

2000 Burr-Brown Product Selection Guide

Linear & Mixed Signal Products



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2000 Burr-Brown Product Selection Guide

The 2000 Burr-Brown Product Selection Guide provides summary information for Burr-Brown's full line of precision components. The materials in this guide will assist in rapid component assessment and selection, allowing a designer to focus on only the products best suited for an application.

The 2000 Product Selection Guide contains the following sections:

PRODUCT LINE SECTIONS: Each product section contains the following information:

- **Selection Trees**—An overview of our product lines organized by performance level or key features.
- **Selection Guides**—Tables for each product line comparing product performance for several key specifications.
- **New Products**—Product features, key applications, and block diagrams for our newest Introductions and for products in development.



PRODUCT APPLICATIONS: Block diagrams of the signal path for common applications with references to Burr-Brown components useful for each functional block.

DEMONSTRATION BOARDS: User-friendly evaluation fixtures for Burr-Brown products.

TOOLS FOR DESIGNERS: Listings of Applications Bulletins, Demonstration Boards, and Design Software available from Burr-Brown.

CROSS REFERENCE: A listing of Burr-Brown products that are pin-for-pin (P/P) compatible with competitors' products, pin-for-pin with exception of one or more specs (P/E), closest part (C/P) or functional equivalent (F/E).

SALES OFFICE LISTINGS: Contact information for Burr-Brown direct sales offices and authorized representatives and distributors.

HOW TO USE THE 2000 PRODUCT SELECTION GUIDE

The New Products Index appears on the inside back cover of the guide with a list of the page numbers where these products can be found. The **boldface page number** indicates more detailed, newer product information. If you are not familiar with Burr-Brown part numbers, the "flip-through" page headings make it convenient to find a specific section.

CUSTOMER SERVICE

Burr-Brown is committed to providing the best customer service in the industry. For immediate assistance, contact your local Burr-Brown salesperson, representative or distributor (listed at the end of the Product Selection Guide). Some of the services we provide:

Technical Literature and Applications Assistance

Burr-Brown provides top caliber applications engineering assistance to our customers. We will provide you with professional guidance and resolve design snags real-time. Designing in a Burr-Brown product is easy! Applications engineers can be contacted during business hours at **1-800-548-6132** or **1-520-746-7980**.

You can also request a data book, individual product data sheets, product guides, applications bulletins, product line brochures, demo board manuals, and design software through the same phone number. In addition, promotional samples and evaluation kits are available when offered in advertisements.

Literature requests can be posted 24 hours a day by using our automated literature request line. When calling, please be prepared to give the following information:

- **Your Name**
- **Company**
- **Full Company Address**
- **Phone Number**
- **Type of Literature you are requesting**

The International number is **1-520-746-3884**.

World Wide Web

Visit the Burr-Brown Web Site and take advantage of all the on-line tools that Burr-Brown has to offer. Currently, the site features on-line purchasing, product data sheets, applications bulletins, parametric search engine, cross reference search tool, Spice macromodels, FilterPro, demo board data sheets, applications seminar manuals, and financial news releases.

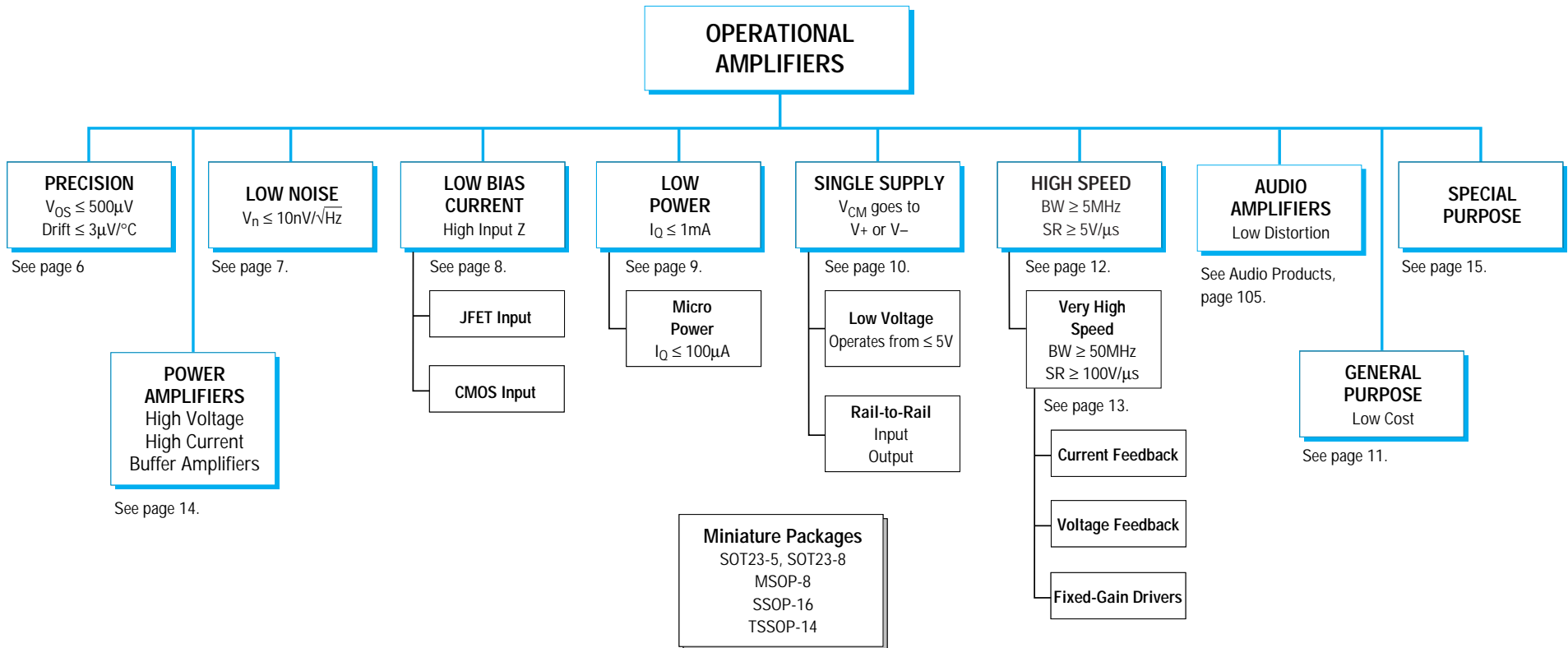
Make the Burr-Brown Web Site your first stop for design tools and applications assistance. Visit us today at <http://www.burr-brown.com/>.

Prices and Quotations

Information on pricing, delivery status, sample requests, or product returns is available at the number listed below. Price quotations made by Burr-Brown or its authorized representatives are valid for 30 days. Delivery quotations are subject to confirmation at the time of order placement. The International number is **1-520-746-7930**.

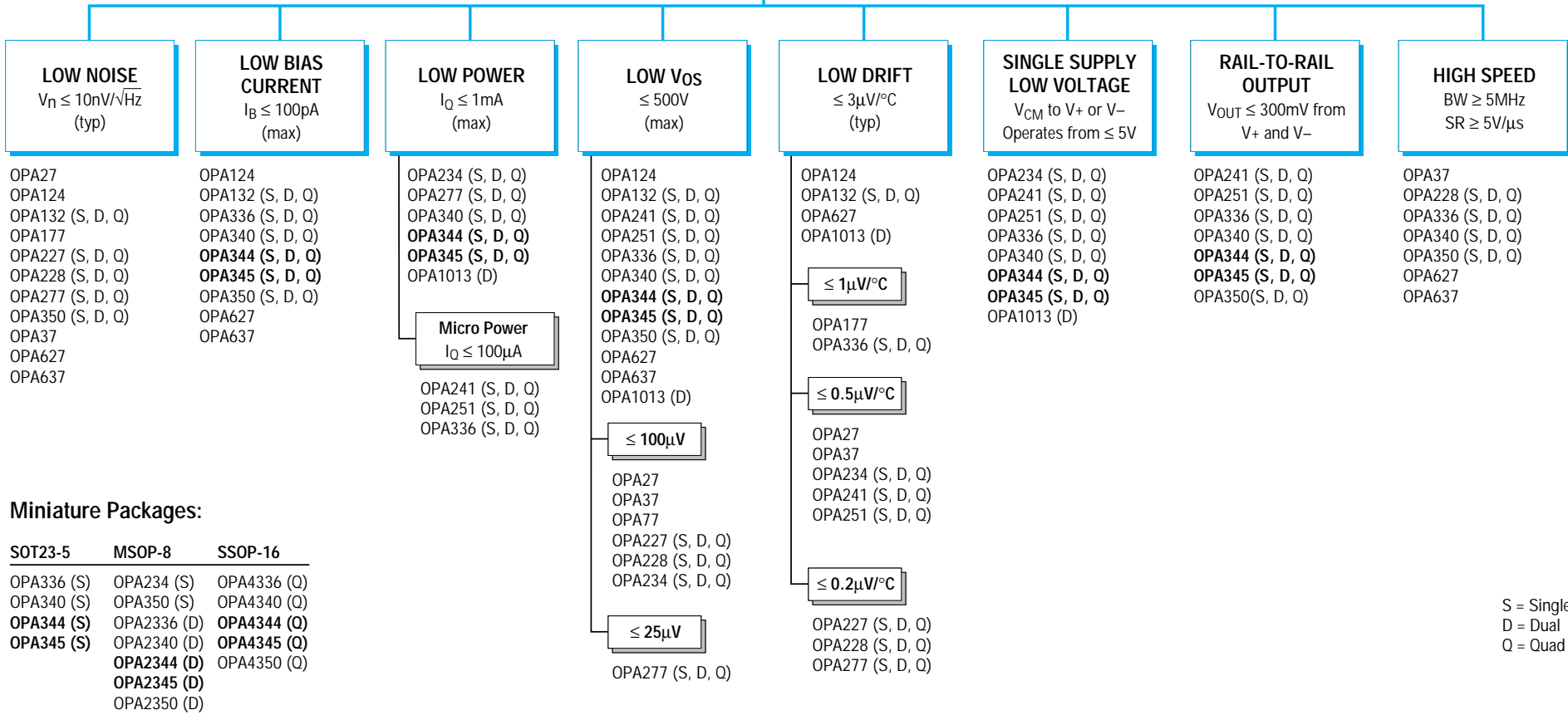


Operational Amplifiers—Main Selection Tree



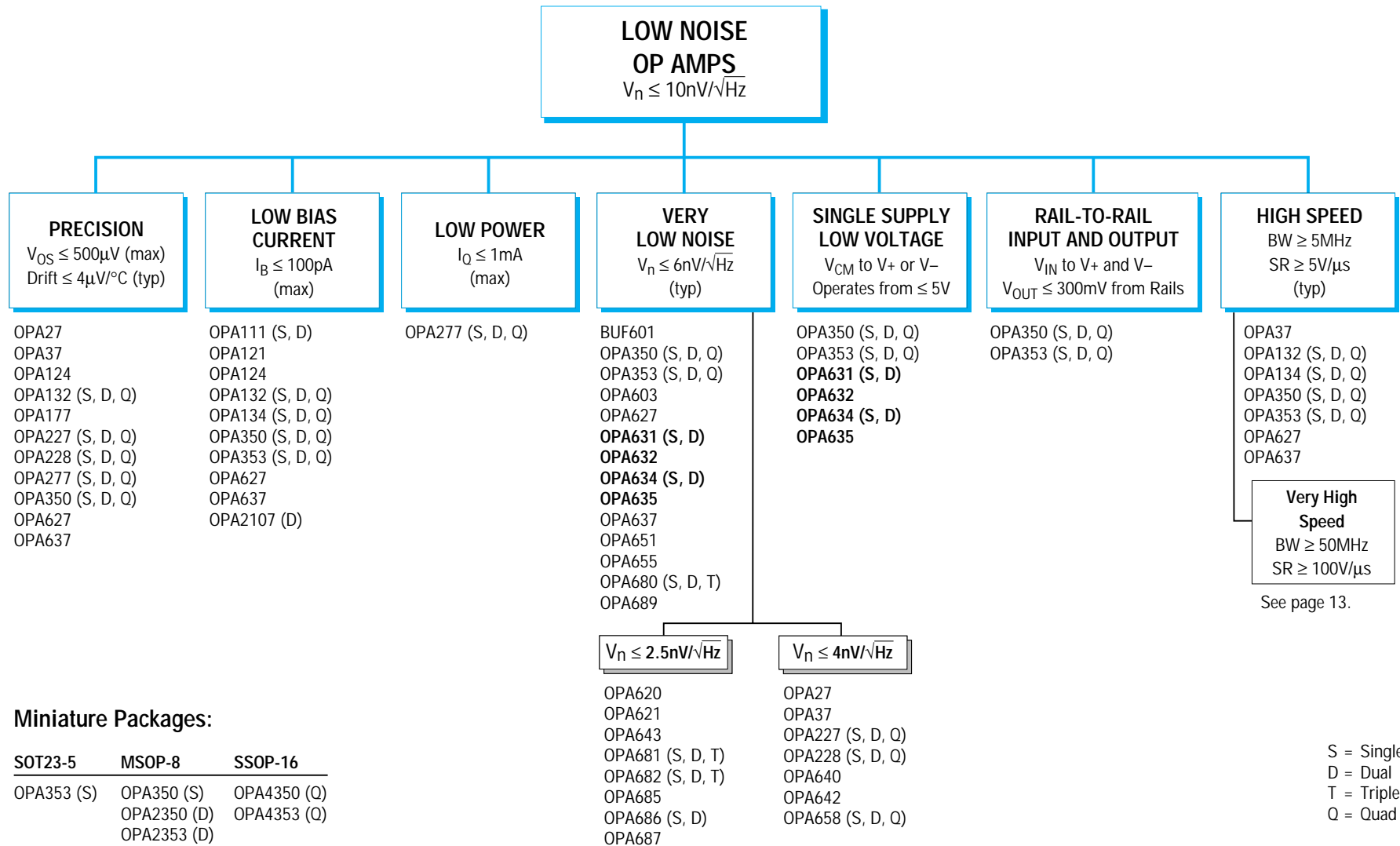
Operational Amplifiers—Selection Tree

**PRECISION
OP AMPS**
 $V_{OS} \leq 500\mu V$
 $V_{OS} \text{ Drift} \leq 4\mu V/^{\circ}C$



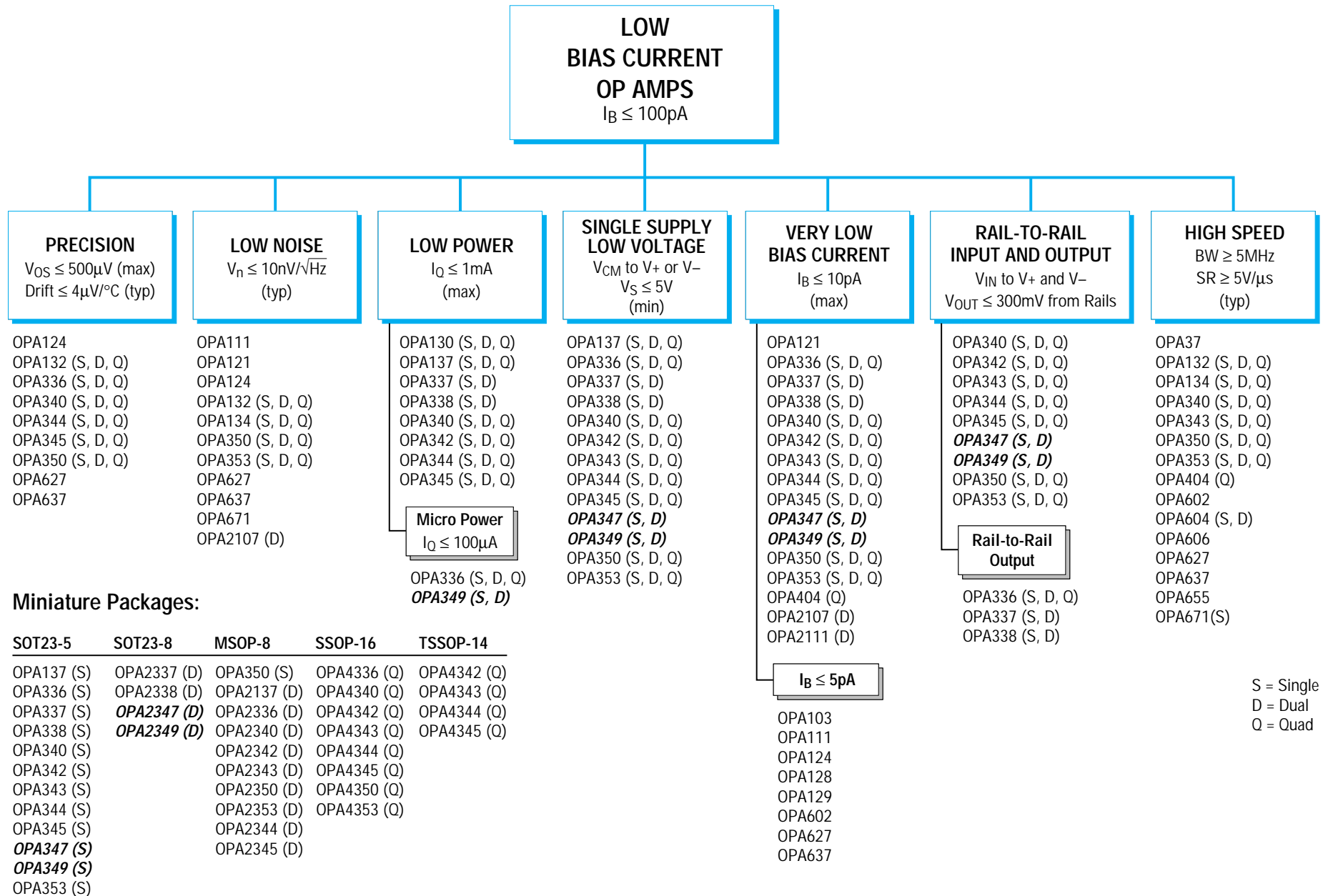
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Operational Amplifiers—Selection Tree



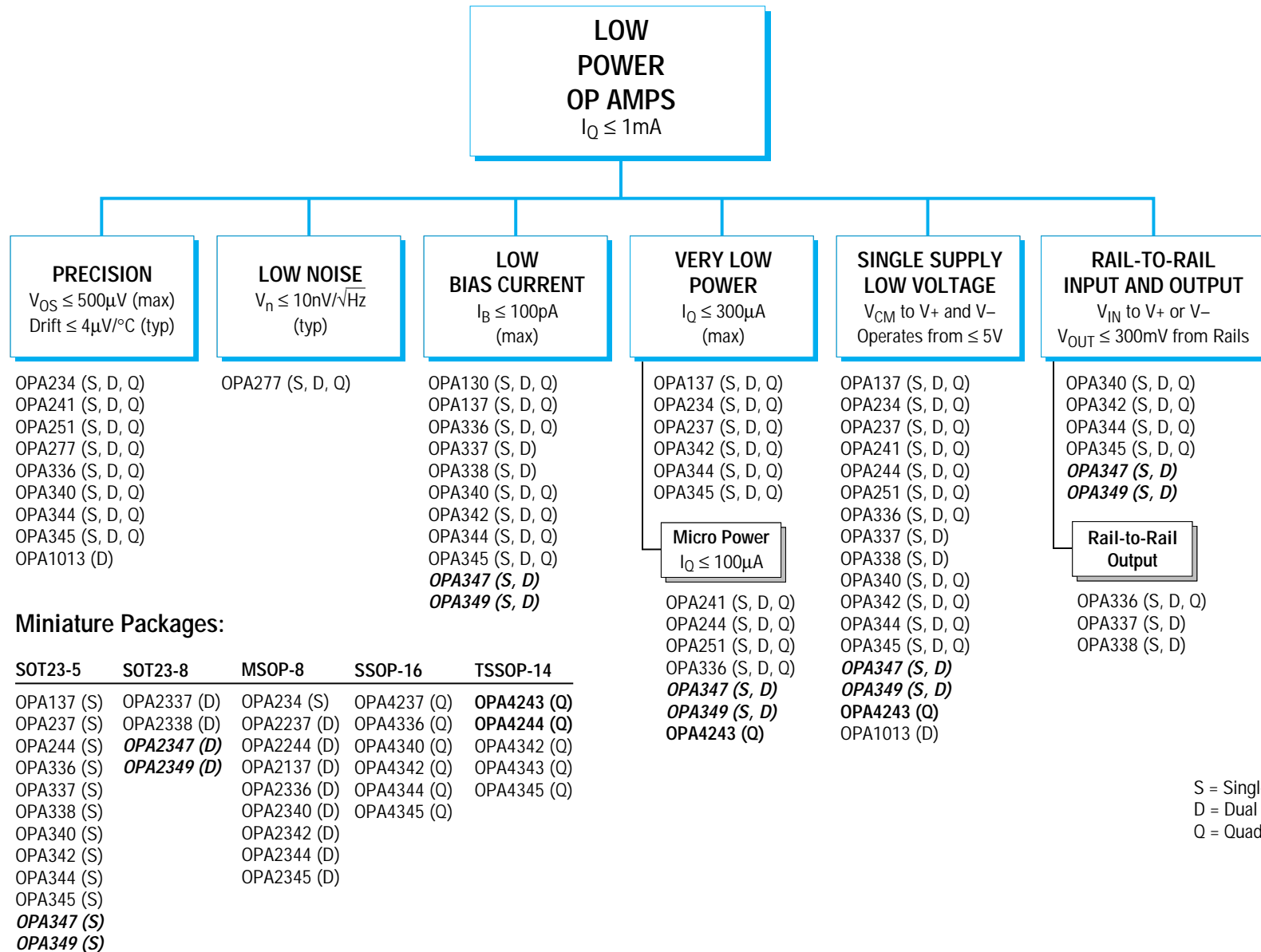
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Operational Amplifiers—Selection Tree



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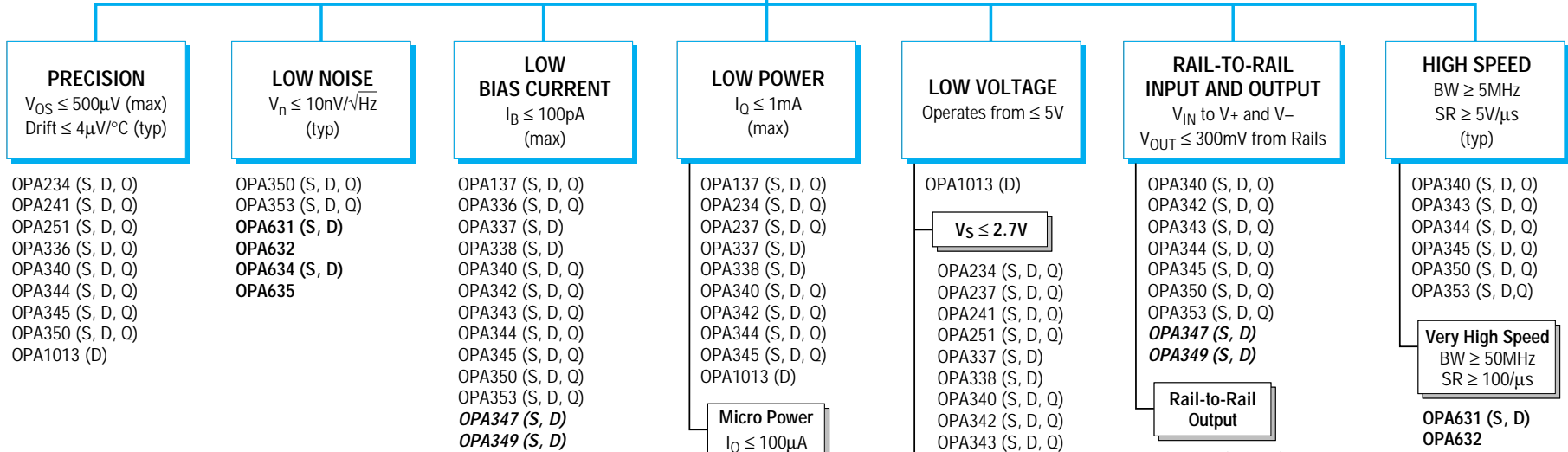
Operational Amplifiers—Selection Tree



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Operational Amplifiers—Selection Tree

**SINGLE-SUPPLY
OP AMPS**
 V_{CM} goes to V_+ and/or V_-



Miniature Packages:

SOT23-5	SOT23-6	SOT23-8	MSOP-8	SSOP-16	TSSOP-14
OPA137 (S)	OPA632	OPA2337 (D)	OPA234 (S)	OPA4237 (Q)	OPA4243 (Q)
OPA237 (S)	OPA635	OPA2338 (D)	OPA350 (S)	OPA4336 (Q)	OPA4244 (Q)
OPA244 (S)		OPA2347 (D)	OPA2237 (D)	OPA4340 (Q)	OPA4342 (Q)
OPA336 (S)		OPA2349 (D)	OPA2244 (D)	OPA4342 (Q)	OPA4343 (Q)
OPA337 (S)			OPA2137 (D)	OPA4343 (Q)	OPA4345 (Q)
OPA338 (S)			OPA2336 (D)	OPA4344 (Q)	
OPA340 (S)			OPA2340 (D)	OPA4345 (Q)	
OPA342 (S)			OPA2342 (D)	OPA4350 (Q)	
OPA343 (S)			OPA2343 (D)	OPA4353 (Q)	
OPA344 (S)			OPA2344 (D)		
OPA345 (S)			OPA2345 (D)		
OPA353 (S)			OPA2350 (D)		
OPA347 (S)			OPA2353 (D)		
OPA349 (S)					
OPA631					
OPA634					

Micro Power
 $I_Q \leq 100\mu A$

OPA241 (S, D, Q)
OPA244 (S, D, Q)
OPA251 (S, D, Q)
OPA336 (S, D, Q)
OPA347 (S, D)
OPA349 (S, D)

$V_S \leq 2.7V$

OPA1013 (D)
OPA234 (S, D, Q)
OPA237 (S, D, Q)
OPA241 (S, D, Q)
OPA251 (S, D, Q)
OPA337 (S, D)
OPA338 (S, D)
OPA340 (S, D, Q)
OPA342 (S, D, Q)
OPA343 (S, D, Q)
OPA344 (S, D, Q)
OPA345 (S, D, Q)
OPA350 (S, D, Q)
OPA353 (S, D, Q)

$V_S \leq 2.3V$

OPA244 (S, D, Q)
OPA336 (S, D, Q)

$V_S \leq 1.8V$

OPA349 (S, D)

Rail-to-Rail Output

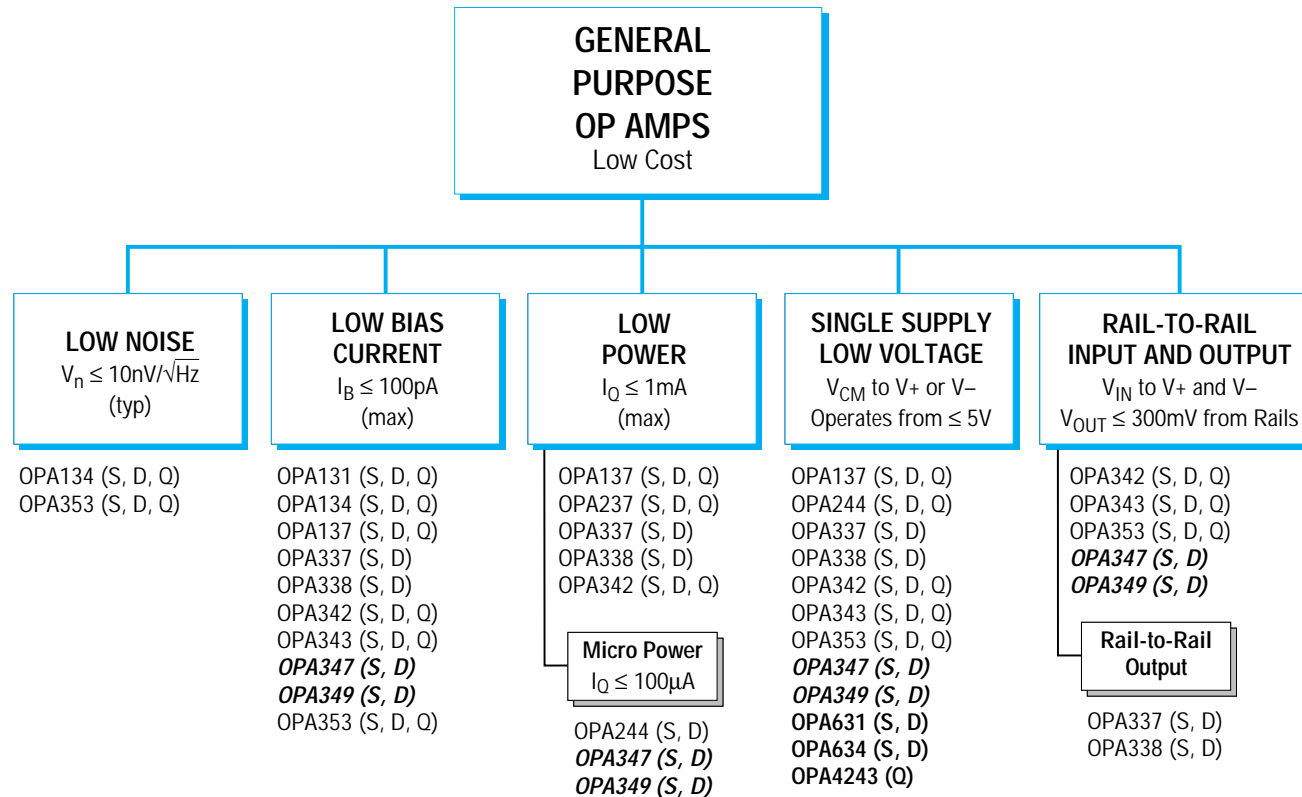
OPA241 (S, D, Q)
OPA251 (S, D, Q)
OPA336 (S, D, Q)
OPA337 (S, D)
OPA338 (S, D)

Very High Speed
 $BW \geq 50MHz$
 $SR \geq 100/\mu s$

OPA631 (S, D)
OPA632
OPA634 (S, D)
OPA635

S = Single
D = Dual
Q = Quad

Operational Amplifiers—Selection Tree



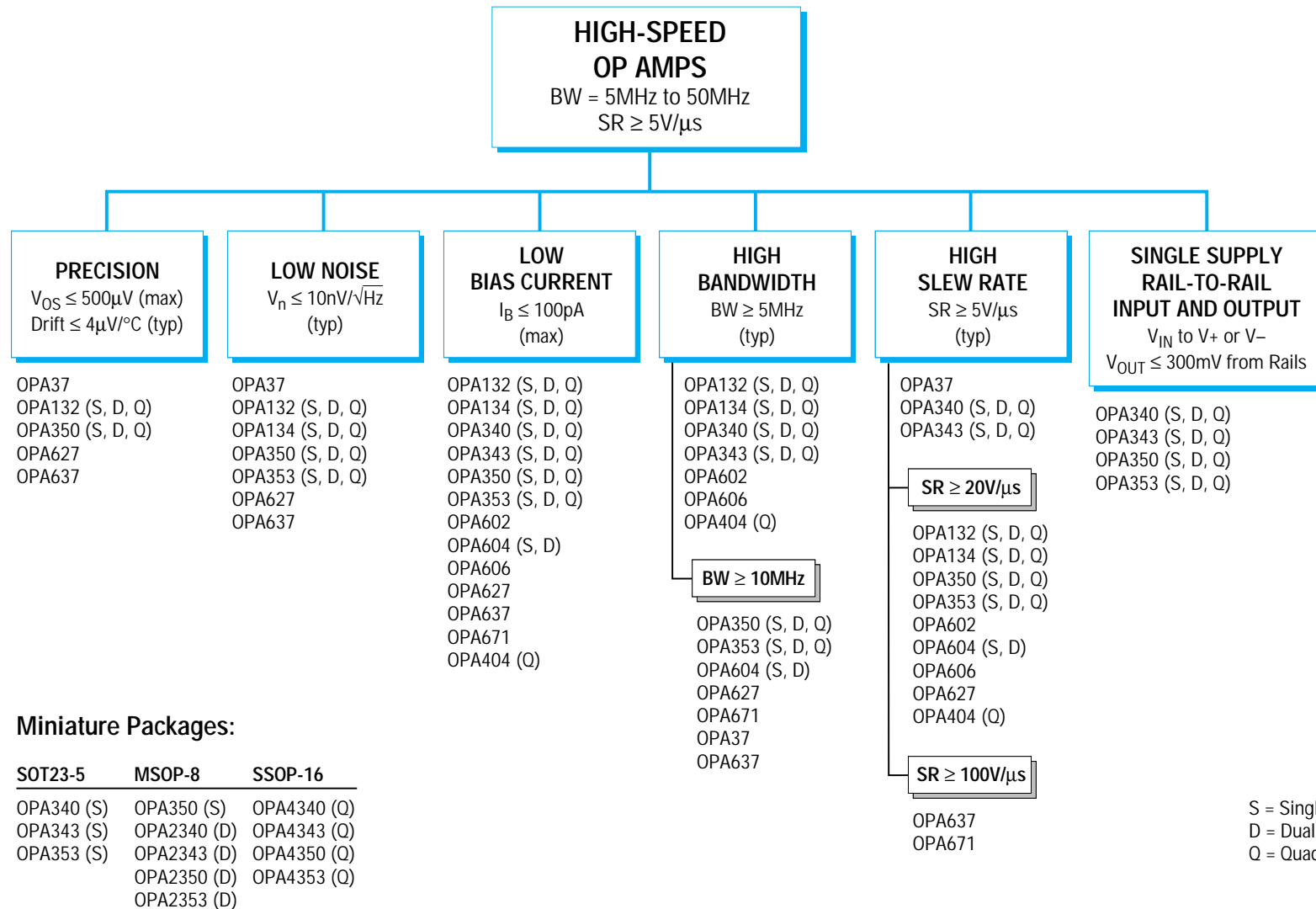
Miniature Packages:

SOT23-5	SOT23-8	MSOP-8	SSOP-16	TSSOP-14
OPA137 (S)	OPA2337 (D)	OPA2137 (D)	OPA4237 (Q)	OPA4243 (Q)
OPA237 (S)	OPA2338 (D)	OPA2237 (D)	OPA4342 (Q)	OPA4244 (Q)
OPA244 (S)	OPA2347 (D)	OPA2244 (D)	OPA4343 (Q)	OPA4342 (Q)
OPA337 (S)	OPA2349 (D)	OPA2342 (D)	OPA4350 (Q)	OPA4343 (Q)
OPA338 (S)		OPA2353 (D)		OPA4345 (Q)
OPA342 (S)				
OPA343 (S)				
OPA347 (S)				
OPA349 (S)				
OPA353 (S)				
OPA631 (S)				
OPA634 (S)				

S = Single
D = Dual
Q = Quad

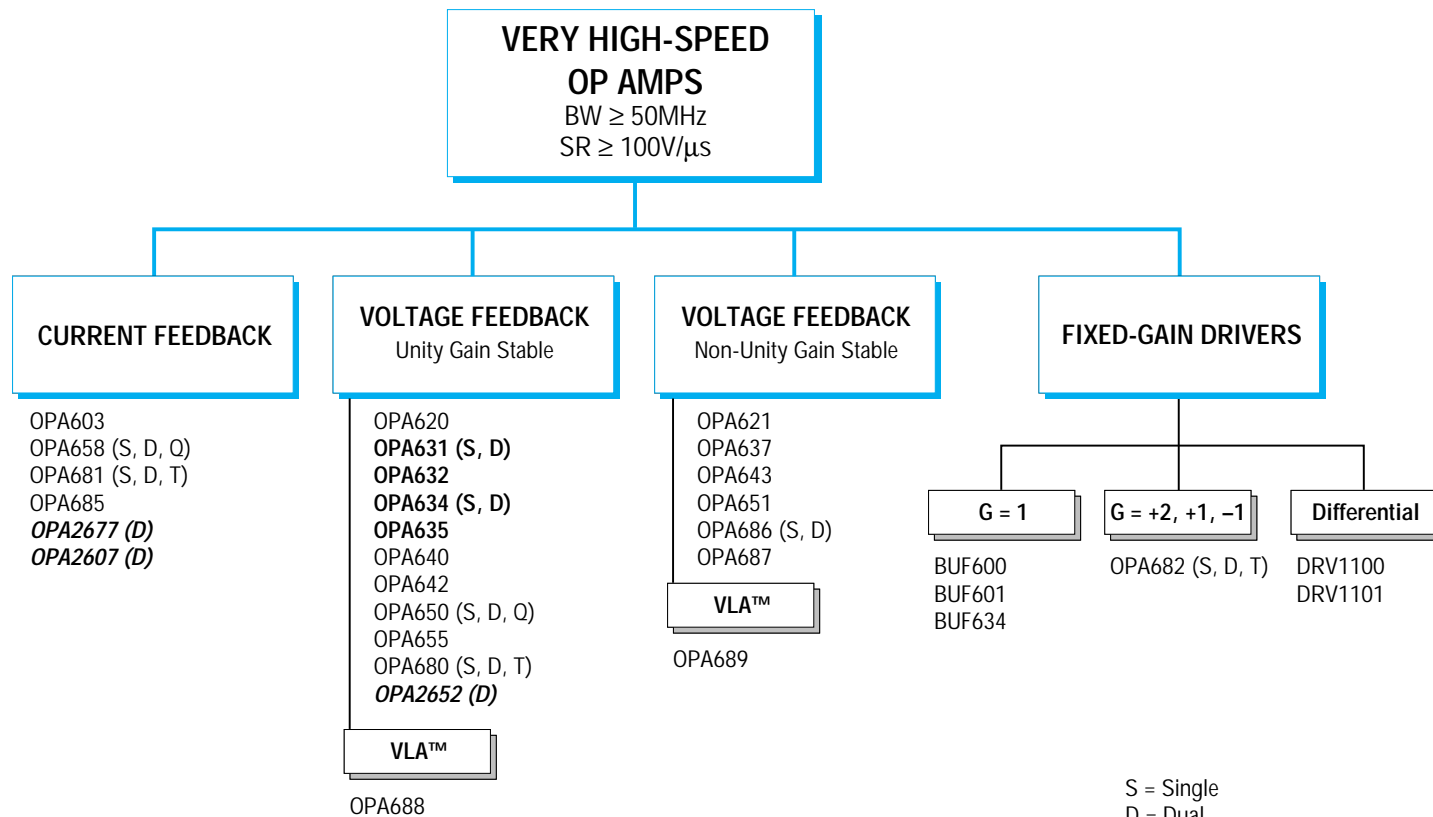
BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Operational Amplifiers—Selection Tree



BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Operational Amplifiers—Selection Tree



S = Single
 D = Dual
 T = Triple
 Q = Quad

VLA™ = Voltage Limiting Amplifier

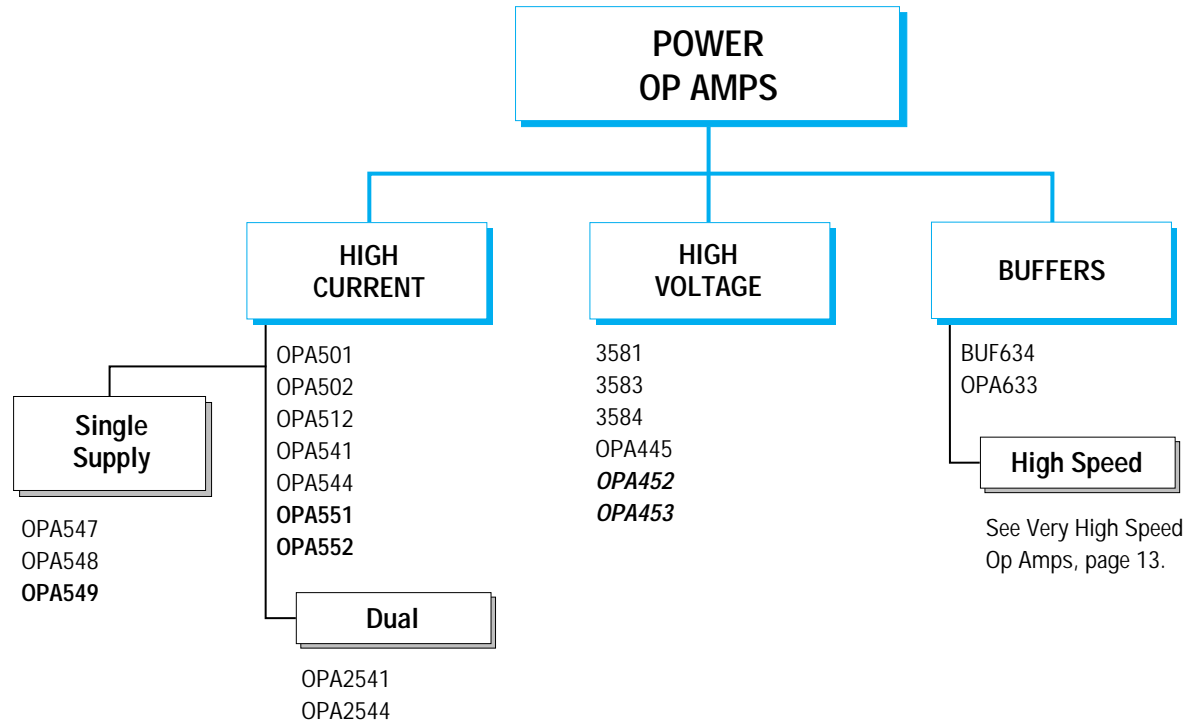
Miniature Packages:

SOT23-5	SOT23-6	MSOP-8	SSOP-16
OPA631 (S)	OPA632 (S)	OPA2650 (D)	OPA3680 (T)
OPA634 (S)	OPA635 (S)	OPA2658 (D)	OPA3681 (T)
OPA642 (S)	OPA680 (S)		OPA3682 (T)
OPA643 (S)	OPA681 (S)		
OPA650 (S)	OPA682 (S)		
OPA658 (S)	OPA685 (S)		
	OPA687 (S)		

* See Pages 19-20 for Listings.

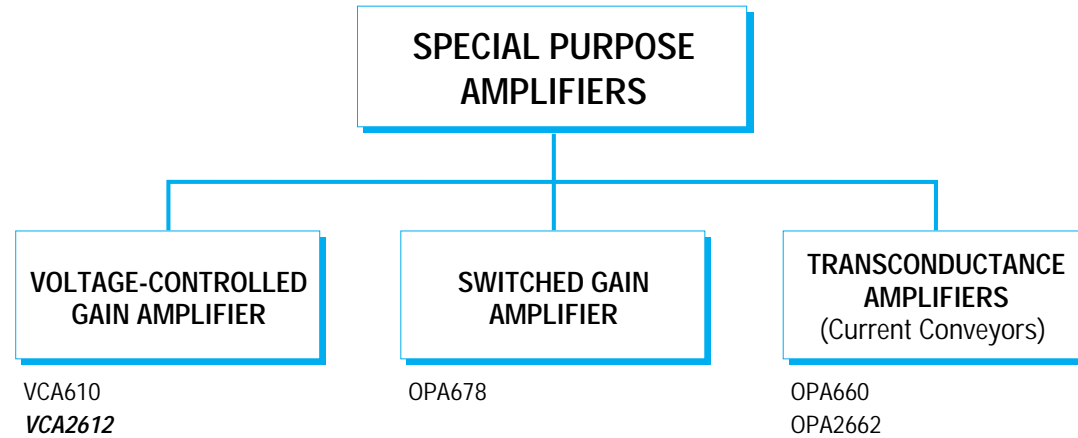
BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Operational Amplifiers—Selection Tree



* See Page 21 for Listings.

Operational Amplifiers—Selection Tree and Guide



VOLTAGE-CONTROLLED AMPLIFIER

Product	Description	BW (MHz)	e_{ni} (nV/ $\sqrt{\text{Hz}}$)	Gain Control Range (dB)	Gain Slew Rate (dB/ μs)	Package(s)	Lowest Grade Price (1000s)		
VCA610	Wideband, Continuously Variable	30	2.2	± 40	300	SO-8, DIP-8	\$17.50		
Product	Description	BW (MHz)	e_{ni} (nV/ $\sqrt{\text{Hz}}$)	Gain Control Range (dB)	Power Dissipation (mW)	Input	V_S (V)	Package(s)	Lowest Grade Price (1000s)
VCA2612	<i>Dual, Low Noise, Programmable Gain and Range</i>	80	2.6	5 to 25	390 (Dual)	DIFF/SE	+5	LQFP-48	\$11.75

TRANSCONDUCTANCE AMPLIFIERS

Product	Description	BW (MHz)	Offset Voltage ($\pm\text{mV}$) typ	Offset Voltage Drift ($\pm\mu\text{V}/^\circ\text{C}$) typ	I_o ($\pm\text{mA}$) typ	V_o (V) min	e_{ni} (nV/ $\sqrt{\text{Hz}}$)	Package(s)	Lowest Grade Price (1000s)
OPA660	Wideband, VCCS and Buffer Amp	850	+7	50	15	3.7	4 (Buffer)	SO-8, DIP-8	\$4.75
OPA2662	Wideband, Dual VCCS	370	75	12	75	3.4	4.4 (OTA)	SO-16	4.66

SWITCHED GAIN AMPLIFIER

Product	Description	BW (MHz)	Offset Voltage ($\pm\text{mV}$) max	SR (mA/ns) typ	I_o ($\pm\text{mA}$)	V_o (V) min	e_{ni} (nV/ $\sqrt{\text{Hz}}$)	Package(s)	Lowest Grade Price (1000s)
OPA678	Wideband, TTL or ECL Controlled	200	1.5	350	44	± 2.5	4	SO-16, DIP-16	\$5.95

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Operational Amplifiers—Selection Guide

OPERATIONAL AMPLIFIERS—Singles

Product	Description	Offset Voltage (±mV) max	Offset Drift (±μV/°C) typ	Bias Current (±A) max	Noise at 1kHz (nV/√Hz) typ	Speed BW, SR (MHz, V/μs) typ, typ	CMRR (dB) min	Open-Loop Gain (dB) min	Input Voltage Range (V) min to max	Output Voltage Range (V) min to max	I _Q per Channel (±mA) typ	Power Supply Range (V) min to max	Package(s)	Lowest Grade Price (1000s)
OPA27	Ultra-Low Noise, Precision	0.1	0.4	80nA	3.2	8, 1.9	100	117	(V-) +4 to (V+) -4	(V-) +3 to (V+) -3	3.3	±4 to ±22	DIP-8, SO-8	\$1.06
OPA37	Decompensated OPA27, G ≥ 5	0.1	0.4	80nA	3.2	63, 11.9	100	117	(V-) +4 to (V+) -4	(V-) +3 to (V+) -3	3.3	±4 to ±22	DIP-8, SO-8	1.08
OPA111	Low Noise, Precision, FET Input	0.25	0.5	1pA	7	2, 2	100	120	(V-) +5 to (V+) -5	(V-) +4 to (V+) -4	2.5	±5 to ±18	TO-99	6.78
OPA121	Low Cost, <i>DIFET</i> ®	2	3	5pA	8	2, 2	86	110	(V-) +5 to (V+) -5	(V-) +4 to (V+) -4	2.5	±5 to ±18	TO-99, DIP-8, SO-8	3.57
OPA124	Low Noise, <i>DIFET</i>	0.25	1	1pA	8	1.5, 1.6	100	120	(V-) +5 to (V+) -5	(V-) +4 to (V+) -4	2.5	±5 to ±18	DIP-8, SO-8	3.38
OPA128	<i>DIFET</i> , Electrometer, Lowest I _B	0.5	5	0.075pA	27	1, 3	90	110	(V-) +5 to (V+) -5	(V-) +5 to (V+) -5	0.9	±5 to ±18	TO-99	10.02
OPA129	<i>DIFET</i> , Ultra-Low Bias Current	2	3	0.1pA	17	1, 2.5	80	94	(V-) +2 to (V+) -2	(V-) +3 to (V+) -3	1.2	±5 to ±18	DIP-8, SO-8	3.00
OPA130	Low Power, FET Input	1	2	20pA	16	1, 2	90	120	(V-) +2 to (V+) -2	(V-) +1.2 to (V+) -2	0.53	±2.25 to ±18	DIP-8, SO-8	1.30
OPA131	General Purpose, FET Input	0.75	2	50pA	15	4, 10	80	100	(V-) +3 to (V+) -1	(V-) +3 to (V+) -3	1.5	±4.5 to ±18	DIP-8, SO-8	0.70
OPA132	High Speed, FET Input	0.5	2	50pA	8	8, 20	96	110	(V-) +2.5 to (V+) -2.5	(V-) +0.5 to (V+) -1.2	4	±2.5 to ±18	DIP-8, SO-8	1.33
OPA134	Audio, FET Input	2	2	100pA	8	8, 20	86	104	(V-) +2.5 to (V+) -2.5	(V-) +0.5 to (V+) -1.2	4	±2.5 to ±18	DIP-8, SO-8	0.87
OPA137	Low Cost, FET Input, Input to V+	3	15	100pA	45	1, 3.5	76	86	(V-) +3 to (V+) +	(V-) +1.2 to (V+) -1.1	0.22	±2.25 to ±18	DIP-8, SO-8, SOT23-5	0.55
OPA177	High Precision	0.025	0.1	1.5nA	7.5	0.6, 0.3	130	134	(V-) +2 to (V+) -2	(V-) +1.5 to (V+) -1.5	1.3	±3 to ±18	DIP-8, SO-8	0.82
OPA227	Precision, Ultra-Low Noise	0.075	0.1	10nA	3	8, 2.3	120	132	(V-) +2 to (V+) -2	(V-) +2 to (V+) -2	3.7	±2.5 to ±18	DIP-8, SO-8	1.00
OPA228	Precision, Ultra-Low Noise, G ≥ 5	0.075	0.1	10nA	3	33, 11	120	132	(V-) +2 to (V+) -2	(V-) +2 to (V+) -2	3.7	±2.5 to ±18	DIP-8, SO-8	1.00
OPA234	Low Power, SS, Precision	0.1	0.5	-25nA	25	0.35, 0.2	96	110	(V-) -0.1 to (V+) -1	(V-) +0.1 to (V+) -1	2.5	+2.7 to +36	DIP-8, SO-8, MSOP-8	0.98
OPA237	Low Cost, SS, Low Power	0.75	2	-40nA	28	1.4, 0.5	78	80	(V-) -0.2 to (V+) -1.5	(V-) +0.1 to (V+) -1	0.17	+2.7 to +36	SOT23-5, SO-8	0.50
OPA241	μPower, SS, Precision, R/R Output	0.25	0.4	-20nA	45	0.035, 0.01	80	100	(V-) -0.2 to (V+) -0.8	100mV from Rails	0.025	+2.7 to +36	DIP-8, SO-8	1.06
OPA244	μPower, SS, Low Cost	1.5	4	-25nA	22	0.24, 0.1	84	86	(V-) to (V+) -1	(V-) +0.5 to (V+) -1	0.04	+2.6 to +36	DIP-8, SO-8, SOT23-5	0.49
OPA251	μPower, Precision, R/R Output	0.25	0.5	-20nA	45	0.035, 0.01	100	100	(V-) -0.2 to (V+) -0.8	250mV from Rails	0.027	±1.35 to ±18	DIP-8, SO-8	1.06
OPA277	High Precision, Low Power	0.02	0.1	1nA	8	1, 0.8	130	126	(V-) +2 to (V+) -2	(V-) +0.5 to (V+) -1.2	0.8	±1.35 to ±18	DIP-8, SO-8	0.90
OPA336	CMOS, μPower, SS, R/R Output	0.125	1.5	10pA	40	0.1, 0.03	80	100	(V-) -0.2 to (V+) -1	100mV from Rails	0.020	+2.3 to +5.5	DIP-8, SO-8, SOT23-5	0.60
OPA337	Low Cost, CMOS, R/R Out	3	2	10pA	26	3, 1.2	74	100	(V-) -0.2 to (V+) -2	125mV from Rails	0.525	±2.7 to ±5.5	DIP-8, SO-8, SOT23-5	0.40
OPA338	Low Cost, CMOS, R/R Out, G ≥ 5	3	2	10pA	26	12.5/4.6	74	100	(V-) -0.2 to (V+) -2	125mV from Rails	0.525	±2.7 to ±5.5	DIP-8, SO-8, SOT23-5	0.40
OPA340	CMOS, High Speed, R/R In and Out	0.5	2.5	10pA	25	5.5, 6	80	106	300mV beyond Rails	5mV from Rails	0.75	+2.7 to +5.5	DIP-8, SO-8, SOT23-5	0.66
OPA342	Low Cost, CMOS, R/R In and Out, Lw Pwr	6	3	10pA	30	1, 1	76	106	300mV beyond Rails	10mV from Rails	0.15	+2.7 to +5.5	SO-8, SOT23-5	0.58
OPA343	CMOS, Low Cost, R/R In and Out	8	3	10pA	25	5.5, 6	74	100	300mV beyond Rails	5mV from Rails	0.85	+2.5 to +5.5	SO-8, SOT23-5	0.57
OPA344	CMOS, R/R In and Out, Low Power	0.5	2.5	10pA	32	1, 1	80	106	300mV beyond Rails	10mV from Rails	0.15	+2.7 to +5.5	DIP-8, SO-8, MSOP-8	0.67
OPA345	CMOS, R/R In and Out, Low Power, G ≥ 5	0.5	2.5	10pA	32	4, 4	80	106	300mV beyond Rails	10mV from Rails	0.15	+2.7 to +5.5	SO-8, SOT23-5	0.67
OPA347	μPower, Low Cost, CMOS, R/R In and Out	10	2	10pA	60	0.3/0.1	62	100	(V-) -0.1 to (V+) +0.1	(V-) +0.01 to (V+) -0.01	0.03	2.5 to 6	SOT23-5, SO-8	0.46
OPA349	"Zero" Power, CMOS, R/R In and Out	10	2.5	10pA	200	0.075/0.02	52	74	(V-) -0.2 to (V+) +0.2	(V-) +0.35 to (V+) -0.35	0.002	1.8 to 6	SOT23-5, SO-8	0.58
OPA350	CMOS, 35MHz, R/R In and Out	0.5	4	10pA	5 ⁽¹⁾	38, 22	76	100	100mV beyond Rails	50mV from Rails	5.2	+2.7 to +5.5	DIP-8, SO-8, MSOP-8	1.22
OPA353	Low Cost, CMOS, 44MHz, R/R In and Out	8	5	10pA	5 ⁽¹⁾	44, 22	76	100	100mV beyond Rails	50mV from Rails	5.2	+2.7 to +5.5	SO-8, SOT23-5	0.96
OPA602	High Speed, Precision, <i>DIFET</i>	0.25	2	1pA	13	6.5, 35	92	92	(V-) +4.8 to (V+) -4.8	(V-) +3.5 to (V+) -3.5	3	±5 to ±18	TO-99, DIP-8, SO-8	3.10
OPA604	Audio, FET Input	5	8	50pA*	11	20, 25	80	80	(V-) +3 to (V+) -3	(V-) +4 to (V+) -4	5.3	±4.5 to ±24	DIP-8, SO-8	0.90
OPA606	Wide Bandwidth, <i>DIFET</i>	0.5	3	10pA	13	13, 35	85	100	(V-) +4 to (V+) -4	(V-) +3 to (V+) -3	6.2	±5 to ±18	TO-99, DIP-8	3.11
OPA627	Ultra-Low THD+N, High Speed, Prec.	0.1	0.4	1pA	5.2	16, 55	106	112	(V-) +4 to (V+) -4	(V-) +3.5 to (V+) -3.5	7	±4.5 to ±18	TO-99, DIP-8	8.28
OPA637	Decompensated OPA627, G ≥ 5	0.1	0.4	1pA	5.2	80, 135	106	112	(V-) +4 to (V+) -4	(V-) +3.5 to (V+) -3.5	7	±4.5 to ±18	TO-99, DIP-8	8.28
OPA671	Fastest Settling, FET Input	5	10	50pA	15	35, 107	74	74	(V-) +3 to (V+) -3	(V-) +4.5 to (V+) -4.5	14.8	±4.5 to ±18	DIP-8	4.37

NOTE: (1) f = 100kHz.

GBW = Gain Bandwidth SS = Single Supply R/R = Rail-to-Rail SR = Slew Rate

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* Denotes typical. **BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT.** Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Operational Amplifiers—Selection Guide

OPERATIONAL AMPLIFIERS—Duals

Product	Description	Offset Voltage (±mV) max	Offset Drift (±µV/°C) typ	Bias Current (±A) max	Noise at 1kHz (nV/√Hz) typ	Speed GBW, SR (MHz, V/µs) typ, typ	CMRR (dB) min	Open-Loop Gain (dB) min	Input Voltage Range (V) min to max	Output Voltage Range (V) min to max	I _q per Channel (±mA) typ	Power Supply Range (V) min to max	Package(s)	Lowest Grade Price (1000s)
OPA1013	Precision, SS, Low Power	0.3	0.4	30nA	25	0.6, 0.35	97	121	(V-) to (V+)-1.5	(V-)+0.025 to (V+)-1	0.33	±2 to ±18	DIP-8	\$1.85
OPA2107	<i>DIFET</i> , Low Noise	1	0.5	10pA	9	4.5, 18	80	82	(V-)+4.5 to (V+)-4.5	(V-)+4 to (V+)-4	4.5	±4.5 to ±18	DIP-8, SO-8	7.01
OPA2111	<i>DIFET</i> , Guaranteed Noise	0.5	0.5	4pA	7	2, 2	96	114	(V-)+5 to (V+)-5	(V-)+5 to (V+)-5	5	±5 to ±18	TO-99, DIP-8	6.03
OPA2130	Low Power, FET Input	1	2	20pA	16	1, 2	90	120	(V-)+2 to (V+)-2	(V-)+1.2 to (V+)-2	0.53	±2.25 to ±18	DIP-8, SO-8	2.10
OPA2131	General Purpose, FET Input	1	2	50pA	15	4, 10	70	94	(V-)+3 to (V+)-1	(V-)+3 to (V+)-3	1.5	±4.5 to ±18	DIP-8, SO-8	1.27
OPA2132	High Speed, FET Input	0.5	2	50pA	8	8, 20	96	110	(V-)+2.5 to (V+)-2.5	(V-)+0.5 to (V+)-1.2	4	±2.5 to ±18	DIP-8, SO-8	2.26
OPA2134	Audio, FET Input	2	2	100pA	8	8, 20	86	104	(V-)+2.5 to (V+)-2.5	(V-)+0.5 to (V+)-1.2	4	±2.5 to ±18	DIP-8, SO-8	1.09
OPA2137	Low Cost, FET Input, Input to V+	3	15	100pA	45	1, 3.5	76	86	(V-)+3 to (V+)	(V-)+1.2 to (V+)-1.1	0.22	±2.25 to ±18	DIP-8, SO-8, MSOP-8	0.64
OPA2227	Precision, Ultra-Low Noise	0.2	0.3	10nA	3	8, 2.3	120	132	(V-)+2 to (V+)-2	(V-)+2 to (V+)-2	3.7	±2.5 to ±18	DIP-8, SO-8	1.70
OPA2228	Precision, Ultra-Low Noise, G ≥ 5	0.2	0.3	10nA	3	33, 11	120	132	(V-)+2 to (V+)-2	(V-)+2 to (V+)-2	3.7	±2.5 to ±18	DIP-8, SO-8	1.70
OPA2234	Low Power, SS, Precision	0.1	0.5	-25nA	25	0.35, 0.2	96	110	(V-)-0.1 to (V+)-1	(V-)+0.1 to (V+)-1	2.5	+2.7 to +36	DIP-8, SO-8, MSOP-8	1.76
OPA2237	Low Cost, SS, Low Power	0.75	2	-40nA	28	1.4, 0.5	78	80	(V-)-0.2 to (V+)-1.5	(V-)+0.1 to (V+)-1	0.17	+2.7 to +36	SOT23-5, SO-8	0.85
OPA2241	µPower, SS, Precision, R/R Output	0.25	0.4	-20nA	45	0.035, 0.01	80	100	(V-)-0.2 to (V+)-0.8	100mV from Rails	0.025	+2.6 to +36	DIP-8, SO-8	1.80
OPA2244	µPower, SS, Low Cost	1.5	2.3	-25nA	22	0.3, 0.1	72	86	(V-) to (V+)-1	(V-)+0.5 to (V+)-1	0.04	+2.6 to +36	DIP-8, SO-8, MSOP-8	0.81
OPA2251	µPower, Precision, R/R Output	0.25	0.5	-20nA	45	0.035, 0.01	100	100	(V-)-0.2 to (V+)-0.8	250mV from Rails	0.027	±1.35 to ±18	DIP-8, SO-8	1.80
OPA2277	High Precision, Low Power	0.02	0.1	1nA	8	1, 0.8	130	126	(V-)+2 to (V+)-2	(V-)+0.5 to (V+)-1.2	0.8	±1.35 to ±18	DIP-8, SO-8	1.53
OPA2336	CMOS, µPower, SS, R/R Output	0.125	1.5	10pA	40	0.1, 0.03	80	100	(V-)-0.2 to (V+)-1	100mV from Rails	0.020	+2.3 to +5.5	DIP-8, SO-8, MSOP-8	1.00
OPA2337	Low Cost, CMOS, R/R Out, SS	3	2	10pA	26	3, 1.2	74	100	(V-)-0.2 to (V+)-1.2	125mV from Rails	0.525	+2.7 to +5.5	DIP-8, SO-8, SOT23-8	0.52
OPA2338	Low Cost, CMOS, R/R Out, G ≥ 5	3	2	10pA	26	12.5/4.6	74	100	(V-)-0.2 to (V+)-1.2	125mV from Rails	0.525	+2.7 to +5.5	DIP-8, SO-8, SOT23-8	0.52
OPA2340	CMOS, High Speed, R/R In and Out	0.5	2.5	10pA	25	5.5, 6	80	106	300mV beyond Rails	5mV from Rails	0.75	+2.7 to +5.5	DIP-8, SO-8, MSOP-8	1.10
OPA2342	Low Cost, CMOS, R/R In and Out, Lw Pwr	6	3	10pA	30	1, 1	76	106	300mV beyond Rails	10mV from Rails	0.15	+2.7 to +5.5	SO-8, MSOP-8	0.92
OPA2343	CMOS, Low Cost, R/R In and Out	8	3	10pA	25	5.5, 6	74	100	300mV beyond Rails	5mV from Rails	0.85	+2.5 to +5.5	SO-8, MSOP-8	0.85
OPA2344	CMOS, R/R In and Out, Low Power	0.5	2.5	10pA	32	1, 1	80	106	300mV beyond Rails	10mV from Rails	0.15	+2.7 to +5.5	DIP-8, SO-8, MSOP-8	1.10
OPA2345	CMOS, R/R In and Out, Lw Pwr, G ≥ 5	0.5	2.5	10pA	32	4, 4	80	106	300mV beyond Rails	10mV from Rails	0.15	+2.7 to +5.5	SO-8, MSOP-8	1.10
OPA2347	µPower, Lw Cost CMOS, R/R In and Out	10	2	10pA	60	0.3/0.1	62	100	(V-)-0.1 to (V+)+0.1	(V-)+0.1 to (V+)-0.01	0.03	2.5 to 6	SOT23-8, SO-8	0.61
OPA2349	"Zero" Power, CMOS, R/R In and Out	10	2.5	10pA	200	0.075/0.02	52	74	(V-)-0.2 to (V+)+0.2	(V-)+0.35 to (V+)-0.35	0.002	1.8 to 6	SOT23-8, SO-8	0.79
OPA2350	CMOS, 35MHz, R/R In and Out	0.5	4	10pA	5 ⁽¹⁾	38, 22	76	100	100mV beyond Rails	50mV from Rails	5.2	+2.7 to +5.5	DIP-8, SO-8, MSOP-8	2.03
OPA2353	Low Cost, CMOS, 44MHz, R/R In and Out	8	5	10pA	5 ⁽¹⁾	44, 22	76	100	100mV beyond Rails	50mV from Rails	5.2	+2.7 to +5.5	SO-8, MSOP-8	1.60
OPA2604	FET Input, Audio	5	8	100pA*	10	20, 25	80	80	(V-)-3 to (V+)-3	(V-)+4 to (V+)-4	10.5	±4.5 to ±24	DIP-8, SO-8	1.64

NOTE: (1) f = 100kHz.

GBW = Gain Bandwidth

R/R = Rail-to-Rail

SR = Slew Rate

SS = Single Supply

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Operational Amplifiers—Selection Guide

OPERATIONAL AMPLIFIERS—Quads

Product	Description	Offset Voltage (±mV) max	Offset Drift (±µV/°C) typ	Bias Current (±A) max	Noise at 1kHz (nV/√Hz) typ	Speed GBW, SR (MHz, V/µs) typ, typ	CMRR (dB) min	Open-Loop Gain (dB) min	Input Voltage Range (V) min to max	Output Voltage Range (V) min to max	I _Q per Channel (±mA) typ	Power Supply Range (V) min to max	Package(s)	Lowest Grade Price (1000s)
OPA404	High Speed, DIFET	0.75	3	4pA	15	6.4, 35	88	88	(V-)–4.5 to (V+)–4.5	(V-)–3.5 to (V+)–3.5	2.25	±5 to ±24	DIP-14, CerDIP-14, SOL-16	\$7.10
OPA4130	Low Power, FET Input	1	2	20pA	16	1, 2	90	120	(V-)–2 to (V+)–2	(V-)–1.2 to (V+)–2	0.53	±2.25 to ±18	DIP-14, SO-14	3.23
OPA4131	General Purpose, FET Input	1	2	50pA	15	4, 10	70	94	(V-)–3 to (V+)–1	(V-)–3 to (V+)–3	1.5	±4.5 to ±18	DIP-14, SO-14, SOL-16	2.86
OPA4132	High Speed, FET Input	0.5	2	50pA	8	8, 20	86	104	(V-)–2.5 to (V+)–2.5	(V-)–0.5 to (V+)–1.2	4	±2.5 to ±18	DIP-14, SO-14	4.26
OPA4134	Audio, High Speed, FET Input	2	2	100pA	8	8, 20	86	104	(V-)–2.5 to (V+)–2.5	(V-)–0.5 to (V+)–1.2	4	±2.5 to ±18	DIP-14, SO-14	1.70
OPA4137	Low Cost, FET Input, Input to V+	3	15	100pA	45	1, 3.5	74	86	(V-)–3 to (V+)	(V-)–1.2 to (V+)–1	0.22	±2.25 to ±18	DIP-14, SO-14	1.00
OPA4227	High Precision, Ultra-Low Noise	0.2	0.3	10nA	3	8, 2.3	120	132	(V-)–2 to (V+)–2	(V-)–2 to (V+)–2	3.7	±2.5 to ±18	DIP-14, SO-14	3.80
OPA4228	Precision, Ultra-Low Noise, G ≥ 5	0.2	0.3	10nA	3	33, 11	120	132	(V-)–2 to (V+)–2	(V-)–2 to (V+)–2	3.7	±2.5 to ±18	DIP-14, SO-14	3.80
OPA4234	SS, Low Power, Precision	0.25	0.5	–50nA	25	0.35, 0.2	86	86	(V-)–0.1 to (V+)–1	(V-)–0.25 to (V+)–1	0.25	±1.35 to ±18	DIP-14, SO-14	3.23
OPA4237	SS, Low Power, General Purpose	0.75	2	–40nA	28	1.4, 0.5	78	80	(V-)–0.2 to (V+)–1.5	(V-)–0.5 to (V+)–1	0.17	±1.35 to ±18	SSOP-16	1.82
OPA4241	SS, µPower, Optimized for V _S = 5V	0.25	0.4	–20nA	45	0.035, 0.01	80	100	(V-)–0.2 to (V+)–0.8	100mV from Rails	0.025	+2.7 to +36	DIP-14, SO-14	3.92
OPA4243	µPower, SS, Low Cost	5	8	25	22	0.3, 0.1	70	86	0 to (V+)–0.9	0.5 to (V+)–0.9	0.06	2.6 to 36	TSSOP-14	1.50
OPA4244	µPower, SS	1.5	2.3	25	22	0.3, 0.1	74	86	0 to (V+)–0.9	0.5 to (V+)–0.9	0.05	2.6 to 36	TSSOP-14	1.95
OPA4251	SS, µPower, Optimized for V _S = ±15V	0.25	0.5	–20nA	45	0.035, 0.01	100	100	(V-)–0.2 to (V+)–0.8	250mV from Rails	0.027	±1.35 to ±18	DIP-14, SO-14	3.92
OPA4277	High Precision, Low Noise	0.05	0.15	4nA	8	1, 0.8	115	126	(V-)–2 to (V+)–2	(V-)–0.5 to (V+)–1.2	0.8	±2 to ±18	DIP-14, SO-14	3.60
OPA4336	CMOS, SS, Precision, µPower, R/R Out	0.5	1.5	10pA	40	0.1, 0.03	76	90	(V-)–0.2 to (V+)–1	100mV from Rails	0.02	+2.3 to +5	DIP-14, SSOP-16	1.90
OPA4340	CMOS, High Speed, R/R In and Out	0.5	2.5	10pA	25	5.5, 6	80	106	300mV beyond Rails	5mV from Rails	0.75	+2.7 to +5	DIP-14, SO-14, SSOP-16	2.09
OPA4342	Low Cost, CMOS, R/R In and Out, Lw Pwer	6	3	10pA	30	1, 1	76	106	300mV beyond Rails	10mV from Rails	0.15	+2.7 to +5.5	SO-14, TSSOP-14	1.58
OPA4343	CMOS, Low Cost, R/R In and Out	8	3	10pA	25	5.5, 6	74	100	300mV beyond Rails	5mV from Rails	0.85	+2.7 to +5	SO-14, SSOP-16, <i>TSSOP-14</i>	1.50
OPA4344	CMOS, R/R In and Out, Low Power	0.5	2.5	10pA	32	1, 1	80	106	300mV beyond Rails	10mV from Rails	0.15	+2.7 to +5.5	DIP-14, SO-14, TSSOP-14	1.85
OPA4345	CMOS, R/R In and Out, Lw Pwer, G ≥ 5	0.5	2.5	10pA	32	4, 4	80	106	300mV beyond Rails	10mV from Rails	0.15	+2.7 to +5.5	SO-14, TSSOP-14	1.85
OPA4350	CMOS, 35MHz, R/R In and Out	0.5	4	10pA	5 ⁽¹⁾	38, 22	76	100	100mV beyond Rails	50mV from Rails	5.2	+2.7 to +5.5	SO-14, SSOP-16	3.86
OPA4353	Low Cost, CMOR, 44MHz, R/R In and Out	8	5	10pA	5 ⁽¹⁾	44, 22	76	100	100mV beyond Rails	50mV from Rails	5.2	+2.7 to +5.5	SO-14, SSOP-16	3.04

NOTE: (1) f = 100kHz.

GBW = Gain Bandwidth

R/R = Rail-to-Rail

SR = Slew Rate

SS = Single Supply

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Operational Amplifiers—Selection Guide

VERY HIGH-SPEED OPERATIONAL AMPLIFIERS—Singles

Product	Description	Bandwidth (MHz) typ	Nominal Gain	Slew Rate (V/ μ s)	SFDR ⁽¹⁾ (dB) typ	Power Supply Voltages (V)	I _Q (mA/chan) typ	Output Voltage Range (V) min	Output Current (mA) min	Offset Voltage (mV) max	Noise at 1MHz (nV/ \sqrt Hz) typ	Package(s)	Lowest Grade Price (1000s)
BUF600	Buffer, G = 1	650	1	3400	75	\pm 5	3	\pm 2.6	20	30	6.5	DIP-8, SO-8	\$2.59
BUF601	Buffer, G = 1	900	1	3600	75	\pm 5	6	\pm 2.6	20	30	5.5	SO-8	3.59
BUF634	Buffer, G = 1	160, 20	1	2000	—	\pm 15, \pm 5	15, 1.5	\pm 10.0	250	100	—	SO-8, DIP-8, TO-220-5, DDPak-5	3.10
DRV1100*													
DRV1101*													
OPA603	CFB	160	2	1000	59	\pm 15, \pm 5	21	\pm 10.0	150 (typ)	6.0	4.2	SO-16, DIP-8	4.65
OPA620	VFB	300	1	250	—	\pm 5	21	\pm 3.0	50	1.0	2.3	SO-8, DIP-8	7.20
OPA621	VFB, G \geq 2	500	2	500	—	\pm 5	26	\pm 2.7	60	1.0	2.3	SO-8	7.20
OPA631	VFB, R/R	75	2	100	42	+10 to +3	6	0.03 to 4.87	70	6	6.0	SOT23-5, SO-8	1.29
OPA632	VFB, R/R, Disable	75	2	100	42	+10 to +3	6	0.03 to 4.87	70	6	6.0	SOT23-6, SO-8	1.29
OPA634	VFB, R/R	150	2	250	63	+10 to +3	12	0.03 to 4.86	80	7	5.6	SOT23-5, SO-8	1.49
OPA635	VFB, R/R, Disable	150	2	250	63	+10 to +3	12	0.03 to 4.86	80	7	5.6	SOT23-6, SO-8	1.49
OPA637	VFB, G \geq 5, Precision FET	80	5	135	—	\pm 15	7	\pm 11.5	\pm 45	0.1	4.5	DIP-8, SO-8	8.28
OPA642	VFB, Low Distortion	400	1	380	92	\pm 5	20	\pm 3.0	40	4.0	2.7	SOT23-5, SO-8, DIP-8	3.75
OPA643	VFB, Low Distortion, G \geq 3	200	5	1000	90	\pm 5	20	\pm 3.0	40	4.0	2.3	SOT23-5, SO-8	3.75
OPA650	VFB	560	1	240	73	\pm 5	5.1	\pm 2.7	65	5.0	8.4	SOT23-5, SO-8, DIP-8	1.29
OPA651	VFB, G \geq 2	470	2	300	67	\pm 5	5.1	\pm 2.7	65	5.0	4.6	SO-8	1.95
OPA655	VFB, FET Input, Low Noise	400	1	290	90	\pm 5	25	\pm 3.0	35	2.0	6.0	SO-8, DIP-8	9.13
OPA658	CFB	680	2	1700	68	\pm 5	5.0	\pm 2.7	60	5.5	3.2	SOT23-5, SO-8, DIP-8	1.49
OPA680	VFB With Disable	220	2	1800	68	\pm 5, +5	6.4	\pm 3.8	135	4.5	4.8	SOT23-6, SO-8, DIP-8	1.79
OPA681	CFB With Disable	220	2	2100	74	\pm 5, +5	6.0	\pm 3.8	135	5.0	2.5	SOT23-6, SO-8, DIP-8	1.79
OPA682	Video Buffer, G = +2, +1, -1	240	2	2100	74	\pm 5, +5	6	\pm 3.8	150	5.0	2.2	SOT23-6, SO-8, DIP-8	1.82
OPA685	CFB, High Gain	900	2	4200	74	\pm 5, 5	13	\pm 3.9	60	3.5	1.7	SO-8, SOT23-6	1.89
OPA686	VFB, Low Noise, G \geq 7	250	10	600	72	\pm 5	12	\pm 3.2	60	1.0	1.3	SOT23-5, SO-8	2.89
OPA687	VFB, Ultra-Low Noise, G \geq 12	290	20	900	74	\pm 5	18	\pm 3.3	60	1.0	0.95	SOT23-6, SO-8	3.49
OPA688	VFB (VLA™)	260	2	1000	66	\pm 5, +5	16	\pm 3.9	70	6.0	6.3	SO-8, DIP-8	2.65
OPA689	VFB (VLA™), G \geq 4	280	6	1600	61	\pm 5, +5	16	\pm 3.9	70	5.0	4.6	SO-8, DIP-8	2.95

NOTES: (1) SFDR is the Spurious Free Dynamic Range at f = 5MHz, R_L = 100 Ω and V_O = 2Vp-p.

CFB = Current Feedback

VFB = Voltage Feedback

VLA™—Voltage Limiting Amplifier

* Differential Line Drivers—please see Communications Section for specifications.

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Operational Amplifiers—Selection Guide

VERY HIGH-SPEED OPERATIONAL AMPLIFIERS—Duals

Product	Description	Bandwidth (MHz) typ	Nominal Gain	Slew Rate (V/ μ s)	SFDR ⁽¹⁾ (dB) typ	Power Supply Voltages (V)	I _Q (mA/chan) typ	Output Voltage Range	Output Current (mA) min	Offset Voltage (mV) max	Noise at 1MHz (nV/ \sqrt Hz) typ	Package(s)	Lowest Grade Price (1000s)
								(V) min					
OPA2631	VFB, R/R	75	2	100	42	+10 to +3	6	0.03 to 4.87	80	6	6.0	SO-8	\$2.09
OPA2634	VFB, R/R	150	2	250	63	+10 to +3	12	0.03 to 4.86	80	7	5.6	SO-8	2.49
OPA2607	CFB	25	8	600	72	\pm 12	17	\pm 10	150	10	1.6	SO-8, SO-14	2.29
OPA2650	VFB	360	1	240	72	\pm 5	5.5	\pm 2.7	65	5.0	8.4	SO-8, MSOP-8, DIP-8	1.95
OPA2652	VFB	200	2	290	75	\pm 5	5.5	\pm 3.0	80	5	8.0	SO-8	1.29
OPA2658	CFB	500	2	1700	68	\pm 5	5.0	\pm 2.7	60	5.5	3.2	SO-8, MSOP-8, DIP-8	2.39
OPA2677	CFB	200	2	1100	72	\pm 6	18	\pm 4.7	280	1.5	1.7	SO-8, SO-14	2.29
OPA2680	VFB With Disable	220	2	1800	68	\pm 5, +5	6.4	\pm 3.8	135	4.5	4.8	SO-8, SO-14	2.89
OPA2681	CFB With Disable	220	2	2100	74	\pm 5, +5	6.0	\pm 3.8	135	5.0	2.2	SO-8, SO-14	2.89
OPA2682	Video Buffer, G = +2, +1, -1	240	2	2100	74	\pm 5, +5	6	\pm 3.8	150	5.0	2.2	SO-8, SO-14	2.92
OPA2686	VFB, Low Noise, G \geq 7	250	10	600	72	\pm 5	12	\pm 3.2	60	1.0	1.4	SO-8	4.59

VERY HIGH-SPEED OPERATIONAL AMPLIFIERS—Triples

Product	Description	Bandwidth (MHz) typ	Nominal Gain	Slew Rate (V/ μ s)	SFDR ⁽¹⁾ (dB) typ	Power Supply Voltages (V)	I _Q (mA/chan) typ	Output Voltage Range	Output Current (mA) min	Offset Voltage (mV) max	Noise at 1MHz (nV/ \sqrt Hz) typ	Package(s)	Lowest Grade Price (1000s)
								(V) min					
OPA3680	VFB With Disable	220	2	1800	68	\pm 5, +5	6.4	\pm 3.8	135	5.0	4.8	SSOP-16, SO-16	\$3.79
OPA3681	CFB With Disable	220	2	2100	74	\pm 5, +5	6.0	\pm 3.8	135	5.0	2.5	SSOP-16, SO-16	3.79
OPA3682	Video Buffer, G = +2, +1, -1	240	2	2100	74	\pm 5, +5	6	\pm 3.8	135	5.0	2.2	SSOP-16, SO-16	3.85

VERY HIGH-SPEED OPERATIONAL AMPLIFIERS—Quads

Product	Description	Bandwidth (MHz) typ	Nominal Gain	Slew Rate (V/ μ s)	SFDR ⁽¹⁾ (dB) typ	Power Supply Voltages (V)	I _Q (mA/chan) typ	Output Voltage Range	Output Current (mA) min	Offset Voltage (mV) max	Noise at 1MHz (nV/ \sqrt Hz) typ	Package(s)	Lowest Grade Price (1000s)
								(V) min					
OPA4650	VFB	360	1	240	68	\pm 5	5.8	\pm 2.7	65	5.5	8.4	SO-14, DIP-14	\$4.99
OPA4658	CFB	450	2	1700	66	\pm 5	5.0	\pm 2.7	60	5.5	3.3	SO-14	4.99

NOTES: (1) BW refers to small-signal bandwidth. (2) G_{NOM} is the nominal gain for the other specs. (3) SR refers to slew rate. (4) SFDR is the Spurious Free Dynamic Range at f = 5MHz, R_L = 100 Ω and V_O = 2V_{p-p}. (5) V_S are the specified supply voltages. (6) I_Q is the supply current per channel. (7) V_{OR} is the no load, voltage output range (guaranteed at 25°C). (8) I_O refers to the output current (guaranteed at 25°C). (9) V_{OS} is the input offset voltage. (10) e_{ni} is the input voltage noise density.

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Operational Amplifiers—Selection Guide

HIGH CURRENT AMPLIFIERS

Product	Description	Output Current (±A) min	Power Supply Range (V)	I _Q per Amp (±mA) max	Offset Voltage (±mV) max	Bias Current (pA) max	Slew Rate (V/μs) typ	Small-Signal Bandwidth (MHz) typ	Temp Range ⁽¹⁾	Package(s)	Lowest Grade Price (1000s)
OPA501	High Voltage	10	±10 to ±40	10	5	20nA	1.35	1	Ind, Mil	TO3-8	\$39.06
OPA502	FET Input, High Voltage	10	±10 to ±45	25	5	200	5	2	Ext	TO3-8	38.72
OPA512	Highest Current, Highest Voltage	15	±10 to ±50	50	3	20nA	2.5	4	Ind, Mil	TO3-8	48.75
OPA541	FET Input	5	±10 to ±40	25	1	50	6	1.6	Ind, Mil	TO3-8, ZIP-11	10.42
OPA2541	Dual, FET Input	5	±10 to ±40	25	1	50	6	1.6	Ind, Mil	TO3-8	38.93
OPA544	FET Input	2	±10 to ±35	15	5	100	5	1.4	Ext	ZIP-11	6.60
OPA2544	Dual, FET Input	2	±10 to ±35	15	5	100	5	1.4	Ext	TO220-5, DDPak-5 TO220-5 Stagger-Formed	11.29
OPA547	Single Supply, Shutdown	0.5	±4 to ±30	10	5	500nA	6*	1	Ext	TO220-7, DDPak-7	4.09
OPA548	Single Supply, Shutdown	3	±4 to ±30	17	5	500nA	10*	1	Ext	TO220-7, DDPak-7	5.45
OPA549	Single Supply, Shutdown	8	±4 to ±30	35	5	500nA	9	0.9	Ext	ZIP-11	7.40
OPA551	FET Input, 8nV/√Hz Noise	0.2	±4 to ±30	8.5	3	100pA	15	3	Ext	DIP-8, SO-8, DDPak-7	1.90
OPA552	FET Input, 8nV/√Hz Noise, G ≥ 5	0.2	±4 to ±30	8.5	3	100pA	24	12	Ext	DIP-8, SO-8, DDPak-7	2.28

HIGH VOLTAGE AMPLIFIERS

Product	Description	Output Current min (±mA)	Power Supply Range (V)	I _Q per Amp max (±mA)	Offset Voltage max (±mV)	Bias Current max (pA)	Slew Rate min (V/μs)	Small-Signal Bandwidth typ (MHz)	Temp Range ⁽¹⁾	Package(s)	Lowest Grade Price (1000s)
3581	High Voltage	30	±32 to ±75	8	3	20	20	5	Com	TO3-8	\$100.10
3583	Very High Voltage	75	±50 to ±150	8.5	3	20	30	5	Com, Ind	TO3-8	81.50
3584	Very High Voltage, Very High Slew Rate	15	±70 to ±150	6.5	3	20	150	7	Com	TO3-8	81.50
OPA445	Lowest Cost, Plastic Packages	15	±10 to ±45	4.7	3	50	15	2	Ind	TO99-8, DIP-8, SO-8	2.44
OPA452	High Voltage, FET Input	50	20 to 80	6.5	5	100	10	2	Ext	TO220, DDPak	2.37
OPA453	High Voltage, FET Input, High Speed	50	20 to 80	6.5	5	100	17	8	Ext	TO220, DDPak	2.37

POWER BUFFERS

Product	Description	Output Current min (±mA)	Rated Output Voltage (V)	Small-Signal Bandwidth typ (MHz)	Slew Rate typ (V/μs)	Power Supply Range (V)	Input Imped. typ (MΩ pF)	Quiescent Current max (±mA)	Temp Range ⁽¹⁾	Package(s)	Lowest Grade Price (1000s)
BUF634	Open-Loop Buffer, Low Cost Low Quiescent and Wide BW Modes	250*	±10	30, 180	2000	±2.25 to ±18	8 8	2, 20	Ext	DIP-8, SO-8, TO220-5 DDPak-5	\$2.84
OPA633	Open Loop, High BW and Slew Rate	80	±11	260	2500	±5 to ±16	1.5 6	25	Ind	DIP-8	5.09

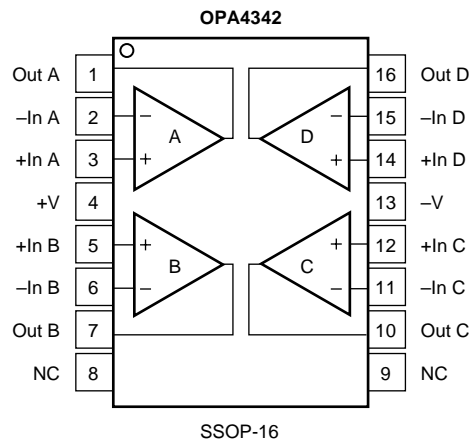
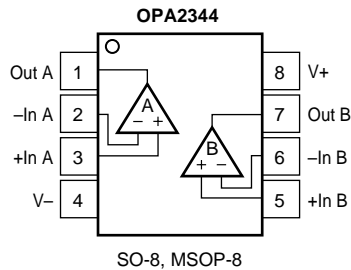
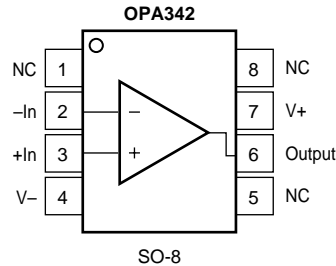
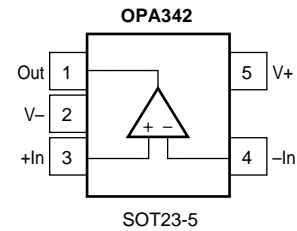
NOTE: (1) Temperature Range: Com = 0°C to +70°C, Ind = -25°C to +85°C, Ext = -40°C to +85°C, Mil = -55°C to +125°C.

* Denotes typical. BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Operational Amplifiers—New Products

OPA342, OPA2342, OPA4342

Low Cost, Low Power, Rail-to-Rail
OPERATIONAL AMPLIFIERS
MicroAmplifier™ Series

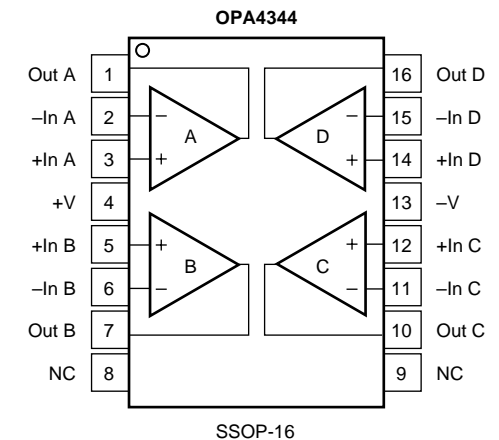
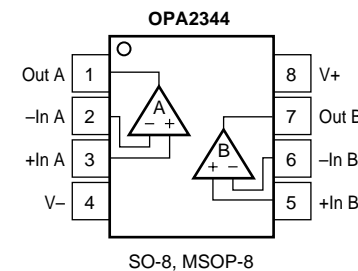
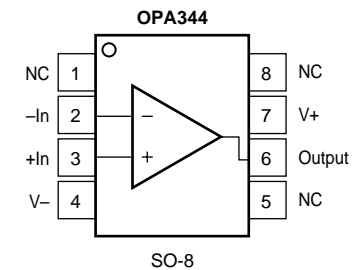
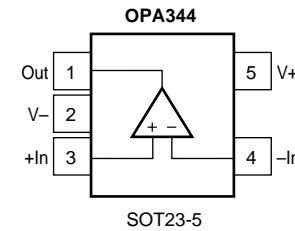


FEATURES

- RAIL-TO-RAIL INPUT
- RAIL-TO-RAIL OUTPUT (within 1mV)
- SINGLE SUPPLY
- LOW COST
- LOW QUIESCENT CURRENT: 150µA max
- MicroSIZE PACKAGE OPTIONS:
SOT23-5 SSOP-16
MSOP-8
- BANDWIDTH: 1MHz
- SLEW RATE: 1V/µs
- THD+NOISE: 0.006%
- SINGLE, DUAL, AND QUAD VERSIONS

OPA344, OPA2344, OPA4344

Low Power, Single-Supply, Rail-to-Rail
OPERATIONAL AMPLIFIERS
MicroAmplifier™ Series



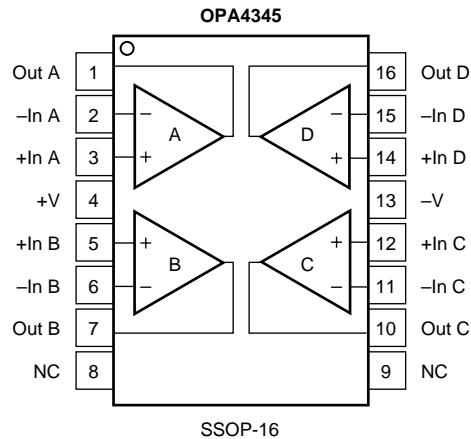
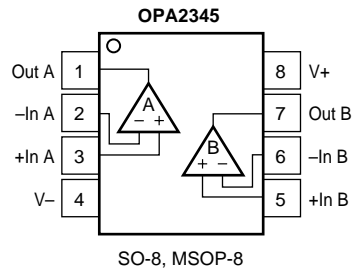
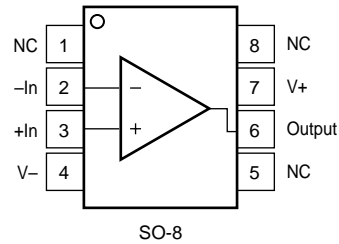
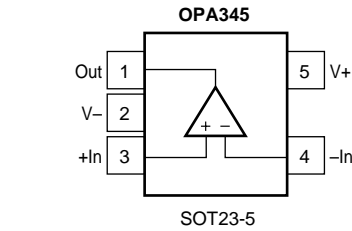
FEATURES

- RAIL-TO-RAIL INPUT
- RAIL-TO-RAIL OUTPUT (within 1mV)
- LOW QUIESCENT CURRENT: 150µA
- MicroSIZE PACKAGE OPTIONS:
SOT23-5
MSOP-8
- BANDWIDTH: 1MHz
- SLEW RATE: 1V/µs
- THD+NOISE: 0.006%
- SINGLE, DUAL, AND QUAD VERSIONS

Operational Amplifiers—New Products

OPA345, OPA2345, OPA4345

Low Power, Single-Supply, Rail-to-Rail, $G \geq 5$
OPERATIONAL AMPLIFIERS
MicroAmplifier™ Series

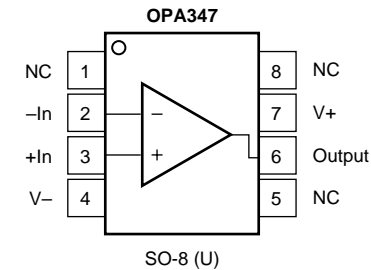
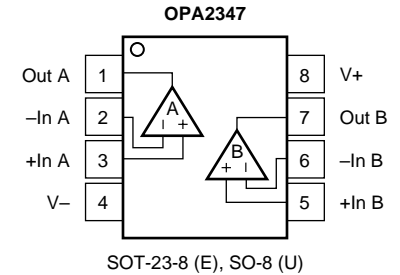
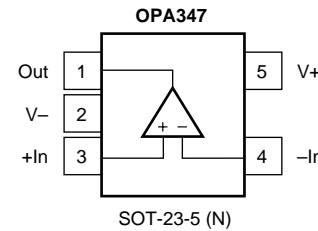


FEATURES

- RAIL-TO-RAIL INPUT
- RAIL-TO-RAIL OUTPUT (within 1mV)
- LOW QUIESCENT CURRENT: 150 μ A
- *MicroSIZE* PACKAGE OPTIONS:
 SOT23-5
 MSOP-8
- BANDWIDTH: 4MHz ($G \geq 5$)
- SLEW RATE: 4V/ μ s
- THD+NOISE: 0.006%
- SINGLE, DUAL, AND QUAD VERSIONS

OPA347, OPA2347

MicroPOWER, Rail-to-Rail
CMOS OPERATIONAL AMPLIFIER



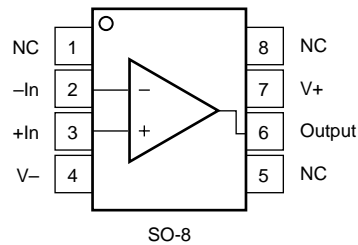
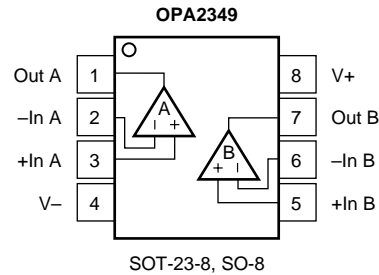
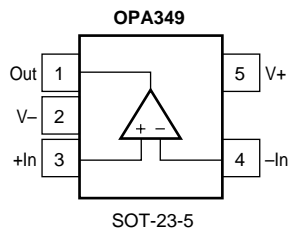
FEATURES

- LOW I_Q : 15 μ A typical
- *MICROSIZE* PACKAGES: SOT-23, SO-8
- LOW COST
- HIGH BANDWIDTH: 300kHz
- RAIL-TO-RAIL INPUT AND OUTPUT
- SINGLE SUPPLY: +2.7V to +5.5V

Operational Amplifiers—New Products

OPA349, OPA2349

**MicroPOWER, Rail-to-Rail, Single Supply
CMOS OPERATIONAL AMPLIFIER**

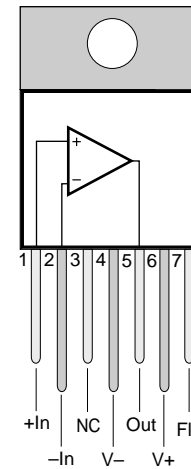
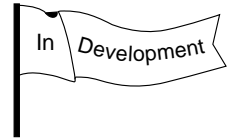


FEATURES

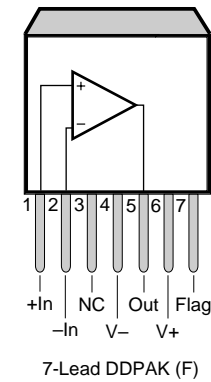
- **LOW SUPPLY CURRENT:** 1 μ A typ
- **GAIN BANDWIDTH:** 90kHz
- **UNITY-GAIN STABLE**
- **LOW INPUT BIAS CURRENT:** 10pA
- **WIDE SUPPLY RANGE:** +1.8V to +6V
- **INPUT RANGE SWINGS 200mV PAST RAILS**
- **OUTPUT SWINGS WITHIN 300mV OF RAILS**
- **OPEN-LOOP GAIN:** 90dB
- **SOT23-5, SOT23-8 MICROPACKAGES**

OPA452

**80V, 50mA
CMOS OPERATIONAL AMPLIFIER**



NOTE: Tab is connected to V- supply.



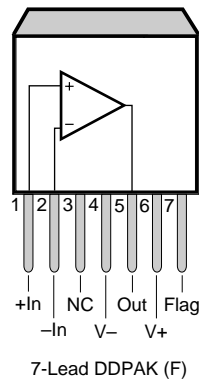
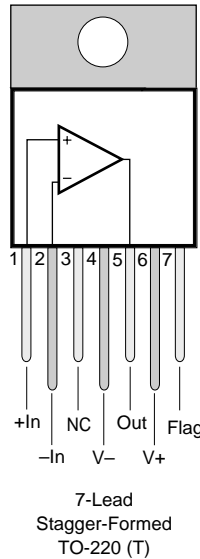
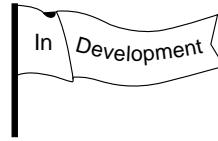
FEATURES

- **WIDE POWER SUPPLY RANGE:** \pm 10V to \pm 40V
- **EXCELLENT OUTPUT LOAD DRIVE:** 50mA Continuous
- **UNITY-GAIN STABLE**
- **HIGH SLEW RATE:** 9V/ μ s
- **WIDE OUTPUT VOLTAGE SWING:** 1V to Rail
- **FULLY PROTECTED:** Thermal Shutdown, Output Current Limit
- **FET INPUT**
- **WIDE JUNCTION TEMPERATURE RANGE:** -40°C to +125°C
- **PACKAGE OPTIONS:** TO220-7, DDPACK-7 Surface Mount

Operational Amplifiers—New Products

OPA453

80V, 50mA
CMOS OPERATIONAL AMPLIFIER

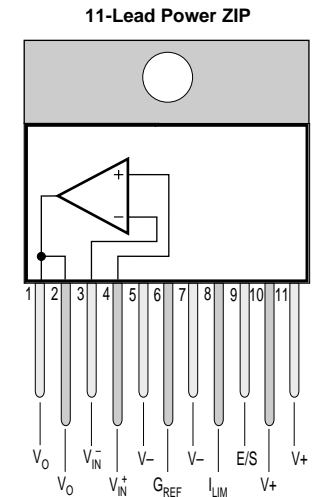
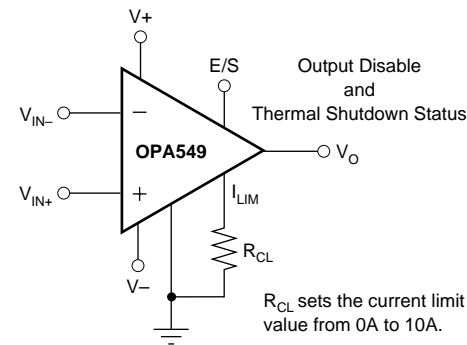


FEATURES

- WIDE POWER SUPPLY RANGE: $\pm 10\text{V}$ to $\pm 40\text{V}$
- EXCELLENT OUTPUT LOAD DRIVE: 50mA Continuous
- OPTIMIZED FOR $G \geq 4$
- HIGH SLEW RATE: $15\text{V}/\mu\text{s}$
- WIDE OUTPUT VOLTAGE SWING: 1V to Rail
- FULLY PROTECTED: Thermal Shutdown, Output Current Limit
- FET INPUT
- WIDE JUNCTION TEMPERATURE RANGE: -40°C to $+125^\circ\text{C}$
- PACKAGE OPTIONS: TO220-7, DDPACK-7 Surface Mount

OPA549

High-Voltage, High-Current
OPERATIONAL AMPLIFIER



Tab is connected to V⁻ supply.

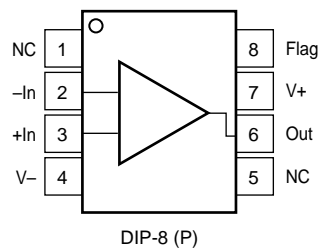
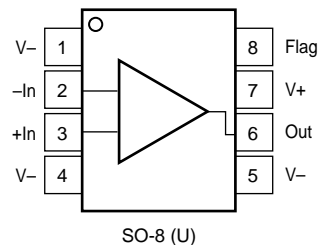
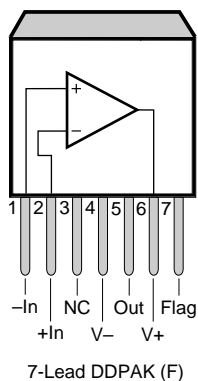
FEATURES

- HIGH OUTPUT CURRENT: 8A Continuous 10A Peak
- WIDE SUPPLY RANGE:
Single Supply: +8V to +60V
Dual Supply: $\pm 4\text{V}$ to $\pm 30\text{V}$
- WIDE OUTPUT VOLTAGE SWING
- FULLY PROTECTED: Thermal Shutdown, Adjustable Current Limit
- OUTPUT DISABLE CONTROL
- THERMAL SHUTDOWN INDICATOR
- HIGH SLEW RATE: $9\text{V}/\mu\text{s}$
- POWER ZIP-11 PACKAGE

Operational Amplifiers—New Products

OPA551

High-Voltage, High-Current
OPERATIONAL AMPLIFIER

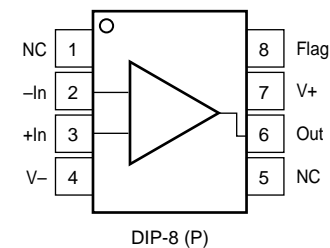
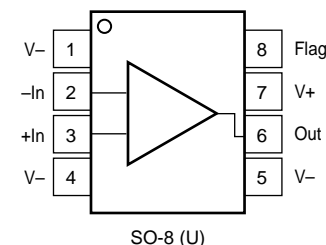
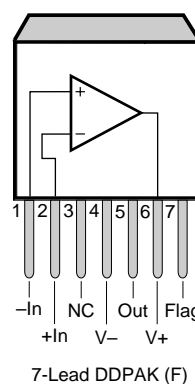


FEATURES

- WIDE SUPPLY RANGE: $\pm 4V$ to $\pm 30V$
- HIGH OUTPUT CURRENT: 200mA Continuous
- FULLY PROTECTED: Thermal Shutdown, Output Current Limit
- WIDE OUTPUT SWING: 2V from Rails
- FAST SLEW RATE: $15V/\mu S$
- WIDE BANDWIDTH: 3MHz
- PACKAGES: DIP-8, SO-8 or DDPAK-7

OPA552

High-Voltage, High-Current, $G \geq 5$
OPERATIONAL AMPLIFIER



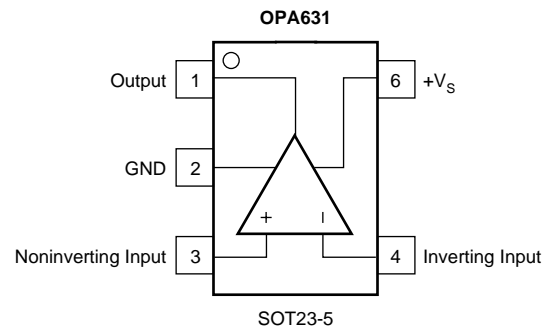
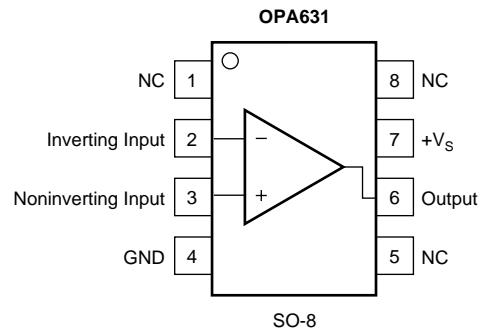
FEATURES

- WIDE SUPPLY RANGE: $\pm 4V$ to $\pm 30V$
- HIGH OUTPUT CURRENT: 200mA Continuous
- FULLY PROTECTED: Thermal Shutdown, Output Current Limit
- WIDE OUTPUT SWING: 2V from Rails
- FAST SLEW RATE: $24V/\mu S$
- WIDE BANDWIDTH: 12MHz
- PACKAGES: DIP-8, SO-8 or DDPAK-7

Operational Amplifiers—New Products

OPA631

SpeedPLUS Low Power, Single-Supply
OPERATIONAL AMPLIFIER

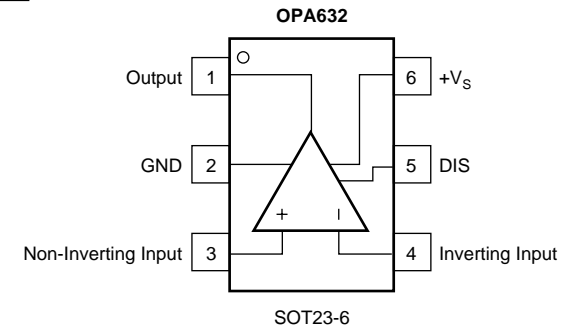
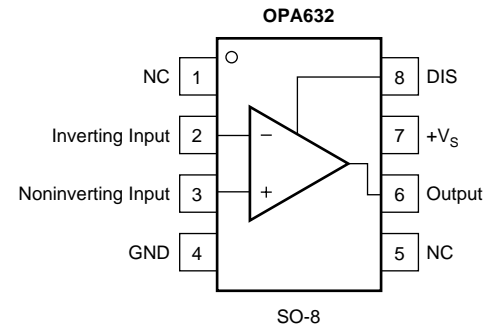


FEATURES

- HIGH BANDWIDTH: 75MHz (G = +2)
- LOW SUPPLY CURRENT: 6mA
- +3V AND +5V OPERATION
- INPUT RANGE INCLUDES GROUND
- 4.8V OUTPUT SWING ON +5V SUPPLY
- HIGH SLEW RATE: 100V/μs
- LOW INPUT VOLTAGE NOISE: 6nV/√Hz
- AVAILABLE IN SOT23-5 PACKAGE

OPA632

SpeedPLUS Low Power, Single-Supply
OPERATIONAL AMPLIFIER
with Disable



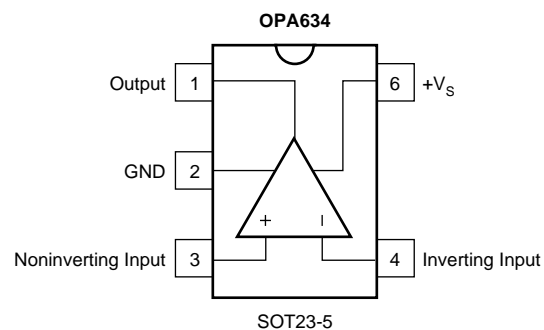
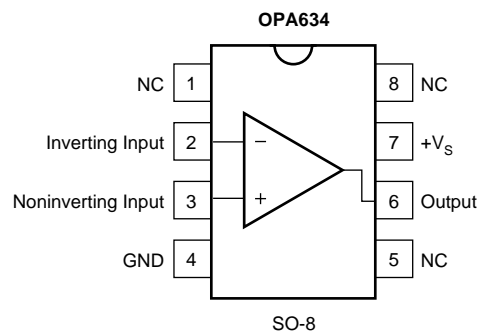
FEATURES

- HIGH BANDWIDTH: 75MHz (G = +2)
- LOW SUPPLY CURRENT: 6mA
- ZERO POWER DISABLE
- +3V AND +5V OPERATION
- INPUT RANGE INCLUDES GROUND
- 4.8V OUTPUT SWING ON +5V SUPPLY
- HIGH SLEW RATE: 100V/μs
- LOW INPUT VOLTAGE NOISE: 6nV/√Hz
- AVAILABLE IN SOT23-6 PACKAGE

Operational Amplifiers—New Products

OPA634

SpeedPLUS Wideband, Single-Supply
OPERATIONAL AMPLIFIER

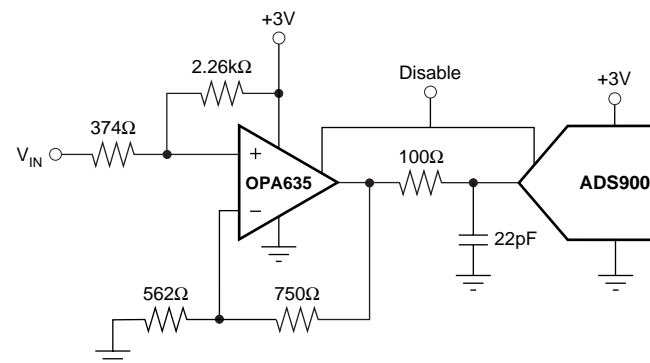


FEATURES

- HIGH BANDWIDTH: 150MHz (G = +2)
- +3V AND +5V OPERATION
- INPUT RANGE INCLUDES GROUND
- 4.8V OUTPUT SWING ON +5V SUPPLY
- HIGH OUTPUT CURRENT: 80mA
- HIGH SLEW RATE: 250V/μs
- LOW INPUT VOLTAGE NOISE: 5.6nV/√Hz
- AVAILABLE IN SOT23-5 PACKAGE

OPA635

SpeedPLUS Wideband, Single-Supply
OPERATIONAL AMPLIFIER
with Disable

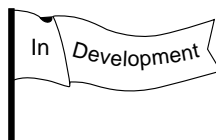


FEATURES

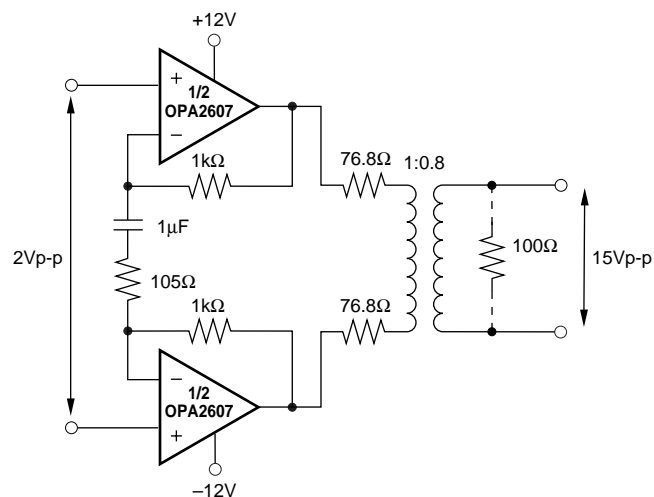
- HIGH BANDWIDTH: 150MHz (G = +2)
- +3V AND +5V OPERATION
- ZERO POWER DISABLE
- INPUT RANGE INCLUDES GROUND
- 4.8V OUTPUT SWING ON +5V SUPPLY
- HIGH OUTPUT CURRENT: 80mA
- HIGH SLEW RATE: 250V/μs
- LOW INPUT VOLTAGE NOISE: 5.6nV/√Hz
- AVAILABLE IN SOT23-6 PACKAGE

Operational Amplifiers—New Products

OPA2607



SpeedPlus Dual, High Output,
Current-Feedback
OPERATIONAL AMPLIFIER



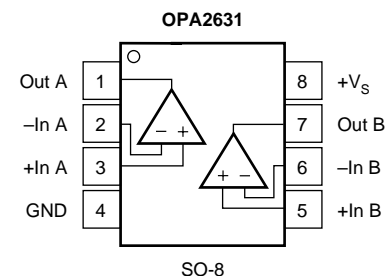
Low Turns Ratio ADSL Upstream Driver

FEATURES

- WIDEBAND $\pm 12\text{V}$ OPERATION: 25MHz (G = +8)
- UNITY GAIN STABLE: 50MHZ (G = 1)
- HIGH OUTPUT CURRENT: 280mA
- OUTPUT VOLTAGE SWING: $\pm 11\text{V}$
- HIGH SLEW RATE: 600V/ μs
- LOW SUPPLY CURRENT: 17mA
- FLEXIBLE POWER CONTROL

OPA2631

SpeedPlus Dual, Low Power, Single-Supply
OPERATIONAL AMPLIFIER



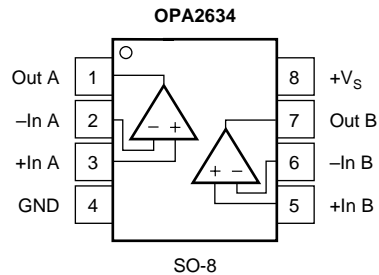
FEATURES

- HIGH BANDWIDTH: 75MHz (G = +2)
- LOW SUPPLY CURRENT: 6mA/ch
- +3V AND +5V OPERATION
- INPUT RANGE INCLUDES GROUND
- 4.8V OUTPUT SWING ON +5V SUPPLY
- HIGH SLEW RATE: 100V/ μs
- LOW INPUT VOLTAGE NOISE: $6\text{nV}/\sqrt{\text{Hz}}$

Operational Amplifiers—New Products

OPA2634

SpeedPLUS Dual, Wideband, Single-Supply
OPERATIONAL AMPLIFIER

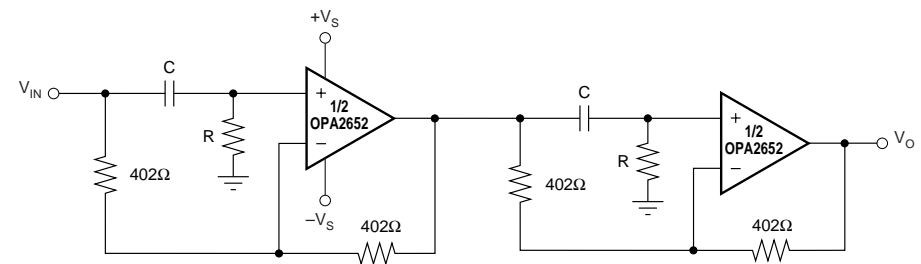
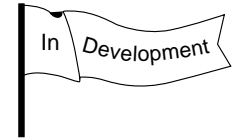


FEATURES

- -3dB BANDWIDTH: 150MHz (G = +2)
- +3V and +5V SPECIFICATIONS
- INPUT RANGE INCLUDES GROUND
- 4.8V OUTPUT SWING ON +5V SUPPLY
- MATCHED CHANNEL CHARACTERISTICS
- HIGH SLEW RATE: 250V/ μ s
- LOW INPUT VOLTAGE NOISE: 5.6nV/ $\sqrt{\text{Hz}}$

OPA2652

SpeedPLUS Dual, Voltage-Feedback
OPERATIONAL AMPLIFIER



Pulse Delay Circuit

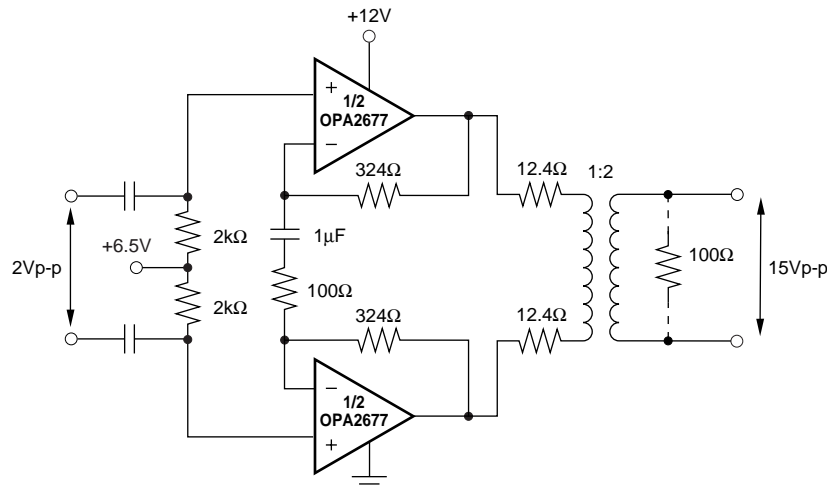
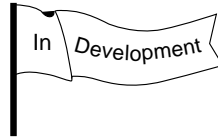
FEATURES

- HIGH BANDWIDTH: 200MHz, G = +2
- HIGH OUTPUT CURRENT: 100mA
- LOW SUPPLY CURRENT: 11mA
- LOW dG/d ϕ ERRORS: 0.01%/0.05°
- HIGH SLEW RATE: 290V/ μ sec

Operational Amplifiers—New Products

OPA2677

SpeedPlus Wideband, High Output Current
OPERATIONAL AMPLIFIER



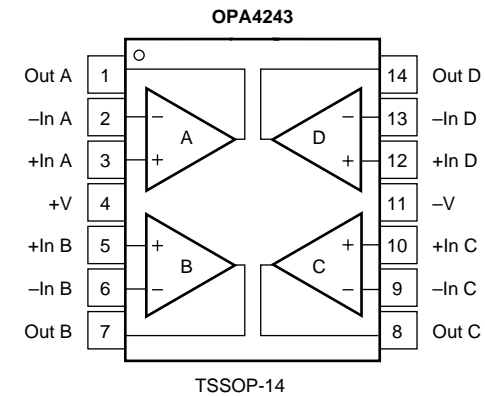
Single Supply ADSL Upstream Driver

FEATURES

- WIDEBAND +12V OPERATION: 200MHz (G = +4)
- UNITY GAIN STABLE: 280MHz (G = 1)
- HIGH OUTPUT CURRENT: 400mA
- OUTPUT VOLTAGE SWING: $\pm 5V$
- HIGH SLEW RATE: 1100V/ μs
- LOW SUPPLY CURRENT: 18mA
- FLEXIBLE POWER CONTROL

OPA4243

MicroPOWER, Single-Supply
QUAD OPERATIONAL AMPLIFIER



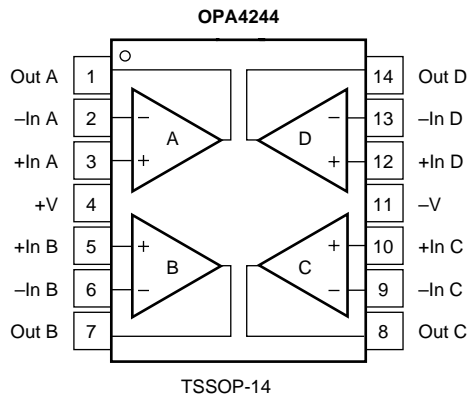
FEATURES

- MICRO-SIZE, TSSOP PACKAGE
- SINGLE-SUPPLY OPERATION
- WIDE SUPPLY RANGE: 2.2V to 36V
- LOW QUIESCENT CURRENT: 50 μA /Chan.
- WIDE BANDWIDTH: 300kHz
- WIDE INPUT/OUTPUT SWING
- LOW OFFSET VOLTAGE: 5mV Max

Operational Amplifiers—New Products

OPA4244

MicroPOWER, Single-Supply
QUAD OPERATIONAL AMPLIFIER

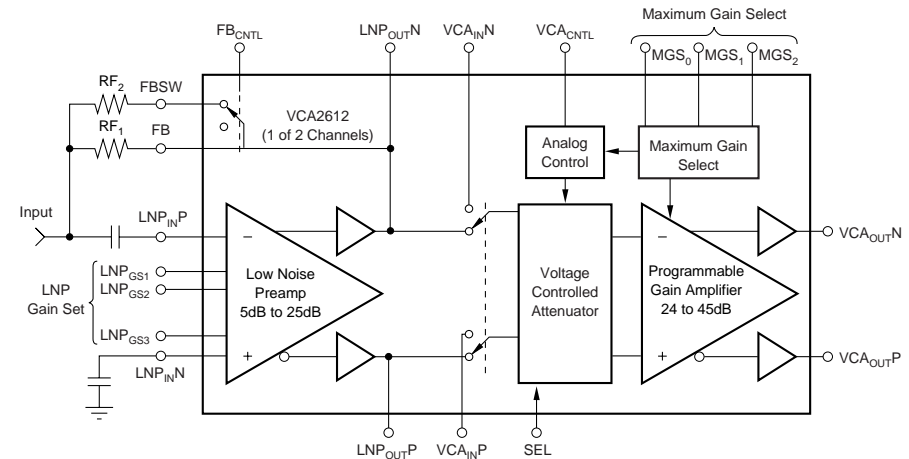
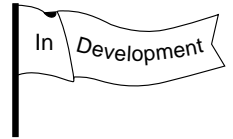


FEATURES

- MICRO-SIZE, TSSOP PACKAGE
- SINGLE-SUPPLY OPERATION
- WIDE SUPPLY RANGE: 2.2V to 36V
- LOW QUIESCENT CURRENT: 50 μ A/Chan.
- WIDE BANDWIDTH: 300kHz
- WIDE INPUT/OUTPUT SWING
- LOW OFFSET VOLTAGE: 1.5mV Max

VCA2612

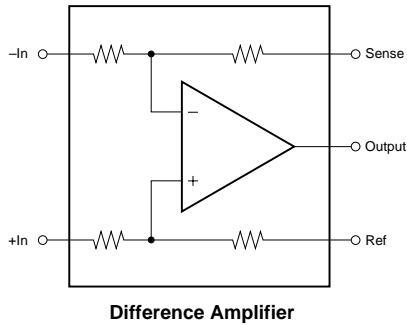
SpeedPLUS Dual,
VARIABLE GAIN AMPLIFIER
With Low Noise Preamp



FEATURES

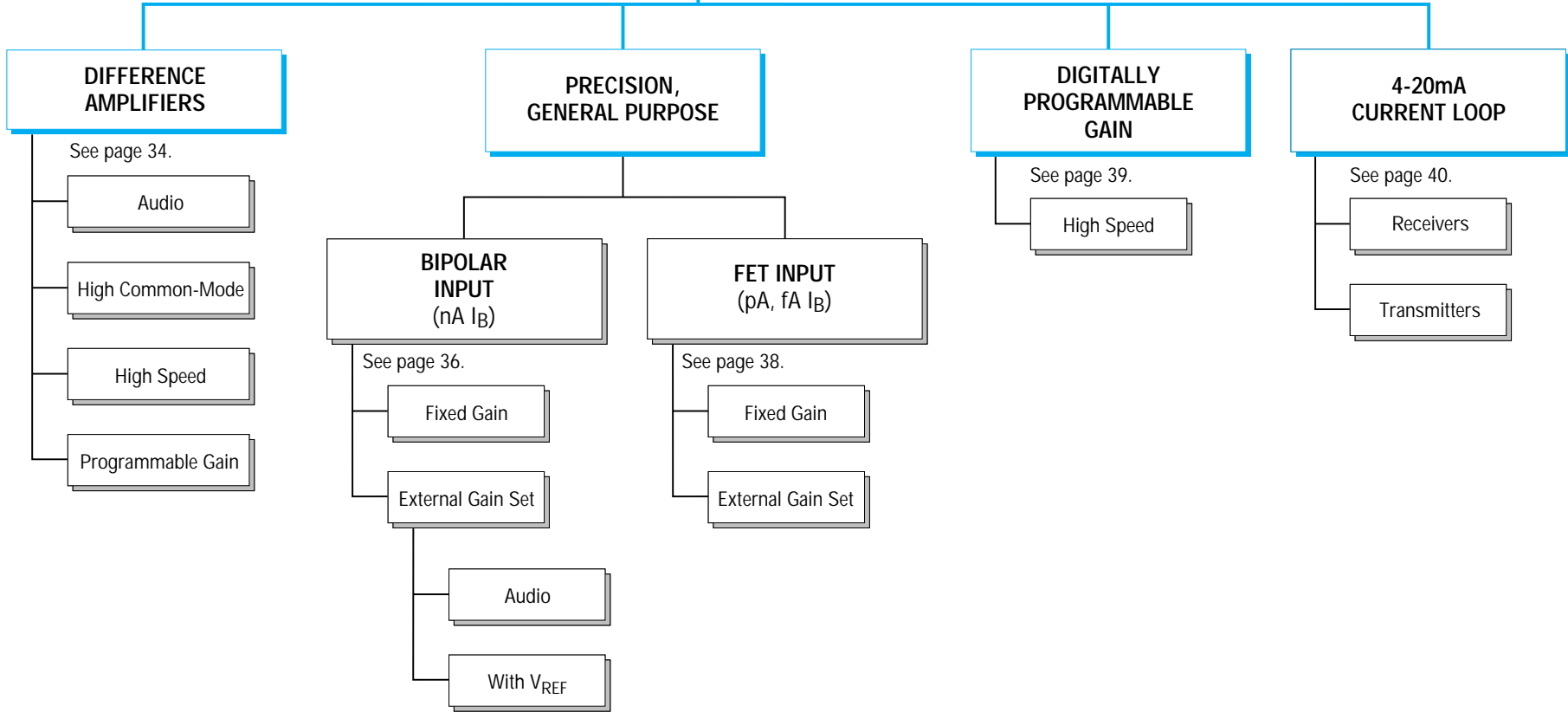
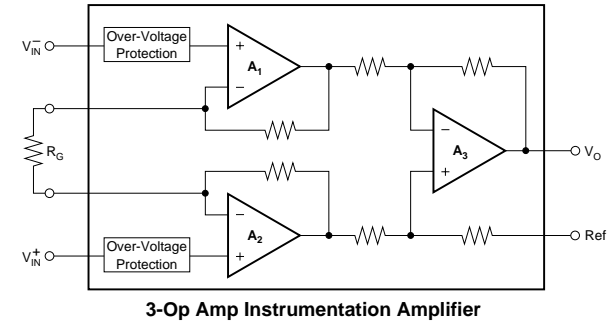
- **VERY LOW NOISE PREAMP:**
Low Input Noise: 0.62nV/ $\sqrt{\text{Hz}}$
Active Termination Noise Reduction
Switchable Termination Value
80MHz Bandwidth
5dB to 25dB Gain
Differential In and Out
- **LOW NOISE VARIABLE GAIN AMPLIFIER:**
Low Noise VCA: 2.6nV/ $\sqrt{\text{Hz}}$, Differential
Programming Optimizes Noise Figure
24dB to 45dB Gain
40MHz Bandwidth
Differential In and Out
- **LOW CROSSTALK:** 52dB at Max Gain, 5MHz
- **HIGH-SPEED VARIABLE GAIN ADJUST**
- **SWITCHABLE EXTERNAL PROCESSING**

Instrumentation Amplifiers—Main Selection Tree

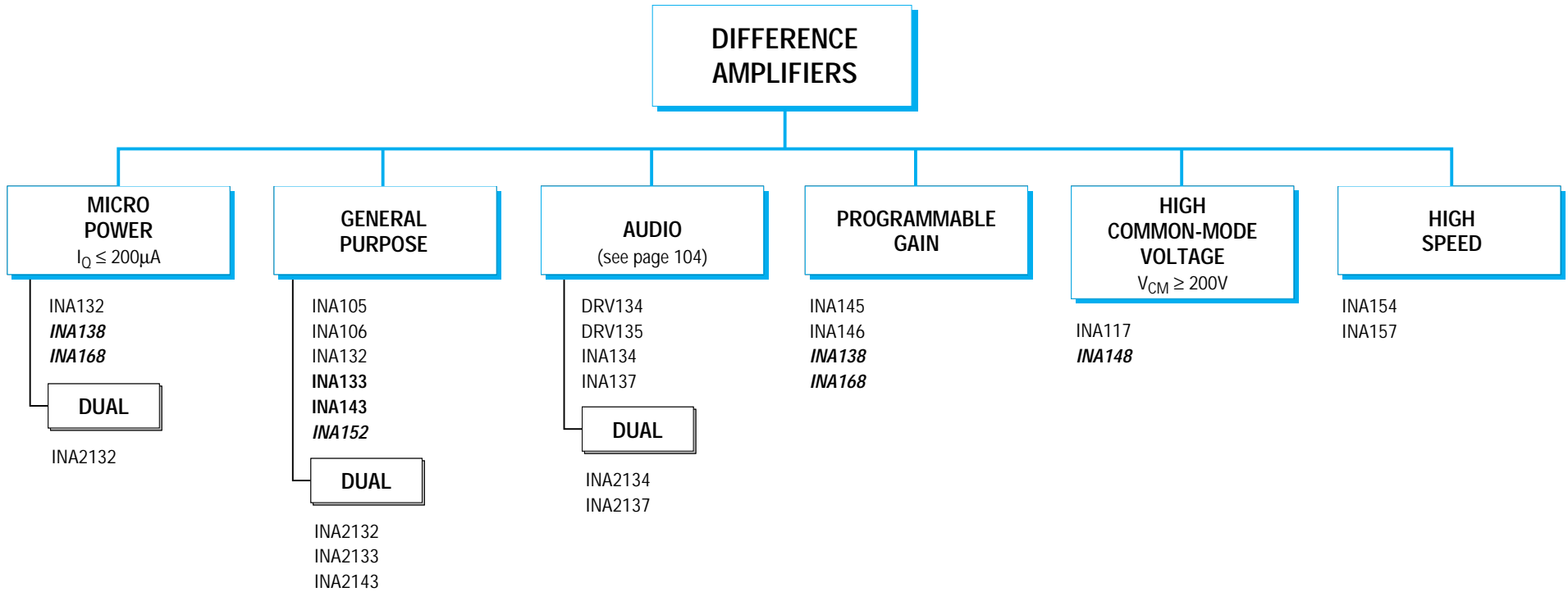


INSTRUMENTATION AMPLIFIERS

Instrumentation amplifiers (IAs) are much more than just precise op amps. They are closed-loop amplifiers with built-in precision feedback components. IAs are used to extract low-level signals in the presence of system errors and noise.



Instrumentation Amplifiers—Selection Tree



* Denotes typical. **BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT.** Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Instrumentation Amplifiers—Selection Guide

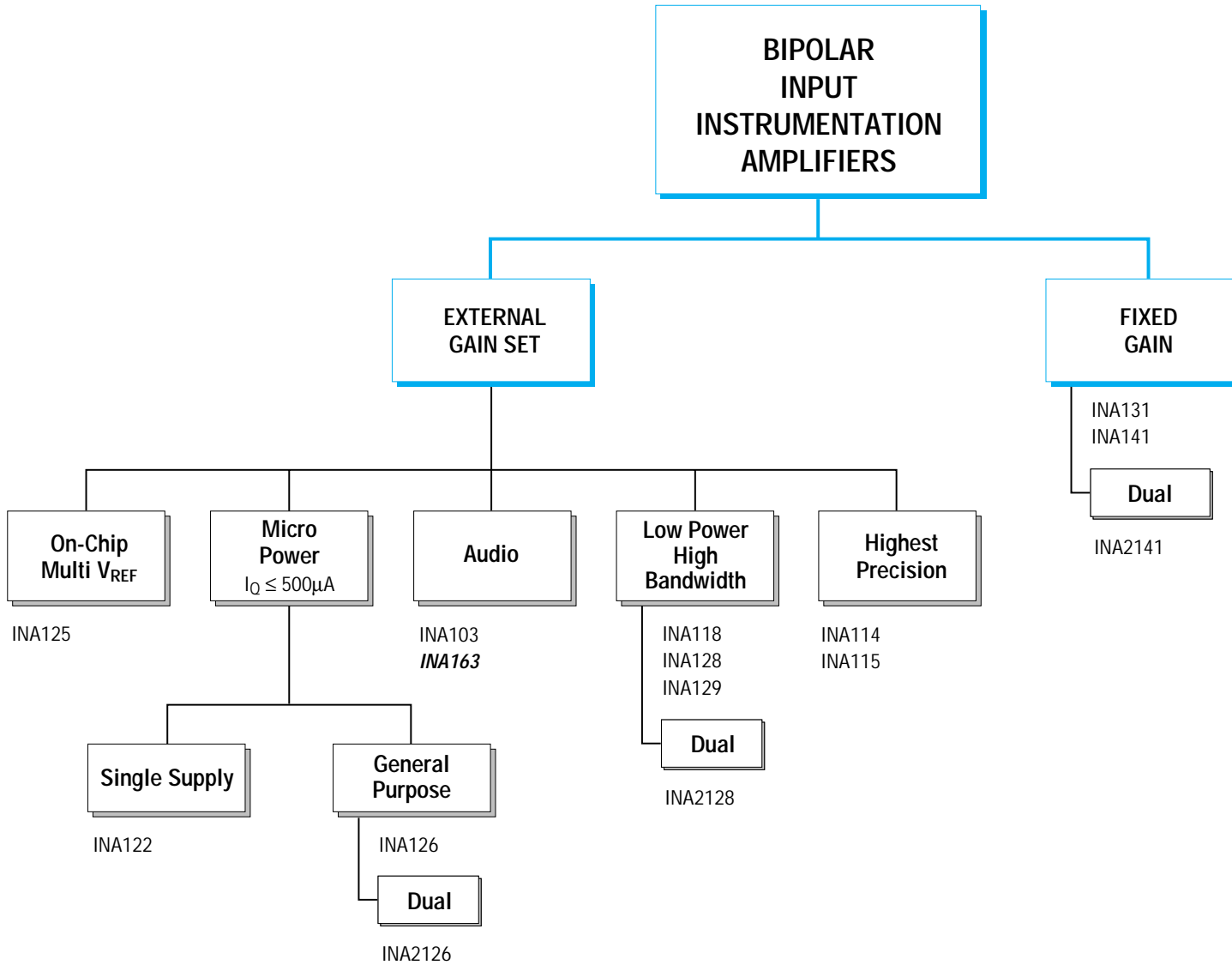
DIFFERENCE AMPLIFIERS

Product	Description	Gain (V/V)	Common-Mode Input Range ⁽¹⁾ (V) min	Input Offset (±μV) max	Input Offset Drift (±μV/°C) max	CMRR (dB) min	Small-Signal Bandwidth (MHz) typ	Slew Rate (V/μs) typ	Quiescent Current per Amp (±mA) typ	Power Supply Range (V) min to max	Package(s)	Lowest Grade Price (1000s)
DRV134	Balanced (Differential) Audio Line Driver	2	±15 ⁽²⁾	10mV ⁽³⁾	10 ^{(3)*}	46	1.5	12	5.2	±4.5 to ±18	DIP-8, SOL-16	\$1.80
DRV135	Balanced (Differential) Audio Line Driver	2	±15 ⁽²⁾	10mV ⁽³⁾	10 ^{(3)*}	46	1.5	12	5.2	±4.5 to ±18	SO-8	1.80
INA105	Precision, G = 1, General Purpose	1	±20	125	10	86	1	3	1.5	±5 to ±18	DIP-8, SO-8, TO99-8	3.77
INA106	Precision, G = 10, General Purpose	10	±3	100	0.2*	86	5	3	1.5	±5 to ±18	DIP-8, SO-8	4.67
INA117	±200V Common-Mode, ±500V Protected Input	1	±200	1000	20	86	0.2	2.6	1.5	±5 to ±18	DIP-8, SO-8, TO99-8	4.06
INA132	Single Supply, Low Cost, Lowest I _Q	1	+28, -15	250	5	76	0.3	0.1	160μA	±1.35 to ±18	DIP-8, SO-8	0.99
INA2132	Dual, Single Supply, Low Cost, Lowest I _Q	1	+28, -30	250	5	76	0.3	0.1	160μA	±1.35 to ±18	SO-14	1.80
INA133	High Speed, Precision	1	±27	450	5	80	1.5	5	0.95	±2.25 to ±18	SO-8	0.99
INA2133	Dual, High Speed, Precision	1	±27	450	5	80	1.5	5	0.95	±2.25 to ±18	SO-14	1.80
INA134	0dB Audio Differential Line Receiver	1	±25	1000	2*	74	3.1	14	2.4	±4 to ±18	DIP-8, SO-8	0.99
INA2134	Dual, 0dB Audio Differential Line Receiver	1	±25	1000	2*	74	3.1	14	2.4	±4 to ±18	DIP-14, SO-14	1.80
INA137	±6dB Audio Differential Line Receiver	0.5, 2	±25	1000	2*	74	4	14	2.4	±4 to ±18	DIP-8, SO-8	0.99
INA2137	Dual, ±6dB Audio Differential Line Receiver	0.5, 2	±25	1000	2*	74	4	14	2.4	±4 to ±18	DIP-14, SO-14	1.80
INA138	High-Side Current Monitor	200μA/V	+36	1mV	1*	100	0.8	—	25μA	+2.7 to +36	SOT23-5	0.75
INA143	High Speed, Precision, G = 10	10	±14.85	250	3	86	0.15	5	0.95	±2.25 to ±18	SO-8	1.40
INA2143	Dual, High Speed, Precision, G = 10	10	±14.85	250	3	86	0.15	5	0.95	±2.25 to ±18	SO-14	2.45
INA145	Programmable Gain, Low Power	1 to 1000	+28, -30	0.5	10*	76	0.5	0.45	0.57	±1.35 to ±18	SO-8	1.40
INA146	Programmable Gain, Low Power	0.1 to 100	±100	5mV	30*	70	0.55	0.45	0.57	±1.35 to ±18	SO-8	1.60
INA148	±200V Common-Mode, 1MΩ Input	1	±200	5mV	100*	70	0.1	1	0.6	±1.35 to ±18	SO-8	1.95
INA152	Micropackage, Single-Supply	1	±18	250	5	86	0.7	0.5	0.45	+2.7 to +20	MSOP-8	1.10
INA154	High Speed (3MHz, 14V/μs)	1	±25	750	20	80	3.1	14	2.4	±4 to ±18	SO-8	0.99
INA157	High Speed (3MHz, 14V/μs)	0.5, 2	±37.5	500	20	86	4	14	2.4	±4 to ±18	SO-8	0.99
INA168	High-Side Current Monitor	200μA/V	+60	1mV	1*	100	0.8	—	25μA	+2.7 to +60	SOT23-5	0.95

NOTES: (1) V_S = ±15. (2) Output voltage swing, V_S = ±18V. (3) Differential output offset voltage.

* Denotes typical. **BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT.** Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Instrumentation Amplifiers—Selection Tree



Instrumentation Amplifiers—Selection Guide

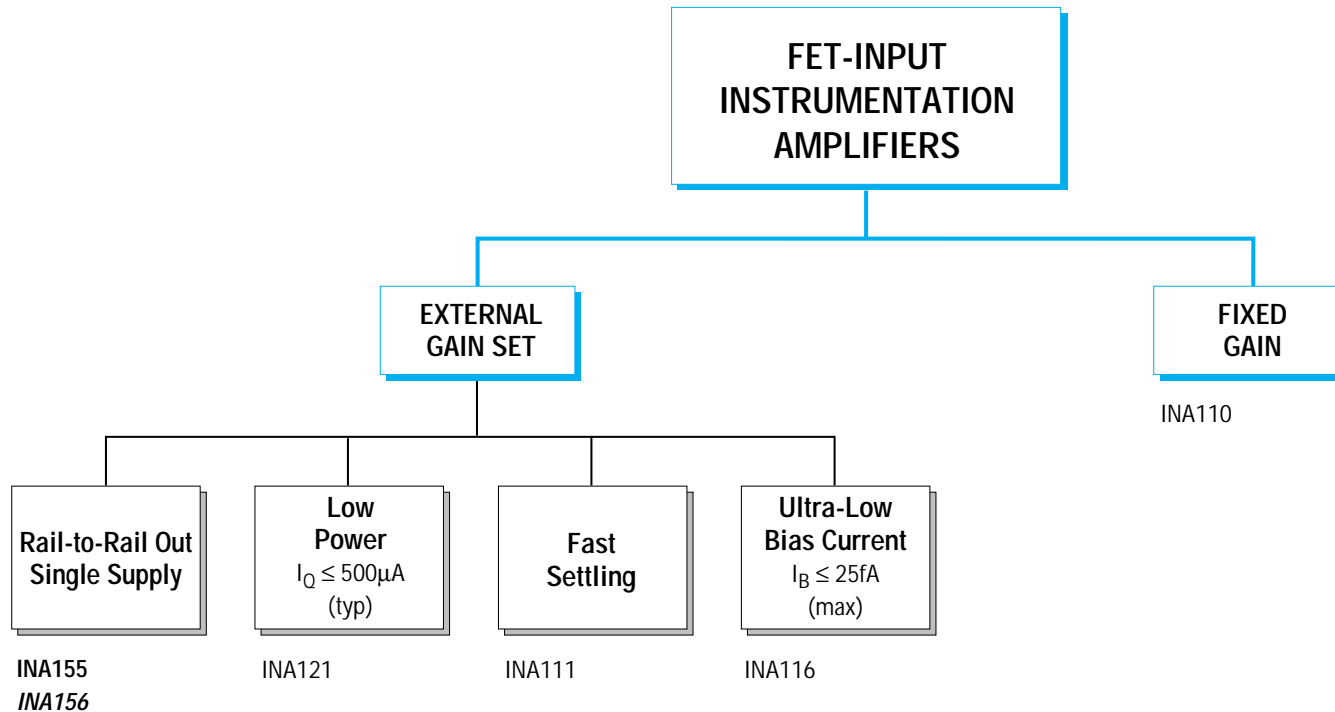
BIPOLAR INPUT INSTRUMENTATION AMPLIFIERS

Product	Description	Gain (V/V)	Non Linearity ⁽¹⁾ (±%) max	Input Offset (±μV) max	Input Offset Drift (±μV/°C) max	CMRR ⁽¹⁾ (dB) min	Input Bias Current (±nA) max	Noise (V _N) at 1kHz (nV/√Hz) typ	Settling Time ⁽¹⁾ to 0.01% (μs) typ	Quiescent Current per Amp (±mA) typ	Power Supply Range (V)	Package(s)	Lowest Grade Price (1000s)
INA103	1nV/√Hz Lowest Noise, Low Distortion	1 to 1000	0.004	100+5000/G	1+20/G	100	8μA	1	3.5	9	±9 to ±25	DIP-16, SOL-16	\$4.60
INA114	Precision	1 to 10000	0.002	50+100/G	0.25+5/G	110	2	11	120	2.2	±2.25 to ±18	DIP-8, SOL-16	3.55
INA115	Precision, Additional Connection to Input Op Amps	1 to 10000	0.002	50+100/G	0.25+5/G	110	2	11	120	2.2	±2.25 to ±18	SOL-16	3.80
INA118	Precision, Low Power, Current Feedback	1 to 10000	0.002	50+100/G	0.5+20/G	107	5	10	21	350μA	±1.35 to ±18	DIP-8, SO-8	3.73
INA122	Single Supply, Micropower, Rail-to-Rail Output Swing	5 to 10000	0.012	250	3	83	25	60	450	60	+2.2 to +36	DIP-8, SO-8	1.95
INA125	Internal Voltage Reference for Bridge Excitation	1 to 10000	0.002	250	2	100	25	38	375	460μA	±1.35 to ±18	DIP-8, SO-8	2.10
INA126	Single Supply, Low Power, Low Cost, MSOP-8	5 to 10000	0.012	250	3	83	25	35	160	175μA	±1.35 to ±18	DIP-8, SO-8, MSOP-8	0.99
INA2126	Dual, Single Supply, Low Power, Low Cost, SSOP-16	5 to 10000	0.012	250	3	83	25	35	160	175μA	±1.35 to ±18	DIP-16, SO-16, SSOP-16	1.80
INA128	Precision, General Purpose, Current Feedback Topology	1 to 10000	0.002	50+500/G	0.5+20/G	120	5	8	9	700μA	±2.25 to ±18	DIP-8, SO-8	3.31
INA2128	Dual, Precision, General Purpose, Current Feedback	1 to 10000	0.002	50+500/G	0.5+20/G	120	5	8	9	700μA	±2.25 to ±18	DIP-16, SO-16	6.00
INA129	AD620 Second Source, Current Feedback Topology	1 to 10000	0.002	50+500/G	0.5+20/G	120	5	8	9	700μA	±2.25 to ±18	DIP-8, SO-8	3.31
INA131	Fixed G = 100	100	0.002	50	0.25	110	2	12	100	2.2	±2.25 to ±18	DIP-8	3.55
INA141	Pin-programmable G = 10, 100, AD621 Second Source	10, 100	0.002	50 ⁽¹⁾	0.5 ⁽¹⁾	117	5	8	9	750μA	±2.25 to ±18	DIP-8, SO-8	3.31
INA2141	Dual, Pin-programmable G = 10, 100	10, 100	0.002	50 ⁽¹⁾	0.5 ⁽¹⁾	117	5	8	9	750μA	±2.25 to ±18	DIP-16, SOL-16	6.00
INA163	1nV/√Hz Low Noise, High Speed	1 to 10000	0.004	500+5000/G	5+20/G	100	8μA	1	3.5	8.5	±4.5 to ±18	SO-14	1.95

NOTE: (1) G = 100.

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Instrumentation Amplifiers—Selection Tree and Guide



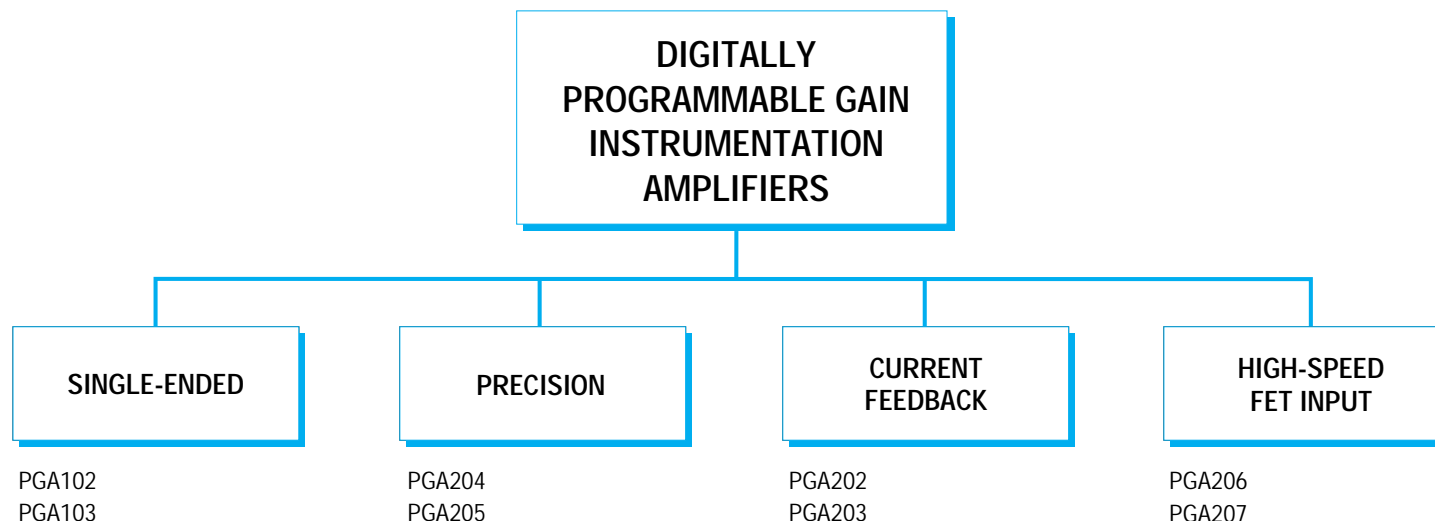
FET-INPUT INSTRUMENTATION AMPLIFIERS

Product	Description	Gain (V/V)	Non-Linearity ⁽¹⁾ (±%) max	Input Offset (±µV) max	Input Offset Drift (±µV/°C) max	CMRR ⁽¹⁾ (dB) min	Input Bias Current (±pA) max	Noise at 1kHz (nV/√Hz) typ	Settling Time ⁽¹⁾ to 0.01% (µs) typ	Quiescent Current per Amp (±mA) typ	Power Supply Range (V)	Package(s)	Lowest Grade Price (1000s)
INA110	Internal Gains of 1, 10, 200, and 500, Fast Settling	1, 10, 100, and 1000	0.01	250+3000/G	2+50/G	106	50	10	3	3	±6 to ±18	DIP-16, SOL-16, CerDIP-16	\$6.60
INA111	Fast Settling, High Speed	1 to 10000	0.005	500+2000/G	5+2000/G	106	20	10	4	3.3	±6 to ±18	DIP-8, SOL-16	3.91
INA116	Ultra-Low Bias Current	1 to 1000	0.005	2000+2000/G	5*	86	25fA	28	145	1	±4.5 to ±18	DIP-16, SOL-16	3.95
INA121	Low Power, Low Cost	1 to 10000	0.005	500+500/G	5+20/G	96	50	20	35	450µA	±2.25 to ±18	DIP-8, SO-8	2.35
INA155	Single Supply, R/R Out, CMOS	10, 50	0.03	1000	5*	92	10	40	8	1.7	+2.7 to +5.5	SO-8, MSOP-8	1.00
INA156	Single Supply, R/R Out, CMOS	10, 50	0.03	5000	10*	72	10	40	8	1.7	+2.7 to +5.5	MSOP-8	0.90

NOTE: (1) Gain = 100.

* Denotes typical. **BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT.** Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Instrumentation Amplifiers—Selection Tree and Guide



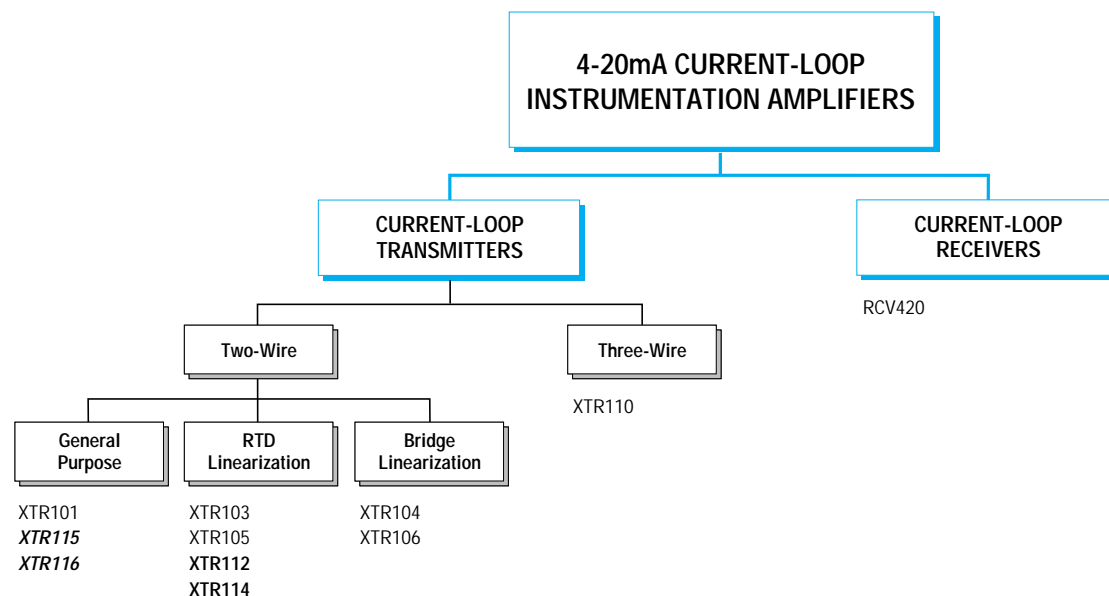
DIGITALLY PROGRAMMABLE GAIN INSTRUMENTATION AMPLIFIERS

Product	Description	Digitally Selected Gains (V/V)	Non-Linearity ⁽²⁾ (±% of FSR) max	Input Offset ⁽²⁾ (±μV) max	Input Offset Drift ⁽²⁾ (±μV/°C) max	Gain Error ⁽²⁾ (±%) max	CMRR ^(1, 2) (dB) min	Input Bias Current ⁽²⁾ (±nA) max	Noise at 1kHz (nV/√Hz) typ	Settling Time ⁽²⁾ to 0.01% (μs) typ	Quiescent Current (±mA) typ	Power Supply Range (V)	Package(s)	Lowest Grade Price (1000s)
PGA102	3 Single-Ended Inputs, Gain Control/Ch.	1, 10, <i>100</i>	0.01	100	3	0.025	—	50	18	8.2	2.4	±5 to ±18	DIP-16, CerDIP-16	\$5.86
PGA103	1 Single-Ended Input, Small Packages	1, 10, <i>100</i>	0.01	500	2*	0.2	—	150	11	8	2.6	±4.5 to ±18	DIP-8, SO-8	3.90
PGA202	FET Input, Fast Settling, Constant GBW	1, 10, <i>100</i> , 1000	0.012	1000+12000/G	12+120/G	0.15	92	50pA	12	2	6.5	±6 to ±18	DIP-14, CerDIP-14	7.28
PGA203	FET Input, Fast Settling, Constant GBW	1, 2, 4, 8	0.012	1000+12000/G	12+120/G	0.15	92	50pA	12	2	6.5	±6 to ±18	DIP-14	7.28
PGA204	DC Precision, ±40V Protection	1, 10, <i>100</i> , 1000	0.002	50+100/G	0.25+5/G	0.024	110	2	13	140	5.2	±4.5 to ±18	DIP-16, SOL-16	6.82
PGA205	DC Precision, ±40V Protection	1, 2, 4, 8	0.002	50+100/G	0.25+5/G	0.024	95	2	15	28	5.2	±4.5 to ±18	DIP-16, SOL-16	6.82
PGA206	FET Input, High Speed, ±40V Protection	1, 2, 4, 8	0.002	1500	2*	0.05	95	100pA	18	3.5	12.4	±4.5 to ±18	DIP-16, SOL-16	10.13
PGA207	FET Input, High Speed, ±40V Protection	1, 2, 5, <i>10</i>	0.002	1500	2*	0.05	95	100pA	18	3.5	12.4	±4.5 to ±18	DIP-16, SOL-16	10.13

NOTES: (1) DC to 60Hz, balanced source impedance. (2) Listed specifications apply for gain values given in italics from "Digitally Selected Gains" column.

* Denotes typical. **BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT.** Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Instrumentation Amplifiers—Selection Tree and Guide



4-20mA CURRENT-LOOP INSTRUMENTATION AMPLIFIERS

Product	Description	Full-Scale Input Range	Output Range	Span Error (unadj.) (% max)	Non Linearity max (%)	Offset Voltage ($\pm\mu\text{V}$) max	Offset Voltage Drift ($\pm\mu\text{V}/^\circ\text{C}$) max	Output Zero Error ($\pm\mu\text{V}$) max	CMRR 60Hz (dB) min	Power Supply Range (V)	Package(s)	Lowest Grade Price (1000s)
RCV420	4-20mA Current-Loop Receiver	4-20mA	0 to 5V	—	0.002	1mV ⁽¹⁾	25 ⁽¹⁾	1.25mV	86	–5, 11.4 to ± 18	DIP-16	\$3.34
XTR101	2-Wire, Selectable In/Out Ranges	5mV to 1V	4-20mA	5	0.01	30	0.75	30	90	11.6 to 40	DIP-14, CerDIP-14, SOL-16	7.25
XTR103	2-Wire, RTD Excitation/Linearization	5mV to 1V	4-20mA	1	0.01	2.5mV	2.5	6	80	9 to 40	DIP-16, SOL-16	7.16
XTR104	2-Wire, Bridge Excitation/Linearization	5mV to 1V	4-20mA	1	0.01	2.5mV	2.5	50	80	9 to 40	DIP-16, SOL-16	7.16
XTR105	2-Wire, RTD (linearization), V_{REG} , Two 800 μA Sources, Low Cost	5mV to 1V	4-20mA	0.2	0.01	25	1.5	25	86	7.5 to 36	DIP-14, SO-14	3.75
XTR106	2-Wire, Bridge (linearization), V_{REG} , 2.5V or 5V Reference, Low Cost	5mV to 1V	4-20mA	0.2	0.01	25	1.5	25	86	7.5 to 36	DIP-14, SO-14	3.75
XTR110	3-Wire, Selectable In/Out Ranges	0 to 10V	Any mA	0.2	0.025	—	—	16	—	13.5 to 40	DIP-16, CerDIP-16, SOL-16	6.35
XTR112	2-Wire, RTD (linearization), V_{REG}, Two 250μA Sources, High Impedance RTDs	5mV to 1V	4-20mA	0.2	0.01	25	1.5	25	86	7.5 to 36	DIP-14, SO-14	3.75
XTR114	2-Wire, RTD (linearization), V_{REG} , Two 100 μA Sources, Very High Z RTDs	5mV to 1V	4-20mA	0.2	0.01	25	1.5	25	86	7.5 to 36	DIP-14, SO-14	3.75
<i>XTR115</i>	<i>2-Wire, High Level In, $V_{\text{REF}} = 2.5\text{V}$</i>	<i>200μA</i>	<i>4-20mA</i>	<i>0.2</i>	<i>0.01</i>	<i>25μA</i>	<i>0.5$\mu\text{A}/^\circ\text{C}$</i>	<i>25</i>	—	<i>7.5 to 36</i>	<i>SO-8</i>	<i>0.85</i>
<i>XTR116</i>	<i>2-Wire, High Level In, $V_{\text{REF}} = 4.096\text{V}$</i>	<i>200μA</i>	<i>4-20mA</i>	<i>0.2</i>	<i>0.01</i>	<i>25μA</i>	<i>0.5$\mu\text{A}/^\circ\text{C}$</i>	<i>25</i>	—	<i>7.5 to 36</i>	<i>SO-8</i>	<i>0.85</i>

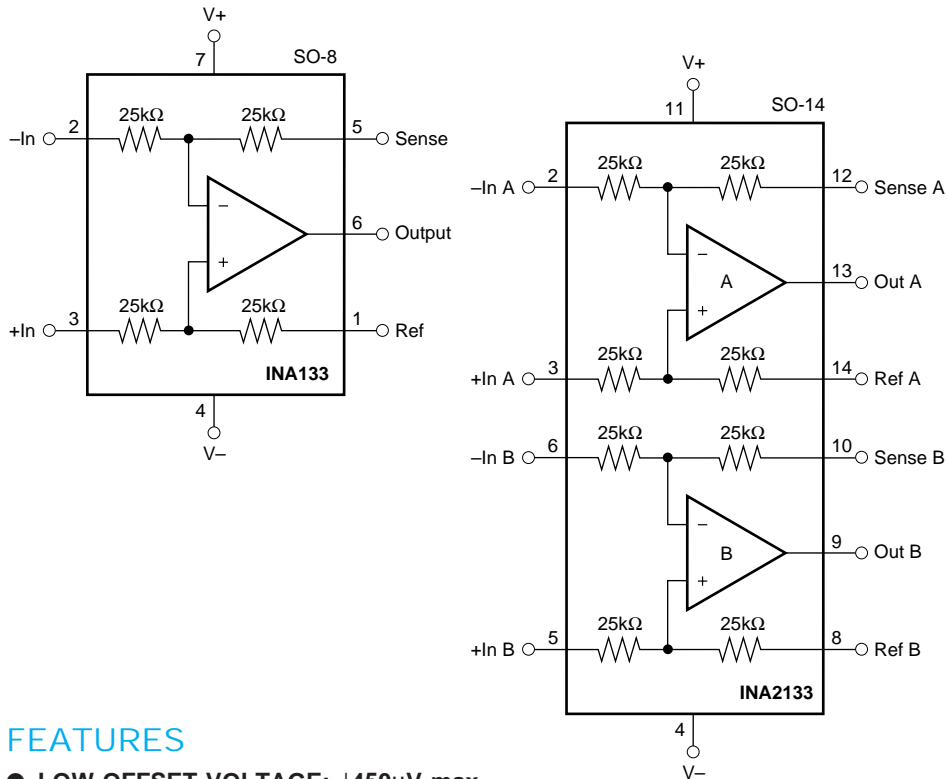
NOTES: (1) RTO.

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Instrumentation Amplifiers—New Products

INA133, INA2133

High-Speed, Precision, $G = 1$
DIFFERENCE AMPLIFIERS

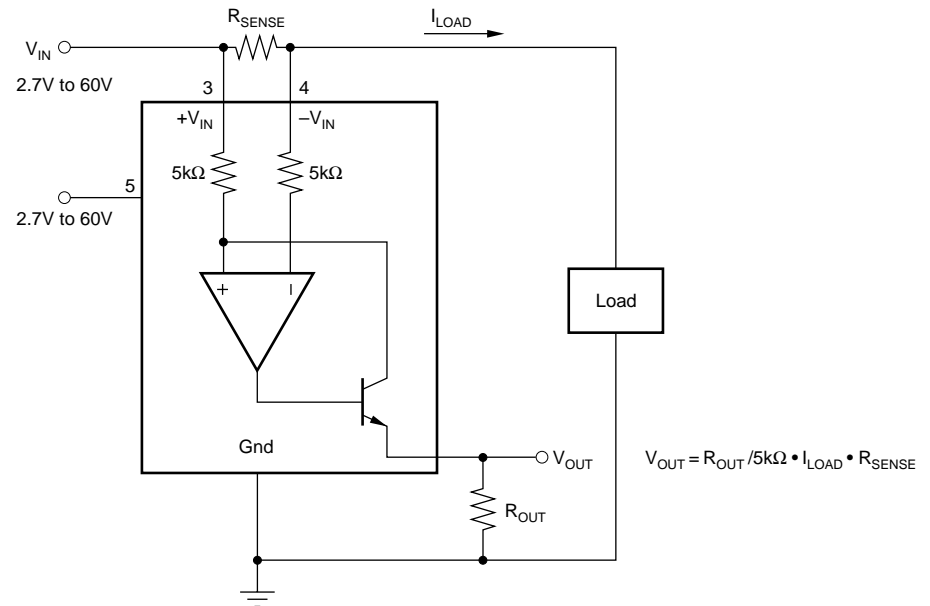


FEATURES

- LOW OFFSET VOLTAGE: $\pm 450\mu\text{V}$ max
- LOW OFFSET DRIFT: $\pm 2\mu\text{V}/^\circ\text{C}$
- LOW GAIN ERROR: 0.05% max
- HIGH SLEW RATE: $5\text{V}/\mu\text{s}$
- FAST SETTLING TIME: $5.5\mu\text{s}$
- LOW QUIESCENT CURRENT: $950\mu\text{A}$
- WIDE SUPPLY RANGE: $\pm 2.25\text{V}$ to $\pm 18\text{V}$
- SO-8, SO-14 PACKAGES
- SINGLE AND DUAL VERSIONS

INA138, INA168

High-Side Measurement, Current Shunt Monitor
DIFFERENCE AMPLIFIERS



$$V_{\text{OUT}} = R_{\text{OUT}} / 5\text{k}\Omega \cdot I_{\text{LOAD}} \cdot R_{\text{SENSE}}$$

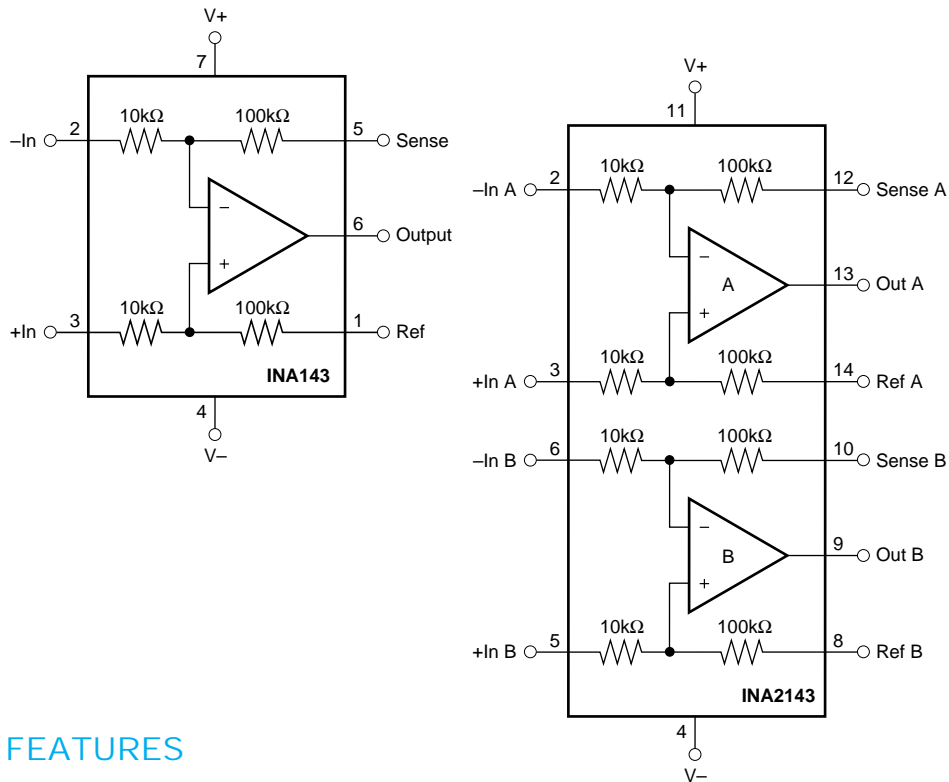
FEATURES

- COMPLETE UNIPOLAR HIGH-SIDE CURRENT MEASUREMENT CIRCUIT
- WIDE SUPPLY AND COMMON-MODE RANGE
- LOW QUIESCENT CURRENT: $\pm 570\mu\text{A}$
- INA138: 2.7V to 40V
- INA168: 2.7V to 60V
- INDEPENDENT SUPPLY AND INPUT COMMON-MODE VOLTAGES
- SINGLE RESISTOR GAIN SET
- LOW QUIESCENT CURRENT ($25\mu\text{A}$ typ)
- SOT23-5 PACKAGE

Instrumentation Amplifiers—New Products

INA143, INA2143

High-Speed, Precision, $G = 10V/V$ or $G = 0.1V/V$
DIFFERENCE AMPLIFIERS

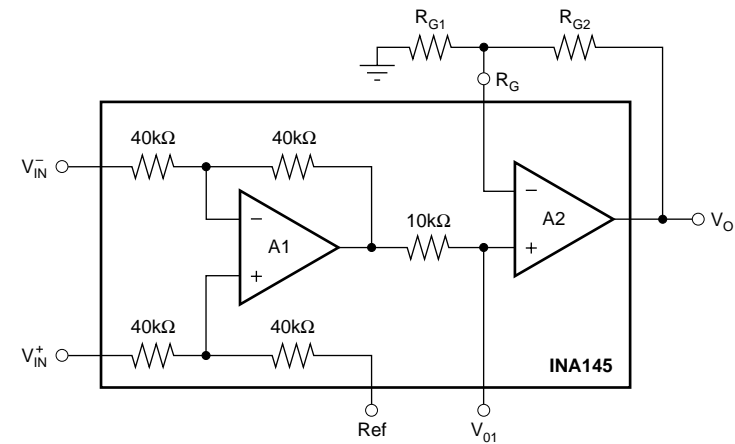


FEATURES

- LOW OFFSET VOLTAGE: $\pm 250\mu V$ max
- LOW OFFSET DRIFT: $\pm 1\mu V/^\circ C$
- LOW GAIN ERROR: 0.05% max
- HIGH SLEW RATE: $5V/\mu s$
- FAST SETTLING TIME: $9\mu s$
- LOW QUIESCENT CURRENT: $950\mu A$
- WIDE SUPPLY RANGE: $\pm 2.25V$ to $\pm 18V$
- SO-8, SO-14 PACKAGES
- SINGLE AND DUAL VERSIONS

INA145

Programmable Gain
DIFFERENCE AMPLIFIER



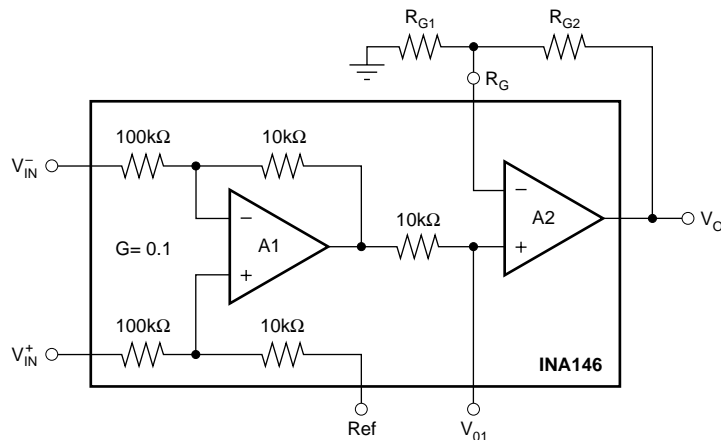
FEATURES

- MINIMUM DIFFERENTIAL GAIN = $1V/V$
- HIGH COMMON-MODE VOLTAGE:
+8V at $V_S = +5V$
 $\pm 28V$ at $V_S = \pm 15V$
- LOW QUIESCENT CURRENT: $\pm 570\mu A$
- WIDE SUPPLY RANGE:
Single Supply: 4.5V to 36V
Dual Supplies: $\pm 2.25V$ to $\pm 18V$
- LOW GAIN ERROR: 0.1%
- LOW NONLINEARITY: 0.002%
- HIGH CMR: 80dB
- EASY GAIN SET WITH EXTERNAL RESISTORS
- SO-8 PACKAGE

Instrumentation Amplifiers—New Products

INA146

High Voltage, Programmable Gain
DIFFERENCE AMPLIFIER

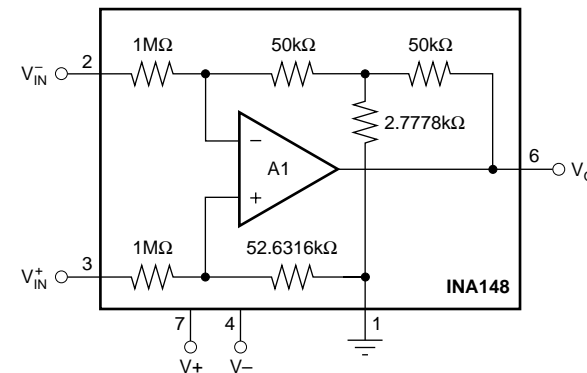


FEATURES

- MINIMUM DIFFERENTIAL GAIN = 0.1V/V
- HIGH COMMON-MODE VOLTAGE:
+40V at $V_S = +5V$
 $\pm 100V$ at $V_S = \pm 15V$
- LOW QUIESCENT CURRENT: $\pm 570\mu A$
- WIDE SUPPLY RANGE:
Single Supply: 4.5V to 36V
Dual Supplies: $\pm 2.25V$ to $\pm 18V$
- LOW GAIN ERROR: 0.1% max
- LOW NONLINEARITY: 0.002%
- HIGH CMR: 80dB
- EASY GAIN SET WITH TWO EXTERNAL RESISTORS
- SO-8 PACKAGE

INA148

High Common-Mode Voltage
HI-Z DIFFERENCE AMPLIFIER



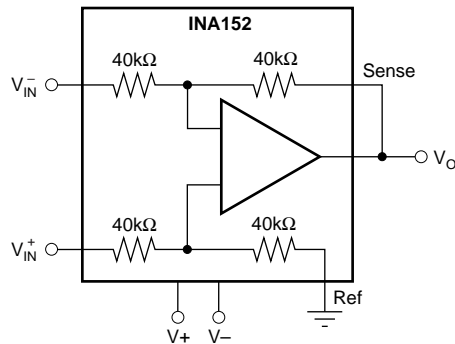
FEATURES

- HIGH COMMON-MODE VOLTAGE:
+80V at $V_S = +5V$
 $\pm 200V$ at $V_S = \pm 15V$
- 1MΩ INPUT RESISTORS
- FIXED DIFFERENTIAL GAIN = 1V/V
- LOW QUIESCENT CURRENT: $\pm 250\mu A$
- WIDE SUPPLY RANGE:
Single Supply: 2.7V to 36V
Dual Supplies: $\pm 1.35V$ to $\pm 18V$
- LOW GAIN ERROR: 0.05% max
- LOW NONLINEARITY: 0.002% max
- HIGH CMR: 90dB
- SO-8 PACKAGE

Instrumentation Amplifiers—New Products

INA152

MicroPackage, Single-Supply
DIFFERENCE AMPLIFIER

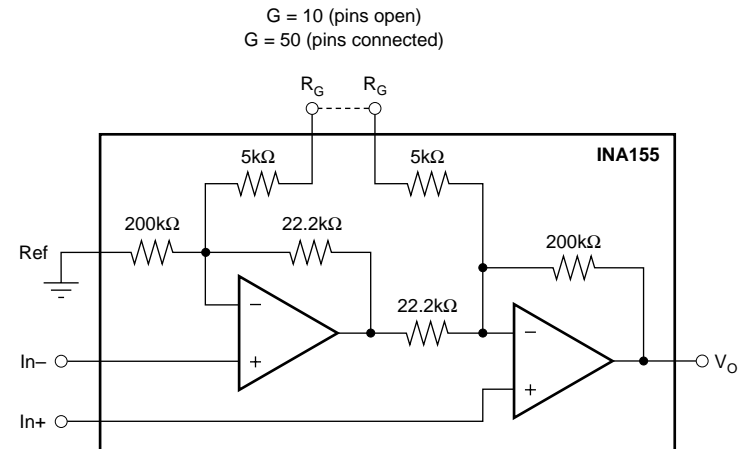


FEATURES

- LOW OFFSET DRIFT: $\pm 3\mu\text{V}/^\circ\text{C}$
- LOW OFFSET VOLTAGE: $100\mu\text{V}$
- HIGH CMR: 86dB
- LOW ERROR GAIN: 0.01%
- LOW ERROR GAIN DRIFT: $1\text{ppm}/^\circ\text{C}$
- SWING TO WITHIN 50mV OF EITHER OUTPUT RAIL
- WIDE SUPPLY RANGE:
Single Supply: 2.7V to 20V
Dual Supplies: $\pm 1.35\text{V}$ to $\pm 10\text{V}$
- MSOP-8 PACKAGE

INA155, INA156

Single-Supply, Rail-to-Rail Output, CMOS
INSTRUMENTATION AMPLIFIER



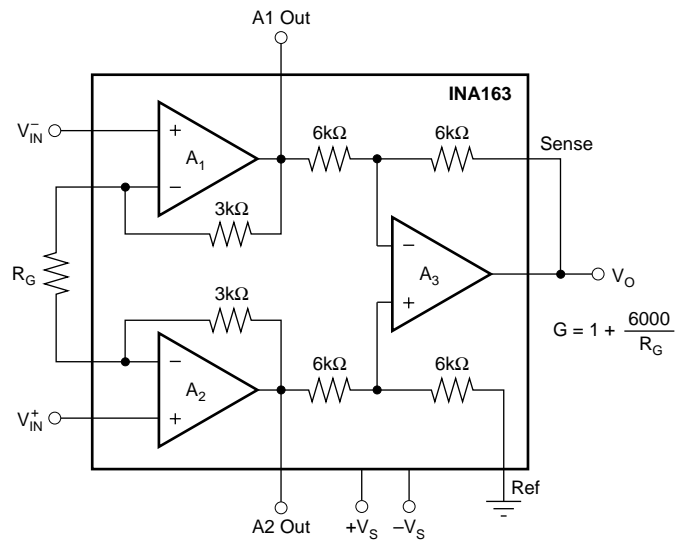
FEATURES

- RAIL-TO-RAIL OUTPUT SWING: $(V_+) - 0.01$
- WIDE INPUT RANGE: $(V_-) + 0.3\text{V}$ to $(V_+) - 0.3\text{V}$
- INTERNAL FIXED GAIN: 10V/V and 50V/V
- LOW OFFSET VOLTAGE: $1\mu\text{Vmax}$ (INA156: $5\mu\text{V}$)
- LOW OFFSET DRIFT: $\pm 5\mu\text{V}/^\circ\text{C}$
- LOW BIAS CURRENT: 1pA
- WIDE BANDWIDTH: 550kHz, $G = 10\text{V/V}$
- HIGH SLEW RATE: $6\text{V}/\mu\text{s}$
- WIDE SUPPLY RANGE: +2.5V to +6V
- LOW QUIESCENT CURRENT: 1.7mA
- SO-8 AND TINY MSOP-8 PACKAGES

Instrumentation Amplifiers—New Products

INA163

Low Noise
INSTRUMENTATION AMPLIFIER

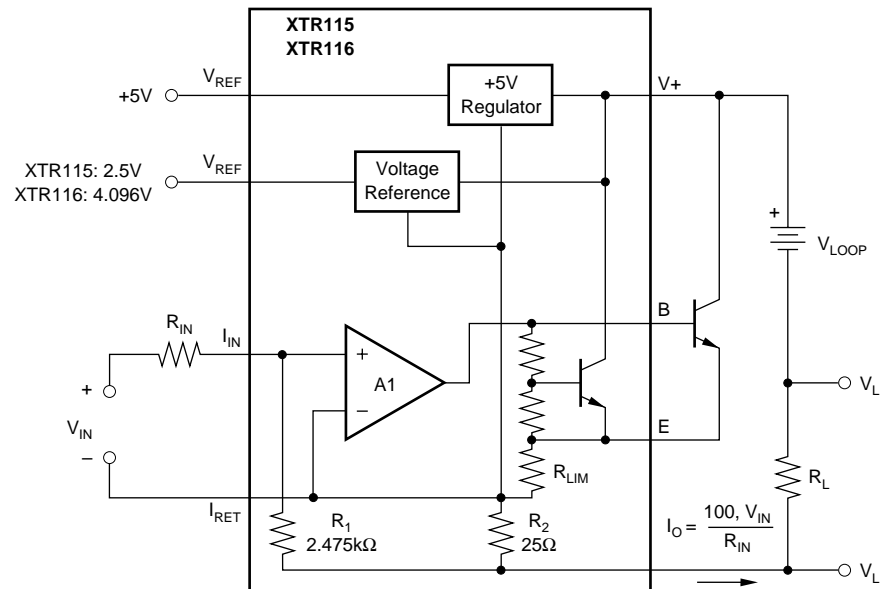


FEATURES

- **LOW NOISE:** $1\text{nV}/\sqrt{\text{Hz}}$ at 1kHz
- **LOW NONLINEARITY:** 0.005%
- **HIGH GBW:** 100MHz at $G = 1000$
- **WIDE SUPPLY RANGE:** $\pm 4\text{V}$ to $\pm 18\text{V}$
- **HIGH CMR:** $> 100\text{dB}$
- **EASY GAIN SET WITH EXTERNAL RESISTOR**
- **SO-14 PACKAGE**

XTR115, XTR116

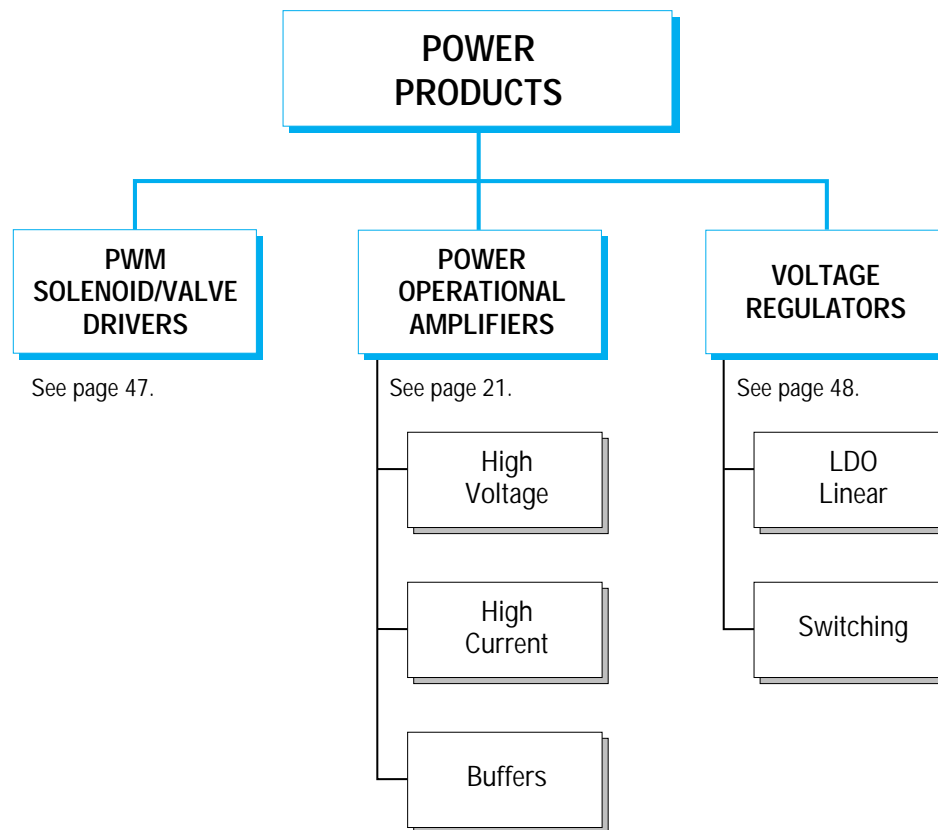
4-20mA Current-Loop Transmitter
INSTRUMENTATION AMPLIFIER



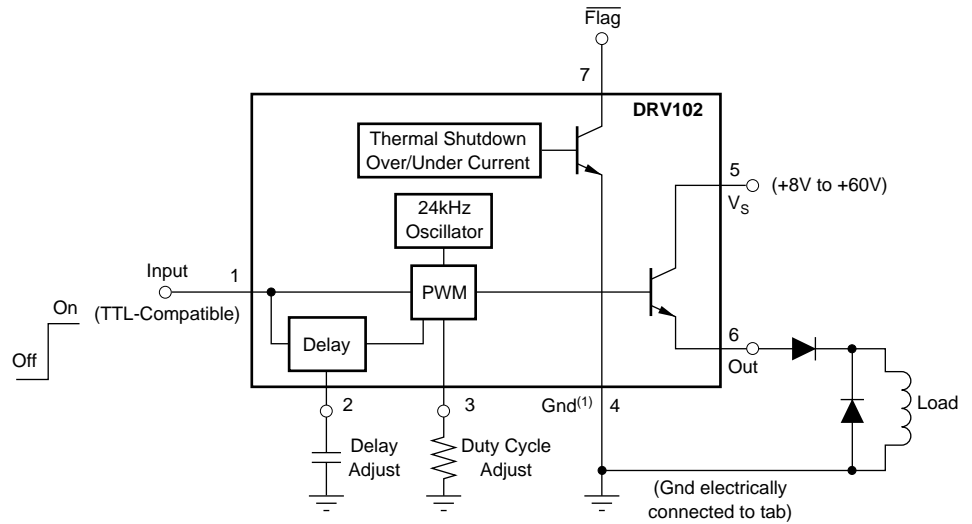
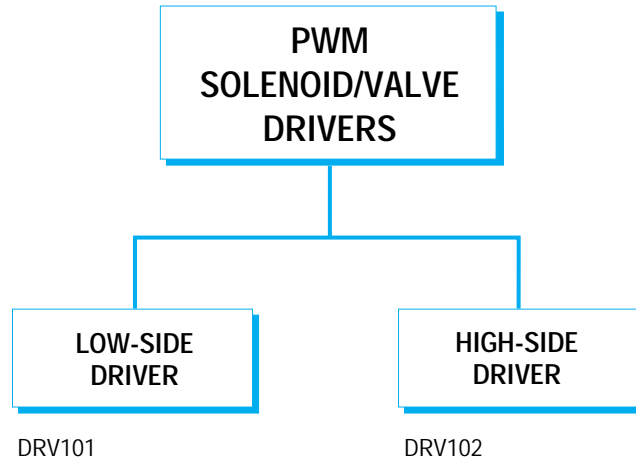
FEATURES

- **VOLTAGE OR CURRENT INPUT**
- **+5V REGULATOR FOR EXTERNAL CIRCUITRY**
- **REFERENCE VOLTAGE OUTPUT**
XTR115: 2.5V
XTR116: 4.096V
- **LOW NONLINEARITY ERROR:** 0.005%
- **MINIMUM SCALE CURRENT:** $160\mu\text{A}$
- **LOW OFFSET VOLTAGE:** $\pm 250\mu\text{V}$
- **WIDE LOOP SUPPLY RANGE:** 7.5V to 36V
- **SO-8 PACKAGE**

Power Products—Main Selection Tree



Power Products—Selection Tree and Guide

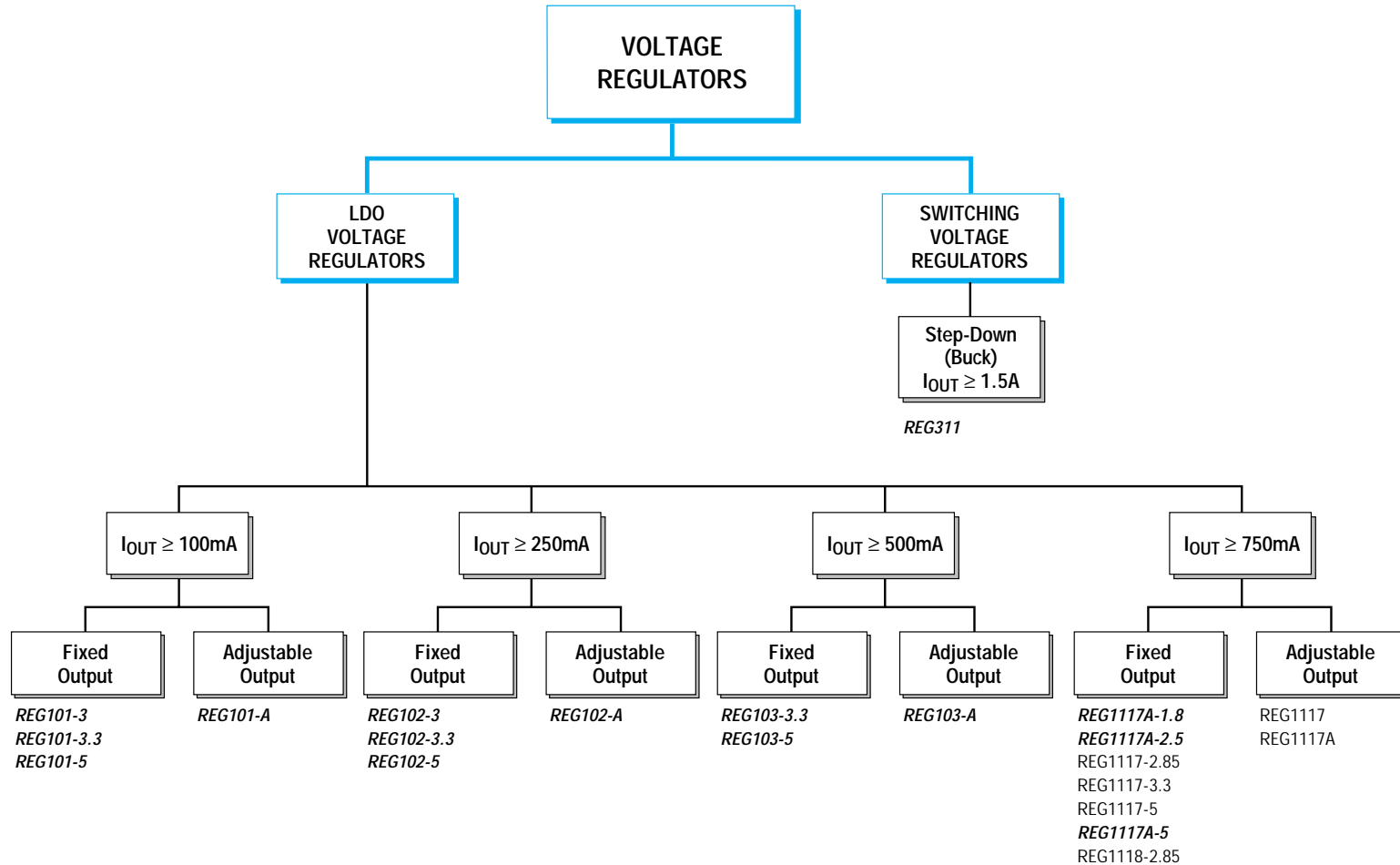


PWM Solenoid/Valve Drivers

Product	Description	Output Current (A) min	Saturation Voltage at $I_o = 1A$ (V) max	Quiescent Current (mA) max	Power Supply Range (V)	Duty Cycle Range (%)	Thermal Shutdown	Package(s)	Lowest Grade Price (1000s)
DRV101	Low-Side PWM Solenoid/Valve Driver	1.9	1	5	+9 to +60	10 to 90	Yes	TO220-7, DDPak-7	\$3.60
DRV102	High-Side PWM Solenoid/Valve Driver	2	2.2	9	+8 to +60	10 to 90	Yes	TO220-7, DDPak-7	3.60

Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Power Products—Selection Tree



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Power Products—Selection Guide

LDO Voltage Regulators

Product	Description	Output Voltage (V) typ	Output Current (mA) min	Dropout Voltage at I _{OUT} max (V) max	Input Voltage (V) min to max	Accuracy vs Line & Load (%) max	Quiescent Current (mA) typ	Disable Current (μA) typ	Package(s)	Lowest Grade Price (1000s)
<i>REG101-3</i>	<i>3V, 100mA, Low Noise, DMOS</i>	<i>3</i>	<i>100</i>	<i>0.1</i>	<i>3.3 to 10</i>	<i>3</i>	<i>0.350</i>	<i>1</i>	<i>SO-8, SOT23-5</i>	<i>\$0.59</i>
<i>REG101-3.3</i>	<i>3.3V, 100mA, Low Noise, DMOS</i>	<i>3.3</i>	<i>100</i>	<i>0.1</i>	<i>3.6 to 10</i>	<i>3</i>	<i>0.350</i>	<i>1</i>	<i>SO-8, SOT23-5</i>	<i>0.59</i>
<i>REG101-5</i>	<i>5V, 100mA, Low Noise, DMOS</i>	<i>5</i>	<i>100</i>	<i>0.1</i>	<i>5.4 to 10</i>	<i>3</i>	<i>0.350</i>	<i>1</i>	<i>SO-8, SOT23-5</i>	<i>0.59</i>
<i>REG101-A</i>	<i>Adj., 100mA, Low Noise, DMOS</i>	<i>1.3 to 6</i>	<i>100</i>	<i>0.1</i>	<i>2.8 to 10</i>	<i>3</i>	<i>0.350</i>	<i>1</i>	<i>SO-8, SOT23-5</i>	<i>0.59</i>
<i>REG102-3</i>	<i>3V, 250mA, Low Noise, DMOS</i>	<i>3</i>	<i>250</i>	<i>0.25</i>	<i>3.5 to 10</i>	<i>3</i>	<i>0.350</i>	<i>1</i>	<i>SO-8, SOT23-5</i>	<i>0.79</i>
<i>REG102-3.3</i>	<i>3.3V, 250mA, Low Noise, DMOS</i>	<i>3.3</i>	<i>250</i>	<i>0.25</i>	<i>3.8 to 10</i>	<i>3</i>	<i>0.350</i>	<i>1</i>	<i>SO-8, SOT23-5</i>	<i>0.79</i>
<i>REG102-5</i>	<i>5V, 250mA, Low Noise, DMOS</i>	<i>5</i>	<i>250</i>	<i>0.25</i>	<i>5.5 to 10</i>	<i>3</i>	<i>0.350</i>	<i>1</i>	<i>SO-8, SOT23-5</i>	<i>0.79</i>
<i>REG102-A</i>	<i>Adj., 250mA, Low Noise, DMOS</i>	<i>1.3 to 6</i>	<i>250</i>	<i>0.25</i>	<i>2.9 to 10</i>	<i>3</i>	<i>0.350</i>	<i>1</i>	<i>SO-8, SOT23-5</i>	<i>0.79</i>
<i>REG103-3.3</i>	<i>3.3V, 500mA, Low Noise, DMOS</i>	<i>3.3</i>	<i>500</i>	<i>0.4</i>	<i>3.9 to 16</i>	<i>3</i>	<i>0.500</i>	<i>1</i>	<i>SO-8, SOT223-5</i>	<i>1.29</i>
<i>REG103-5</i>	<i>5V, 500mA, Low Noise, DMOS</i>	<i>5</i>	<i>500</i>	<i>0.4</i>	<i>5.7 to 16</i>	<i>3</i>	<i>0.500</i>	<i>1</i>	<i>SO-8, SOT223-5</i>	<i>1.29</i>
<i>REG103-A</i>	<i>Adj., 500mA, Low Noise, DMOS</i>	<i>1.3 to 6</i>	<i>500</i>	<i>0.4</i>	<i>3.1 to 16</i>	<i>3</i>	<i>0.500</i>	<i>1</i>	<i>SO-8, SOT223-5</i>	<i>1.29</i>
REG1117	Adjustable Output, 800mA	1.25 to 10	800	1.2	3.25 to 12	0.8	0.05 ⁽¹⁾	N/A	SOT223-3	1.38
REG1117-2.85	2.85V, 800mA, SCSI Bus Terminator	2.85	800	1.2	4 to 10	0.6	4	N/A	SOT223-3	1.38
REG1117-3.3	3.3V, 800mA, General Purpose	3.3	800	1.2	4.8 to 10	0.6	4	N/A	SOT223-3, DDPak-3	1.38
REG1117-5	5V, 800mA, General Purpose	5	800	1.2	6.5 to 15	0.5	4	N/A	SOT223-3	1.38
REG1117A	Adjustable Output, 1A	1.25 to 10	1000	1.3	3.25 to 12	0.8	0.05 ⁽¹⁾	N/A	SOT223-3, DDPak-3	1.38
<i>REG1117A-1.8</i>	<i>1.8V, 1000mA, General Purpose</i>	<i>1.8V</i>	<i>1000</i>	<i>1.3</i>	<i>3.25 to 12</i>	<i>0.8</i>	<i>4</i>	<i>N/A</i>	<i>DDPAK-3, SOT223-3</i>	<i>1.38</i>
<i>REG1117A-2.5</i>	<i>2.5V, 1000mA, General Purpose</i>	<i>2.5V</i>	<i>1000</i>	<i>1.3</i>	<i>4 to 12</i>	<i>0.8</i>	<i>4</i>	<i>N/A</i>	<i>DDPAK-3, SOT223-3</i>	<i>1.38</i>
<i>REG1117A-5</i>	<i>5V, 1000mA, General Purpose</i>	<i>5V</i>	<i>1000</i>	<i>1.3</i>	<i>6.5 to 15</i>	<i>0.8</i>	<i>4</i>	<i>N/A</i>	<i>DDPAK-3</i>	<i>1.38</i>
REG1118-2.85	2.85V with Source and Sink Capability	2.85	-400/+800	1.3	4.75 to 6	2	3	N/A	SOT223-3	1.39

NOTE: (1) Adjust pin current, I_O = 10mA.

Switching Voltage Regulators

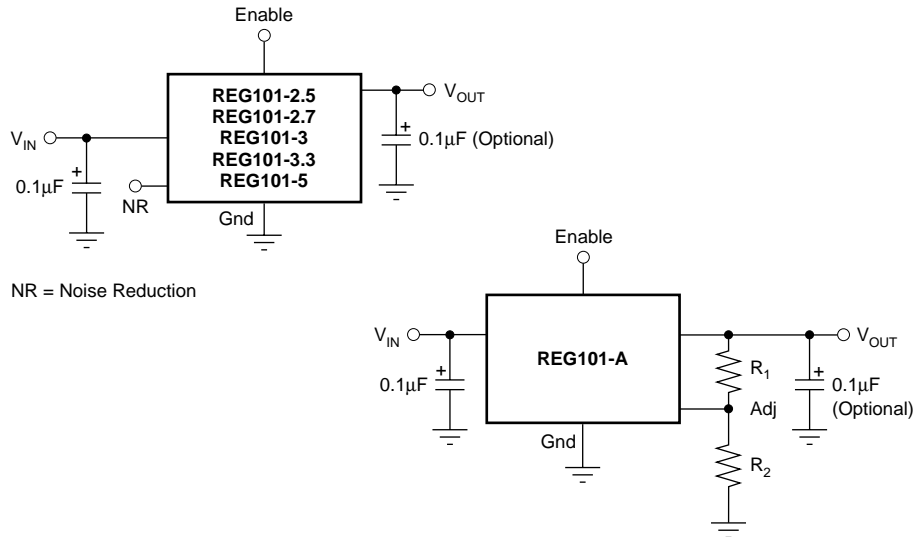
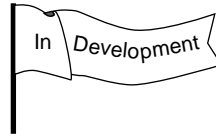
Product	Description	Output Voltage (V) typ	Output Current (mA) min	Switching Frequency Mode (kHz)	Input Voltage (V) min to max	Accuracy vs Line & Load (%) max	Quiescent Current (μA) typ	Disable Current (μA) typ	Package(s)	Lowest Grade Price (1000s)
<i>REG502-3.3</i>	<i>3.3V, 800mA Switch, Buck/Boost</i>	<i>3.3</i>	<i>350⁽¹⁾</i>	<i>150 to 700⁽²⁾, PWM</i>	<i>2.2 to 16</i>	<i>2.5</i>	<i>200</i>	<i>10</i>	<i>TSSOP-16</i>	<i>\$2.60</i>
<i>REG502-5</i>	<i>5V, 800mA Switch, Buck/Boost</i>	<i>5.0</i>	<i>350⁽¹⁾</i>	<i>150 to 700⁽²⁾, PWM</i>	<i>2.2 to 16</i>	<i>2.5</i>	<i>200</i>	<i>10</i>	<i>TSSOP-16</i>	<i>2.60</i>
<i>REG502-A</i>	<i>Adjustable, 800mA Switch, Buck/Boost</i>	<i>1.2 to 16</i>	<i>350⁽¹⁾</i>	<i>150 to 700⁽²⁾, PWM</i>	<i>2.2 to 16</i>	<i>2.5</i>	<i>200</i>	<i>10</i>	<i>TSSOP-16</i>	<i>2.60</i>

NOTES: (1) 3V to 5V boost operation. Step-down operation yields higher output currents. (2) Internal oscillator operates at 600kHz and can be synchronized to external clock.

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

REG101

100mA LOW DROPOUT REGULATOR

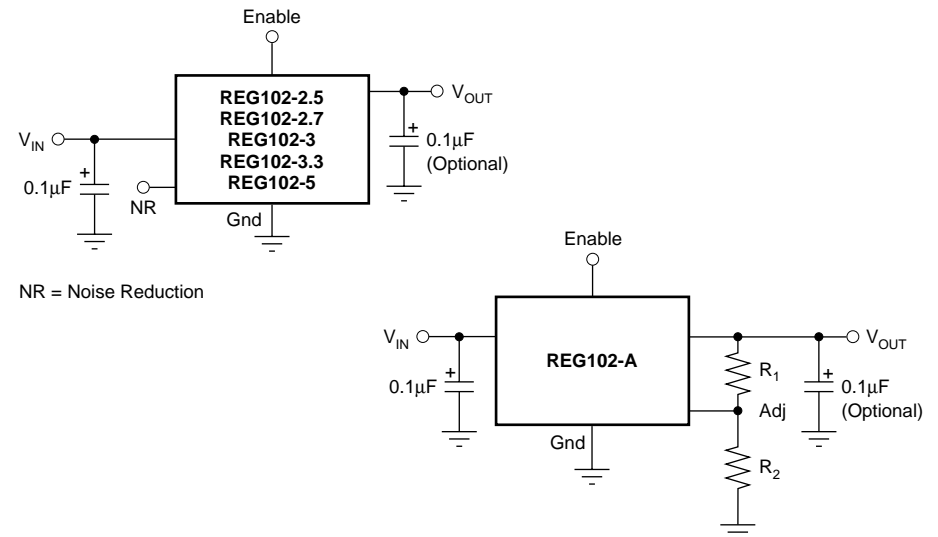
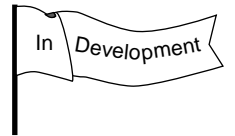


FEATURES

- **VERY LOW NOISE:**
As low as $25\mu\text{Vrms}$ at $V_{\text{OUT}} = 2.5\text{V}$, 10kHz -100kHz ($C_{\text{NR}} = 0.01\mu\text{F}$)
- **NO OUTPUT CAPACITOR REQUIRED:**
0.1µF Recommended, Not ESR Sensitive
- **HIGH ACCURACY:** $\pm 2\%$ max
- **LOW DROPOUT VOLTAGE:** 100mV max at 100mA
- **LOW QUIESCENT CURRENT:** $I_{\text{Q}} = 350\mu\text{A}$
- I_{Q} CONSTANT VERSUS LOAD CURRENT
- **SHUTDOWN MODE:** $I_{\text{Q}} = 1\mu\text{A}$
- 2.5V, 2.7V, 3.0V, 3.3V, 5.0V AND ADJUSTABLE OUTPUT VERSIONS
- UP TO 100mA OUTPUT CURRENT
- INTERNAL CURRENT LIMIT
- THERMAL PROTECTION
- SMALL SURFACE-MOUNT PACKAGES: SOT23-5 and SO-8

REG102

250mA LOW DROPOUT REGULATOR

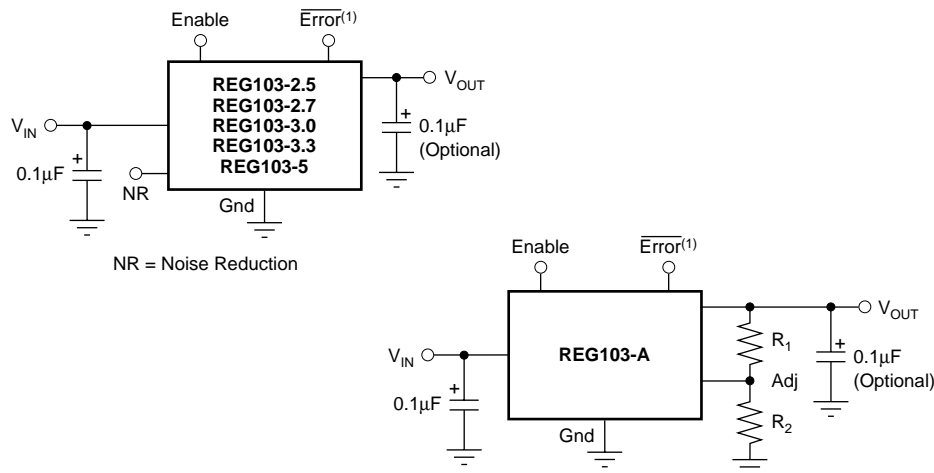
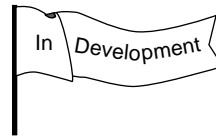


FEATURES

- **VERY LOW NOISE:**
As low as $25\mu\text{Vrms}$ at $V_{\text{OUT}} = 2.5\text{V}$, 10kHz -100kHz $35\mu\text{Vrms}$ ($C_{\text{NR}} = 0.01\mu\text{F}$)
- **NO OUTPUT CAPACITOR REQUIRED:**
0.1µF Recommended, Not ESR Sensitive
- **HIGH ACCURACY:** $\pm 2\%$ max
- **LOW DROPOUT VOLTAGE:** 250mV max at 250mA
- **LOW QUIESCENT CURRENT:** $I_{\text{Q}} = 350\mu\text{A}$
- I_{Q} CONSTANT VERSUS LOAD CURRENT
- **SHUTDOWN MODE:** $I_{\text{Q}} = 1\mu\text{A}$
- 2.5V, 2.7V, 3.0V, 3.3V, 5.0V AND ADJUSTABLE OUTPUT VERSIONS
- UP TO 250mA OUTPUT CURRENT
- INTERNAL CURRENT LIMIT
- THERMAL PROTECTION
- SMALL SURFACE-MOUNT PACKAGES: SOT23-5 and SO-8

REG103

500mA LOW DROPOUT REGULATOR

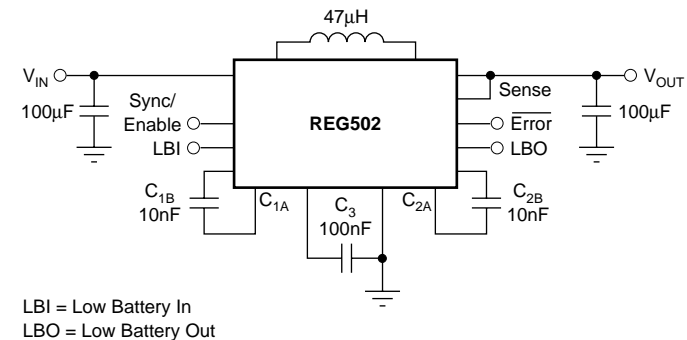
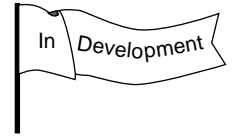


FEATURES

- **VERY LOW NOISE:**
As low as $25\mu\text{Vrms}$ at $V_{\text{OUT}} = 2.5\text{V}$, $10\text{kHz} - 100\text{kHz}$ ($C_{\text{NR}} = 0.01\mu\text{F}$)
- **NO OUTPUT CAPACITOR REQUIRED:**
 $0.1\mu\text{F}$ Recommended, Not ESR Sensitive
- **HIGH ACCURACY:** $\pm 2\%$ max
- **LOW DROPOUT VOLTAGE:** 400mV max at 500mA
- **LOW QUIESCENT CURRENT:** $I_{\text{Q}} = 350\mu\text{A}$
- I_{Q} NEARLY CONSTANT VERSUS LOAD CURRENT
- **SHUTDOWN MODE:** $I_{\text{Q}} = 1\mu\text{A}$
- **2.5V, 2.7V, 3.0V, 3.3V, 5.0V AND ADJUSTABLE OUTPUT VERSIONS**
- **UP TO 500mA OUTPUT CURRENT**
- **INTERNAL CURRENT LIMIT**
- **THERMAL PROTECTION**
- **OUTPUT VOLTAGE ERROR INDICATOR⁽¹⁾**
- **SMALL SURFACE-MOUNT PACKAGES:** SOT223-5, SO-8 AND DDPK-5

REG502

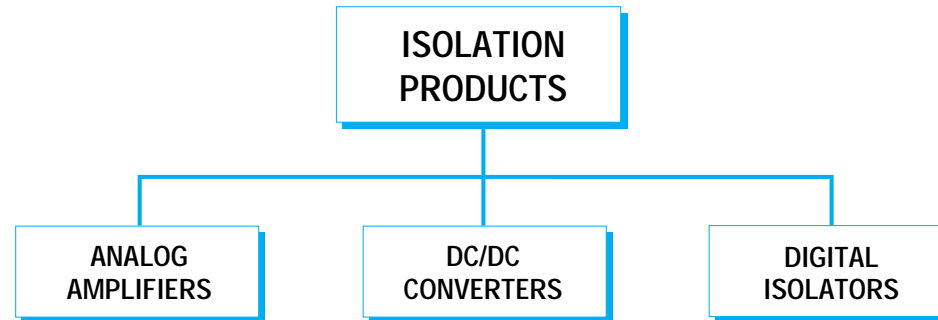
800mA BUCK/BOOST CONVERTER



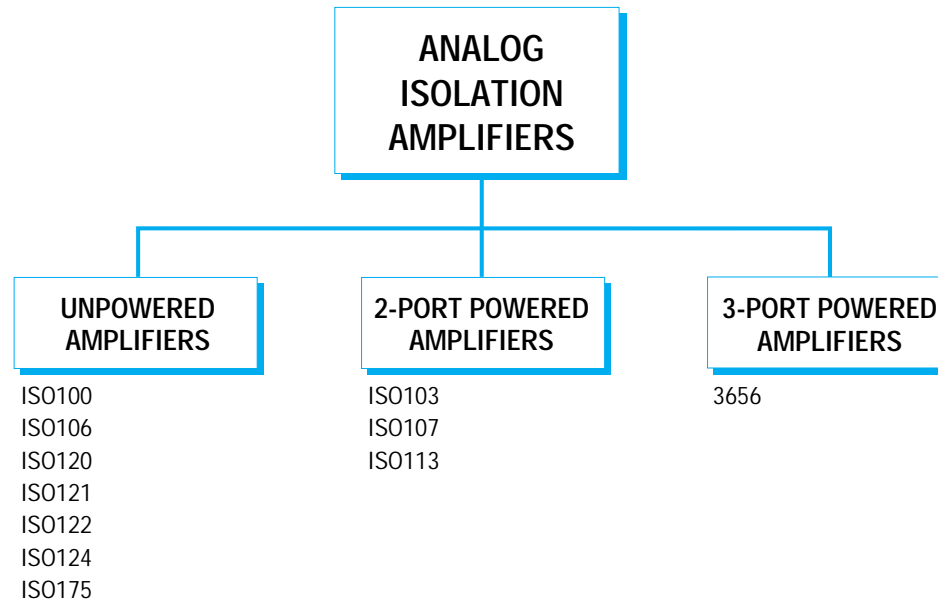
FEATURES

- **800mA MAXIMUM SWITCH CURRENT**
- **WIDE INPUT AND OUTPUT VOLTAGE RANGE:** 2.2V to 16V
- **3.3V, 5.0V AND ADJUSTABLE OUTPUT VERSIONS**
- **HIGH ACCURACY:** 2%
- **ERROR FLAG SIGNALS VALID OUTPUT VOLTAGE**
- **SEAMLESS TRANSITION BETWEEN STEP-UP AND STEP-DOWN OPERATION**
- **SYNCHRONIZABLE UP TO 700kHz**
- **LOW POWER:** $I_{\text{Q}} = 200\mu\text{A}$
- **SHUTDOWN MODE:** $I_{\text{Q}} = 10\mu\text{A}$
- **LOW BATTERY DETECTOR**
- **INTERNAL CURRENT LIMIT**
- **REVERSE CURRENT PROTECTION**
- **THERMAL SHUTDOWN**
- **THIN SURFACE MOUNT PACKAGE:** TSSOP-16

Isolation Products—Main Selection Tree



Isolation Products—Selection Tree and Guide

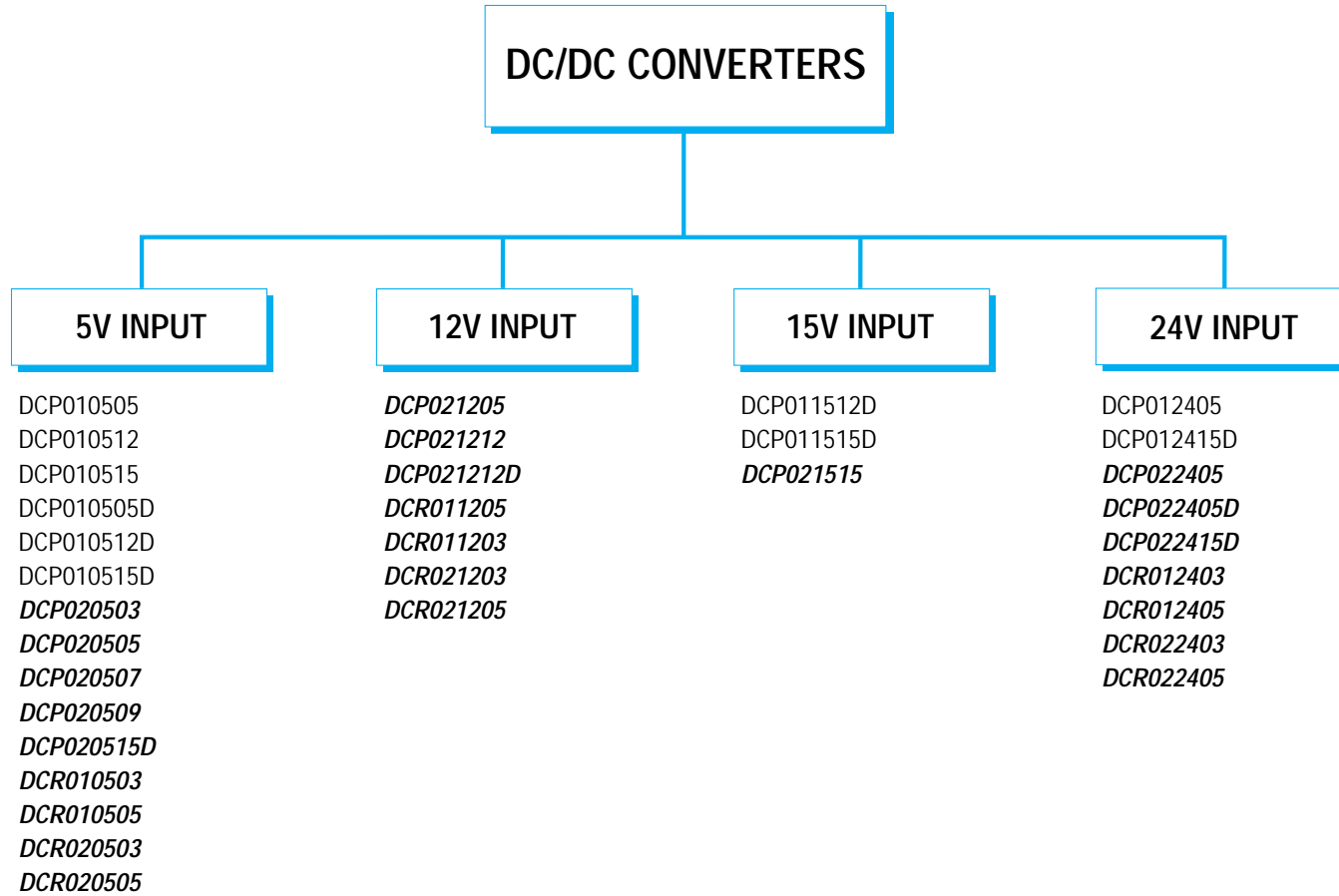


Product	Description	Isolation Voltage Cont Peak (DC) (V)	Isolation Voltage Pulse/Test Peak (V)	Isolation Mode Rejection 60Hz (dB) typ	Leakage Current at 240V/60Hz (μ Arms) max	Gain Non-Linearity (%) max	Input Offset Voltage Drift (\pm μ V) max	Bias Current (nA) max	Small-Signal Bandwidth (kHz) typ	Temp Range ⁽¹⁾	Lowest Grade Price (1000s)
ISO100	Low Drift Wide BW	750	2500	108 ⁽²⁾	0.3	0.07	2 ⁽²⁾	10	60	Ind	\$47.64
ISO103	1500Vrms Isolated Input Power, Buffer, 2 Port	2121	5657	130	2.0	\pm 0.025	250	—	20	Ind	63.10
ISO106	3500Vrms Isolation, Buffer	4950	8000	130	1.0	\pm 0.025	250	—	70	Ind ⁽³⁾	34.41
ISO107	2500Vrms Isolated Input Power, Buffer, 2 Port	3500	8000	100	2.0	\pm 0.025	400	—	20	Ind	82.00
ISO113	1500Vrms Isolated Output Power, Buffer, 2 Port	2121	5657	130	2.0	\pm 0.02	250	—	20	Ind	60.00
ISO120	1500Vrms Isolation, Buffer	2121	2500 ⁽⁴⁾	115	0.5	\pm 0.01	150	—	60	Mil ⁽³⁾	22.43
ISO121	3500Vrms Isolation, Buffer	4950	5600 ⁽⁴⁾	115	0.5	\pm 0.01	150	—	60	Ind	29.58
ISO122	1500Vrms Isolation, Buffer	2121	2400 ⁽⁴⁾	140	0.5	\pm 0.02	200*	—	50	Ind	9.25
ISO124	1500Vrms Isolation, Buffer	2121	2400 ⁽⁴⁾	140	0.5	\pm 0.01	200*	—	50	Ind	6.95
ISO175	Isolated Instrumentation Amplifier	2121	2500	115	0.8	\pm 0.104	\pm (1+520/G)	—	60	Ind	10.65
3656	High Isolation Voltage, 3 Port	3500	8000	125	0.5 ⁽²⁾	\pm 0.05	(5+ 350/G ₁)	100	30	Ind	83.93

NOTES: All packages are DIPs except ISO130 and ISO122, which are also available in surface mount. (1) Ind = -25°C to +85°C, XInd = -40°C to +85°C, Mil = -55°C to +125°C. (2) R_{IN} = 10k Ω . (3) Hermetic. (4) Partial discharge test voltage.

* Denotes typical. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Isolation Products—Selection Tree



BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Isolation Products—Selection Guide

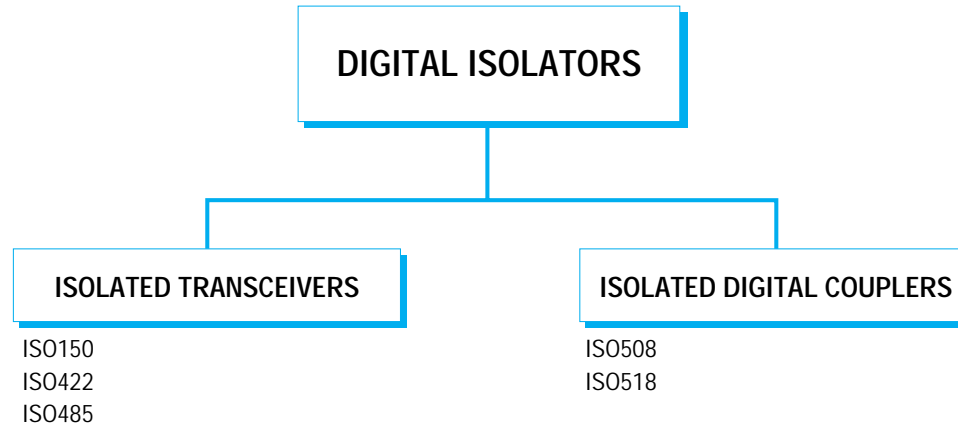
DC/DC Converters

Product	Description	Isolation Voltage Cont Peak (V)	Isolation Voltage Pulse/Test Peak (V)	Input Voltage (VDC) min	Input Voltage (VDC) max	Output Voltage at 75% Load (VDC)	Current, Balanced Loads on All Outputs, Rated (mA)	Output Sensitivity to Input Change (%/‰ of V_{IN})	Temp Range ⁽¹⁾	Efficiency, Full Load (%)	W/cm ³ Power Density ⁽²⁾	MTBF $T_A = 25^\circ\text{C}$, Life Test (Million Hours)	Package(s)	Lowest Grade Price (1000s)
DCP010505	1W, Isolated, 5V _{IN} , 5V _{OUT}	N/A	1400	4.5	5.5	5	200	1	Xlnd	71	2	108	DIP-14, Gull Wing	\$5.01
DCP010512	1W, Isolated, 5V _{IN} , 12V _{OUT}	N/A	1400	4.5	5.5	12	83	1	Xlnd	72	2	108	DIP-14, Gull Wing	5.01
DCP010515	1W, Isolated, 5V _{IN} , 15V _{OUT}	N/A	1400	4.5	5.5	15	67	1	Xlnd	73	2	108	DIP-14, Gull Wing	5.01
DCP010505D	1W, Isolated, 5V _{IN} , ±5V _{OUT}	N/A	1400	4.5	5.5	±5	±100	1	Xlnd	66	2	108	DIP-14, Gull Wing	5.51
DCP010512D	1W, Isolated, 5V _{IN} , ±12V _{OUT}	N/A	1400	4.5	5.5	±12	±41	1	Xlnd	72	2	108	DIP-14, Gull Wing	5.51
DCP010515D	1W, Isolated, 5V _{IN} , ±15V _{OUT}	N/A	1400	4.5	5.5	±15	±33	1	Xlnd	75	2	108	DIP-14, Gull Wing	5.51
DCP012405	1W, Isolated, 24V _{IN} , 5V _{OUT}	N/A	1400	21.6	26.4	5	200	1	Xlnd	65	2	93	DIP-14, Gull Wing	5.01
DCP012415D	1W, Isolated, 24V _{IN} , ±15V _{OUT}	N/A	1400	21.6	26.4	±15	±33	1	Xlnd	75	2	93	DIP-14, Gull Wing	5.51
DCR010503	1W, Isolated, 5V_{IN}, 3.3V_{OUT}, Regulated	N/A	1400	4.5	5.5	3.3	300	0.05	Ind	TBD	1.3	TBD	DIP-18	5.90
DCR010505	1W, Isolated, 5V_{IN}, 5V_{OUT}, Regulated	N/A	1400	4.5	5.5	5	200	0.05	Ind	TBD	1.3	TBD	DIP-18	5.90
DCR011203	1W, Isolated, 12V_{IN}, 3.3V_{OUT}, Regulated	N/A	1400	10.8	13.2	3.3	300	0.05	Ind	TBD	1.3	TBD	DIP-18	5.90
DCR011205	1W, Isolated, 12V_{IN}, 5V_{OUT}, Regulated	N/A	1400	10.8	13.2	5	200	0.05	Ind	TBD	1.3	TBD	DIP-18	5.90
DCR012403	1W, Isolated, 24V_{IN}, 3.3V_{OUT}, Regulated	N/A	1400	21.6	26.4	3.3	300	0.05	Ind	TBD	1.3	TBD	DIP-18	5.90
DCR012405	1W, Isolated, 24V_{IN}, 5V_{OUT}, Regulated	N/A	1400	21.6	26.4	5	200	0.05	Ind	TBD	1.3	TBD	DIP-18	5.90
DCP020503	2W, Isolated, 5V_{IN}, 3.3V_{OUT}	N/A	1400	4.5	5.5	3.3	600	1	Ind	TBD	4.8, 6.5	TBD	DIP-14, SO-28	6.90
DCP020505	2W, Isolated, 5V_{IN}, 5V_{OUT}	N/A	1400	4.5	5.5	5	200	1	Ind	TBD	4.8, 6.5	TBD	DIP-14, SO-28	6.90
DCP020507	2W, Isolated, 5V_{IN}, 7V_{OUT}	N/A	1400	4.5	5.5	7	285	1	Ind	TBD	4.8, 6.5	TBD	DIP-14, SO-28	6.90
DCP020509	2W, Isolated, 5V_{IN}, 9V_{OUT}	N/A	1400	4.5	5.5	9	222	1	Ind	TBD	4.8, 6.5	TBD	DIP-14, SO-28	6.90
DCP020515D	2W, Isolated, 5V_{IN}, 15V_{OUT}	N/A	1400	4.5	5.5	±15	±67	1	Ind	TBD	4.8, 6.5	TBD	DIP-14, SO-28	7.40
DCP021205	2W, Isolated, 12V_{IN}, 5V_{OUT}	N/A	1400	10.8	13.2	5	400	1	Ind	TBD	4.8, 6.5	TBD	DIP-14, SO-28	6.90
DCP021212	2W, Isolated, 12V_{IN}, 12V_{OUT}	N/A	1400	10.8	13.2	12	166	1	Ind	TBD	4.8, 6.5	TBD	DIP-14, SO-28	6.90
DCP021212D	2W, Isolated, 12V_{IN}, ±12V_{OUT}	N/A	1400	10.8	13.2	±12	±83	1	Ind	TBD	4.8, 6.5	TBD	DIP-14, SO-28	7.40
DCP022405	2W, Isolated, 24V_{IN}, 5V_{OUT}	N/A	1400	21.6	26.4	5	400	1	Ind	TBD	4.8, 6.5	TBD	DIP-14, SO-28	6.90
DCP022405D	2W, Isolated, 24V_{IN}, ±5V_{OUT}	N/A	1400	21.6	26.6	±5	±200	1	Ind	TBD	4.8, 6.5	TBD	DIP-14, SO-28	4.40
DCP021515	2W, Isolated, 15V_{IN}, 15V_{OUT}	N/A	1400	13.5	16.5	15	133	1	Ind	TBD	4.8, 6.5	TBD	DIP-14, SO-28	6.90
DCP022415D	2W, Isolated, 24V_{IN}, ±15V_{OUT}	N/A	1400	21.6	26.4	±15	±67	1	Ind	TBD	4.8, 6.5	TBD	DIP-14, SO-28	7.40
DCR020503	2W, Isolated, 5V_{IN}, 3.3V_{OUT}, Regulated	N/A	1400	4.5	5.5	3.3	540	0.05	Ind	TBD	2.6	TBD	DIP-18	7.90
DCR020505	2W, Isolated, 5V_{IN}, 5V_{OUT}, Regulated	N/A	1400	4.5	5.5	5	370	0.05	Ind	TBD	2.6	TBD	DIP-18	6.90
DCR021203	2W, Isolated, 12V_{IN}, 3.3V_{OUT}, Regulated	N/A	1400	10.8	13.2	3.3	540	0.05	Ind	TBD	2.6	TBD	DIP-18	7.90
DCR021205	2W, Isolated, 12V_{IN}, 5V_{OUT}, Regulated	N/A	1400	10.8	13.2	5	370	0.05	Ind	TBD	2.6	TBD	DIP-18	7.90
DCR022403	2W, Isolated, 24V_{IN}, 3.3V_{OUT}, Regulated	N/A	1400	21.6	26.4	3.3	540	0.05	Ind	TBD	2.6	TBD	DIP-18	7.90
DCR022405	2W, Isolated, 24V_{IN}, 5V_{OUT}, Regulated	N/A	1400	21.6	26.4	5	370	0.05	Ind	TBD	2.6	TBD	DIP-18	7.90

NOTE: (1) Xlnd = -40°C to +100°C. (2) Calculated figure not in product data sheet.

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Isolation Products—Selection Tree and Guide



Product	Description	Isolation Voltage Cont Peak (Vrms)	Isolation Voltage Pulse/Test (Vrms)	Leakage Current at 240VAC 60Hz (µA)	Data Rate (Mbd)*	Power Consumption per Channel (mW) max	Ext Power Req	Temp Range ⁽¹⁾	Package(s)	Lowest Grade Price (1000s)
ISO150	2-Channel Isolated Digital Coupler	1500	2400 ⁽²⁾	0.6	80	25	Yes	XInd	DIP-24, SOIC-28	\$7.38
ISO422	Isolated RS-422 Transceiver	1500	2400	2	2.5	150	Yes	XInd	DIP-24, Gull Wing	6.00
ISO485	RS-485 Transceiver	1500	2400	0.6	20	180 at 5MBit/s	Yes	XInd	DIP-24	8.09
ISO508	Unidirectional, 8-Channel Isolated Digital Coupler	1500	2400	1	16 ⁽³⁾	12.5*	Yes	XInd	DIP-24, Gull Wing	8.19
ISO518	Bidirectional, 8-Channel Isolated Digital Coupler	1500	2400	1	8 ⁽⁴⁾	12.5*	Yes	XInd	DIP-24, Gull Wing	8.65

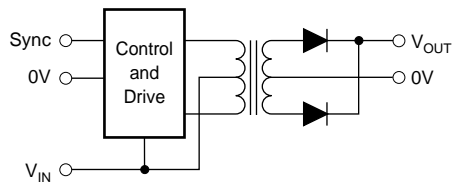
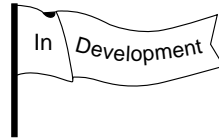
NOTES: (1) XInd = -40°C to +85°C. (2) Partial discharge test voltage, AC Vrms. (3) Asynchronous mode, 8 bits wide x 2M transfers/sec. (4) Synchronous mode, 8 bits wide, half-duplex rate.

* Denotes Typical. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Isolation Products—New Products

DCP02

2W, Unregulated, Isolated
DC/DC CONVERTER

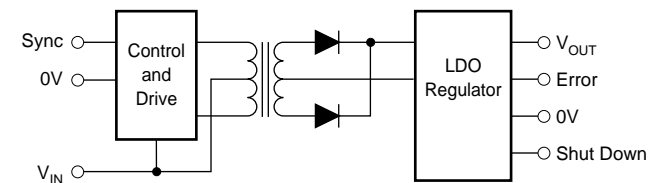
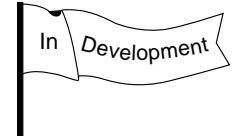


FEATURES

- 106W/in³ (6.5W/cm³) POWER DENSITY
- THERMAL SHUTDOWN
- SYNC AND REMOTE SHUTDOWN
- CLASS 'B' EMC
- 5, 12, 15, 24V INPUTS
- 3.3, 5, +5, 7, 9, 12, ± 12 , 15, ± 15 V OUTPUTS
- DIP-14 AND SO-28 PACKAGES

DCR01

1W, Regulated, Isolated
DC/DC CONVERTER



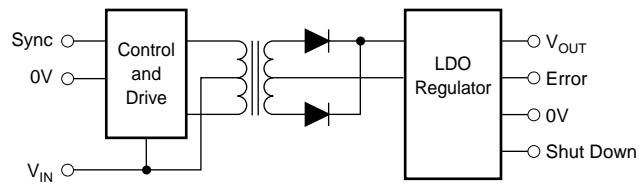
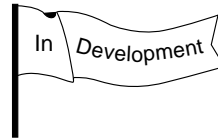
FEATURES

- LOWEST PROFILE REGULATED DC/DC CONVERTER
- 21W/in³ (1.3W/cm³) POWER DENSITY
- SYNCHRONIZABLE
- ISOLATED AND NON-ISOLATED REMOTE SHUTDOWN
- CLASS 'B' EMC
- 5, 12, 24V INPUTS
- 3.3V, 5V OUTPUTS
- DIP-18 PACKAGES

Isolation Products—New Products

DCR02

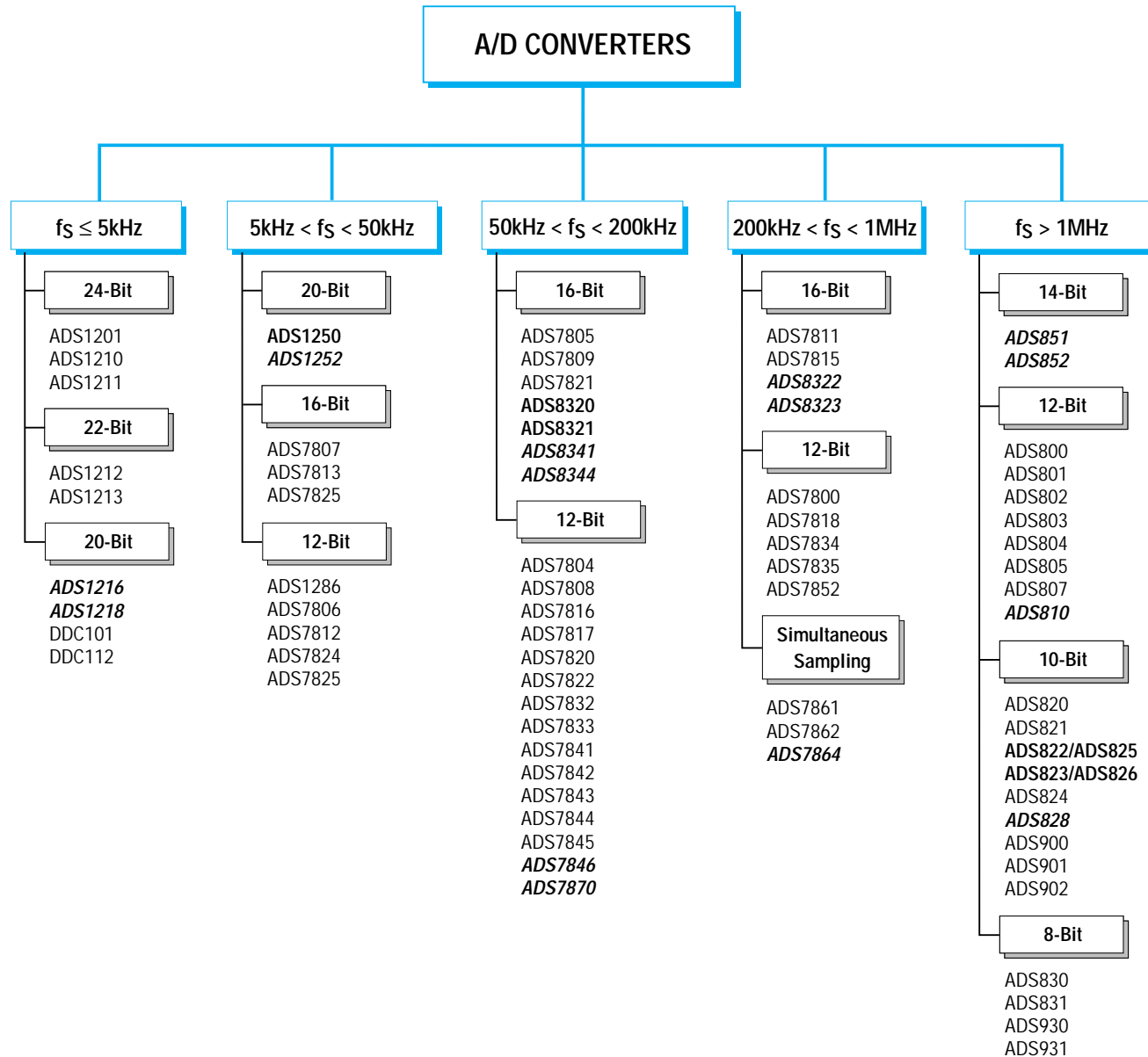
2W, Regulated, Isolated
DC/DC CONVERTER



FEATURES

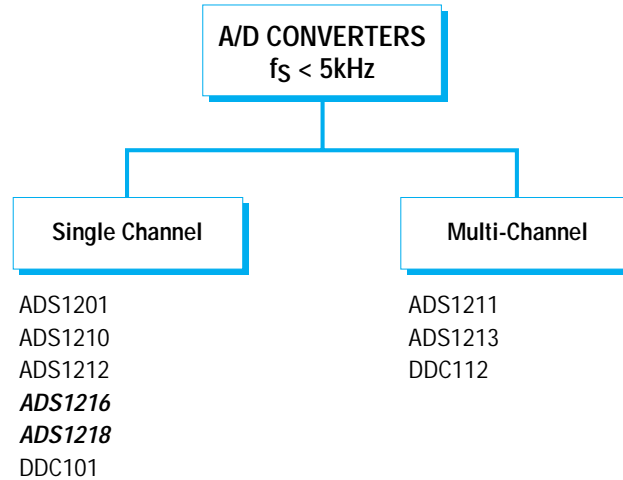
- LOWEST PROFILE REGULATED DC/DC CONVERTER
- 43W/in³ (2.6W/cm³) POWER DENSITY
- SYNCHRONIZABLE
- ISOLATED AND NON-ISOLATED REMOTE SHUTDOWN
- CLASS 'B' EMC
- 5, 12, 24V INPUTS
- 3.3V, 5V OUTPUTS
- DIP-18 PACKAGES

Analog-to-Digital Converters—Main Selection Tree



BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Analog-to-Digital Converters—Selection Tree and Guide

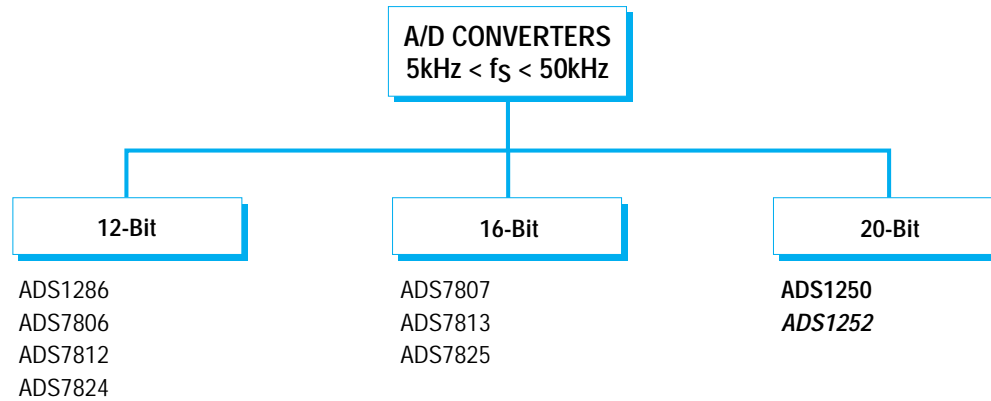


Product	Description	Bits	Sample Rate (kHz)	Number of Channels	Interface	Type	Linearity (%)	NMC ⁽¹⁾ (Bits)	SINAD (dB)	Power (mW)	Package(s)	Lowest Grade Price (1000s)
ADS1201	High Dynamic Range, 24-Bit Modulator	24	0.01	1 Diff	Modulator	$\Delta\Sigma$	± 0.0015	24	—	10	DIP-24, SO-24, SSOP-28	\$5.76
ADS1210	24-Bit, Single Channel	24	0.01	1 Diff	Serial	$\Delta\Sigma$	± 0.0015	24	—	60	DIP-18, SO-18	9.60
ADS1211	24-Bit, 4-Channel	24	0.01	4 Diff	Serial	$\Delta\Sigma$	± 0.0015	24	—	60	DIP-24, SO-24, SSOP-28	10.52
ADS1212	22-Bit, Single Channel	22	0.01	1 Diff	Serial	$\Delta\Sigma$	± 0.0015	22	—	1.4	DIP-18, SO-18	7.25
ADS1213	22-Bit, 4-Channel	22	0.01	4 Diff	Serial	$\Delta\Sigma$	± 0.0015	22	—	1.4	DIP-24, SO-24, SSOP-28	8.50
ADS1216	20-Bit, 8-Channel, w/IDACs	20	0.06	4 Diff, 8 SE	Serial	$\Delta\Sigma$	± 0.0015	20	—	10	TQFP-48	6.55
ADS1218	20-Bit, 8-Channel, w/IDACs, Memory	20	0.06	4 Diff, 8 SE	Serial	$\Delta\Sigma$	± 0.0015	20	—	10	TQFP-48	7.95
DDC101	20-Bit, 15kHz, Current Input	20	15	1 Lin	Serial	$\Delta\Sigma$	± 0.0015	20	—	100	SO-24	18.99
DDC112	20-Bit, 2kHz/Channel Current Input	20	2kHz/ch	2 Lin	Serial	$\Delta\Sigma$	± 0.0015	20	—	180	SO-28	11.50

NOTE: (1) NMC = No Missing Codes.

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Analog-to-Digital Converters—Selection Tree and Guide

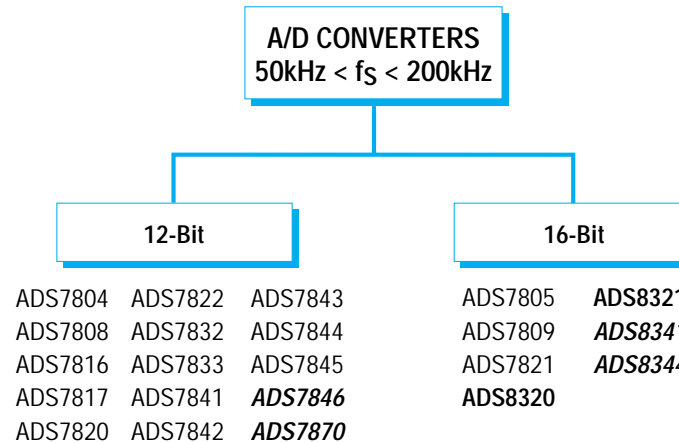


Product	Description	Bits	Sample Rate (kHz)	Number of Channels	Interface	Type	Linearity (%)	NMC ⁽¹⁾ (Bits)	SINAD (dB)	Power (mW)	Package(s)	Lowest Grade Price (1000s)
ADS1250	20-Bit, 25kHz, DSP Interface	20	25	1 Diff	Serial	$\Delta\Sigma$	± 0.003	20	—	80	SOIC-16	\$6.55
ADS1252	20-Bit, 25kHz, μ Packages	20	25	1 Diff	Serial	$\Delta\Sigma$	± 0.003	20	—	45	SO-8	6.55
ADS7807	16-Bit, 40kHz, Complete	16	40	1 SE	Parallel/Serial	SAR	± 0.0022	16	86	35	DIP-28, SO-28	25.75
ADS7813	16-Bit, 16-Pin, Complete	16	40	1 SE	Serial	SAR	± 0.003	16	87	35	DIP-16, SO-16	20.00
ADS7825	4-Channel, 16-Bit	16	40	4 SE	Parallel/Serial	SAR	± 0.003	16	86	50	DIP-28, SO-28	28.46
ADS7806	12-Bit, 40kHz, Complete	12	40	1 SE	Parallel/Serial	SAR	± 0.012	12	72	35	DIP-28, SO-28	9.47
ADS7812	12-Bit, 16-Pin, Complete	12	40	1 SE	Serial	SAR	± 0.012	12	72	35	DIP-16, SO-16	9.25
ADS7824	4-Channel, 12-Bit	12	40	4 SE	Parallel/Serial	SAR	± 0.012	12	72	50	DIP-28, SO-28	12.30
ADS1286	12-Bit, 20kHz	12	20	1 Diff	Serial	SAR	± 0.024	12	72	3.5	DIP-8, SO-8	2.95

NOTE: (1) NMC = No Missing Codes.

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Analog-to-Digital Converters—Selection Tree and Guide

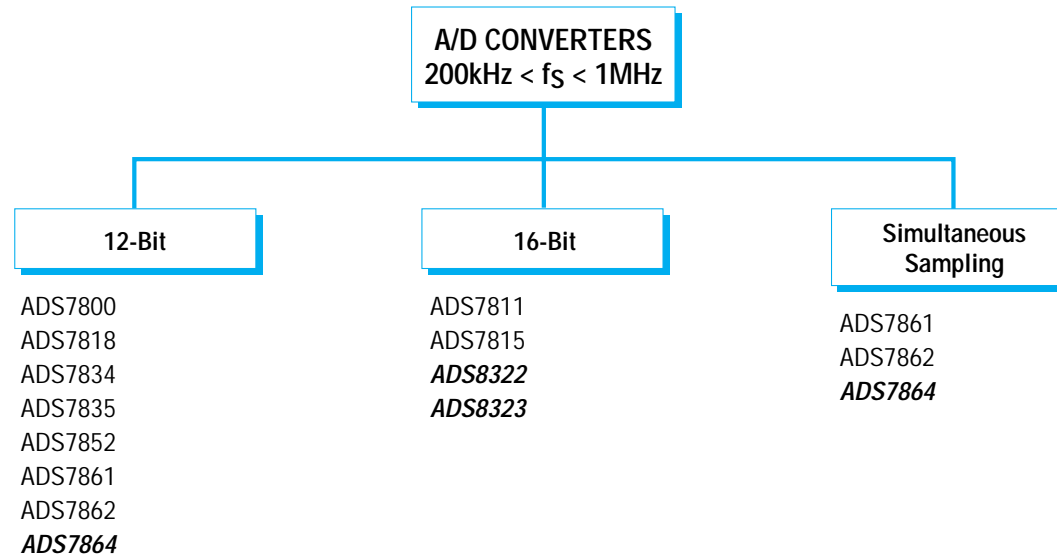


Product	Description	Bits	Sample Rate (kHz)	Number of Channels	Interface	Type	Linearity (%)	NMC ⁽¹⁾ (Bits)	SINAD (dB)	Power (mW)	Package(s)	Lowest Grade Price (1000s)
ADS7805	16-Bit, 100kHz, Complete	16	100	1 SE	Parallel	SAR	0.0045	16	86	100	DIP-28, SO-28	\$20.50
ADS7809	16-Bit, 100kHz, Serial	16	100	1 SE	Serial	SAR	0.0030	16	86	100	DIP-20, SO-20	20.50
ADS7821	16-Bit, 100kHz, 0-5V Input	16	100	1 SE	Parallel	SAR	0.0045	16	86	100	DIP-28, SO-28	27.47
ADS8320	16-Bit, 8-Pin, Unipolar	16	100	1 Diff	Serial	SAR	0.012	15	84	10	MSOP-8	6.25
ADS8321	16-Bit, 8-Pin, Bipolar	16	100	1 Diff	Serial	SAR	0.012	15	84	10	MSOP-8	6.25
ADS8341	16-Bit, 4-Ch, Serial	16	100	4 SE/2 Diff	Serial	SAR	0.012	15	84	5	SSOP-16	7.00
ADS8344	16-Bit, 8-Ch, Serial	16	100	8 SE/4 Diff	Serial	SAR	0.012	15	84	5	SSOP-20	7.75
ADS7816	12-Bit, 200kHz, 8-Pin	12	200	1 SE	Serial	SAR	0.0240	12	72	3.5	DIP-8, SO-8, MSOP-8	3.45
ADS7817	12-Bit, 200kHz, 8-Pin, Bipolar	12	200	1 SE	Serial	SAR	0.0240	12	71	4	DIP-8, SO-8, MSOP-8	3.95
ADS7841	4-Channel, 12-Bit, Serial	12	200	4 SE/2 Diff	Serial	SAR	0.0240	12	70	3.5	DIP-16, SSOP-16	5.59
ADS7842	4-Channel, 12-Bit, Parallel	12	200	4 SE	Parallel	SAR	0.0240	12	70	3.5	SSOP-28	6.21
ADS7844	8-Channel, 12-Bit, Serial	12	200	8 SE/4 Diff	Serial	SAR	0.0240	12	70	3.5	QSOP-20	3.98
ADS7833	12-Bit, Simultaneous Sampling	12	150	10 Diff	Serial	SAR	0.0480	12	72	125	PLCC-68	31.64
ADS7843	4-Wire Touch-Screen Controller	12	125	2 SE	Serial	SAR	0.0480	11	—	3.5	SSOP-16	3.95
ADS7845	5-Wire Touch-Screen Controller	12	125	2 SE	Serial	SAR	0.0480	11	—	3.5	SSOP-16	3.95
ADS7846	Touch Scr. Contr. w/Ref	12	125	2 SE	Serial	SAR	0.0480	12	—	1.8	SSOP-16	4.97
ADS7832	4-Channel, Autocal, 12-Bit	12	117	4 SE	Parallel	SAR	0.0180	12	69	7.5	DIP-28, PLCC-28	16.00
ADS7804	12-Bit, 100kHz, Complete	12	100	1 SE	Parallel	SAR	0.0120	12	72	100	DIP-28, SO-28	11.00
ADS7808	12-Bit, 100kHz, Serial	12	100	1 SE	Serial	SAR	0.0120	12	72	100	DIP-20, SO-20	9.95
ADS7820	12-Bit, 100kHz, 0-5V Input	12	100	1 SE	Parallel	SAR	0.0120	12	72	100	DIP-28, SO-28	10.25
ADS7822	12-Bit, Low Power, 8-Pin	12	75	1 Diff	Serial	SAR	0.0180	12	71	1.625	DIP-8, SO-8, MSOP-8	3.15
ADS7870	12-Bit, Data Acquisition System	12	50	8 SE/4 Diff	Serial	SAR	0.024	12	70	6.5	SSOP-28	3.90

NOTE: (1) NMC = No Missing Codes.

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Analog-to-Digital Converters—Selection Tree and Guide

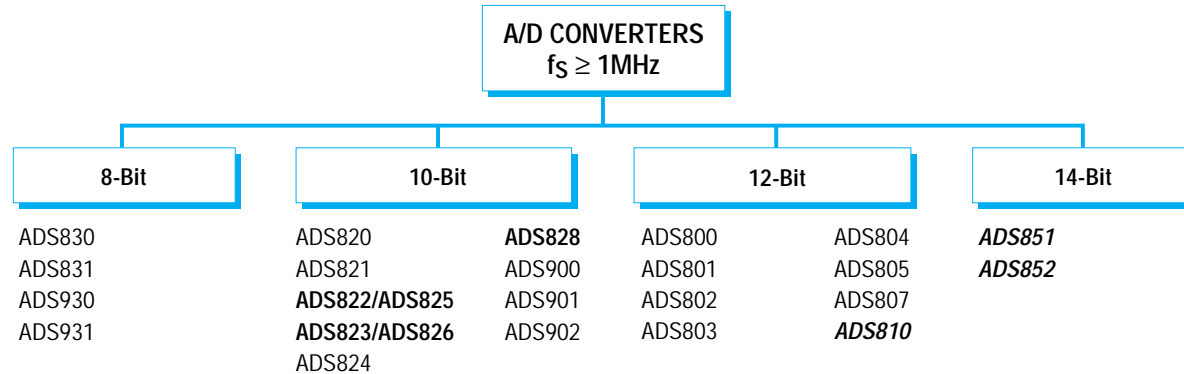


Product	Description	Bits	Sample Rate (kHz)	Number of Channels	Interface	Type	Linearity (%)	NMC ⁽¹⁾ (Bits)	SINAD (dB)	Power (mW)	Package(s)	Lowest Grade Price (1000s)
ADS8322	16-Bit, 500kHz, Int Ref, Unipolar	16	500	1 Diff	Parallel	SAR	±0.0045	16	86	85	TQFP-32	\$7.50
ADS8323	16-Bit, 500kHz, Int Ref, Bipolar	16	500	1 Diff	Parallel	SAR	±0.0045	16	86	85	TQFP-32	7.50
ADS7811	16-Bit, 250kHz, (DC Specs)	16	250	1 SE	Parallel	SAR	±0.006	15	84	250	SO-28	34.75
ADS7815	16-Bit, 250kHz, Parallel	16	250	1 SE	Parallel	SAR	±0.006 (typ)	15	84	250	SO-28	20.00
ADS7818	12-Bit, 500kHz, Int Ref, 0 to 2 • V _{REF} Input	12	500	1 Diff	Serial	SAR	±0.024	12	70	15	DIP-8, MSOP-8	5.60
ADS7834	12-Bit, 500kHz, Int Ref, 0 to V _{REF} Input	12	500	1 Diff	Serial	SAR	±0.024	12	70	15	DIP-8, MSOP-8	5.60
ADS7835	12-Bit, 500kHz, Int Ref, ±V _{REF} Input	12	500	1 Diff	Serial	SAR	±0.024	12	70	15	MSOP-8	6.25
ADS7852	8-Channel, 12-Bit, Int Ref	12	500	8 SE	Parallel	SAR	±0.024	12	70	20	TQFP-32	7.15
ADS7861	12-Bit, Simultaneous Sample, Serial	12	500	4 Diff	Serial	SAR	±0.024	12	70	20	SSOP-24	6.35
ADS7862	12-Bit, Simultaneous Sample, Parallel	12	500	4 Diff	Parallel	SAR	±0.024	12	70	20	TQFP-32	7.55
ADS7864	6-Channel, Simultaneous Sample	12	500	6 Diff	Parallel	SAR	±0.024	12	70	50	TQFP-48	6.75
ADS7800	12-Bit, 333kHz, Parallel	12	333	1 SE	Parallel	SAR	±0.012	12	69	215	DIP-24, SO-24, Ceramic-24	23.95

NOTE: (1) NMC = No Missing Codes.

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Analog-to-Digital Converters—Selection Tree and Guide



Product	Description	Bits	Sample Rate (MSPS)	Power (mW)	V _S (V)	SNR (dB)	SFDR at f _{IN} (dBFS) (MHz)	FPBW (MHz)	Serial or Parallel	Input ⁽¹⁾	Package(s)	Lowest Grade Price (1000s)
ADS852	Sampling, High Dynamic Range	14	65	650	+5	75	100 at 20	1000	P	SE/Diff	TQFP-48	\$39.00
ADS851	Sampling, High Dynamic Range	14	40	400	+5	75	100 at 20	1000	P	SE/Diff	TQFP-48	29.00
ADS810	Sampling, High Dynamic Range	12	100	650	+5	66	80 at 20	1000	P	SE/Diff	TQFP-48	19.95
ADS807	Sampling, Int/Ext Reference Option	12	53	335	+5	69	81 at 10	270	P	SE/Diff	SSOP-28	17.95
ADS800	Sampling, Int Reference	12	40	390	+5	62	61 at 12	65	P	Diff	SO-28, SSOP-28	29.95
ADS801	Sampling, Int Reference	12	25	270	+5	61	61 at 12	65	P	Diff	SO-28, SSOP-28	20.55
ADS805	Sampling, Int/Ext Reference Option	12	20	300	+5	67	77 at 8	270	P	SE/Diff	SO-28	15.35
ADS802	Sampling, Int Reference	12	10	250	+5	66	67 at 5	65	P	Diff	SO-28, SSOP-28	12.25
ADS804	Sampling, Int/Ext Reference Option	12	10	180	+5	69	80 at 4.8	270	P	SE/Diff	SO-28	9.95
ADS803	Sampling, Int/Ext Reference Option	12	5	116	+5	69	82 at 2	270	P	SE/Diff	SO-28	6.95
ADS828	Sampling, Int/Ext Reference Option	10	75	315	+5	58	68 at 10	300	P	SE/Diff	SSOP-28	9.75
ADS824	Sampling, Int/Ext Reference Option	10	70	315	+5	58	68 at 20	300	P	SE/Diff	SSOP-28	8.80
ADS823/ADS826	Sampling, Int/Ext Reference Option	10	60	265	+5	60	74 at 10	300	P	SE/Diff	SSOP-28	8.45
ADS821	Sampling, Int Reference	10	40	380	+5	58	63 at 12	65	P	Diff	SO-28, SSOP-28	12.25
ADS822/ADS825	Sampling, Int/Ext Reference Option	10	40	190	+5	60	66 at 10	300	P	SE/Diff	SSOP-28	4.90
ADS902	Sampling, Ext Reference	10	30	140	+5	58	58 at 12	100	P	SE	SSOP	5.45
ADS900	Sampling, Int Reference, Low Power	10	20	52	+2.7	50	53 at 10	100	P	SE	SSOP-28	3.95
ADS901	Sampling, Ext Reference, Low Power	10	20	48	+2.7	54	51 at 9	100	P	SE	SSOP-28	3.85
ADS820	Sampling, Int Reference	10	20	195	+5	60	63 at 10	65	P	Diff	SO-28, SSOP-28	6.36
ADS831	Sampling, Int/Ext Reference Option	8	80	265	+5	49	65 at 10	300	P	SE	SSOP-20	4.95
ADS830	Sampling, Int/Ext Reference Option	8	60	180	+5	49	65 at 10	300	P	SE	SSOP-20	3.95
ADS930	Sampling, Int Reference	8	30	66	+2.7 to +5.25	46	51 at 12	100	P	SE	SSOP-28	2.15
ADS931	Sampling, Ext Reference	8	30	63	+2.7 to +5.25	48	49 at 12	100	P	SE	SSOP-28	2.25

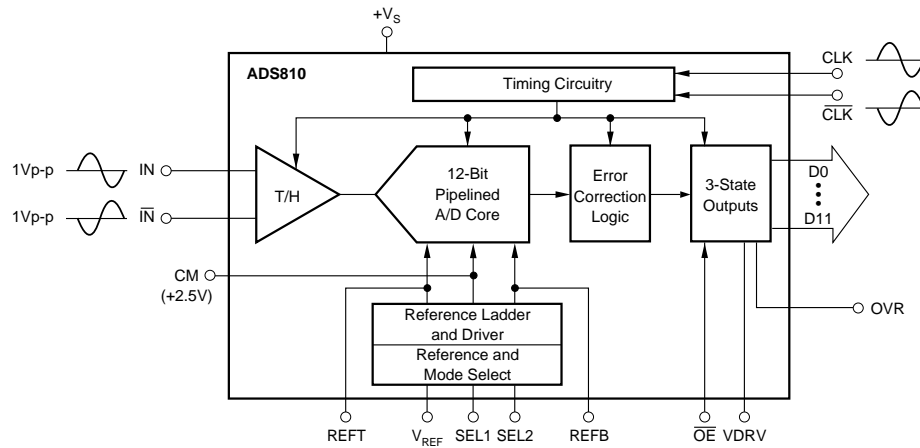
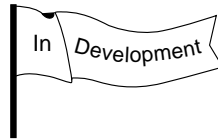
NOTE: (1) SE indicates single-ended input, Diff indicates differential input.

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Analog-to-Digital Converters—New Products

ADS810

SpeedPlus 12-Bit, 100MHz Sampling
ANALOG-TO-DIGITAL CONVERTER

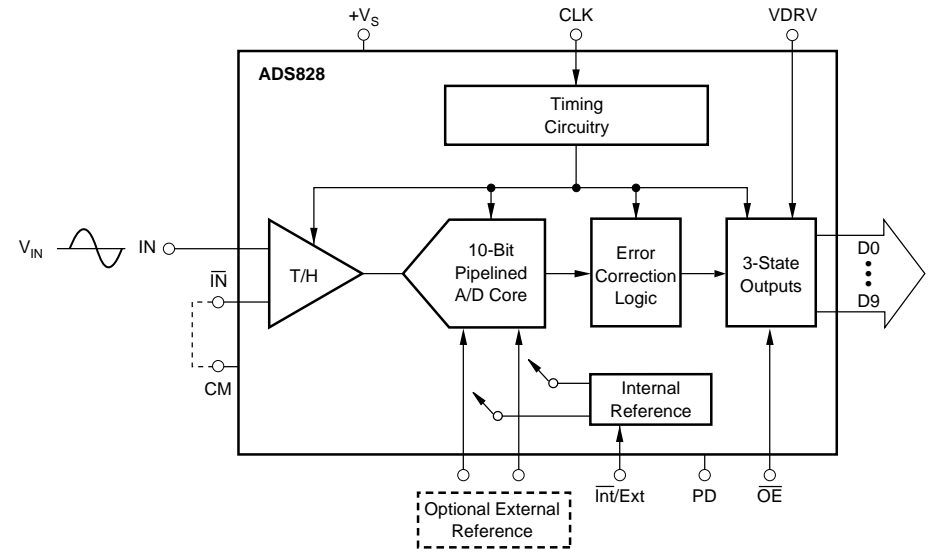
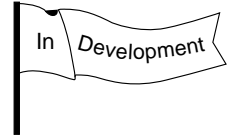


FEATURES

- **HIGH DYNAMIC RANGE:**
High SFDR: 80dB at 20MHz f_{IN}
High SNR: 66dB at 20MHz f_{IN}
- **PREMIUM TRACK/HOLD:**
High Bandwidth: 1GHz
Low Jitter: 0.25ps rms
Differential or Single-Ended Inputs
Selectable Full-Scale Input Range
- **FLEXIBLE CLOCKING:**
Differential or Single-Ended
Accepts Sine or Square Wave Clocking Down to 0.5Vp-p
Variable Threshold Level

ADS828

SpeedPlus 10-Bit, 75MHz Sampling
ANALOG-TO-DIGITAL CONVERTER



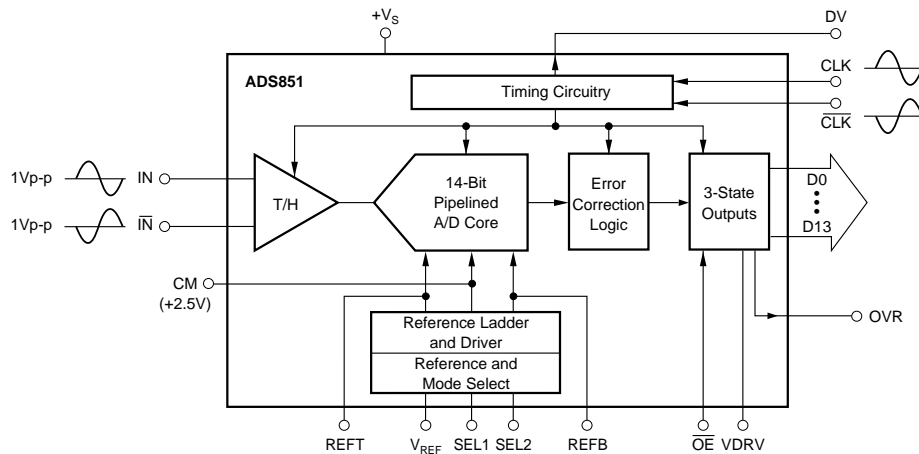
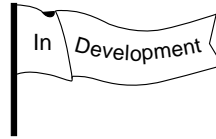
FEATURES

- **HIGH SNR: 58dB**
- **HIGH SFDR: 70dB**
- **LOW POWER: 315mW**
- **+3V/+5V LOGIC I/O COMPATIBLE**
- **INTERNAL/EXTERNAL REFERENCE OPTION**
- **SINGLE-ENDED OR DIFFERENTIAL ANALOG INPUT**
- **PROGRAMMABLE INPUT RANGE: 1Vp-p or 2Vp-p**
- **LOW DNL: 0.3LSB**
- **SINGLE +5V SUPPLY OPERATION**
- **POWER DOWN: 20mW**
- **SSOP-28 PACKAGE**

Analog-to-Digital Converters—New Products

ADS851

SpeedPlus 14-Bit, 40MHz Sampling
ANALOG-TO-DIGITAL CONVERTER

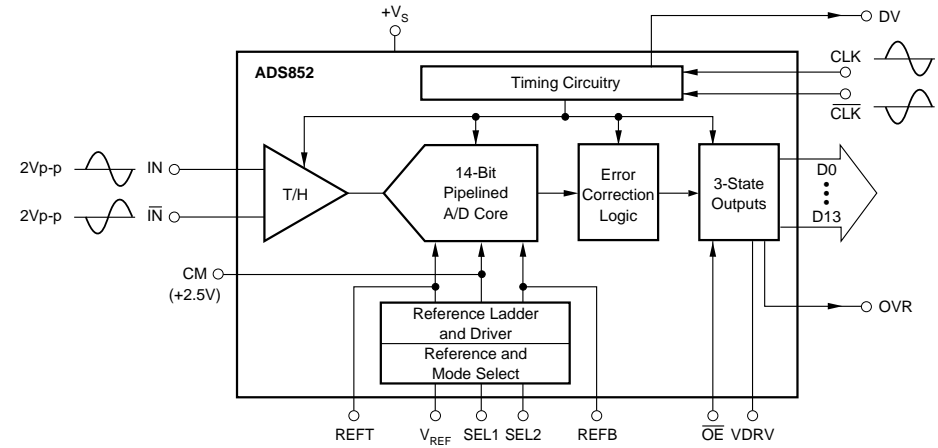
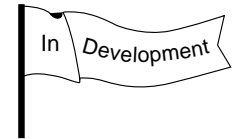


FEATURES

- **HIGH DYNAMIC RANGE:**
High SFDR: 100dB at 20MHz f_{IN}
High SNR: 75dB at 20MHz f_{IN}
- **PREMIUM TRACK/HOLD:**
High Bandwidth: 1GHz
Low Jitter: 0.25ps rms
Differential or Single-Ended Inputs
Selectable Full-Scale Input Range
- **LOW POWER:** 400mW
- **FLEXIBLE CLOCKING:**
Differential or Single-Ended
Accepts Sine or Square Wave Clocking Down to 0.5Vp-p
Variable Threshold Level

ADS852

SpeedPlus 14-Bit, 65MHz Sampling
ANALOG-TO-DIGITAL CONVERTER



FEATURES

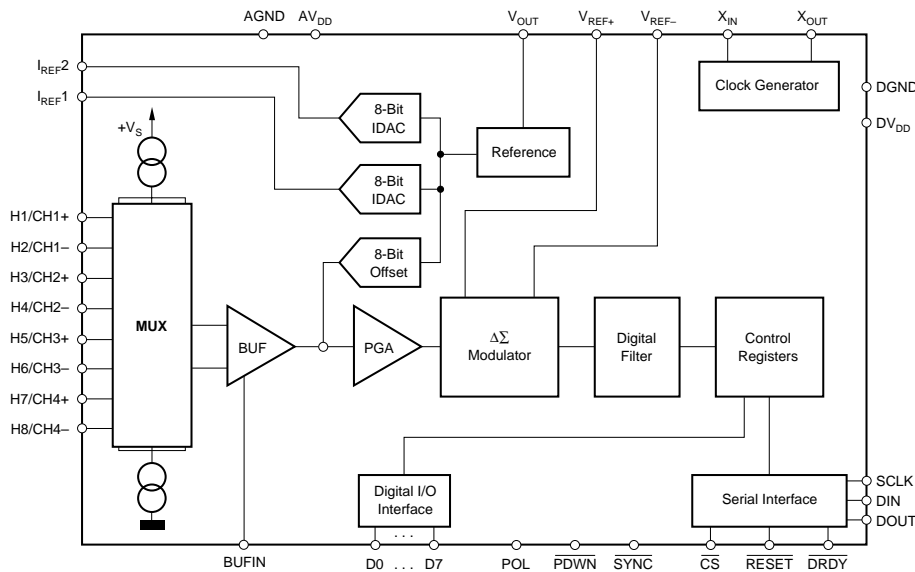
- **HIGH DYNAMIC RANGE:**
High SFDR: 100dB at 20MHz f_{IN}
High SNR: 75dB at 20MHz f_{IN}
- **PREMIUM TRACK/HOLD:**
High Bandwidth: 1GHz
Low Jitter: 0.25ps rms
Differential or Single-Ended Inputs
Selectable Full-Scale Input Range
- **FLEXIBLE CLOCKING:**
Differential or Single-Ended
Accepts Sine or Square Wave Clocking Down to 0.5Vp-p
Variable Threshold Level

Analog-to-Digital Converters—New Products

ADS1216

In Development

Resolution PLUS High Resolution
ANALOG-TO-DIGITAL CONVERTER



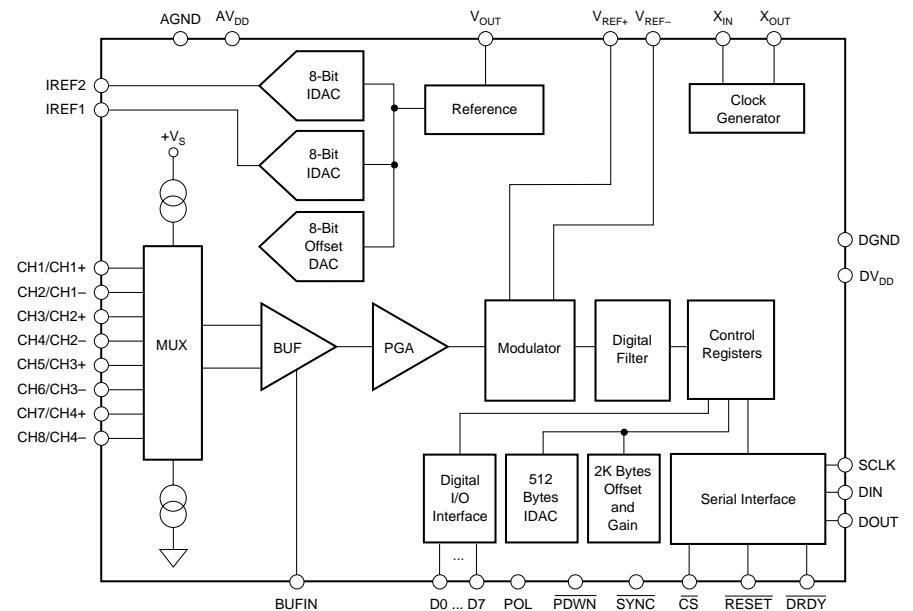
FEATURES

- RESOLUTION OF 500,000 COUNTS (Peak-to-Peak)
- 20 BITS NO MISSING CODES
- 20 BITS EFFECTIVE RESOLUTION AT 50/60Hz
- DIFFERENTIAL INPUTS
- ON-CHIP SELF-CALIBRATION
- OFFSET DRIFT: 5ppm/°C
- GAIN DRIFT: 5ppm/°C
- OPERATES WITH REFERENCE VOLTAGES OF 1V TO 5V
- OFFSET/GAIN CALIBRATION REGISTERS PER CHANNEL

ADS1218

In Development

Resolution PLUS High Resolution
ANALOG-TO-DIGITAL CONVERTER



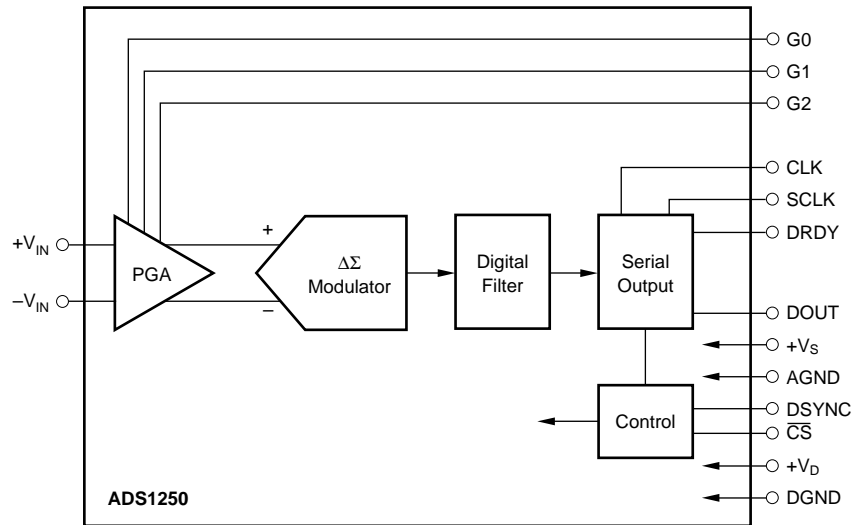
FEATURES

- RESOLUTION OF 500,000 COUNTS (Peak-to-Peak)
- 20 BITS NO MISSING CODES
- 20 BITS EFFECTIVE RESOLUTION AT 50/60Hz
- DIFFERENTIAL INPUTS
- ON-CHIP SELF-CALIBRATION
- OFFSET DRIFT: 5ppm/°C
- GAIN DRIFT: 5ppm/°C
- OPERATES WITH REFERENCE VOLTAGES OF 1V TO 5V
- OFFSET/GAIN CALIBRATION REGISTERS PER CHANNEL
- 2K ON-BOARD FLASH MEMORY

Analog-to-Digital Converters—New Products

ADS1250

Resolution_{PLUS} 20-Bit
Data Acquisition System
ANALOG-TO-DIGITAL CONVERTER

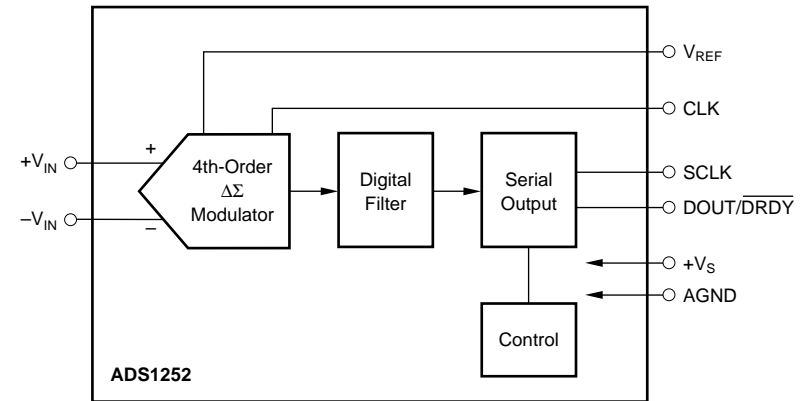
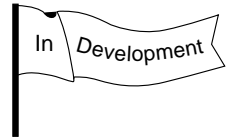


FEATURES

- 20 BITS NO MISSING CODES
- 18 BITS EFFECTIVE RESOLUTION UP TO 25kHz DATA RATE
- LOW NOISE: 2.8ppm at PGA = 1
- DIFFERENTIAL INPUTS
- INL: 0.002% max
- PROGRAMMABLE FULL SCALE
- I/O CONTROLLED PGA: 1, 2, 4, 8
- EXTERNAL REFERENCE

ADS1252

Resolution_{PLUS} 20-Bit
Data Acquisition System
ANALOG-TO-DIGITAL CONVERTER



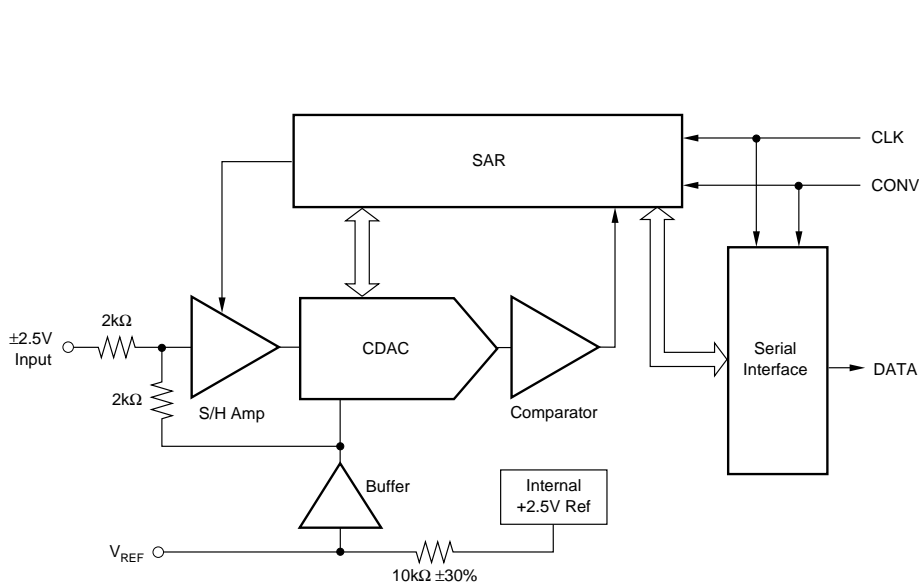
FEATURES

- 20 BITS NO MISSING CODES
- 18 BITS EFFECTIVE RESOLUTION UP TO 25kHz DATA RATE
- LOW NOISE: 2.8ppm
- DIFFERENTIAL INPUTS
- INL: 0.0015% max
- EXTERNAL REFERENCE
- POWER-DOWN MODE

Analog-to-Digital Converters—New Products

ADS7835

12-Bit, High-Speed, Low Power, Sampling
ANALOG-TO-DIGITAL CONVERTER

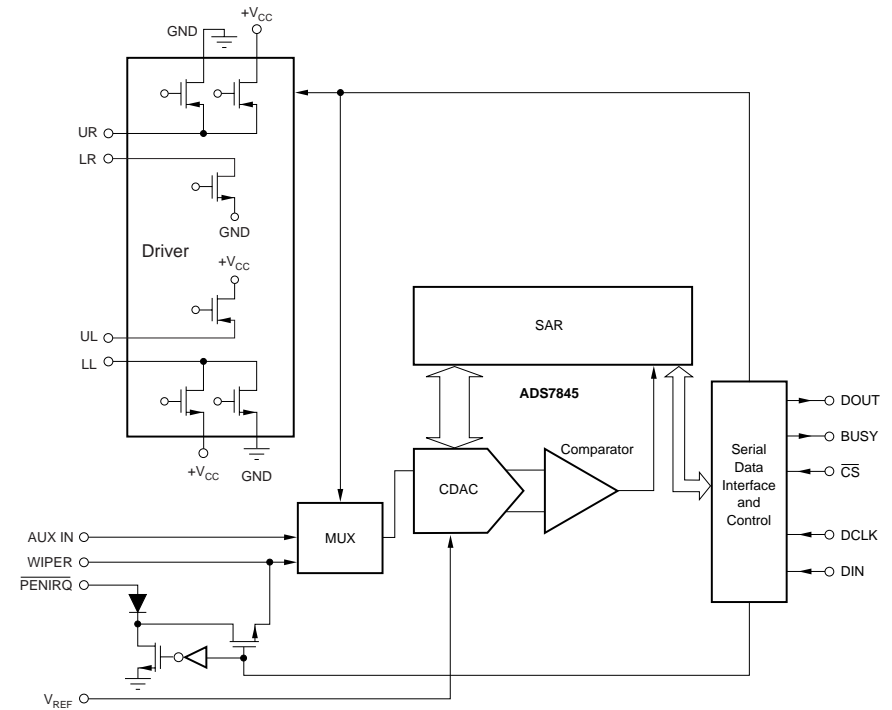


FEATURES

- 500kHz THROUGHPUT RATE
- 2.5V INTERNAL REFERENCE
- LOW POWER: 17.5mW
- SINGLE-SUPPLY: +5V Operation
- SERIAL INTERFACE
- GUARANTEED NO MISSING CODES
- MSOP-8
- $\pm V_{REF}$ INPUT RANGE

ADS7845

5-WIRE TOUCH-SCREEN CONTROLLER



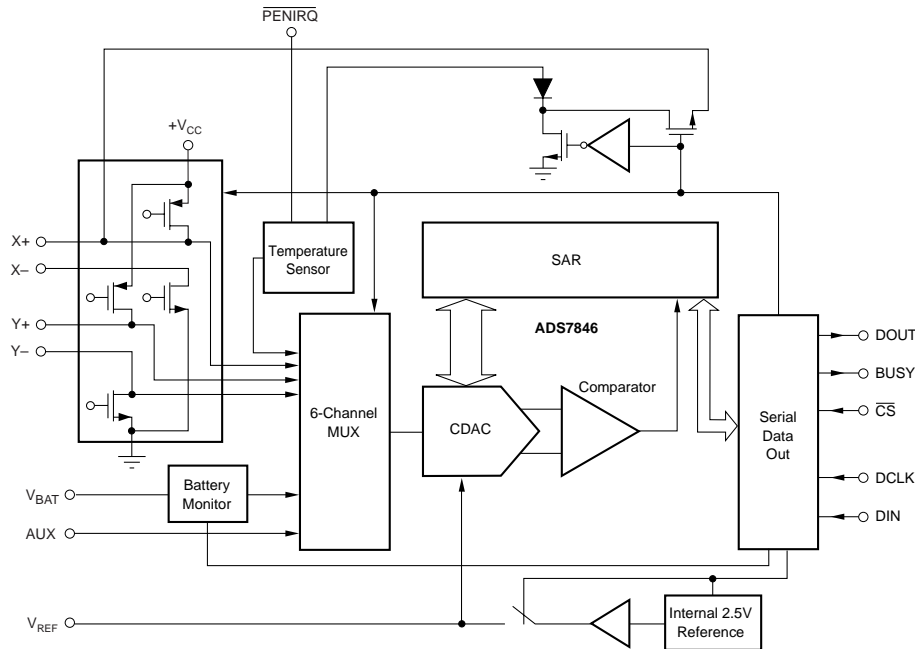
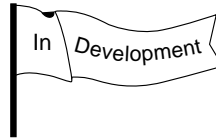
FEATURES

- 5-WIRE TOUCH SCREEN INTERFACE
- RATIOMETRIC CONVERSION
- SINGLE-SUPPLY: 2V to 5V
- UP TO 125kHz CONVERSION RATE
- SERIAL INTERFACE
- PROGRAMMABLE 8- OR 12-BIT RESOLUTION
- AUXILIARY ANALOG INPUTS
- FULL POWER-DOWN CONTROL

Analog-to-Digital Converters—New Products

ADS7846

TOUCH-SCREEN CONTROLLER

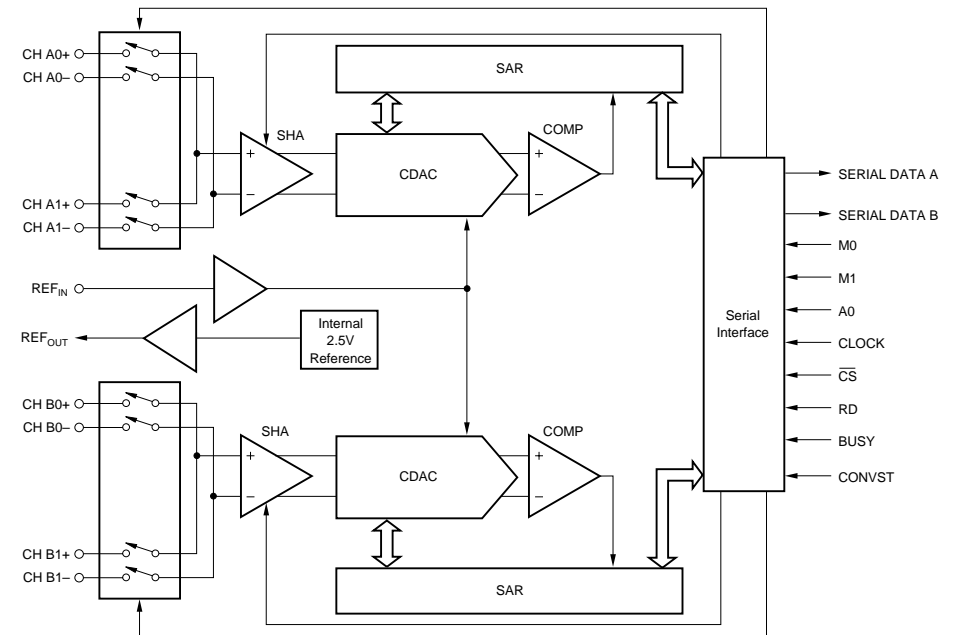


FEATURES

- SAME PINOUT AS ADS7843
- 2.2V TO 5.25V OPERATION
- INTERNAL 2.5V REFERENCE (Operates > 2.7V)
- DIRECT BATTERY MEASUREMENT (0V to 6V)
- ON-CHIP TEMPERATURE MEASUREMENT
- TOUCH-PRESSURE MEASUREMENT
- QSPI/SPI 3-WIRE INTERFACE
- AUTO POWER DOWN
- SSOP-16 PACKAGE

ADS7861

Dual, 500kHz, 12-Bit, 2 + 2 Channel, Simultaneous Sampling ANALOG-TO-DIGITAL CONVERTER



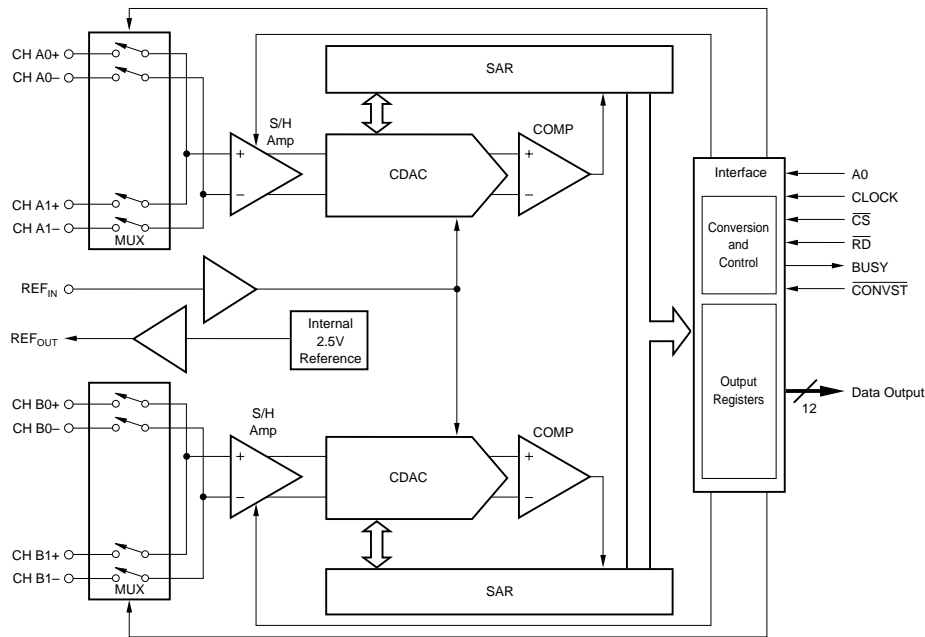
FEATURES

- 4 INPUT CHANNELS
- FULLY DIFFERENTIAL INPUTS
- 2 μ s TOTAL THROUGHPUT PER CHANNEL
- GUARANTEED NO MISSING CODES
- 1MHz EFFECTIVE SAMPLING RATE
- LOW POWER: 40mW
- SSI SERIAL INTERFACE

Analog-to-Digital Converters—New Products

ADS7862

Dual, 500kHz, 12-Bit, 2 + 2 Channel, Simultaneous Sampling
ANALOG-TO-DIGITAL CONVERTER

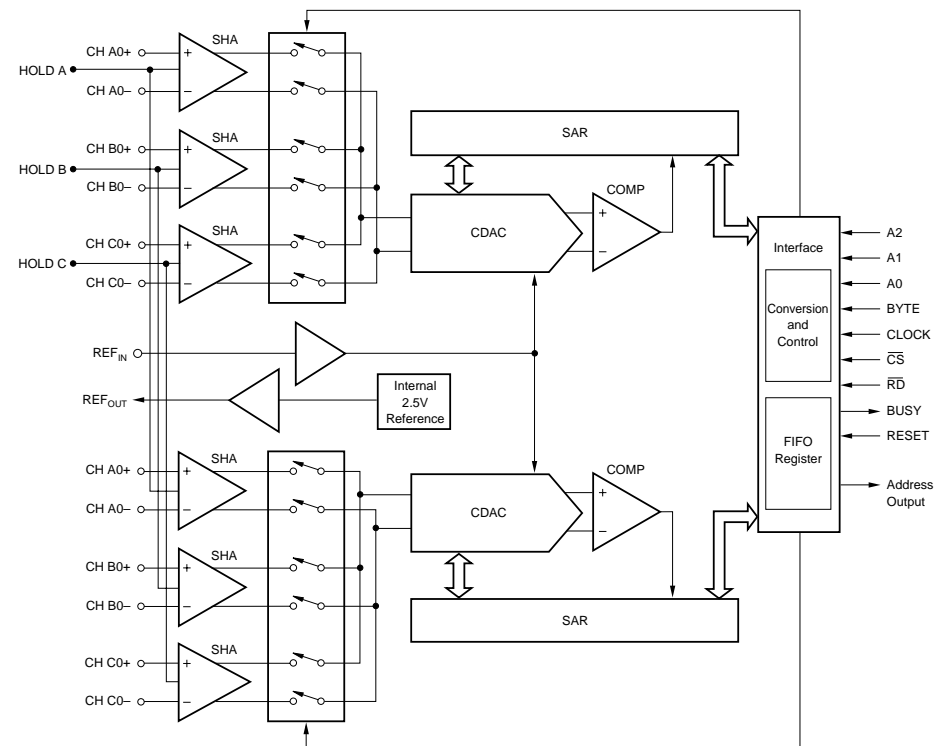
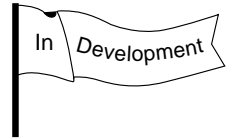


FEATURES

- 4 INPUT CHANNELS
- FULLY DIFFERENTIAL INPUTS
- 2μs TOTAL THROUGHPUT PER CHANNEL
- GUARANTEED NO MISSING CODES
- PARALLEL INTERFACE
- 1MHz EFFECTIVE SAMPLING RATE
- LOW POWER: 40mW

ADS7864

500kHz, 12-Bit, 6 Channel,
Simultaneous Sampling
ANALOG-TO-DIGITAL CONVERTER



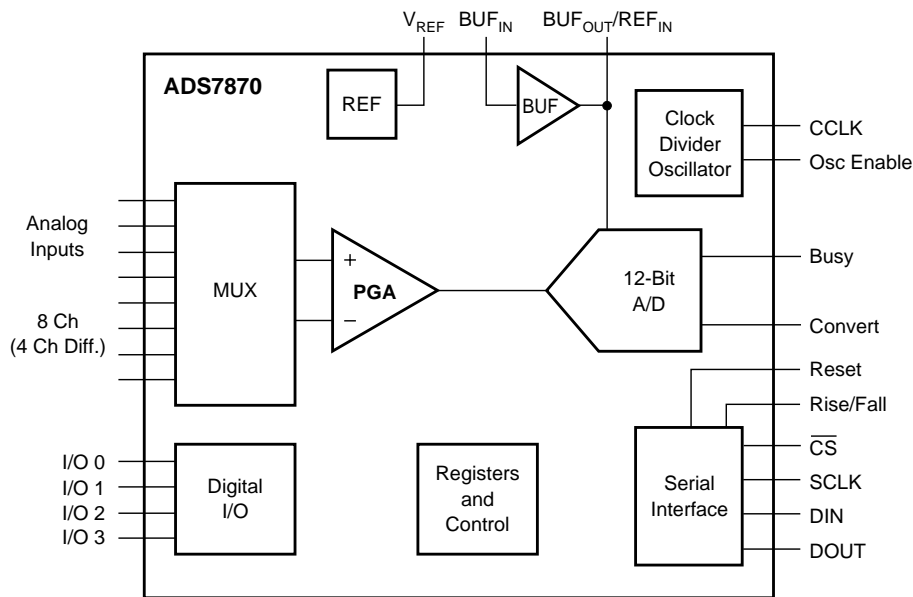
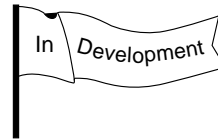
FEATURES

- 6 INPUT CHANNELS
- FULLY DIFFERENTIAL INPUTS
- 2μs TOTAL THROUGHPUT PER CHANNEL
- GUARANTEED NO MISSING CODES
- LOW POWER: 50mW

Analog-to-Digital Converters—New Products

ADS7870

12-Bit ADC, MUX, PGA,
and Internal Reference
DATA ACQUISITION SYSTEM

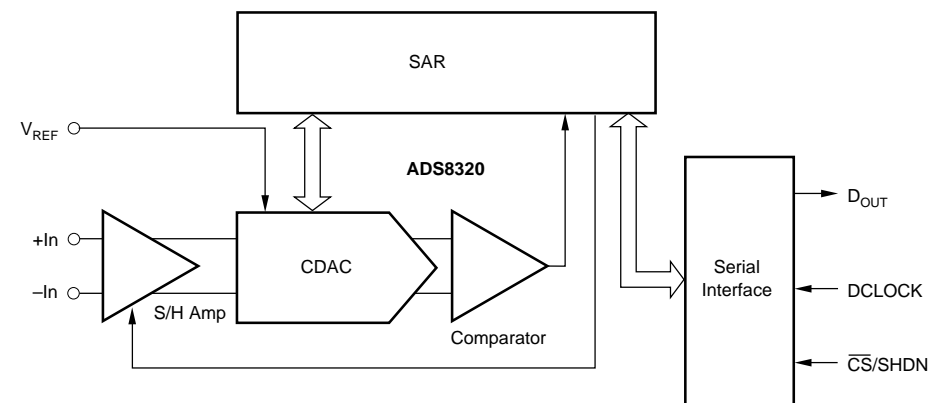


FEATURES

- 16-BIT DYNAMIC RANGE
- PGA GAINS: 1, 2, 4, 5, 8, 10, 16, 20V/V
- 4-CHANNEL DIFFERENTIAL/8-CHANNEL SINGLE-ENDED MULTIPLEXER
- 2.048V OR 2.5V INTERNAL REFERENCE
- FAST SERIAL DIGITAL INTERFACE
- HIGH-SPEED THROUGHPUT RATE: 50ks/s
- ERROR/OVERLOAD INDICATOR
- 2.7V TO 5.5V SINGLE SUPPLY OPERATION
- DIGITAL I/O THROUGH SERIAL INTERFACE
- SSOP-28 PACKAGE

ADS8320

16-Bit, High-Speed, 2.7V to 5V *MicroPOWER*, Sampling
ANALOG-TO-DIGITAL CONVERTER



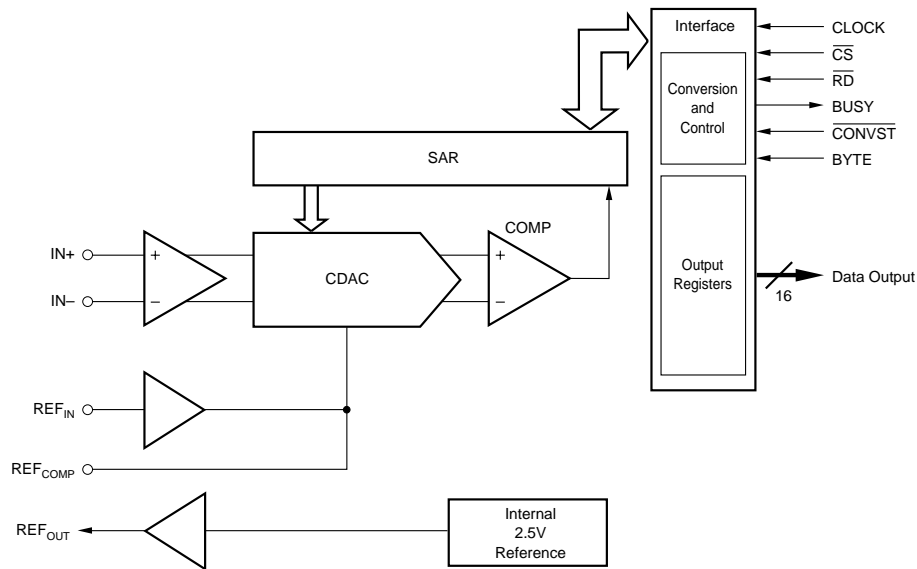
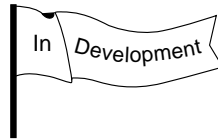
FEATURES

- 100kHz SAMPLING RATE
- *MicroPOWER*:
1.8mW at 100kHz and 2.7V
0.3mW at 10kHz and 2.7V
- POWER DOWN: 3 μ A max
- MSOP-8 PACKAGE
- PIN-COMPATIBLE TO ADS7816 AND ADS7822
- SERIAL (SPI/SSI) INTERFACE

Analog-to-Digital Converters—New Products

ADS8322

16-Bit, *MicroPOWER*, Sampling
ANALOG-TO-DIGITAL CONVERTER

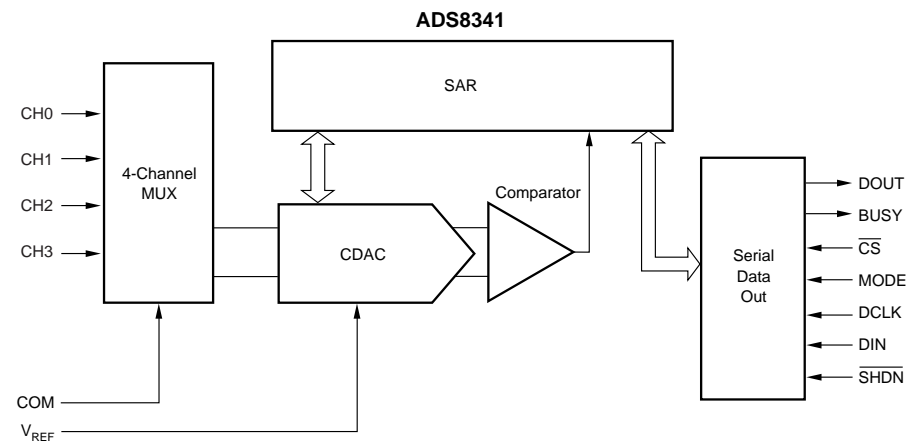
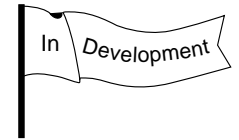


FEATURES

- TRUE DIFFERENTIAL INPUTS
- HIGH-SPEED PARALLEL INTERFACE
- 500kHz SAMPLING RATE
- LOW POWER: 85mW
- BIPOLAR INPUT RANGE

ADS8341

16-Bit, 4 Channel, Serial Output
ANALOG-TO-DIGITAL CONVERTER



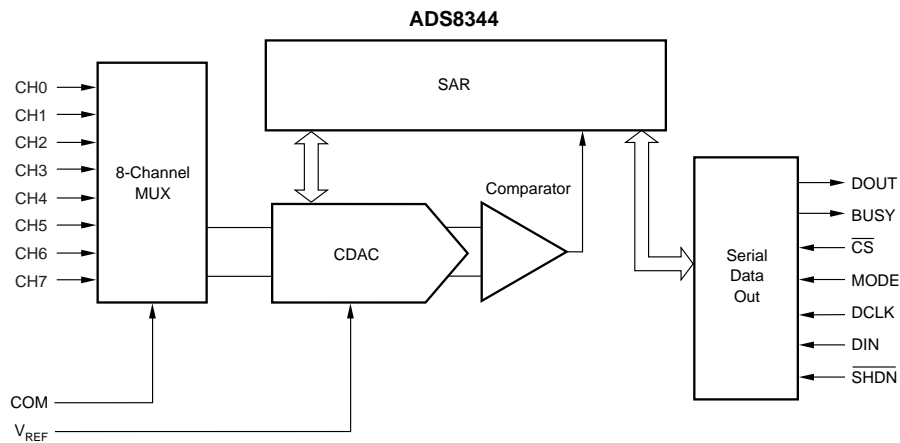
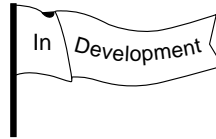
FEATURES

- 4 INPUT CHANNELS
- 100kHz SAMPLING RATE
- SINGLE 2.7V TO 5V SUPPLY
- SERIAL INTERFACE
- INTERNAL CLOCK
- 15 BITS NO MISSING CODES
- 84dB SINAD
- LOW POWER: 5mW
- PIN-FOR-PIN WITH ADS7841

Analog-to-Digital Converters—New Products

ADS8344

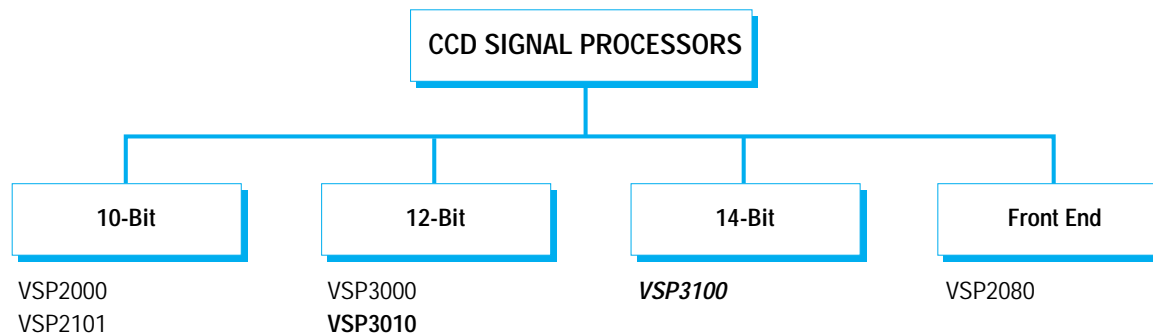
16-Bit, 8 Channel, Serial Output
ANALOG-TO-DIGITAL CONVERTER



FEATURES

- 8 INPUT CHANNELS
- 100kHz SAMPLING RATE
- SINGLE 2.7V TO 5V SUPPLY
- SERIAL INTERFACE
- INTERNAL CLOCK
- 15 BITS NO MISSING CODES
- 84dB SINAD
- LOW POWER: 5mW
- PIN-FOR-PIN WITH ADS7844

CCD Signal Processors—Selection Tree and Guide



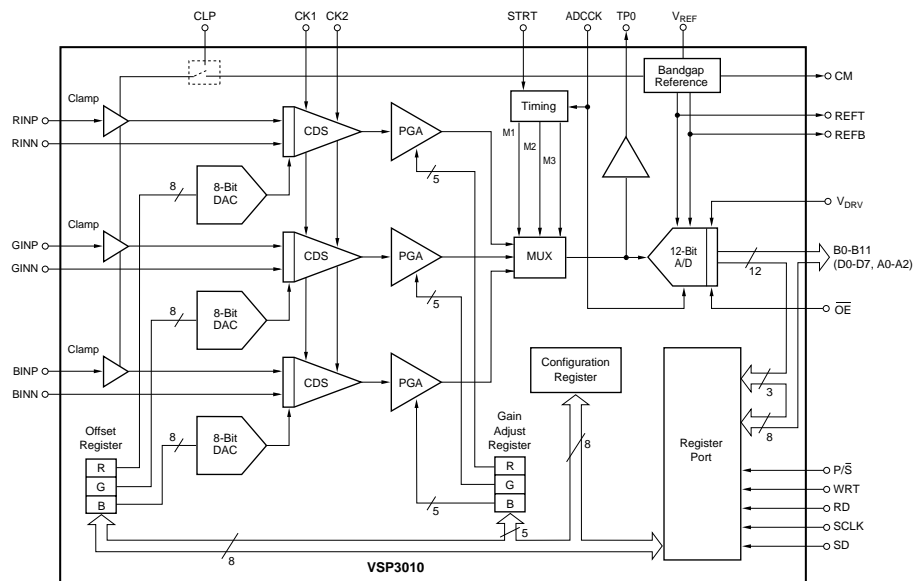
Product	Description	Bits	Sample Rate (MSPs)	Power (mW)	V _S (V)	SNR (dB)	Mode	Gain Range (dB)	Package(s)	Lowest Grade Price (1000s)
VSP3100	CCD/CIS Signal Processor	14	10	500	+5	—	CCD/CIS	0 to +13	LQFP-48	\$15.00
VSP3000	CCD/CIS Signal Processor	12	6	400 at +2.7V	+2.7/+5	—	CCD/CIS	0 to +13	LQFP-48	5.75
VSP3010	CCD/CIS Signal Processor	12	6	350 (CCD Mode)	+5	—	CCD/CIS	0 to +13	LQFP-48	5.75
VSP2101	CCD Signal Processor	10	27	160 at +2.7V	+2.7	53	CCD	0 to +34	LQFP-48	5.75
VSP2000	CCD Signal Processor	10	18	165 at +2.7V	+2.7/+5	53	CCD	0 to +34	LQFP-48	5.75
VSP2080	CCD Front-End Processor	—	—	120 at +3.0V	+2.7	55	CCD	0 to +34	SSOP-20	2.23

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

CCD Signal Processors—New Products

VSP3010

SpeedPLUS 12-BIT, 12MHz
CCD/CIS SIGNAL PROCESSOR

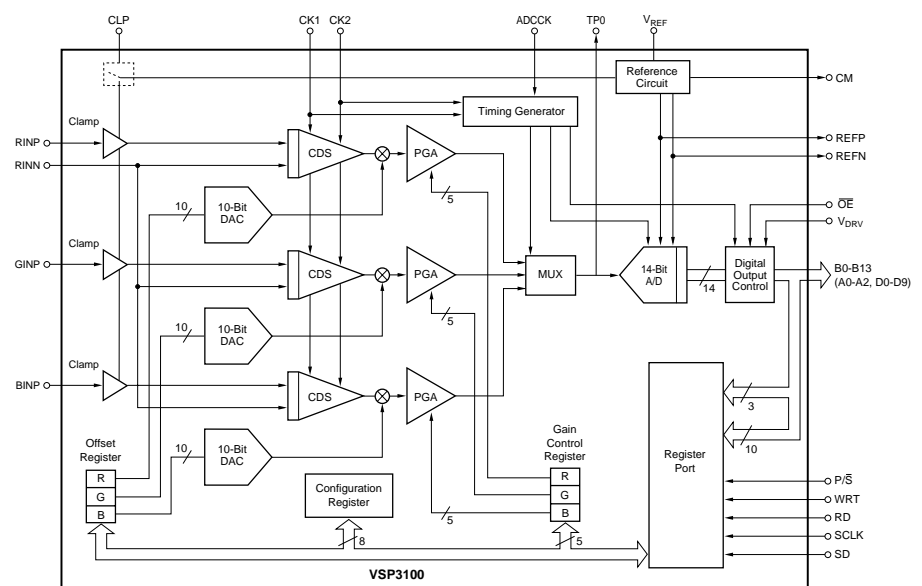
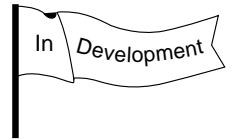


FEATURES

- 12-BIT, 12MHz A/D CONVERTER
- GUARANTEED NO MISSING CODE
- 3-CHANNEL, 2MHz COLOR SCAN MODE CORRELATED DOUBLE SAMPLERS
- 8-Bit Offset Adjustment DACs
- 0dB to +13dB PGAs
- A/D INPUT MONITOR
- INTERNAL VOLTAGE REFERENCE
- SINGLE +5V SUPPLY
- +3V OR +5V DIGITAL OUTPUT
- LOW POWER: 500mW (typ, CCD MODE)

VSP3100

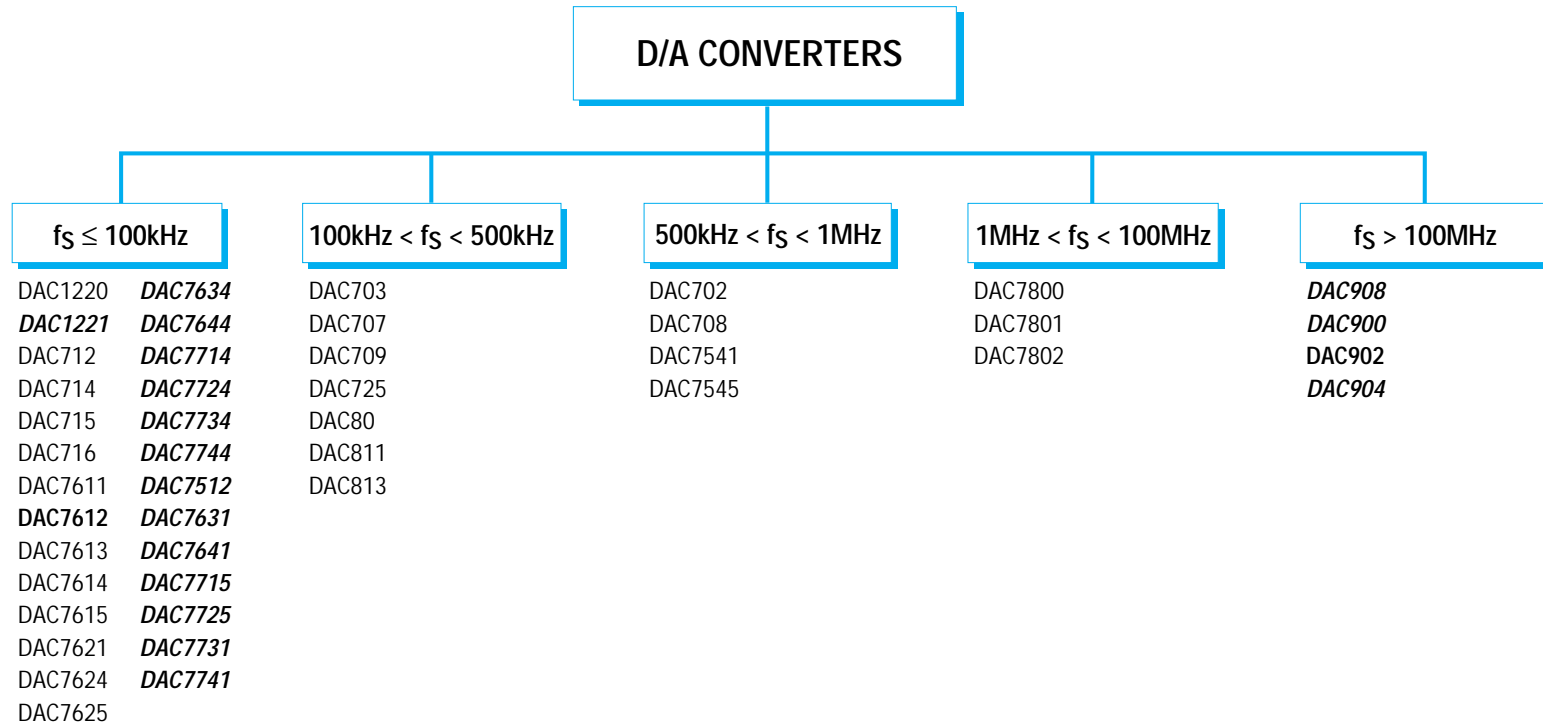
SpeedPLUS 14-BIT, 10MHz
CCD/CIS SIGNAL PROCESSOR



FEATURES

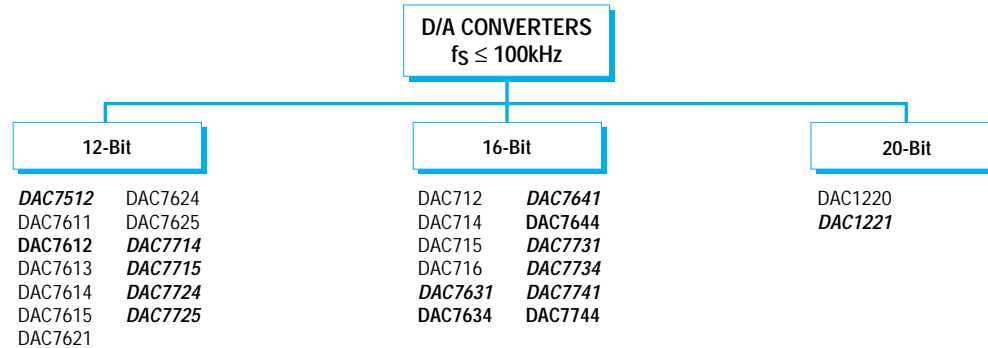
- INTEGRATED TRIPLE CORRELATED DOUBLE SAMPLER
- OPERATION MODE SELECTABLE: 1/3-Channel, 10Msps (typ), CCD/CIS Mode
- PROGRAMMABLE GAIN AMPLIFIER: 0dB to +13dB
- SELECTABLE OUTPUT MODE: Normal/Demultiplexed
- OFFSET CONTROL RANGE: $\pm 400\text{mV}$
- +3V OR +5V DIGITAL OUTPUT
- LOW POWER: 500mW (typ)
- LQFP-48 SURFACE MOUNT PACKAGE

Digital-to-Analog Converters—Main Selection Tree



BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

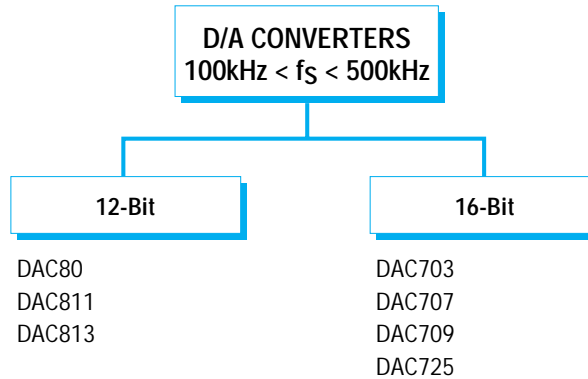
Digital-to-Analog Converters—Selection Tree and Guide



Product	Description	Resolution (Bits)	Settling Time (μs)	# Output D/As	Interface	Output (V)	V_{REF}	Linearity (%)	Monotonic (Bits)	Power Dissipation (mW)	Package(s)	Lowest Grade Price (1000s)
DAC1220	20-Bit, Monotonic, Low Power	20	10ms	1	Serial	+5	No	± 0.0015	20	3	SSOP-16	\$6.25
DAC1221	20-Bit, Monotonic, 3V Operation	20	10ms	1	Serial	+5	No	± 0.0015	20	1	SSOP-16	6.25
DAC712	16-Bit, 10 μs , Parallel, Bipolar	16	10	1	Parallel	± 10	Yes	± 0.003	15	600	DIP-28, SO-28	12.38
DAC714	16-Bit, 10 μs , Serial, Bipolar	16	10	1	Serial	± 10	Yes	± 0.0015	16	625	DIP-16, SO-16	12.38
DAC715	16-Bit, 10 μs , Parallel, Unipolar	16	10	1	Parallel	+10	Yes	± 0.003	16	600	DIP-28, SO-28	12.38
DAC716	16-Bit, 10 μs , Serial, Unipolar	16	10	1	Serial	+10	Yes	± 0.003	16	625	DIP-16, SO-16	12.38
DAC7631	16-Bit, Serial, $\pm 10\text{V}$	16	10	1	Serial	+2.5, ± 2.5	No	± 0.0015	16	8.5	SSOP-20	5.50
DAC7634	Quad, 16-Bit, Serial	16	10	4	Serial	+2.5, ± 2.5	No	± 0.003	15	60	SSOP-48	18.97
DAC7641	16-Bit, Parallel, $\pm 10\text{V}$	16	10	1	Parallel	+2.5, ± 2.5	No	± 0.0015	16	2.5	TQFP-32	5.85
DAC7644	Quad, 16-Bit, Parallel	16	10	4	Parallel	+2.5, ± 2.5	No	± 0.0045	15	15	SSOP-48	20.71
DAC7731	16-Bit, Serial	16	5	1	Serial	± 10	Yes	± 0.0015	16	60	TQFP-48	7.80
DAC7734	Quad, 16-Bit, Serial, $\pm 10\text{V}$	16	10	4	Serial	± 10	No	± 0.0015	16	185	SSOP-48	27.10
DAC7741	16-Bit, Parallel	16	5	1	Parallel	± 10	Yes	± 0.0015	16	60	TQFP-48	8.30
DAC7744	Quad, 16-Bit, Parallel, $\pm 10\text{V}$	16	10	4	Parallel	± 10	No	± 0.0015	16	185	SSOP-48	29.58
DAC7512	12-Bit, Serial	12	10	1	Serial	$+V_{\text{DD}}$	No	± 0.390	12	5.4	MSOP-8, SOT-23	2.15
DAC7611	12-Bit, Int Ref, Serial	12	10	1	Serial	4.095	Yes	± 0.012	12	2.5	SO-8	5.25
DAC7612	12-Bit, Dual, Int Ref, Serial	12	10	2	Serial	4.095	Yes	± 0.012	12	3.7	SO-8	5.25
DAC7613	12-Bit, 10 μs , Parallel	12	10	1	Parallel	+2.5, ± 2.5	No	± 0.024	12	4	SSOP-24	5.13
DAC7614	Quad, 12-Bit, Serial	12	10	4	Serial	+2.5, ± 2.5	No	± 0.012	12	10	DIP-16, SO-16	9.15
DAC7615	Quad, 12-Bit, Serial, Double Buffered	12	10	4	Serial	+2.5, ± 2.5	No	± 0.012	12	10	DIP-16, SO-16	9.15
DAC7621	12-Bit, Int Ref, Parallel	12	10	1	Parallel	4.095	Yes	± 0.024	12	5	SSOP-20	5.90
DAC7624	Quad, 12-Bit, Parallel, Reset Midscale	12	10	4	Parallel	+2.5, ± 2.5	No	± 0.012	12	10	DIP-28, SO-28	9.15
DAC7625	Quad, 12-Bit, Parallel, Reset Zero	12	10	4	Parallel	+2.5, ± 2.5	No	± 0.012	12	10	DIP-28, SO-28	9.15
DAC7714	Quad, 12-Bit, Serial, $\pm 10\text{V}$	12	10	4	Serial	± 10	No	± 0.024	12	90	SSOP-16, SOIC-20	9.75
DAC7715	Quad, 12-Bit, Serial, $\pm 10\text{V}$	12	10	4	Serial	± 10	No	± 0.024	12	50	SSOP-20, PDIP-20	10.81
DAC7724	Quad, 12-Bit, Parallel, $\pm 10\text{V}$	12	10	4	Parallel	± 10	No	± 0.024	12	90	SOIC-24, DIP-24	11.75
DAC7725	Quad, 12-Bit, Parallel, $\pm 10\text{V}$	12	10	4	Parallel	± 10	No	± 0.024	12	30	SOIC-28, PDIP-28	11.75

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

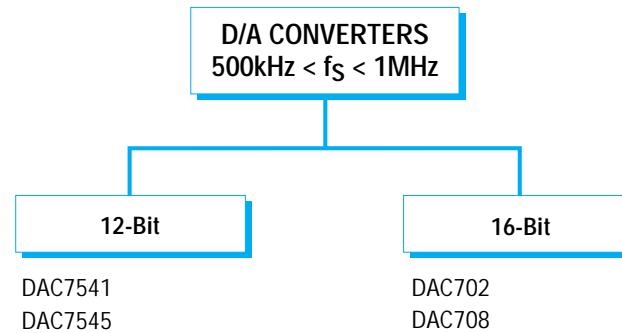
Digital-to-Analog Converters—Selection Tree and Guide



Product	Description	Resolution (Bits)	Settling Time (μ s)	# Output D/As	Interface	Output (V)	V_{REF}	Linearity (%)	Monotonic (Bits)	Power Dissipation (mW)	Package(s)	Lowest Grade Price (1000s)
DAC703	16-Bit, General Purpose	16	8	1	Parallel	± 10	Yes	± 0.0015	15	940	DIP-24, SO-24	\$23.09
DAC707	16-Bit, μ Processor Compatible	16	8	1	Parallel	± 10	Yes	± 0.003	14	950	DIP-28	28.38
DAC709	16-Bit, Byte Interface	16	8	1	Parallel	$\pm 5, 10$	Yes	± 0.003	14	950	Hermetic-24	52.88
DAC725	Dual, 16-Bit	16	8	2	Parallel	± 10	Yes	± 0.003	14	1175	DIP-28	41.21
DAC80	12-Bit, Industry Standard	12	4	1	Parallel	$\pm 2.5, 5, 10$	Yes	± 0.012	12	480	DIP-24, Hermetic-24	16.59
DAC811	12-Bit, Flexible Bus Interface	12	4	1	Parallel	$\pm 5, 10$	Yes	± 0.006	12	800	DIP-28, SO-28	9.85
DAC813	12-Bit, Small Package, Flexible Interface	12	4	1	Parallel	$\pm 5, 10$	Yes	± 0.006	12	330	DIP-28, SO-28	10.83

Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

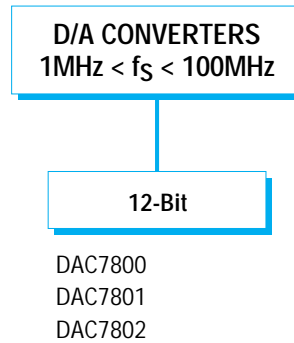
Digital-to-Analog Converters—Selection Tree and Guide



Product	Description	Resolution (Bits)	Settling Time (μ s)	# Output D/As	Interface	Output (mA)	V_{REF}	Linearity (%)	Monotonic (Bits)	Power Dissipation (mW)	Package(s)	Lowest Grade Price (1000s)
DAC702	16-Bit, ± 1 mA Output	16	8	1	Parallel	± 1	Yes	$\pm 0.0015\%$	15	365	Hermetic-24	\$62.59
DAC708	16-Bit, ± 1 mA, 0 to -2 , ± 1 Output	16	8	1	Parallel	0 to -2 , ± 1	Yes	$\pm 0.003\%$	14	370	Hermetic-24	61.24
DAC7541	12-Bit, $+1$ mA Output	12	1	1	Parallel	$+1$	No	$\pm 0.012\%$	12	30	DIP-18, SO-18	6.32
DAC7545	12-Bit, $+1$ mA Output	12	2	1	Parallel	$+1$	No	$\pm 0.012\%$	12	30	DIP-18, SO-18	5.55

Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

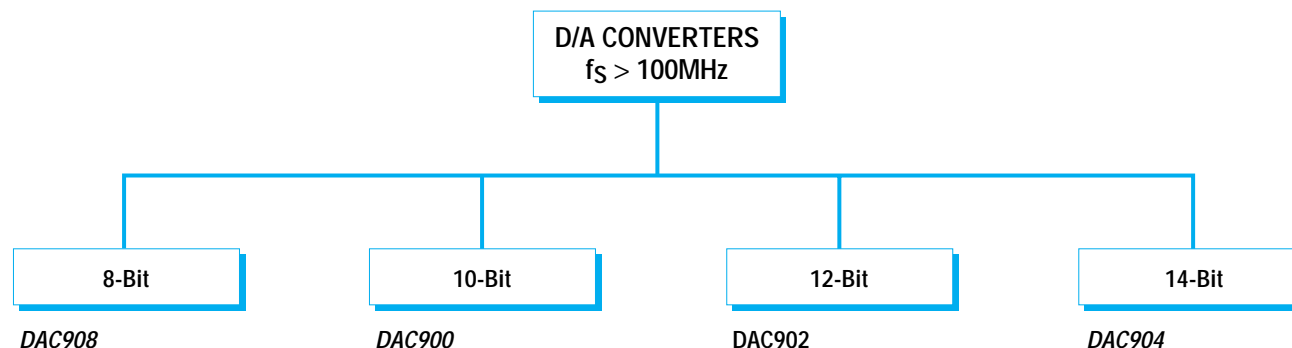
Digital-to-Analog Converters—Selection Tree and Guide



Product	Description	Resolution (Bits)	Settling Time (μs)	# Output D/As	Interface	Output (mA)	V_{REF}	Linearity (%)	Monotonic (Bits)	Power Dissipation (mW)	Package(s)	Lowest Grade Price (1000s)
DAC7800	12-Bit, Multiplying Serial	12	0.8	2	Serial	+1	No	$\pm 0.012\%$	12	1	DIP-16	\$11.76
DAC7801	12-Bit, Byte Interface, Parallel	12	0.8	2	Parallel	+1	No	$\pm 0.012\%$	12	1	DIP-24	14.09
DAC7802	12-Bit, Full 12-Bit Interface	12	0.8	2	Parallel	+1	No	$\pm 0.012\%$	12	1	DIP-24	11.76

Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Digital-to-Analog Converters—Selection Tree and Guide

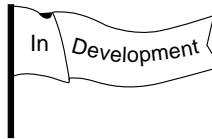


Product	Description	Resolution (Bits)	Update Rate (MSPS)	Power Supply (V) (mA)		Settling Time (ns)	I _{OUT} (mA)	Power Dissipation (mW)	Package(s)	Lowest Grade Price (1000s)
<i>DAC904</i>	<i>I_{OUT}</i>	14	165	+2.7 to +5.5	34	25 to 0.1%	20	170	SO-28, TSSOP-28	\$16.30
DAC902	<i>I_{OUT}</i>	12	165	+2.7 to +5.5	34	25 to 0.1%	20	170	SO-28, TSSOP-28	12.50
<i>DAC900</i>	<i>I_{OUT}</i>	10	165	+2.7 to +5.5	34	25 to 0.1%	20	170	SO-28, TSSOP-28	5.75
<i>DAC908</i>	<i>I_{OUT}</i>	8	165	+2.7 to +5.5	34	25 to 0.1%	20	170	SO-28, TSSOP-28	2.95

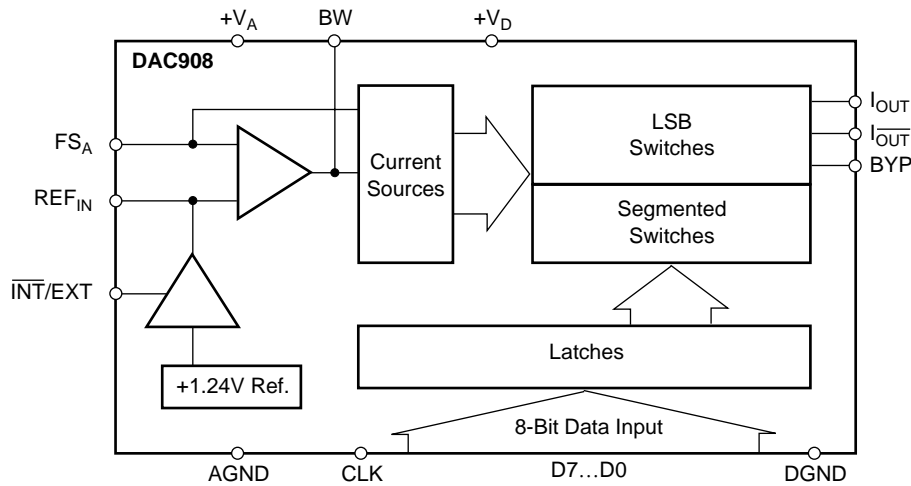
BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Digital-to-Analog Converters—New Products

DAC908



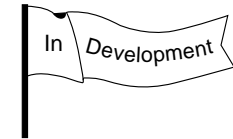
Speed $1.1\mu\text{s}$ 8-Bit, 165MSPS
DIGITAL-TO-ANALOG CONVERTER



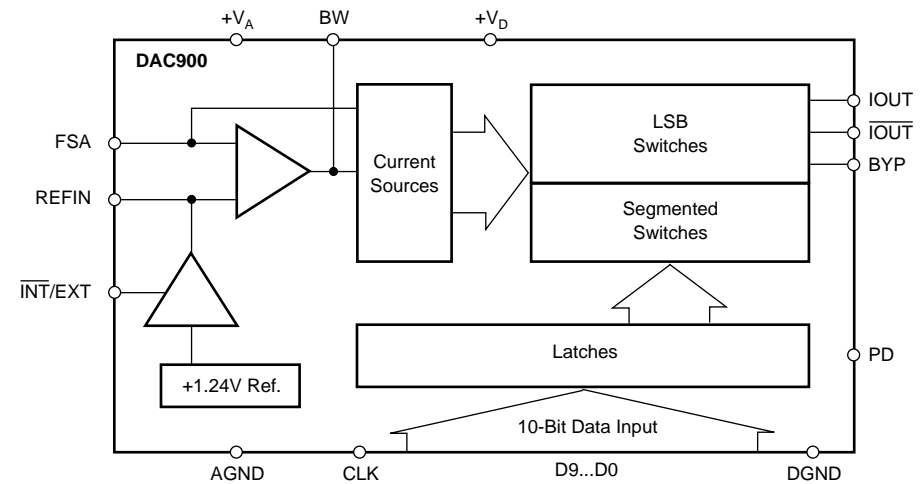
FEATURES

- SINGLE +5V OR +3V OPERATION
- HIGH SFDR
- LOW GLITCH: 3pV-s
- LOW POWER
- INTERNAL REFERENCE:
Optional Ext. Reference
Adjustable Full-Scale Range
Multiplying Option

DAC900



Speed $1.1\mu\text{s}$ 10-Bit, 165MSPS
DIGITAL-TO-ANALOG CONVERTER



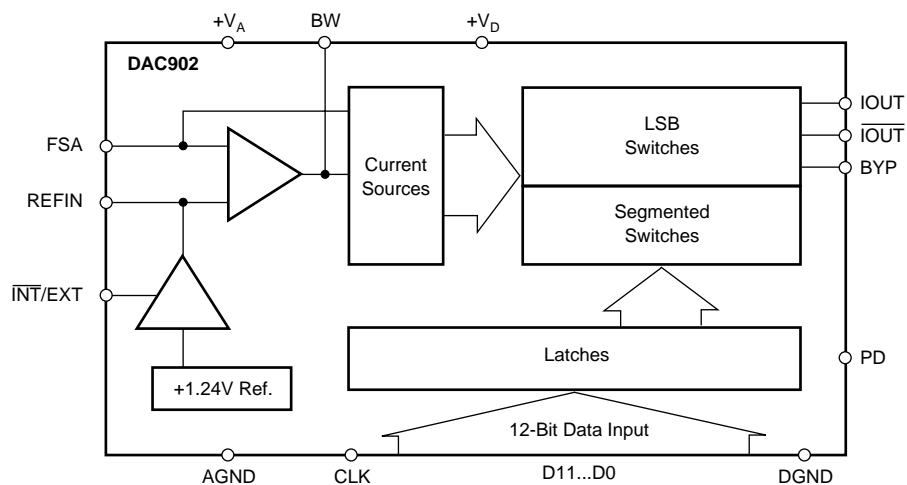
FEATURES

- SINGLE +5V OR +3V OPERATION
- HIGH SFDR
- LOW GLITCH: 3pV-s
- LOW POWER: 170mW at 5V
- INTERNAL REFERENCE:
Optional Ext. Reference
Adjustable Full-Scale Range
Multiplying Option

Digital-to-Analog Converters—New Products

DAC902

SpeedPLUS 12-Bit, 165MSPS
DIGITAL-TO-ANALOG CONVERTER

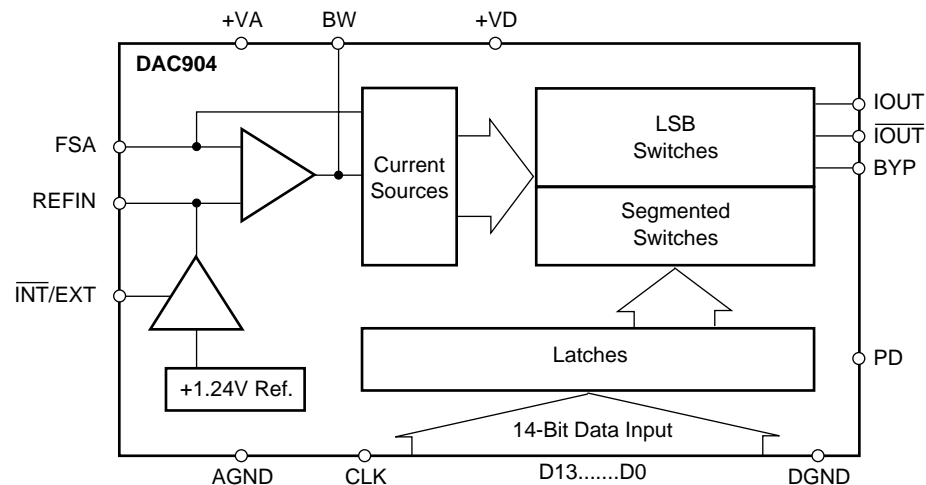
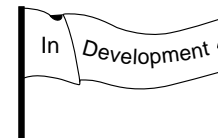


FEATURES

- SINGLE +5V OR +3V OPERATION
- HIGH SFDR
- LOW GLITCH: 3pV-s
- LOW POWER: 170mW at 5V
- INTERNAL REFERENCE:
 - Optional Ext. Reference
 - Adjustable Full-Scale Range
 - Multiplying Option

DAC904

SpeedPLUS 14-Bit, 165MSPS
DIGITAL-TO-ANALOG CONVERTER



FEATURES

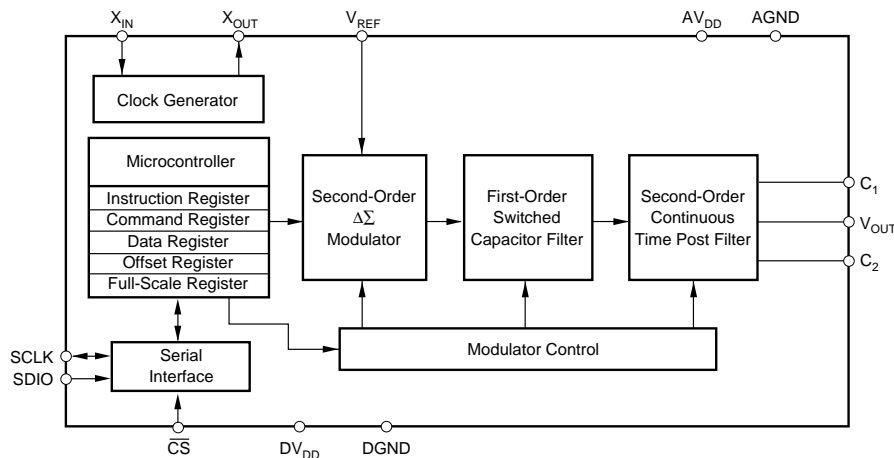
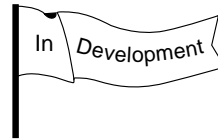
- SINGLE +5V OR +3V OPERATION
- HIGH SFDR
- LOW GLITCH: 3pV-s
- LOW POWER
- INTERNAL REFERENCE:
 - Optional Ext. Reference
 - Adjustable Full-Scale Range
 - Multiplying Option



Digital-to-Analog Converters—New Products

DAC1221

20-Bit, Low Power
DIGITAL-TO-ANALOG CONVERTER

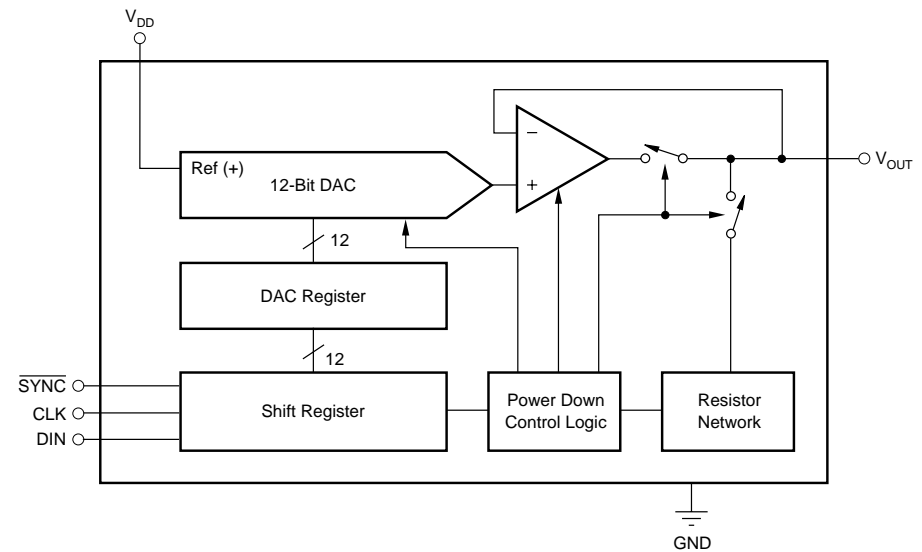
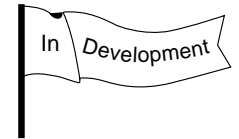


FEATURES

- 16-BIT MONOTONICITY GUARANTEED OVER -40°C to $+85^{\circ}\text{C}$
- LOW POWER: 1.5mW
- VOLTAGE OUTPUT (0V to +2.5V)
- SETTLING TIME: 2ms to 0.012%
- MAX LINEARITY ERROR: $\pm 0.0015\%$
- ON-CHIP CALIBRATION

DAC7512

12-Bit
DIGITAL-TO-ANALOG CONVERTER



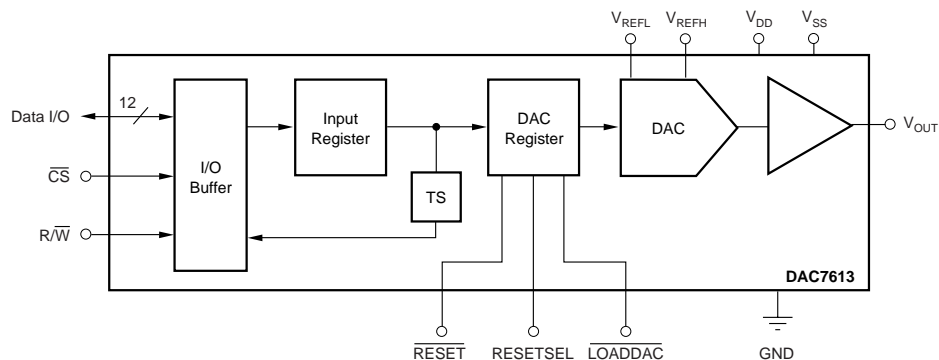
FEATURES

- LOW POWER: 0.7mW
- RAIL-TO-RAIL OUTPUT
- SETTLING TIME: $10\mu\text{s}$ to 1LSB
- 12-BIT LINEARITY: t_{MIN} to t_{MAX}
- PACKAGE: SOT23-6
- POWER ON RESET TO ZERO
- 30MHz DATA RATE
- 12-BIT MONOTONICITY: t_{MIN} to t_{MAX}

Digital-to-Analog Converters—New Products

DAC7613

12-Bit, Voltage Output
DIGITAL-TO-ANALOG CONVERTER

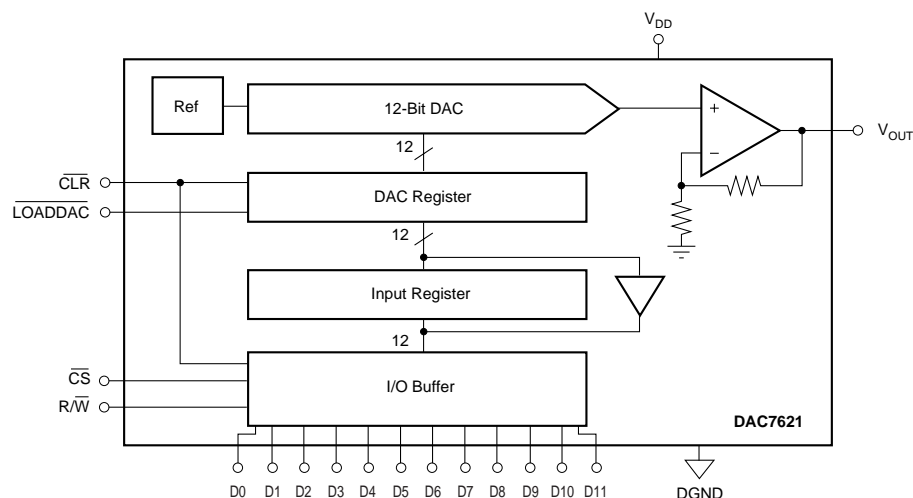


FEATURES

- LOW POWER: 1.8mW
- UNIPOLAR OR BIPOLAR OPERATION
- SETTLING TIME: 10 μ s to 0.012%
- 12-BIT LINEARITY AND MONOTONICITY: -40°C to +85°C
- DATA READBACK
- DOUBLE-BUFFERED DATA INPUTS
- SSOP-24 PACKAGE

DAC7621

12-Bit, Parallel Input
DIGITAL-TO-ANALOG CONVERTER



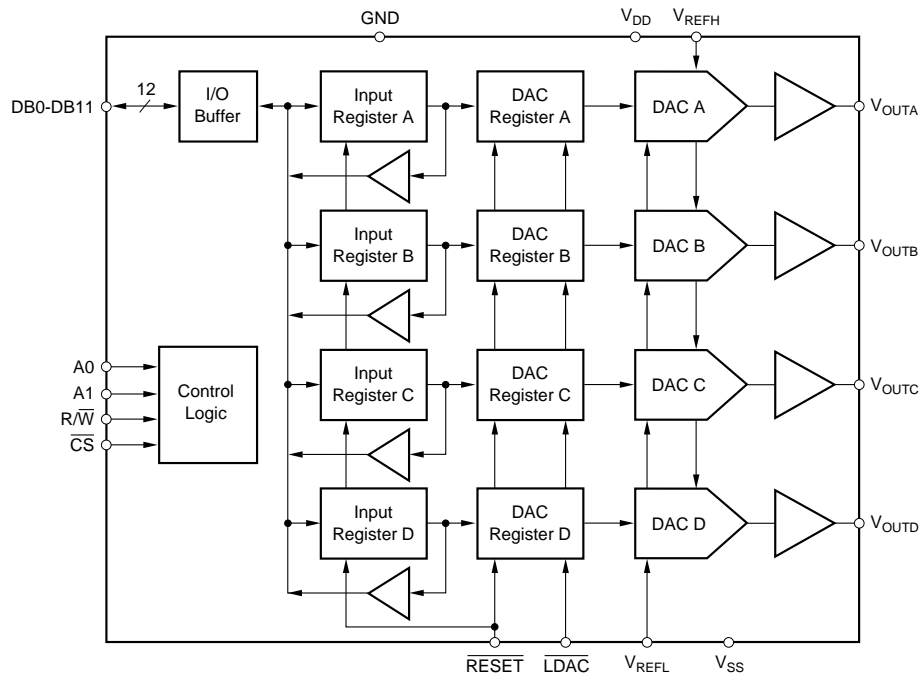
FEATURES

- LOW POWER: 2.5mW
- FAST SETTLING: 7 μ s to 1 LSB
- 1mV LSB WITH 4.095V FULL-SCALE RANGE
- COMPLETE WITH REFERENCE
- 12-BIT LINEARITY AND MONOTONICITY OVER INDUSTRIAL TEMP RANGE
- ASYNCHRONOUS RESET TO 0V

Digital-to-Analog Converters—New Products

DAC7624, DAC7625

12-Bit, Quad, Voltage Output
DIGITAL-TO-ANALOG CONVERTER

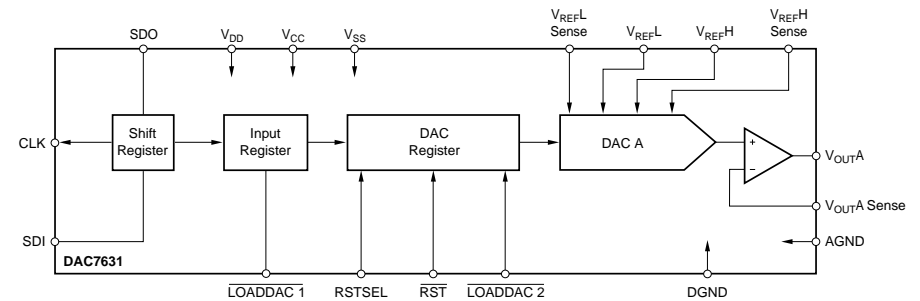
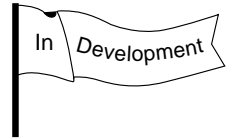


FEATURES

- LOW POWER: 20mW
- UNIPOLAR OR BIPOLAR OPERATION
- SETTLING TIME: 10 μ s to 0.012%
- 12-BIT LINEARITY AND MONOTONICITY: -40°C to +85°C
- RESET TO MID-SCALE (DAC7624) OR ZERO-SCALE (DAC7625)
- DATA READBACK
- DOUBLE-BUFFERED DATA INPUTS

DAC7631

Serial Input, 16-Bit, Voltage Output
DIGITAL-TO-ANALOG CONVERTER



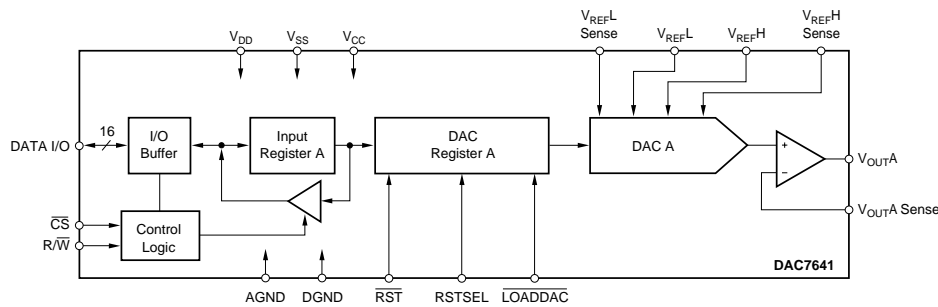
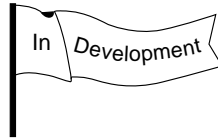
FEATURES

- LOW POWER: 2.5mW
- UNIPOLAR OR BIPOLAR OPERATION
- SETTLING TIME: 10 μ s to 0.003%
- 16-BIT LINEARITY AND MONOTONICITY: -40°C to +85°C
- USER-SELECTABLE RESET TO MID-SCALE OR ZERO-SCALE
- SMALL SSOP-20 PACKAGE

Digital-to-Analog Converters—New Products

DAC7641

16-Bit, Voltage Output
DIGITAL-TO-ANALOG CONVERTER

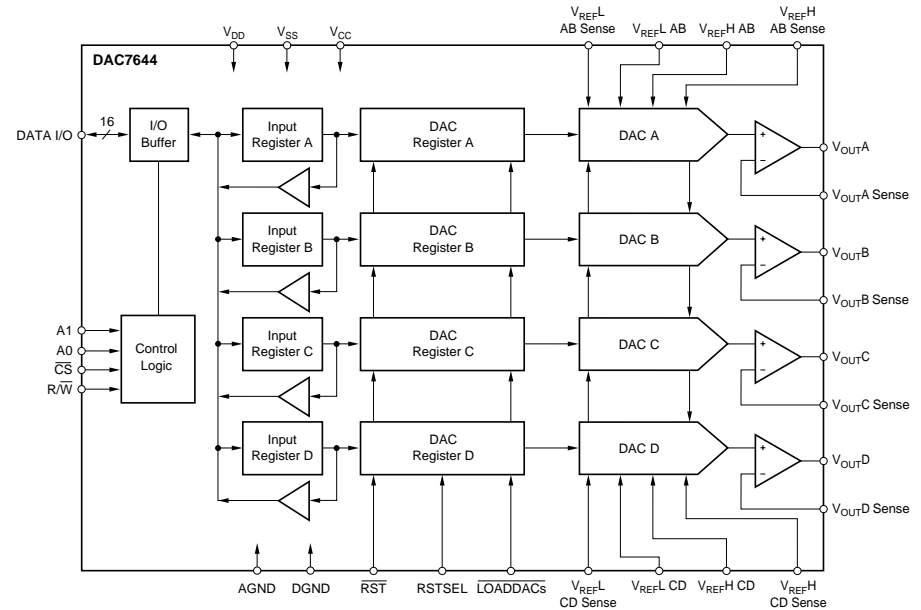


FEATURES

- LOW POWER: 2.5mW
- UNIPOLAR OR BIPOLAR OPERATION
- SETTLING TIME: 10 μ s to 0.003%
- 16-BIT LINEARITY AND MONOTONICITY: -40°C to +85°C
- PROGRAMMABLE RESET TO MID-SCALE OR ZERO-SCALE
- DATA READBACK
- DOUBLE-BUFFERED DATA INPUTS

DAC7644

16-Bit, Quad
DIGITAL-TO-ANALOG CONVERTER



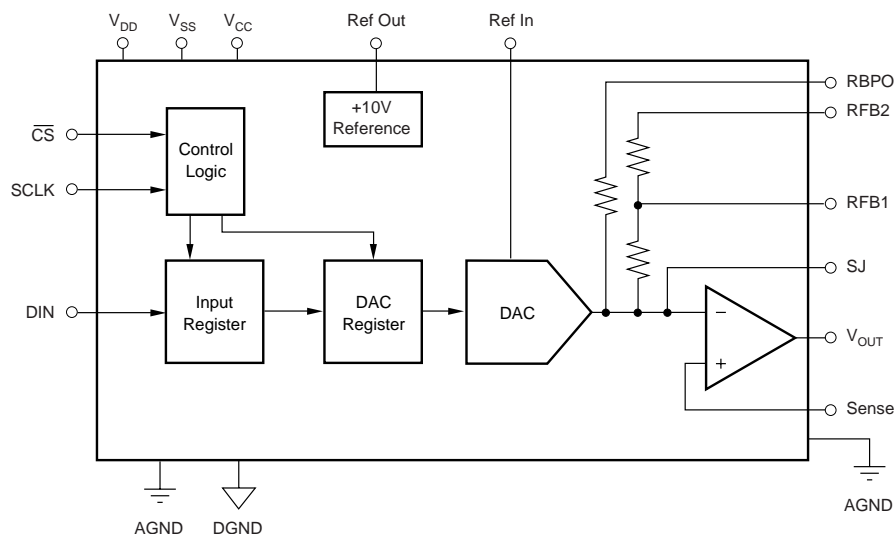
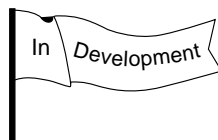
FEATURES

- LOW POWER: 10mW Single Supply
- UNIPOLAR OR BIPOLAR OPERATION
- SETTLING TIME: 10 μ s to 0.003%
- 15-BIT LINEARITY: t_{MIN} to t_{MAX}
- RESET TO MIN VALUE OR CENTER-SCALE
- DATA READBACK
- DOUBLE-BUFFERED DATA INPUTS
- 15-BIT MONOTONICITY: t_{MIN} to t_{MAX}
- SSOP-48 PACKAGE

Digital-to-Analog Converters—New Products

DAC7731

16-Bit
DIGITAL-TO-ANALOG CONVERTER

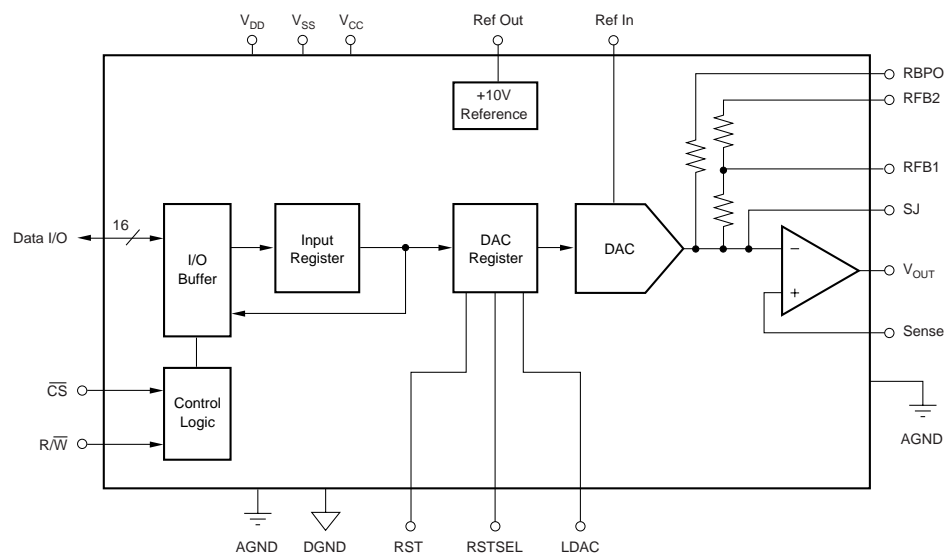


FEATURES

- LOW POWER: 60mW
- UNIPOLAR OR BIPOLAR OPERATION
- SETTLING TIME: 5 μ s to 0.003%
- 16-BIT LINEARITY: t_{MIN} to t_{MIN}
- PACKAGE: TQFP-48
- RESET TO MIN VALUE OR CENTER-SCALE
- DATA READBACK
- DOUBLE-BUFFERED DATA INPUTS
- 16-BIT MONOTONICITY: t_{MIN} to t_{MIN}

DAC7741

16-Bit, Parallel Input, Unipolar or Bipolar Output
DIGITAL-TO-ANALOG CONVERTER



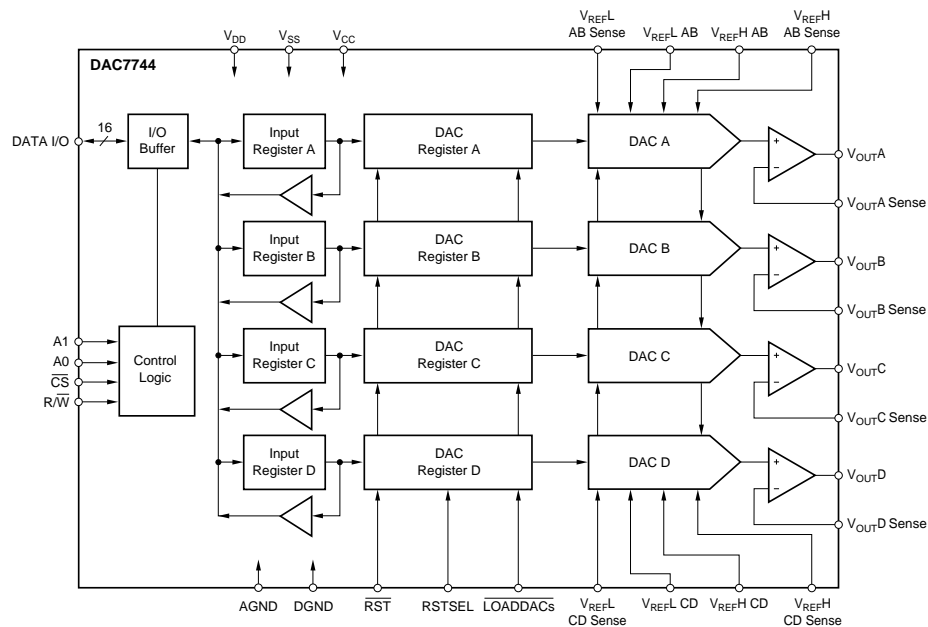
FEATURES

- LOW POWER: 60mW
- UNIPOLAR OR BIPOLAR OPERATION
- SETTLING TIME: 5 μ s to 0.003%
- 16-BIT LINEARITY: t_{MIN} to t_{MAX}
- PACKAGE: TQFP-48
- RESET TO MIN VALUE OR CENTER-SCALE
- DATA READBACK
- DOUBLE-BUFFERED DATA INPUTS
- 16-BIT MONOTONICITY: t_{MIN} to t_{Max}

Digital-to-Analog Converters—New Products

DAC7744

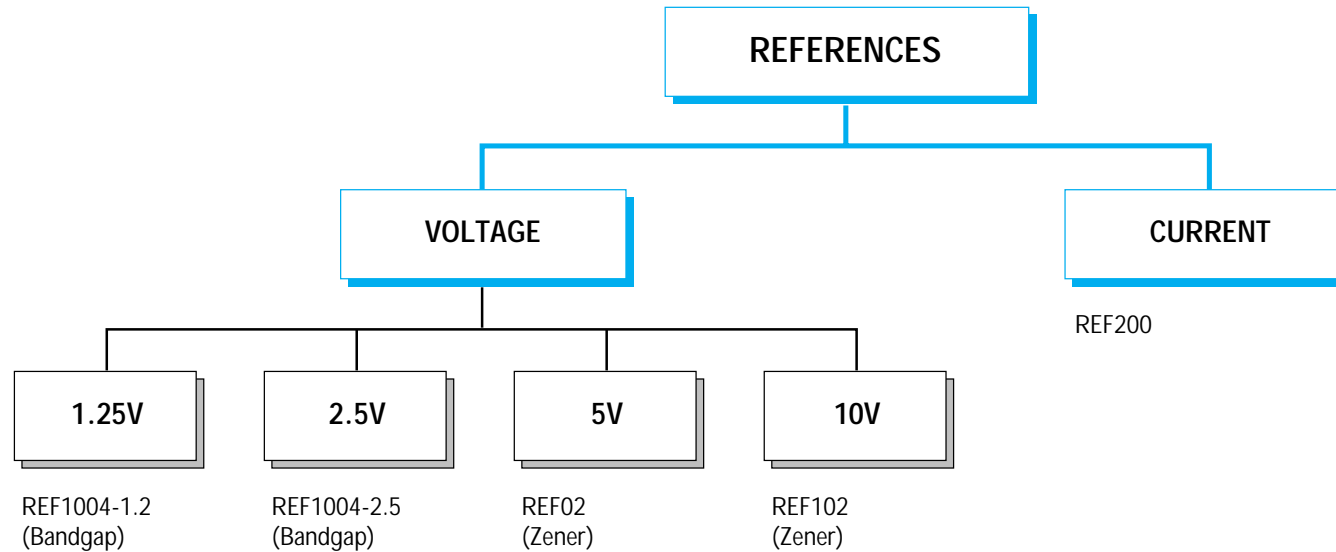
16-Bit, Quad DIGITAL-TO-ANALOG CONVERTER



FEATURES

- **LOW POWER:** 185mW
- **UNIPOLAR OR BIPOLAR OPERATION**
- **SETTLING TIME:** 10 μ s to 0.003%
- **16-BIT LINEARITY:** t_{MIN} to t_{MAX}
- **RESET TO MIN VALUE OR CENTER-SCALE**
- **DATA READBACK**
- **DOUBLE-BUFFERED DATA INPUTS**
- **16-BIT MONOTONICITY:** t_{MIN} to t_{Max}
- **PACKAGE:** SSOP-48

References—Selection Tree and Guide



VOLTAGE REFERENCES

Product	Description	Output Voltage (V) max	Output Voltage Drift (\pm ppm/ $^{\circ}$ C) max	Stability (ppm/kHz) typ	Line Regulation (ppm/V) max	Load Regulation (ppm/mA) max	Quiescent Current (mA) max	Specified Temp Range ($^{\circ}$ C) min to max	Package(s)	Lowest Grade Price (1000s)
REF02	5V Precision, Zener Reference	+5 \pm 0.010	10	—	80	50	1.4	–40 to +85	DIP-8, SO-8	\$1.64
REF102	10V Precision, Zener Reference Ext. Industrial and Military Temperature Ranges	+10 \pm 0.0025	2.5	5	1	10	1.4	–40 to +85 and –55 to +125	DIP-8, SO-8, TO99-8	2.25
REF1004-1.2	1.2V Precision, Micropower, Bandgap Shunt Reference Commercial and Industrial Temperature Ranges	+1.235 \pm 0.004 (over temp)	20*	20	—	—	10 μ A ⁽¹⁾	0 to +70 and –40 to +85	SO-8	1.28
REF1004-2.5	2.5V Precision, Micropower, Bandgap Shunt Reference Commercial and Industrial Temperature Ranges	+2.5 \pm 0.011 (over temp)	20*	20	—	—	20 μ A ⁽¹⁾	0 to +70 and –40 to +85	SO-8	1.22

NOTE: (1) Minimum operating current.

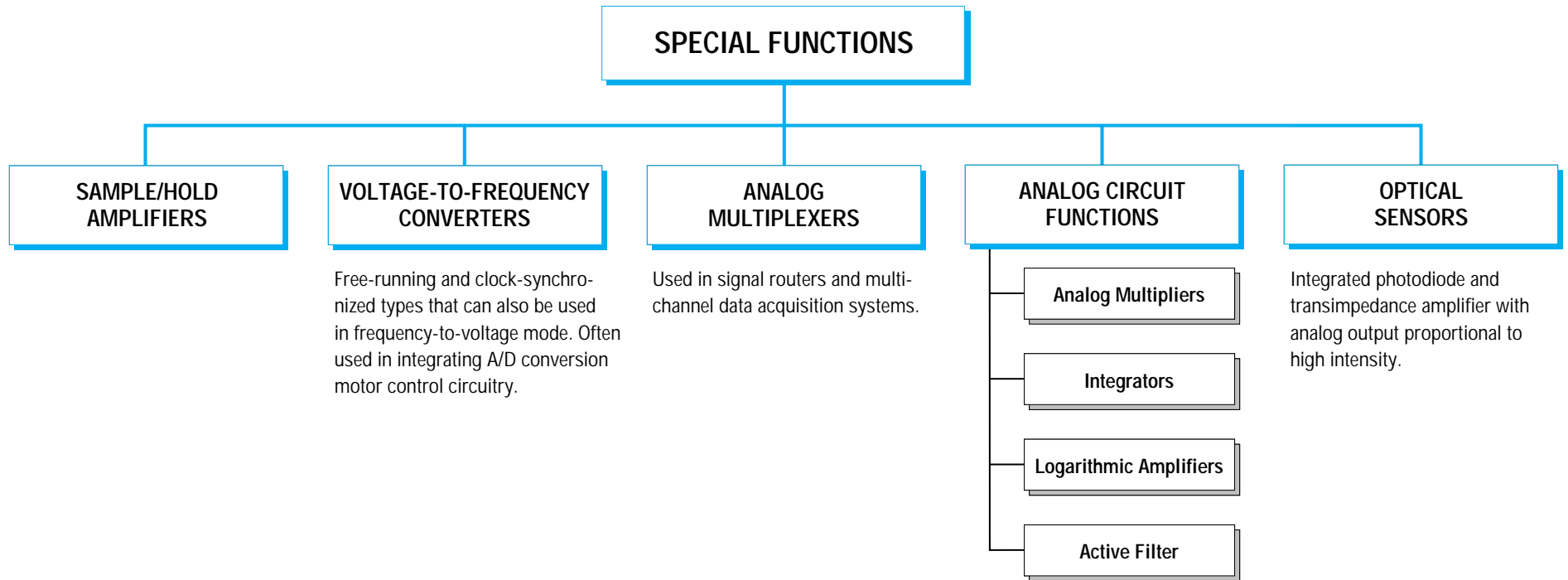
CURRENT REFERENCES

Product	Description	Output Current (μ A) max	Output Current Drift (\pm ppm/ $^{\circ}$ C) typ	Output Impedance 3.5V to 30V ($M\Omega$) min	Noise 0.1kHz to 10Hz (nAp-p) typ	Voltage Compliance (V) min to max	Specified Temp Range ($^{\circ}$ C) min to max	Package(s)	Lowest Grade Price (1000s)
REF200	Dual Current Source/Sink	200 \pm 2 ⁽¹⁾	25	200	1	2.5 to 40	–25 to +85	DIP-8, SO-8	\$2.38

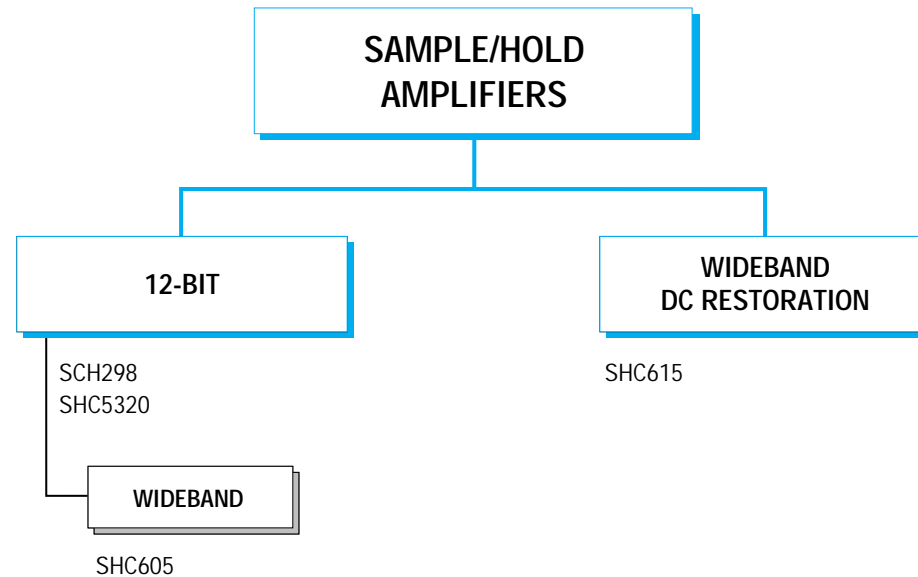
NOTE: (1) Dual 100 μ A current sources.

* Denotes typical. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Special Functions—Main Selection Tree



Special Functions—Selection Tree and Guide



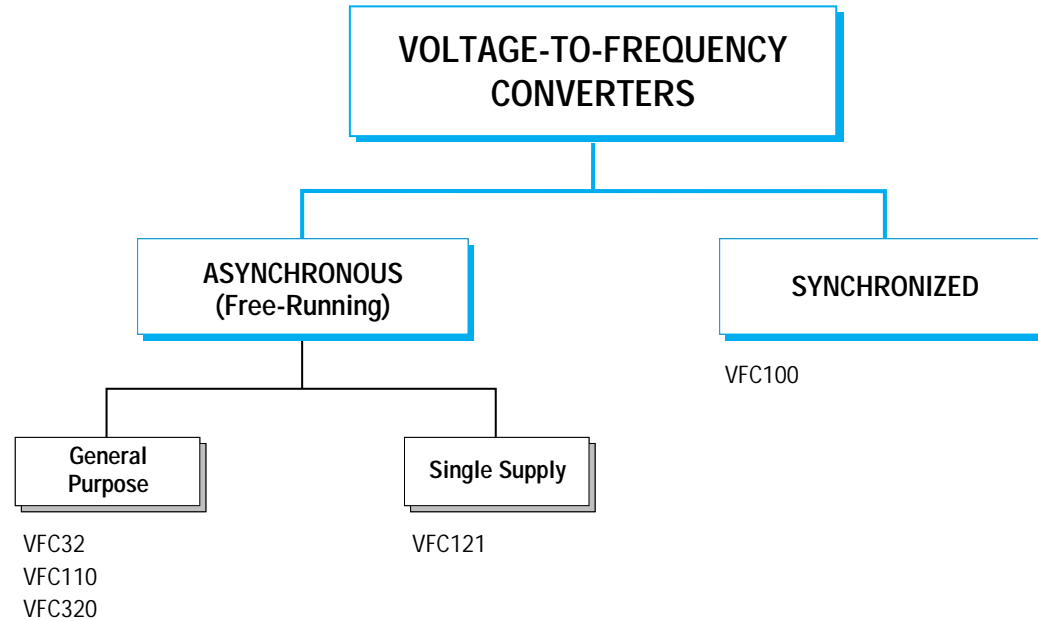
SAMPLE/HOLD AMPLIFIERS

Product	Description	Gain Error (%) max	Offset Error (mV) max	Small-Signal Bandwidth (MHz) typ	Acquisition Time to 0.01% (μs) max	Droop Rate (μV/μs) max	Input Range (Vp-p) max	Temp Range ⁽¹⁾	Package(s)	Lowest Grade Price (1000s)
SHC298	Lowest Cost, Industry Standard	±0.005	±7	0.125	10	±100000	23	Com, Ind	TO-99, DIP-8, SO-8	\$2.00
SHC605	Low Cost, Wideband	±0.005*	±7.5	200	0.02*	±8000	4	Ext	SO-16	23.80
SHC615	Wideband DC Restoration Circuit	±0.1 ^{(2)*}	8*	750	15ns ⁽²⁾	±33000 ⁽²⁾	2	Ext	DIP-14, SO-14	5.95
SHC5320	Low Cost	NA	±0.5	2	1.5	±0.5	20	Com, Mil	DIP-14, CerDIP-14, SOL-16	7.28

NOTE: (1) Temperature range: Com = 0°C to +70°C, Ind = -25°C to +85°C, Ext = -40°C to +85°C, Mil = -55°C to +125°C. (2) With 27pF external hold capacitor.

* Denotes typical. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Special Functions—Selection Tree and Guide



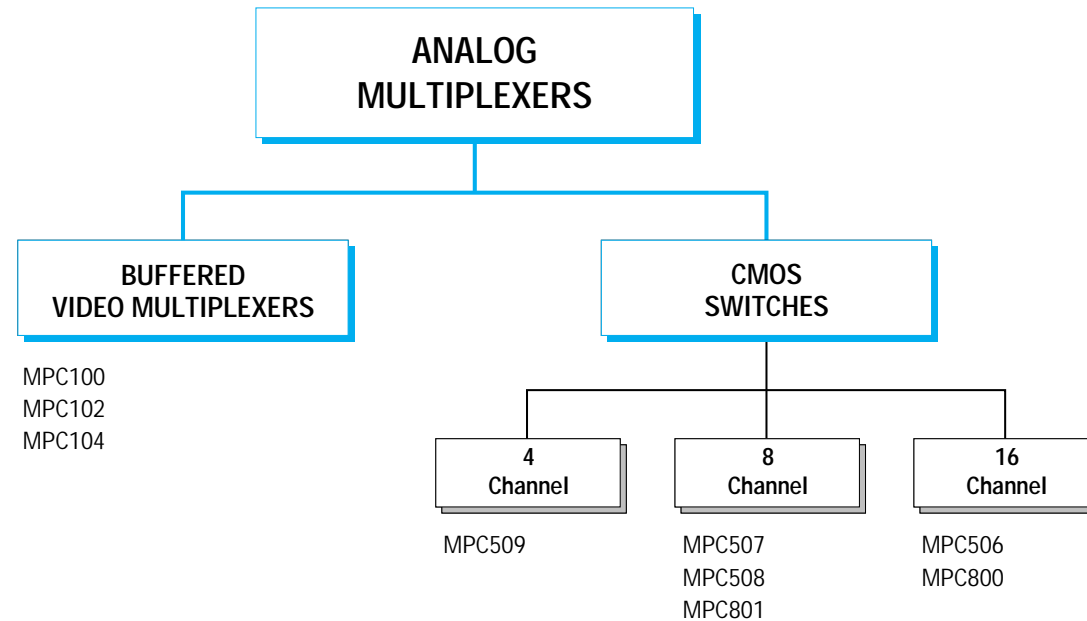
VOLTAGE-TO-FREQUENCY CONVERTERS

Product	Description	Frequency Range (kHz)	V _{IN} Range (V)	Linearity (% of FSR) max	Quiescent Current (mA) typ	Temp Range ⁽¹⁾	Package(s)	Lowest Grade Price (1000s)
VFC32	Low Cost	User-Selected 500kHz max	User-Selected	±0.01 at 10kHz ±0.05 at 100kHz	5.5	Com, Ind, Mil	DIP-14, SO-14, TO-100 Metal Can	\$5.76
VFC100	Synchronized	Clock-Programmed 2MHz max	0 to +10	±0.1 at 1MHz	10.6	Ind	CerDIP-16	6.55
VFC110	High Performance, Low Jitter	User-Selected 4MHz max	0 to +10	±0.05 at 1MHz	13	Ind, Mil	CerDIP-14, DIP-14	9.84
VFC121	Single Supply, Low Power, High Input Z	User-Selected 1.5MHz max	User-Selected	±0.03 at 100kHz	7.5	Ind	DIP-14	7.93
VFC320	Precision, 20ppm/°C Gain Drift	User-Selected 1MHz max	User-Selected	±0.002 at 10kHz	6.5	Ind, Mil	CerDIP-14, TO-100 Metal Can	10.40

NOTE: (1) Com = 0°C to +70°C, Ind = -25°C to +85°C, Mil = -55°C to +125°C.

Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Special Functions—Selection Tree and Guide

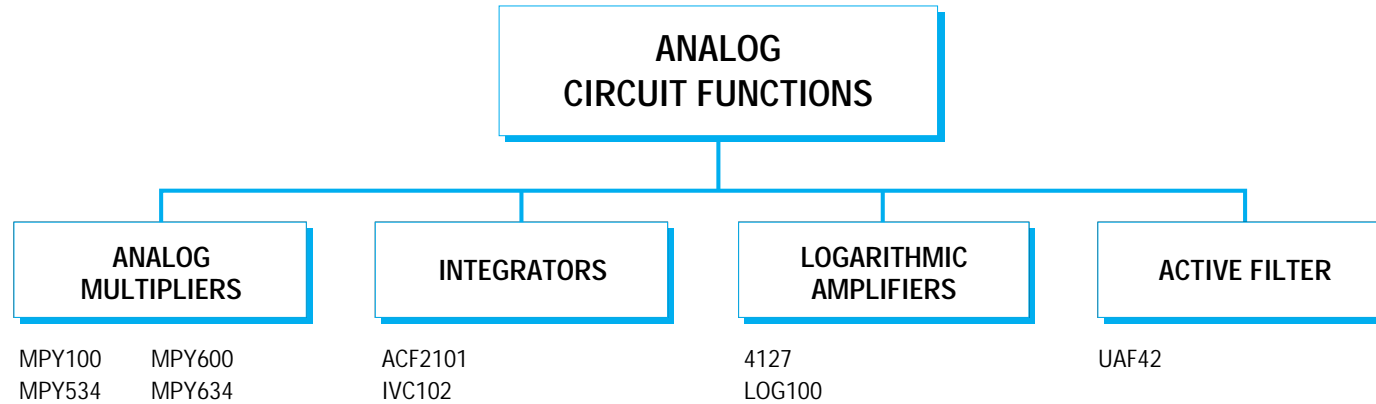


ANALOG MULTIPLEXERS

Product	Description	Channels	Input Range (V) typ	On Resistance (Ω) max	Settling Time (to 0.01%) typ	Temp Range ($^{\circ}\text{C}$) min to max	Package(s)	Lowest Grade Price (1000s)
MPC100	4x1 Video, Single-Ended	4-Channel	± 4.2	—	—	-40 to +85	SO-14, DIP-14	\$5.29
MPC102	2x1, Dual Differential	2-Channel	± 3.6	—	—	-40 to +85	SO-14, DIP-14	4.79
MPC104	2x1 Video, Single-Ended	2-Channel	± 3.6	—	—	-40 to +85	SO-8, DIP-8	1.75
MPC506	Protected Inputs, CMOS	16-Channel, Single-Ended	± 15	1.8k	3.5 μs	-40 to +85	DIP-28, SO-28	5.33
MPC507	Protected Inputs, CMOS	8-Channel, Differential	± 15	1.8k	3.5 μs	-40 to +85	DIP-28, SO-28	5.33
MPC508	Protected Inputs, CMOS	8-Channel, Single-Ended	± 15	1.8k	3.5 μs	-40 to +85	DIP-16, SOL-16	2.62
MPC509	Protected Inputs, CMOS	4-Channel, Differential	± 15	1.8k	3.5 μs	-40 to +85	DIP-16, SOL-16	2.62
MPC800	High Speed, CMOS	16 Single-Ended or 8 Differential	± 15	750	800ns	0 to +70	CerDIP-28	23.76
MPC801	High Speed, CMOS	8 Single-Ended or 4 Differential	± 15	750	800ns	0 to +70	CerDIP-28	14.40

Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Special Functions—Selection Tree and Guide



ANALOG MULTIPLIERS

Product	Description	Transfer Function	Error at +25°C (%) max	Temperature Coefficient (%/°C) typ	Feed-through (mVp-p)	1% BW (MHz) typ	Temp Range ⁽¹⁾	Package(s)	Lowest Grade Price (1000s)
MPY100	General Purpose	$[(X_1 - X_2)(Y_1 - Y_2)/10] + Z_2$	±0.5	0.008	30	70kHz	Ind, Mil	Metal TO-100, CerDIP-14	\$11.55
MPY534	Adjustable Scale Factor	$[(X_1 - X_2)(Y_1 - Y_2)/10] + Z_2$	±0.25	0.008	0.05%	3	Com, Mil	Metal TO-100, CerDIP-14	15.90
MPY600	Wide Bandwidth	$[(X_1 - X_2)(Y_1 - Y_2)/2] + Z_2$	±0.025	0.02	2	30	Ind	DIP-16	11.17
MPY634	Scale Factor, Wide Bandwidth	$[(X_1 - X_2)(Y_1 - Y_2)/10] + Z_2$	±0.5	0.015	0.15%	10	Com, Ind	Metal TO-100, DIP-14, SOL-16	11.03

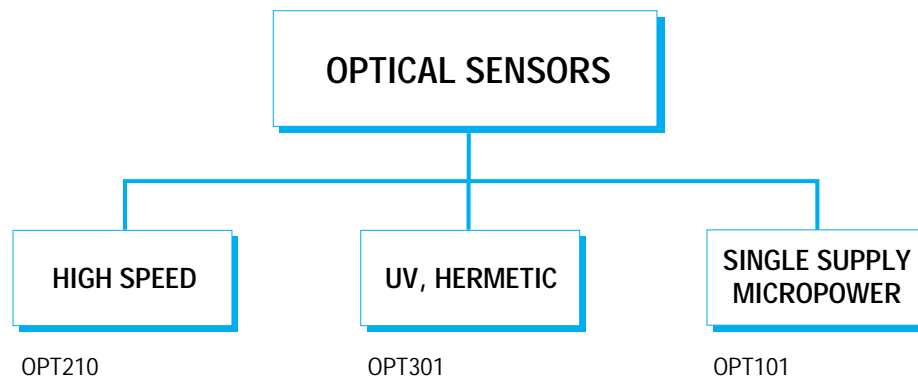
OTHER ANALOG CIRCUIT FUNCTIONS

Product	Description	Function	Comments	Temp Range ⁽¹⁾	Package(s)	Lowest Grade Price (1000s)
4127	Logarithmic Amplifier	K Log (I_1/I_{REF})	Versatile part that contains an internal reference and a current inverter. 1% and 0.5% accuracy.	Com	Double Wide CerDIP-24	\$61.00
ACF2101	Dual Switched Integrator	Dual, transimpedance amplifier that converts an input current to an output voltage by integrating the current for a user-determined period of time. $V_{OUT} = -(1/C) I_{IN} dt$	Includes HOLD and RESET switches and output multiplexer. Eliminates large feedback resistor of traditional I-to-V converters.	Ext	DIP-24, SO-24	14.62
IVC102	Switched Integrator	Single integrating amplifier with integrating capacitors and low leakage FET switches.	Ideal for amplifying low level sensors such as photodiodes and ionization chambers.	Ext	DIP-24, SO-14	4.25
LOG100	Logarithmic Amplifier	K Log (I_1/I_2)	Optimized for log ratio of current inputs. Specified over six decades of input (1nA to 1mA), 55mV total error, 0.25% log conformity.	Com	Double Wide CerDIP-14	52.94
UAF42	Universal Active Filter	Active filter which can be configured for a wide range of low-pass, high-pass, and band-pass filters.	Uses classical state-variable analog architecture.	Ind	DIP-14, CerDIP-14, SOL-16	7.07

NOTE: (1) Temperature range: Com = 0°C to +70°C, Ind = -25°C to +85°C, Ext = -40°C to +85°C.

Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Special Functions—Selection Tree and Guide



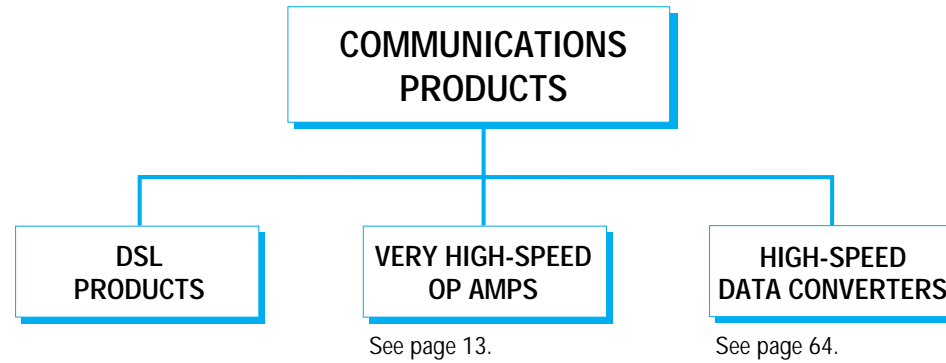
OPTICAL SENSORS

Product	Description	Small-Signal Bandwidth (kHz) typ	Photodiode Dimensions	Feedback Resistor	Dark Error (mV) max	Power Supply Range (V)	Quiescent Current (μA) max	Package(s)	Lowest Grade Price (1000s)
OPT101	Low cost, general purpose, single-supply operation with nominal 7.5mV output offset pedestal.	14	0.09" x 0.09"	1MΩ	+5 to +10 ⁽¹⁾	+2.7 to +36	240	Clear DIP-8, Clear DIP-8 with J-formed leads, SIP-5	\$2.55
OPT210	Wide bandwidth with infrared response and extended bandwidth using bootstrap buffer.	900 (with external bootstrap buffer)	0.09" x 0.09"	External	±10	±2.25 to ±18	4000	Clear DIP-8, Clear DIP-8 with J-formed leads, SIP-5	4.25
OPT301	Hermetic, general purpose, extended ultraviolet response, Wide temperature range.	4	0.09" x 0.09"	1MΩ	±2	±2.25 to ±18	500	TO99-8	10.59

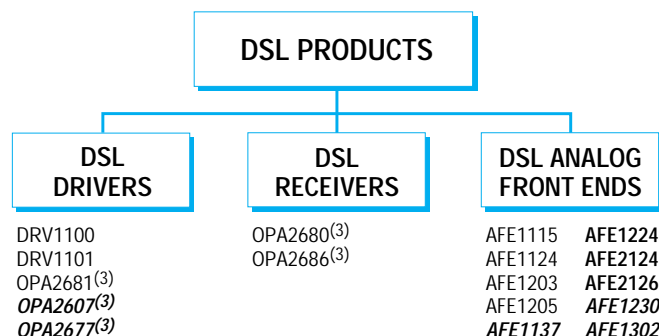
NOTE: (1) Offset for single-supply operation.

Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Communications Products—Main Selection Tree



Communications Products—Selection Tree and Guide



DSL DRIVERS AND RECEIVERS

Product	Description	Peak Current (mA) min	Output Voltage Swing 100Ω Load ⁽¹⁾ (Vp-p) min	Output Voltage Swing 15Ω Load ⁽¹⁾ (Vp-p) min	Power Supply (V)	BW ^(1, 2) (3dB)	Slew Rate (V/μs)	THD ^(1, 2)	Package(s)	Lowest Grade Price (1000s)
DRV1100	Differential DSL Line Driver	200mA	8.5	6	+5	5MHz	80	-72dBc	DIP, SO-8	\$2.95
DRV1101	Differential Line Driver, ADSL G.Lite CPE	200mA	8.5	6	+5	10MHz	100	-81dBc	SO-8	2.95
OPA2680 ⁽³⁾										
OPA2681 ⁽³⁾										
OPA2686 ⁽³⁾										
OPA2607⁽³⁾										
OPA2677⁽³⁾										

NOTES: (1) Total output voltage swing with true differential signal and floating load using single 5V supply. (2) 6Vp-p, 15Ω load, at 10kHz. (3) For information on these parts, please see the High-Speed Op Amp section on page 20.

DSL ANALOG FRONT ENDS

Product	Description	Design Speed (kbps)	Minimum Speed (kbps)	Power (mW)	Power Supply Voltage (V)	Application	Temp Range ⁽¹⁾	Package(s)	Lowest Grade Price (1000s)
AFE1302	ADSL G.Lite, Programmable Low Power Mode	1100	—	500	+5	ADSL G.LITE	Com	SSOP-40	\$11.00
AFE1230	Serial Interface, Programmable Filters	2320	64	650	+5	HDSL2, SDSL	XInd	SSOP-36	18.00
AFE1137	AFE, Low Power, Serial Interface, VCXO, Equalizer	768	160	300	+5	DSL	XInd	SSOP-56	14.40
AFE1115	Parallel Interface, Including VCXO Circuitry	1168	192	300	+5	HDSL, SDSL	XInd	SSOP-56	12.00
AFE1124	Low Power, Serial Interface	1168	64	250	+5	HDSL, SDSL	XInd	SSOP-28	9.00
AFE1203	Single-Pair HDSL, Programmable Low Power Mode	2320	160	385	+5	HDSL, SDSL	XInd	SSOP-48	18.00
AFE1205	Single-Pair HDSL, Programmable Low Power Mode	2320	160	385	+5	HDSL, SDSL	XInd	SSOP-48	18.00
AFE1224	Single-Pair HDSL, Programmable Low Power Mode	2320	64	355	+5	HDSL, SDSL	XInd	SSOP-28	14.40
AFE2124	Dual Low Power, Serial Interface	1168	64	500	+5	HDSL, SDSL	XInd	SSOP-48	18.00
AFE2126	Dual, Low Power, Serial Interface	1168	64	280	+5	HDSL, SDSL	XInd	SSOP-48	18.00

NOTE: (1) XInd = -40°C to +85°C. (2) Com = 0°C to +70°C.

The analog front-end components provide all of the active analog circuitry needed to connect a digital signal processor to an external compromise hybrid and line transformer. All parts feature scalable data rates making them ideal for both HDSL and MDSL applications.

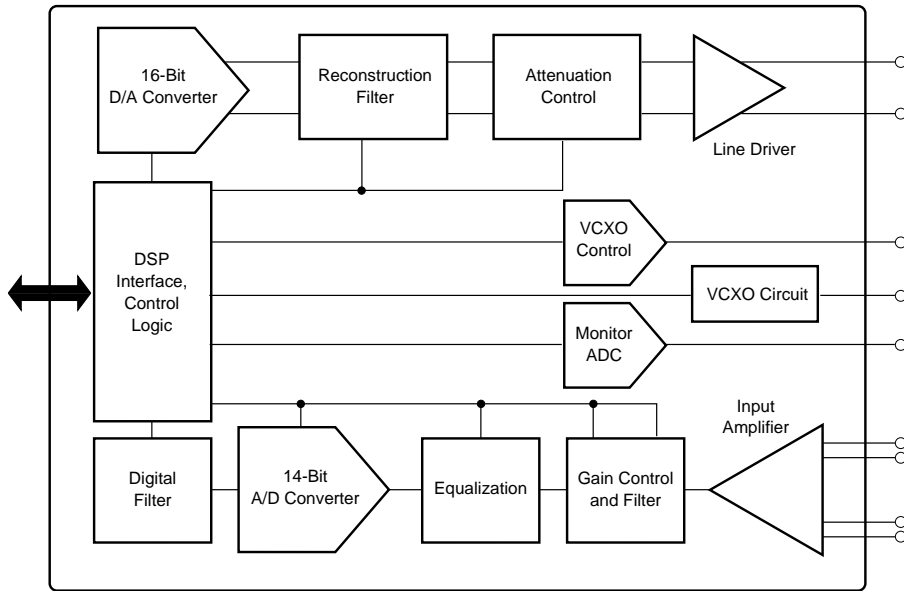
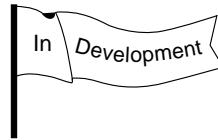
In addition to the standard products shown above, Burr-Brown has the capability to design and produce new analog front-end chips for volume production requirements. Our “core cell” approach means that we can design new analog front-end products using critical circuit blocks which already exist, for fast turnaround time with relatively low risk.

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Communications Products—New Products

AFE1137

DSL ANALOG FRONT END



AFE1137

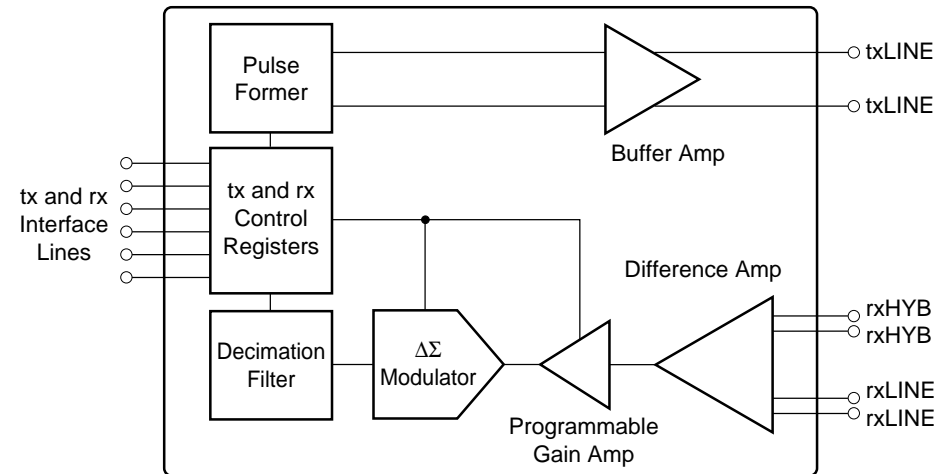
Patents Pending

FEATURES

- PARADYNE HOTWIRE MVL ANALOG FRONT END
- 768kbps OPERATION
- SCALABLE DATA RATE
- VCXO CIRCUITRY ON-CHIP
- LINE DRIVER ON-CHIP
- +5V POWER (5V or 3.3V digital)
- PROGRAMMABLE FILTERS

AFE1224

2Mbps, Single-Pair HDSL ANALOG FRONT END



AFE1224

Patents Pending

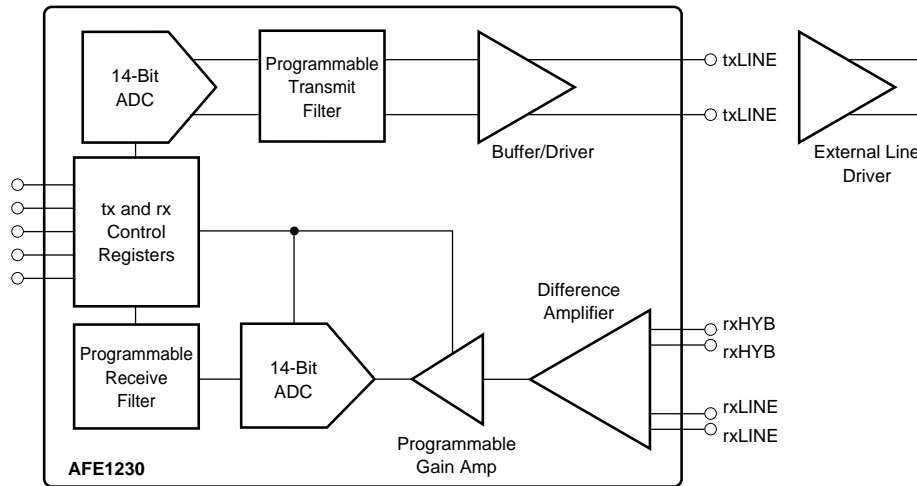
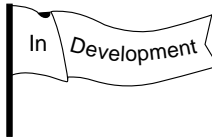
FEATURES

- E1/T1 SINGLE PAIR 2B1Q OPERATION
- 64kbps TO 2320kbps OPERATION
- PROGRAMMABLE POWER DISSIPATION
- 355mW AT 2.32Mbps
- SCALABLE DATA RATE
- PIN-COMPATIBLE WITH AFE1124
- SSOP-28

Communications Products—New Products

AFE1230

HD SL2 AND SD SL ANALOG FRONT END



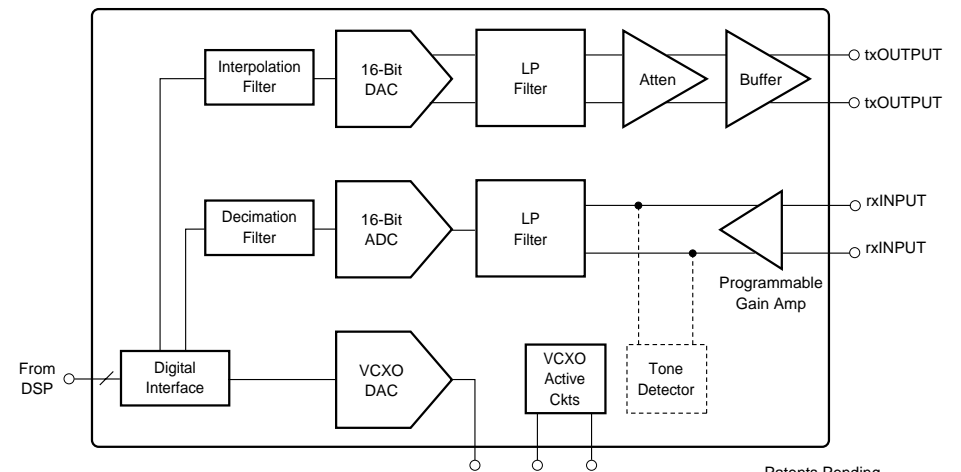
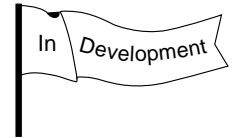
Patents Pending

FEATURES

- SERIAL DIGITAL INTERFACE
- E1, T1 AND SUBRATE OPERATION
- 64kbps to 2320kbps OPERATION
- SCALABLE DATA RATE
- PROGRAMMABLE tx AND rx FILTERS
- 650mW POWER DISSIPATION AT E1
- +5V POWER (5V or 3.3V digital)
- 36-PIN PACKAGE

AFE1302

ADSL G.LITE ANALOG FRONT END



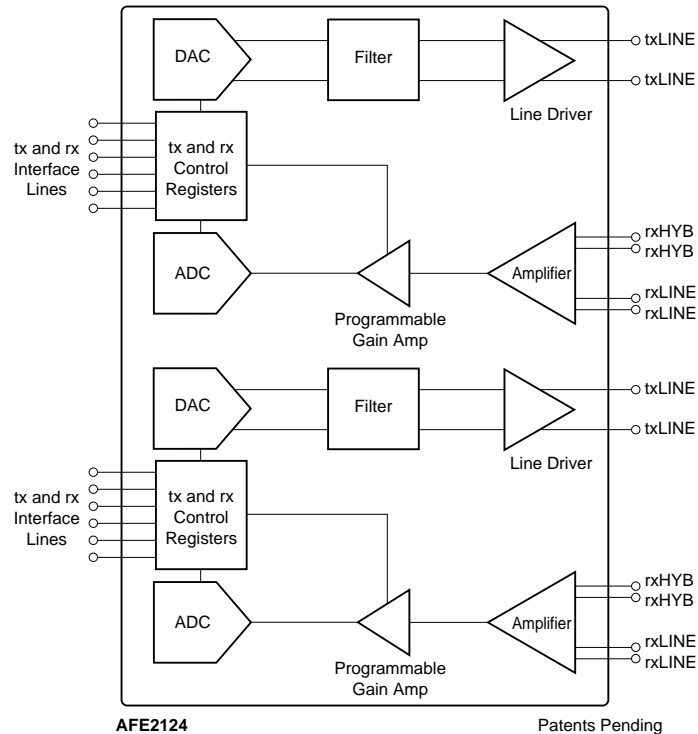
Patents Pending

FEATURES

- COMPLETE ADSL G.LITE ANALOG INTERFACE
- PROGRAMMABLE POWER DISSIPATION
- 500mW NOMINAL
- VCXO CIRCUITRY
- VCXO CONTROL DAC
- 0°C TO +70°C OPERATION

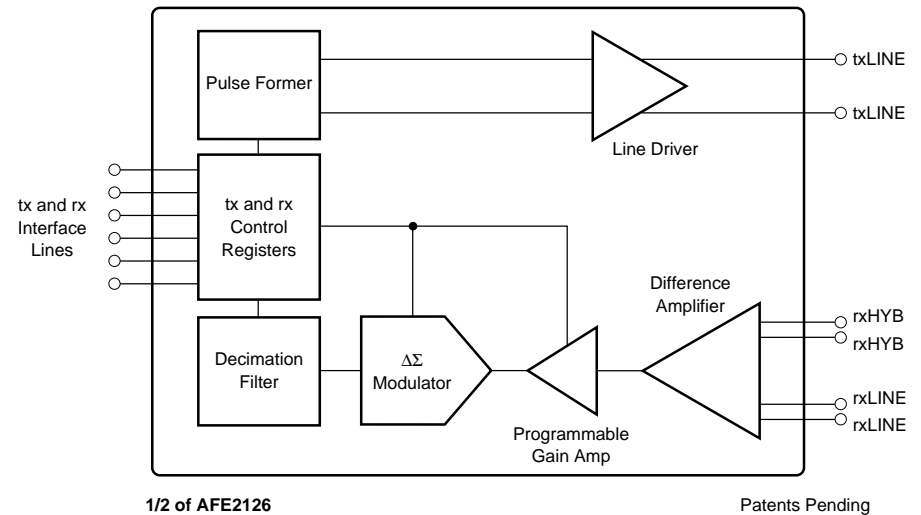
AFE2124

DUAL HDSL ANALOG FRONT END



AFE2126

Dual HDSL/SDSL ANALOG FRONT END



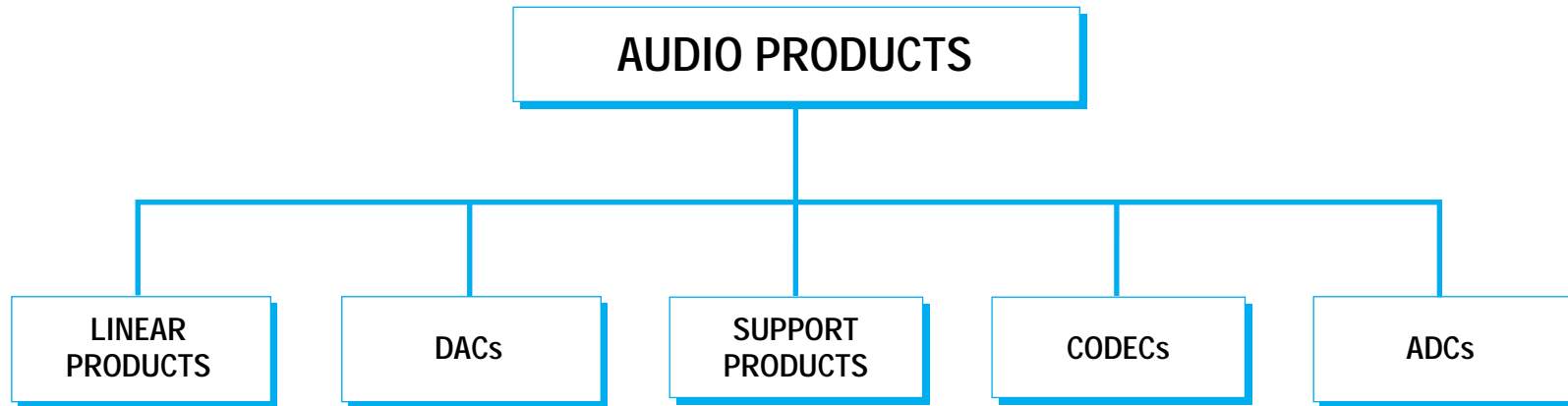
FEATURES

- SERIAL DIGITAL INTERFACE
- 64kbps TO 1168kbps OPERATION
- SCALABLE DATA RATE
- 500mW POWER DISSIPATION:
+5V Power (5V or 3.3V digital)
- SSOP-48

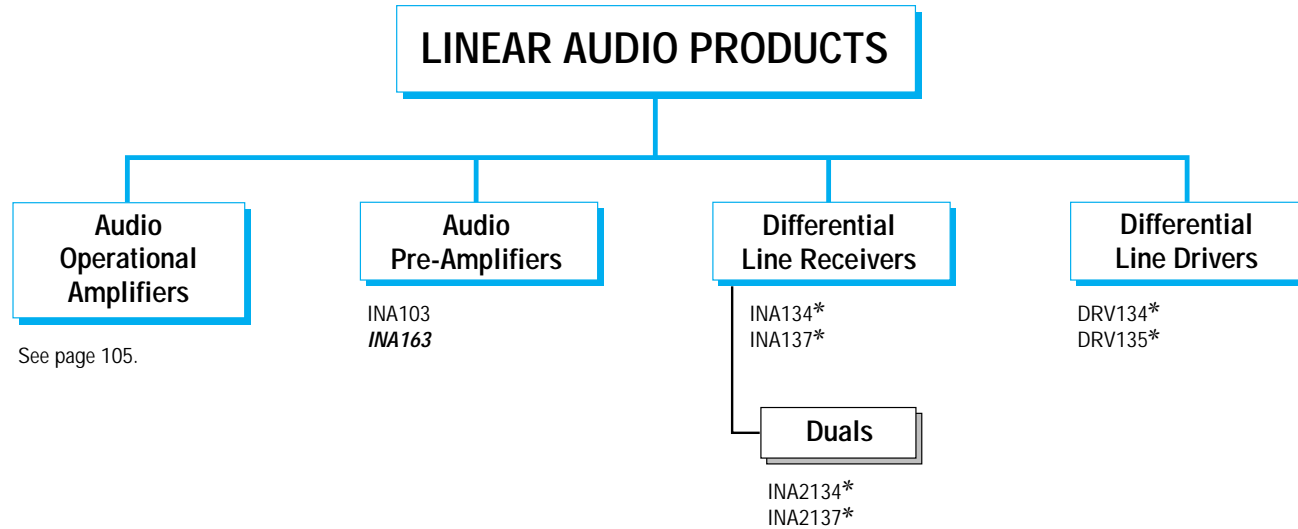
FEATURES

- SERIAL DIGITAL INTERFACE
- E1, T1 AND SDSL OPERATION
- 64kbps TO 1168kbps OPERATION
- SCALABLE DATA RATE
- 280mW POWER DISSIPATION PER CHANNEL
- TWO COMPLETE HDSL ANALOG INTERFACES
- +5V POWER (5V or 3.3V Digital)
- WIDE Rx GAIN RANGE: 0dB to 18dB
- SSOP-48 PACKAGE

Audio Products—Main Selection Tree



Audio Products—Selection Tree and Guide



LINEAR AUDIO PRODUCTS

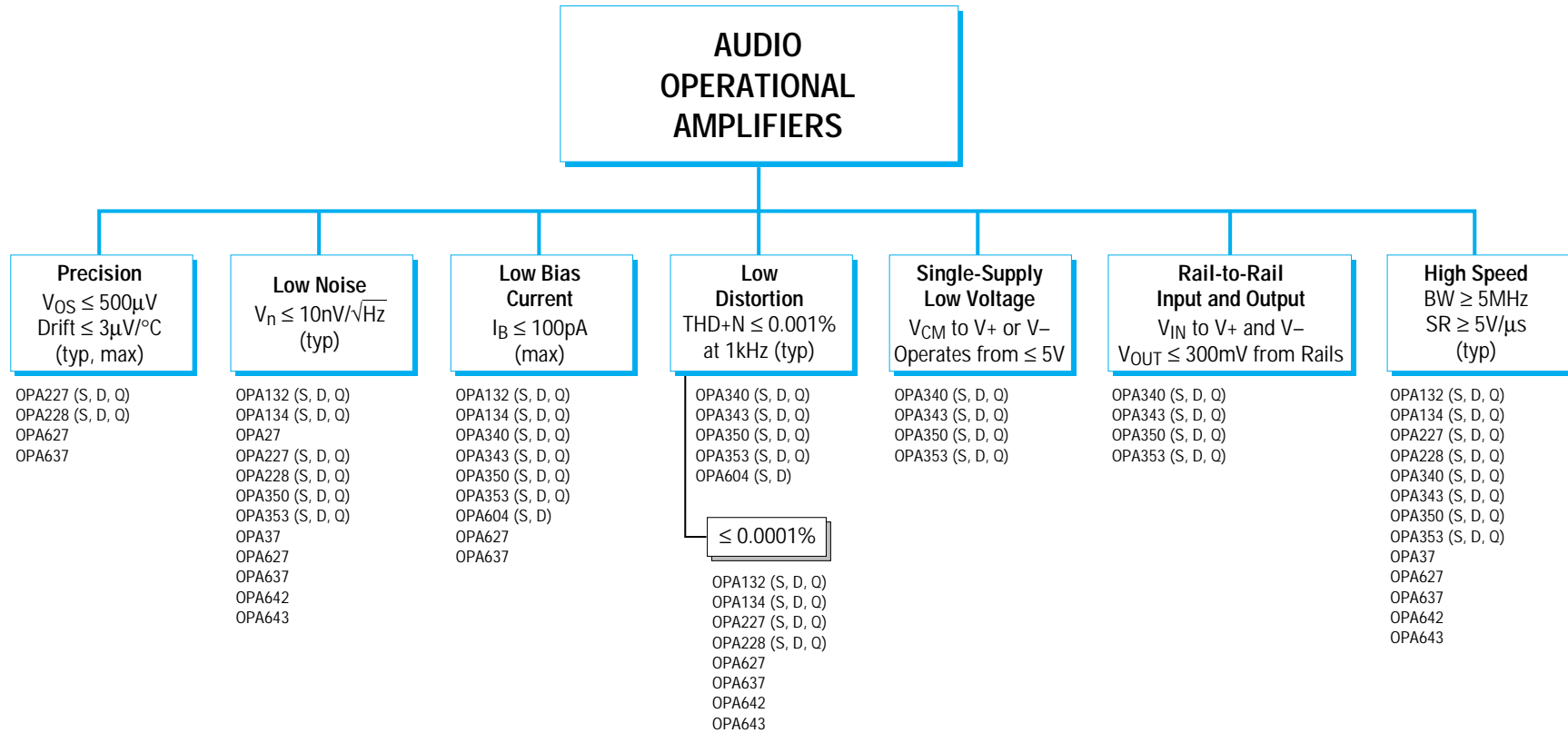
Product	Description	Gain (V/V)	Common-Mode Input Range ⁽¹⁾ (V) min	THD+N at 1kHz G = 1 (%) typ	Input Offset (±mV) max	Small-Signal Bandwidth (MHz) typ	Slew Rate (V/μs) typ	Power Supply Range (V)	Quiescent Current per Amp (±mA) typ	Package(s)	Lowest Grade Price (1000s)
DRV134	Improved SSM2142 Line Driver	2	±16 ⁽²⁾	0.001	10 ⁽³⁾	1.5	15	±4.5 to ±18	5.2	DIP-8, SOL-16	\$1.80
DRV135	Improved SSM2142 in SO-8 Package	2	±16 ⁽²⁾	0.001	10 ⁽³⁾	1.5	15	±4.5 to ±18	5.2	SO-8	1.80
INA103	1nV/√Hz Noise, Low Distortion Pre-Amplifier	1 to 1000	±11	0.0012	0.1+5/G	6	15	±9 to ±25	9	DIP-16, SOL-16	4.60
INA134	0dB Differential Line Receiver, Improved SSM2141	1	±25	0.0005	1	3.1	14	±4 to ±18	2.4	DIP-8, SO-8	1.20
INA2134	Dual, 0dB Audio Differential Line Receiver	1	±25	0.0005	1	3.1	14	±4 to ±18	2.4	DIP-14, SO-14	2.15
INA137	±6dB Differential Line Receiver, Improved SSM2143	0.5, 2	±25	0.0005	1	4	14	±4 to ±18	2.4	DIP-8, SO-8	1.20
INA2137	Dual, ±6dB Audio Differential Line Receiver	0.5, 2	±25	0.0005	1	4	14	±4 to ±18	2.4	DIP-14, SO-14	2.15
INA163	Low Noise Microphone Preamp, 1nV/√Hz	1 to 5000	±11	0.0009	0.5+5/G	6	15	±4.5 to ±18	8.5	SO-14	1.95

NOTES: (1) $V_S = \pm 15V$. (2) Output voltage swing, $V_S = \pm 18V$. (3) Differential offset voltage.

* These products are also contained in the Difference Amplifiers section on page 26.

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Audio Products—Selection Tree



Miniature Packages:

SOT23-5	MSOP-8	SSOP-16
OPA340 (S)	OPA350 (S)	OPA4340 (Q)
OPA343 (S)	OPA2340 (D)	OPA4343 (Q)
OPA353 (S)	OPA2343 (D)	OPA4350 (Q)
	OPA2350 (D)	OPA4353 (Q)
	OPA2353 (D)	

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Audio Products—Selection Guide

AUDIO OPERATIONAL AMPLIFIERS—Singles

Product	Description	Offset Voltage (±mV) max	Bias Current (±A) max	Noise at 1kHz (nV/√Hz) typ	Bandwidth (MHz) typ	Slew Rate (V/μs) typ	THD+N at 1kHz (%) typ	I _Q per Channel (±mA) typ	Power Supply Range (V) min to max	Package(s)	Lowest Grade Price (1000s)
OPA27	Very Low Noise, Precision	0.1	80nA	3.2	8	1.9	—	5.7	±4 to ±22	DIP-8, SO-8	\$1.06
OPA37	V _{CM} Low Noise, Precision	0.1	80nA	3.2	8	1.9	—	5.7	±4 to ±22	DIP-8, SO-8	1.08
OPA132	FET Input, Precision	0.5	50pA	8	8	20	0.00008	4	±2.5 to ±18	DIP-8, SO-8	1.33
OPA134	FET Input, Low Cost	2	100pA	8	8	20	0.00008	4	±2.5 to ±18	DIP-8, SO-8	0.87
OPA227	Lowest Noise, Precision	0.075	10nA	3	8	2.3	0.00005	3.7	±2.5 to ±18	DIP-8, SO-8	1.00
OPA228	Lowest Noise, Precision, G ≥ 5	0.075	10nA	3	33	10	0.00005	3.7	±2.5 to ±18	DIP-8, SO-8	1.00
OPA340	CMOS, R/R In and Out, Precision	0.5	10pA	25	5.5	6	0.0007	0.75	+2.7 to +5.5	DIP-8, SO-8, SOT23-5	0.66
OPA343	CMOS, R/R In and Out, Low Cost	8	10pA	25	5.5	6	0.0007	0.85	+2.7 to +5.5	SO-8, SOT23-5	0.57
OPA350	CMOS, R/R In and Out, High Speed	0.5	10pA	5 ⁽¹⁾	38	22	0.0006	5.2	+2.7 to +5.5	DIP-8, SO-8, MSOP-8	1.22
OPA353	CMOS, R/R In and Out, Low Cost	8	10pA	5 ⁽¹⁾	44	22	0.0006	5.2	+2.7 to +5.5	SO-8, SOT23-5	0.96
OPA604	FET Input, High Speed	5	50pA*	11	20	25	0.0003	5.3	±4.5 to ±24	DIP-8, SO-8	0.90
OPA627	Best Distortion, Low Noise, Precision	0.1	1pA	5.2	16	55	0.00003	7	±4.5 to ±18	TO-99, DIP-8	8.28
OPA637	Precision, Low Noise, G ≥ 5, High Speed	0.1	1pA	5.2	80	135	0.00003	7	±4.5 to ±18	TO-99, DIP-8	8.28
OPA642	High Speed, Ultra-Low Distortion	4	45μA	2.7 ⁽²⁾	400	340	—	20	±4.5 to ±5.5	DIP-8, SO-8, SOT23-5	3.75
OPA643	Decompensated OPA642, G ≥ 5	4	30μA	2.3 ⁽²⁾	200	1000	—	20	±4.5 to ±5.5	DIP-8, SO-8, SOT23-5	3.75

AUDIO OPERATIONAL AMPLIFIERS—Duals

Product	Description	Offset Voltage (±mV) max	Bias Current (±A) max	Noise at 1kHz (nV/√Hz) typ	Bandwidth (MHz) typ	Slew Rate (V/μs) typ	THD+N at 1kHz (%) typ	I _Q per Channel (±mA) typ	Power Supply Range (V) min to max	Package(s)	Lowest Grade Price (1000s)
OPA2132	FET Input, Precision	0.5	50pA	8	8	20	0.00008	4	±2.5 to ±18	DIP-8, SO-8	\$2.26
OPA2134	FET Input, Low Cost	2	100pA	8	8	20	0.00008	4	±2.5 to ±18	DIP-8, SO-8	1.09
OPA2227	Lowest Noise, Precision	0.075	10nA	3	8	2.3	0.00005	3.7	±2.5 to ±18	DIP-8, SO-8	1.70
OPA2228	Lowest Noise, Precision, G ≥ 5	0.075	10nA	3	33	10	0.00005	3.7	±2.5 to ±18	DIP-8, SO-8	1.70
OPA2340	CMOS, R/R In and Out, Precision	0.5	10pA	25	5.5	6	0.0007	0.75	+2.7 to +5.5	DIP-8, SO-8, MSOP-8	1.10
OPA2343	CMOS, R/R In and Out, Low Cost	8	10pA	25	5.5	6	0.0007	0.85	+2.7 to +5.5	SO-8, MSOP-8	0.85
OPA2350	CMOS, R/R In and Out, High Speed	0.5	10pA	5 ⁽²⁾	38	22	0.0006	5.2	+2.7 to +5.5	DIP-8, SO-8, MSOP-8	2.03
OPA2353	CMOS, R/R In and Out, Low Cost	8	10pA	5 ⁽²⁾	44	22	0.0006	5.2	+2.7 to +5.5	SO-8, MSOP-8	1.60
OPA2604	FET Input, High Speed	5	100pA*	10	20	25	0.0003	5.3	±4.5 to ±24	DIP-8, SO-8	1.64

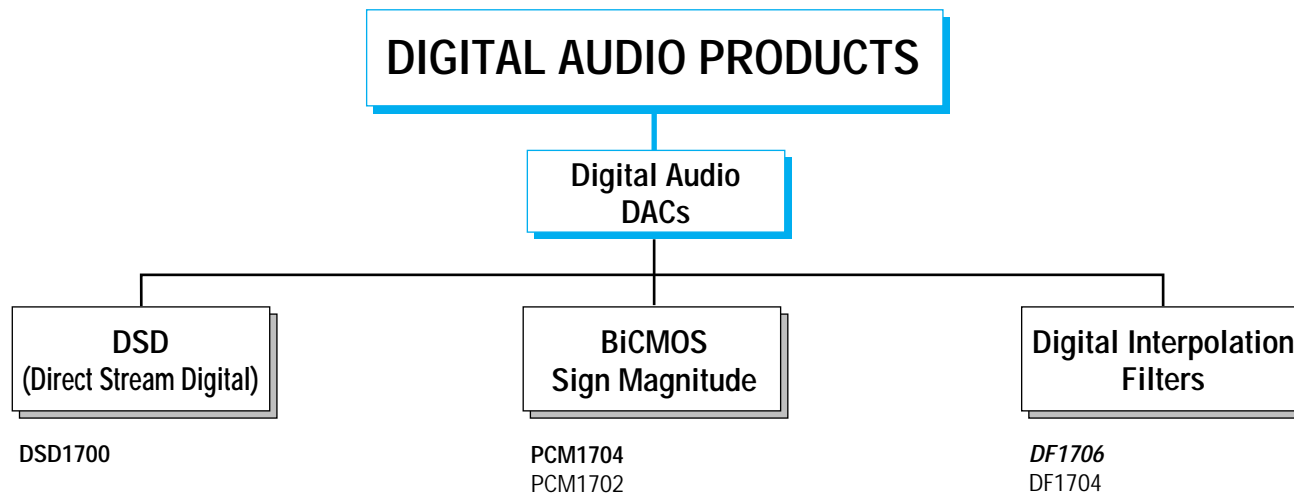
AUDIO OPERATIONAL AMPLIFIERS—Quads

Product	Description	Offset Voltage (±mV) max	Bias Current (±A) max	Noise at 1kHz (nV/√Hz) typ	Bandwidth (MHz) typ	Slew Rate (V/μs) typ	THD+N at 1kHz (%) typ	I _Q per Channel (±mA) typ	Power Supply Range (V) min to max	Package(s)	Lowest Grade Price (1000s)
OPA4132	FET Input, Precision	0.5	50pA	8	8	20	0.00008	4	±2.5 to ±18	DIP-14, SO-14	\$4.26
OPA4134	FET Input, Low Cost	2	100pA	8	8	20	0.00008	4	±2.5 to ±18	DIP-14, SO-14	1.70
OPA4227	Lowest Noise, Precision	0.075	10nA	3	8	2.3	0.00005	3.7	±2.5 to ±18	DIP-8, SO-8	3.80
OPA4228	Lowest Noise, Precision, G ≥ 5	0.075	10nA	3	33	10	0.00005	3.7	±2.5 to ±18	DIP-8, SO-8	3.80
OPA4340	CMOS, R/R In and Out, Precision	0.5	10pA	25	5.5	6	0.0007	0.75	+2.7 to +5.5	DIP-14, SO-14, SSOP-16	2.09
OPA4343	CMOS, R/R In and Out, Low Cost	8	10pA	25	5.5	6	0.0007	0.85	+2.7 to +5.5	SO-14, SSOP-16	1.50
OPA4350	CMOS, R/R In and Out, High Speed	0.5	10pA	8	38	22	0.0006	5.2	+2.7 to +5.5	DIP-14, SO-14, SSOP-16	3.86
OPA4353	CMOS, R/R In and Out, Low Cost	8	10pA	5 ⁽²⁾	44	22	0.0006	5.2	+2.7 to +5.5	SO-14, SSOP-16	3.04

NOTES: (1) f = 100kHz. (2) f ≥ 1MHz.

* Denotes typical. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Audio Products—Selection Tree and Guide



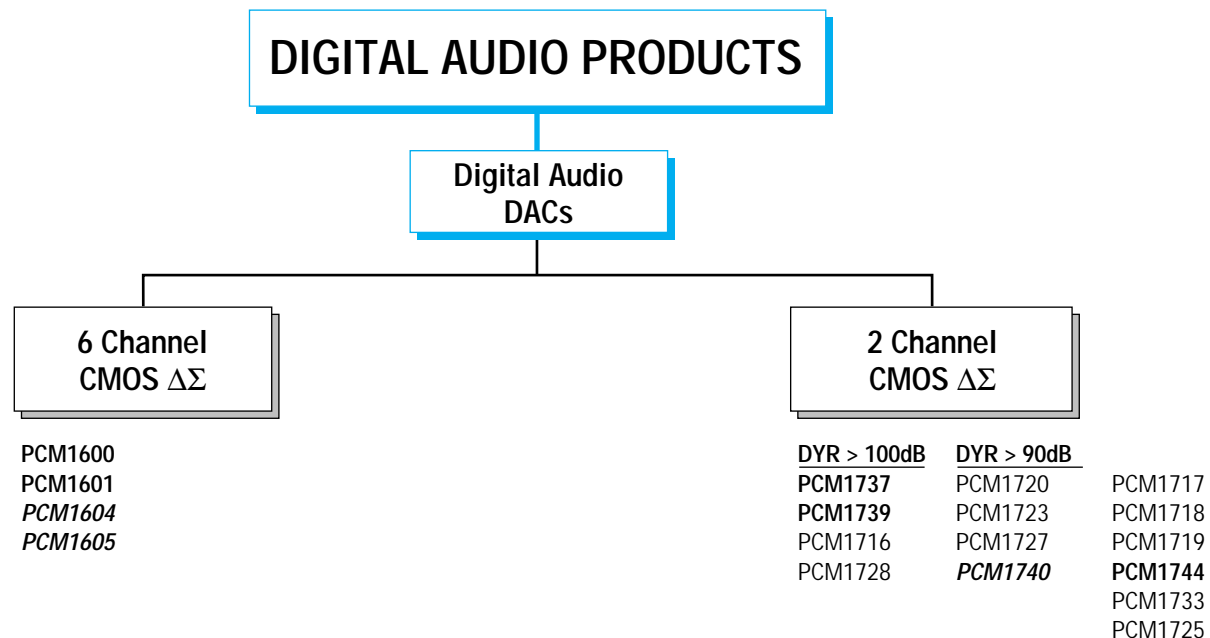
Product	Description	Dynamic Range (dB)	Configuration	Audio Data Format	Power Supply (V)	Package	Lowest Grade Price (1000s)
DSD1700	DSD Audio DAC for SACD	110	Mono	DSD	+5	SSOP-28	\$9.95

Product	Description	Dynamic Range (dB)	Maximum Resolution (Bits)	Maximum Sampling Rate (kHz)	Configuration	Audio Data Format	Power Supply (V)	Package(s)	Lowest Grade Price (1000s)
PCM1704	BiCMOS, Sign-Magnitude DAC	112	24	768kHz	Mono	Serial Latched	±5	SO-20	\$12.80
PCM1702	BiCMOS, Sign-Magnitude DAC	110	20	768kHz	Mono	Serial Latched	±5	DIP-16, SO-20	11.65

Product	Description	Stopband Attenuation (dB)	Passband Ripple	Power Supply (V)	Package	Lowest Grade Price (1000s)
DF1706	Digital Interpolation Filter (192kHz)	-115	±0.00005	+3.3	SSOP-28	\$10.95
DF1704	Digital Interpolation Filter (96kHz)	-115	±0.00005	+5	SSOP-28	9.95

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

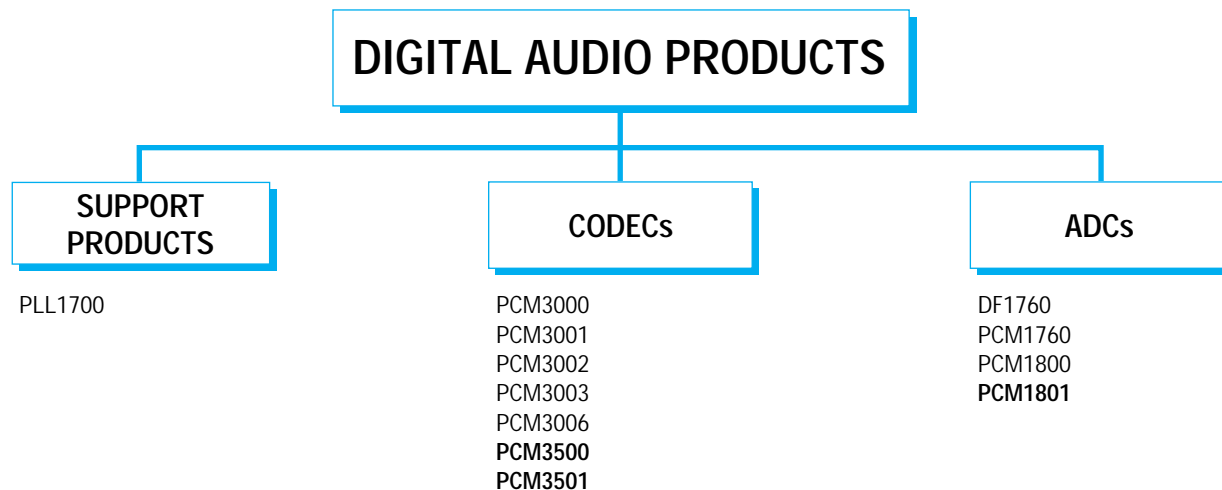
Audio Products—Selection Tree and Guide



Product	Description	Dynamic Range (dB)	Resolution (Bits) max	Sampling Rate (kHz) max	Configuration	Audio Data Format	Power Supply (V)	Package	Lowest Grade Price (1000s)
PCM1600/1	CMOS, Multi-Level $\Delta\Sigma$	105	24	96	6ch	Normal, I ² S	+3.3 and +5	LQFP/MQFP-48	\$8.95
<i>PCM1604/5</i>	<i>CMOS, Multi-Level $\Delta\Sigma$</i>	<i>105</i>	<i>24</i>	<i>192</i>	<i>6ch</i>	<i>Normal, I²S</i>	<i>+3.3 and +5</i>	<i>LQFP/MQFP-48</i>	<i>9.95</i>
PCM1737	CMOS, Multi-Level $\Delta\Sigma$	106	24	192	Stereo	Normal, I ² S	+3.3 and +5	SSOP-28	4.15
PCM1739	CMOS, Multi-Level $\Delta\Sigma$	106	24	192	Stereo	Normal, I ² S	+3.3 and +5	SSOP-28	4.15
PCM1716	CMOS, Multi-Level $\Delta\Sigma$	106	24	96	Stereo	Normal, I ² S	+5	SSOP-28	3.95
PCM1728	CMOS, Multi-Level $\Delta\Sigma$	106	24	96	Stereo	Normal, I ² S	+5	SSOP-28	3.95
PCM1720	CMOS, Multi-Level $\Delta\Sigma$	96	24	96	Stereo	Normal, I ² S	+5	SSOP-20	3.30
PCM1723	CMOS, Multi-Level $\Delta\Sigma$, w/PLL	94	24	96	Stereo	Normal, I ² S	+5	SSOP-24	4.15
PCM1727	CMOS, Multi-Level $\Delta\Sigma$, w/Dual PLL	92	24	96	Stereo	Normal, I ² S	+5	SSOP-24	4.95
PCM1740	CMOS, Multi-Level $\Delta\Sigma$, w/VCXO/PLL	92	24	96	Stereo	Normal, I²S	+5	SSOP-24	4.95
PCM1717	CMOS, Multi-Level $\Delta\Sigma$	96	18	48	Stereo	Normal, I ² S	+2.7 to +5.5	SSOP-20	3.15
PCM1718	CMOS, Multi-Level $\Delta\Sigma$	96	18	48	Stereo	Normal, I ² S	+2.7 to +5.5	SSOP-20	3.15
PCM1719	CMOS, Multi-Level $\Delta\Sigma$, Headphone Amp	96	18	48	Stereo	Normal, I ² S	+5	SSOP-28	4.15
PCM1744	CMOS, Multi-Level $\Delta\Sigma$	95	24	96	Stereo	I²S	+5	SOIC-14	1.95
PCM1733	CMOS, Multi-Level $\Delta\Sigma$	95	18	96	Stereo	Normal, I ² S	+5	SOIC-14	1.95
PCM1725	CMOS, Multi-Level $\Delta\Sigma$	95	16	96	Stereo	Normal, I ² S	+5	SOIC-14	1.95

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Audio Products—Selection Tree and Guide



Product	Description	Jitter (ps)	Sampling Rates Supported (kHz)	Power Supply (V)	Comments	Package(s)	Lowest Grade Price (1000s)
PLL1700	Multi Clock Generator	150	32, 44.1, 48, 64, 88.2, 96, 176.4, 192	+3.3 and +5	27MHz Input; Audio Clock Outputs	SSOP-20	\$1.95

Product	Description	Stopband Attenuation (dB)	Passband Ripple	Power Supply (V)	Package(s)	Lowest Grade Price (1000s)
DF1760	Digital Decimation Filter (1/64)	-100	±0.0001	+5	SSOP-28	\$13.80

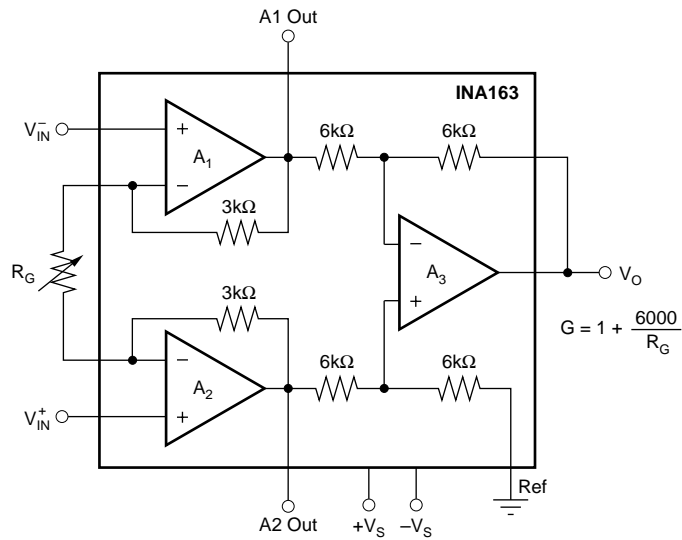
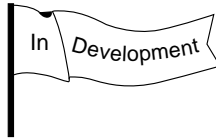
Product	Description	Resolution (Bits) max	Sampling Rate (kHz) max	Configuration	Audio Data Format	Power Supply (V)	Dynamic Range (dB)	Package(s)	Lowest Grade Price (1000s)
PCM1760	CMOS, $\Delta\Sigma$	20	48	Stereo	Normal	±5	108	DIP-28, SOIC	\$14.25
PCM1800	CMOS, $\Delta\Sigma$	20	48	Stereo	Normal, I ² S	+5	95	SSOP-24	2.95
PCM1801	CMOS, $\Delta\Sigma$	16	48	Stereo	Left Justified, I²S	+5	93	SOIC-14	2.25
PCM3000, PCM3001	CMOS, Multi-Level $\Delta\Sigma$	18	48	Stereo	Normal, I ² S	+5	96	SSOP-28	4.95
PCM3002, PCM3003	CMOS, Multi-Level $\Delta\Sigma$	20	48	Stereo	Normal, I ² S	+2.7 to +3.6	94	SSOP-24	4.95
PCM3006	CMOS, Multi-Level $\Delta\Sigma$	16	48	Stereo	Normal	+2.7 to +3.6	93	TSSOP-24	4.95
PCM3500	CMOS, Multi-Level $\Delta\Sigma$	16	26	Mono	DSP	+2.7 to +3.6	88	SSOP-24	3.45
PCM3501	CMOS, Multi-Level $\Delta\Sigma$	16	26	Mono	DSP	+2.7 to +3.6	88	SSOP-24	3.45

BOLD DENOTES NEW PRODUCT. BOLD, ITALIC DENOTES PRODUCT IN DEVELOPMENT. Some specifications have been estimated for comparison purposes. Refer to data sheets for guaranteed specifications.

Audio Products—New Products

INA163

Low Noise, Low Distortion
MICROPHONE PREAMPLIFIER

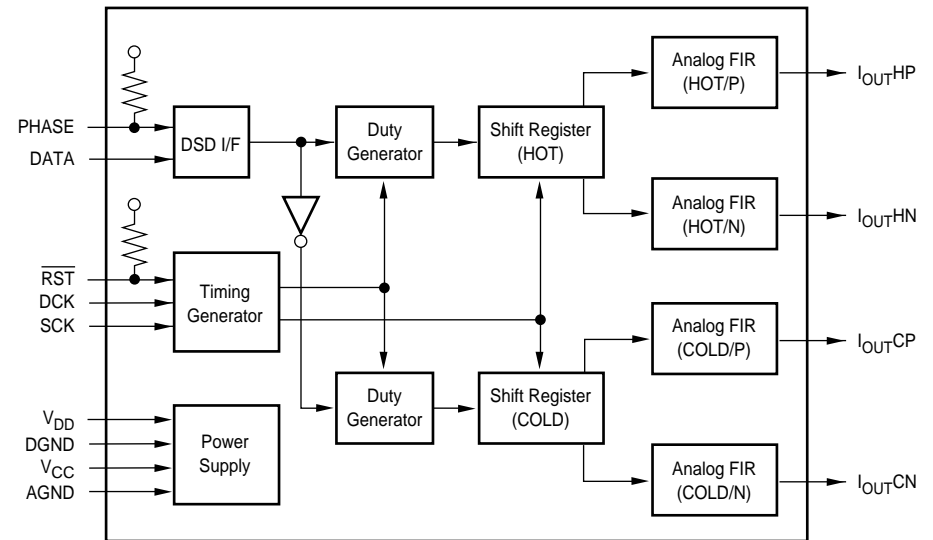


FEATURES

- **LOW NOISE:** $1\text{nV}/\sqrt{\text{Hz}}$ at 1kHz
- **LOW THD+N:** 0.0009% at 1kHz, $G = 100$
- **HIGH BW:** 100kHz at $G = 60\text{dB}$
- **WIDE SUPPLY RANGE:** $\pm 4\text{V}$ to $\pm 18\text{V}$
- **HIGH CMR:** $> 100\text{dB}$
- **EASY GAIN SET WITH EXTERNAL RESISTOR**
- **SO-14 PACKAGE**

DSD1700

SoundPlus Direct Stream Digital (DSD)
AUDIO DAC FOR SACD



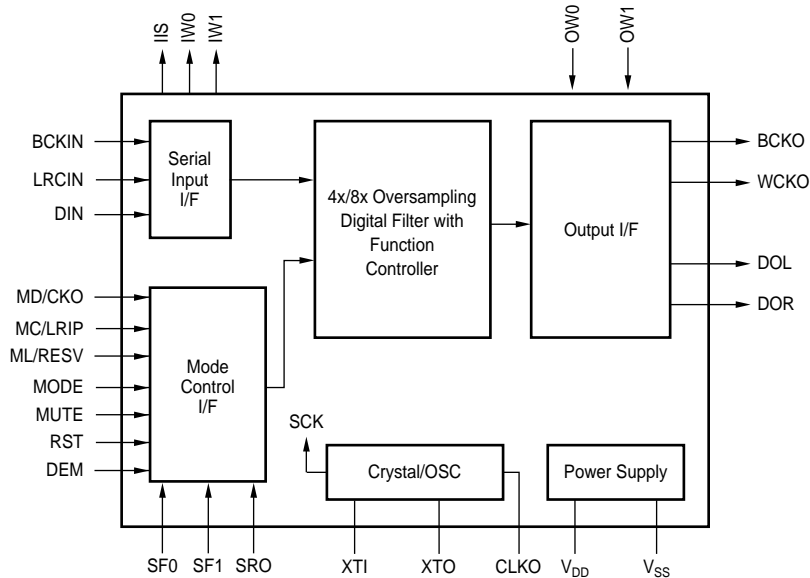
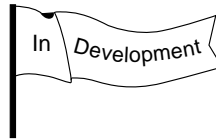
FEATURES

- **DIRECT CONVERSION OF DSD DATA TO AN ANALOG SIGNAL**
- **DUAL DIFFERENTIAL ANALOG FIR FILTER**
- **DIRECT INTERFACE TO A DSD DECODER**
Data Clock: 2.8224MHz ($64f_s$)
System Clock: 11.2896MHz ($256f_s$)
- **+5V SINGLE SUPPLY OPERATION**
- **SSOP-28 PACKAGE**

Audio Products—New Products

DF1706

SoundPLUS 24-Bit, 192kHz
DIGITAL INTERPOLATION FILTER

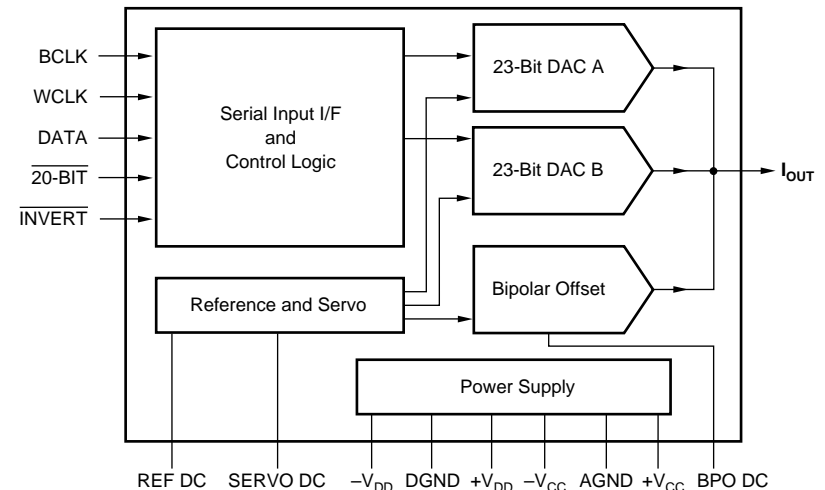


FEATURES

- **SAMPLING FREQUENCY:** 192kHz max (f_s)
- **INPUT AUDIO DATA WORD:** 16-, 20-, 24-Bit
- **OUTPUT AUDIO DATA WORD:** 16-, 18-, 20-, 24-Bit
- **SYSTEM CLOCK:** 128/192/256/384/512/768 f_s
- **STOP BAND ATTENUATION:** -115dB
- **PASSBAND RIPPLE:** ± 0.00005 dB
- **MULTIFUNCTIONS:**
 - L/R Independent Digital Attenuation
 - Digital De-Emphasis
 - Soft Mute
 - Selectable Sharp or Slow Roll Off Filter Response
- **SINGLE +3.3V POWER SUPPLY**
- **SSOP-28 PACKAGE**

PCM1704

SoundPLUS BiCMOS Sign Magnitude
AUDIO DAC



FEATURES

- **SAMPLING FREQUENCY:** 768kHz max (f_s) (192kHz • 4 or 96kHz • 8)
- **INPUT AUDIO DATA WORD:** 20-, 24-Bit
- **DYNAMIC RANGE:** 112dB
- **SNR:** 120dB
- **THD+N:**
 - U Grade = 0.0025%
 - J Grade = 0.0015%
 - K Grade = 0.0008%
- **FAST CURRENT OUTPUT (± 1.2 mA/200ns)**
- **EXCELLENT LOW LEVEL LINEARITY**
- **± 5 V SUPPLY**
- **SO-20 PACKAGE**

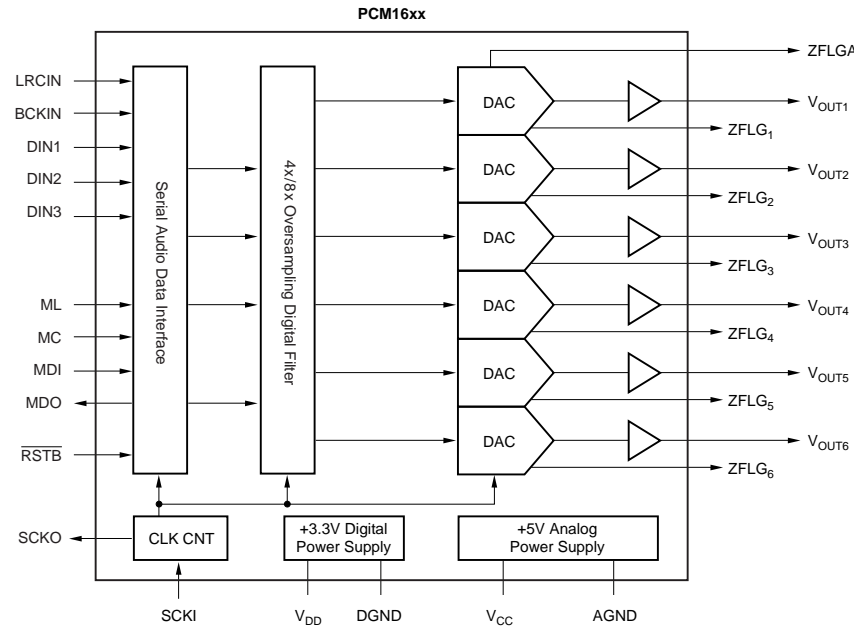
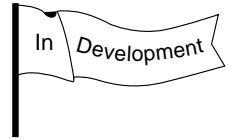
Audio Products—New Products

PCM1600, PCM1601

SoundPLUS™ 24-Bit, 96kHz, 6 Ch $\Delta\Sigma$
AUDIO DAC

PCM1604, PCM1605

SoundPLUS™ 24-Bit, 192kHz, 6 Ch $\Delta\Sigma$
AUDIO DAC



FEATURES

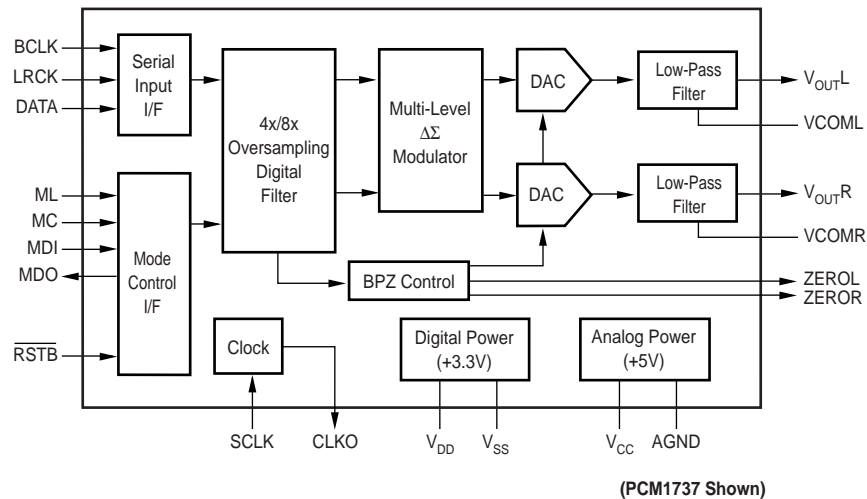
- **SAMPLING FREQUENCY:** 96kHz max (f_s)
- **INPUT AUDIO DATA WORD:** 16-, 18, 20-, 24-Bit
- **DYNAMIC RANGE:** 105dB
- **SNR:** 105dB
- **THD+N:** -96dB
- **SYSTEM CLOCK:** 256/384/512/768 f_s
- **8x OVERSAMPLING DIGITAL FILTER:**
Stop Band Attenuation: -82dB
Passband Ripple: ± 0.002 dB
- **MULTI-FUNCTIONS:**
Digital Attenuation, Mute, and Zero Flag for Each Channel
- **DUAL POWER SUPPLY:** +3.3V and +5V
- **LQFP-48 AND MQFP-48 PACKAGES**

FEATURES

- **SAMPLING FREQUENCY:** 192kHz max (f_s)
- **INPUT AUDIO DATA WORD:** 16-, 18, 20-, 24-Bit
- **DYNAMIC RANGE:** 105dB
- **SNR:** 105dB
- **THD+N:** -96dB
- **SYSTEM CLOCK:** 128/192/256/384/512/768 f_s
- **4x/8x OVERSAMPLING DIGITAL FILTER:**
Stop Band Attenuation: -82dB
Passband Ripple: ± 0.002 dB
- **MULTI-FUNCTIONS:**
Digital Attenuation, Mute, and Zero Flag for Each Channel
- **ZERO FLAG PINS MAY BE USED AS GENERAL PURPOSE LOGIC OUTPUTS**
- **DUAL POWER SUPPLY:** +3.3V and +5V
- **LQFP-48 AND MQFP-48 PACKAGES**
- **PIN COMPATIBLE WITH PCM1600, PCM1601**

PCM1737, PCM1739

SoundPLUS™ 24-Bit, 192kHz, Stereo
AUDIO DAC

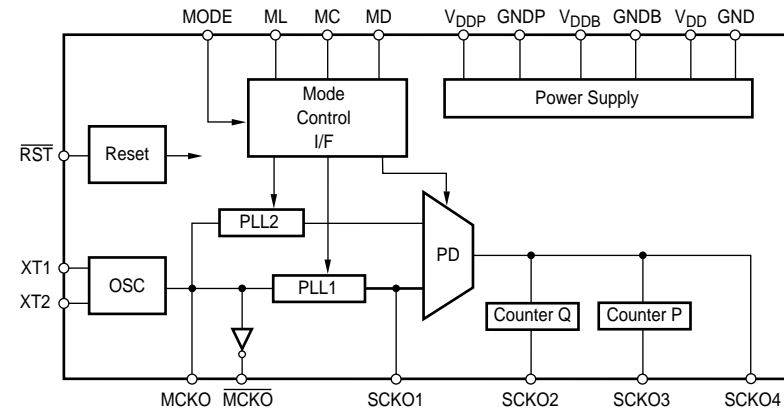


FEATURES

- PCM1737: Software Controlled
- PCM1739: Hardware Controlled
- SAMPLING FREQUENCY: 192kHz max (f_s)
- INPUT AUDIO DATA WORD: 16-, 18-, 20-, 24-Bit
- DYNAMIC RANGE: 106dB
- SNR: 106dB
- THD+N: -96dB
- SYSTEM CLOCK: 128/192/256/384/512/768 f_s
- 4x/8x OVERSAMPLING DIGITAL FILTER:
 - Stop Band Attenuation: -82dB
 - Passband Ripple: ± 0.002 dB
- DUAL POWER SUPPLIES: +3.3V and +5V
- SSOP-28 PACKAGE

PLL1700

SoundPLUS™ MULTI-CLOCK GENERATOR



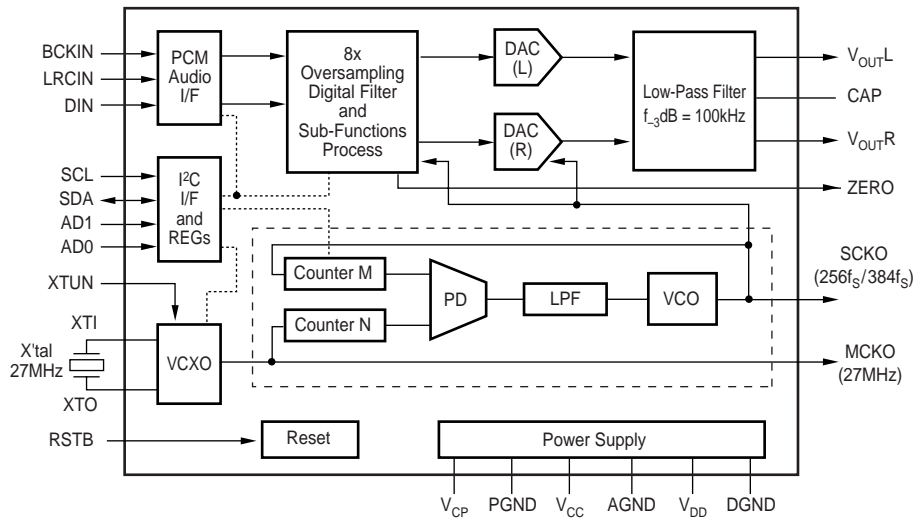
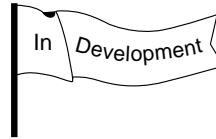
FEATURES

- 27MHz MASTER CLOCK INPUT
- AUDIO SYSTEM CLOCK OUTPUTS:
 - SCKO1 = 33.8688MHz (fixed)
 - SCKO2 = 256 f_s
 - SCKO3 = 384 f_s
 - SCKO4 = 768 f_s
- ZERO PPM ERROR
- VERY LOW CLOCK JITTER: 150ps (w/20pF load)
- MULTIPLE SAMPLING FREQUENCIES:
 - f_s = 32kHz, 44.1kHz, 48kHz, 64kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz
- +3.3V CMOS LOGIC INTERFACE
- DUAL POWER SUPPLIES: +3.3V and +5V
- SSOP-20 PACKAGE

Audio Products—New Products

PCM1740

SoundPLUS 24-Bit, 96kHz
AUDIO DAC with VCXO and PLL

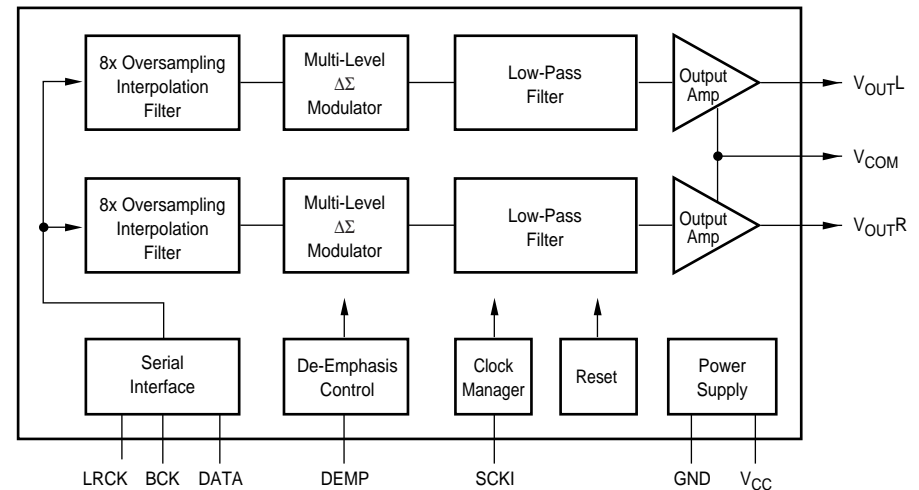


FEATURES

- INPUT AUDIO DATA WORD: 16-, 20-, 24-Bit
- SAMPLING FREQUENCY: 96kHz max (f_s)
- DYNAMIC RANGE: 92dB
- I²C CONTROL INTERFACE
- PROGRAMMABLE PLL CIRCUIT: 256/384 f_s from 27MHz Master Clock
- ON-CHIP VCXO GENERATES 27MHz \pm 150ppm WITH A 0-3V CONTROL VOLTAGE
- NORMAL OR I²S DATA INPUT FORMATS
- SSOP-24 PACKAGE

PCM1744

SoundPLUS Low Cost, 24-Bit, 96kHz
AUDIO DAC

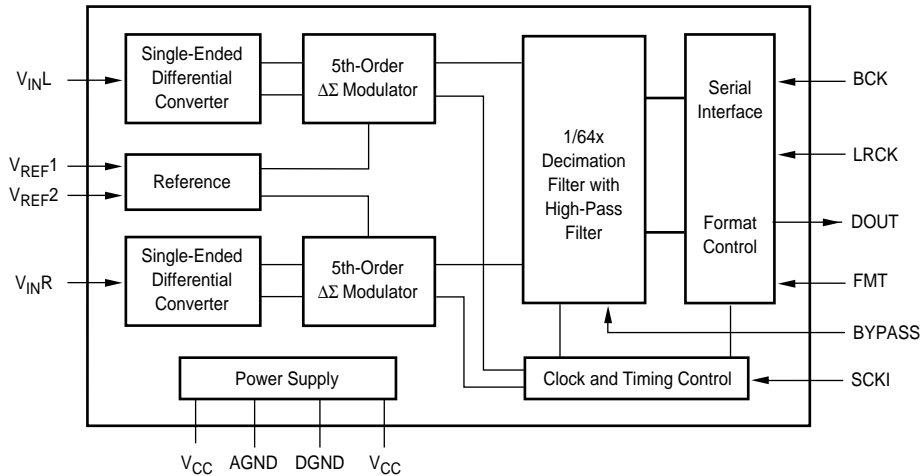


FEATURES

- INPUT AUDIO DATA FORMAT: 24-Bit I²S
- SAMPLING FREQUENCY: 96kHz max (f_s)
- DYNAMIC RANGE: 95dB
- 8x OVERSAMPLING DIGITAL FILTER
- SYSTEM CLOCK: 256/384 f_s
- SMALL SOIC-14 PACKAGE
- PIN COMPATIBLE WITH PCM1725 and PCM1733

PCM1801

SoundPLUS Low Cost, 16-Bit, Stereo
AUDIO ADC

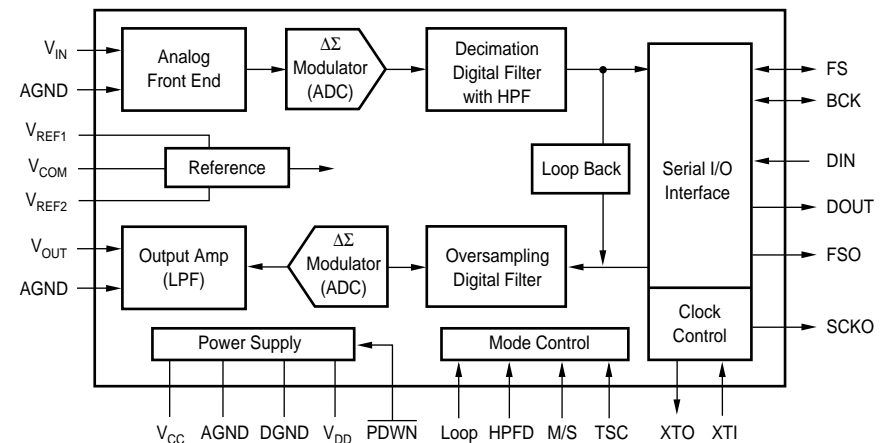


FEATURES

- **OUTPUT DATA FORMAT:** Left Justified/I²S
- **SAMPLING FREQUENCY:** 48kHz max (f_s)
- **DYNAMIC RANGE:** 93dB
- **THD+N:** -88dB
- **SYSTEM CLOCK:** 256/384/512 f_s
- **SINGLE-ENDED VOLTAGE INPUT**
- **ANTI-ALIASING FILTER INCLUDED**
- **1/64x DECIMATION FILTER:**
Passband Ripple: ± 0.05 dB
Stopband Attenuation: -65dB
On-Chip High Pass Filter
- **SINGLE +5V POWER SUPPLY**
- **SMALL SOIC-14 PACKAGE**

PCM3500

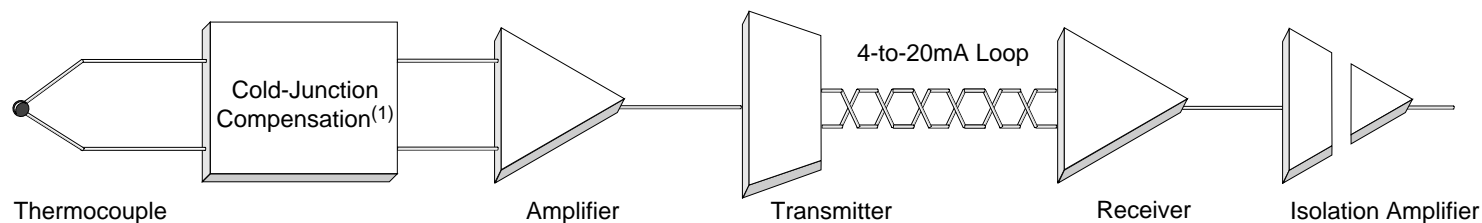
SoundPLUS 16-Bit, Mono, Voice/Modem Codec



FEATURES

- **SUPPORTS V.90 AND V.34bis SOFTWARE MODEM RATES**
- **16-BIT $\Delta\Sigma$ ADC AND DAC**
- **SAMPLING FREQUENCY:** 26kHz max (f_s)
- **DYNAMIC RANGE:** 88dB
- **THD+N:** -85dB
- **PASSBAND RIPPLE:** ± 0.04 dB to $0.45f_s$
- **SYSTEM CLOCK:** 512 f_s
- **MASTER OR SLAVE OPERATION**
- **16-BIT SYNCHRONOUS SERIAL INTERFACE**
- **SINGLE POWER SUPPLY:** +2.7V to +3.6V
- **SSOP-24 PACKAGE**

INDUSTRIAL AND PROCESS CONTROL SENSOR ELECTRONICS COMPONENTS—THERMOCOUPLE



AMPLIFIERS—typical sensor interface circuit elements.

- Operational Amplifier—basic building block for signal processing. Circuit transfer function set by user-selected components. See page 5.
- Instrumentation Amplifier—gain up to 10000 set by pin strapping or fixed resistor. Very high common-mode rejection. See page 33.
- Difference Amplifier—fixed gain of 1/2 to 10 set by pin strapping. High common-mode rejection. See page 34.
- Programmable Gain Amplifier—digitally programmed gain version of instrumentation amp. See page 39.

4-to-20mA CURRENT LOOP TRANSMITTER—converts applied signal voltage into current on supply line. May contain sensor support circuits such as references and linearization circuits. See page 40.

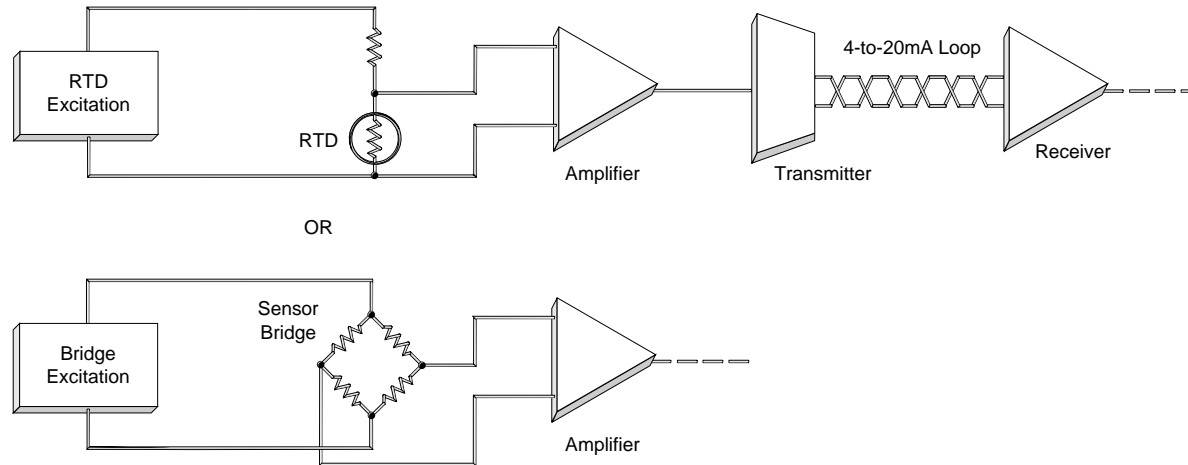
4-to-20mA CURRENT LOOP RECEIVER—difference amplifier which is adjusted to convert the 4-to-20mA signal into a 0V to 5V voltage level. See page 40.

ISOLATION—provides galvanic isolation in signal path.

- Amplifier—transmits analog signals across a galvanically isolated barrier. See page 53.
- DC/DC Converters—provide isolated power for input stage. See page 54.

NOTE: (1) See INA114 or XTR106 for cold-junction compensation technique.

INDUSTRIAL AND PROCESS CONTROL SENSOR ELECTRONICS COMPONENTS—RTD + BRIDGE



SENSOR EXCITATION—voltage and current references or regulators may be needed in conjunction with instrumentation or op amps to obtain optimized performance. For references, see page 91. For regulators, see page 48.

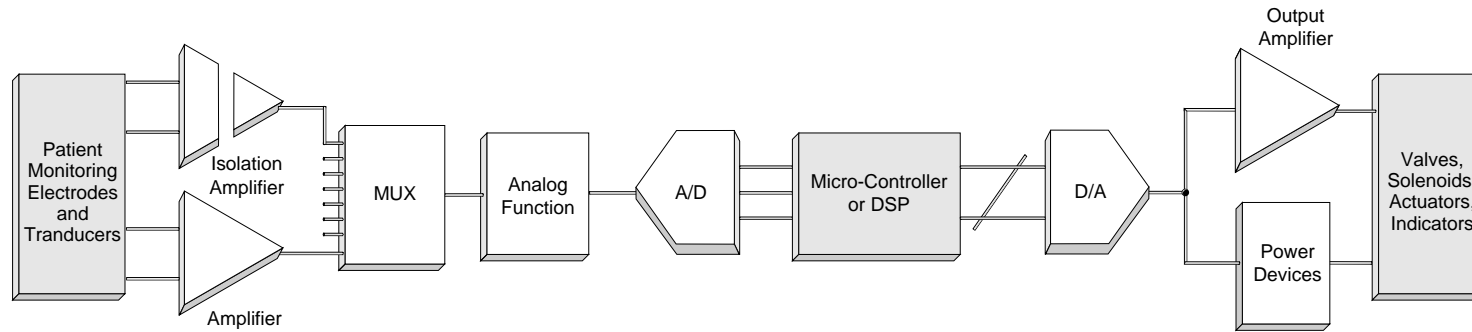
AMPLIFIERS—typical sensor interface circuit elements.

- Operational Amplifier—basic building block for signal processing. Circuit transfer function set by user-selected components. See page 5.
- Instrumentation Amplifier—gain up to 10000 set by pin strapping or fixed resistor. Very high common-mode rejection. See page 33.
- Difference Amplifier—fixed gain of 1/2 to 10 set by pin strapping. High common-mode rejection. See page 34.
- Programmable Gain Amplifier—digitally programmed gain version of instrumentation amp. See page 39.

4-to-20mA CURRENT LOOP TRANSMITTER—converts applied signal voltage into current on supply line. May contain sensor support circuits such as references and linearization circuits. See page 40.

4-to-20mA CURRENT LOOP RECEIVER—difference amplifier which is adjusted to convert the 4-to-20mA signal into a 0V to 5V voltage level. See page 40.

MEDICAL INSTRUMENTATION



ISOLATION—provides galvanic isolation in signal path.

- Amplifier—transmits analog signals across a galvanically isolated barrier. See page 53.
- DC/DC Converter—provides isolated power for input stage. See page 54.

AMPLIFIERS—typical sensor interface circuit elements.

- Operational Amplifier—basic building block for signal processing. Circuit transfer function set by user-selected components. See page 5.
- Instrumentation Amplifier—gain up to 10000 set by pin strapping or fixed resistor. Very high common-mode rejection. See page 33.
- Difference Amplifier—fixed gain of 1/2 to 10 set by pin strapping. High common-mode rejection. See page 34.
- Programmable Gain Amplifier—digitally programmed gain version of instrumentation amp. See page 39.

MULTIPLEXER—signal selector (several inputs, one output). Signal selection is by logic levels. See page 95.

ANALOG FUNCTIONS—complex and non-linear signal processing includes active filters, log amps, analog multipliers, etc. See page 96.

ANALOG/DIGITAL CONVERTERS—a complete line of converters that provide flexibility (various input ranges, serial/parallel interface, multiple channels, sampling rates, etc.), and a complete solution (V_{REF} , sample-and-hold, internal clock all on one chip), along with 12- and 16-bit pin-for-pin compatibility in selected models. See page 59.

DIGITAL/ANALOG CONVERTERS—these products provide up to 20 bits of resolution, current or voltage output, serial or parallel interface, and up to four DACs on a chip, along with other key features for medical applications. See page 77.

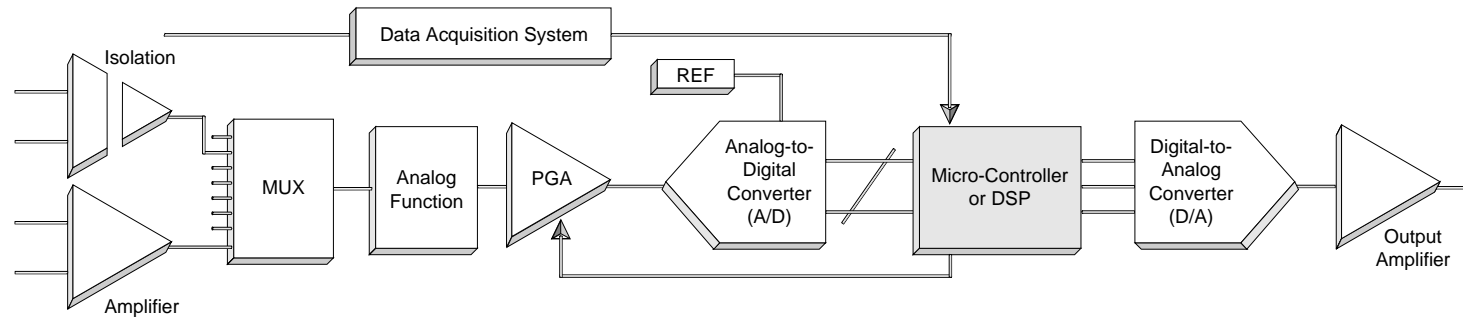
DATA ACQUISITION SYSTEM—complete A/D solution (multiplexer, PGA, reference, delta-sigma modulator/filter) all in one package with 24 bits of resolution on selected models. See page 60.

REFERENCE AND REGULATORS—provides controlled voltages and currents. See page 91 (references), page 48 (regulators).

OUTPUT DEVICES—unique output capabilities.

- Power Amplifiers—high-voltage and high-current op amps. See page 14.
- Buffer Amplifiers—high-speed drivers. See page 13.
- Switchers—PWM Drivers. See page 47.

INDUSTRIAL AND PROCESS CONTROL



ISOLATION—provides galvanic isolation in signal path.

- Amplifier—transmits analog signals across a galvanically isolated barrier. See page 53.
- DC/DC Converter—provides isolated power for input stage. See page 54.

AMPLIFIERS—typical sensor interface circuit elements.

- Operational Amplifier—basic building block for signal processing. Circuit transfer function set by user-selected components. See page 5.
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DIGITAL/ANALOG CONVERTERS—these products provide up to 20 bits of resolution, current or voltage output, serial or parallel interface, and up to four DACs on a chip, along with other key features for Industrial and Process Control applications. See page 77.

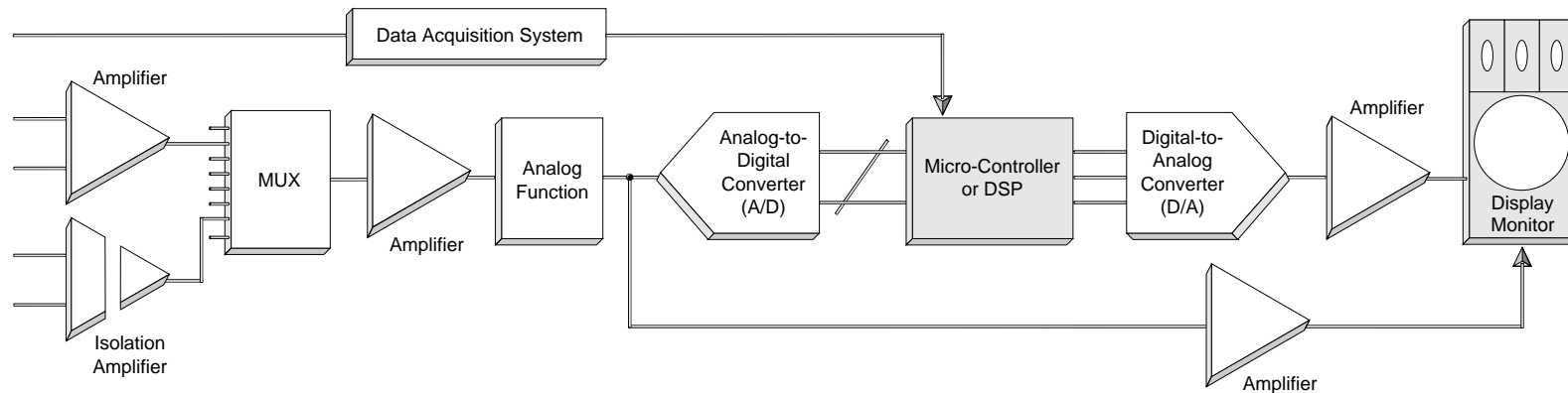
DATA ACQUISITION SYSTEM—complete A/D solution (multiplexer, PGA, reference, delta-sigma modulator/filter) all in one package with 24 bits of resolution on selected models. See page 60.

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OUTPUT DEVICES—unique output capabilities.

- Power Amplifiers—high-voltage and high-current op amps. See page 14.
- Buffer Amplifiers—high-speed drivers. See page 13.
- Switchers—PWM Drivers. See page 47.

DATA ACQUISITION AND MONITORING APPLICATIONS



ISOLATION—provides galvanic isolation in signal path.

- Amplifier—transmits analog signals across a galvanically isolated barrier. See page 53.
- DC/DC Converter—provides isolated power for input stage. See page 54.

AMPLIFIERS—typical sensor interface circuit elements.

- Operational Amplifier—basic building block for signal processing. Circuit transfer function set by user-selected components. See page 5.
- Instrumentation Amplifier—gain up to 10000 set by pin strapping or fixed resistor. Very high common-mode rejection. See page 33.
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ANALOG/DIGITAL CONVERTERS—a complete line of converters that provide flexibility (various input ranges, serial/parallel interface, multiple channels, sampling rates, etc.), and a complete solution (V_{REF} , sample-and-hold, internal clock all on one chip), along with 12- and 16-bit pin-for-pin compatibility in selected models. See page 59.

DIGITAL/ANALOG CONVERTERS—these products provide up to 20 bits of resolution, current or voltage output, serial or parallel interface, and up to four DACs on a chip, along with other key features for Industrial and Process Control applications. See page 77.

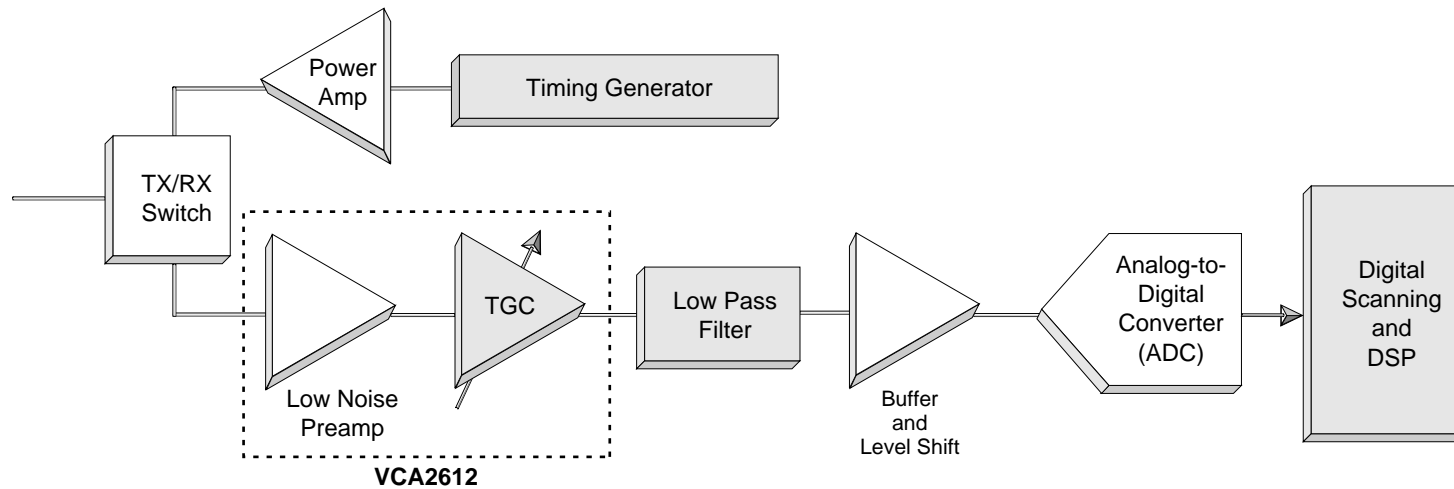
DATA ACQUISITION SYSTEM—complete A/D solution (multiplexer, PGA, reference, delta-sigma modulator/filter) all in one package with 24 bits of resolution on selected models. See page 60.

REFERENCE AND REGULATORS—provides controlled voltages and currents. See page 91 (reference), page 48 (regulators).

OUTPUT DEVICES—unique output capabilities.

- Power Amplifiers—high-voltage and high-current op amps. See page 14.
- Buffer Amplifiers—high-speed drivers. See page 13.
- Switchers—PWM Drivers. See page 47.

DIGITAL ULTRASOUND CIRCUIT COMPONENTS



AMPLIFIERS—typical transceiver channel circuit elements.

- Operational Amplifiers—basic building block for signal processing, e.g., impedance transformation and amplification. See page 5.

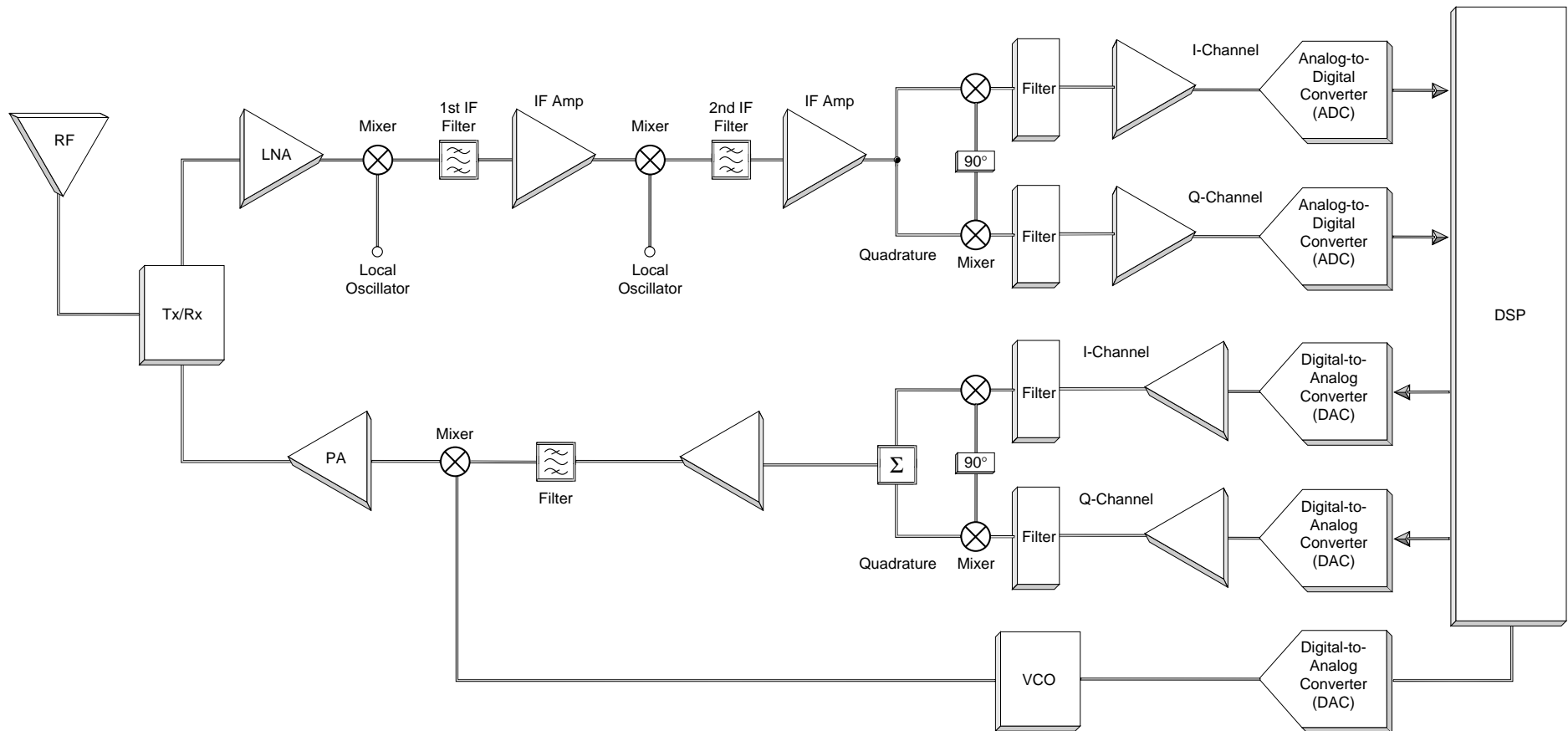
ANALOG-TO-DIGITAL CONVERTERS (ADC)—interface between analog and digital domain.

- A/D converter digitizes an analog signal into a digital format of N-bits. See page 59.

DIGITAL-TO-ANALOG CONVERTERS (DAC)—interface between digital and analog domain.

- D/A converter accepts N-bit digital data and produces an analog output signal. See page 77.

WIRELESS COMMUNICATIONS TRANSCIVER CIRCUIT COMPONENT



AMPLIFIERS—typical transceiver channel circuit elements.

- Operational Amplifiers—basic building block for signal processing, e.g., impedance transformation and amplification. See page 5.

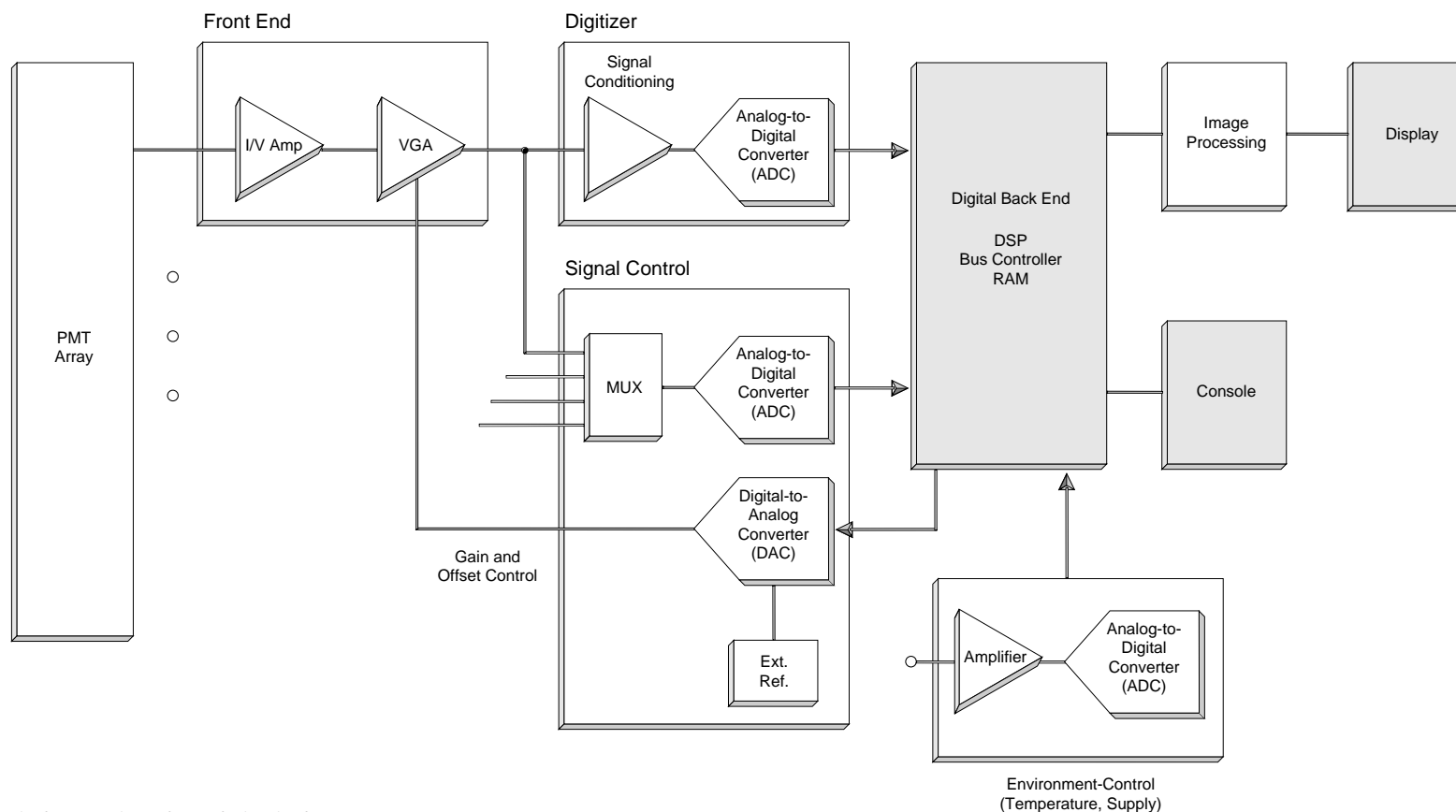
ANALOG-TO-DIGITAL CONVERTERS (ADC)—interface between analog and digital domain.

- A/D converter digitizes an analog signal into a digital format of N-bits. See page 59.

DIGITAL-TO-ANALOG CONVERTERS (DAC)—interface between digital and analog domain.

- D/A converter accepts N-bit digital data and produces an analog output signal. See page 77.

GAMMA CAMERA CIRCUIT COMPONENTS



AMPLIFIERS—typical transceiver channel circuit elements.

- Operational Amplifiers—basic building block for signal processing, e.g., impedance transformation and amplification. See page 5.

ANALOG-TO-DIGITAL CONVERTERS (ADC)—interface between analog and digital domain.

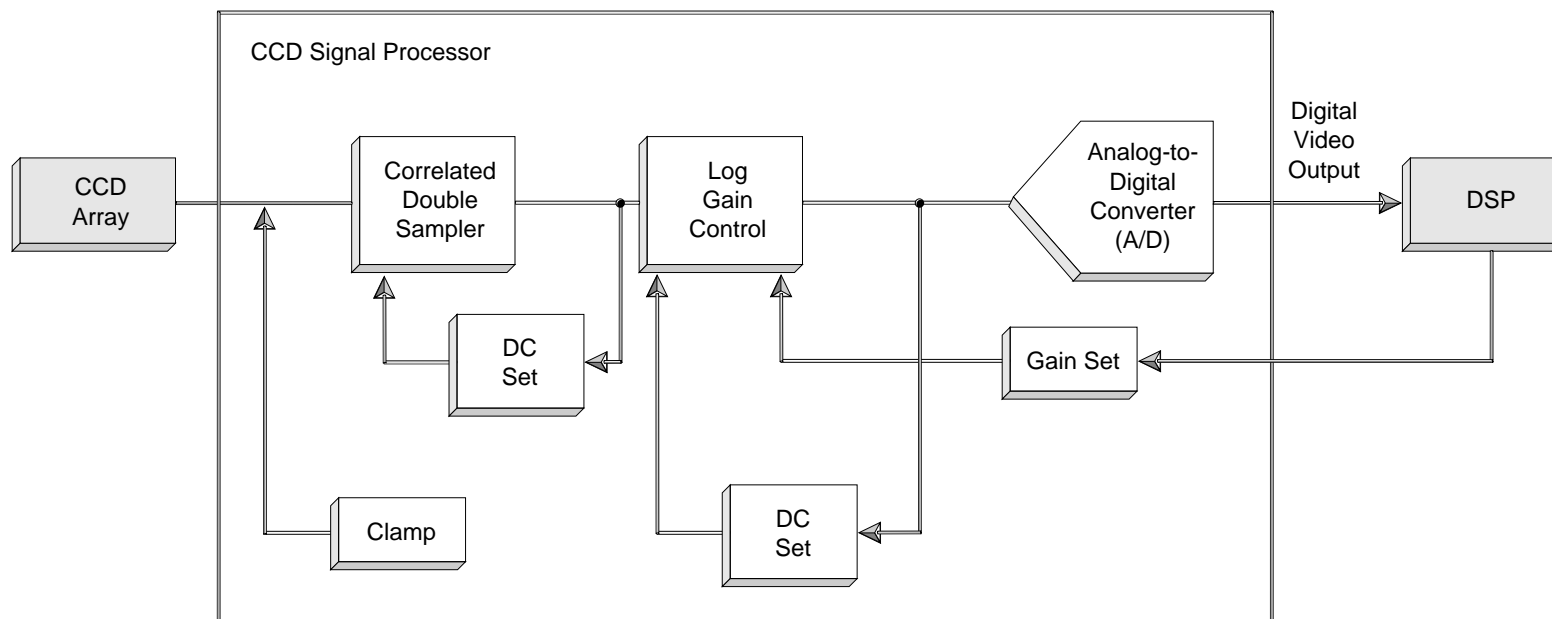
- A/D converter digitizes an analog signal into a digital format of N-bits. See page 59.

DIGITAL-TO-ANALOG CONVERTERS (DAC)—interface between digital and analog domain.

- D/A converter accepts N-bit digital data and produces an analog output signal. See page 77.

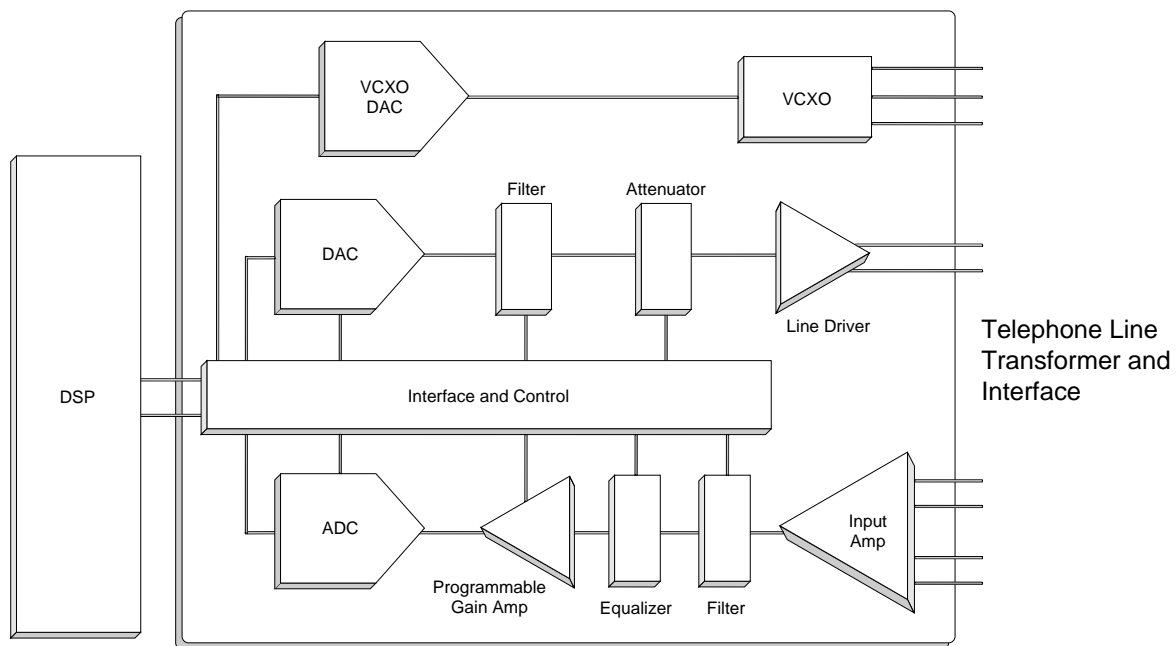
MULTIPLEXERS—signal selector (multiple inputs, one output). Signal selection is by logic levels. See page 95.

DIGITAL CAMERA APPLICATIONS



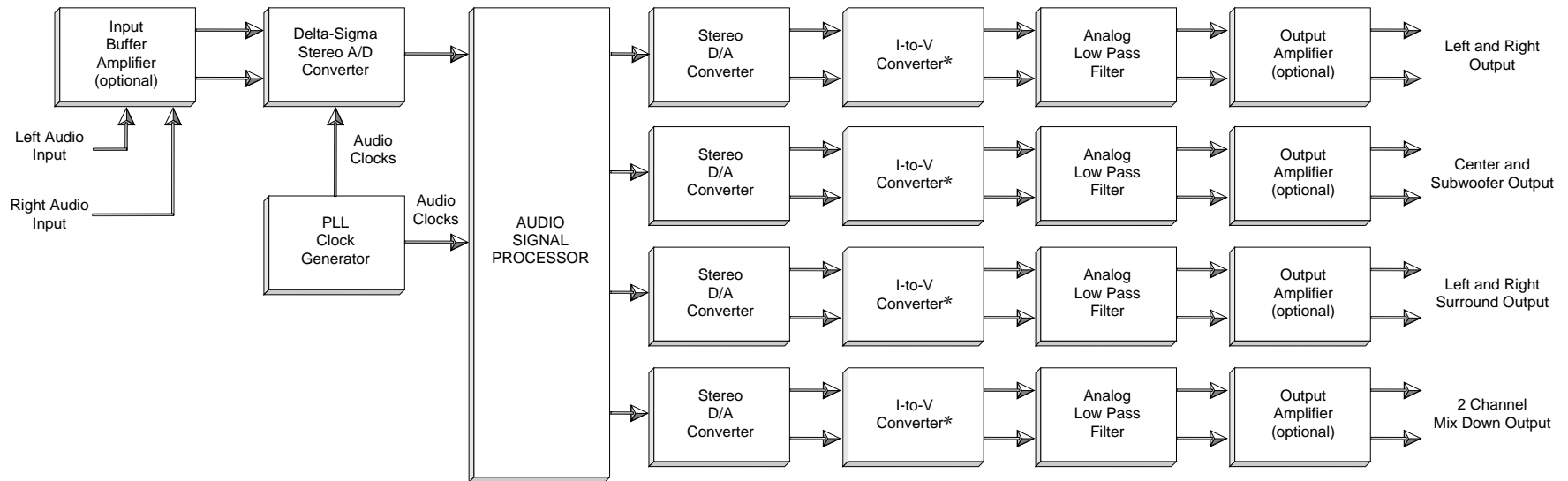
CCD SIGNAL PROCESSOR—provides signal conditioning and analog-to-digital conversion for the output of a CCD array. See page 75.

DSL ANALOG FRONT-END



This is an example of a full-featured DSL Analog Front End using Burr-Brown's "core" cell approach. Burr-Brown can design new analog front-end products using critical circuit blocks which already exist, for fast turnaround time with relatively low risk.

DIGITAL AUDIO PROCESSING APPLICATION



AUDIO A/D CONVERTER—provides high resolution, low noise digitizing of audio inputs from various sources (line, microphone preamp, etc.).

PLL CLOCK GENERATOR—Phase Lock Loop-based clock generator provides low jitter clocks for audio, video, and DSP subsystems.

AUDIO SIGNAL PROCESSOR—third party product for performing decoding, effects, and surround-sound processing.

AUDIO D/A CONVERTERS—provides high resolution, low noise, and high dynamic range analog reproduction of digital audio data.

I-TO-V (Current-to-Voltage) CONVERTER—used for BiCMOS Sign-Magnitude D/As to convert the current output of a D/A converter to a corresponding voltage output.

ANALOG LOW PASS FILTER—usually second-order or higher. Filtering is required to band limit the output signal and remove out-of-band energy produced by delta-sigma D/As.

*Required for Advanced Sign Magnitude D/A Converters only. Delta-Sigma D/As do not require this function.

Demonstration Boards

APPLICATION PRODUCT	DEMO BOARD PART NUMBER	DEVICE INCLUDED	DEVICE ATTACH	SOFTWARE INCLUDED	CABLES	SUPPORT CARD SUPPLIED
ADS800E	DEM-ADS8xxE		Solder			
ADS800U	DEM-ADS800U	Y	Solder			
ADS801E	DEM-ADS8xxE		Solder			
ADS801U	DEM-ADS801U	Y	Solder			
ADS802E	DEM-ADS8xxE		Solder			
ADS802U	DEM-ADS802U	Y	Solder			
ADS803U	DEM-ADS80xU		Solder			
ADS804U	DEM-ADS80xU		Solder			
ADS805U	DEM-ADS80xU		Solder			
ADS807E	DEM-ADS807E	Y	Solder			
ADS820E	DEM-ADS8xxE		Solder			
ADS820U	DEM-ADS820U	Y	Solder			
ADS821E	DEM-ADS8xxE		Solder			
ADS821U	DEM-ADS821U	Y	Solder			
ADS822E	DEM-ADS822E	Y	Solder			
ADS823E	DEM-ADS823E	Y	Solder			
ADS824E	DEM-ADS824E	Y	Solder			
ADS830E	DEM-ADS830E	Y	Solder			
ADS831E	DEM-ADS831E	Y	Solder			
ADS900E	DEM-ADS9xxE		Solder			
ADS901E	DEM-ADS9xxE		Solder			
ADS902E	DEM-ADS9xxE		Solder			
ADS930E	DEM-ADS9xxE		Solder			
ADS931E	DEM-ADS9xxE		Solder			
ADS1201U	DEM-ADS1201U		Socket			
ADS1201U	DEM-ADS1201UADP		Socket			
ADS1210P	DEM-ADS1210/11		Socket	Y	Y	
ADS1211P	DEM-ADS1210/11	Y	Socket	Y	Y	
ADS1212P	DEM-ADS1210/11		Socket	Y	Y	
ADS1213P	DEM-ADS1210/11	Y	Socket	Y	Y	
ADS1250U	DEM-ADS1250U		Socket			
ADS1286P	DEM-ADS78DIP		Socket			
ADS78xx	DEM-CIB		Computer Interface	Y		
ADS7811U	DEM-ADS7815U	Y	Socket			
ADS7812P	DEM-ADS7812/13P		Socket			
ADS7813P	DEM-ADS7812/13P	Y	Socket			
ADS7815U	DEM-ADS7815U	Y	Socket			
ADS7816P	DEM-ADS78DIP	Y	Socket			
ADS7817P	DEM-ADS78DIP	Y	Socket			

Demonstration Boards

APPLICATION PRODUCT	DEMO BOARD PART NUMBER	DEVICE INCLUDED	DEVICE ATTACH	SOFTWARE INCLUDED	CABLES	SUPPORT CARD SUPPLIED
ADS7818P	DEM-ADS78DIP		Socket			
ADS7822P	DEM-ADS78DIP	Y	Socket			
ADS7833N	DEM-ADS7833-C	Y	Socket			
ADS7834P	DEM-ADS78DIP		Socket			
DAC1220E	DEM-DAC1220E		Socket			
DDC112U	DEM-DDC112U-C	Y	Socket	Y	Y	
DSD1700	DEM-DSD1700	Y	Solder Mount			
OPA263xN	DEM-OPA268xN (MKT-353)		Solder			
OPA263xU	DEM-OPA268xU (MKT-352)		Solder			
OPA265xE	DEM-OPA26xxE (MKT-349)		Solder			
OPA265xU	DEM-OPA268xU (MKT-352)		Solder			
OPA268xN	DEM-OPA268xN (MKT-353)		Solder			
OPA268xU	DEM-OPA268xU (MKT-352)		Solder			
OPA368xE	DEM-OPA368xE (MKT-354)		Solder			
OPA368xU	DEM-OPA368xU (MKT-364)		Solder			
OPA603P	DEM-OPA68xP (MKT-350)		Solder			
OPA603U	DEM-OPA68xU (MKT-351)		Solder			
OPA62xP	DEM-OPA68xP (MKT-350)		Solder			
OPA62xU	DEM-OPA68xU (MKT-351)		Solder			
OPA63xN	DEM-OPA6xxN (MKT-348)		Solder			
OPA63xU	DEM-OPA68xU (MKT-351)		Solder			
OPA64xN	DEM-OPA6xxN (MKT-348)		Solder			
OPA64xP	DEM-OPA68xP (MKT-350)		Solder			
OPA64xU	DEM-OPA68xU (MKT-351)		Solder			
OPA65xN	DEM-OPA6xxN (MKT-348)		Solder			
OPA65xP	DEM-OPA68xP (MKT-350)		Solder			
OPA65xU	DEM-OPA68xU (MKT-351)		Solder			
OPA68xN	DEM-OPA6xxN (MKT-348)		Solder			
OPA68xP	DEM-OPA68xP (MKT-350)		Solder			
OPA68xU	DEM-OPA68xU (MKT-351)		Solder			
PCM1600	DEM-DAI1600	Y	Solder Mount	Y		
PCM1702	DEM-1702	Y	Socket			
PCM1702	EVM-1702	Y	Socket			
PCM1704/DF1704	DEM-DAI1704	Y	Socket	Y	Y	
PCM1710	DEM-PCM1710	Y	Socket			
PCM1710	DEM-DAI1710	Y	Socket			
PCM1716	DEM-PCM1716	Y	Socket			
PCM1716	DEM-PCM1716-1	Y	Socket	Y	Y	
PCM1716	DEM-DAI1716	Y	Socket			Y

Demonstration Boards

APPLICATION PRODUCT	DEMO BOARD PART NUMBER	DEVICE INCLUDED	DEVICE ATTACH	SOFTWARE INCLUDED	CABLES	SUPPORT CARD SUPPLIED
PCM1716	DEM-DAI1716-1	Y	Socket	Y	Y	Y
PCM1717	DEM-PCM1717	Y	Socket			
PCM1717	DEM-PCM1717-1	Y	Socket	Y	Y	
PCM1717	DEM-DAI1717	Y	Socket	Y	Y	
PCM1718	DEM-PCM1718	Y	Socket			
PCM1718	DEM-DAI1718	Y	Socket			
PCM1719	DEM-PCM1719	Y	Socket			
PCM1719	DEM-PCM1719-1	Y	Socket	Y	Y	
PCM1720	DEM-PCM1720	Y	Socket			
PCM1720	DEM-PCM1720-1	Y	Socket	Y	Y	
PCM1720	DEM-DAI1720	Y	Socket			Y
PCM1720	DEM-DAI1720-1	Y	Socket	Y	Y	Y
PCM1723	DEM-PCM1723	Y	Socket			
PCM1723	DEM-PCM1723-1	Y	Socket	Y	Y	
PCM1725	DEM-PCM1725	Y	Socket			
PCM1725	DEM-DAI1725	Y	Socket			Y
PCM1728	DEM-PCM1728	Y	Socket			
PCM1728	DEM-DAI1728	Y	Socket			Y
PCM1732	DEM-DAI1732	Y	Socket	Y	Y	
PCM1737	DEM-DAI1737	Y	Socket	Y		
PCM1739	DEM-DAI1739	Y	Socket			
PCM1740	DEM-PCM1740	Y	Solder Mount			
PCM1760/DF1760	DEM-PCM1760	Y	Socket			
PCM1800	DEM-PCM1800	Y	Socket			
PCM1800	DEM-DAI1800	Y	Socket			Y
PCM1801	DEM-PCM1801	Y	Socket			
PCM1801	DEM-DAI1801	Y	Socket			Y
PCM3000	DEM-PCM3000	Y	Socket			
PCM3000	DEM-PCM3000-1	Y	Socket	Y	Y	
PCM3001	DEM-DAI3001	Y	Socket			Y
PCM3001	DEM-PCM3001	Y	Socket			
PCM3002	DEM-PCM3002	Y	Socket			
PCM3002	DEM-PCM3002-1	Y	Socket	Y	Y	
PCM3002	DEM-DAI3002	Y	Socket			Y
PCM3002	DEM-DAI3002-1	Y	Socket	Y	Y	Y
PCM3003	DEM-PCM3003	Y	Socket			
PCM3003	DEM-DAI3003	Y	Socket			Y
PCM3500	DEM-PCM3500	Y	Socket			

Tape and Reel Information

TAPE AND REEL MODEL NUMBERING SYSTEM

Model numbers for products on tape and reel include the reel quantities as a suffix to the core model number separated by a slash, such as: OPA2237UA/2K5. The slash (“/”) is the unique indicator for tape and reel.

To determine the complete model number for a given product, first note the package number that is given for each product in its respective product data sheet. Then look up that package number in Table I to determine the quantity of devices per reel and the suffix.

To shorten tape and reel delivery times, all products will be stocked already taped and reeled. Therefore, no partial or odd size reels will be allowed. The quantity ordered must be equal to, or a multiple of, the suffix quantity.

Some Burr-Brown products (such as those in SOT-23 packages) are only available on tape and reel. In general, these products will also be available on the small 250-piece reel (/250) for pre-production purposes. If the product is available in rails, only the larger full production reel size will be offered.

When entering an order for a part on tape and reel, please request the part number complete with the slash suffix along with the quantity of units desired. Thus, an order for 5000 pieces of OPA2237UA on tape and reel would be entered as:

MATERIAL	QTY
OPA2237UA/2K5	5000

This would be supplied as two 2500-piece reels. It is always a good idea to confirm tape and reel model numbers with your nearest Burr-Brown Sales Office.

PACKAGE NUMBER ⁽¹⁾	DESCRIPTION	TAPE WIDTH, W (mm)	PITCH, P (mm)	DEVICES PER REEL	REEL DIAMETER (mm)	SUFFIX
010-2	14 pin plastic with Gull wing leads	32	16	700	330	/700
178	SO-24	24	16	1000	330	/1K
182	SO-8	12	8	2500	330	/2K5
211	SOL-16	16	12	1000	330	/1K
217	SO-28	24	12 16 ⁽²⁾	1000 1000	330 330	/1K /1K
219	SOL-18	24	16	1000	330	/1K
221	SOL-20	24	12	1000	330	/1K
235	SO-14	16	8	2500 2000 ⁽³⁾	330 250	/2K5 /2K
239	SOL-24	24	12	1000	330	/1K
248	SO-20	24	12	1000 2000 ⁽⁴⁾	330 330	/1K /2K
265	SO-16	16	8	2500	330	/2K5
311	SOT-223	12	8	2500	330	/2K5
322	SSOP-16	12	8	2500 250	330 178	/2K5 /250
324	SSOP-28	16	12	1000 2000 ⁽⁵⁾	330 330	/1K /2K
325	DDPak-5	24	16	500	330	/500
328	DDPak-7	24	16	500	330	/500
331	SOT23-5	8	4	3000 250	178 178	/3K /250
332	SOT23-6	8	4	3000 250	178 178	/3K /250
333	SSOP-48	32	16	1000	330	/1K
334	SSOP-20	16	16 12 ⁽⁶⁾	1000 2000	330 330	/1K /2K
337	MSOP-8	12	8	2500 250	330 178	/2K5 /250
338	SSOP-24	16	12	1000 2000 ⁽⁷⁾	330 330	/1K /2K
339	DDPak-3	24	16	500	330	/500
340	LQFP-48	16	12	2000 250	330 330	/2K /250
341	SO-28	24	16	1000	330	/1K
346	SSOP-56	32	16	1000	330	/1K
348	SOT23-8	8	4	3000 250	178 178	/3K /250
349	SSOP-20 (QSOP-20)	16	8	2500	330	/2K5
350	TSSOP-24	16	12	1000 2000 ⁽⁸⁾	330 330	/1K /2K
351	TQFP-32	16	12	2000 250	330 330	/2K /250
352	SSOP-24	16	8	2500	330	/2K5
355	TQFP-48	16	12	2000 250	330 330	/2K /250
357	TSSOP-14	12	8	2500 250	330 178	/2K5 /250
360	TSSOP-28	16	8	2500	330	/2K5
361	LQFP-64	24	16	1500	330	/1K5
361-1	LQFP-64	24	16	1500	330	/1K5
363	TSSOP-16	12	8	2500 250	330 178	/2K5 /250

NOTES: (1) Package numbers can be found in individual product data sheets in the "Package Information" table. (2) For all PCM1700U, PCM1712U, PCM1715U, and PCM1760U models only. (3) For all PCM1725U and PCM1733 U models only. (4) For all PCM1702U, PCM1704U, PCM69AU models only. (5) For all DF1704E, PCM1716E, PCm1719E, PCM1728E, PCM3000E, PCM3001E models only. (6) For all PCM1717E, PCM1718E, PCM1720E, and PLL models only. (7) For all PCM1723E, PCM1727E, PCM1800E, PCM3002E and PCM3003E models only. (8) For all PCM3006T models only.

TABLE I. Tape and Reel Reference Information.

Tools for Designers

ACTIVE FILTER DESIGN SOFTWARE

The FilterPro™ active filter design package, available from Burr-Brown, makes it easy to design high-performance active filters. Filter designs are time continuous, free from the digital switching noise and aliasing of switched-capacitor types. Graphics capabilities allow easy comparison of filter types. Program outputs include print-outs of standard real-world component values. FILTER1 designs Sallen-Key low-pass filters, FILTER2 is for multiple feedback (MFB) low-pass filters, and FILTER42 is for state-variable low-pass,

high-pass, band-pass and band-reject (notch) filters built using Burr-Brown's UAF42 monolithic Universal Active Filter integrated circuit.

The package comes with complete documentation for each module, including measurements of actual representative filters designed by the program. A DOS-compatible 3.5" disk contains all three filter design programs and other supporting software. This software can also be found at the Burr-Brown Web Site (<http://www.burr-brown.com/>).



Applications Bulletins

APPLICATIONS LIBRARY

The following applications information and CD-ROM is available from Burr-Brown at no charge.

Call 1-800-548-6132 to order or download from <http://www.burr-brown.com/>.

APPLICATIONS BULLETINS

Increasing INA117 Differential Input Range	AB-001
Make a Precision Current Source or Current Sink	AB-002
Voltage-Reference Filters	AB-003
Make a Precision -10V Reference	AB-004
Make a Precision ±10V Reference	AB-005
Make a -10V to +10V Adjustable Precision Voltage Source	AB-006
Classical Op Amp or Current-Feedback Op Amp? This Composite Op Amp Gives you the Best of Both Worlds	AB-007
AC Coupling Instrumentation and Difference Amplifiers	AB-008
Single-Supply Operation of Isolation Amplifiers	AB-009
±200V Difference Amplifier with Common-Mode Voltage Monitor	AB-010
Low Power Supply Voltage Operation of REF102 10V Precision Voltage Reference	AB-011
Boost ISO120 Bandwidth to More Than 100kHz	AB-012
Increasing ADC603 Input Range	AB-013
Input Overload Protection for the RCV420 4-20mA Current-Loop Receiver	AB-014
Extending the Common-Mode Range of Difference Amplifiers	AB-015
Boost Amplifier Output Swing With Simple Modification	AB-016
0-20mA Receiver Using the RCV420	AB-018
Using the ADS7800 12-Bit ADC with Unipolar Input Signals	AB-019
Operational Amplifier and Instrumentation Amplifier Macromodels	AB-020
Synchronization of ISO120/ISO121 Isolation Amplifiers	AB-021
Fast Settling Low-Pass Filter	AB-022
Simple Output Filter Eliminates ISO Amp Output Ripple and Keeps Full Bandwidth	AB-023
Analog Isolation with Power	AB-024
Boost Instrumentation Amp CMR with Common-Mode Driven Supplies	AB-025
A Low Noise, Low Distortion Design for Anti-Aliasing and Anti-Imaging Filters	AB-026
High-Speed Data Conversion	AB-027
Feedback Plots Define Op Amp AC Performance	AB-028
Input Filtering the INA117 ±200V Difference Amplifier	AB-029
Thermal and Electrical Properties of Selected Packaging Materials	AB-030
4-20mA to 0-20mA Converter and Current Summing	AB-031
IC Building Blocks Form Complete Isolated 4-20mA Current-Loop Systems	AB-032
Single-Supply, Low-Power Measurements of Bridge Networks	AB-033
MFB Low-Pass Filter Design Program	AB-034
Filter Design Program for the UAF42 Universal Active Filter	AB-035
Diode-Based Temperature Measurement	AB-036
Mounting Consideration for TO-3 Package	AB-037
Heat Sinking—TO-3 Thermal Model	AB-038
Power Amplifier Stress and Power Handling Limitations	AB-039
Frequency-to-Voltage Conversion	AB-040
Single-Supply 4-20mA Current Loop Receiver	AB-041
Programmable Gain Instrumentation Amplifiers	AB-042
Use Low-Impedance Bridges on 4-20mA Current Loops	AB-043
Improved Device Noise Performance for the 3650 Isolation Amplifier	AB-044
Op Amp Performance Analysis	AB-045
Operational Amplifier Macromodels: A Comparison	AB-046
Noise Sources in Applications Using Capacitive Coupled Isolated Amplifiers	AB-047
The ACF2101 Used as a Bipolar Switched Integrator	AB-048
The MPC100 Analog Multiplexer Improves RF Signal Distribution	AB-049
Compensate Transimpedance Amplifiers Intuitively	AB-050
Double the Output Current to a Load with the Dual OPA2604 Audio Op Amp	AB-051
OPA660 Drives Magnetic Recording Head	AB-052
Improved Noise Performance of the ACF2101 Switched Integrator	AB-053
Clamping Amplifiers Track Power Supplies	AB-054
Precision IA Swings Rail-to-Rail on Single 5V Supply	AB-056
Comparison of Noise Performance Between a FET Transimpedance Amplifier and a Switched Integrator	AB-057
Simple Filter Turns Square Waves into Sine Waves	AB-058
MTTF, Failrate, Reliability and Life Testing	AB-059
Careful Layout Tames Sample-Hold Pedestal Errors	AB-060
OPT201 Photodiode-Amplifier Rejects Ambient Light	AB-061
Digitally Programmable, Time-Continuous Active Filter	AB-062
Voltage-to-Frequency Converters Offer Useful Options in A/D Conversion	AB-066
Dynamic Tests for A/D Converter Performance	AB-072
Photodiode Monitoring with Op Amps	AB-075
Design and Application of Transformer-Coupled Hybrid Isolation Amplifier Model 3656	AB-078
The Key to Understanding Sources of Error in the ISO100 Isolation Amplifier	AB-079
Hybrid Isolation Amps Zap Prices and Voltage Barriers	AB-080
DC-to-DC Converters	AB-081
Principles of Data Acquisition and Conversion	AB-082
10MHz Analog Multiplier Carries Output Amp Breaks Bandwidth Barrier	AB-083
Analog-to-Digital Converter Grounding Practices Effect System Performance	AB-084
Simple Circuit Delivers 38Vp-p at 5A from 28V Unipolar Supply	AB-085
Switch Gains Accurately with the INA120	AB-086
Level Shifting Signals with Differential Amplifiers	AB-087
Improved Voltage Filter has Several Advantages	AB-088
A Clarification of Use High-Speed S/H to Improve Sampling ADC Performance	AB-089
Feedback Circuit Clamps Precisely	AB-090

Applications Bulletins (cont.)

Voltage-Feedback Amps vs Current-Feedback Amps: Bandwidth & Distortion Considerations ..	AB-091	Using External Integration Capacitors on the DDC112	AB-138
SWOP Amplifiers Simplify RF Signal Processing	AB-092	ADS7843 Pen Interrupt	AB-142
Isolation Amps Hike Accuracy and Reliability	AB-093	Multi-DDC112 DUT Board for the DDC112 Evaluation Fixture	AB-143
Tame Photodiodes with Operational Amplifier Bootstrap	AB-094	New Software for the DDC112 Evaluation Fixture	AB-144
Tips for Using the ADS78xx Family of A/D Converters	AB-095	Using the ADS1201 Evaluation Board	AB-146
Build A Three Phase Sine Wave Generator With the UAF42	AB-096	Control Port and Reset Operation for Burr-Brown Sound _{PLUS} [™] Audio Converters and CODECs	AB-147
DDC101 Evaluation Fixture PC Interface Board	AB-097	Low Sampling Rate Operation for Burr-Brown Sound _{PLUS} [™] Audio Data Converters and CODECs	AB-148
Selecting an A/D Converter	AB-098	Creating A Bipolar Input Range for the DDC112	AB-150
An Easy Solution to Current Limiting an Op Amp	AB-099	Four-Wire RTD Current-Loop Transmitter: Four-Wire Connections to an RTD Allow the RTD to be Remotely Located from Active Circuitry, Yet Maintain Accuracy	AB-151
Multiplexer Data Acquisition System	AB-100	DC Motor Speed Controller: Control a DC Motor without Tachometer Feedback	AB-152
Combining an Amplifier with the BUF634	AB-101	An Error Analysis of the ISO102 in Small-Signal Measuring	AB-161
Output Spectrum and Post-LPF Design of the PCM1710	AB-102	DC/DC Converter Noise Reduction	AB-162
Noise Analysis for High Speed Op Amps	AB-103	Partial Discharge Testing	AB-163
Dynamic Performance Testing of Digital Audio D/A Converters	AB-104	Implementation and Applications of Current Sources and Current Receivers	AB-165
Tuning in Amplifiers	AB-105	Comparing the ADS1201 to the CS5321	AB-167
Programming Tricks for Higher Conversion Speeds Utilizing $\Delta\Sigma$ Converters	AB-106	Coding Schemes Used with Data Converters	AB-175
Giving $\Delta\Sigma$ Converters a Little Gain Boost with a Front End Analog Gain Stage	AB-107	Exchanging Files on the Customer Service Electronic Bulletin Board	AB-176
ADS7809 Tag Feature	AB-109	CDAC Architecture Plus Resistor Divider Gives ADC574 Pinout with Sampling, Low-Power, New Input Ranges	AB-178
Voltage Reference Scaling Techniques	AB-110	Video Operational Amplifiers	AB-179
DEM-ADS1210/1211 Demo Board Tricks to Evaluate	AB-111	Ultra High-Speed ICs	AB-180
Interfacing the ADS1210 with an 8xC51 Microcontroller	AB-112	Diamond Transistor OPA660	AB-181
Accessing the ADS1210 Demo Board with your PC	AB-113	New Ultra High-Speed Circuit Techniques with Analog ICs	AB-183
Overdriving the Inputs to the ADS1210, ADS1211, ADS1212, and ADS1213	AB-115	Driving Video Output Stages with Monolithic Integrated Amps	AB-184
Synchronization of External Analog Multiplexers with the $\Delta\Sigma$ A/D Converters	AB-116	Automatic Gain Control (AGC) Using the Diamond Transistor OPA660	AB-185
Short Cycling the 8-Pin ADS78xx Family	AB-117	Current or Voltage Feedback: The Choice is Yours with the New, Flexible, Wide-Band Operational Amplifier OPA622	AB-186
Extract and Digitize AC Signals with a Single A/D Converter	AB-118	External Open-Loop Gain Adjustment: Check It Out with the Demo Boards for the OPA623 and OPA622	AB-187
A "Getting Started" Guide for the $\Delta\Sigma$ Converters: ADS1210, ADS1211, ADS1212, ADS1213, ADS1214 and ADS1215	AB-119	Building a 400MHz Wide-Band Differential Amp: It's a Breeze with the Diamond Transistor OPA660	AB-188
How to Get 23 Bits of Effective Resolution From Your 24-Bit Converter	AB-120	Macromodels for RF Operational Amplifiers are a Powerful Design Tool	AB-189
Precision Absolute Value Circuits	AB-121	Designing Active Filters With the Diamond Transistor OPA660	AB-190
Interfacing The ADS7822 To The Synchronous Serial Port of The 80x51 Microcontroller	AB-122	There's a World of Line Drivers to Choose From	AB-191
Using The Continuous Parallel Mode With The ADS7824 and ADS7825	AB-123	Fiber Optic Transmission	AB-192
THD+N Versus Frequency Characteristics And Spectra Of The PCM1717/18/20/23/27	AB-124	The Current-Feedback Operational Amplifier: A High-Speed Building Block	AB-193
Customizing the DDC112 Evaluation Fixture	AB-125	Intermodulation Distortion (IMD)	AB-194
ADS121x Analog-Digital Converter Applications Primer	AB-127		
Voltage-to-Frequency Converters Offer Useful Options In A/D Conversion.	AB-130		
Understanding the DDC112's Continuous and Non-Continuous Modes	AB-131		
Solder Pad Recommendations for Surface-Mount Devices	AB-132		
The DDC112's Test Mode	AB-135		
Retrieving Data from the DDC112	AB-136		
Add Current Limit to the BUF634	AB-137		
		DESIGN SOFTWARE	
		FilterPro Disk	AB/E-034, 035

Cross Reference

Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Advanced Linear Devices	ALD2711	OPA2342	C/P	Analog Devices	AD ADC84-12	ADC84KG-12	P/P	Analog Devices	AD1674	ADS574	P/E
AKM	AK4309	PCM1725	C/P	Analog Devices	AD ADC85-12	ADC85H-12	P/P	Analog Devices	AD1674	ADS774JP	F/E
AKM	AK4310	PCM1717	F/E	Analog Devices	AD ADC85C-12	ADC85H-12	P/P	Analog Devices	AD1674	ADS7804	C/P
AKM	AK4311A	PCM1717	F/E	Analog Devices	AD ADC85S-12	ADC87H-12	P/P	Analog Devices	AD1678	ADS7800AH	F/E
AKM	AK4312B	PCM1717	C/P	Analog Devices	AD DAC85-CBI-I	DAC85H-CBI-I	P/P	Analog Devices	AD1711	ADS1211	C/P
AKM	AK4315	PCM1717	C/P	Analog Devices	AD DAC85-CBI-V	DAC85H-CBI-V	P/P	Analog Devices	AD181	OPA241	C/P
AKM	AK4316	PCM1717	F/E	Analog Devices	AD DAC85C-CBI-I	DAC85H-CBI-I	P/P	Analog Devices	AD183	OPA227	C/P
AKM	AK4317	PCM1717	C/P	Analog Devices	AD DAC85C-CBI-V	DAC85H-CBI-V	P/P	Analog Devices	AD183	OPAA227	C/P
AKM	AK4318	PCM1718	C/P	Analog Devices	AD DAC87-CBI-I	DAC87H-CBI-V	P/P	Analog Devices	AD1851	PCM56	P/E
AKM	AK4319A	PCM1717	C/P	Analog Devices	AD DAC87-CBI-V	DAC87H-CBI-V	P/P	Analog Devices	AD1853	PCM1704/DF1706	C/P
AKM	AK4320	PCM1720	C/P	Analog Devices	AD09	OPA4227	C/P	Analog Devices	AD1854	PCM1737/39	C/P
AKM	AK4321	PCM1720	C/P	Analog Devices	AD11	OPA4131	C/P	Analog Devices	AD1855	PCM1737/39	C/P
AKM	AK4323	PCM1723	F/E	Analog Devices	AD1139	DAC729JH	F/E	Analog Devices	AD1856	PCM56	P/P
AKM	AK4324	PCM1716/28	F/E	Analog Devices	AD1145	DAC709KH	F/E	Analog Devices	AD1856N	PCM56P	P/P
AKM	AK4351	PCM1717	C/P	Analog Devices	AD1147	DAC729JH	C/P	Analog Devices	AD1856N-J	PCM56P-J	P/P
AKM	AK4352	PCM1717	C/P	Analog Devices	AD1148	DAC729JH	C/P	Analog Devices	AD1856N-K	PCM56P-K	P/P
AKM	AK4356	PCM1604	C/P	Analog Devices	AD1154	SHC605	C/P	Analog Devices	AD1859	PCM1723	C/P
AKM	AK4363	PCM1723	C/P	Analog Devices	AD1154	SHC76	P/E	Analog Devices	AD1860N	PCM61P	P/P
AKM	AK4380	PCM1720	C/P	Analog Devices	AD12	OPA277	C/P	Analog Devices	AD1860N-J	PCM61P-J	P/P
AKM	AK4393	PCM1704/DF1704	C/P	Analog Devices	AD1376	ADC75	P/E	Analog Devices	AD1860N-K	PCM61P-K	P/P
AKM	AK4394	PCM1704/DF1706	C/P	Analog Devices	AD1376	ADC76JG	P/E	Analog Devices	AD1861	PCM61	P/E
AKM	AK4512	PCM3006	F/E	Analog Devices	AD1376JD	ADC76JG	P/P	Analog Devices	AD1862	PCM1702	F/E
AKM	AK4516A	PCM3002/3	C/P	Analog Devices	AD1376KD	ADC76KG	P/P	Analog Devices	AD1862	PCM63P	F/E
AKM	AK4532	PCM3000/1	C/P	Analog Devices	AD1377	ADC76	F/E	Analog Devices	AD1864	PCM1700	F/E
AKM	AK5390	PCM1760/DF1760	C/P	Analog Devices	AD1377	ADS7805	F/E	Analog Devices	AD1865	PCM1700P	F/E
AKM	AK5506	ADS1210	C/P	Analog Devices	AD1377	ADS7809	F/E	Analog Devices	AD1876	ADS7809	F/E
AKM	AK5545	ADS1211	C/P	Analog Devices	AD1380	ADC700JH	C/P	Analog Devices	AD1876	PCM78P	F/E
Allegro	VLN3755	OPA2541	C/P	Analog Devices	AD1382KD (1 grade)	ADS7815U	C/P	Analog Devices	AD1877	PCM1800, PCM1801	C/P
Alpha Semiconductor	AS1004S-1.2V	REF1004I-1.2	P/P	Analog Devices	AD1385KD	ADS7815U	C/P	Analog Devices	AD1879	PCM1760	C/P
Analog devices	1B22	ISO113	C/P	Analog Devices	AD1385TD	ADS7815U	C/P	Analog Devices	AD202	ISO122	C/P
Analog Devices	286J	3656	F/E	Analog Devices	AD1671	ADS7810	C/P	Analog Devices	AD202	ISO212	C/P
Analog Devices	433		N/C	Analog Devices	AD1671	ADS7819	C/P	Analog Devices	AD203	ISO103	C/P
Analog Devices	436	MPY100	F/E	Analog Devices	AD1671	ADS802	C/P	Analog Devices	AD203N	ISO103	F/E

CROSS REFERENCE: A listing of Burr-Brown products that are pin-for-pin (P/P) compatible with competitors products, pin-for-pin with exception of one or more specs (P/E), closest part (C/P) or functional equivalent (F/E).

Cross Reference

Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Analog Devices	AD204	ISO124	C/P	Analog Devices	AD526	PGA204	C/P	Analog Devices	AD549	OPA130	P/E
Analog Devices	AD204	ISO212	C/P	Analog Devices	AD526	PGA206	C/P	Analog Devices	AD5539	OPA621KP	F/E
Analog Devices	AD208	ISO175	C/P	Analog Devices	AD526	PGA207	C/P	Analog Devices	AD562	DAC80-CBI-V	C/P
Analog Devices	AD208	ISO175	C/P	Analog Devices	AD5320	DAC7611	C/P	Analog Devices	AD562	DAC85	C/P
Analog Devices	AD208	ISO212	C/P	Analog Devices	AD532JD	MPY100	P/E	Analog Devices	AD563	DAC80-CBI-V	C/P
Analog Devices	AD210	3656	F/E	Analog Devices	AD532KD	MPY100	P/E	Analog Devices	AD563	DAC85	C/P
Analog Devices	AD210	ISO103	C/P	Analog Devices	AD533	MPY100	F/E	Analog Devices	AD565	DAC80-CBI-I	C/P
Analog Devices	AD2701	REF102	C/P	Analog Devices	AD534JD	MPY534JD	P/P	Analog Devices	AD565A	DAC80-CBI-I	C/P
Analog Devices	AD2702	REF102	C/P	Analog Devices	AD534JH	MPY534JH	P/P	Analog Devices	AD565A	DAC85	C/P
Analog Devices	AD2710	REF10JM	C/P	Analog Devices	AD534KD	MPY534KD	P/P	Analog Devices	AD566	DAC80-CBI-I	C/P
Analog Devices	AD2712	REF102	C/P	Analog Devices	AD534KH	MPY534KH	P/P	Analog Devices	AD566A	DAC80-CBI-I	C/P
Analog Devices	AD289	ISO102	C/P	Analog Devices	AD534LD	MPY534LD	P/P	Analog Devices	AD566A	DAC85	C/P
Analog Devices	AD290A	ISO122	C/P	Analog Devices	AD534SD	MPY534SD	P/P	Analog Devices	AD567	DAC811AH	F/E
Analog Devices	AD293	ISO102	C/P	Analog Devices	AD534SH	MPY534SH	P/P	Analog Devices	AD569	DAC709KH	C/P
Analog Devices	AD294	ISO102	C/P	Analog Devices	AD534TD	MPY534TD	P/P	Analog Devices	AD572	ADC84KG-12	F/E
Analog Devices	AD295	3656	F/E	Analog Devices	AD534TH	MPY534TH	P/P	Analog Devices	AD573	ADS574	C/P
Analog Devices	AD346	SHC5320	F/E	Analog Devices	AD535	MPY534JD	F/E	Analog Devices	AD574ADJ	ADC574AJH	P/P
Analog Devices	AD346	SHC605	C/P	Analog Devices	AD537	VFC32	C/P	Analog Devices	AD574AJN	ADC674AJH	P/P
Analog Devices	AD386	SHC702	C/P	Analog Devices	AD539	MPY634	C/P	Analog Devices	AD574AKD	ADC574AKH	P/P
Analog Devices	AD3860	DAC811AH	P/E	Analog Devices	AD542	OPA131	P/E	Analog Devices	AD574AKP	ADC574AKN	P/P
Analog Devices	AD390	DAC4813	F/E	Analog Devices	AD542	OPA132	P/E	Analog Devices	AD574ANJ	ADC574AJP	P/P
Analog Devices	AD420	DAC7611+ XTR110	C/P	Analog Devices	AD544	OPA131	P/E	Analog Devices	AD578	ADC80AG-12	F/E
Analog Devices	AD4813	DAC4813	F/E	Analog Devices	AD544	OPA132	P/E	Analog Devices	AD579	ADC601JG	C/P
Analog Devices	AD4820	DAC4814	C/P	Analog Devices	AD545	OPA131	P/E	Analog Devices	AD581	REF102	F/E
Analog Devices	AD515	OPA128	P/P	Analog Devices	AD545	OPA132	P/E	Analog Devices	AD582	SHC298AM	C/P
Analog Devices	AD515	OPA129	F/E	Analog Devices	AD546	OPA130	P/E	Analog Devices	AD583	SHC5320KH	F/E
Analog Devices	AD521	INA101AG	F/E	Analog Devices	AD546	OPA131	P/E	Analog Devices	AD584	REF02	C/P
Analog Devices	AD522	INA101AM	F/E	Analog Devices	AD547	OPA130	P/E	Analog Devices	AD584	REF1004-2.5	C/P
Analog Devices	AD524	INA110	P/E	Analog Devices	AD547	OPA131	P/E	Analog Devices	AD584	REF102	C/P
Analog Devices	AD5240	ADC84KG-12	P/E	Analog Devices	AD548	OPA137	P/E	Analog Devices	AD585	SHC5320KH	F/E
Analog Devices	AD5240	ADC85	P/E	Analog Devices	AD548	OPA130	P/E	Analog Devices	AD586	REF02	P/E
Analog Devices	AD526	PGA102	F/E	Analog Devices	AD549	OPA128	P/P	Analog Devices	AD587	REF102	C/P
Analog Devices	AD526	PGA203	C/P	Analog Devices	AD549	OPA129	F/E	Analog Devices	AD587JN	REF102AP	P/P

CROSS REFERENCE: A listing of Burr-Brown products that are pin-for-pin (P/P) compatible with competitors products, pin-for-pin with exception of one or more specs (P/E), closest part (C/P) or functional equivalent (F/E).

Cross Reference

Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Analog Devices	AD587JR	REF102AU	P/P	Analog Devices	AD642	OPA2131	P/E	Analog Devices	AD677	ADS7809	F/E
Analog Devices	AD587KN	REF102BP	P/P	Analog Devices	AD642	OPA2132	P/E	Analog Devices	AD677	ADS7821	C/P
Analog Devices	AD587LN	REF102BP	P/P	Analog Devices	AD644	OPA2132	P/E	Analog Devices	AD678	ADS7800AH	F/E
Analog Devices	AD588	REF102	C/P	Analog Devices	AD645	OPA131	F/E	Analog Devices	AD683	SHC605	C/P
Analog Devices	AD600	VCA610	C/P	Analog Devices	AD645	OPA132	F/E	Analog Devices	AD693	XTR105	F/E
Analog Devices	AD601	VCA610	C/P	Analog Devices	AD645SH	OPA111SM	P/P	Analog Devices	AD694	XTR110	F/E
Analog Devices	AD6012	DAC80-CBI-V	C/P	Analog Devices	AD647	OPA2131	F/E	Analog Devices	AD704	OPA4277	C/P
Analog Devices	AD602	VCA610	C/P	Analog Devices	AD6470	AFE1105	C/P	Analog Devices	AD705	OPA277	C/P
Analog Devices	AD603	VCA610	C/P	Analog Devices	AD648	OPA2130	P/P	Analog Devices	AD706	OPA2277	C/P
Analog Devices	AD603AR	VCA610	C/P	Analog Devices	AD650	VFC110	C/P	Analog Devices	AD707	OPA277	P/P
Analog Devices	AD606	INA101AM	F/E	Analog Devices	AD651	VFC100	P/E	Analog Devices	AD708	OPA2277	P/P
Analog Devices	AD611	OPA132	F/E	Analog Devices	AD654	VFC121	C/P	Analog Devices	AD711	OPA131	P/E
Analog Devices	AD612	PGA204	C/P	Analog Devices	AD654	VFC32	C/P	Analog Devices	AD711	OPA132	P/E
Analog Devices	AD614	PGA204	C/P	Analog Devices	AD660	DAC714	F/E	Analog Devices	AD711	OPA134	P/E
Analog Devices	AD620	INA114	P/E	Analog Devices	AD662	DAC667JP	C/P	Analog Devices	AD712	OPA2107	P/E
Analog Devices	AD620	INA118	P/E	Analog Devices	AD664	DAC4813	C/P	Analog Devices	AD712	OPA2131	P/E
Analog Devices	AD620	INA128	P/E	Analog Devices	AD6640	ADS807	C/P	Analog Devices	AD712	OPA2134	P/E
Analog Devices	AD620	INA129	P/P	Analog Devices	AD667AD	DAC667AH	P/P	Analog Devices	AD712	OPA2604	P/E
Analog Devices	AD620AR	INA129UA	P/E	Analog Devices	AD667BD	DAC667BH	P/P	Analog Devices	AD713	OPA4131	P/E
Analog Devices	AD621	INA141	C/P	Analog Devices	AD667JN	DAC667JP	P/P	Analog Devices	AD713	OPA4132	P/E
Analog Devices	AD622	INA129	P/P	Analog Devices	AD667KN	DAC667KP	P/P	Analog Devices	AD713	OPA4134	P/E
Analog Devices	AD623	INA122	F/E	Analog Devices	AD669	DAC712	F/E	Analog Devices	AD7225	DAC7624	F/E
Analog Devices	AD623	INA126	F/E	Analog Devices	AD669	DAC715	F/E	Analog Devices	AD7225	DAC7625	C/P
Analog Devices	AD624	INA110	F/E	Analog Devices	AD671	ADS7800	F/E	Analog Devices	AD7233	DAC4813	C/P
Analog Devices	AD624	INA111	C/P	Analog Devices	AD671	ADS802	C/P	Analog Devices	AD7245	DAC667JP	C/P
Analog Devices	AD625	INA103	F/E	Analog Devices	AD671	ADS803	C/P	Analog Devices	AD7247	DAC2815	C/P
Analog Devices	AD626	INA122	C/P	Analog Devices	AD674AJD	ADC674AJP	P/P	Analog Devices	AD7248	DAC667JP	C/P
Analog Devices	AD627	INA122	P/P	Analog Devices	AD674AKD	ADC674AKH	P/P	Analog Devices	AD734	MPY600	C/P
Analog Devices	AD627	INA128	P/E	Analog Devices	AD674AKN	ADC674AKP	P/P	Analog Devices	AD734	MPY634	C/P
Analog Devices	AD627	INA129	P/P	Analog Devices	AD676	ADS7805	F/E	Analog Devices	AD741	OPA277	P/E
Analog Devices	AD629	INA117	P/P	Analog Devices	AD676	ADS7807	F/E	Analog Devices	AD743	OPA132	P/E
Analog Devices	AD632	MPY534	P/E	Analog Devices	AD676	ADS7821	C/P	Analog Devices	AD743	OPA134	P/E
Analog Devices	AD633	MPY634	C/P	Analog Devices	AD677	ADS7807	C/P	Analog Devices	AD743	OPA627AP	F/E

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Cross Reference

Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Analog Devices	AD744	OPA602	F/E	Analog Devices	AD7545JN	DAC7545JP	P/P	Analog Devices	AD7845	DAC667JP	C/P
Analog Devices	AD744	OPA627AP	C/P	Analog Devices	AD7545KN	DAC7545KP	P/P	Analog Devices	AD7846	DAC715	C/P
Analog Devices	AD744KN	OPA132	P/E	Analog Devices	AD7545LN	DAC7545LP	P/P	Analog Devices	AD7848	DAC667JP	C/P
Analog Devices	AD745	OPA132	P/E	Analog Devices	AD7545SQ	DAC7545KP	P/E	Analog Devices	AD7849	DAC715	F/E
Analog Devices	AD745	OPA134	P/E	Analog Devices	AD7545TQ	DAC7545KP	P/E	Analog Devices	AD7870	ADS774JP	F/E
Analog Devices	AD745	OPA627	C/P	Analog Devices	AD7545UQ	DAC7545KP	P/E	Analog Devices	AD7870	ADS7804	C/P
Analog Devices	AD745	OPA637	P/E	Analog Devices	AD7546	DAC707KH	F/E	Analog Devices	AD7870	ADS7808	C/P
Analog Devices	AD746	OPA2107	P/E	Analog Devices	AD7547	DAC7802	P/E	Analog Devices	AD7874	ADS7800	C/P
Analog Devices	AD746	OPA2132	P/E	Analog Devices	AD7548	DAC811AH	C/P	Analog Devices	AD7874	ADS7824	C/P
Analog Devices	AD7501	MPC508	F/E	Analog Devices	AD7549	DAC7802KP	F/E	Analog Devices	AD7874	ADS7833	F/E
Analog Devices	AD7502	MPC509	F/E	Analog Devices	AD7572	ADS774	F/E	Analog Devices	AD7875	ADS7804	C/P
Analog Devices	AD7503	MPC508	C/P	Analog Devices	AD7578	ADC7802BP	C/P	Analog Devices	AD7875	ADS7808	C/P
Analog Devices	AD7506	MPC506	P/E	Analog Devices	AD7579	ADS574JP	C/P	Analog Devices	AD7876	ADS7804	C/P
Analog Devices	AD7507	MPC507	P/E	Analog Devices	AD7580	ADS574JP	C/P	Analog Devices	AD7876	ADS7808	C/P
Analog Devices	AD7521	DAC7541AJP	P/E	Analog Devices	AD7582	ADC7802BP	F/E	Analog Devices	AD7878	ADS774JP	F/E
Analog Devices	AD7524	DAC7801	C/P	Analog Devices	AD7582	ADS7824	C/P	Analog Devices	AD7884A	ADS7815U	C/P
Analog Devices	AD7528	DAC7528	P/P	Analog Devices	AD759	LOG100	C/P	Analog Devices	AD7884B	ADS7815U	C/P
Analog Devices	AD7528	DAC7528	P/P	Analog Devices	AD760	DAC715	C/P	Analog Devices	AD7884T	ADS7815U	C/P
Analog Devices	AD7531	DAC7541AJP	P/E	Analog Devices	AD766	DAC56	P/E	Analog Devices	AD7885	ADS7805	C/P
Analog Devices	AD7537	DAC7801	P/P	Analog Devices	AD766	PCM56P	F/E	Analog Devices	AD7885A	ADS7815U	C/P
Analog Devices	AD7537JN	DAC7801KP	P/P	Analog Devices	AD767	DAC667JP	F/E	Analog Devices	AD7885B	ADS7815U	C/P
Analog Devices	AD7537LN	DAC7801LP	P/P	Analog Devices	AD767	DAC811	F/E	Analog Devices	AD7885C	ADS7815U	C/P
Analog Devices	AD7538	DAC702	C/P	Analog Devices	AD7672	ADS7800JP	F/E	Analog Devices	AD7886	ADS7810	C/P
Analog Devices	AD7541AJN	DAC7541AJP	P/P	Analog Devices	AD768	DAC702	C/P	Analog Devices	AD7886	ADS7819	C/P
Analog Devices	AD7541AKN	DAC7541AKP	P/P	Analog Devices	AD7703	DDC101	C/P	Analog Devices	AD7891	ADS7800	C/P
Analog Devices	AD7542	DAC811AH	C/P	Analog Devices	AD7710	ADS1211	C/P	Analog Devices	AD7891	ADS7833	F/E
Analog Devices	AD7543	DAC7800KP	C/P	Analog Devices	AD7712	ADS1210	C/P	Analog Devices	AD7892	ADS7831	C/P
Analog Devices	AD7545AQ	DAC7545KP	P/E	Analog Devices	AD7712	ADS1211	C/P	Analog Devices	AD7892-1	ADS7810	C/P
Analog Devices	AD7545BQ	DAC7545KP	P/E	Analog Devices	AD7714	ADS1210	C/P	Analog Devices	AD7892-1	ADS7819	C/P
Analog Devices	AD7545CQ	DAC7545KP	P/E	Analog Devices	AD775	ADS930	C/P	Analog Devices	AD7892-3	ADS7810	C/P
Analog Devices	AD7545GCQ	DAC7545KP	P/E	Analog Devices	AD7772	ADC804BH	C/P	Analog Devices	AD7892-3	ADS7819	C/P
Analog Devices	AD7545GLN	DAC7545GLP	P/P	Analog Devices	AD779	ADS7805	C/P	Analog Devices	AD7893	ADS7808	C/P
Analog Devices	AD7545GUQ	DAC7545KP	P/E	Analog Devices	AD780AR	REF1004I-2.5	C/P	Analog Devices	AD7893	ADS7831	C/P

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Cross Reference

Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Analog Devices	AD7896	ADS7817/ADS7818	C/P	Analog Devices	AD8052	OPA2631	P/E	Analog Devices	AD841	OPA671	C/P
Analog Devices	AD795	OPA124	P/E	Analog Devices	AD8052	OPA2634	C/P	Analog Devices	AD842	OPA651	C/P
Analog Devices	AD795	OPA131	P/E	Analog Devices	AD8052	OPA2680	C/P	Analog Devices	AD843	OPA671	P/E
Analog Devices	AD795	OPA132	P/E	Analog Devices	AD8054	OPA3680	C/P	Analog Devices	AD844	OPA603	P/E
Analog Devices	AD8001	OPA658	P/P	Analog Devices	AD8055	OPA650	P/P	Analog Devices	AD845	OPA671	P/E
Analog Devices	AD8002	OPA2658	P/P	Analog Devices	AD8055	OPA680	P/E	Analog Devices	AD846	OPA603	F/E
Analog Devices	AD8004	OPA4658	P/E	Analog Devices	AD8056	OPA2650	P/P	Analog Devices	AD847	OPA671	C/P
Analog Devices	AD8005	OPA681	C/P	Analog Devices	AD8056	OPA2680	P/E	Analog Devices	AD847	OPA680	C/P
Analog Devices	AD8009	OPA658	C/P	Analog Devices	AD8057	OPA680	P/E	Analog Devices	AD848	OPA651	C/P
Analog Devices	AD8009	OPA685	P/E	Analog Devices	AD8058	OPA2680	P/E	Analog Devices	AD849	OPA651	C/P
Analog Devices	AD8010	OPA681	P/E	Analog Devices	AD8072	OPA2681	P/P	Analog Devices	AD849	OPA686	C/P
Analog Devices	AD8011	OPA681	P/E	Analog Devices	AD8073	OPA3681	F/E	Analog Devices	AD8531	OPA343	C/P
Analog Devices	AD8012	OPA2681	P/E	Analog Devices	AD8079A	OPA2682	F/E	Analog Devices	AD8532	OPA2343	C/P
Analog Devices	AD8013	OPA3681	F/E	Analog Devices	AD8079B	OPA2682	F/E	Analog Devices	AD8534	OPA4343	C/P
Analog Devices	AD8023	OPA3681	F/E	Analog Devices	AD80Z-12	ADC80AGZ-12	C/P	Analog Devices	AD8541	OPA336	P/E
Analog Devices	AD8031A	OPA350	C/P	Analog Devices	AD810	OPA603	C/P	Analog Devices	AD8542	OPA2336	P/E
Analog Devices	AD8031A	OPA353	C/P	Analog Devices	AD810	OPA681	C/P	Analog Devices	AD8544	OPA4336	P/E
Analog Devices	AD8032A	OPA2350	C/P	Analog Devices	AD812	OPA2681	C/P	Analog Devices	AD876	ADS820	C/P
Analog Devices	AD8032A	OPA2353	C/P	Analog Devices	AD813	OPA3681	F/E	Analog Devices	AD876	ADS820	C/P
Analog Devices	AD8036	OPA688	P/E	Analog Devices	AD817	OPA603	C/P	Analog Devices	AD876-8	AD931	F/E
Analog Devices	AD8037	OPA688	P/E	Analog Devices	AD817	OPA681	C/P	Analog Devices	AD9005	ADS804	C/P
Analog Devices	AD8041	OPA632	P/E	Analog Devices	AD818	OPA680	C/P	Analog Devices	AD9042	ADS807	F/E
Analog Devices	AD8041	OPA635	C/P	Analog Devices	AD820	OPA130	C/P	Analog Devices	AD9049	ADS902	C/P
Analog Devices	AD8041	OPA680	C/P	Analog Devices	AD820	OPA131	C/P	Analog Devices	AD9050	ADS822	C/P
Analog Devices	AD8042	OPA2631	P/E	Analog Devices	AD822	OPA2130	C/P	Analog Devices	AD9050	ADS823	C/P
Analog Devices	AD8042	OPA2634	C/P	Analog Devices	AD823	OPA2132	C/P	Analog Devices	AD9051	ADS823	F/E
Analog Devices	AD8042	OPA2680	C/P	Analog Devices	AD823	OPA2134	C/P	Analog Devices	AD9057	ADS830	C/P
Analog Devices	AD8044	OPA4650	C/P	Analog Devices	AD824	OPA4130	P/E	Analog Devices	AD9057	ADS831	C/P
Analog Devices	AD8047	OPA680	P/E	Analog Devices	AD828	OPA2680	C/P	Analog Devices	AD9058	ADS830	F/E
Analog Devices	AD8048	OPA680	P/E	Analog Devices	AD829	OPA642	C/P	Analog Devices	AD9059	ADS830	F/E
Analog Devices	AD8051	OPA631	P/E	Analog Devices	AD829	OPA650	C/P	Analog Devices	AD9071	ADS824	C/P
Analog Devices	AD8051	OPA634	C/P	Analog Devices	AD834	MPY600	C/P	Analog Devices	AD9101	SHC615	C/P
Analog Devices	AD8051	OPA680	C/P	Analog Devices	AD840	OPA686	C/P	Analog Devices	AD9200	ADS900	C/P

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Cross Reference

Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Analog Devices	AD9220	ADS804	F/E	Analog Devices	ADC912	ADS774	C/P	Analog Devices	DAC8222	DAC7802KP	F/E
Analog Devices	AD9221	ADS803	F/E	Analog Devices	ADDAC71	DAC71-COB-V	P/E	Analog Devices	DAC8412	DAC4815	F/E
Analog Devices	AD9223	ADS803	F/E	Analog Devices	ADDAC72	DAC72BH-COB-V	P/E	Analog Devices	DAC8412	DAC7624	P/E
Analog Devices	AD9224	ADS807	F/E	Analog Devices	ADDAC72-COB-I	DAC72BH-COB-I	P/E	Analog Devices	DAC8413	DAC7625	P/E
Analog Devices	AD9225	ADS805	C/P	Analog Devices	ADDAC80	DAC80-CBI-V	P/E	Analog Devices	DAC8420	DAC7614	P/E
Analog Devices	AD9280	ADS930	C/P	Analog Devices	ADDAC80D-CBI-V	DAC80-CBI-V	P/P	Analog Devices	DAC8420	DAC7615	F/E
Analog Devices	AD9300	MPC100AP	C/P	Analog Devices	ADDAC80N-CBI-I	DAC80-CBI-I	P/P	Analog Devices	DAC8512	DAC7611	P/P
Analog Devices	AD9610	OPA600	C/P	Analog Devices	ADDAC80N-CBI-V	DAC80P-CBI-V	P/P	Analog Devices	HAS-1202	ADC80AG-12	F/E
Analog Devices	AD9617	OPA681	P/E	Analog devices	ADG408	MPC508	P/P	Analog Devices	HAS-1202A	ADC80AG-12	C/P
Analog Devices	AD9618	OPA681	P/E	Analog Devices	ADG506	MPC506	P/E	Analog Devices	HOS-100	OPA633KP	P/E
Analog Devices	AD9620	BUF601	C/P	Analog Devices	ADG506A	MPC506	C/P	Analog Devices	HOS-200	OPA633KP	F/E
Analog Devices	AD9630	BUF601	P/E	Analog Devices	ADG507	MPC506	P/E	Analog Devices	HTC0300	SHC804BM	P/E
Analog Devices	AD9631	OPA642	P/E	Analog Devices	ADG507A	MPC507	C/P	Analog Devices	MUX08	MPC508	P/E
Analog Devices	AD9632	OPA642	P/E	Analog Devices	ADG508A	MPC508	C/P	Analog Devices	MUX16	MPC506	P/E
Analog Devices	AD976	ADS7805	P/P	Analog Devices	ADG509A	MPC509	C/P	Analog Devices	MUX24	MPC509	P/E
Analog Devices	AD976	ADS7815U	F/E	Analog Devices	ADLH0033	OPA633KP	F/E	Analog Devices	MUX28	MPC507	P/E
Analog Devices	AD976A	ADS7815U	F/E	AAnalog Devices	ADREF01	REF102AP	P/E	Analog Devices	OP01	OPA227	P/E
Analog Devices	AD976AxR	ADS7805xU	P/E	Analog Devices	ADVFC32	VFC32	P/E	Analog Devices	OP01	OPA27	P/E
Analog Devices	AD977	ADS7809	C/P	Analog Devices	AMP01	INA128	F/E	Analog Devices	OP02	OPA237	C/P
Analog Devices	AD9802	VSP2000	F/E	Analog Devices	AMP02	INA103	C/P	Analog Devices	OP04	OPA2237	P/E
Analog Devices	ADADC71JD	ADC71JG	P/P	Analog Devices	AMP02	INA111	P/E	Analog Devices	OP05	OPA277	P/E
Analog Devices	ADADC71KD	ADC71KG	P/P	Analog Devices	AMP02	INA114	P/E	Analog Devices	OP06	OPA237	C/P
Analog Devices	ADADC72AD	ADC71AG	P/P	Analog Devices	AMP02	INA118	P/P	Analog Devices	OP06	OPA241	C/P
Analog Devices	ADADC72BD	ADC71BG	P/P	Analog Devices	AMP03	INA105	P/E	Analog Devices	OP07	OPA277	P/P
Analog Devices	ADADC72JD	ADC71JG	P/P	Analog Devices	AMP04	INA118	C/P	Analog Devices	OP09	OPA4227	C/P
Analog Devices	ADADC72KD	ADC71KG	P/P	Analog Devices	AMP05	INA110	F/E	Analog Devices	OP10	OPA2277	C/P
Analog Devices	ADADC80-12	ADC80AG-12	P/P	Analog Devices	BUF03	BUF634	C/P	Analog Devices	OP11	OPA4131	C/P
Analog Devices	ADADC85	ADC85	P/E	Analog Devices	BUF03	OPA633	C/P	Analog Devices	OP113	OPA227	C/P
Analog Devices	ADC1103	ADC80AG-12	F/E	Analog Devices	BUF04	OPA682	C/P	Analog Devices	OP12	OPA277	C/P
Analog Devices	ADC1130	ADC71JG	C/P	Analog Devices	DAC1136	DAC729JH	P/E	Analog Devices	OP14	OPA2131	C/P
Analog Devices	ADC1131	ADC71JG	C/P	Analog Devices	DAC1138	DAC729KH	F/E	Analog Devices	OP15	OPA132	P/E
Analog Devices	ADC1140	ADC71JG	C/P	Analog Devices	DAC8043xP	DAC8043P	P/P	Analog Devices	OP16	OPA132	P/E
Analog Devices	ADC910	ADS7800	C/P	Analog Devices	DAC8221	DAC7802KP	F/E	Analog Devices	OP162	OPA350	C/P

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Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Analog Devices	OP162	OPA353	C/P	Analog Devices	OP260	OPA603	C/P	Analog Devices	OP420	OPA4243	C/P
Analog Devices	OP17	OPA637	F/E	Analog Devices	OP262	OPA2340	C/P	Analog Devices	OP420	OPA4251	P/E
Analog Devices	OP176	OPA134	P/E	Analog Devices	OP262	OPA2343	C/P	Analog Devices	OP421	OPA4237	P/E
Analog Devices	OP176	OPA627	P/E	Analog Devices	OP262	OPA2350	C/P	Analog Devices	OP44	OPA602	C/P
Analog Devices	OP177	OPA177	P/P	Analog Devices	OP262	OPA2353	C/P	Analog Devices	OP450	OPA4342	P/P
Analog Devices	OP177	OPA277	P/E	Analog Devices	OP27	OPA227	P/P	Analog Devices	OP462	OPA4350	C/P
Analog Devices	OP181	OPA241	C/P	Analog Devices	OP27	OPA27	P/E	Analog Devices	OP470	OPA4227	P/P
Analog Devices	OP183	OPA227	C/P	Analog Devices	OP275	OPA2132	P/E	Analog Devices	OP471	OPA4227	P/P
Analog Devices	OP184	OPA227	C/P	Analog Devices	OP275	OPA2134	P/E	Analog Devices	OP471	OPA4228	P/E
Analog Devices	OP191	OPA237	C/P	Analog Devices	OP275	OPA2604	P/E	Analog Devices	OP481	OPA4241	C/P
Analog Devices	OP191	OPA337	C/P	Analog Devices	OP279	OPA2337	C/P	Analog Devices	OP481	OPA4336	C/P
Analog Devices	OP191	OPA340	C/P	Analog Devices	OP279	OPA2338	C/P	Analog Devices	OP482	OPA4134	C/P
Analog Devices	OP191	OPA343	C/P	Analog Devices	OP279	OPA2340	P/E	Analog Devices	OP484	OPA4227	C/P
Analog Devices	OP193	OPA241	P/E	Analog Devices	OP279	OPA2343	C/P	Analog Devices	OP490	OPA4241	P/E
Analog Devices	OP193	OPA251	P/E	Analog Devices	OP281	OPA2241	C/P	Analog Devices	OP490	OPA4243	C/P
Analog Devices	OP196	OPA241	C/P	Analog Devices	OP282	OPA2132	P/E	Analog Devices	OP490	OPA4251	P/E
Analog Devices	OP196	OPA336	C/P	Analog Devices	OP283	OPA2227	C/P	Analog Devices	OP491	OPA4340	C/P
Analog Devices	OP20	OPA241	P/E	Analog Devices	OP284	OPA2227	C/P	Analog Devices	OP491	OPA4343	C/P
Analog Devices	OP20	OPA251	P/E	Analog Devices	OP284	OPA2340	C/P	Analog Devices	OP492	OPA4227	C/P
Analog Devices	OP200	OPA1013	C/P	Analog Devices	OP285	OPA2132	P/E	Analog Devices	OP493	OPA4241	C/P
Analog Devices	OP200	OPA2277	P/P	Analog Devices	OP290	OPA2241	P/E	Analog Devices	OP493	OPA4241	C/P
Analog Devices	OP207	OPA2277	P/E	Analog Devices	OP290	OPA2251	P/E	Analog Devices	OP493	OPA4251	C/P
Analog Devices	OP213	OPA2227	C/P	Analog Devices	OP291	OPA2340	C/P	Analog Devices	OP495	OPA4130	C/P
Analog Devices	OP213	OPA2277	P/E	Analog Devices	OP296	OPA2241	C/P	Analog Devices	OP496	OPA4241	C/P
Analog Devices	OP215	OPA2132	P/E	Analog Devices	OP296	OPA2244	C/P	Analog Devices	OP496	OPA4244	C/P
Analog Devices	OP220	OPA2241	P/E	Analog Devices	OP297	OPA2277	P/E	Analog Devices	OP497	OPA4277	P/E
Analog Devices	OP220	OPA2251	P/E	Analog Devices	OP37	OPA228	P/P	Analog Devices	OP50	OPA228	P/E
Analog Devices	OP221	OPA2234	P/E	Analog Devices	OP37	OPA37	C/P	Analog Devices	OP50	OPA37	P/E
Analog Devices	OP221	OPA2237	C/P	Analog Devices	OP400	OPA4234	P/E	Analog Devices	OP77	OPA177	P/E
Analog Devices	OP227	OPA2227	P/E	Analog Devices	OP400	OPA4277	P/E	Analog Devices	OP77	OPA277	P/P
Analog Devices	OP249	OPA2107	P/E	Analog Devices	OP41	OPA131	P/E	Analog Devices	OP80	OPA337	C/P
Analog Devices	OP249	OPA2132	P/P	Analog Devices	OP413	OPA4227	P/E	Analog Devices	OP80	OPA342	C/P
Analog Devices	OP250	OPA2343	P/P	Analog Devices	OP42	OPA134	C/P	Analog Devices	OP90	OPA241	P/E

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Cross Reference

Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Analog Devices	OP90	OPA251	P/E	Analog Devices	REF02HP	REF02BP	P/P	Analogic	MPI814	DAC70BH-COB-I	F/E
Analog Devices	OP97	OPA277	P/E	Analog Devices	REF02HZ	REF02BP	C/P	Analogic	MPI914	DAC70BH-COB-I	F/E
Analog Devices	PM155A	OPA132	C/P	Analog Devices	REF05	REF02	C/P	Apex	PA01	OPA541	C/P
Analog Devices	PM156A	OPA132	C/P	Analog Devices	REF-05A	REF02AP	C/P	Apex	PA01	OPA549	F/E
Analog Devices	PM157A	OPA637	C/P	Analog Devices	REF05B	REF02AP	C/P	Apex	PA02	OPA541	C/P
Analog Devices	PM7524GP	DAC7528PB	C/P	Analog Devices	REF10AJ	REF10RM	P/P	Apex	PA07	OPA512	C/P
Analog Devices	PM7528	DAC7528	P/E	Analog Devices	REF10BJ	REF10RM	P/P	Apex	PA08	3583JM	C/P
Analog Devices	PM7541FP	DAC7541AJP	P/P	Analog Devices	SHA1A	SHC85	F/E	Apex	PA10	OPA512	F/E
Analog Devices	PM7541GP	DAC7541AKP	P/P	Analog Devices	SHA21	SHC605	C/P	Apex	PA11	OPA541AM	P/E
Analog Devices	PM7545AR	DAC7545KP	P/E	Analog Devices	SHA2A-5A	SHC605	C/P	Apex	PA12	OPA502	P/E
Analog Devices	PM7545BR	DAC7545KP	P/E	Analog Devices	SHC85	SHC85	P/E	Apex	PA12	OPA512BM	P/E
Analog Devices	PM7545ER	DAC7545KP	P/E	Analog Devices	SMP-10	SHC298AM	F/E	Apex	PA12	OPA549	F/E
Analog Devices	PM7545FR	DAC7545KP	P/E	Analog Devices	SMP-11	SHC298AM	F/E	Apex	PA12A	OPA512SM	P/E
Analog Devices	PM7545GP	DAC7545GLP	P/P	Analog Devices	SMP-81	SHC5320KH	C/P	Apex	PA13	OPA549	F/E
Analog Devices	PM7645AR	DAC7545KP	P/E	Analog Devices	SSM2015	INA103	C/P	Apex	PA16	OPA549	F/E
Analog Devices	PM7645GP	DAC7545GLP	P/P	Analog Devices	SSM2016	INA103	C/P	Apex	PA21	OPA2544T	C/P
Analog Devices	PM8012	DAC7545KP	F/E	Analog Devices	SSM2017	INA103	C/P	Apex	PA25	OPA2541	C/P
Analog Devices	REF01AJ	REF102	C/P	Analog Devices	SSM2017P	INA103	F/E	Apex	PA25	OPA2544T	C/P
Analog Devices	REF01CS	REF102	C/P	Analog Devices	SSM2135	OPA2134	C/P	Apex	PA26	OPA2544T	C/P
Analog Devices	REF01CS	REF102	C/P	Analog Devices	SSM2135	OPA2227	C/P	Apex	PA51	OPA501AM	P/E
Analog Devices	REF01EJ	REF102	C/P	Analog Devices	SSM2141	INA105	P/E	Apex	PA51	OPA549	F/E
Analog Devices	REF01EJ	REF102	C/P	Analog Devices	SSM2141	INA134	P/P	Apex	PA51A	OPA501SM	P/E
Analog Devices	REF01EJ	REF102	C/P	Analog Devices	SSM2141	INA154	P/P	Apex	PA61	OPA512	C/P
Analog Devices	REF01HP	REF102	C/P	Analog Devices	SSM2142P	DRV134PA	P/P	Apex	PA73	OPA549	F/E
Analog Devices	REF01HP	REF102	C/P	Analog Devices	SSM2142S	DRV134UA	P/P	Apex	PA81	3581J	P/E
Analog Devices	REF02	REF02	C/P	Analog Devices	SSM2143	INA137	P/P	Apex	PA82	OPA541	C/P
Analog Devices	REF02AJ	REF02	F/E	Analog Devices	SSM2143	INA157	P/P	Apex	PA83	3583AM	P/E
Analog Devices	REF02CP	REF02BP	P/P	Analog Devices	SSM2275	OPA2134	C/P	Apex	PA84	3584	P/E
Analog Devices	REF02CS	REF02BU	P/P	Analog Devices	SSM2475	OPA4134	C/P	Beckman	7580	DAC80-CBI-V	P/E
Analog Devices	REF02CZ	REF02AP	C/P	Analog Microelectronics	AM422	INA125	C/P	Beckman	877-80	DAC80-CBI-V	P/E
Analog Devices	REF02DP	REF02AP	P/P	Analogic	MP8014	ADC76JG	F/E	Beckman	877-85	DAC85H-CBI-V	P/E
Analog Devices	REF02DZ	REF02AP	C/P	Analogic	MP8016	ADC76JH	F/E	Burr-Brown	OPA103AM	OPA111AM	P/P
Analog Devices	REF02EZ	REF02BP	C/P	Analogic	MP8116	DAC729JH	F/E	Burr-Brown	OPA103CM	OPA111AM	P/E

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Cross Reference

Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Calex	175	INA101AM	F/E	Comlinear	CLC425	OPA687	P/E	Crystal Semiconductor	CS4329	PCM1716/28	F/E
Calex	175L	INA101AM	F/E	Comlinear	CLC426	OPA2680	P/E	Crystal Semiconductor	CS433x	PCM1725/33/44	F/E
Calex	176J	INA101AM	F/E	Comlinear	CLC427	OPA2680	P/E	Crystal Semiconductor	CS4340	PCM1720	C/P
Calex	176K	INA101AM	F/E	Comlinear	CLC428	OPA2680	P/E	Crystal Semiconductor	CS4341	PCM1720	C/P
Calex	176L	INA101AM	F/E	Comlinear	CLC430	OPA681	P/E	Crystal Semiconductor	CS4390	PCM1716/28	F/E
Calex	178	INA101AM	F/E	Comlinear	CLC431	OPA2681	C/P	Crystal Semiconductor	CS4391	PCM1737/39	F/E
Comlinear	CLC109	OPA682	F/E	Comlinear	CLC432	OPA2681	C/P	Crystal Semiconductor	CS4396/7	PCM1704/DF1704, PCM1737/39	C/P
Comlinear	CLC110	BUF601	C/P	Comlinear	CLC436	OPA671	C/P				
Comlinear	CLC111	BUF601	C/P	Comlinear	CLC440	OPA680	P/E	Crystal Semiconductor	CS5012A	ADS7804	C/P
Comlinear	CLC300	OPA620	F/E	Comlinear	CLC446	OPA680	P/E	Crystal Semiconductor	CS5016	ADS7805	F/E
Comlinear	CLC400	OPA681	P/E	Comlinear	CLC449	OPA658	C/P	Crystal Semiconductor	CS5016	ADS7807	C/P
Comlinear	CLC401	OPA681	C/P	Comlinear	CLC449	OPA681	C/P	Crystal Semiconductor	CS5016	ADS7821	F/E
Comlinear	CLC401	OPA687	F/E	Comlinear	CLC449	OPA685	P/E	Crystal Semiconductor	CS5032	ADS7810	C/P
Comlinear	CLC402	OPA681	P/E	Comlinear	CLC450	OPA681	P/E	Crystal Semiconductor	CS5032	ADS7819	C/P
Comlinear	CLC404	OPA685	P/E	Comlinear	CLC452	OPA631	C/P	Crystal Semiconductor	CS5032	ADS7831	C/P
Comlinear	CLC405	OPA681	P/E	Comlinear	CLC452	OPA634	C/P	Crystal Semiconductor	CS5101	ADS7805	F/E
Comlinear	CLC406	OPA681	P/E	Comlinear	CLC452	OPA681	P/E	Crystal Semiconductor	CS5101	ADS7821	F/E
Comlinear	CLC407	OPA682	P/E	Comlinear	CLC501	OPA689	C/P	Crystal Semiconductor	CS5101A	ADS7809	C/P
Comlinear	CLC408	OPA681	P/E	Comlinear	CLC502	OPA688	P/E	Crystal Semiconductor	CS5101A	ADS7825	C/P
Comlinear	CLC409	OPA658	P/E	Comlinear	CLC5602	OPA2681	P/E	Crystal Semiconductor	CS5102A	ADS7807	C/P
Comlinear	CLC409	OPA681	P/E	Comlinear	CLC5612	OPA2682	P/E	Crystal Semiconductor	CS5102A	ADS7825	C/P
Comlinear	CLC409	OPA685	P/E	Comlinear	CLC5622	OPA2681	P/E	Crystal Semiconductor	CS5126	ADS7805	C/P
Comlinear	CLC410	OPA681	P/E	Comlinear	CLC5623	OPA3681	F/E	Crystal Semiconductor	CS5326	PCM1760P	C/P
Comlinear	CLC411	OPA603	C/P	Comlinear	CLC5632	OPA2682	P/E	Crystal Semiconductor	CS5327	PCM1750P	C/P
Comlinear	CLC412	OPA2681	P/E	Comlinear	CLC5633	OPA3682	F/E	Crystal Semiconductor	CS5328	PCM1750P	C/P
Comlinear	CLC414	OPA4658	P/E	Comlinear	CLC5644	OPA4658	P/E	Crystal Semiconductor	CS5329	PCM1750P	C/P
Comlinear	CLC415	OPA4658	P/E	Comlinear	CLC5654	OPA4658	P/E	Crystal Semiconductor	CS5336	PCM1750P	C/P
Comlinear	CLC416	OPA2681	P/E	Comlinear	CLC5665	OPA603	C/P	Crystal Semiconductor	CS5337	PCM1750P	C/P
Comlinear	CLC417	OPA2682	P/E	Comlinear	CLC949	ADS805	C/P	Crystal Semiconductor	CS5338	PCM1750P	C/P
Comlinear	CLC418	OPA2681	P/E	Crystal Semiconductor	CS4226/7/8	PCM16xx + PCM1800	C/P	Crystal Semiconductor	CS533P	PCM1750P	C/P
Comlinear	CLC420	OPA680	P/E	Crystal Semiconductor	CS4303	PCM1716/28	C/P	Crystal Semiconductor	CS533x	PCM1800/PCM1801	F/E
Comlinear	CLC422	OPA687	P/E	Crystal Semiconductor	CS4327	PCM1720	F/E	Crystal Semiconductor	CS5389	PCM1760	P/P
Comlinear	CLC423	OPA680	P/E	Crystal Semiconductor	CS4328	PCM1716/28	C/P	Crystal Semiconductor	CS5412	ADS7810	C/P

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Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Crystal Semiconductor	CS5412	ADS7819	C/P	Datel	SHM-9	SHC5320KH	C/P	Elantec	EL2071C	OPA681	P/E
Crystal Semiconductor	CS7615	VSP2100	C/P	Datel	SHM-HU	SHC804BM	C/P	Elantec	EL2072	BUF601	P/E
Dallas Semiconductor	DS2107S	REG1117-2.85	C/P	Datel	SHM-IC-1	SHC298AM	C/P	Elantec	EL2073	OPA650	C/P
Datel	ADC511	ADC601JG	F/E	Datel	SHM-LM-2	SHC298AM	P/P	Elantec	EL2073	OPA658	C/P
Datel	ADC810	ADC80AG-12	F/E	DDC	ADC00401	ADC80AG-12	F/E	Elantec	EL2073C	OPA650	P/E
Datel	ADC811	ADC80AG-12	F/E	DDC	ADC00403	ADC80AG-12	F/E	Elantec	EL2074	OPA651	P/E
Datel	ADC817	ADC80AG-12	F/E	DDC	ADC4450	ADC80AG-12	F/E	Elantec	EL2074	OPA658	C/P
Datel	ADC827	ADC80AG-12	F/E	DDC	ADH051	ADC80AG12	C/P	Elantec	EL2090	SHC615	F/E
Datel	ADC-EH12B3	ADC80AG-12	C/P	DDC	ADH8516	ADC80AG-12	F/E	Elantec	EL2110C	OPA650	P/E
Datel	ADC-HX12B	ADC84KG-12	P/E	DDC	ADH8585	ADC85H-12	P/E	Elantec	EL2111C	OPA651	P/E
Datel	ADS130	ADS804	C/P	DDC	ADH8586	ADC85H-12	F/E	Elantec	EL2150	OPA631	C/P
Datel	DAC612	DAC811AH	C/P	DDC	DAC02701	DAC811AH	F/E	Elantec	EL2150	OPA634	C/P
Datel	DAC-71	DAC71-COB-V	P/E	DDC	DAC87	DAC87H-CBI-V	P/E	Elantec	EL2157	OPA632	C/P
Datel	DAC-72	DAC72BH-COB-V	P/E	DDC	DAC-S	DAC85H-CBI-V	P/E	Elantec	EL2157	OPA635	C/P
Datel	DAC-HK12B	DAC811AH	F/E	DDC	DAC-SL	DAC811AH	F/E	Elantec	EL2160C	OPA658	P/E
Datel	DAC-HP16BCG	DAC71-CSB-V	P/P	DDC	THA0523	SHC804BM	P/E	Elantec	EL2171	OPA658	C/P
Datel	DAC-HP16BMC	DAC71-CSB-V	P/P	Elantec	EL2001	BUF634	C/P	Elantec	EL2171C	OPA658	P/E
Datel	DAC-HP16BMC-1	DAC71-COB-V	P/P	Elantec	EL2002	BUF634	C/P	Elantec	EL2210	OPA2650	C/P
Datel	DAC-HY12	DAC80-CBI-V	P/E	Elantec	EL2003	OPA633KP	P/E	Elantec	EL2220C	OPA2650	P/E
Datel	DAC-HZ12BMC	DAC85H-CBI-V	P/E	Elantec	EL2007	OPA541AM	C/P	Elantec	EL2221C	OPA2650	P/E
Datel	DAC-HZ12BMM	DAC87H-CBI-V	P/P	Elantec	EL2008	BUF634	C/P	Elantec	EL2223	OPA2650	C/P
Datel	MX-1606	MPC506AP	P/P	Elantec	EL2009	BUF634	C/P	Elantec	EL2224	OPA2650	C/P
Datel	MX1616	MPC800	P/E	Elantec	EL2020	OPA603	C/P	Elantec	EL2245	OPA2650	C/P
Datel	MX1616	MPC800KG	P/E	Elantec	EL2020	OPA658	C/P	Elantec	EL2250C	OPA2650	P/E
Datel	MX-808	MPC508AP	P/P	Elantec	EL2030	OPA603	C/P	Elantec	EL2260C	OPA2658	P/E
Datel	MX818	MPC801	P/E	Elantec	EL2030	OPA658	C/P	Elantec	EL2360	OPA3681	F/E
Datel	MX-818	MPC801KG	P/E	Elantec	EL2030C	OPA658	P/E	Elantec	EL2386	OPA3681	C/P
Datel	MXD-409	MPC509AP	P/P	Elantec	EL2041	OPA650	C/P	Elantec	EL2386C	OPA3681	F/E
Datel	MXD-807	MPC507AP	P/P	Elantec	EL2044	OPA631	P/E	Elantec	EL2410	OPA4650	C/P
Datel	SHM-20C	SHC5320KH	P/P	Elantec	EL2044	OPA634	C/P	Elantec	EL2411	OPA4650	C/P
Datel	SHM-20M	SHC5320SH	P/P	Elantec	EL2044	OPA650	C/P	Elantec	EL2420C	OPA4650	P/E
Datel	SHM-4860MC	SHC804CM	P/P	Elantec	EL2045	OPA651	C/P	Elantec	EL2421C	OPA4650	P/E
Datel	SHM-6	SHC5320KH	C/P	Elantec	EL2070C	OPA681	F/E	Elantec	EL2424	OPA4650	C/P

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Cross Reference

Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Elantec	EL2444	OPA4650	C/P	Harris	HA2-2525-5	OPA640	C/P	Harris	HA5024	OPA4658	C/P
Elantec	EL2445	OPA4650	C/P	Harris	HA2-2620-5	OPA640	C/P	Harris	HA5025	OPA4658	P/E
Elantec	EL2450	OPA4650	P/E	Harris	HA-2400	OPA678	F/E	Harris	HA5033	BUF634	C/P
Elantec	EL2460	OPA4658	C/P	Harris	HA-2420	SHC5320KH	C/P	Harris	HA5033	OPA658	C/P
Elantec	EL2460C	OPA4658	P/E	Harris	HA-2425	SHC5320KH	C/P	Harris	HA-5062	OPA2111AM	C/P
Elantec	EL4089	SHC615	F/E	Harris	HA2500	OPA640	C/P	Harris	HA-5064	OPA404AG	F/E
Elantec	EL4393C	OPA3681	F/E	Harris	HA-2505	OPA602	P/E	Harris	HA-5082	OPA2111AM	F/E
Gennum	6M4314	MPC100AP	C/P	Harris	HA2510	OPA640	C/P	Harris	HA-5084	OPA404AG	F/E
Gennum	6M8108	MPC100AP	C/P	Harris	HA2520	OPA640	C/P	Harris	HA-5100	OPA606KM	C/P
Gennum	6X414A	MPC100AP	F/E	Harris	HA-2520	3507J	P/P	Harris	HA-5102	OPA2111AM	C/P
Gennum	6X4201	MPC100AP	C/P	Harris	HA-2546	MPY600	C/P	Harris	HA-5104	OPA404AG	F/E
Gennum	6X4304	MPC100AP	C/P	Harris	HA-2547	MPY600	C/P	Harris	HA-5112	OPA2111AM	C/P
Gennum	6X434	MPC100AP	F/E	Harris	HA2600	OPA640	C/P	Harris	HA-5114	OPA404AG	F/E
Harris	AD7521JD	DAC7541AJP	P/E	Harris	HA2605	OPA640	C/P	Harris	HA5130	OPA27GP	F/E
Harris	AD7521JN	DAC7541AJP	P/P	Harris	HA2625	OPA640	C/P	Harris	HA5135	OPA277	P/E
Harris	AD7521KD	DAC7541AJP	P/P	Harris	HA2640	OPA445	P/E	Harris	HA5135	OPA27GP	F/E
Harris	AD7521KN	DAC7541AJP	P/P	Harris	HA2640	OPA551	C/P	Harris	HA-5142	OPA2111AM	C/P
Harris	AD7521LD	DAC7541AJP	P/E	Harris	HA2640	OPA552	C/P	Harris	HA-5144	OPA404AG	C/P
Harris	AD7521LN	DAC7541AJP	P/P	Harris	HA2645	OPA445	P/E	Harris	HA5147	OPA37GP	F/E
Harris	AD7531JD	DAC7541AJP	P/E	Harris	HA-2650	OPA2111AM	C/P	Harris	HA-5160	OPA602	F/E
Harris	AD7531JN	DAC7541AJP	P/P	Harris	HA2840/1/2	OPA658	C/P	Harris	HA-5170	OPA111AM	F/E
Harris	AD7531KD	DAC7541AJP	P/E	Harris	HA3-5033-5	OPA633KP	P/P	Harris	HA-5170	OPA602	C/P
Harris	AD7531KN	DAC7541AJP	P/P	Harris	HA3-5320-4	SHC5320KP	P/P	Harris	HA5177	OPA277	P/E
Harris	AD7531LD	DAC7541AJP	P/E	Harris	HA3-5320-5	SHC5320KP	P/P	Harris	HA-5180	OPA111	P/E
Harris	AD7531LN	DAC7541AJP	P/P	Harris	HA3-5320-9	SHC5320KP	P/P	Harris	HA-5320-5	SHC5320KH	P/P
Harris	AD7541AD	DAC7541AJP	P/E	Harris	HA-4156	OPA404AG	C/P	Harris	HA-5330	SHC605	C/P
Harris	AD7541BD	DAC7541AJP	P/E	Harris	HA-4741	OPA404AG	C/P	Harris	HA6033	BUF634	C/P
Harris	AD7541JN	DAC7541AJP	P/E	Harris	HA-5002	OPA633KP	C/P	Harris	HA-OP27	OPA27GP	F/E
Harris	AD7541KN	DAC7541AKP	P/P	Harris	HA-5004	OPA603AP	C/P	Harris	HA-OP37	OPA37GP	F/E
Harris	AD7541LN	DAC7541AKP	P/P	Harris	HA5013	OPA3681	F/E	Harris	HFA0001	OPA658	C/P
Harris	HA1-5320-4	SHC5320KH	P/P	Harris	HA5020	OPA681	P/E	Harris	HFA005	OPA658	C/P
Harris	HA1-5320-5	SHC5320KH	P/P	Harris	HA5022	OPA2681	P/E	Harris	HFA1100	OPA658	C/P
Harris	HA1-5320-9	SHC5320KH	P/P	Harris	HA5023	OPA2658	P/E	Harris	HFA1100	OPA685	P/E

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Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Harris	HFA1105	OPA658	C/P	Harris	HI1-774KD-5	ADC774KP	P/P	Harris	ICL7112	ADS7806	C/P
Harris	HFA1105	OPA658	P/E	Harris	HI1-774SD-2	ADS7804PB	F/E	Harris	IH5108CPE	MPC508AP	P/P
Harris	HFA1109	OPA658	P/E	Harris	HI1-774TD-2	ADS7804PB	F/E	Harris	IH5108IJE	MPC508AG	P/P
Harris	HFA1112	BUF601	C/P	Harris	HI2-0518-5	MPC801KG	P/P	Harris	IH5108MJE	MPC801KG	C/P
Harris	HFA1120	OPA658	C/P	Harris	HI3-0506A-5	MPC506AP	P/P	Harris	IH5208CPE	MPC509AP	P/P
Harris	HFA1130	OPA658	C/P	Harris	HI3-0507A-5	MPC507AP	P/P	Harris	IH5208IJE	MPC507AG	P/E
Harris	HFA1130	OPA688	P/E	Harris	HI3-0508A-5	MPC508AP	P/P	Harris	IH6108	MPC508	P/E
Harris	HFA1135	OPA658	C/P	Harris	HI3-0509A-5	MPC509AP	P/P	Harris	IH6116	MPC506	P/E
Harris	HFA1135	OPA688	P/E	Harris	HI3-546-4	MPC506AG	P/P	Harris	IH6208	MPC509	P/E
Harris	HFA1145	OPA658	C/P	Harris	HI3-547-4	MPC507AG	P/P	Harris	IH6216	MPC507	P/E
Harris	HFA1145	OPA681	P/E	Harris	HI5023	OPA2650	C/P	Harris	ILC7112	ADS7800	C/P
Harris	HFA1205	OPA2658	P/E	Harris	HI5127	OPA27	P/E	Harris	LF353	OPA2111AM	P/E
Harris	HFA1245	OPA2681	P/E	Harris	HI-5137	OPA37	P/E	Harris	LM118	OPA640	C/P
Harris	HFA1405	OPA4658	P/E	Harris	HI-518	MPC801KG	P/E	Hewlett Packard	HCPL2430	ISO150	C/P
Harris	HFA5033	BUF600	C/P	Harris	HI-5660	DAC80-CBI-V	C/P	Hewlett Packard	HCPL7101	ISO150	C/P
Harris	HI1-0506A-5	MPC506AG	P/P	Harris	HI-5680	DAC80-CBI-V	P/E	Hewlett Packard	HCPL7800	ISO130	P/P
Harris	HI1-0507A-5	MPC507AG	P/P	Harris	HI-5685	DAC85H-CBI-V	P/E	Hewlett Packard	HCPL-7860	ADS1201	C/P
Harris	HI1-0508A-5	MPC508AG	P/P	Harris	HI-5687	DAC87H-CBI-V	P/E	Hybrid	DAC331	DAC7541AJP	F/E
Harris	HI1-0509A-5	MPC509AG	P/P	Harris	HI-5690	DAC80-CBI-V	C/P	Hybrid	DAC336-12	DAC811AH	F/E
Harris	HI1-0516-2	MPC800KG	C/P	Harris	HI-5695	DAC85H-CBI-V	C/P	Hybrid	DAC347	DAC7541AJP	F/E
Harris	HI1-0516-5	MPC800KG	P/P	Harris	HI5702	ADS822	F/E	Hybrid	DAC377	DAC729JH	C/P
Harris	HI1-0518-2	MPC801KG	C/P	Harris	HI5703	ADS822	F/E	Hybrid	DAC9332-16	DAC709KH	F/E
Harris	HI1-546-5	MPC506AP	P/P	Harris	HI5710	ADS822	C/P	Hybrid	DAC9349	DAC80-CBI-V	C/P
Harris	HI1-547-5	MPC507AP	P/P	Harris	HI5714	ADS830	F/E	Hybrid	DAC9377	DAC707KH	F/E
Harris	HI1-574AJD-5	ADC574AJH	P/P	Harris	HI5714/80	ADS831	F/E	Hybrid	HS3120	DAC811AH	F/E
Harris	HI1-574AKD-5	ADC574AKH	P/P	Harris	HI-574	ADS7806	C/P	Hybrid	HS3160	DAC703KH	C/P
Harris	HI1-574ASD-2	ADC574ASH	P/P	Harris	HI5766	ADS823	F/E	Hybrid	HS346	SHC5320KH	C/P
Harris	HI1-574ATD-2	ADC574ATH	P/P	Harris	HI5767	ADS822	F/E	Hybrid	HS3860	DAC811AH	F/E
Harris	HI1-674AJD-5	ADC674AJH	P/P	Harris	HI5767/60	ADS823	F/E	Hybrid	HS7541	DAC7541AJP	P/E
Harris	HI1-674AKD-5	ADC674AKH	P/P	Harris	HI-5811	DAC811AH	P/E	Hybrid	HS7545	DAC7545KP	P/E
Harris	HI1-674ASD-2	ADC674ASH	P/P	Harris	HI-674A	ADS7804	C/P	Hybrid	HS9338	DAC811AH	F/E
Harris	HI1-674ATD-2	ADC674ATH	P/P	Harris	HI-774A	ADS7804	C/P	Hybrid	HS9377	DAC707KH	F/E
Harris	HI1-774JD-5	ADC774JP	P/P	Harris	HI-DAC16	DAC71-COB-V	F/E	Hybrid	HS9378	DAC707KH	F/E

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Hybrid	HS9576	ADC76JG	P/E	Linear Technology	LT1007	OPA227	P/P	Linear Technology	LT1058	OPA4132	P/E
Hybrid	HSDAC80	DAC80-CBI-V	P/E	Linear Technology	LT1007	OPA27	P/P	Linear Technology	LT1062	UAF42	C/P
Hybrid	HSDAC87	DAC87H-CBI-V	P/E	Linear Technology	LT1008	OPA277	P/E	Linear Technology	LT1077	OPA241	P/E
Hytek	HY6110	PGA204	C/P	Linear Technology	LT1010	BUF634	C/P	Linear Technology	LT1077	OPA244	P/E
ICS/MicroClock	MK715	ADS7843	C/P	Linear Technology	LT1012	OPA277	P/E	Linear Technology	LT1077	OPA251	P/E
Intech	AD1201	ADS803	C/P	Linear Technology	LT1013	OPA1013	P/P	Linear Technology	LT1078	OPA2241	P/E
Intersil (Harris)	ICH8515	OPA541AM	C/P	Linear Technology	LT1013	OPA2234	P/E	Linear Technology	LT1078	OPA2244	P/E
Intersil (Harris)	ICL7134	DAC709KH	C/P	Linear Technology	LT1013	OPA2237	P/E	Linear Technology	LT1078	OPA2251	P/E
Intersil (Harris)	ICL7145	DAC707KH	C/P	Linear Technology	LT1014	OPA4234	P/E	Linear Technology	LT1079	OPA4241	P/E
Intersil (Harris)	ICL7146	DAC811AH	C/P	Linear Technology	LT1014	OPA4237	P/E	Linear Technology	LT1079	OPA4244	P/E
Intersil (Harris)	ICL7605	INA101AM	F/E	Linear Technology	LT1019	REF10JM	C/P	Linear Technology	LT1097	OPA277	P/E
Intersil (Harris)	ICL7606	INA101AM	F/E	Linear Technology	LT1021ACH-10	REF102CM	P/P	Linear Technology	LT1101	INA122	P/E
Intersil (Harris)	ICL8013	MPY100	F/E	Linear Technology	LT1021BCH-10	REF102BM	P/P	Linear Technology	LT1112	OPA2277	P/E
Intersil (Harris)	IH5110-15	SHC298AM	C/P	Linear Technology	LT1021BCN8-10	REF102AP	P/P	Linear Technology	LT1113	OPA2132	P/E
Linear Technology	LCT1050	OPA277	C/P	Linear Technology	LT1021BMH-10	REF102SM	P/P	Linear Technology	LT1113	OPA2134	P/E
Linear Technology	LF355	OPA134	P/E	Linear Technology	LT1021CCH-10	REF102BM	P/P	Linear Technology	LT1114	OPA4277	P/E
Linear Technology	LF356	OPA134	P/E	Linear Technology	LT1021CCN8-10	REF102BP	P/P	Linear Technology	LT1115	OPA227	C/P
Linear Technology	LF412	OPA2132	P/E	Linear Technology	LT1021CMH-10	REF102SM	P/P	Linear Technology	LT1117CST	REG1117	P/P
Linear Technology	LM185	REF1004	F/E	Linear Technology	LT1021DCH-10	REF102AM	P/P	Linear Technology	LT1117CST-2.85	REG1117-2.85	P/P
Linear Technology	LM358S8-1.2	REF1004C-1.2	P/P	Linear Technology	LT1021DCN8-10	REF102AP	P/P	Linear Technology	LT1117CST-3.3	REG1117-3.3	P/P
Linear Technology	LM358S8-2.5	REF1004C-2.5	P/P	Linear Technology	LT1021DMH-10	REF102RM	P/P	Linear Technology	LT1117CST-5	REG1117-5	P/P
Linear Technology	LT1001	OPA177	P/P	Linear Technology	LT1022	OPA132	P/E	Linear Technology	LT1122	OPA132	C/P
Linear Technology	LT1001	OPA27	F/E	Linear Technology	LT1024	OPA2277	P/E	Linear Technology	LT1122	OPA627	C/P
Linear Technology	LT1001	OPA277	P/P	Linear Technology	LT1027	REF02	C/P	Linear Technology	LT1124	OPA2132	C/P
Linear Technology	LT1002	OPA2277	P/P	Linear Technology	LT1028	OPA227	C/P	Linear Technology	LT1125	OPA4132	C/P
Linear Technology	LT1004CS8-1.2	REF1004C-1.2	P/P	Linear Technology	LT1035	REG1117	C/P	Linear Technology	LT1126	OPA2228	P/P
Linear Technology	LT1004CS8-1.2v	REF1004C-1.2	P/P	Linear Technology	LT1036	REG1117	C/P	Linear Technology	LT1127	OPA4228	P/P
Linear Technology	LT1004CS8-2.5	REF1004C-2.5	P/P	Linear Technology	LT1037	OPA228	P/P	Linear Technology	LT1128	OPA227	C/P
Linear Technology	LT1004IS-1.2	REF1004I-1.2	P/P	Linear Technology	LT1037	OPA37	P/P	Linear Technology	LT1167	INA129	P/E
Linear Technology	LT1004IS-2.5	REF1004I-2.5	P/P	Linear Technology	LT1055	OPA132	P/E	Linear Technology	LT1169	OPA2132	P/E
Linear Technology	LT1005	REG1117	C/P	Linear Technology	LT1056	OPA132	P/E	Linear Technology	LT1178	OPA2241	P/E
Linear Technology	LT1006	OPA234	P/E	Linear Technology	LT1057	OPA2111AM	C/P	Linear Technology	LT1178	OPA2251	P/E
Linear Technology	LT1006	OPA237	P/E	Linear Technology	LT1057	OPA2132	P/E	Linear Technology	LT1179	OPA4241	P/E

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Linear Technology	LT1179	OPA4251	P/E	Linear Technology	LT1367	OPA4234	C/P	Linear Technology	LT1638	OPA2342	C/P
Linear Technology	LT1191	OPA680	C/P	Linear Technology	LT1367	OPA4237	C/P	Linear Technology	LT1639	OPA4237	C/P
Linear Technology	LT1192	OPA680	C/P	Linear Technology	LT1413	OPA2234	P/E	Linear Technology	LT1639	OPA4243	C/P
Linear Technology	LT1201	OPA2227	C/P	Linear Technology	LT1413	OPA2237	C/P	Linear Technology	LT1792	OPA132	P/E
Linear Technology	LT1202	OPA4227	C/P	Linear Technology	LT1457	OPA2131	P/E	Linear Technology	LT1793	OPA132	P/E
Linear Technology	LT1203	MPC104	C/P	Linear Technology	LT1462	OPA2130	C/P	Linear Technology	LT2078	OPA2241	C/P
Linear Technology	LT1207	OPA2658	C/P	Linear Technology	LT1463	OPA4130	C/P	Linear Technology	LT2078	OPA2244	C/P
Linear Technology	LT1211	OPA2227	C/P	Linear Technology	LT1464	OPA2130	P/E	Linear Technology	LT2078	OPA2251	C/P
Linear Technology	LT1212	OPA4227	C/P	Linear Technology	LT1464	OPA2137	P/E	Linear Technology	LT2079	OPA4241	C/P
Linear Technology	LT1213	OPA2227	C/P	Linear Technology	LT1465	OPA4130	P/E	Linear Technology	LT2079	OPA4251	C/P
Linear Technology	LT1214	OPA4227	C/P	Linear Technology	LT1466	OPA2342	C/P	Linear Technology	LT2178	OPA2241	C/P
Linear Technology	LT1215	OPA2227	C/P	Linear Technology	LT1467	OPA4342	C/P	Linear Technology	LT2178	OPA2251	C/P
Linear Technology	LT1216	OPA4227	C/P	Linear Technology	LT1490	OPA2241	C/P	Linear Technology	LT2178	OPA2340	C/P
Linear Technology	LT1218	OPA241	C/P	Linear Technology	LT1490	OPA2251	C/P	Linear Technology	LT2179	OPA4241	C/P
Linear Technology	LT1218	OPA251	C/P	Linear Technology	LT1490	OPA4243	C/P	Linear Technology	LT2179	OPA4244	C/P
Linear Technology	LT1219	OPA241	C/P	Linear Technology	LT1491	OPA4241	C/P	Linear Technology	LT2179	OPA4251	C/P
Linear Technology	LT1219	OPA251	C/P	Linear Technology	LT1491	OPA4251	C/P	Linear Technology	LT323AT	REG1117-5	C/P
Linear Technology	LT1221	OPA603	C/P	Linear Technology	LT1492	OPA2227	C/P	Linear Technology	LT485CS8	ISO485	C/P
Linear Technology	LT1222	OPA603	C/P	Linear Technology	LT1493	OPA4227	C/P	Linear Technology	LTC1272	ADS7800	C/P
Linear Technology	LT1223	OPA658	C/P	Linear Technology	LT1495	OPA2241	C/P	Linear Technology	LTC1272	ADS7804	C/P
Linear Technology	LT1225	OPA686	C/P	Linear Technology	LT1496	OPA4241	C/P	Linear Technology	LTC1272	ADS7810	C/P
Linear Technology	LT1226	OPA643	C/P	Linear Technology	LT1498	OPA2340	C/P	Linear Technology	LTC1272	ADS7819	C/P
Linear Technology	LT1228	SHC615	F/E	Linear Technology	LT1499	OPA4340	C/P	Linear Technology	LTC1278	ADS7810	C/P
Linear Technology	LT1252	OPA658	C/P	Linear Technology	LT1630	OPA2350	C/P	Linear Technology	LTC1278	ADS7819	C/P
Linear Technology	LT1253	OPA2658	C/P	Linear Technology	LT1631	OPA4350	C/P	Linear Technology	LTC1279	ADS7810	C/P
Linear Technology	LT1259	OPA2680	C/P	Linear Technology	LT1632	OPA2350	C/P	Linear Technology	LTC1279	ADS7819	C/P
Linear Technology	LT1260	OPA4650	C/P	Linear Technology	LT1632	OPA2353	C/P	Linear Technology	LTC1286	ADS1286	P/E
Linear Technology	LT1361	OPA2680	C/P	Linear Technology	LT1633	OPA4350	C/P	Linear Technology	LTC1287	ADS7806	C/P
Linear Technology	LT1362	OPA4650	C/P	Linear Technology	LT1633	OPA4353	C/P	Linear Technology	LTC1605	ADS7805	P/P
Linear Technology	LT1364	OPA2680	C/P	Linear Technology	LT1636	OPA241	C/P	Linear Technology	LTC490	ISO485	C/P
Linear Technology	LT1365	OPA4650	C/P	Linear Technology	LT1637	OPA237	C/P	Linear Technology	OP05	OPA277	P/E
Linear Technology	LT1366	OPA2234	C/P	Linear Technology	LT1638	OPA2237	C/P	Linear Technology	OP07	OPA277	P/P
Linear Technology	LT1366	OPA2237	C/P	Linear Technology	LT1638	OPA2338	C/P	Linear Technology	OP15	OPA132	P/E

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Linear Technology	OP16	OPA132	P/E	Maxim	DG508A	MPC508	P/E	Maxim	MAX359CPE	MPC509AP	P/P
Linear Technology	OP17	OPA637	F/E	Maxim	DG509A	MPC509	P/E	Maxim	MAX359CWE	MPC509AU	P/P
Linear Technology	OP27	OPA227	P/E	Maxim	HI1-0508A-5	MPC508AG	P/P	Maxim	MAX359EJE	MPC509AG	P/P
Linear Technology	OP27	OPA27	P/E	Maxim	HI1-0509A-5	MPC509AG	P/P	Maxim	MAX400	OPA277	P/P
Linear Technology	OP37	OPA37	P/E	Maxim	HI3-0508A-5	MPC508AP	P/P	Maxim	MAX4005	OPA655	C/P
Linear Technology	REF-01	REF102AM	F/E	Maxim	HI3-0509A-5	MPC509AP	P/P	Maxim	MAX4012	OPA631	C/P
Linear Technology	REF01AH	REF102	C/P	Maxim	MAX120	ADS7810	C/P	Maxim	MAX4012	OPA634	C/P
Linear Technology	REF01EH	REF102	C/P	Maxim	MAX120	ADS7819	C/P	Maxim	MAX4012	OPA650	P/E
Linear Technology	REF01EH	REF102	C/P	Maxim	MAX120	ADS7831	C/P	Maxim	MAX4012	OPA680	F/E
Linear Technology	REF01EH	REF102	C/P	Maxim	MAX1247	ADS7841	P/E	Maxim	MAX4014	OPA682	P/E
Linear Technology	REF01EN8	REF102	C/P	Maxim	MAX146	ADS7822+MPC508A	C/P	Maxim	MAX4016	OPA2631	C/P
Linear Technology	REF01EN8	REF102	C/P	Maxim	MAX147	ADS7844	P/E	Maxim	MAX4016	OPA2634	C/P
Linear Technology	REF02CJ8	REF02AP	C/P	Maxim	MAX1480	ISO485	C/P	Maxim	MAX4016	OPA2680	P/E
Linear Technology	REF02CN8	REF02AP	P/P	Maxim	MAX1626		N/C	Maxim	MAX4017	OPA2682	P/E
Linear Technology	REF02DJ8	REF02AP	C/P	Maxim	MAX170	ADS7808	C/P	Maxim	MAX4018	OPA3680	F/E
Linear Technology	REF02DN8	REF02AP	P/P	Maxim	MAX170	ADS7809	C/P	Maxim	MAX4019	OPA3682	F/E
Linear Technology	REF02EJ8	REF02BP	C/P	Maxim	MAX187	ADS1286	P/E	Maxim	MAX402	OPA241	P/E
Linear Technology	REF02EN8	REF02BP	P/P	Maxim	MAX190	ADS7806	C/P	Maxim	MAX402	OPA251	P/E
Linear Technology	REF02HJ8	REF02BP	C/P	Maxim	MAX190	ADS7808	C/P	Maxim	MAX4020	OPA4650	F/E
Linear Technology	REF02HN8	REF02BP	P/P	Maxim	MAX191	ADS7808	C/P	Maxim	MAX4022	OPA4650	C/P
LinFinity	SG1536	OPA445	P/P	Maxim	MAX195	ADS7809	C/P	Maxim	MAX403	OPA227	C/P
LinFinity	SG1536	OPA551	C/P	Maxim	MAX195	ADS7821	C/P	Maxim	MAX403	OPA353	C/P
LinFinity	SG1536	OPA552	C/P	Maxim	MAX2 (XX)	UAF42	C/P	Maxim	MAX404	OPA651	F/E
LinFinity	SG2273	OPA549	F/E	Maxim	MAX270	UAF42	C/P	Maxim	MAX4040	OPA336	P/E
L-Ray	RC5532DD	OPA2132	F/E	Maxim	MAX271	UAF42	C/P	Maxim	MAX4040	OPA344	P/E
M.S.Kennedy	PA2541	OPA2541	P/E	Maxim	MAX274	UAF42	C/P	Maxim	MAX4042	OPA2336	P/E
Maxim	1480AEP1	ISO485	F/E	Maxim	MAX275	UAF42	C/P	Maxim	MAX4042	OPA2344	P/E
Maxim	1480BCP1	ISO485	F/E	Maxim	MAX306	MPC506	P/E	Maxim	MAX4044	OPA4336	P/E
Maxim	AD565	DAC80-CBI-I	C/P	Maxim	MAX310	MPC100	C/P	Maxim	MAX4044	OPA4344	P/E
Maxim	AM6012	DAC80-CBI-V	C/P	Maxim	MAX311	MPC100	C/P	Maxim	MAX405	OPA680	C/P
Maxim	DG506A	MPC506	P/E	Maxim	MAX358CPE	MPC508AP	P/P	Maxim	MAX406	OPA349	C/P
Maxim	DG507A	MPC507	P/E	Maxim	MAX358CWE	MPC508AU	P/P	Maxim	MAX407	OPA349	C/P
Maxim	DG508	MPC508	P/E	Maxim	MAX358EJE	MPC508AG	P/P	Maxim	MAX409	OPA349	C/P

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Maxim	MAX410	OPA350	C/P	Maxim	MAX4130	OPA337	C/P	Maxim	MAX4198	INA132	P/E
Maxim	MAX4100	OPA650	P/E	Maxim	MAX4130	OPA338	C/P	Maxim	MAX4198	INA133	P/E
Maxim	MAX4101	OPA651	P/P	Maxim	MAX4130	OPA340	P/E	Maxim	MAX4198	INA2132	F/E
Maxim	MAX4102	OPA650	P/E	Maxim	MAX4132	OPA2340	P/E	Maxim	MAX4198	INA2133	F/E
Maxim	MAX4103	OPA651	P/E	Maxim	MAX4134	OPA4340	P/E	Maxim	MAX4199	INA143	P/E
Maxim	MAX4104	OPA642	P/E	Maxim	MAX414	OPA4350	C/P	Maxim	MAX4199	INA2143	F/E
Maxim	MAX4105	OPA643	P/E	Maxim	MAX4144	OPA3682	C/P	Maxim	MAX42	OPA244	P/E
Maxim	MAX4106	OPA686	P/E	Maxim	MAX4145	OPA3681	C/P	Maxim	MAX4200	OPA682	C/P
Maxim	MAX4107	OPA686	P/E	Maxim	MAX4146	OPA3681	C/P	Maxim	MAX4201	OPA682	C/P
Maxim	MAX4108	OPA642	P/P	Maxim	MAX4147	OPA2682	C/P	Maxim	MAX4202	OPA682	C/P
Maxim	MAX4109	OPA642	P/P	Maxim	MAX4162	OPA343	P/E	Maxim	MAX4203	OPA2682	C/P
Maxim	MAX4112	OPA658	P/E	Maxim	MAX4162	OPA344	P/E	Maxim	MAX4204	OPA2682	C/P
Maxim	MAX4112	OPA681	P/E	Maxim	MAX4162	OPA4343	P/E	Maxim	MAX4205	OPA2682	C/P
Maxim	MAX4113	OPA658	P/E	Maxim	MAX4163	OPA2343	P/E	Maxim	MAX4212	OPA631	C/P
Maxim	MAX4113	OPA685	P/E	Maxim	MAX4163	OPA2344	P/E	Maxim	MAX4212	OPA634	C/P
Maxim	MAX4117	OPA2658	P/E	Maxim	MAX4164	OPA4344	P/E	Maxim	MAX4212	OPA680	P/E
Maxim	MAX4117	OPA2681	P/E	Maxim	MAX4165	OPA338	C/P	Maxim	MAX4213	OPA632	C/P
Maxim	MAX4118	OPA2658	P/E	Maxim	MAX4165	OPA338	C/P	Maxim	MAX4213	OPA635	C/P
Maxim	MAX4118	OPA2681	P/E	Maxim	MAX4165	OPA340	P/P	Maxim	MAX4213	OPA680	P/E
Maxim	MAX4119	OPA4650	P/E	Maxim	MAX4167	OPA2338	C/P	Maxim	MAX4214	OPA682	P/E
Maxim	MAX4119	OPA4658	P/E	Maxim	MAX4167	OPA2340	C/P	Maxim	MAX4215	OPA682	P/E
Maxim	MAX412	OPA2350	C/P	Maxim	MAX4169	OPA4340	C/P	Maxim	MAX4216	OPA2631	C/P
Maxim	MAX4120	OPA4658	P/E	Maxim	MAX4178	OPA682	P/E	Maxim	MAX4216	OPA2634	C/P
Maxim	MAX4120	OPA4658	P/E	Maxim	MAX4180	OPA681	P/E	Maxim	MAX4216	OPA2680	P/E
Maxim	MAX4122	OPA337	C/P	Maxim	MAX4181	OPA681	P/E	Maxim	MAX4217	OPA2682	P/E
Maxim	MAX4122	OPA338	C/P	Maxim	MAX4194	INA122	P/E	Maxim	MAX4218	OPA3680	F/E
Maxim	MAX4122	OPA340	P/E	Maxim	MAX4194	INA155	P/E	Maxim	MAX4219	OPA3682	F/E
Maxim	MAX4122	OPA343	P/P	Maxim	MAX4195	INA122	P/E	Maxim	MAX4220	OPA4650	F/E
Maxim	MAX4124	OPA350	P/E	Maxim	MAX4195	INA155	P/E	Maxim	MAX4222	OPA4650	C/P
Maxim	MAX4126	OPA2338	C/P	Maxim	MAX4196	INA122	P/E	Maxim	MAX4223	OPA681	P/E
Maxim	MAX4126	OPA2340	P/E	Maxim	MAX4196	INA155	P/E	Maxim	MAX4224	OPA681	C/P
Maxim	MAX4128	OPA2350	P/E	Maxim	MAX4197	INA122	P/E	Maxim	MAX4224	OPA685	P/E
Maxim	MAX4129	OPA4340	P/E	Maxim	MAX4197	INA155	P/E	Maxim	MAX4225	OPA2681	P/E

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Cross Reference

Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Maxim	MAX4226	OPA2681	C/P	Maxim	MAX436	OPA2662	C/P	Maxim	MAX479	OPA4251	P/E
Maxim	MAX4227	OPA2681	P/E	Maxim	MAX437	OPA228	P/P	Maxim	MAX480	OPA241	P/P
Maxim	MAX4228	OPA2681	C/P	Maxim	MAX438	OPA343	C/P	Maxim	MAX480	OPA251	P/P
Maxim	MAX4230	OPA349	P/E	Maxim	MAX439	OPA353	C/P	Maxim	MAX487	ISO150	C/P
Maxim	MAX4240	OPA336	P/E	Maxim	MAX439	OPA353	C/P	Maxim	MAX492	OPA2344	P/P
Maxim	MAX4240	OPA349	P/E	Maxim	MAX441	MPC100	C/P	Maxim	MAX494	OPA4344	P/P
Maxim	MAX4242	OPA2336	P/E	Maxim	MAX442	MPC104	C/P	Maxim	MAX495	OPA344	P/P
Maxim	MAX4244	OPA4336	P/E	Maxim	MAX448	OPA4650	F/E	Maxim	MAX496	OPA4658	C/P
Maxim	MAX4250	OPA340	P/P	Maxim	MAX450	MPC100	C/P	Maxim	MAX497	OPA4650	C/P
Maxim	MAX4252	OPA2340	P/P	Maxim	MAX452	OPA350	C/P	Maxim	MAX507	DAC715	C/P
Maxim	MAX4254	OPA4340	P/P	Maxim	MAX453	MPC104	C/P	Maxim	MAX508	MPC508	P/E
Maxim	MAX4255	OPA350	P/E	Maxim	MAX454	MPC100	C/P	Maxim	MAX536	DAC4814	C/P
Maxim	MAX4257	OPA2350	P/E	Maxim	MAX455	MPC100	N/C	Maxim	MAX543xxPx	DAC8043P	P/P
Maxim	MAX427	OPA227	P/E	Maxim	MAX457	OPA2350	C/P	Maxim	MAX543xxSx	DAC8043P	F/E
Maxim	MAX4278	OPA682	P/E	Maxim	MAX460	OPA671	C/P	Maxim	MAX550	ADS7822+MPC508A	C/P
Maxim	MAX428	OPA2650	F/E	Maxim	MAX463	OPA3680	C/P	MAXIM	MAX6160	REG1117	C/P
Maxim	MAX4304	OPA642	P/E	Maxim	MAX464	OPA4650	C/P	Maxim	MAX735	DCP010505P	C/P
Maxim	MAX4305	OPA686	P/E	Maxim	MAX465	OPA3682	C/P	Maxim	MAX7537	DAC7801KP	F/E
Maxim	MAX4308	OPA643	P/P	Maxim	MAX466	OPA4650	C/P	Maxim	MAX7547	DAC7802KP	F/E
Maxim	MAX4309	OPA686	P/E	Maxim	MAX467	OPA3682	C/P	Maxim	MAX887	DCP+REG1117	C/P
Maxim	MAX4310	OPA2682	C/P	Maxim	MAX468	OPA3682	C/P	Maxim	MX174ACPI	ADC774JP	P/P
Maxim	MAX4313	OPA2682	C/P	Maxim	MAX469	OPA4650	C/P	Maxim	MX174BCPI	ADC774KP	P/P
Maxim	MAX4322	OPA338	C/P	Maxim	MAX470	OPA3682	C/P	Maxim	MX574AJN	ADC574AJP	P/P
Maxim	MAX4322	OPA343	P/P	Maxim	MAX473	OPA343	P/E	Maxim	MX574AJP	ADS574JU	F/E
Maxim	MAX4326	OPA2343	P/P	Maxim	MAX473	OPA353	P/E	Maxim	MX574AKN	ADC574AKP	P/P
Maxim	MAX4329	OPA4343	P/P	Maxim	MAX474	OPA2343	P/E	Maxim	MX574AKP	ADS574KU	F/E
Maxim	MAX4330	OPA337	C/P	Maxim	MAX474	OPA2353	P/E	Maxim	MX674AJN	ADC674AJP	P/P
Maxim	MAX4330	OPA340	P/E	Maxim	MAX475	OPA4343	P/E	Maxim	MX674AKN	ADC674AKP	P/P
Maxim	MAX4332	OPA2337	C/P	Maxim	MAX475	OPA4353	P/E	Maxim	MX7521	DAC7541AJP	P/E
Maxim	MAX4332	OPA2342	P/E	Maxim	MAX477	OPA680	P/E	Maxim	MX7528	DAC7528	P/P
Maxim	MAX4334	OPA4337	C/P	Maxim	MAX478	OPA2241	P/E	Maxim	MX7531	DAC7541AJP	P/E
Maxim	MAX4334	OPA4343	P/E	Maxim	MAX478	OPA2251	P/E	Maxim	MX7541AJCWN	DAC7541AJU	P/P
Maxim	MAX435	OPA2662	C/P	Maxim	MAX479	OPA4241	P/E	Maxim	MX7541AJN	DAC7541AJP	P/P

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Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Maxim	MX7541AKCWN	DAC7541AKU	P/P	Maxim	REF02HP	REF02BP	P/P	Micro Networks	MN5210-14	ADC84KG-12	F/E
Maxim	MX7541AKN	DAC7541AKP	P/P	Maxim	REF02HZ	REF02BP	C/P	Micro Networks	MN5245	ADC80AG-12	F/E
Maxim	MX7545AQ	DAC7545KP	P/E	Maxim	REF02J	REF02	C/P	Micro Networks	MN5246	ADS804	C/P
Maxim	MX7545BQ	DAC7545KP	P/E	Micrel	MIC7101	OPA342	C/P	Micro Networks	MN5248	ADC601	P/E
Maxim	MX7545CQ	DAC7545KP	P/E	Micro Networks	ADC80-12	ADC80MAH-12	P/P	Micro Networks	MN5280	ADC71JG	C/P
Maxim	MX7545GCO	DAC7545KP	P/E	Micro Networks	ADC84-12	ADC84KG-12	P/P	Micro Networks	MN5282	ADC71JG	C/P
Maxim	MX7545GLCWP	DAC7545GLU	P/P	Micro Networks	ADC85-12	ADC85-12	P/P	Micro Networks	MN5290	ADC76JG	C/P
Maxim	MX7545GLN	DAC7545GLP	P/P	Micro Networks	ADC85C-12	ADC85H-12	P/P	Micro Networks	MN5291	ADC76JG	C/P
Maxim	MX7545GUD	DAC7545KP	P/E	Micro Networks	ADC87H	ADC87H-12	P/P	Micro Networks	MN5610	ADC84KG-12	F/E
Maxim	MX7545JCWP	DAC7545JU	P/P	Micro Networks	DAC71-COB-I	DAC71-COB-I	P/P	Micro Networks	MN5745AJ	ADC574AJP	P/P
Maxim	MX7545JN	DAC7545JP	P/P	Micro Networks	DAC71-COB-V	DAC71-COB-V	P/P	Micro Networks	MN574A	ADC574AJH	P/E
Maxim	MX7545KCWP	DAC7545KU	P/P	Micro Networks	DAC71-CSB-I	DAC71-CSB-I	P/P	Micro Networks	MN574AK	ADC574AKP	P/P
Maxim	MX7545KN	DAC7545KP	P/P	Micro Networks	DAC71-CSB-V	DAC71-CSB-V	P/P	Micro Networks	MN574AL	ADC574AKP	P/P
Maxim	MX7545LCWP	DAC7545LU	P/P	Micro Networks	DAC80-CBI-I	DAC800-CBI-I	P/P	Micro Networks	MN574AS	ADC574ASH	P/P
Maxim	MX7545LN	DAC7545LP	P/P	Micro Networks	DAC80-CBI-I	DAC80-CBI-I	P/P	Micro Networks	MN574AT	ADC574ATH	P/P
Maxim	REF01	REF102AM	P/E	Micro Networks	DAC80-CBI-V	DAC800-CBI-V	P/P	Micro Networks	MNADC80	ADC80AG-12	P/E
Maxim	REF01AJ	REF102	C/P	Micro Networks	DAC80-CBI-V	DAC80-CBI-V	P/P	Micro Networks	MNADC84	ADC84KG-12	P/E
Maxim	REF01EJ	REF102	C/P	Micro Networks	DAC85-CBI-I	DAC85H-CBI-I	P/P	Micro Networks	MNADC85	ADC85H-12	P/E
Maxim	REF01EJ	REF102	C/P	Micro Networks	DAC85-CBI-V	DAC85H-CBI-V	P/P	Micro Networks	MNADC87	ADC87H-12	P/E
Maxim	REF01EJ	REF102	C/P	Micro Networks	DAC87	DAC87H-CBI-V	P/P	Micro Networks	MNDAC80	DAC80-CBI-V	P/E
Maxim	REF01HCSA	REF102	C/P	Micro Networks	DAC87H	DAC87H-CBI-V	P/P	Micro Networks	MNDAC85	DAC85H-CBI-V	P/E
Maxim	REF01HCSA	REF102	C/P	Micro Networks	DACHK	DAC811AH	F/E	Micro Networks	MNDAC87	DAC87H-CBI-V	P/E
Maxim	REF01HP	REF102	C/P	Micro Networks	MN0300A	SHC605	C/P	Micro Networks	MNDAC88	DAC811AH	F/E
Maxim	REF01HP	REF102	C/P	Micro Networks	MN2020	PGA102	C/P	Micro Power Systems	MP574AJ	ADC574AJP	P/P
Maxim	REF02	REF02	C/P	Micro Networks	MN3210	DAC71-COB-V	P/E	Micro Power Systems	MP574AK	ADC574AKP	P/P
Maxim	REF02CCSA	REF02AU	P/P	Micro Networks	MN3300	DAC71-COB-V	P/E	Micro Power Systems	MP574AS	ADC574ASH	P/P
Maxim	REF02CP	REF02BP	P/P	Micro Networks	MN3310	DAC703KH	P/E	Micro Power Systems	MP574AT	ADC574ATH	P/P
Maxim	REF02CZ	REF02AP	C/P	Micro Networks	MN3660	DAC811AH	C/P	Micro Power Systems	MP7506	MPC506	P/E
Maxim	REF02DCSA	REF02AU	P/P	Micro Networks	MN375	SHC605	C/P	Micro Power Systems	MP7507	MPC507	P/E
Maxim	REF02DP	REF02AP	P/P	Micro Networks	MN376	SHC804BM	P/P	Micro Power Systems	MP7508	MPC508	P/E
Maxim	REF02DZ	REF02AP	C/P	Micro Networks	MN3850	DAC85H-CBI-V	P/E	Micro Power Systems	MP7509	MPC509	P/E
Maxim	REF02EZ	REF02BP	C/P	Micro Networks	MN3860	DAC811AH	F/E	Micro Power Systems	MP7531JD	DAC7541AAH	P/P
Maxim	REF02HCSA	REF02BU	P/P	Micro Networks	MN5200	ADC84KG-12	F/E	Micro Power Systems	MP7531KD	DAC7541AAH	P/P

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Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
Micro Power Systems	MP7531KN	DAC7541AJP	P/P	Motorola	MC1436C	OPA551	C/P	Motorola	MC34083	OPA2107	P/E
Micro Power Systems	MP7531LD	DAC7541AAH	P/P	Motorola	MC1436C	OPA552	C/P	Motorola	MC34083	OPA2604	P/P
Micro Power Systems	MP7531LN	DAC7541AJP	P/P	Motorola	MC1456	OPA2604	C/P	Motorola	MC34084	OPA4132	P/P
Micro Power Systems	MP7542	DAC7545KP	C/P	Motorola	MC1458	OPA2604	C/P	Motorola	MC34085	OPA4132	C/P
Micro Power Systems	MP7545AD	DAC7545KP	P/E	Motorola	MC1536	OPA445	C/P	Motorola	MC34181	OPA111	F/E
Micro Power Systems	MP7545BD	DAC7545KP	P/E	Motorola	MC1595	MPY600	C/P	Motorola	MC34182	OPA2111	C/P
Micro Power Systems	MP7545CD	DAC7545KP	P/E	Motorola	MC1596	MPY600	C/P	Motorola	MC34268	REG1117-2.85	C/P
Micro Power Systems	MP7545JN	DAC7545JP	P/P	Motorola	MC1741	OPA177	P/E	Motorola	MC3458	OPA1013	C/P
Micro Power Systems	MP7545KN	DAC7545KP	P/P	Motorola	MC1747	OPA1013	C/P	Motorola	MC4558	OPA2604	C/P
Micro Power Systems	MP7545LN	DAC7545LP	P/P	Motorola	MC24181	OPA137	P/E	Motorola	TCA0372	OPA2544	C/P
Micro Power Systems	MP7545SD	DAC7545KP	P/E	Motorola	MC33078	OPA2134	P/E	Motorola	TL071	OPA604	P/E
Micro Power Systems	MP7545TD	DAC7545KP	P/E	Motorola	MC33079	OPA4132	P/E	Motorola	TL072	OPA2107	C/P
Micro Power Systems	MP7545UD	DAC7545KP	P/E	Motorola	MC33171	OPA237	P/E	Motorola	TL081	OPA604	P/E
Micro Power Systems	MP7616	DAC703KH	C/P	Motorola	MC33201	OPA337	C/P	National Semiconductor	ACE10154	ADS7824	C/P
Micro Power Systems	MP7621AD	DAC7541AJP	P/E	Motorola	MC33201	OPA338	C/P	National Semiconductor	AD7521	DAC7541AJP	P/E
Micro Power Systems	MP7621BD	DAC7541AKP	P/E	Motorola	MC33201	OPA340	P/E	National Semiconductor	AD7531	DAC7541AJP	P/E
Micro Power Systems	MP7621JN	DAC7541AJP	P/P	Motorola	MC33201	OPA343	C/P	National Semiconductor	ADC1080	ADC80AG-12	P/E
Micro Power Systems	MP7621KN	DAC7541AKP	P/P	Motorola	MC33202	OPA2340	P/E	National Semiconductor	ADC10831	ADS7844	F/E
Micro Power Systems	MP7622	DAC7545KP	C/P	Motorola	MC33204	OPA4340	P/E	National Semiconductor	ADC10832	ADS7844	F/E
Micro Power Systems	MP7623	DAC7541AJP	P/E	Motorola	MC33502	OPA2337	C/P	National Semiconductor	ADC10834	ADS7844	F/E
Micro Power Systems	MP9331-16	DAC709KH	F/E	Motorola	MC33502	OPA2338	C/P	National Semiconductor	ADC10838	ADS7844	F/E
Micro Power Systems	MP9377-16	DAC707KH	F/E	Motorola	MC34001	OPA602	P/E	National Semiconductor	ADC1175	ADS930	F/E
Micro Power Systems	REF10	REF10KM	P/E	Motorola	MC34002	OPA2604	C/P	National Semiconductor	ADC12062	ADS7810	C/P
Motorola	LF351	OPA604	P/E	Motorola	MC34074	OPA404	C/P	National Semiconductor	ADC12062	ADS7819	C/P
Motorola	LF353	OPA2111	P/E	Motorola	MC34074	OPA4131	C/P	National Semiconductor	ADC1280	ADC80AG-12	P/E
Motorola	LF356	OPA602	P/E	Motorola	MC34074	OPA4234	F/E	National Semiconductor	ADC386	SHC605	C/P
Motorola	LF357	OPA637	C/P	Motorola	MC34080	OPA602	C/P	National Semiconductor	CLC5956	ADS807	C/P
Motorola	LF441	OPA606	P/E	Motorola	MC34080	OPA604	P/P	National Semiconductor	CLC5956	ADS807	C/P
Motorola	LM11C	OPA602	P/E	Motorola	MC34080	OPA606	C/P	National Semiconductor	CLC942	ADS807	C/P
Motorola	LM307	OPA177	P/E	Motorola	MC34081	OPA132	P/P	National Semiconductor	CLC952	ADS807	F/E
Motorola	LM358	OPA1013	C/P	Motorola	MC34081	OPA602	P/E	National Semiconductor	CLC952B	ADS807	F/E
Motorola	LM833	OPA2107	C/P	Motorola	MC34082	OPA2132	P/P	National Semiconductor	DAC1208	DAC811AH	F/E
Motorola	MC1436	OPA445	P/P	Motorola	MC34082	OPA2604	C/P	National Semiconductor	DAC1218	DAC7541AJP	F/E

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National Semiconductor	DAC1219	DAC7541AJP	F/E	National Semiconductor	LH0033	OPA633KP	F/E	National Semiconductor	LM131	VFC32	C/P
National Semiconductor	DAC1230	DAC811AH	F/E	National Semiconductor	LH0036	INA114	C/P	National Semiconductor	LM143	OPA445	C/P
National Semiconductor	DAC1280	DAC80-CBI-V	P/E	National Semiconductor	LH0036	INA118	C/P	National Semiconductor	LM143	opa551	C/P
National Semiconductor	DAC1285	DAC85H-CBI-V	P/E	National Semiconductor	LH0038	INA114	C/P	National Semiconductor	LM144	OPA445	C/P
National Semiconductor	DAC1286	DAC80-CBI-V	P/E	National Semiconductor	LH0038	INA118	C/P	National Semiconductor	LM148	OPA4130	C/P
National Semiconductor	DAC1287	DAC87H-CBI-V	P/E	National Semiconductor	LH0042	OPA121KM	P/E	National Semiconductor	LM149	OPA4131	C/P
National Semiconductor	LF11508	MPC508	P/E	National Semiconductor	LH0043	SHC298AM	C/P	National Semiconductor	LM1558	OPA2111	C/P
National Semiconductor	LF11509	MPC509	P/E	National Semiconductor	LH0044	OPA27GP	F/E	National Semiconductor	LM163	INA101AM	F/E
National Semiconductor	LF157A	OPA606KM	F/E	National Semiconductor	LH0052	OPA111AM	P/E	National Semiconductor	LM1875	OPA2544T	C/P
National Semiconductor	LF298	SHC298	P/E	National Semiconductor	LH0053	SHC5320KH	C/P	National Semiconductor	LM268	REF102	C/P
National Semiconductor	LF298H	SHC298AM	P/P	National Semiconductor	LH0053	SHC85	C/P	National Semiconductor	LM272C	OPA338	C/P
National Semiconductor	LF347	OPA4134	P/P	National Semiconductor	LH0084	PGA204	F/E	National Semiconductor	LM285AM-1.2	REF1004I-1.2	P/P
National Semiconductor	LF351	OPA134	P/P	National Semiconductor	LH0086	PGA102	F/E	National Semiconductor	LM285AM-2.5	REF1004I-2.5	P/P
National Semiconductor	LF353	OPA2131	P/P	National Semiconductor	LH0091		N/C	National Semiconductor	LM285AXM-1.2	REF1004I-1.2	P/P
National Semiconductor	LF353	OPA2134	P/P	National Semiconductor	LH0094		N/C	National Semiconductor	LM285AXM-2.5	REF1004I-2.5	P/P
National Semiconductor	LF355	OPA131	P/P	National Semiconductor	LH0101	OPA541	C/P	National Semiconductor	LM285AYM-1.2	REF1004I-1.2	P/P
National Semiconductor	LF355	OPA132	P/P	National Semiconductor	LH2011	OPA2111AM	C/P	National Semiconductor	LM285AYM-2.5	REF1004I-2.5	P/P
National Semiconductor	LF356	OPA132	P/P	National Semiconductor	LH2101A	OPA2111AM	C/P	National Semiconductor	LM285BXM-1.2	REF1004I-1.2	P/P
National Semiconductor	LF398AN	SHC298AJP	P/P	National Semiconductor	LH2108A	OPA2111AM	C/P	National Semiconductor	LM285BXM-2.5	REF1004I-2.5	P/P
National Semiconductor	LF398H	SHC298AM	P/P	National Semiconductor	LH4001	OPA633KP	C/P	National Semiconductor	LM285BYM-1.2	REF1004I-1.2	P/P
National Semiconductor	LF398N	SHC298JP	P/P	National Semiconductor	LH740A	OPA121KM	P/E	National Semiconductor	LM285BYM-2.5	REF1004I-2.5	P/P
National Semiconductor	LF400C	OPA606KM	F/E	National Semiconductor	LM101	OPA277	C/P	National Semiconductor	LM285M-1.2	REF1004I-1.2	P/P
National Semiconductor	LF411	OPA132	P/P	National Semiconductor	LM107	OPA277	P/P	National Semiconductor	LM285M-2.5	REF1004I-2.5	P/P
National Semiconductor	LF412	OPA2132	P/P	National Semiconductor	LM11	OPA111	C/P	National Semiconductor	LM2902	OPA4237	C/P
National Semiconductor	LF441	OPA137	P/P	National Semiconductor	LM11	OPA121	C/P	National Semiconductor	LM2904	OPA2237	C/P
National Semiconductor	LF442	OPA2137	P/P	National Semiconductor	LM1117MPX-2.85	REG1117-2.85	P/P	National Semiconductor	LM2940	REG1117A	C/P
National Semiconductor	LF444	OPA4137	P/P	National Semiconductor	LM1117MPX-3.3	REG1117-3.3	P/P	National Semiconductor	LM308	OPA237	P/E
National Semiconductor	LF451	OPA134	P/P	National Semiconductor	LM1117MPX-5.0	REG1117-5	P/P	National Semiconductor	LM324	OPA4237	P/P
National Semiconductor	LF453	OPA2134	P/P	National Semiconductor	LM1117MPX-ADJ	REG1117	P/P	National Semiconductor	LM3303	OPA4237	P/P
National Semiconductor	LH0003	OPA640	C/P	National Semiconductor	LM112	OPA277	C/P	National Semiconductor	LM331	VFC32	C/P
National Semiconductor	LH0021	3571	C/P	National Semiconductor	LM118	OPA627	C/P	National Semiconductor	LM334	REF200	F/E
National Semiconductor	LH0022	OPA121KM	P/E	National Semiconductor	LM12	OPA541	C/P	National Semiconductor	LM340	REG1117	C/P
National Semiconductor	LH0023	SHC298AM	C/P	National Semiconductor	LM12	OPA549	F/E	National Semiconductor	LM343	OPA445	C/P

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Cross Reference

Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.	Competitor	Competitor Part Number	Burr-Brown Part Number	Pin Compat.
National Semiconductor	LM347	OPA4131	P/E	National Semiconductor	LM6181	OPA658	P/E	National Semiconductor	LMC272C	OPA2337	C/P
National Semiconductor	LM347	OPA4132	P/E	National Semiconductor	LM6181N	OPA603	C/P	National Semiconductor	LMC6001	OPA344	P/P
National Semiconductor	LM358	OPA2237	P/P	National Semiconductor	LM6182	OPA2658	P/E	National Semiconductor	LMC6001C	OPA337	C/P
National Semiconductor	LM363	INA101	F/E	National Semiconductor	LM6261	OPA650	P/E	National Semiconductor	LMC6001C	OPA338	C/P
National Semiconductor	LM368	REF102	C/P	National Semiconductor	LM6262	OPA650	P/E	National Semiconductor	LMC6022	OPA2342	P/P
National Semiconductor	LM385	REF1004-2.5	C/P	National Semiconductor	LM6264	OPA651	P/E	National Semiconductor	LMC6024	OPA4342	P/P
National Semiconductor	LM385AM-1.2	REF1004C-1.2	P/P	National Semiconductor	LM627	OPA227	P/E	National Semiconductor	LMC6032	OPA2342	P/P
National Semiconductor	LM385AM-2.5	REF1004C-2.5	P/P	National Semiconductor	LM627	OPA228	P/E	National Semiconductor	LMC6034	OPA4342	P/P
National Semiconductor	LM385ASM-1.2	REF1004C-1.2	P/P	National Semiconductor	LM6361	OPA640	C/P	National Semiconductor	LMC6035B	OPA2337	C/P
National Semiconductor	LM385AXM-1.2	REF1004C-1.2	P/P	National Semiconductor	LM6361	OPA650	P/E	National Semiconductor	LMC6041	OPA241	P/E
National Semiconductor	LM385AXM-2.5	REF1004C-2.5	P/P	National Semiconductor	LM6362	OPA650	P/E	National Semiconductor	LMC6041	OPA336	P/E
National Semiconductor	LM385AYM-1.2	REF1004C-1.2	P/P	National Semiconductor	LM6364	OPA651	P/E	National Semiconductor	LMC6042	OPA2241	P/E
National Semiconductor	LM385AYM-2.5	REF1004C-2.5	P/P	National Semiconductor	LM637	OPA228	P/E	National Semiconductor	LMC6042	OPA2336	P/E
National Semiconductor	LM385BM-1.2	REF1004C-1.2	P/P	National Semiconductor	LM675	OPA541	C/P	National Semiconductor	LMC6044	OPA4241	P/E
National Semiconductor	LM385BM-2.5	REF1004C-2.5	P/P	National Semiconductor	LM675	OPA548	C/P	National Semiconductor	LMC6044	OPA4336	P/E
National Semiconductor	LM385BXM-1.2	REF1004C-1.2	P/P	National Semiconductor	LM709	OPA237	P/E	National Semiconductor	LMC6061	OPA241	P/E
National Semiconductor	LM385BXM-2.5	REF1004C-2.5	P/P	National Semiconductor	LM7121	OPA650	P/E	National Semiconductor	LMC6061	OPA336	C/P
National Semiconductor	LM385BYM-1.2	REF1004C-1.2	P/P	National Semiconductor	LM7121	OPA680	F/E	National Semiconductor	LMC6062	OPA2241	P/E
National Semiconductor	LM385BYM-2.5	REF1004C-2.5	P/P	National Semiconductor	LM7131	OPA631	C/P	National Semiconductor	LMC6062	OPA2336	P/E
National Semiconductor	LM385M-1.2	REF1004C-1.2	P/P	National Semiconductor	LM7131	OPA634	C/P	National Semiconductor	LMC6064	OPA4241	P/E
National Semiconductor	LM385M-2.5	REF1004C-2.5	P/P	National Semiconductor	LM7131	OPA680	F/E	National Semiconductor	LMC6064	OPA4336	P/E
National Semiconductor	LM385SM-1.2	REF1004C-1.2	P/P	National Semiconductor	LM725	OPA277	P/E	National Semiconductor	LMC6081	OPA337	C/P
National Semiconductor	LM4136	OPA4237	C/P	National Semiconductor	LM7301	OPA237	C/P	National Semiconductor	LMC6081	OPA338	C/P
National Semiconductor	LM607	OPA227	P/P	National Semiconductor	LM7301	OPA337	C/P	National Semiconductor	LMC6081	OPA344	C/P
National Semiconductor	LM6125	BUF634	C/P	National Semiconductor	LM7301	OPA338	C/P	National Semiconductor	LMC6082	OPA2344	C/P
National Semiconductor	LM6132	OPA2340	C/P	National Semiconductor	LM741	OPA237	P/E	National Semiconductor	LMC6084	OPA4344	C/P
National Semiconductor	LM6134	OPA4340	C/P	National Semiconductor	LM747	OPA2237	P/E	National Semiconductor	LMC6462	OPA2336	C/P
National Semiconductor	LM6142	OPA2350	C/P	National Semiconductor	LM748	OPA237	P/E	National Semiconductor	LMC6464	4336	C/P
National Semiconductor	LM6144	OPA4350	C/P	National Semiconductor	LM759	OPA547	C/P	National Semiconductor	LMC6482	OPA2337	P/E
National Semiconductor	LM6152A	OPA2350	C/P	National Semiconductor	LM77000	OPA551	C/P	National Semiconductor	LMC6482	OPA2338	C/P
National Semiconductor	LM6152A	OPA2353	C/P	National Semiconductor	LM7805	REG1117	C/P	National Semiconductor	LMC6482	OPA2340	P/E
National Semiconductor	LM6154	OPA4353	C/P	National Semiconductor	LM837	OPA4228	C/P	National Semiconductor	LMC6482	OPA2344	C/P
National Semiconductor	LM6154A	OPA4350	C/P	National Semiconductor	LMC272	OPA2343	F/E	National Semiconductor	LMC6484	OPA4342	C/P

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Cross Reference

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National Semiconductor	LMC6484	OPA4344	C/P	National Semiconductor	LPV321	OPA349	P/E	Philips	TDA8762A/60	ADS823	F/E
National Semiconductor	LMC6492	OPA2337	P/E	National Semiconductor	SN75176	ISO485	C/P	Philips	TDA8762A/80	ADS824	C/P
National Semiconductor	LMC6492	OPA2340	P/E	NEC	UPC1251	OPA1013CN8	P/P	Philips	TDA8763	ADS823	F/E
National Semiconductor	LMC6492	OPA2342	C/P	NEC	UPC63200	PCM69	C/P	Philips	TDA8763A	ADS823	F/E
National Semiconductor	LMC6492	OPA2343	C/P	Newport	NM485D	ISO485	F/E	Philips	TDA8768	ADS807	C/P
National Semiconductor	LMC6494	OPA4342	C/P	NJR	NJM062D	OPA2137	P/P	Philips	TDA8786	VSP2000	F/E
National Semiconductor	LMC6572	OPA2342	C/P	NJR	NJU7001	OPA241	C/P	Philips	TDA8787	VSP2000	F/E
National Semiconductor	LMC6582	OPA2344	C/P	NJR	NJU7001	OPA251	C/P	Raytheon	OP05	OPA277	P/E
National Semiconductor	LMC6584	OPA4344	C/P	NJR	NJU7022	OPA2130	C/P	Raytheon	OP37	OPA37	P/E
National Semiconductor	LMC660	OPA4342	C/P	NJR	NJU7022	OPA2337	P/E	Raytheon	OP47	OPA37GP	F/E
National Semiconductor	LMC662A	OPA2342	C/P	NJR	NJU7032	OPA2337	P/E	Raytheon	RC1458	OPA2111AM	C/P
National Semiconductor	LMC6852B	OPA2337	P/E	NPC	SM5872	PCM1717	C/P	Raytheon	RC2041	OPA2111AM	C/P
National Semiconductor	LMC6852B	OPA2338	P/E	NPC	SM5875	PCM1712	C/P	Raytheon	RC2043	OPA2111AM	C/P
National Semiconductor	LMC7101	OPA343	C/P	NPC	SM5875	PCM1717	C/P	Raytheon	RC4136	OPA404AG	C/P
National Semiconductor	LMC7111	OPA336	C/P	NPC	SM5876	PCM1712	C/P	Raytheon	RC4153	VFC320	C/P
National Semiconductor	LMV321	OPA337	P/P	NPC	SM5877	PCM1717	C/P	Raytheon	RC4156	OPA404AG	C/P
National Semiconductor	LMV324	OPA4342	P/P	Omnirel	OMA2541	OPA2541	P/E	Raytheon	RC4558	OPA2111AM	C/P
National Semiconductor	LMV358	OPA2337	P/P	Omnirel	OMA501	OPA501	P/E	Raytheon	RC4559	OPA2111AM	C/P
National Semiconductor	LMV721	OPA343	P/P	Omnirel	OMA502	OPA502	P/E	Raytheon	RC4560	OPA2111AM	C/P
National Semiconductor	LMV722	OPA2343	P/P	Omnirel	OMA511	OPA541	C/P	Raytheon	RC4562	OPA2111AM	C/P
National Semiconductor	LMV722	OPA353	P/P	Omnirel	OMA512	OPA512	P/E	Raytheon	RC4739	OPA2111AM	C/P
National Semiconductor	LMV751	OPA340	P/E	Omnirel	OMA541	OPA541LM	P/E	Raytheon	RC5532	OPA2111AM	C/P
National Semiconductor	LMV821	OPA338	C/P	Philips	NE5532	OPA2134	C/P	Raytheon	RC5534	OPA37GP	F/E
National Semiconductor	LMV822	OPA2343	P/P	Philips	NE5533	OPA2134	C/P	Raytheon	RC714	OPA27GP	F/E
National Semiconductor	LMV824	OPA4343	P/P	Philips	NE5534	OPA134	C/P	Raytheon	RC747	OPA2111AM	C/P
National Semiconductor	LMV921	OPA342	P/P	Philips	TDA1305	PCM1710	C/P	RCA	CA3100	OPA627	C/P
National Semiconductor	LP324	OPA4243	C/P	Philips	TDA1305	PCM1718	C/P	Sanyo	LC78835	PCM1717	C/P
National Semiconductor	LP324	OPA4251	P/E	Philips	TDA1305	PCM1720	C/P	Semtech	EZ1117CST-3.3	REG1117F-3.3	P/P
National Semiconductor	LPC660	OPA4251	C/P	Philips	TDA1306	PCM1710	C/P	SGS-Thompson	TS27L2BC	OPA2244	C/P
National Semiconductor	LPC660	OPA4336	C/P	Philips	TDA1306	PCM1718	C/P	SGS-Thompson	TS27L2BC	OPA2244	P/E
National Semiconductor	LPC661	OPA336	C/P	Philips	TDA1306	PCM1720	C/P	SGS-Thompson	TS3V902	OPA2337	P/E
National Semiconductor	LPC662	OPA2241	C/P	Philips	TDA1386	PCM1718	C/P	SGS-Thompson	TS3V902	OPA2338	P/E
National Semiconductor	LPC662	OPA2336	C/P	Philips	TDA7862	ADS822	F/E	SGS-Thompson	TS3V902	OPA2342	C/P

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SGS-Thompson	TS3V912	OPA2337	P/E	Sipex	SP111AIH	OPA111AM	P/P	Texas Instruments	AD7528	DAC7528	P/E
SGS-Thompson	TS3V912	OPA2338	P/E	Sipex	SP111AMH	OPA111SM	P/P	Texas Instruments	LF198	SHC298	P/E
SGS-Thompson	TS3V912	OPA2342	C/P	Sipex	SP111BIH	OPA111BM	P/P	Texas Instruments	LF398	SHC298	P/E
SGS-Thompson	TS951	OPA337	P/E	Sipex	SP121ACP	OPA121KP	P/P	Texas Instruments	LT1004CD-1.2	REF1004C-1.2	P/P
SGS-Thompson	TS951	OPA338	P/E	Sipex	SP121BCH	OPA121KM	P/P	Texas Instruments	LT1004CD-2.5	REF1004C-2.5	P/P
SGS-Thompson	UDN2962W	DRV101	C/P	Sipex	SP674AA	ADS7804PB	F/E	Texas Instruments	LT1013	OPA1013	P/E
SGS-Thompson	UDN2966	DRV101	C/P	Sipex	SP674AB	ADS7804PB	F/E	Texas Instruments	TCL2252C	OPA2244	P/E
Siemens	IL11	ISO150	C/P	Sipex	SP674AJ	ADS774JP	P/P	Texas Instruments	TL031AC	OPA137	P/P
Signetics	NE532	OPA2604	P/E	Sipex	SP674AK	ADS774KP	P/P	Texas Instruments	TL061AC	OPA137	P/E
Signetics	NE5532N	OPA2604	P/P	Sipex	SP674AS	ADS7804PB	F/E	Texas Instruments	TL061C	OPA137	P/P
Signetics	NE5534	OPA604	P/E	Sipex	SP674AT	ADS7804PB	F/E	Texas Instruments	TL062	OPA2137	P/E
Siliconix	D6534	MPC100	C/P	Sipex	SP7800	ADS7800	C/P	Texas Instruments	TL064	OPA4137	P/E
Siliconix	D6538	MPC100	C/P	Sipex	SP9345	DAC4813	F/E	Texas Instruments	TL071	OPA131	P/E
Siliconix	D6884	MPC100	C/P	Sony	CSD2652	PCM1710	C/P	Texas Instruments	TL071	OPA604	P/E
Siliconix	D6894	MPC100	C/P	Sony	CXD2310	ADS820	F/E	Texas Instruments	TL072	OPA2131	P/E
Siliconix	DG407	MPC507A	P/P	SPT	SPT1175	ADS930	F/E	Texas Instruments	TL072	OPA2604	P/E
Siliconix	DG506	MPC506	P/E	SPT	SPT7734	ADS830	F/E	Texas Instruments	TL074	OPA4134	P/P
Siliconix	DG507	MPC507	P/E	SPT	SPT7850	ADS820	C/P	Texas Instruments	TL074BC	OPA4131	P/E
Siliconix	DG508	MPC508	P/E	SPT	SPT7850	ADS820	F/E	Texas Instruments	TL082	OPA2604	P/E
Siliconix	DG509	MPC509	P/E	SPT	SPT7860	ADS822	F/E	Texas Instruments	TL084	OPA404KP	P/E
Sipex	HS ADC85C	ADC85H-12	P/P	SPT	SPT7861	ADS821	C/P	Texas Instruments	TL084CD	OPA4131UJ	P/P
Sipex	HS574AA	ADS574ATH	P/P	SPT	SPT7861	ADS822	F/E	Texas Instruments	TL087	OPA604	F/E
Sipex	HS574AB	ADS574ATH	P/P	SPT	SPT7863	ADS822	F/E	Texas Instruments	TL088	OPA604	F/E
Sipex	HS574AJ	ADS574JP	P/P	SPT	SPT7920	ADS802	C/P	Texas Instruments	TLC2201	OPA111	P/E
Sipex	HS574AK	ADS574KP	P/P	SPT	SPT7920	ADS804	F/E	Texas Instruments	TLC2202	OPA2111	P/E
Sipex	HS574AS	ADS574ASH	P/P	SPT	SPT7922	ADS802	C/P	Texas Instruments	TLC2221	OPA2337	P/E
Sipex	HS574AT	ADS574ATH	P/P	SPT	SPT7922	ADS822	F/E	Texas Instruments	TLC2252	OPA2336	C/P
Sipex	HS-7541AAQ	DAC7541ABH	P/P	Teledyne-Philbrick	1480	3583JM	P/E	Texas Instruments	TLC2262	OPA2337	P/E
Sipex	HS-7541ABQ	DAC7541ABH	P/P	Teledyne-Philbrick	TP4002	DAC71-COB-V	F/E	Texas Instruments	TLC2262A	OPA2237	P/E
Sipex	HS-7541AJN	DAC7541AKP	P/P	Teledyne-Philbrick	TP4855	SHC605	C/P	Texas Instruments	TLC2262C	OPA2337	P/E
Sipex	HS-7541AKN	DAC7541AKP	P/P	Teledyne-Philbrick	TP4860	SHC804BM	P/E	Texas Instruments	TLC2262C	OPA2338	P/E
Sipex	HS9576J	ADC76JG	P/P	Teledyne-Philbrick	TPADC85	ADC85H-12	P/E	Texas Instruments	TLC2272	OPA2234	P/E
Sipex	HS9576K	ADC76KG	P/P	Teledyne-Philbrick	TPADC87	ADC87H-12	P/E				

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Texas Instruments	TLC2272	OPA2337	P/E	Texas Instruments	TLV2731	OPA338	F/E	Zeltex	ZD384	DAC71-COB-V	F/E
Texas Instruments	TLC2274	OPA4234	C/P	Texas Instruments	TLV2771	OPA337	C/P	Zeltex	ZD394	DAC71-COB-V	F/E
Texas Instruments	TLC5510	ADS930	F/E	Texas Instruments	TLV2771	OPA338	C/P	Zeltex	ZDA160	DAC729JH	F/E
Texas Instruments	TLC5540	ADS830	F/E	Texas Instruments	TSL250	OPT101	C/P				
Texas Instruments	TLE2021A	OPA234	P/E	Texas Instruments	TSL251	OPT101	C/P				
Texas Instruments	TLE2021A	OPA237	P/E	Texas Instruments	TSL252	OPT101	C/P				
Texas Instruments	TLE2022	OPA2234	P/E	Texas Instruments	TSL260	OPT101	C/P				
Texas Instruments	TLE2071ACP	OPA132	P/E	Texas Instruments	TSL261	OPT101	C/P				
Texas Instruments	TLE2071ACP	OPA134	F/E	Texas Instruments	TSL262	OPT101	C/P				
Texas Instruments	TLE2072	OPA2134	P/E	Thomson	TEA2114	MPC100AP	C/P				
Texas Instruments	TLE2072CP	OPA2132	P/E	Thomson	TEA6415	MPC100AP	C/P				
Texas Instruments	TLE2074ACN	OPA4132	P/E	Toshiba	TC9293	PCM1717	C/P				
Texas Instruments	TLE2081AC	OPA132	P/E	Toshiba	TC9404	PCM1717	C/P				
Texas Instruments	TLE2084AC	OPA4132	P/E	TriTech	TR88801	ADS7843	C/P				
Texas Instruments	TLE2141AC	OPA350	C/P	TriTech	TR88802	ADS7843	C/P				
Texas Instruments	TLE2142AC	OPA353	C/P	TriTech	TR88L803	ADS7843	C/P				
Texas Instruments	TLSCSI285	REG1117-2.85	C/P	Tritech	TR88L804	ADS7843	C/P				
Texas Instruments	TLV2211	OPA2337	P/E	TRW	THC1201	ADS804	C/P				
Texas Instruments	TLV2211	OPA336	C/P	Unitrode	L295	DRV101	C/P				
Texas Instruments	TLV2231C	OPA337	C/P	VTC	VA033	OPA633KP	P/E				
Texas Instruments	TLV2231C	OPA338	P/E	Wolfson	WM8716	PCM1716	P/P				
Texas Instruments	TLV2252	OPA2336	C/P	Wolfson	WM8720	PCM1720	P/P				
Texas Instruments	TLV2262	OPA2234	P/E	Wolfson	WM8725	PCM1725	P/P				
Texas Instruments	TLV2262A	OPA2337	C/P	Wolfson	WM8733	PCM1733	P/P				
Texas Instruments	TLV2262A	OPA2338	C/P	Wolfson	WM8736	PCM16xx	C/P				
Texas Instruments	TLV2442C	OPA2337	C/P	Zeltex	ADA160Q	DAC729JH	F/E				
Texas Instruments	TLV2442C	OPA2338	C/P	Zeltex	ZAD354	DAC71-COB-V	F/E				
Texas Instruments	TLV2461	OPA337	C/P	Zeltex	ZAD7100	ADC80AG-12	F/E				
Texas Instruments	TLV2461	OPA338	C/P	Zeltex	ZAD7400	ADC76JG	F/E				
Texas Instruments	TLV2721	OPA337	C/P	Zeltex	ZAD8000	DAC70BH-COB-I	F/E				
Texas Instruments	TLV2721	OPA338	C/P	Zeltex	ZD354	DAC71-COB-V	F/E				
Texas Instruments	TLV2731	OPA337	F/E	Zeltex	ZD364	DAC71-COB-V	F/E				

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