SIGNAL CHAIN
## Selector Guide

High-performance analog solutions for your signal-chain designs

Maxim offers the largest selection of high-performance ADCs, DACs, voltage references, operational amplifiers, and digital potentiometers. Our leading-edge product offering meets customer needs for precision, accuracy, and small size in medical, industrial, communications, instrumentation, and automotive applications.


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MAXIM 1983 2008 25 YEARS OF ENGINEERING SUCCESS

MAXIM
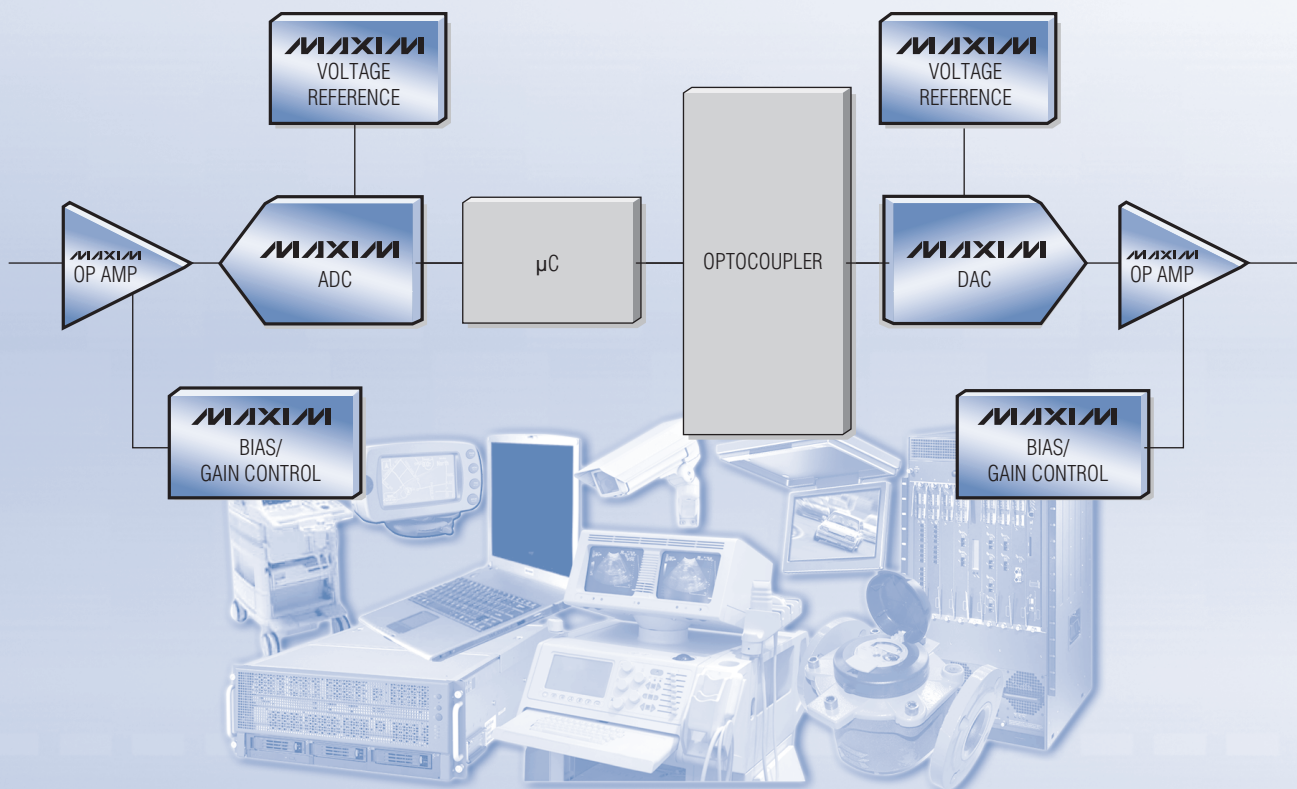
High-performance amplifiers and comparators

Maxim has the widest selection of amplifiers and comparators for signal conditioning. Offering high bandwidth and minimal current consumption, our products achieve the best speed-to-power ratios in the industry. Additionally, miniature packaging technology provides space and cost savings, with a variety of amplifiers and comparators available in ultra-tiny footprints.

- **Up to 2500kHz bandwidth**
- **Down to 0.75µA current consumption**
- **Package sizes down to 1.5mm x 1.5mm**
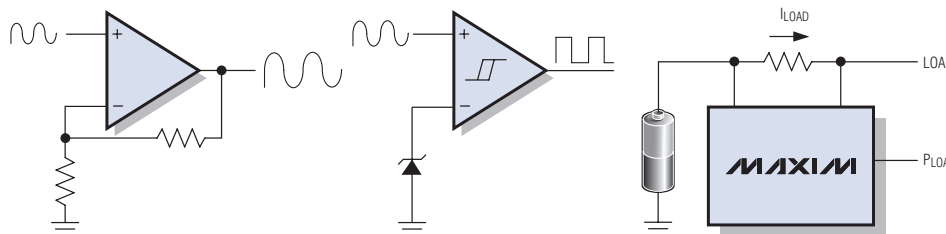
General-purpose operational amplifiers

www.maxim-ic.com/amps-comps

Part*	Op Amps per Package	Rail-to-Rail	Supply Voltage (V)	Supply Current per Amp (mA, typ)	V_{OS} (µV, max)	Input Bias Current (nA, max)	Unity GBW (MHz)	Slew Rate (V/µs)	Input CMVR (V)	Input Voltage Noise (nV/√Hz)	Smallest Available Packages
LMX321/58/24	1, 2, 4	Output	2.3 to 7	0.105	6000	50	1.3	1	$(V_{EE} - 0.2)$ to $(V_{CC} - 0.9)$	66	SC70/SOT23/TSSOP
MAX4230–34	1, 2, 4	Output, input	2.7 to 5.5	1.1	6000	0.05	10	10	V_{SS} to V_{DD}	12	SC70/SOT23/UCSP™/TSSOP
MAX4245/46/47	1, 2	Output, input	2.5 to 5.5	0.32	1500	50	1	0.4	$(V_{SS} - 0.1)$ to $(V_{DD} + 0.1)$	52	SC70/SOT23
MAX4291/92/94	1, 2, 4	Output, input	1.8 to 5.5	0.1	2500	60	0.5	0.2	V_{EE} to V_{CC}	70	UCSP/TSSOP
MAX4400–03	1, 2, 4	Output	2.5 to 5.5	0.32	4500	0.1	0.8	1	V_{SS} to $(V_{DD} - 1.4)$	36	SC70/SOT23/TSSOP
MAX4480–83	1, 2, 4	Output	2.5 to 5.5	0.045	5500	0.1	0.14	0.08	V_{SS} to $(V_{DD} - 1.3)$	100	SC70/SOT23/TSSOP
MAX4484/86/87	1, 2, 4	Output	2.7 to 5.5	1.9	5000	0.1	7	20	V_{SS} to $(V_{DD} - 1.3)$	29	SC70/SOT23/TSSOP
MAX4490/91/92	1, 2, 4	Output, input	2.7 to 5.5	0.8	10,000	2.5	10	10	V_{EE} to V_{CC}	12	SC70/SOT23/TSSOP
MAX4493/94/95	1, 2, 4	Output	4.5 to 11	0.77	5000	1000	5	3	$(V_{EE} - 0.2)$ to $(V_{CC} - 1.5)$	8	SC70/SOT23/TSSOP

*All devices operate in the -40°C to +125°C automotive temperature range, except the MAX4291/MAX4292/MAX4294, which operate in the -40°C to +85°C extended temperature range.
UCSP is a trademark of Maxim Integrated Products, Inc.

Operational amplifiers

Low voltage, low power

Part	Op Amps per Package	Rail-to-Rail	Supply Voltage (V)	Supply Current per Op Amp (µA, typ)	Input Bias Current (nA, max)	Unity GBW (kHz)	Temp Range (°C)	Package
MAX4464/70/71/72/74	1, 2, 4	Output	1.8 to 5.5	0.75	1.5	9/40*	-40 to +85	5-/8-SOT23, 5-SC70, 8-µMAX®, 8-/14-SO, 14-TSSOP
MAX4036–39	1, 2	Output	1.4 to 3.6	0.8	0.01	4	-40 to +85/+125**	5-SC70, 6-SOT23, 8-/10-TDFN, 9-UCSP, 8-/10-µMAX
MAX9910–13	1, 2	Output, input	1.8 to 5.5	4	0.01	200	-40 to +85	5-/6-SC70, 8-SOT23, 10-µMAX
MAX9914–17	1, 2	Output, input	1.8 to 5.5	20	0.01	1000	-40 to +85	5-/6-SC70, 8-SOT23, 10-µMAX
MAX4289	1	Output	1.0 to 5.5	9	15	17	-40 to +85	6-SOT23, 8-SO

µMAX is a registered trademark of Maxim Integrated Products, Inc.

*Unity-gain stable versions have GBW of 9kHz. Decompensated versions provide GBW of 40kHz with a minimum stable gain of 5V/V.

**MAX4036/MAX4038 are available in "A" grade versions that operate from -40°C to +125°C.

High precision

Part	Op Amps per Package	Rail-to-Rail	Supply Voltage (V)	Supply Current per Op Amp (µA, typ)	V_{OS} (µV, max)	V_{OS} Drift (µV/°C)	Input Bias Current (nA, max)	Unity GBW (MHz)	Temp Range (°C)	Package
MAX4236/37	1	Output	2.4 to 5.5	350	20	0.6	0.5	1.7/7.5*	-40 to +85	6-SOT23, 8-µMAX, 8-SO
MAX4238/39	1	Output	2.7 to 5.5	600	2	0.01	0.001 (typ)	1/6.5**	-40 to +125	6-SOT23, 6-TDFN, 8-SO

*Unity-gain stable versions have GBW of 1.7MHz. Decompensated versions provide GBW of 7.5MHz with a minimum stable gain of 5V/V.

**Unity-gain stable versions have GBW of 1MHz. Decompensated versions provide GBW of 6.5MHz with a minimum stable gain of 10V/V.

Low noise

Part	Op Amps per Package	Rail-to-Rail	Supply Voltage (V)	Supply Current per Op Amp (µA, typ)	Input Bias Current (nA, max)	Unity GBW (MHz)	Slew Rate (V/µs)	Input Voltage Noise at 1kHz (nV/√Hz)	Package
MAX4249–57	1, 2, 4	Output	2.4 to 5.5	420	0.1	3/22*	0.3/2.1*	8.9	5-SOT23, 8-/10-µMAX, 8-/10-UCSP, 8-/14-SO
MAX4475–78/88/89	1, 2, 4	Output	2.7 to 5.5	2500	0.15	10/42**	3/10**	4.5	6-SOT23, 8-µMAX, 6-TDFN, 8-/14-SO, 14-TSSOP
MAX410/12/14	1, 2, 4	—	±2.4 to ±5.25	2500	150	28	4.5	1.5	8-/14-DIP, 8-/14-SO, 8-TDFN

*Unity-gain stable versions of MAX4249–MAX4257 have GBW of 3MHz. Decompensated versions provide GBW of 22MHz with a minimum stable gain of 10V/V.

**Unity-gain stable versions of MAX4475–MAX4478/MAX4488/MAX4489 have GBW of 10MHz. Decompensated versions provide GBW of 42kHz with a minimum stable gain of 10V/V.

Instrumentation Amplifiers

Part	Supply Voltage (V)	Rail-to-Rail	Input CMRR (V)	Supply Current per Op Amp (µA, typ)	V_{OS} (µV, max)	Gain Error (%, max)	Unity GBW (kHz)	Temp Range (°C)	Package
MAX4208/09	2.85 to 5.5	Output	$(V_{SS} - 0.1)$ to $(V_{DD} - 1.3)$	750	20	±0.25	750	-40 to +125	8-µMAX
MAX4460/61/62	2.85 to 5.25	Output	$(V_{SS} - 0.1)$ to $(V_{DD} - 1.7)$	680	425	±0.35	2500	-40 to +85	6-TDFN, 6-SOT23, 8-SO
MAX4194–97	2.7 to 7.5	Output	$(V_{EE} - 0.2)$ to $(V_{CC} - 1.1)$	93	450	±0.01	250	-40 to +85	8-SO

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Industry's broadest line of current-sense amplifiers

Unidirectional

Part	Features	Input Voltage (V)	Supply Current (µA)	V$_{OS}$ at +25°C (µV, max)	Gain	Gain Accuracy at +25°C (%, max)	Bandwidth (kHz)	Temp Range (°C)	Smallest Available Package(s)
MAX4073	Ultra small	2 to 28	500	1000 (typ)	20V/V, 50V/V, 100V/V	1	1700	-40 to +125	SC70
MAX4173	Wide common-mode range	0 to 28	420	3000	20V/V, 50V/V, 100V/V	2.5	1400	-40 to +85	SOT23
MAX4372	Low power	0 to 28	30	800	20V/V, 50V/V, 100V/V	2.5	200	-40 to +85	UCSP
MAX4376/ 77/78	Single/dual/quad	0 to 28	1000	—	20V/V, 50V/V, 100V/V	2.5	1700	-40 to +125	SOT23/ µMAX/ TSSOP
MAX4373/ 74/75	Integrated comparator(s) + reference, low power	0 to 26	50	1000	20V/V, 50V/V, 100V/V	1.7	120	-40 to +85	µMAX
MAX4172	Precision, current output	0 to 32	800	750	10mA/V	2.0	800	-40 to +85	µMAX

Bidirectional

Part	Features	Input Voltage (V)	Supply Current (µA)	V$_{OS}$ at +25°C (µV, max)	Gain	Gain Accuracy at +25°C (%, max)	Bandwidth (kHz)	Temp Range (°C)	Smallest Available Package
MAX4069–72	Integrated reference, precision	1.35 to 24	100	250	50V/V, 100V/V	1	100	-40 to +125	TQFN

High voltage

Part	Features	Input Voltage (V)	Supply Current (µA)	V$_{OS}$ at +25°C (µV, max)	Gain	Gain Accuracy at +25°C (%, max)	Bandwidth (kHz)	Temp Range (°C)	Smallest Available Package
MAX4080/81	Uni-/bidirectional, precision	4.5 to 76	75/100	600	5V/V, 20V/V, 60V/V	0.6	250	-40 to +125	µMAX

Power sense

Part	Features	Input Voltage (V)	Supply Current (µA)	V$_{OS}$ at +25°C (µV, max)	Gain	Gain Accuracy at +25°C (%, max)	Bandwidth (kHz)	Temp Range (°C)	Smallest Available Package
MAX4210	Power + current monitor	4 to 28	670	—	V/W and V/V	1.5	220	-40 to +85	TDFN
MAX4211	Integrated reference + two comparators	4 to 28	670	—	V/W and V/V	1.5	220	-40 to +85	TQFN

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Comparators

High speed

Part	Comparators per Package	Propagation Delay (ns, typ)	Rail-to-Rail Input	Supply Voltage (V)	Supply Current per Comp (µA, typ)	V_{OS} (mV, typ)	V_{OS} (mV, max)	Logic Output	Temp Range (°C)	Package
MAX9600/01	2	0.5		±5	12,000	1	5	ECL/PECL	-40 to +85	20-TSSOP
MAX999	1	4.5		2.7 to 5.5	5000	0.5	1.5	CMOS, TTL	-40 to +85	5-SOT23
MAX9010	1	5		4.5 to 5.5	900	1	5	TTL	-40 to +85	6-SC70
MAX9203	1	7		5 to 10, ±5	1300	1	4	TTL	-40 to +85	8-SOT23, 8-SO
MAX9109	1	25		4.5 to 5.5	350	0.5	1.6	TTL	-40 to +85	6-SC70, 6-SOT23, 8-SO
MAX9140	1	40	✓	2.7 to 5.5	165	0.5	2	TTL/CMOS	-40 to +85	5-SC70, 5-SOT23

General purpose

| Part	Comparators per Package	Propagation Delay (ns, typ)	Supply Voltage (V)	Supply Current per Comp (µA, typ)	V_{OS} (mV, typ)	V_{OS} (mV, max)	Logic Output	Temp Range (°C)	Package
LMX331	1	100	1.8 to 5.5	60	0.2	7	Open drain	-40 to +125	5-SOT23, 5-SC70
MAX9077	2	580	2.1 to 5.5	3	1	8	CMOS, TTL	-40 to +85	8-SOT23, 8-µMAX, 8-SO
MAX9021	1	3000	2.5 to 5.5	2.8	1	8	TTL/CMOS	-40 to +125	5-SOT23, 5-SC70
MAX9022	2	3000	2.5 to 5.5	2.8	1	8	TTL/CMOS	-40 to +125	8-SO, 8-µMAX, 8-SOT23
MAX9024	4	3000	2.5 to 5.5	2.8	1	8	TTL/CMOS	-40 to +125	14-TSSOP, 14-SO

Low voltage

| Part	Comparators per Package	Propagation Delay (ns, typ)	Rail-to-Rail Input	Supply Voltage (V)	Supply Current per Comp (µA, typ)	V_{OS} (mV, typ)	V_{OS} (mV, max)	Logic Output	Temp Range (°C)	Package
MAX9100	1	3700		1.0 to 5.5	6	3	10	CMOS	-40 to +85	5-SOT23, 8-SO
MAX9101	1	3700		1.0 to 5.5	6	3	10	Open drain	-40 to +85	5-SOT23, 8-SO
MAX9017/19	2	30,000	✓	1.8 to 5.5	0.07	0.15	5	CMOS	-40 to +85	8-SOT23
MAX9018/20	2	30,000	✓	1.8 to 5.5	0.07	0.15	5	Open drain	-40 to +85	8-SOT23
MAX9027	1	40,000	✓	1.8 to 5.5	1	0.3	5	CMOS	-40 to +85	6-UCSP
MAX9028	1	45,000	✓	1.8 to 5.5	1	0.3	5	Open drain	-40 to +85	6-UCSP
MAX9117/19	1	40,000	✓	1.8 to 5.5	0.68	1	5	CMOS	-40 to +85	5-SC70
MAX9118/20	1	45,000	✓	1.8 to 5.5	0.68	1	5	Open drain	-40 to +85	5-SC70

High-precision digital-to-analog converters

Maxim offers over 245 high-precision, general-purpose digital-to-analog converters (DACs) for industrial, communications, computing, and consumer applications. These high-performance DACs are designed to meet customer specifications such as high precision and multiple channels, and they come in small packages to save board space.

- **High-precision: < 1 LSB INL**
- **1 to 32 channels**
- **Resolutions from 6 bits up to 16 bits**
- **Parallel and high-speed serial (SPI™, I²C) interfaces**
- **Fast settling: < 1µs**
- **Small packages (SOT23, QFN, µMAX)**

245* PRECISION DACs	16 BIT	25
	14 BIT	20
	13 BIT	14
	12 BIT	78
	10 BIT	39
	8 BIT OR LESS	69
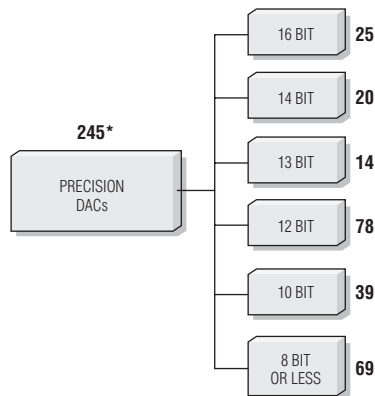
Pin- and software-compatible dual and quad 12-/16-bit DACs

Maxim's new buffered 12-/16-bit DACs are available in an ultra-small, 4mm x 4mm, 24-pin TQFN package. Pin and software compatibility save design time and reduce inventory needs.
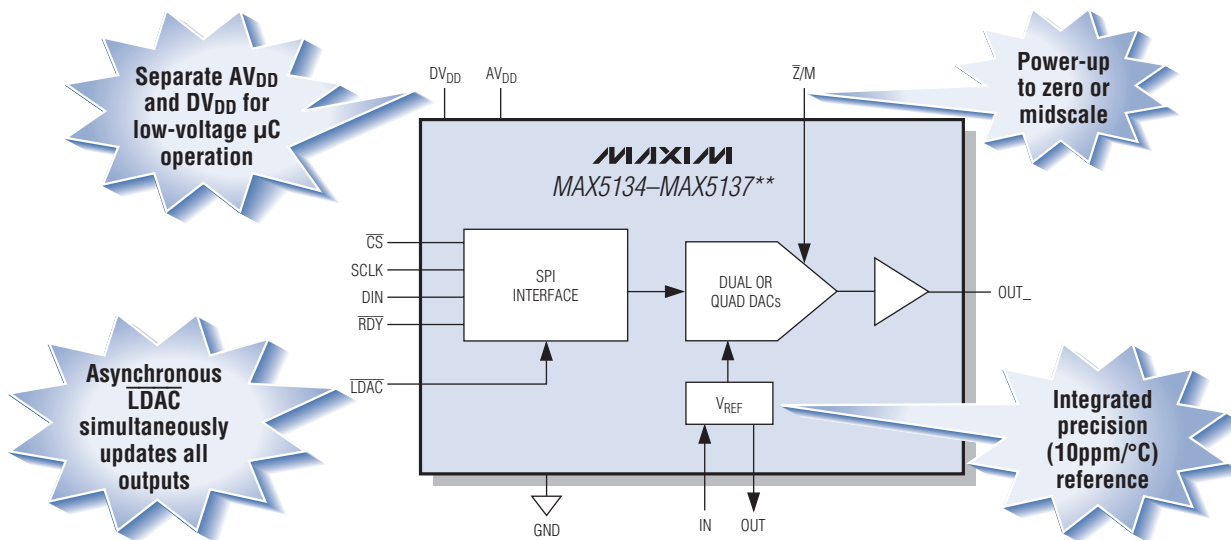
- **8 LSB INL buffered-voltage output**
- **Guaranteed monotonic to 12/16 bits**
- **SPI-compatible serial interface**
- **Low power consumption—2µA (max) in shutdown mode**
- **-40°C to +105°C temperature range**

Part	Resolution (Bits)	DACs	Supply Voltage AV$_{DD}$ (V)	Package
MAX5134	16	4		
MAX5135**	12	4	2.7 to 5.25	24-TQFN
MAX5136**	16	2		
MAX5137**	12	2		

www.maxim-ic.com/DACs

SPI is a trademark of Motorola, Inc.
*Root part numbers.
**Future product—contact factory for availability.

Part	Temp Range ◇	Resolution (Bits)	Channels	V/I Output ◇◇	Interface Compatibility	INL (max) over Temp	DNL (max) over Temp	Settling Time (µs)	Glitch Impulse (nV-s)	Supply Current (µA)	Supply Range AV_{DD} (V)	Reference	Buffered	Smallest Package (mm x mm)	Price † ($)
6 BITS OR LESS															
DS4402	E	5	2	I	I2C	1	0.5	ns	—	500	2.7 to 5.75	Int		14-TDFN (3 x 3)	0.58
DS4404	E	5	4	I	I2C	1	0.5	ns	—	500	2.7 to 5.75	Int		14-TDFN (3 x 3)	0.73
MAX5360/61/62	E	6	1	V	I2C	1	1	20	40	230	2.7 to 3.6, 4.5 to 5.5, 2.7 to 5.5	Int (2V), int (4V), int (V_{DD})	✓	5-SOT23	0.65
MAX5363/64/65	E	6	1	V	SPI	1	1	20	40	230	2.7 to 3.6, 4.5 to 5.5, 2.7 to 5.5	Int (2V), int (4V), int (V_{DD})	✓	6-SOT23	0.65
8 BITS															
MAX5480	C, E	8	1	—	Parallel	0.5	1	0.5	—	500	5	Ext		16-QSOP	1.35
MX7523	C	8	1	—	Parallel	0.5	1	0.2	—	100	5 to 16	Ext		16-WSO	1.96
MX7524	C, E	8	1	—	Parallel	0.5	1	0.35	—	500	5 or 15	Ext		16-SO	1.88
MAX7624	C, E	8	1	—	Parallel	0.5	1	0.35	—	500	5 or 15	Ext		16-SO	2.26
MAX5548	E	8	2	—	SPI/I2C	1	1	30	40	6mA	2.7 to 5.25	Int, ext		16-TQFN (3 x 3)	2.97
MX7528	C, E	8	2	—	Parallel	0.5	1	0.4	60	500	5 to 15	Ext		20-WSO	2.84
MX7628	C, E	8	2	—	Parallel	0.5	1	0.4	60	500	12 to 15	Ext		20-WSO	3.80
MAX517	C	8	1	V	I2C	1/1.5	1	6	12	3.5mA	4.5 to 5.5	Ext	✓	8-SO	2.00
MX7224	C	8	1	V	Parallel	1	1	5	—	4mA	-5 to +12 or +15	Ext	✓	18-WSO	2.36
MAX5380/81/82	E	8	1	V	I2C	1	1	20	40	230	2.7 to 3.6, 4.5 to 5.5, 2.7 to 5.5	Int (2V), int (4V), int (V_{DD})	✓	5-SOT23	0.95
MAX5383/84/85	E	8	1	V	SPI	1	1	20	40	230	2.7 to 3.6, 4.5 to 5.5, 2.7 to 5.5	Int (2V), int (4V), int (V_{DD})	✓	6-SOT23	0.95
MAX550A	C, E	8	1	V	SPI	1	1	4	—	10	2.5 to 5.5	Ext	✓	8-µMAX	1.40
MAX5510/11	E	8	1	V	SPI	1	1	660	—	5/7	1.8 to 5.5	Ext, int (MAX5511)	✓	12-TQFN (4 x 4)	1.47/1.97
MAX522	C, E	8	2	V	SPI	1.5	1	70	—	2.5mA	2.7 to 5.5	Ext	✓	8-SO	2.25
MAX5102	E	8	2	V	Parallel	1/2	1	6	90	360	2.7 to 5.5	Ext	✓	16-TSSOP	2.09
MAX5109	E	8	2	V	I2C	2	0.5	8	—	2mA	2.7 to 5.25	Ext	✓	16-QSOP	3.45
MAX518A/519A	C, E, M	8	2	V	I2C	1	1	6	12	6mA	4.5 to 5.5	Int (V_{DD})/ext	✓	8-/16-SO	2.14/3.06
MAX518B/519B	C, E, M	8	2	V	I2C	1.5	1	6	12	6mA	4.5 to 5.5	Int (V_{DD})/ext	✓	8-/16-SO	2.14/2.23
MAX522/23	E	8	2	V	SPI	1	1	10/50	—	800/220	2.7 to 5.5	Ext	✓	8-SOT23	1.25
MAX5294/95	E	8	2	V	SPI/QSPI™/MICROWIRE™	0.5	1	2	2	2mA	2.7 to 5.25	Ext	✓	16-TQFN (4 x 4)	1.85
MAX548/49	C, E	8	2	V	SPI	1	1	4	—	250/10	2.5 to 5.5	Int (V_{DD})/ext	✓	8-µMAX	1.57
MAX5512/14	E	8	2	V	SPI	1	1	660	—	6	1.8 to 5.5	Ext	✓	8-µMAX	1.98
MAX5513/15	E	8	2	V	SPI	1	1	660	—	8	1.8 to 5.5	Int	✓	12-QFN (3 x 3)	2.48
MAX501A/B	E	8	3	V	Parallel	1/2	1	6	90	520	2.7 to 5.5	Int (V_{DD})	✓	16-TSSOP	2.87/2.39
MAX512/13	C, E	8	3	V	SPI	1.5	1	70	—	2.8mA	±5/±3	Ext	✓	14-SO	2.85
MAX500	C, E	8	4	V	I2C	0.5/1	1	4500	—	1.2mA	+15 or ±5	Ext	✓	16-WSO	4.09
MAX505	C, E	8	4	V	Parallel	1/1.5	1	6	5	2mA	±5 or +5	Ext	✓	24-SSOP	5.56
MAX506	C, E	8	4	V	Parallel	1/1.5	1	6	5	2mA	±5 or +5	Ext	✓	20-WSO	6.10
MAX509	C, E	8	4	V	SPI	1/1.5	1	6	12	2mA	±5	Ext	✓	20-SSOP	4.82
MAX510	C, E	8	4	V	SPI	1/1.5	1	6	12	20mA	±5	Ext	✓	16-WSO	4.67
MAX520	C, E	8	4	V	I2C	1	1	2	12	20	4.5 to 5.5	Ext	✓	20-SSOP	3.33
MAX533	C, E	8	4	V	SPI	1/2	1	6	50	13mA	2.7 to 3.6	Ext	✓	16-QSOP	2.66
MAX5100	E	8	4	V	Parallel	1/2	1	6	90	700	2.7 to 5.5	Ext	✓	20-TSSOP	2.59
MAX5105/06	E	8	4	V	SPI	1	0.5	6	—	1mA	2.7 to 5.5	Ext	✓	20-/16-QSOP	2.80
MAX5115/16	E	8	4	V	I2C	2	0.50	8	50	1.3mA	2.7 to 5.25	Ext	✓	20-/16-QSOP	6.10

MICROWIRE is a trademark of National Semiconductor Corp.

◇ Temperature ranges: C = 0°C to +70°C, E = −40°C to +85°C, M = −55°C to +125°C.

◇◇ V = voltage, I = current

QSPI is a trademark of Motorola, Inc.

† 1000-up piece price provided is for design guidance and is FOB USA. Lowest grade pricing. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

DACs (continued)

Part	Temp Range◇	Resolution (Bits)	Channels	V/I Output◇◇	Interface Compatibility	INL (max) over Temp	DNL (max) over Temp	Settling Time (µs)	Glitch Impulse (nV-s)	Supply Current (µA)	Supply Range AVDD (V)	Reference	Buffered	Smallest Package (mm x mm)	Price† ($)
8 BITS (CONTINUED)															
MAX534	C, E	8	4	V	SPI	1	1	8	50	1.3mA	4.5 to 5.5	Ext	✓	16-QSOP	3.64/2.66
MAX5584/85	E	8	4	V	SPI	0.5	1	2	12	4mA	2.7 to 5.5	Ext	✓	20-TQFN/TSSOP	2.31
MX7225/26	C, E	8	4	V	Parallel	0.5/1/2	1	4	—	13mA	14.25 to 15.75	Ext	✓	24-SO	9.34/7.80
MAX521	C, E	8	8	V	I2C	1.5/2	1	6	12	24mA	4.5 to 5.5	Ext	✓	24-SSOP	4.70
MAX528	C, E	8	8	V	SPI	1	1	3	—	1.8mA	-5.5 to 0, +10.8 to +16.5	Ext		24-SSOP	6.21
MAX529	C, E	8	8	V	SPI	1	1	3	—	1mA	-5.5 to 0, +4.75 to +5.25	Ext		24-SSOP	5.09
MX7228	C	8	8	V	Parallel	1	1	5	—	16mA	13.5 to 16.5	Ext	✓	24-WSO	11.95
MAX5258/59	E	8	8	V	SPI	1	1	10	30/20	2.6mA	4.5 to 5.5/2.7 to 3.6	Ext	✓	16-QSOP	2.30
MAX5594/95	E	8	8	V	SPI	0.5	1	2	12	8mA	2.7 to 5.25	Ext	✓	24-/28-TSSOP	3.08
10 BITS															
MX7520	C, E	10	1	I	Parallel	2.5	1	0.5	—	2mA	5 to 15	Ext		16-WSO	2.12
MX7530	C, E	10	1	I	Parallel	2.5	1	0.5	—	2mA	5 to 15	Ext		16-WSO	2.10
MX7533	C, E	10	1	I	Parallel	2.5	1	0.8	—	2mA	15	Ext		16-WSO	2.11
MAX5547	E	10	2	I	SPI	4, 6	1	10	16	2mA	2.7 to 5.25	Int, ext	✓	8-TDFN (3 x 3)	3.19
MAX5550	E	10	2	I	SPI/I2C	2	1	30	40	6mA	2.7 to 5.25	Int, ext	✓	16-TQFN (3 x 3)	3.37
MAX5304	C, E	10	1	V	SPI	4	1	10	—	400	4.5 to 5.5	Ext	✓	8-µMAX	1.60
MAX5811	E	10	1	V	I2C	4	1	4	12	170	2.7 to 5.5	Int (V$_{DD}$)	✓	6-SOT23	1.75
MAX5354/55	E	10	1	V	SPI	1	1	10	—	400	4.5 to 5.5, 3.15 to 3.6	Ext	✓	8-µMAX	2.70/2.90
MAX5520/21	E	10	1	V	SPI	4	1	660	—	5	1.8 to 5.5	Ext, int (MAX5521)	✓	12-QFN (4 x 4)	1.97/2.47
MAX5721	E	10	2	V	SPI	4	1	10	12	205	2.7 to 5.5	Ext	✓	8-µMAX	2.61
MAX5821	E	10	2	V	I2C	4	1	10	12	205	2.7 to 5.5	Ext	✓	8-µMAX	2.62
MAX5158/59	C, E	10	2	V	SPI	1	1	8	—	650/600	4.5 to 5.5/2.7 to 3.6	Ext	✓	16-QSOP	3.40
MAX5232/33	E	10	2	V	SPI	0.5	1	15	—	475	2.7 to 3.6/4.5 to 5.5	Int	✓	16-QSOP	4.48
MAX5236/37	E	10	2	V	SPI	0.5	1	10	—	430	2.7 to 3.6/4.5 to 5.5	Ext	✓	10-µMAX	3.59
MAX5292/93	E	10	2	V	SPI	1	1	2	2	2mA	2.7 to 5.25	Ext	✓	16-TQFN (4 x 4)	3.45
MAX5522-25	E	10	2	V	SPI	4	1	660	—	6	1.8 to 5.5	Ext, int (MAX5523/25)	✓	8-µMAX/12-QFN	2.65/3.15
MAX5741	E	10	4	V	SPI	4	1	10	12	420	2.7 to 5.5	Ext	✓	10-µMAX	2.95
MAX5841	E	10	4	V	I2C	4	1	10	12	420	2.7 to 5.5	Ext	✓	10-µMAX	3.65
MAX5250	C, E	10	4	V	SPI	0.5/1	1	10	—	980	4.5 to 5.5	Ext	✓	20-SSOP	6.44/4.95
MAX5251	C, E	10	4	V	SPI	0.5/1	1	12	—	980	3 to 3.6	Ext	✓	20-SSOP	6.44/4.95
MAX5582/83	E	10	4	V	SPI	1	1	3	12	4mA	2.7 to 5.5	Ext	✓	20-TQFN/24-TSSOP	4.15
MAX5308/09	E	10	8	V	SPI	2	0.5	5	2	1.7mA	2.7 to 5.5	Ext	✓	16-TSSOP	5.30
MAX5592/93	E	10	8	V	SPI	1	1	3	12	8mA	2.7 to 5.25	Ext	✓	24-/28-TSSOP	5.24
12 BITS															
MAX543	C, E	12	1	I	3-wire	0.5	1	1	20	500	5, 12, or 15	Ext		8-SO	4.36
MAX551	C, E	12	1	I	SPI	0.5/1	0.5/1	1	20	1.5mA	4.5 to 5.25	Ext		10-µMAX	3.75
MAX552	C, E	12	1	I	SPI	0.5/1	0.5/1	1	20	500	2.7 to 3.6	Ext		10-µMAX	3.75
MX7541	C, E	12	1	I	Parallel	0.5/1/2	1/4	1	—	2mA	5 to 16	Ext		18-DIP	3.81
MX7542	C, E	12	1	I	Parallel	0.5	1	2	—	2.5mA	4.75 to 5.25	Ext		16-DIP	4.38
MX7543	C, E	12	1	I	Serial	0.5	1	2	—	2.5mA	4.75 to 5.25	Ext		16-DIP	4.38
MX7521/31	C, E	12	1	I	Parallel	2.5	1	0.5	—	2mA	5 to 15	Ext		18-WSO	3.75/3.80
MX7537/47	C, E	12	2	I	Parallel	1	1	1.5	7	2mA	12 to 15	Ext		24-WSO	7.40/7.64

◇ Temperature ranges: C = 0°C to +70°C, E = -40°C to +85°C.

◇◇ V = voltage, I = current

† 1000-up piece price provided is for design guidance and is FOB USA. Lowest grade pricing. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

12 BITS (CONTINUED)

Part	Temp Range	Resolution (Bits)	Channels	V/I Output	Interface Compatibility	INL (max) over Temp	DNL (max) over Temp	Settling Time (µs)	Glitch Impulse (nV-s)	Supply Current (µA)	Supply Range AVDD (V)	Reference	Buffered	Smallest Package (mm x mm)	Price† ($)
MX7545	C, E	12	1	—	Parallel	0.5/1/2	1/4	2	400	2mA	5, 15	Ext		20-DIP	4.00
MX7548	C, E	12	1	—	Parallel	1	1	1	200	3mA	5, 15	Ext		20-DIP	6.06
MAX7645	C, E	12	1	—	Parallel	0.5	1	1	5	100	5	Ext		20-SO	3.75
MAX514	C, E	12	4	—	Serial	1	1	1	—	400	4.5 to 5.25	Ext		28-SO	14.25
MAX530	C, E	12	1	✓	Parallel	0.5	1	25	—	400	+4.5 to +5.5 or ±5	Int, ext	✓	24-SSOP	5.18
MAX531	C, E	12	1	✓	SPI	0.5/1.0	1	25	—	400	+4.5 to +5.5 or ±5	Int, ext	✓	14-SO	5.18
MAX5302	C, E	12	1	✓	SPI	4	1	14	—	400	4.5 to 5.5	Ext	✓	8-µMAX	2.45
MAX5352	C	12	1	✓	SPI	0.5, 1	1	14	—	400	4.5 to 5.5	Ext	✓	8-µMAX	4.20
MAX5353	C	12	1	✓	SPI	1, 2	1	14	—	400	3.15 to 3.6	Ext	✓	8-µMAX	7.10
MAX5712	A, E	12	1	✓	SPI	16	1	10	12	187	2.7 to 5.5	Ext	✓	6-SOT23	1.35
MAX5812	E	12	1	✓	I2C	16	1	12	12	190	2.7 to 5.5	Ext	✓	6-SOT23	2.58
MX7845	C, E	12	1	✓	Parallel	1	1	5	450	10mA	±15	Ext	✓	24-SO	6.26
MAX501/02	C, E	12	1	✓	Parallel	0.5, 0.75	1	5	450	10mA	±12 to ±15	Ext	✓	24-SO	5.09
MAX507/08	C, E	12	1	✓	Parallel	0.75	1	5	30	12mA	±12 to ±15	Int (5V)	✓	24-WSO	6.03
MAX5120/22	E	12	1	✓	SPI	0.5, 1	1	20	—	600	4.5 to 5.5	Int (2.5)	✓	16-QSOP	3.80
MAX5121/23	E	12	1	✓	SPI	1, 2	1	20	—	600	2.7 to 3.6	Int (1.25)	✓	16-QSOP	3.80
MAX5174/75	C, E	12	1	✓	SPI	1, 2	1	18	—	400/350	4.5 to 5.5	Ext	✓	16-QSOP	3.15
MAX5176/77	C, E	12	1	✓	SPI	2, 4	1	18	—	400/350	2.7 to 3.6	Ext	✓	16-QSOP	3.15
MAX538/39	C, E	12	1	✓	SPI	0.5/1.0	1	25	—	300	4.5 to 5.5	Ext	✓	8-SO	4.61
MAX5530/31	E	12	1	✓	SPI	8	1	660	—	5/7	1.8 to 5.5	Int, ext	✓	12-QFN (4 x 4)	3.97/4.47
MX7245/48	C, E	12	1	✓	Parallel	1	1	5	30	1.2mA	±12 to ±15	Int	✓	24-/20-DIP	6.66
MAX532	C, E	12	2	✓	SPI	0.5	1	2.5	60	10mA	±12 to ±15	Ext	✓	16-WSO	10.99
MAX5104	C, E	12	2	✓	SPI	4	1	15	—	650	4.5 to 5.5	Ext	✓	16-QSOP	3.75
MAX5322	E	12	2	✓	SPI	1	1	10	10	16mA	±12 to ±15	Ext	✓	28-SSOP	8.79
MAX5722	A, E	12	2	✓	SPI	16	1	10	12	215	2.7 to 5.5	Ext	✓	8-µMAX	4.38
MAX5822	E	12	2	✓	I2C	16	1	12	12	215	2.7 to 5.5	Ext	✓	8-µMAX	4.79
MAX5154/56	C, E	12	2	✓	SPI	0.5, 1	1	15	—	650	4.5 to 5.5	Ext	✓	16-QSOP	6.15
MAX5155/57	C, E	12	2	✓	SPI	1, 2	1	15	—	600	2.7 to 3.6	Ext	✓	16-QSOP	6.15
MAX5230/31	E	12	2	✓	SPI	0.5, 1	1	15	—	475/525	2.7 to 3.6/4.5 to 5.5	Int	✓	16-QSOP	7.75
MAX5234/35	E	12	2	✓	SPI	0.5, 1	1	10	40	430/450	2.7 to 3.6/4.5 to 5.5	Ext	✓	10-µMAX	6.35
MAX5290/91	E	12	2	✓	SPI/QSPI/MICROWIRE	1/4	1	2	2	2mA	2.7 to 5.25	Ext	✓	16-TQFN (4 x 4)	4.80
MAX5137*	G	12	2	✓	SPI	1	1	10	12	3.2mA	2.7 to 5.25	Int, ext	✓	24-TQFN (4 x 4)	*
MAX5532/34	E	12	2	✓	SPI	8	1	660	—	6	1.8 to 5.5	Ext	✓	8-µMAX/12-QFN	5.47
MAX5533/35	E	12	2	✓	SPI	8	1	660	—	8	1.8 to 5.5	Int	✓	8-µMAX/12-QFN	5.97
MX7837/47	C	12	2	✓	Parallel	0.5	1	4	60	10mA	±12 to ±15	Ext	✓	24-SO	10.97
MAX525	C, E	12	4	✓	SPI	0.5/1	1	12	—	980	4.5 to 5.5	Ext	✓	20-SSOP	11.35
MAX536	C, E	12	4	✓	SPI	0.5/1	1	3	—	25mA	10.8 to 16.5	Ext	✓	16-SO	13.88
MAX537	C, E	12	4	✓	SPI	0.5/1	1	5	—	16mA	4.5 to 5.5	Ext	✓	16-WSO	13.88
MAX5135*	G	12	4	✓	SPI	1	1	10	12	3.2mA	2.7 to 5.25	Int, ext	✓	24-TQFN (4 x 4)	*
MAX5253	C, E	12	4	✓	SPI	0.5/1	1	16	—	980	3 to 3.6	Ext	✓	20-SSOP	10.78
MAX5500/01	G	12	4	✓	SPI	0.75/2	1	12	—	980	4.5 to 5.5/3 to 3.6	Ext	✓	20-SSOP	5.80
MAX5742	A, E	12	4	✓	SPI	16	1	10	12	420	2.7 to 5.5	Ext	✓	10-µMAX	5.67

*Future product—contact factory for availability.
◇Temperature ranges: A = –40°C to +125°C, C = 0°C to +70°C, E = –40°C to +85°C, G = 40° to +105°.
◇◇V = voltage, I = current

†1000-up piece price provided is for design guidance and is FOB USA. Lowest grade pricing. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

DACs (continued)

Part	Temp Range◇	Resolution (Bits)	Channels	V/I Output◇◇	Interface Compatibility	INL (max) over Temp	DNL (max) over Temp	Settling Time (µs)	Glitch Impulse (nV-s)	Supply Current (µA)	Supply Range AV$_{DD}$ (V)	Reference	Buffered	Smallest Package (mm x mm)	Price† ($)
12 BITS (CONTINUED)															
MAX5842	E	12	4	V	I2C	16	1	12	12	420	2.7 to 5.5	Ext	✓	10-µMAX	6.73
MAX526/27	C, E	12	4	V	Parallel	0.5, 1.0	1	3/5	—	28mA	-5 and +12 to +15, ±5	Ext	✓	24-WSO	16.91/14.41
MAX5580/81	E	12	4	V	SPI	0/4	1	3	2	4mA	2.7 to 5.25	Ext	✓	20-TQFN (5 x 5)	8.29
MAX5306/07	E	12	8	V	SPI	4	1	5	2	1700	2.7 to 5.5	Ext	✓	16-TSSOP	9.30
MAX5331/32/33	E	12	32	V	SPI	0.1% FSR	1	22	—	42mA	-5.25 to -2.75/+8.55 to +11.6	Ext	✓	68-TQFN (10 x 10)	31.36
13 AND 14 BITS															
MAX535	C	13	1	V	SPI	0.5/1	1	16	—	400	4.5 to 5.5	Ext	✓	8-µMAX	4.70
MAX5351	C	13	1	V	SPI	1/2	1	16	—	400	3.15 to 3.6	Ext	✓	8-µMAX	5.23
MAX5130/31	E	13	1	V	SPI	0.5/1/2	1	20	—	600	4.5 to 5.5/2.7 to 3.6	Int	✓	16-QSOP	4.62
MAX5132/33	E	13	1	V	SPI	0.5/1/2	1	20	—	600	4.5 to 5.5/2.7 to 3.6	Int	✓	16-QSOP	4.62
MAX5150	C	13	2	V	SPI	0.5/1	1	16	—	650	4.5 to 5.5	Ext	✓	16-QSOP	7.56
MAX5151	C	13	2	V	SPI	1/2	1	16	—	600	2.7 to 3.6	Ext	✓	16-QSOP	7.56
MAX5152	C	13	2	V	SPI	0.5/1	1	20	—	650	4.5 to 5.5	Ext	✓	16-QSOP	7.56
MAX5153	C	13	2	V	SPI	1/2	1	25	—	600	2.7 to 3.6	Ext	✓	16-QSOP	7.56
MAX547	C	13	8	V	Parallel	2/4	1	5	—	4.4mA	±5	Ext	✓	44-MQFP	26.64
MAX5270	C, E	13	8	V	Parallel	2/4	1	22	120	1.3mA	±12	Ext	✓	44-MQFP	22.50
MAX5839	C, E	13	8	V	Parallel	2/4	1	22	120	2.5mA	-9 to +14	Ext	✓	44-MQFP	22.50
MX7536	C, E	14	1	I	Parallel	1/2	1	1.5	50	4mA	11.4 to 15.75	Ext		28-SO	9.68
MX7538	C, E	14	1	I	Parallel	1/2	1	1.5	20	4mA	-0.5 to +12 or +15	Ext		24-SO	7.11
MX7534/35	C, E	14	1	I	Parallel	1/2	1	1.5	50	3mA/4mA	11.4 to 15.75	Ext		20-/28-SO	8.84/9.92
MAX5544	C, E	14	1	V	SPI	8	1	1	10	1.1mA	4.75 to 5.25	Ext	✓	8-SO	4.20
MAX5141–44	E	14	1	V	SPI	1	1	1	7	200	4.5 to 5.5/2.7 to 3.6	Ext	✓	8-/10-µMAX	6.50
MAX5170/71	E	14	1	V	SPI	1/2	1	18/12	—	400/350	4.5 to 5.5	Ext	✓	16-QSOP	4.36
MAX5172/73	E	14	1	V	SPI	2/4	1	18/12	—	400/350	2.7 to 3.6	Ext	✓	16-QSOP	4.36
MAX3264	C	14	8	V	Parallel	4/8	1	22	120	4mA	-9 to +14	Ext	✓	44-MQFP	27.25
MAX5774	C	14	32	V	SPI	4	1	20	120	1.5mA	4.75 to 5.25	Ext	✓	64-TQFP (12 x 12)	47.95
16 BITS															
MAX5541	C, E	16	1	V	SPI	16	1	1	10	1.1mA	4.75 to 5.25	Ext		8-SO	4.50
MAX5200–03	A, C	16	1	V	SPI	20/40	1/2	25	10	1.5mA	4.5 to 5.5/2.7 to 3.6	Int	✓	10-µMAX	3.33
MAX5204–07	A, C	16	1	V	SPI	20	1/2	25	10	1.5mA	4.5 to 5.5/2.7 to 3.6	Ext	✓	10-µMAX	2.83
MAX541/42	C	16	1	V	SPI	1/2/4	1	1	10	1.1mA	4.75 to 5.5	Ext		8-/14-SO	9.95
MAX5441–44	C, E	16	1	V	SPI	2/4	1	1	7	200	4.5 to 5.5/2.7 to 3.6	Ext		8-/10-µMAX	9.95
MAX5650/51/52	E	16	1	V	Parallel	4	1	2	10	2mA	4.5 to 5.5/2.7 to 5.25	Int/int/ext	✓	32-TQFP	8.50
MAX5136*	G	16	2	V	SPI	8	1	10	12	3.2mA	2.7 to 5.25	Int, ext	✓	24-TQFN (4 x 4)	*
MAX5134	G	16	4	V	SPI	8	1	10	12	3.2mA	2.7 to 5.25	Int, ext	✓	24-TQFN (4 x 4)	9.95
MAX5631/32/33	E	16	32	V	SPI	20	4	22	—	82mA	-5.25 to +11.6	Ext	✓	68-TQFN (10 x 10)	49.95
MAX5732–35	E	16	32	V	SPI	8/16	1	20	120	15mA	4.75 to 5.25	Ext	✓	56-TQFN (10 x 10)	53.90

*Future product—contact factory for availability.

◇Temperature ranges: A = −40°C to +125°C, C = 0°C to +70°C, E = −40°C to +85°C, G = −40°C to +105°C.

◇◇V = voltage, I = current

†1000-up piece price provided is for design guidance and is FOB USA. Lowest grade pricing. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

High-precision analog-to-digital converters

Maxim has the largest analog-to-digital converter (ADC) product offering on the market—we make over 300 ADCs that provide industry-leading performance and features. We have the ADCs that you need to bridge the gap between real-world and digital signals in all of your applications.
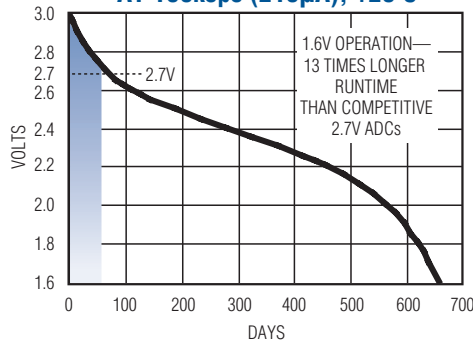
- **8- to 24-bit resolution**
- **DC to 5Msps conversion rate**
- **Single-ended, true differential, unipolar, bipolar, and software-selectable input ranges**
- **1, 2, 4, 8, 12, and 16 channels**
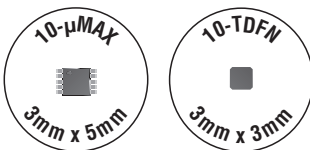- **I^2C-/SPI-/QSPI-/MICROWIRE-compatible and parallel interfaces**
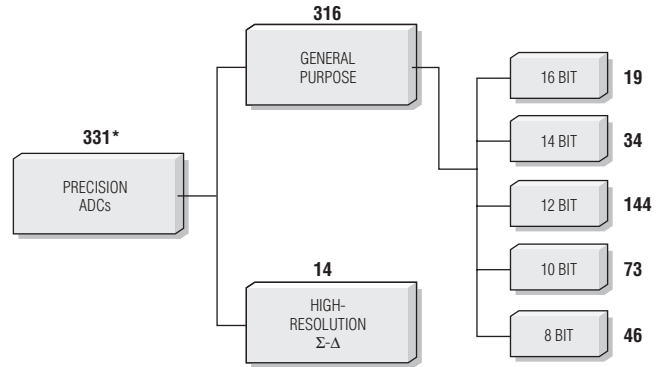
Ultra-low-power 8-/10-/12-bit ADCs run on two AA batteries** for 1.8 years at 100ksps

- **1.6V to 3.6V low-power operation**
- **0 to V_{DD} external reference input**
- **Unipolar or bipolar operation**
- **One differential or two single-ended inputs**

TYPICAL TWO AA DISCHARGE CURVE AT 100ksps (210µA), +25°C

1.6V OPERATION— 13 TIMES LONGER RUNTIME THAN COMPETITIVE 2.7V ADCs

Part	Resolution (Bits)
MAX1391/94	8
MAX1392/95	10
MAX1393/96	12

10-µMAX
3mm x 5mm

10-TDFN
3mm x 3mm

MAX1391– MAX1396

1.6V to 3.6V supply
- **750µA at 400ksps**
- **627µA at 300ksps**
- **210µA at 100ksps**
- **10nA at SHDN**

SPI-/QSPI-/ MICROWIRE-/DSP- compatible serial interface

External reference input

Two single-ended or one differential input
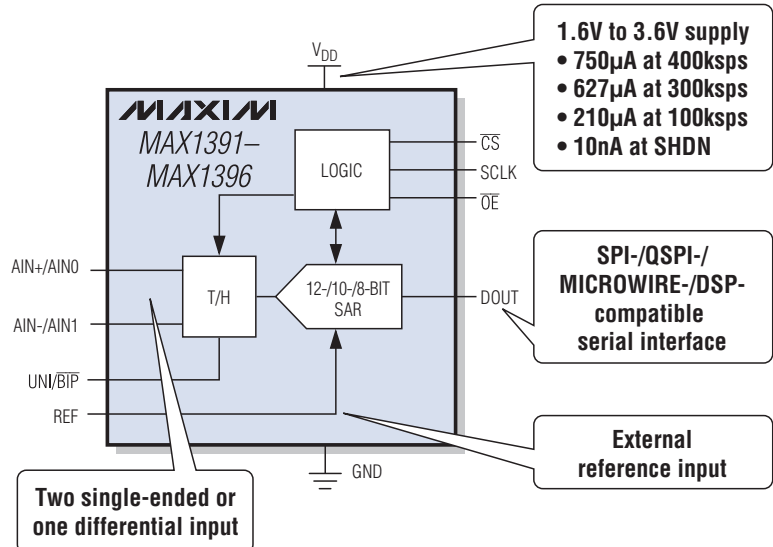
www.maxim-ic.com/ADCs

*Root part numbers.
**3300mAh AA alkaline battery (LR6).

Part	Input Channels	Conversion Rate (ksps, min)	Data Bus (Bits)	Reference	V_{IN} (V)	Differential Inputs	V_{SUPPLY} (V)	Power (mW, typ)	Low-Power Mode	Standby Mode	Smallest Package	Temp Range◇	Price† ($)
8 BITS													
MAX1106/07	1	25	Serial	Int, ext	0 to V_{REF}	✓	(3.3, 3)/5	0.288/0.575	✓	✓	10-µMAX	C, E	1.55
MX7574	1	66.7/250	µP/8	Ext	10, ±5		5	5			18-SO	I, C, M	4.80
MAX1115/16	1	100	Serial	Int	0 to V_{REF}		(3.3, 3)/5	0.405/0.91	✓		8-SOT23	E	1.24
MX7576/75	1	100/200	µP/8	Ext	5		5	15			18-SO	C, M, E	3.78/4.39
MAX165/66	1	200	µP/8	Int, ext	5	—/✓	5	15			18-/20-SO	C, M, E	3.95/3.77
MAX160	1	250	µP/8	Ext	10, ±5		5	5	✓		18-SO	C, M, E	7.20
ADC0820	1	400	µP/8	Ext	5		5	25			20-SO	C, M, E	7.16
MAX1391	1	400	Serial	Ext	0 to V_{REF} or ±V_{REF}/2	✓	1.8, 1.5, 3.3, 3, 2.5	0.864	✓	✓	10-TDFN	E	1.15
MAX152	1	400	µP/8	Ext	3, ±1.5		±3.3, 3.3	4.5	✓	✓	20-SSOP	C, M, E	4.25
MAX150	1	500	µP/8	Int, ext	5		5	25			20-SO	C, M, E	7.96
MX7820/21	1	500	µP/8	Ext	5/(±5, 5)		5/(±5, 5)	25/50			20-SO	I (MX7820), C, M, E (MX7821)	7.93/7.61
MAX153	1	1000	µP/8	Ext	±2.5, 5		±5, 5	40	✓		20-SSOP	C, M, E	6.63
MAX1108/09	2	50	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2		(3.3, 3)/5	0.21/0.475	✓	✓	10-µMAX	C, E	1.55
MAX1117/18/19	2	100	Serial	Int/ext/int	0 to V_{REF}		(3.3, 3)/(3.3, 3, 5/5)	0.405/0.675/0.91	✓		8-SOT23	E	1.24/0.99/1.24
MAX1394	2	400	Serial	Ext	0 to V_{REF}	✓	1.8, 1.5, 3.3, 3, 2.5	0.864	✓	✓	10-TDFN	E	1.15
MAX1111/13	4	50	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	(3.3, 3, 5)/5	0.2295/0.675	✓	✓	16-QSOP	C, M, E	1.69
MAX1036/37	4	188	I²C	Int, ext	0 to V_{REF}	✓	5/(3.3, 3)	1.75	✓	✓	8-SOT23	E	1.65
MAX156	4	250	µP/8	Int, ext	±2.5, 2.5	✓	±5, 5	45		✓	28-SO	C, E	7.19
MAX113	4	400	µP/8	Ext	3, ±1.5		3.3	4.5	✓	✓	24-SSOP	C, M, E	3.45
MAX154	4	400	µP/8	Int, ext	±2.5, 5		5	25			24-SSOP	C, M, E	8.36
MX7824	4	400	µP/8	Ext	5		5	25			24-SO	C, M, E	8.33
MAX114	4	1000	µP/8	Ext	±2.5, 5		5	40	✓		24-SSOP	C, M, E	3.30
MX7581	8	15	µP/8	Ext	10		5	15			28-SO	C, M, E	11.08
MAX1110/12	8	50	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	(3.3, 3, 5)/5	0.2295/0.675	✓	✓	20-SSOP	C, M, E	1.86
MAX161	8	50	µP/8	Ext	10		5	15			28-SO	C, M, E	11.12
MAX155	8	250	µP/8	Int, ext	±2.5, 2.5	✓	±5, 5	90		✓	28-SO	C, M, E	9.50
MAX117	8	400	µP/8	Ext	3, ±1.5		3.3, 3	4.5	✓	✓	28-SSOP	C, M, E	3.55
MAX158	8	400	µP/8	Int, ext	±2.5, 5		5	25			28-SSOP	C, M, E	8.76
MX7828	8	400	µP/8	Ext	5		5	25			28-SO	C, M, E	8.73
MAX118	8	1000	µP/8	Ext	±2.5, 5		5	40	✓		28-SSOP	C, M, E	3.40
MAX1038/39	12	188	I²C	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5/(3.3, 3)	1.75	✓	✓	16-QSOP	E	1.90
10 BITS													
MAX1242/43	1	73	Serial	(Int, ext)/ext	0 to V_{REF}		3.3, 3, 5	4.2/2.7	✓	✓	8-SO	C, M, E	2.75/2.45
MAX177	1	100	µP/8, µP/12	Int	±2.5		5 and -15, 5 and -12	104			24-SO	C, M, E	7.96
MAX159	1	108	Serial	Ext	0 to V_{REF}		3.3, 3, 5	2.7	✓	✓	8-µMAX	C, M, E	2.79
MAX1088/89	1	150	Serial	Ext	0 to V_{REF} or ±V_{REF}/2	✓	5/(3.3, 3)	1.6/0.735	✓		8-SOT23	E	2.40
MAX173	1	200	µP/8, µP/12	Int	5		5 and -15, 5 and -12	145			24-SO	C, M, E	7.01
MAX1085	1	300	Serial	Ratiometric, int, ext	0 to V_{REF} or ±V_{REF}/2		3.3, 3	7.5	✓	✓	8-SO	C, E	3.88
MAX1392	1	350	Serial	Ext	0 to V_{REF} or ±V_{REF}	✓	1.8, 1.5, 3.3, 3, 2.5	0.874	✓	✓	10-TDFN	E	1.81
MAX1084	1	400	Serial	Int	2.5		5	13.75	✓		8-SO	C, E	3.88
MAX1070/71	1 uni-/bipolar	1500	Serial	Ext	0 to V_{REF} or ±V_{REF}/2	✓	3.3, 3	18	✓	✓	12-TQFN	E	2.48
MAX1077/79	1 uni-/bipolar	1500	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	3.3, 3	21.9	✓	✓	12-TQFN	C, E	2.98/2.68
MAX1072/75	1 uni-/bipolar	1800	Serial	Ext	0 to V_{REF} or ±V_{REF}/2	✓	5	45	✓	✓	12-TQFN	E	2.75/2.48
MAX1076/78	1 uni-/bipolar	1800	Serial	Ext	0 to V_{REF} or ±V_{REF}/2	✓	5	50	✓	✓	12-TQFN	E	2.68
MAX157	2	108	Serial	Ext	0 to V_{REF}	✓	3.3, 3, 5	2.7	✓	✓	8-µMAX	C, M, E	2.79
MAX1086/87	2	150	Serial	Ext	0 to V_{REF} or ±V_{REF}/2		5/(3.3, 3)	1.6/0.735	✓		8-SOT23	E	2.40
MAX1395	2	357	Serial	Ext	0 to V_{REF}		1.8, 1.5, 3.3, 3, 2.5	0.832	✓	✓	10-TDFN	I, M	1.93
MAX1136/37	4	94.4	I²C	Int	0 to V_{REF}	✓	5/(3.3, 3)	3.35	✓	✓	8-µMAX	E	2.75
MAX1248/49	4	133	Serial	(Int, ext)/ext	0 to V_{REF} or ±V_{REF}/2	✓	(3.3, 3)/(3.3, 3, 5)	3.6	✓	✓	16-QSOP	C, M, E	3.40/3.95
MAX1361/62	4	150	I²C, SMBus™	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	(3.3, 3)/5	2		✓	10-µMAX	E	*

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*Contact factory for pricing and availability.

◇Temperature ranges: C = 0°C to +70°C, E = -40°C to +85°C, I = -20°C to +85°C, M = -55°C to +125°C.

†1000-up piece price provided is for design guidance and is FOB USA. Lowest grade pricing. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

ADCs (continued)

Part	Input Channels	Conversion Rate (ksps, min)	Data Bus (Bits)	Reference	V_{IN} (V)	Differential Inputs	V_{SUPPLY} (V)	Power (mW, typ)	Low-Power Mode	Standby Mode	Smallest Package	Temp Range◊	Price† ($)
10 BITS (CONTINUED)													
MAX1063	4	250	µP/8	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	3	6.9	✓	✓	24-QSOP	C, E	3.92
MAX1093	4	250	µP/8	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	3	6.9		✓	24-QSOP	C, E	3.92
MAX1064	4	400	µP/8	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	5	11		✓	24-QSOP	C, E	*
MAX1092	4	400	µP/8	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	5	11	✓	✓	24-QSOP	C, E	3.92
MAX1098	5	0.9	Serial	Int	$\pm 2V_{REF}$	✓	5	2.2		✓	16-SSOP	E	*
MAX1204	8	133	Serial	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	$\pm$5, 5	7.5	✓	✓	20-SSOP	C, M, E	4.25
MAX148/49	8	133	Serial	Ext/int	—/$\pm$5, 2.5	✓	(3.3, 3)/(3.3, 3, 5)	2.4/3.6	✓	✓	20-SSOP	C, M, E	3.10/3.20
MAX192	8	133	Serial	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	5	7.5	✓	✓	20-SSOP	C, M, E	5.95
MAX1061/91	8	250	µP/8	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	3	6.9	✓	✓	28-QSOP	C, E	4.11
MAX1020/21	8	300	Serial	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	5/(3.3, 3)	26.5/15.9	✓	✓	36-TQFN	E	9.20
MAX1026	8	300	Serial	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	5	9.5	✓	✓	16-QSOP	C, E	3.46
MAX1027	8	300	Serial	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	3.3, 3	1.86	✓		16-QSOP	C, E	3.46
MAX1040/42	8	300	Serial	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	5	26.5	✓	✓	36-TQFN	E	*
MAX1043	8	300	Serial	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	3.3, 3	15.9	✓	✓	36-TQFN	E	*
MAX1081/80	8	300/400	Serial	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	(3.3, 3)/5	8/13.75	✓	✓	20-TSSOP	C, E	4.19
MAX1060	8	400	µP/8	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	5	11		✓	28-QSOP	C, E	4.11
MAX1090	8	400	µP/8	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	5	11	✓	✓	28-QSOP	C, E	4.11
MAX1153/54	10	94	Serial	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	(3.3, 3)/5	6.6/15	✓	✓	16-TSSOP	E	3.50
MAX1138/39	12	94.4	I²C	Int	0 to V_{REF} or $\pm V_{REF}$/2	✓	5/(3.3, 3)	3.35/2	✓	✓	16-QSOP	E	2.99
MAX1022	12	300	Serial	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	5	26.5	✓	✓	36-TQFN	E	9.40
MAX1028/30	12/16	300	Serial	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	5	9.5	✓		20-QSOP/28-TQFN	C, E	3.91/4.36
MAX1029/31	12/16	300	Serial	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	3.3, 3	1.86	✓		20-QSOP/28-TQFN	C, E	3.91/4.36
MAX1057/58	16	300	Serial	Int, ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	(3.3, 3)/5	6.9/12.5	✓	✓	48-TQFN	E	9.90
12 BITS													
MAX1365/67	1	0.005	Serial	Int, ext	$\pm$2, $\pm$0.2		3.3, 3, 5	3.5	✓	✓	48-LQFP	E	*
MX7578	1	10	µP/8	Ext	5		$\pm$5 and +15	108			24-SO	C, M, E	16.96
MAX178	1	17	µP/8, µP/12	Int, ext	5		5	117			24-SO	C, M, E	15.24
MX574A/674A	1	40/66	µP/8, µP/12	Int, ext	$\pm$10, 10, $\pm$5, 20		5	150	✓		28-SO	C, M, E	11.97/23.44
MAX1240/41	1	73	Serial	(Int, ext)/ext	0 to V_{REF}	✓	(3.3, 3)/(3.3, 3, 5)	4.2	✓	✓	8-SO	C, M, E	3.85/3.10
MAX187/89	1	75	Serial	Int/ext	0 to V_{REF}/5		5	7.5/5	✓	✓	16-SO	C, M, E	7.45/6.95
MAX190	1	76	µP/8, serial	Int, ext	5	✓	5	15		✓	24-SO	C, M, E	10.00
MX7572-12	1	80	µP/8, µP/12	Int	5		5	145			24-SO	I, C, M	14.00
MAX1272/73	1	87	Serial	Int, ext	(0 to 10, 0 to 5, $\pm$10, $\pm$5)/$\pm V_{REF}$		5	11	✓	✓	8-PDIP	C, E	*
MAX185	1	96	µP/12	Ext	10, $\pm$5, 5		5 and -15, 5 and -12	90			24-SO	C, M, E	7.20
MX7672-10	1	96	µP/12	Ext	10, $\pm$5, 5		5	110			24-SO	C, M, E	25.25
MAX163/64/67	1	100	µP/8, µP/12	Int	5/$\pm$5/$\pm$2.5		5 and -15, 5 and -12	104			24-SO	C, M, E	14.40
MAX172	1	100	µP/8, µP/12	Int	5		5 and -15, 5 and -12	145			24-SO	I, C, M	9.60
MAX191	1	100	µP/8, serial	Int, ext	$\pm$2.5, 5	✓	$\pm$5, 5	15		✓	24-SO	C, M, E	9.60
MAX145	1	108	Serial	Ext	0 to V_{REF}	✓	3.3, 3, 5	2.7	✓	✓	8-µMAX	C, M, E	4.24
MAX170	1	125	Serial	—	5		5 and -15, 5 and -12	115			16-SO	C, M, E	11.96
MAX174	1	125	µP/8, µP/12	Int, ext	$\pm$10, 10, $\pm$5, 20		5	150			28-SO	C, M, E	28.13
MAX1288/89	1	150	Serial	Ext	0 to V_{REF} or $\pm V_{REF}$/2	✓	5/(3.3, 3)	—	✓	✓	8-SOT23	E	3.45
MX7672-05	1	192	µP/12	Ext	10, $\pm$5, 5		5	110			24-SO	C, M, E	33.66
MAX184	1	200	µP/12	Ext	10, $\pm$5, 5		5 and -15, 5 and -12	90			24-SO	C, M, E	8.25
MX7572-05	1	200	µP/8, µP/12	Int	5		5	145			24-SO	I, C, M	20.00
MAX176	1	250	Serial	Int	$\pm$5		5 and -15, 5 and -12	123			16-SO	C, M, E	13.20
MAX1285	1	300	Serial	Int	2.5		3.3, 3	13.75	✓		8-SO	C, E	4.85
MAX162	1	308	µP/8, µP/12	Int	5		5 and -15, 5 and -12	145			24-SO	I, C, M	19.20
MAX183	1	308	µP/12	Ext	10, $\pm$5, 5		5 and -15, 5 and -12	90	✓	✓	24-SO	C, E	9.00
MX7672-03	1	308	µP/12	Ext	10, $\pm$5, 5		5	110			24-SO	C, E	57.38
MAX1393	1	312	Serial	Ext	0 to V_{REF}	✓	1.5, 1.8, 2.5, 3, 3.3	0.832	✓	✓	10-TDFN	I, M	2.48
MAX122	1	333	µP/12	Int	$\pm$5		5 and -15, 5 and -12	210			24-SSOP	C, M, E	12.00
MAX1284	1	400	Serial	Int	2.5		5	13.75	✓		8-SO	C, E	4.85

*Contact factory for pricing and availability.

◊Temperature ranges: C = 0°C to +70°C, E = -40°C to +85°C, I = -20°C to +85°C, M = -55°C to +125°C.

†1000-up piece price provided is for design guidance and is FOB USA. Lowest grade pricing. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

Part	Input Channels	Conversion Rate (ksps, min)	Data Bus (Bits)	Reference	V_{IN} (V)	Differential Inputs	V_{SUPPLY} (V)	Power (mW, typ)	Low-Power Mode	Standby Mode	Smallest Package	Temp Range◇	Price† ($)
12 BITS (CONTINUED)													
MAX120	1	500	µP/12	Int	±5		5 and -15, 5 and -12	210			24-SSOP	C, M, E	16.00
MAX1224/25	1 uni-/bipolar	1500	Serial	Ext	0 to V_{REF} or ±V_{REF}/2	✓	3.3, 3	18	✓	✓	12-TQFN	E	5.09
MAX1277/79	1 uni-/bipolar	1500	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	3.3, 3	21.9	✓	✓	12-TQFN	C, E	*
MAX1274/75	1 uni-/bipolar	1800	Serial	Ext	0 to V_{REF} or ±V_{REF}/2	✓	5	45	✓	✓	12-TQFN	E	*
MAX1276/78	1 uni-/bipolar	1800	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5	55	✓	✓	12-TQFN	C, E	3.40
MAX144	2	108	Serial	Ext	0 to V_{REF}		3.3, 3, 5	2.7	✓	✓	8-µMAX	C, M, E	4.24
MAX1286/87	2	150	Serial	Ext	0 to V_{REF} or ±V_{REF}/2		5/(3.3, 3)	0.5	✓	✓	8-SOT23	E	3.45
MAX1267/97	2	265	µP/12	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	3.3, 3	5.4	✓	✓	24-QSOP	C, E	5.60
MAX1396	2	312	Serial	Ext	0 to V_{REF}		1.5, 1.8, 2.5, 3, 3.3	0.832	✓	✓	10-TDFN	I, M	2.48
MAX1268/96	2	420	µP/12	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5	10	✓	✓	24-QSOP	C, E	5.60
MAX1306/10/14	2	1800	µP/12	Int, ext	5/±5/±10	✓	5	—	✓	✓	48-LQFP	E	*/2.50/*
MX7582	4	10	µP/8	Ext	5	✓	±5 and +15	108	✓	✓	28-PLCC	C, M, E	19.50
MAX182	4	17	µP/8	Int, ext	5	✓	±5 and +15, ±5 and +12	102		✓	28-SO	C, M, E	17.55
MAX1236/37	4	94.4	I²C	Int	0 to V_{REF} or ±V_{REF}/2	✓	5/(3.3, 3)	3.35/2	✓	✓	8-µMAX	E	3.85
MAX1246/47	4	133	Serial	(Int, ext)/ext	0 to V_{REF} or ±V_{REF}/2	✓	(3.3, 3)/(3.3, 3, 5)	3.6/9	✓	✓	16-QSOP	C, M, E	6.15/5.80
MAX1363/64	4	133	I²C, SMBus	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	(3.3, 3)/5	2		✓	10-µMAX	E	*
MAX1263/93	4	250	µP/8	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	3.3, 3	5.1	✓	✓	24-QSOP	C, E	5.74
MAX1283	4	300	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	3.3, 3	8	✓	✓	16-TSSOP	C, E	5.04
MAX1346/48	4	300	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5	26.5	✓	✓	36-TQFN	E	*/0.73
MAX1264/92	4	400	µP/8	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5	9.5	✓	✓	24-QSOP	C, E	5.74
MAX1282	4	400	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5	13.75	✓	✓	16-TSSOP	C, E	5.04
MAX1305/09/13	4	2800	µP/12	Int, ext	5/±5/±10		5	—	✓	✓	48-LQFP	E	1.33/*/*
MAX181	6	100	µP/16, µP/8	Int, ext	±2.5, 5	✓	5 and -15, 5 and -12	110			44-PLCC	C, M, E	13.92
MAX196/98	6	100	µP/12	Int, ext	(±10, 10, ±5, 5)/±V_{REF}		5	30	✓	✓	28-SSOP	C, M, E	9.90
MAX1265/95	6	265	µP/12	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	3.3, 3	5.4	✓	✓	28-QSOP	C, E	5.87
MAX1266/94	6	420	µP/12	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5	10	✓	✓	28-QSOP	C, E	5.87
MAX1127/28	8	8	I²C	Int, ext	(±10, 10, ±5, 5)/±V_{REF}		5	30			28-SSOP	C, E	9.25
MAX1245	8	100	Serial	Ext	0 to V_{REF} or ±V_{REF}/2	✓	3.3, 3, 2.5	2.4	✓	✓	20-SSOP	C, E	6.25
MAX180	8	100	µP/16, µP/8	Int, ext	±2.5, 5	✓	5 and -15, 5 and -12	110			44-PLCC	C, M, E	13.92
MAX197/99	8	100	µP/8	Int, ext	(±10, 10, ±5, 5)/±V_{REF}		5	30		✓	28-SSOP	C, M, E	9.90
MAX1270/71	8	110	Serial	Int, ext	(±10, 10, ±5, 5)/±V_{REF}		5	30		✓	28-SSOP	C, E	8.95
MAX115/16	8	116	µP/12	Int, ext	±5/±2.5	✓	±5	175	✓		36-SSOP	C, E	7.95/9.99
MAX1202/03	8	133	Serial	(Int, ext)/ext	0 to V_{REF} or ±V_{REF}/2	✓	±5, 5	7.5	✓	✓	20-SSOP	C, M, E	6.50/5.45
MAX146/47	8	133	Serial	(Int, ext)/ext	0 to V_{REF} or ±V_{REF}/2	✓	(3.3, 3)/(3.3, 3, 5)	3.6/2.7	✓	✓	20-SSOP	C, M, E	6.25/5.95
MAX186/88	8	133	Serial	Int/ext	0 to V_{REF} or ±V_{REF}/2	✓	±5, 5	7.5	✓	✓	20-SSOP	C, M, E	8.95/8.45
MAX1261/91	8	250	µP/8	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	3.3, 3	5.1	✓	✓	28-QSOP	C, E	5.99
MAX1220/21	8	300	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5/(3.3, 3)	26.5/15.9	✓	✓	36-TQFN	E	13.79
MAX1226/27	8	300	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5/(3.3, 3)	9.5/1/86	✓	✓	16-QSOP	C, E	4.52/4.45
MAX1281	8	300	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	3.3, 3	8	✓	✓	20-TSSOP	C, E	5.24
MAX1340/42	8	300	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5	26.5	✓	✓	36-TQFN	E	*
MAX1343	8	300	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	3.3, 3	15.9	✓	✓	36-TQFN	E	*
MAX1262	8	400	µP/8	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5	9.5	✓	✓	28-QSOP	C, E	5.99
MAX1280	8	400	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5	13.75	✓	✓	20-TSSOP	C, E	5.24
MAX1290	8	400	µP/8	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5	9.5	✓	✓	28-QSOP	C, E	5.99
MAX1304/08/12	8	4000	µP/12	Int, ext	5/±5/±10		5	—	✓	✓	48-LQFP	E	0.89/1.26/*
MAX1253/54	10	94	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	(3.3, 3)/5	6.6/15	✓	✓	16-TSSOP	E	4.95
MAX1238/39	12	94.4	I²C	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5/(3.3, 3)	3.35/2	✓	✓	16-QSOP	E	4.19
MAX1223	12	300	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	3.3, 3	15.9	✓	✓	36-TQFN	E	*
MAX1228/30	12/16	300	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5	9.5	✓		20-QSOP/28-TQFN	C, E	4.98/5.43
MAX1229/31	12/16	300	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	3.3, 3	1.86	✓	✓	20-QSOP/28-TQFN	C, E	4.98/5.43
MAX1257/58	16	300	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	(3.3, 3)/5	6.9/12.5	✓	✓	48-TQFN	E	14.49

*Contact factory for pricing and availability.

◇Temperature ranges: C = 0°C to +70°C, E = -40°C to +85°C, I = -20°C to +85°C, M = -55°C to +125°C.

†1000-up piece price provided is for design guidance and is FOB USA. Lowest grade pricing. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

ADCs (continued)

Part	Input Channels	Conversion Rate (ksps, min)	Data Bus (Bits)	Reference	V_{IN} (V)	Differential Inputs	V_{SUPPLY} (V)	Power (mW, typ)	Low-Power Mode	Standby Mode	Smallest Package	Temp Range◇	Price† ($)
14 BITS													
MAX1069	1	58	I²C	Int, ext	0 to V_{REF}	✓	5	12.5	✓	✓	14-TSSOP	C, E	7.45
MAX194	1	85	Serial	Ext	±5, 5		5	55	✓	✓	16-SO	C, M, E	14.00
MAX1156/58/74	1	135	µP/8	Int, ext	(0 to 10)/±10/±5		5	23.75	✓	✓	20-TSSOP	C, E	**
MAX1157/59/75	1	135	µP/14	Int, ext	(0 to 10)/±10/±5		5	20	✓	✓	28-TSSOP	C, E	**
MAX1144/45	1	150	Serial	Ext	±6, ±2.048		3.3	26.4	✓	✓	20-SSOP	C, E	14.95
MAX1065/66	1	165	µP/16 (MAX1065), µP/8 (MAX1066)	Int, ext	0 to V_{REF}	✓	5	16	✓	✓	28-/20-TSSOP	C, E	7.65
MAX1062	1	200	Serial	Ratiometric, ext	0 to V_{REF}	✓	5	12.5	✓	✓	10-µMAX	C, E	5.95
MAX1142/43	1	200	Serial	Ratiometric, int, ext	(±12, 12)/(±4.096, 4.096)	✓	5	55	✓	✓	20-SSOP	C, E	14.95
MAX121	1	308	Serial	Int	±5	✓	5	213		✓	20-SSOP	C, M, E	12.00
MAX1318/22/26	2	900	µP/14	Int, ext	5/±5/±10		5	—	✓	✓	48-LQFP	E	1.75/1.17/**
MAX1146/47	4	116	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5/(3.3, 3)	5.5/3.3	✓	✓	20-TSSOP	C, E	7.78
MAX1033	4	130	Serial	Int, ext	6 to 0, 0 to 6, 12 to 0, ±12, ±6, 0 to 12, ±24, ±3	✓	5	—	✓	✓	20-TSSOP	E	17.95
MAX1067	4	200	Serial	Int, ext	0 to V_{REF}		5	14.5	✓	✓	16-QSOP	E	**
MAX1338	4	600	µP/14	Int, ext	±2.5, ±1.25, ±10, ±5	✓	5	325	✓		56-TQFN	E	**
MAX1317/21/25	4	1400	µP/14	Int, ext	5/±5/±10	✓	5	—	✓	✓	48-LQFP	E	5.13
MAX1148/49	8	116	Serial	Int, ext	0 to V_{REF} or ±V_{REF}/2	✓	5/(3.3, 3)	5.5/3.3	✓	✓	20-TSSOP	C, E	8.55
MAX1068	8	200	Serial	Int, ext	0 to V_{REF}		5	14.5	✓	✓	24-QSOP	E	**
MAX125/26	8	250	µP/14	Int, ext	±5/±2.5		±5	165		✓	36-SSOP	C, E	13.42
MAX1316/20/24	8	2000	µP/14	Int, ext	5/±5/±10		5	—	✓	✓	48-LQFP	E	**/0.29/**
16 BITS													
MAX1366/68	1	0.005	Serial	Int, ext	±2, ±0.2	✓	3.3, 3, 5	3.5	✓	✓	48-LQFP	E	**
MAX1462	1	0.015	Serial	Ratiometric	—	✓	3.3, 3, 2.5	930			48-LQFP	C	**
MAX1169	1	58	I²C	Int, ext	0 to V_{REF}	✓	5	12.5	✓		14-TSSOP	C, E	8.70
MAX195	1	85	Serial	Ext	±5, 5		5	55		✓	16-SO	C, M, E	24.00
MAX1177	1	135	µP/8	Int, ext	10		5	23.75	✓	✓	20-TSSOP	C, E	**
MAX1178/88	1	135	µP/8	Int, ext	±5/±10		5	23.75	✓	✓	20-TSSOP	C, E	**
MAX1179/87/89	1	135	µP/16	Int, ext	±5/10/±10		5	20	✓	✓	28-TSSOP	C, E	**
MAX1134/35	1	150	Serial	Ext	±6/±2.048		3.3	26.4	✓	✓	20-SSOP	C, E	19.95
MAX1165/66	1	165	µP/16 (MAX1165), µP/8 (MAX1166)	Int, ext	0 to V_{REF}		5	16	✓	✓	28-/20-TSSOP	C, E	9.25
MAX1132/33	1	200	Serial	Ratiometric, int, ext	(±12, 12)/ (±4.096, 4.096)		5	55	✓	✓	20-SSOP	C, E	19.95
MAX1162	1	200	Serial	Ext	0 to V_{REF}		5	12.5	✓	✓	10-µMAX	C, E	7.39
MAX1358/59	2	0.512	Serial	Int, ext	-V_{REF}/gain to V_{REF}/gain, -0.05 to V_{REF}/gain	✓	1.8, 3.3, 3, 2.5	2.45	✓	✓	40-TQFN	C, E	8.88/8.20
MAX1301	4	130	Serial	Int, ext	6 to 0, 0 to 6, 12 to 0, ±12, ±6, 0 to 12, ±24, ±3	✓	5	76.2	✓	✓	20-TSSOP	E	31.95
MAX1167/68	4/8	200	Serial	Int, ext	0 to V_{REF}		5	14.5	✓	✓	16-/24-QSOP	E	**

Sigma-Delta (Σ-Δ) ADCs

Part	Resolution (Bits)	Input Channels	Conversion Rate (sps)	Data Bus (Bits)	Reference	V_{IN} (V)	V_{SUPPLY} (V)	Low-Power Mode	Standby Mode	DNL (LSB, max)	INL (±%FSR, max)	Smallest Package	Temp Range◇	Price† ($)
MAX110/11	14	2	50	Serial	Ext	±3/(1.5, ±1.5)	-5 (MAX110), 5		✓	2	0.03/0.05	20-SSOP	C, M, E	4.80
MAX1415/16	16	2	500	Serial	Ext	0 to V_{REF} or ±V_{REF}/2	3/5	✓	✓	1	0.03	16-TSSOP	E	**
MX7705	16	2	500	Serial	Ext	0 to V_{REF} or ±V_{REF}/2	5	✓	✓	1	0.03	16-TSSOP	E	4.12
MAX1407/08/ 09/14	16	4/8/1/4	60	Serial	Int	0 to AV_{DD}	3	✓		—	0.045	28-SSOP (MAX1407/ 08/14), 20-SSOP (MAX1409)	C	7.95/**/ 5.95/7.95
MAX1401/03	18	5	4800	Serial	Ext	0 to V_{REF} or ±V_{REF}/2	3	✓	✓	1	0.0015	28-SSOP	C, E	8.95
MAX1400/02	18	5	4800	Serial	Ext	0 to V_{REF} or ±V_{REF}/2	5	✓	✓	1	0.0015	28-SSOP	C, E	8.95
MAX11040*	24	4	64	Quad	Int, ext	±2.2	3.3			0.1	0.003	38-TSSOP	E	*

*Future product—contact factory for availability.
**Contact factory for pricing and availability.
◇Temperature ranges: C = 0°C to +70°C, E = -40°C to +85°C, M = -55°C to +125°C.
†1000-up piece price provided is for design guidance and is FOB USA. Lowest grade pricing. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

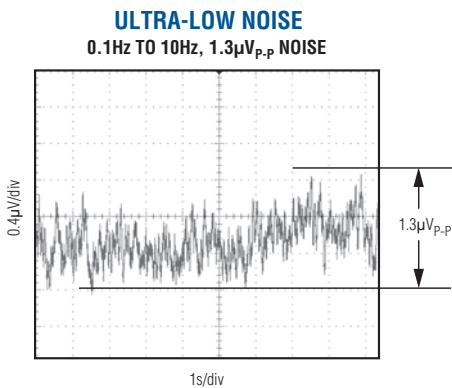# Industry's best-in-class voltage references

Maxim offers over 159 best-in-class series and shunt voltage references that meet your project's key specifications, such as temperature coefficient, noise, and small size.

- **Lowest noise: 1.3µV$_{P-P}$**
- **Lowest tempco: 1ppm/°C**
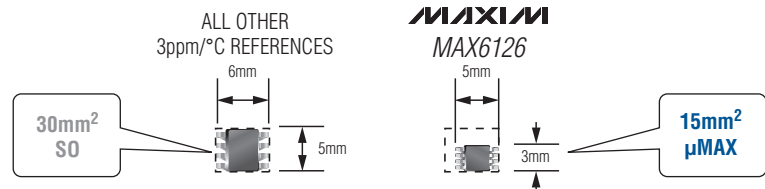- **Lowest power consumption: 60µA**
- **Smallest size: 1.5mm x 1mm**

159*

VOLTAGE REFERENCES

SERIES | **130**

SHUNT | **29**
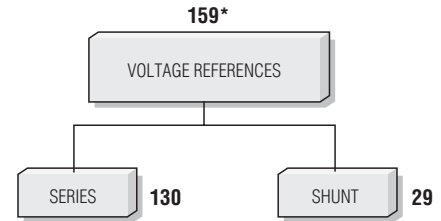
Industry's smallest 3ppm/°C series reference has ultra-low noise

Offering an ultra-low noise of 1.3µV$_{P-P}$, the MAX6126 is ideal for high-resolution data converters and noise-sensitive systems. The small 15mm^2 footprint requires only half the board space of previous-generation precision references.

MAX6126 IS 50% SMALLER

ALL OTHER
3ppm/°C REFERENCES

/VI/IXI/VI
MAX6126

6mm

5mm

**30mm^2
SO**

5mm

3mm

**15mm^2
µMAX**

ULTRA-LOW NOISE
0.1Hz TO 10Hz, 1.3µV$_{P-P}$ NOISE

0.4µV/div

1.3µV$_{P-P}$

1s/div

- **±0.02% (max) initial accuracy**
- **0.025Ω (max) load regulation**
- **20ppm/khr long-term drift**
- **200mV dropout at 5mA source current**
- **20µV/V (max) line regulation**
- **-40°C to +125°C automotive temperature range**

Industry's only series reference to guarantee ±0.04% initial accuracy and 10ppm/°C tempco over -40°C to +125°C

Offered in a 6-pin SOT23, the MAX6033 achieves temperature-drift performance that was previously available only in a 3x larger 8-pin SO package. This reference uses bandgap technology for low-noise performance and excellent accuracy.

2.5V INITIAL ACCURACY + TEMPERATURE DRIFT

ERROR (±mV)

-40°C TO +125°C

MAXIM **3.5 mV**

COMPETITOR A **4.75 mV**

COMPETITOR B **10 mV**
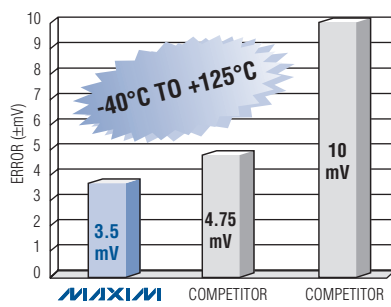
- **2.5, 3.0, 4.096, and 5.0V output voltages**
- **Low 200mV dropout voltage**
- **2.7V to 12.6V supply range**
- **Low 40µA supply current**
- **40ppm/1000hr (typ) long-term stability**
- **Tiny, 3mm x 3mm, 6-pin SOT23**

www.maxim-ic.com/references

*Root part numbers.

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/VI/IXI/VI

2-terminal shunt references

Part	Reverse-Breakdown Voltage (V)	Temp Drift (ppm/°C, max)	Initial Accuracy, T_A = +25°C (±%, max)	Operating-Current Range	0.1Hz to 10Hz Noise (µV$_{P-P}$)	Package	Temp Range◇	Features	Price† ($)
LM4041/51	1.225	100/50	0.1, 0.2, 0.5, 1	60µA to 12mA	20µV$_{RMS}$*	SOT23, SC70	A, E	Miniature SC70	0.31/0.73
MAX6138_12	1.225	25	0.1, 0.2, 0.5	65µA to 15mA	28µV$_{RMS}$*	SC70	E	Improved drift over LM4050	1.75
MAX6006/07	1.25/2.048	30, 75	0.2, 0.5	1µA to 2mA	60	SOT23	E	Lowest power 3-SOT23	0.55
LM4040/LM4050	2.048	100/50	0.1, 0.2, 0.5, 1	60µA to 15mA	35µV$_{RMS}$*	SOT23, SC70	A, E	Miniature SC70	0.31/0.73
MAX6138_21	2.048	25	0.1, 0.2, 0.5	65µA to 15mA	20µV$_{RMS}$*	SC70	E	Improved drift over LM4050	1.15
LM4040/LM4050	2.5	100/50	0.1, 0.2, 0.5, 1	60µA to 15mA	35µV$_{RMS}$*	SOT23, SC70	E, A	Miniature SC70	0.31/0.65
MAX6008	2.5	30, 75	0.2, 0.5	1µA to 2mA	60	SOT23	E	Lowest power 3-SOT23	0.55
MAX6138_25	2.5	25	0.1, 0.2, 0.5	65µA to15mA	35µV$_{RMS}$*	SC70	E	Improved drift over LM4050	1.15
LM4040/LM4050	3	100/50	0.1, 0.2, 0.5, 1	60µA to 15mA	35µV$_{RMS}$*	SOT23, SC70	A, E	Miniature SC70	0.31/0.73
MAX6009	3	30, 75	0.2, 0.5	1µA to 2mA	60	SOT23	E	Lowest power 3-SOT23	0.55
MAX6138_30	3	25	0.1, 0.2, 0.5	65µA to 15mA	45µV$_{RMS}$*	SC70	E	Improved drift over LM4050	1.15
LM4040/LM4050	3.3	100/50	0.1, 0.2, 0.5, 1	65µA to 15mA	50µV$_{RMS}$*	SC70	A	Miniature SC70	0.31/0.73
MAX6138_33	3.3	25	0.1, 0.2, 0.5	65µA to 15mA	50µV$_{RMS}$*	SC70	E	Improved drift over LM4050	1.15
LM4040/LM4050	4.096	100/50	0.1, 0.2, 0.5, 1	60µA to 15mA	35µV$_{RMS}$*	SOT23, SC70	A, E	Miniature SC70	0.31/0.73
MAX6138_41	4.096	25	0.1, 0.2, 0.5	73µA to 15mA	80µV$_{RMS}$*	SC70	E	Improved drift over LM4050	1.15
LM4040/LM4050	5	100/50	0.1, 0.2, 0.5, 1	60µA to 15mA	35µV$_{RMS}$*	SOT23, SC70	A, E	Miniature SC70	0.31/0.73
MAX6138_50	5	25	0.1, 0.2, 0.5	80µA to 15mA	80µV$_{RMS}$*	SC70	E	Improved drift over LM4050	1.15

3-terminal series references

Part	Output Voltage (V)	Supply-Voltage Range (V)	Temp Drift (ppm/°C, max)	Initial Accuracy, T_A = +25°C (±%, max)	Quiescent Current (µA, max)	0.1Hz to 10Hz Noise (µV$_{P-P}$)	Package	Temp Range◇	Features	Price† ($)
MAX6037_ADJ	Adj	2.5 to 5.5	25, 65	0.2, 0.5	275	6	SOT23	A	Shutdown and adjustable output	0.85
MAX6160	Adj	2.7 to 12.6	100	1	100	15	SOT143, SO	E	Low cost, low dropout, adjustable	0.88
MAX6001	1.25	2.5 to 12.6	100	1	45	25	SOT23	E	Very low cost	0.40
MAX6012	1.25	2.5 to 12.6	20, 30	0.3, 0.5	35	12	SOT23	E	Low power, low drift, low dropout	1.35
MAX6018_12	1.25	1.8 to 5.5	60	0.2, 0.4	5	36	SOT23	E	Ultra-low supply current, 1.8V operation	0.85
MAX6023_12	1.25	2.5 to 12.6	30	0.2	35	25	UCSP	E	1mm x 1.5mm chip-scale package	1.50
MAX6037_12	1.25	2.5 to 5.5	25, 65	0.2, 0.5	275	6	SOT23	A	Shutdown	0.85
MAX6061	1.25	2.5 to 12.6	20, 30	0.4, 0.6	125	13	SOT23	E	5mA output, precision	1.35
MAX6101	1.25	2.5 to 12.6	75	0.4	150	13	SOT23	E	Low cost, precision	0.33
MAX6161	1.25	2.5 to 12.6	5, 10	0.16, 0.32, 0.48	120	20	SO	E	5mA output, precision	2.00
MAX6190	1.25	2.5 to 12.6	5, 10, 25	0.16, 0.32, 0.48	35	25	SO	E	Low power, low drift	1.45
MAX6018_16	1.6	1.8 to 5.5	60	0.2, 0.4	5	55	SOT23	E	Ultra-low supply current, 1.8V operation	0.85
MAX6018_18	1.8	2.0 to 5.5	60	0.2, 0.4	5	62	SOT23	E	Ultra-low supply current	0.85
MAX6068	1.8	2.5 to 12.6	20, 30	0.2, 0.5	125	18	SOT23	E	5mA output, stable with all capacitive loads	1.35
MAX6100	1.8	2.5 to 12.6	75	0.4	150	18	SOT23	E	5mA output, low cost	0.33
MAX6168	1.8	2.5 to 12.6	5, 10	0.1, 0.3	120	18	SO	E	5mA output, stable with all capacitive loads	2.00
MAX6018_21	2.048	2.25 to 5.5	60	0.2, 0.4	5	70	SOT23	E	Ultra-low supply current	0.85
MAX6021	2.048	2.5 to 12.6	20, 30	0.2, 0.4	35	35	SOT23	E	Low power, low drift, low dropout	1.35
MAX6023_21	2.048	2.5 to 12.6	30	0.2	35	60	UCSP	E	1mm x 1.5mm chip-scale package	1.50
MAX6034_21	2.048	2.5 to 5.5	30, 75	0.2, 0.4	115	45	SC70	E	Low supply current	0.55
MAX6037_21	2.048	2.5 to 5.5	25, 65	0.2, 0.5	275	6	SOT23	A	Shutdown	0.85

*Wideband noise: 10Hz ≤ f ≤ 10kHz.
◇Temperature ranges: A = -40°C to +125°C, E = -40°C to +85°C.

†1000-up piece price provided is for design guidance and is FOB USA. Lowest grade pricing. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

3-terminal series references (continued)

Part	Output Voltage (V)	Supply-Voltage Range (V)	Temp Drift (ppm/°C, max)	Initial Accuracy, T_A = +25°C (±%, max)	Quiescent Current (µA, max)	0.1Hz to 10Hz Noise (μV_{P-P})	Package	Temp Range ◇	Features	Price† ($)
MAX6062	2.048	2.5 to 12.6	20, 30	0.2, 0.4	125	22	SOT23	E	5mA output, precision	1.35
MAX6106	2.048	2.5 to 12.6	75	0.4	125	22	SOT23	E	Low cost, precision	0.33
MAX6126_21	2.048	2.7 to 12.6	3, 5, 7	0.02, 0.06, 0.1	550	1.3	µMAX, SO	A	3ppm/°C tempco, ultra-low noise	3.15
MAX6129_21	2.048	2.5 to 12.6	40, 100	0.4, 0.5	3	65	SOT23	E	Ultra-low power	0.55
MAX6162	2.048	2.5 to 12.6	5, 10	0.1, 0.24	120	22	SO	E	5mA output, precision	2.00
MAX6191	2.048	2.5 to 12.6	5, 10, 25	0.1, 0.24, 0.5	35	40	SO	E	REF191 alternative	1.45
MAX873	2.5	4.5 to 18	7, 20	0.06, 0.1	280	16	SO	E	Low power, low drift	1.44
MAX6002	2.5	2.7 to 12.6	100	1	45	60	SOT23	E	Very low cost	0.40
MAX6023_25	2.5	2.7 to 12.6	30	0.2	35	60	UCSP	E	1mm x 1.5mm chip-scale package	1.50
MAX6025	2.5	2.7 to 12.6	20, 30	0.2, 0.4	35	50	SOT23	E	Low power, low drift, low dropout	1.35
MAX6033_25	2.5	2.7 to 12.6	10, 20	0.04, 0.08, 0.1	75	16	SOT23	A	10mA output current, ultra-low drift	1.45
MAX6034_25	2.5	2.7 to 5.5	30, 75	0.2, 0.4	115	55	SC70	E	Low supply current	0.55
MAX6035_25	2.5	4.4 to 33	20, 65	0.2, 0.5	95	21	SOT23	A	Up to 33V high supply voltage	0.65
MAX6037_25	2.5	2.7 to 5.5	25, 65	0.2, 0.5	275	6	SOT23	A	Shutdown	0.85
MAX6043_25	2.5	4.5 to 40	3, 10	0.05, 0.1	490	4	SOT23	A	High voltage, low drift, precision	0.55
MAX6066	2.5	2.7 to 12.6	20, 30	0.2, 0.4	125	27	SOT23	E	5mA output, precision	1.35
MAX6102	2.5	2.7 to 12.6	75	0.4	150	27	SOT23	E	Low cost, precision	0.33
MAX6125	2.5	2.7 to 12.6	50	1	100	15	SOT23, SO	E	Low cost, low dropout	0.95
MAX6126_25	2.5	2.7 to 12.6	3, 5, 7	0.02, 0.06, 0.1	550	1.45	µMAX, SO	A	Ultra-low noise, 3ppm/°C tempco	3.15
MAX6129_25	2.5	2.7 to 12.6	40, 100	0.4, 0.5	3	80	SO	E	Ultra-low power	0.55
MAX6133_25	2.5	2.7 to 12.6	3, 7	0.04, 0.1	80	16	µMAX, SO	A	Ultra-low drift	3.79
MAX6143_25	2.5	4.5 to 40	8, 25, 65	0.1, 0.5	490	4	SO	A	High precision	2.59
MAX6166	2.5	2.7 to 12.6	5, 10	0.1, 0.2, 0.4	120	27	SO	E	5mA output, precision	2.00
MAX6173	2.5	2.7 to 40	3	0.06	450	3.8	SO	A	Temperature sensor	2.59
MAX6192	2.5	2.7 to 12.6	5, 10, 25	0.1, 0.2, 0.4	35	60	SO	E	REF192 alternative	1.45
MAX6220_25	2.5	8 to 40	20	0.1	3.3mA	1.5	SO	A	-40°C to +125°C, 15mA output	1.60
MAX6225	2.5	8 to 36	3, 5	0.04, 0.12	2.7mA	1.5	DIP, SO, CERDIP	C, E, M	Low drift, less than $1.5\mu V_{P-P}$ output noise	2.25
MAX6325	2.5	8 to 36	1	0.04	2.7mA	1.5	DIP, SO, CERDIP	C, E, M	Ultra-low drift, $1.5\mu V_{P-P}$ output noise	6.70
MAX6003	3	3.2 to 12.6	100	1	45	75	SOT23	E	Very low cost	0.40
MAX6023_30	3	3.2 to 12.6	30	0.2	35	60	UCSP	E	1mm x 1.5mm chip-scale package	1.50
MAX6030	3	3.2 to 12.6	20, 30	0.2 to 0.4	35	65	SOT23	E	Low power, low drift, low dropout	1.35
MAX6033_30	3	3.2 to 12.6	10, 20	0.04, 0.08, 0.1	75	24	SOT23	A	10mA output current, ultra-low drift	1.45
MAX6034_30	3	3.2 to 5.5	30, 75	0.2, 0.4	115	66	SC70	E	Low supply current	0.55
MAX6035_30	3	4.9 to 33	20, 65	0.2, 0.5	95	25	SOT23	A	Up to 33V high supply voltage	0.65
MAX6037_30	3	3.2 to 5.5	25, 65	0.2, 0.5	275	6	SOT23	A	Shutdown	0.85
MAX6063	3	3.2 to 12.6	20, 30	0.2 to 0.4	125	35	SOT23	E	5mA output, precision	1.35
MAX6103	3	3.2 to 12.6	75	0.4	150	35	SOT23	E	Low cost, precision	0.33
MAX6126_30	3	3.2 to 12.6	3, 5, 7	0.02, 0.06, 0.1	550	1.75	µMAX, SO	A	3ppm/°C tempco, ultra-low noise	3.15
MAX6129_30	3	3.2 to 12.6	40, 100	0.4, 0.5	3.5	95	SOT23	E	Ultra-low power	0.55
MAX6133_30	3	3.2 to 12.6	3, 7	0.04, 0.1	80	24	µMAX, SO	A	Ultra-low drift	3.79
MAX6163	3	3.2 to 12.6	5, 10	0.07, 0.17	120	35	SO	E	5mA output, precision	2.00
MAX6193	3	3.2 to 12.6	5, 10, 25	0.07, 0.17, 0.33	35	75	SO	E	REF193 alternative	1.43
MAX6034_33	3.3	3.6 to 5.5	30, 75	0.2, 0.4	115	73	SC70	E	Low supply current	0.55
MAX6037_33	3.3	3.5 to 5.5	25, 65	0.2, 0.5	275	6	SOT23	A	Shutdown	0.85
MAX6043_33	3.3	5.3 to 40	3, 10	0.05, 0.1	490	4	SOT23	A	High voltage, low drift, precision	0.55
MAX6129_33	3.3	3.5 to 12.6	40, 100	0.4, 0.5	3.5	110	SOT23	E	Ultra-low power	0.55
MAX6143_33	3.3	5.3 to 40	8, 25, 65	0.1, 0.5	490	4	SO	A	High precision	2.59
MAX6177	3.3	3.5 to 40	3	0.06	450	3.8	SO	A	Temperature sensor	2.59

◇Temperature ranges: A = –40°C to +125°C, C = 0°C to +70°C,
E = –40°C to +85°C, M = –55°C to +125°C.

†1000-up piece price provided is for design guidance and is FOB USA. Lowest grade pricing. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

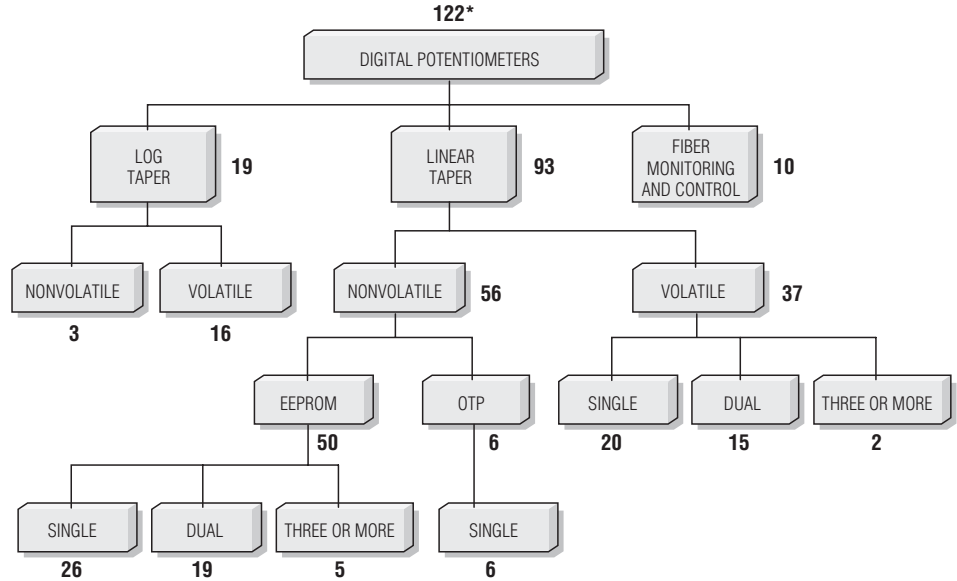# 3-terminal series references (continued)

Part	Output Voltage (V)	Supply-Voltage Range (V)	Temp Drift (ppm/°C, max)	Initial Accuracy, TA = +25°C (±%, max)	Quiescent Current (µA, max)	0.1Hz to 10Hz Noise (µVP-P)	Package	Temp Range◇	Features	Price† ($)
MAX6004	4.096	4.3 to 12.6	100	1	45	100	SOT23	E	Very low cost	0.40
MAX6023_41	4.096	4.3 to 12.6	30	0.2	35	100	UCSP	E	1mm x 1.5mm chip-scale package	1.50
MAX6033_41	4.096	4.3 to 12.6	10, 20	0.04, 0.08, 0.1	75	32	SOT23	A	10mA output current, ultra-low drift	1.45
MAX6034_41	4.096	4.3 to 5.5	30, 75	0.2, 0.4	115	90	SC70	E	Low supply current	0.55
MAX6037_41	4.096	4.3 to 5.5	25, 65	0.2, 0.5	275	6	SOT23	A	Shutdown	0.85
MAX6041	4.096	4.3 to 12.6	20, 30	0.2, 0.4	35	100	SOT23	E	Low power, low drift, low dropout	1.35
MAX6043_41	4.096	4.3 to 12.6	3, 10	0.05, 0.1	490	4	SOT23	A	High voltage, low drift, precision	0.55
MAX6064	4.096	6 to 40	20, 30	0.2, 0.4	125	50	SOT23	E	5mA output, precision	1.35
MAX6104	4.096	4.3 to 12.6	75	0.4	150	50	SOT23	E	Low cost, precision	0.33
MAX6126_41	4.096	4.3 to 12.6	3, 5, 7	0.02, 0.06, 0.1	550	2.4	µMAX, SO	A	3ppm/°C tempco, ultra-low noise	3.15
MAX6129_41	4.096	4.3 to 12.6	40, 100	0.4, 0.5	4	130	SOT23	E	Ultra-low power	0.55
MAX6133_41	4.096	4.3 to 12.6	3, 7	0.04, 0.1	80	32	µMAX, SO	A	Ultra-low drift	3.79
MAX6141	4.096	4.3 to 12.6	50	1	105	25	SOT23, SO	E	Low cost, low dropout	0.95
MAX6143_41	4.096	6 to 40	8, 25, 65	0.1, 0.5	490	4	SO	A	High precision	2.59
MAX6164	4.096	4.3 to 12.6	5, 10	0.05, 0.12	120	50	SO	E	5mA output, precision	2.00
MAX6174	4.096	4.3 to 40	3	0.06	450	3.8	SO	A	Temperature sensor	2.59
MAX6198	4.096	4.3 to 12.6	5, 10, 25	0.05, 0.12, 0.24	35	100	SO	E	REF198 alternative	1.45
MAX6220_41	4.096	8 to 40	20	0.1	3.5mA	1.5	SO	A	-40°C to +125°C, 15mA output	1.60
MAX6241	4.096	8 to 36	3, 5	0.02, 0.1	2.9mA	2.4	DIP, SO, CERDIP	C, E, M	Low drift, 2.4µVP-P output noise	2.25
MAX6341	4.096	8 to 36	1	0.02	2.9mA	2.4	DIP, SO, CERDIP	C, E, M	Ultra-low drift, 2.4µVP-P output noise	6.70
MAX6023_45	4.5	4.7 to 12.6	30	0.2	35	110	UCSP	E	1mm x 1.5mm chip-scale package	1.50
MAX6045	4.5	4.7 to 12.6	20, 30	0.2, 0.4	35	110	SOT23	E	Low power, low drift, low dropout	1.35
MAX6067	4.5	4.7 to 12.6	20, 30	0.2, 0.4	125	55	SOT23	E	5mA output, precision	1.35
MAX6107	4.5	4.7 to 12.6	55	0.4	150	55	SOT23	E	Low cost, precision	0.33
MAX6145	4.5	4.7 to 12.6	50	1	105	30	SOT23, SO	E	Low cost, low dropout	0.95
MAX6167	4.5	4.7 to 12.6	5, 10	0.04, 0.1	120	55	SO	E	5mA output, precision	2.00
MAX6194	4.5	4.7 to 12.6	5, 10, 25	0.04, 0.1, 0.2	35	110	SO	E	REF194 alternative	1.45
MAX875	5	7 to 18	7, 20	0.04, 0.06	280	32	DIP, SO	C, E	Low power, low drift	2.10
MAX6005	5	5.2 to 12.6	100	1	45	120	SOT23	E	Very low cost	0.40
MAX6023_50	5	5.2 to 12.6	30	0.2	35	120	UCSP	E	1mm x 1.5mm chip-scale package	1.50
MAX6033_50	5	5.2 to 12.6	10, 20	0.04, 0.08, 0.1	75	40	SOT23	A	10mA output current, ultra-low drift	1.45
MAX6035_50	5	6.9 to 33	20, 65	0.2, 0.5	s95	68	SOT23	A	Up to 33V high supply voltage	0.65
MAX6043_50	5	7 to 40	3, 10	0.05, 0.1	490	4	SOT23	A	High voltage, low drift, precision	0.55
MAX6050	5	5.2 to 12.6	20, 30	0.2, 0.4	35	120	SOT23	E	Low power, low drift, low dropout	1.35
MAX6065	5	5.2 to 12.6	20, 30	0.2, 0.4	125	60	SOT23	E	5mA output, precision	1.35
MAX6105	5	5.2 to 12.6	75	0.4	150	60	SOT23	E	Low cost, precision	0.33
MAX6126_50	5	5.2 to 12.6	3, 5, 7	0.02, 0.06, 0.1	550	2.85	µMAX, SO	A	3ppm/°C tempco, ultra-low noise	3.15
MAX6129_50	5	5.2 to 12.6	40, 100	0.4, 0.5	5	160	SOT23	E	Ultra-low power	0.55
MAX6133_50	5	5.2 to 12.6	3, 7	0.04, 0.1	80	40	µMAX, SO	A	Ultra-low drift	3.79
MAX6143_50	5	7 to 40	8, 25, 65	0.1, 0.5	490	4	SO	A	High voltage, precision	2.59
MAX6150	5	5.2 to 12.6	50	1	110	35	SOT23, SO	E	Low cost, low dropout	0.95
MAX6165	5	5.2 to 12.6	5, 10	0.04, 0.1	120	60	SO	E	5mA output, precision	2.50
MAX6175	5	5.2 to 40	3	0.06	450	3.8	SO	A	Temperature sensor	2.59
MAX6195	5	5.2 to 12.6	5, 10, 25	0.04, 0.1, 0.2	35	120	SO	E	REF195 alternative	1.45
MAX6220_50	5	8 to 40	20	0.1	3.7mA	1.5	SO	A	-40°C to +125°C, 15mA output	1.60
MAX6250	5	8 to 36	3, 5	0.02, 0.1	3mA	3	DIP, SO, CERDIP	C, E, M	Low drift, 3.0µVP-P output noise	2.25
MAX6350	5	8 to 36	1	0.02	3mA	3	DIP, SO, CERDIP	C, E, M	Ultra-low drift, 3.0µVP-P output noise	6.70
MAX6043_10	10	12 to 40	3, 10	0.05, 0.1	490	4	SOT23	A	High voltage, low drift, precision	0.55
MAX6143_10	10	12 to 40	8, 25, 65	0.1, 0.5	490	4	SO	A	High precision	2.59
MAX6176	10	12 to 40	3	0.06	450	3.8	SO	A	Temperature sensor	2.59

◇Temperature ranges: A = -40°C to +125°C, C = 0°C to +70°C, E = -40°C to +85°C, M = -55°C to +125°C.

†1000-up piece price provided is for design guidance and is FOB USA. Lowest grade pricing. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

High-performance digital potentiometers

Maxim offers over 122 high-performance digital potentiometers. These potentiometers are optimized for applications, including adjustable voltage references and programmable gain amplifiers (PGAs), that require digitally controlled resistors for gain adjustment, volume control, and other circuit configurations.
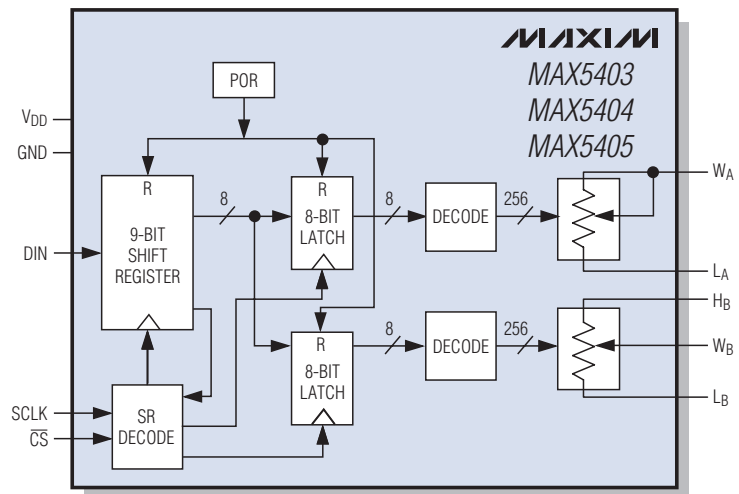
- **32 to 1024 steps**
- **Single, dual, triple, and quad channels**
- **Optimized to adjust currents and voltages for**
  - **LCD/LED contrast**
  - **Volume control**
  - **Servo-motor control**
  - **Industrial actuator control**
  - **Programmable power supply**
  - **Mechanical potentiometer replacement**

122*

DIGITAL POTENTIOMETERS

- LOG TAPER — **19**
  - NONVOLATILE — **3**
  - VOLATILE — **16**
- LINEAR TAPER — **93**
  - NONVOLATILE — **56**
    - EEPROM — **50**
      - SINGLE — **26**
      - DUAL — **19**
      - THREE OR MORE — **5**
    - OTP — **6**
      - SINGLE — **6**
  - VOLATILE — **37**
    - SINGLE — **20**
    - DUAL — **15**
    - THREE OR MORE — **2**
- FIBER MONITORING AND CONTROL — **10**

Industry's smallest, dual, 256-tap, low-drift digital potentiometers

The MAX5403/MAX5404/MAX5405 are dual linear taper digital potentiometers, each with one 3-terminal potentiometer and one 2-terminal variable resistor. These devices provide glitchless switching between resistor taps, as well as a convenient power-on reset (POR) that sets the wiper to the midscale position at power-up. They perform the same function as a discrete potentiometer or variable resistor.

- **3mm x 5mm, 10-pin µMAX package**
- **Ultra-low 0.1µA supply current**
- **2.7V to 5.5V single-supply operation**
- **Low 35ppm/°C end-to-end temperature coefficient**
- **Low 5ppm/°C ratiometric temperature coefficient**
- **3-wire, SPI-compatible interface**
- **10kΩ/50kΩ/100kΩ resistor values**

MAXIM
MAX5403
MAX5404
MAX5405

POR

V_{DD}
GND
DIN
SCLK
$\overline{CS}$

R
9-BIT SHIFT REGISTER

SR DECODE

R 8-BIT LATCH
R 8-BIT LATCH

8
8
8

DECODE
DECODE

256
256

W_A
L_A
H_B
W_B
L_B

www.maxim-ic.com/digipots

*Root part numbers.

MAXIM

Part	Smallest Package	Tap Positions	DigiPots	Resistor Taper	Supply Voltage (V)	End-to-End Resistor Values (kΩ)	NV*	Features	Digital Interface	Price† ($)
SINGLE										
DS1866	8-SO	8	1	Log	2.7 to 5.5	10		Low-cost trimming or volume control	3-wire	1.08
DS4301	8-μSOP	32	1	Linear	2.4 to 5.5	200	✓	Low cost, NV	Up/down	0.60
MAX5407	8-SOT23	32	1	Log	2.7 to 5.5	20		SOT-PoT™	Up/down	0.79
MAX5160	8-μMAX	32	1	Linear	2.7 to 5.5	50, 100, 200		Ideal for LCD screen adjustment, volume control, and mechanical pot replacement	Up/down	0.68
MAX5161	6-SOT23	32	1	Linear	2.7 to 5.5	50, 100, 200		SOT-PoT	Up/down	0.68
MAX5427/28/29	16-QFN	32	1	Linear	2.7 to 5.5	100/50/10	✓	One-time programmable	Up/down	0.69
MAX5432/33	8-TDFN	32	1	Linear	2.7 to 5.5	50/100	✓	I²C voltage-divider, EEPROM	I²C	0.63
MAX5434/35	6-SOT23	32	1	Linear	2.7 to 5.5	50/100	✓	I²C variable resistor, EEPROM	I²C	0.63
MAX5460/61/62	5-/6-/6-SC70	32	1	Linear	2.7 to 5.5	100		Low-cost FleaPoT™	Up/down	0.57/0.56/0.56
MAX5463/64/65	5-/6-/6-SC70	32	1	Linear	2.7 to 5.5	50		Low-cost FleaPoT	Up/down	0.57/0.56/0.56
MAX5466/67/68	5-/6-/6-SOT23	32	1	Linear	2.7 to 5.5	50		Low-cost SOT-PoT	Up/down	0.68
MAX5471/72	6-SOT23	32	1	Linear	2.7 to 5.5	50/100	✓	EEPROM	Up/down	0.53
MAX5474/75	8-SOT23	32	1	Linear	2.7 to 5.5	50/100	✓	EEPROM	Up/down	0.57
DS1669	8-SO	64	1	Linear	+4 to +8	10, 50, 100	✓	Replaces mechanical variable resistors	Up/down	2.48
DS1809	8-μSOP	64	1	Linear	4.5 to 5.5	10, 50, 100	✓	Digital or pushbutton control	Up/down	1.27
DS1869	8-SO	64	1	Linear	±2.7 to +8	10, 50, 100	✓	Replaces mechanical variable resistors	Up/down	2.10
MAX5527/28/29	8-TDFN	64	1	Linear	2.7 to 5.5	100/50/10	✓	One-time programmable	Up/down	0.70
DS1804	8-μSOP	100	1	Linear	2.7 to 5.5	10, 50, 100	✓	Low cost, NV	Up/down	1.29
DS1666	16-SO	128	1	Log	+4.5 to ±5.5	10, 50, 100	✓	Suitable for audio applications	Up/down	1.71
DS3501	10-μMAX	128	1	Linear	2.7 to 5.5	10	✓	0 to 15V pot terminals with internal temp compensation	I²C	0.50
MAX5128	8-μDFN	128	1	Linear	2.7 to 5.25	20	✓	2mm x 2mm, NV	Up/down	0.68
MAX5436/38	10-μMAX	128	1	Linear	±15, +30	50/100		High voltage	SPI	2.49
MAX5437/39	14-TSSOP	128	1	Linear	±15, +30	50/100		High voltage, on-chip amplifier	SPI	3.24
DS1805	14-TSSOP	256	1	Linear	2.7 to 5.5	10, 50, 100		Low cost, multidroppable	Up/down	1.15
DS2890	CSP	256	1	Linear	2.8 to 6	100		1-Wire interface	2-Wire®	1.44
MAX5400/01	8-SOT23	256	1	Linear	2.7 to 5.5	100, 50		SOT-PoT™	1-Wire®	0.90
MAX5402	8-μMAX	256	1	Linear	2.7 to 5.5	10		μPoT™	SPI	0.90
MAX5417/18/19	8-TDFN	256	1	Linear	2.7 to 5.25	50/100/200	✓	I²C, 256-tap, single pot in TDFN	I²C	1.25
MAX5422/23/24	8-TDFN	256	1	Linear	2.7 to 5.25	50/100/200	✓	SPI, 256-tap, single pot in TDFN	SPI	1.25
DUAL										
DS1808	16-SO	32	2	Log	+4.5 to ±13.2	45		High-voltage dual supply with mute position	2-wire	2.36
MAX5406	48-TSSOP	32	2	Log	2.7 to 5.25, ±2.7	10		Volume, tone, and balance control plus subwoofer output	Up/down	2.17
MAX5408	16-QFN	32	2	Log	2.7 to 3.6	10		One wiper per resistor	SPI	1.55
MAX5409	16-QFN	32	2	Log	2.7 to 3.6	10		Dual wipers per resistor	SPI	2.11
MAX5410	16-QFN	32	2	Log	4.5 to 5.5	10		One wiper per resistor	SPI	1.55
MAX5411	16-QFN	32	2	Log	4.5 to 5.5	10		Dual wipers per resistor	SPI	2.11
MAX5456/57	16-QFN	32	2	Log	2.7 to 5.25, ±2.7	10		4-wire/3-wire, debounced pushbutton interface	Up + down	1.47
MAX5440	24-SSOP	32	2	Log	2.5 to 5.25, ±2.7	40		Rotary-encoder volume control with buffered outputs	Rotary	1.47
MAX5486	24-TSSOP	32	2	Log	2.7 to 5.5, ±2.7	40		Stereo volume and balance control with buffered output	Up + down	1.57
DS1881	16-TSSOP	32/63	2	Log	0 to 5	45	✓	Configurable NV, low-noise, low-distortion audio control	I²C	0.95
DS1882	16-TSSOP	32/63	2	Log	±7	45	✓	Configurable NV, low-noise, low-distortion audio control	I²C	1.16
DS1801	14-TSSOP	65	2	Log	2.7 to 5.5	45		Zero-crossing detection eliminates noise caused by wiper movement	3-wire	2.75
DS3908	14-TDFN	64	2	Linear	3 to 5.5	100	✓	Programmable-gain output	I²C	0.79
DS1802	20-TSSOP	65	2	Log	2.7 to 5.5	45		Zero-crossing detection eliminates noise caused by wiper movement	3-wire or pushbutton	3.50
DS1807	14-TSSOP	65	2	Log	2.7 to 5.5	45		Zero-crossing detection eliminates noise caused by wiper movement	2-wire	2.75
DS1855	4 x 4 BGA	100/256	2	Linear	2.7 to 5.5	10/10 or 10/50	✓	NV, 256-byte EEPROM	2-wire	1.78

SOT-PoT, FleaPoT, and μPoT are trademarks of Maxim Integrated Products, Inc.
1-Wire is a registered trademark of Maxim Integrated Products, Inc.
*Nonvolatile.

†1000-up prices provided are for design guidance and are for the lowest grade commercial temperature parts (FOB USA). International prices will differ due to local duties, taxes, and exchange rates. Prices are subject to change. Not all packages are offered in 1k piece increments, and some may require minimum order quantities.

Digital potentiometers (continued)

Part	Smallest Package	Tap Positions	DigiPots	Resistor Taper	Supply Voltage (V)	End-to-End Resistor Values (kΩ)	Digital Interface	NV*	Features	Price† ($)
DUAL (CONTINUED)										
DS1845	4 x 4 BGA	100/256	2	Linear	2.7 to 5.5	10/10, 10/50, 10/100	2-wire	✓	Highly integrated, optimized for pluggable optical transceivers; EEPROM	1.78
DS1267	20-TSSOP	256	2	Linear	+4.5 to ±5.5	10, 50, 100	3-wire		Ultra-low power consumption; quiet pumpless design	3.72
DS1803	14-TSSOP	256	2	Linear	2.7 to 5.5	10, 50, 100	2-wire		Dual-pot version of DS1805	2.28
DS1867	20-TSSOP	256	2	Linear	+4.5 to ±5.5	10, 50, 100	3-wire	✓	NV version of DS1267	3.62
DS1868	20-TSSOP	256	2	Linear	+2.7 to ±3.3	10, 50, 100	3-wire		Low-voltage version of DS1267	2.49
DS3902	8-µSOP	256	2	Linear	2.4 to 5.5	50/30, 50/15	I²C	✓	Dual, NV variable resistors with user EEPROM	0.70
MAX5403/04/05	10-µMAX	256	2	Linear	2.7 to 5.5	10/50/100	SPI		Ultra-small dual pot	1.25
MAX5413/14/15	14-TSSOP	256	2	Linear	2.7 to 5.5	10/50/100	SPI		Ultra-low power consumption	1.25
MAX5450/52/54	10-µMAX	256	2	Linear	2.7 to 5.5	10/50/100	Up/down		Up/down interface version of MAX5405/04/03	1.25
MAX5451/53/55	14-TSSOP	256	2	Linear	2.7 to 5.5	10/50/100	Up/down		Up/down interface version of MAX5415/14/13	1.25
MAX5477/78/79	12-TQFN	256	2	Linear	2.7 to 5.25	10/50/100	I²C	✓	I²C, 256-tap, dual pot in TDFN	1.60
MAX5487/88/89	12-TQFN	256	2	Linear	2.7 to 5.25	10/50/100	SPI	✓	SPI, 256-tap, dual pot in TDFN	1.60
DS3930	20-TSSOP	256	2 DACs	Linear	2.7 to 5.5	16.7	2-wire	✓	Two 3-output DACs, EEPROM, user I/Os	1.95
MAX5494/95	16-TDFN	1024	2	Linear	2.7 to 5.25	10/50	SPI	✓	Two voltage-dividers	3.60
MAX5496/97	16-TDFN	1024	2	Linear	2.7 to 5.25	10/50	SPI	✓	Two variable resistors	3.60
MAX5498/99	16-TDFN	1024	2	Linear	2.7 to 5.25	10/50	SPI	✓	One voltage-divider/one variable resistor	3.60
TRIPLE										
DS1846	20-TSSOP	100/256	3	Linear	2.7 to 5.5	2 x 10, 100	2-wire	✓	256-byte EEPROM, MicroMonitor™	2.43
DS3903	20-TSSOP	128	3	Linear	2.7 to 5.5	2 x 10, 90	2-wire	✓	Low-cost triple NV pot	0.95
DS3904/05	8-/10-µSOP	128	3	Linear	2.7 to 5.5	20	2-wire	✓	Three NV resistors, one/three address pin(s)	0.70/0.75
DS3906	10-µSOP	128	3	Pseudo-log	2.7 to 5.5	2 x 2.5, 1.4	2-wire	✓	Optimized for use with external parallel resistors to provide linear ohm and/or sub-ohm step sizes	1.27
DS3901	14-TSSOP	256	3	Linear	2.4 to 5.5	20, 30, 50	I²C	✓	Dual NV settings for each pot, write protection, programmable address, 232 bytes user EEPROM	0.88
QUAD										
DS1844	20-TSSOP	64	4	Linear	2.7 to 5.5	10, 50, 100	2-wire		Ideal for applications requiring multiple controls	2.33
SEXTET										
DS1806	20-TSSOP	64	6	Linear	2.7 to 5.5	10, 50, 100	3-wire		Daisy-chain capability	4.37
SPECIALTY										
DS1847/48	4 x 4 BGA	256	2	Linear	3.0 to 5.5	10, 50	2-wire	✓	Ideal for optical transceivers; temp sensor, NV lookup table, variable resistors, user EEPROM (DS1848)	2.16/2.37
DS1851	4 x 4 BGA	256	2	Linear	3.0 to 5.5	—	—	✓	Ideal for optical transceivers; temp sensor, NV lookup table, 8-bit DAC	1.73
DS1854	4 x 4 BGA	256	2	Linear	3.0 to 5.5	50	2-wire	✓	Temp-controlled resistors, ADC, 256-byte EEPROM	2.53
DS1856	4 x 4 BGA	256	2	Linear	2.8 to 5.5	50/50	2-wire	✓	Temp-controlled resistors, ADC, 256-byte EEPROM	2.53
DS1857/58	4 x 4 BGA	256	2	Linear	3.0 to 5.5	50	2-wire	✓	Temp-controlled resistors, ADC, 256-byte EEPROM	2.53
DS1859	4 x 4 BGA	256	2	Linear	2.85 to 5.5	2 x 50 or 2 x 20	I²C	✓	Temp-controlled resistors, 256-byte EEPROM, ADC with internal calibration	2.53
DS1870	16-TSSOP	256	2	Linear	4.5 to 5.5	13	I²C	✓	LDMOS RF power-amplifier bias controller	3.72
DS1863/65	16-TSSOP/ 28-TQFN	—	1 DAC/ 3 DACs	Linear	3.3, 5	—	I²C	✓	User EEPROM, complies with or compatible to SFF-8472, scalable dynamic ranging (right shifting), maskable laser shutdown, alarm/warning flags, internal calibration, lookup table compensation	1.83/2.34
DS1862/64	25-CSBGA/ 28-TQFN	—	1 DAC/ 2 DACs	Linear	3.3, 5	—	I²C, 2-wire (DS1862)	✓	User EEPROM, scalable dynamic ranging (right shifting), alarm/warning flags, internal calibration, lookup table compensation	1.83
DS1852	25-CSBGA	—	—	Linear	3.3, 3, 5	—	2-wire	✓	User EEPROM, complies with or compatible to SFF-8472, external calibration, alarm/warning flags, internal calibration	2.55

†1000-up prices provided are for design guidance and are for the lowest grade commercial temperature parts (FOB USA). International prices will differ due to local duties, taxes, and exchange rates. Prices are subject to change. Not all packages are offered in 1k piece increments, and some may require minimum order quantities.

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*Nonvolatile.

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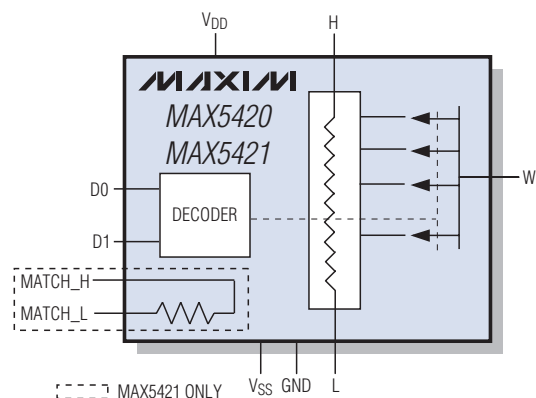
Programmable resistor-dividers

Part	Smallest Available Package	Tap Positions	DigiPots	Supply Voltage (V)	End-to-End Resistor Values (kΩ)	Digital Interface	NV*	Features	Temp Range◇	Price† ($)
MAX5420	8-µMAX	4	1	2.7 to 5.5	15	2-wire parallel		Precision voltage-divider for PGAs; provides noninverting gains of 1, 2, 4, and 8; gain accuracy guaranteed to 0.025%	E	1.26
MAX5421	10-µMAX	4	1	2.7 to 5.5	15	2-wire parallel		Precision voltage-divider for PGAs; provides noninverting gains of 1, 2, 4, and 8; accurate to ±0.025%; includes matching resistor for op amp, input-bias current compensation	E	1.43
MAX5430	8-SOT23	4	1	±12 to ±15	57	2-wire parallel		Precision voltage-divider for PGAs; provides noninverting gains of 1, 2, 4, and 8; accurate to ±0.025%	E	1.26
MAX5431	10-µMAX	4	1	±12 to ±15	57	2-wire parallel		Precision voltage-divider for PGAs; provides noninverting gains of 1, 2, 4, and 8; accurate to ±0.025%; includes matching resistor for op amp, input-bias current compensation	E	1.43
MAX5426	14-TSSOP	4	1	±5 to ±15	—	2-wire parallel		Digitally controlled precision-resistor network for programmable instrumentation amplifiers in three-op-amp configuration; provides gains of 1, 2, 4, and 8; gains accurate to ±0.025%	E	1.40
MAX5490	5-SOT23	1	1	—	10	—		30V precision voltage-divider	M	0.67
MAX5491/92	3-SOT23	1	1	—	30/(10, 100)	—		45V/80V precision voltage-divider	M	0.67
DS4303	5-SOT23	—	—	2.4 to 3.6	—	—	✓	Voltage sample and infinite hold	E	0.39
DS4305	5-SOT23	—	—	4.0 to 5.5	—	—	✓	Voltage sample and infinite hold	A	0.39

*Nonvolatile.
◇Temperature ranges: A = -40°C to +125°C, E = -45°C to +85°C, M = -55°C to +125°C.
†1000-up piece price provided is for design guidance and is FOB USA. Lowest grade pricing. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

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