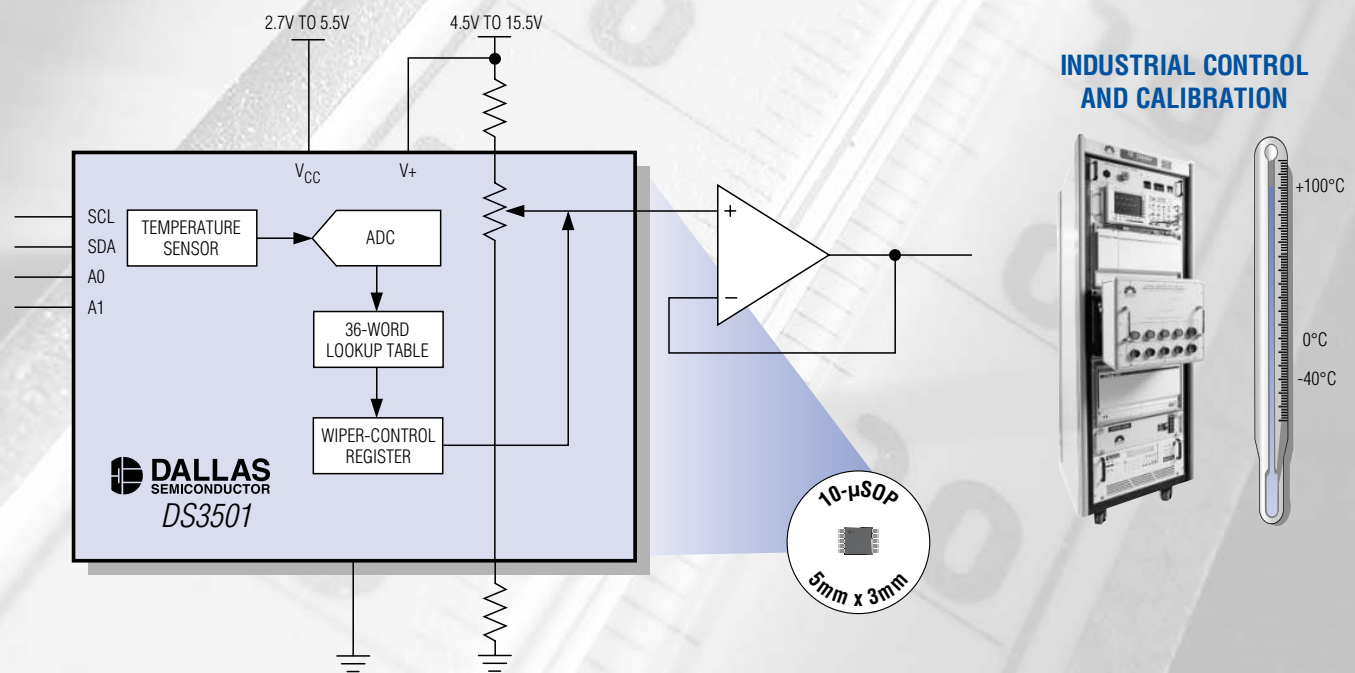


Industry's First High-Voltage Digital Potentiometer with Internal Temperature Compensation

High-Voltage Operation Reduces Component Requirements

The DS3501 provides temperature compensation to a high-voltage, 128-step digital potentiometer to eliminate temperature variability from industrial calibration and control applications.



INDUSTRIAL CONTROL
AND CALIBRATION

- Analog Bias Voltage Input for Wide Terminal-Voltage Operation from 4.5V to 15.5V
- 128 Wiper Steps (or 7-Bit Resolution)
- 10k Ω Full-Scale Resistances
- Temperature Adjustments at Approximately 3.9 $^{\circ}$ C Increments

- 36-Word EEPROM Lookup Table
- On-Chip Temperature Sensor and ADC
- I²C-Compatible Serial Interface
- -40 $^{\circ}$ C to +100 $^{\circ}$ C Operating Temperature
- Small, 10-Pin μ SOP

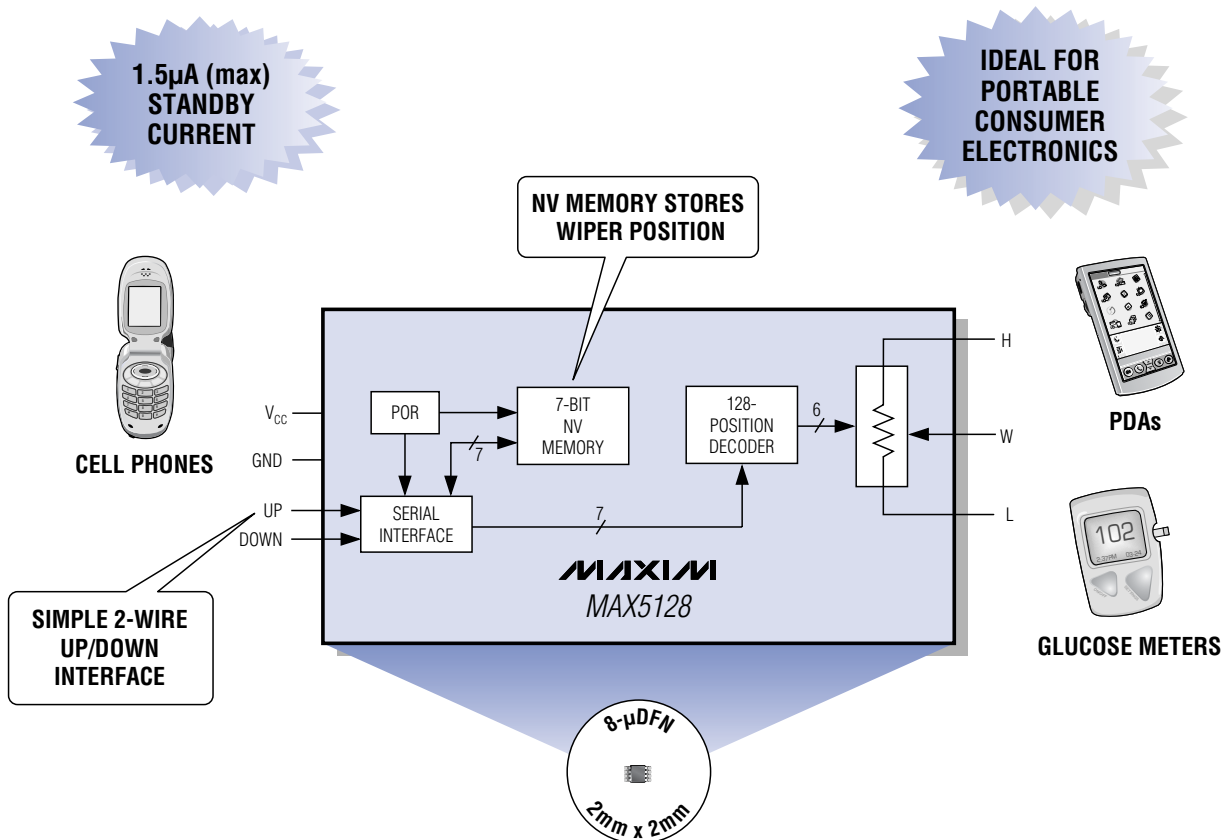
In This Issue

- Ultra-Small, Low-Cost Solutions
- Optical-Control Products

- Audio-Control Solutions
- High-Resolution Adjustment

Smallest 128-Tap, Nonvolatile Up/Down Digital Potentiometer

With an ultra-small, 2mm x 2mm μ DFN package, 1.5 μ A (max) standby supply current, and simple 2-wire up/down interface, the MAX5128 nonvolatile (NV) digital pot is ideal for use in portable consumer electronics. This device has 22k Ω end-to-end resistance and a 5ppm/ $^{\circ}$ C ratiometric temperature coefficient.



- Tiny, 2mm x 2mm μ DFN Package
- Wiper Position Stored in NV Memory and Recalled at Power-Up
- 22k Ω End-to-End Resistance
- 128 Tap Positions
- -40 $^{\circ}$ C to +85 $^{\circ}$ C Temperature Range
- 5ppm/ $^{\circ}$ C Ratiometric Temperature Coefficient
- 1.5 μ A (max) Standby Supply Current
- 2.7V to 5.25V Single-Supply Operation
- Pricing Starts at \$0.68 \dagger

For More Information on Maxim's Complete Line of Digital Pots,
Go to: www.maxim-ic.com/DigiPots

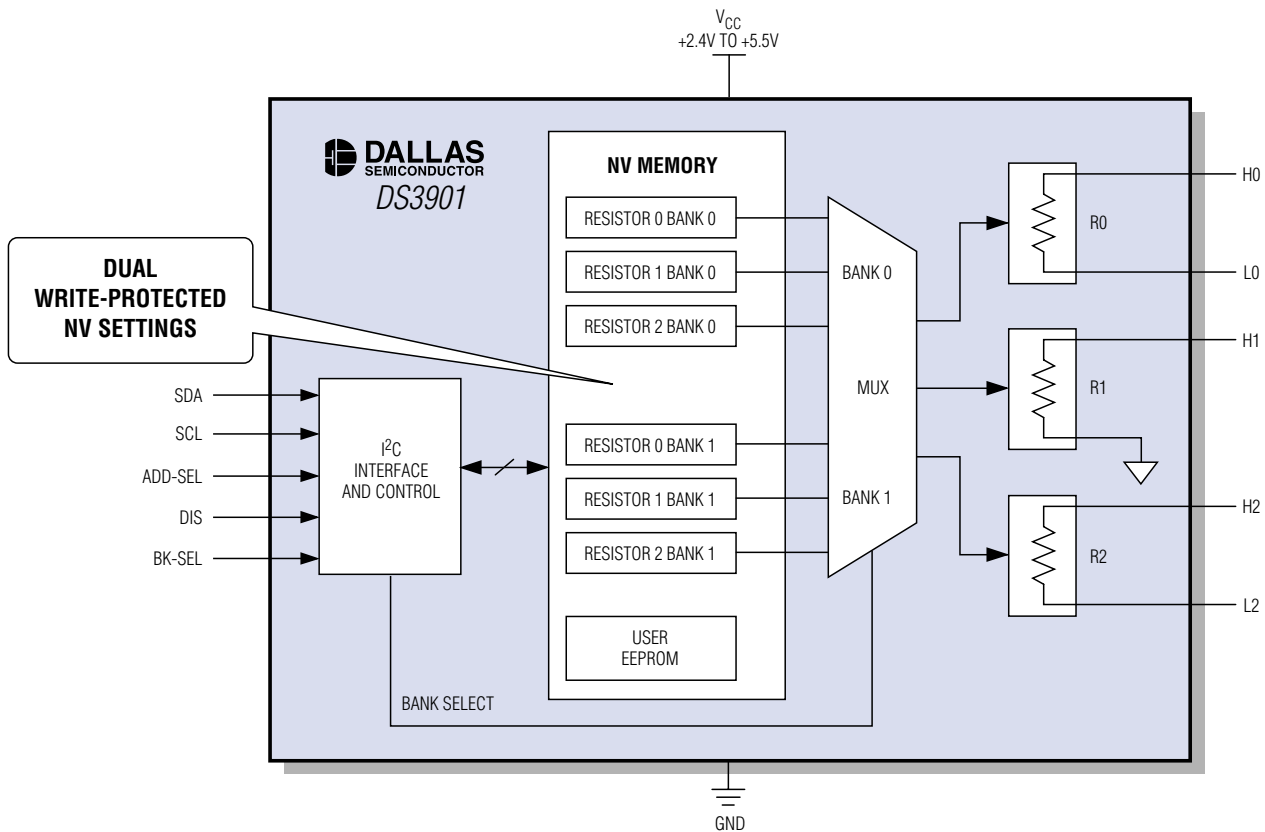
\dagger 1000-up recommended resale. Prices provided are for design guidance and are FOB USA. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.



Industry's First Variable Resistor with Dual NV Settings

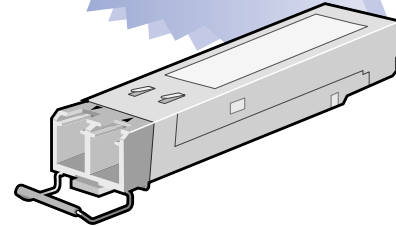
Enables Two Calibration Settings for Each Resistor

The DS3901 triple 8-bit, NV variable resistor is unique because each of its variable resistors can be programmed to two different NV settings. Toggling between the two values is then accomplished by software through the I²C interface or an input pin. This device is ideal for applications requiring two different factory calibrations for each variable resistor.



- **Three 256-Position Linear Digital Resistors**
 - 50kΩ, 30kΩ, and 20kΩ Full-Scale Resistances
 - Low 50ppm/°C, End-to-End Temperature Coefficient
- **Dual NV Settings for Each Resistor**
- **Two-Level Password Write Protection**
- **232 Bytes of User EEPROM**
- **I²C Serial Interface with Programmable Slave Address**
- **14-Pin TSSOP**

DUAL RESISTOR SETTINGS ENABLE DUAL OPERATING MODES FOR END APPLICATION



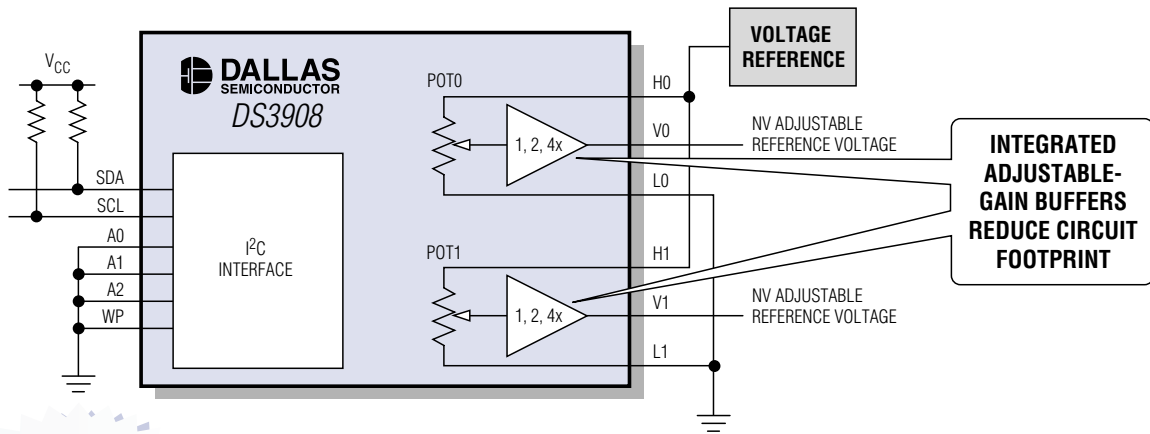
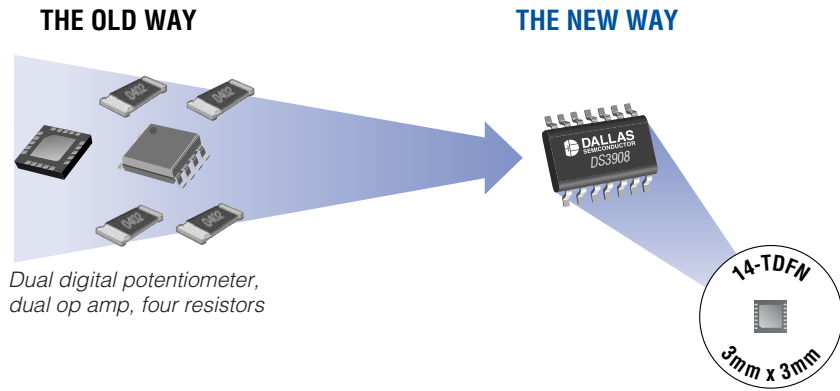
100Mbps/1Gbps Ethernet optical transceiver module requires that various transmit and receive parameters be calibrated differently for each mode of operation.



Dual Digital Potentiometer with Buffered Wipers Improves Output Linearity and Reduces Circuit Area

Eliminates External Op Amps

The DS3908 contains two 64-position NV digital pots with programmable-gain amplifiers that buffer the wiper outputs. The buffered wipers offer distinct advantages over standard digital pots by providing a high-impedance load for the pot and a low-impedance voltage output. This improves the linearity of the output voltage by eliminating changes in current through both the potentiometer and the wiper impedance.

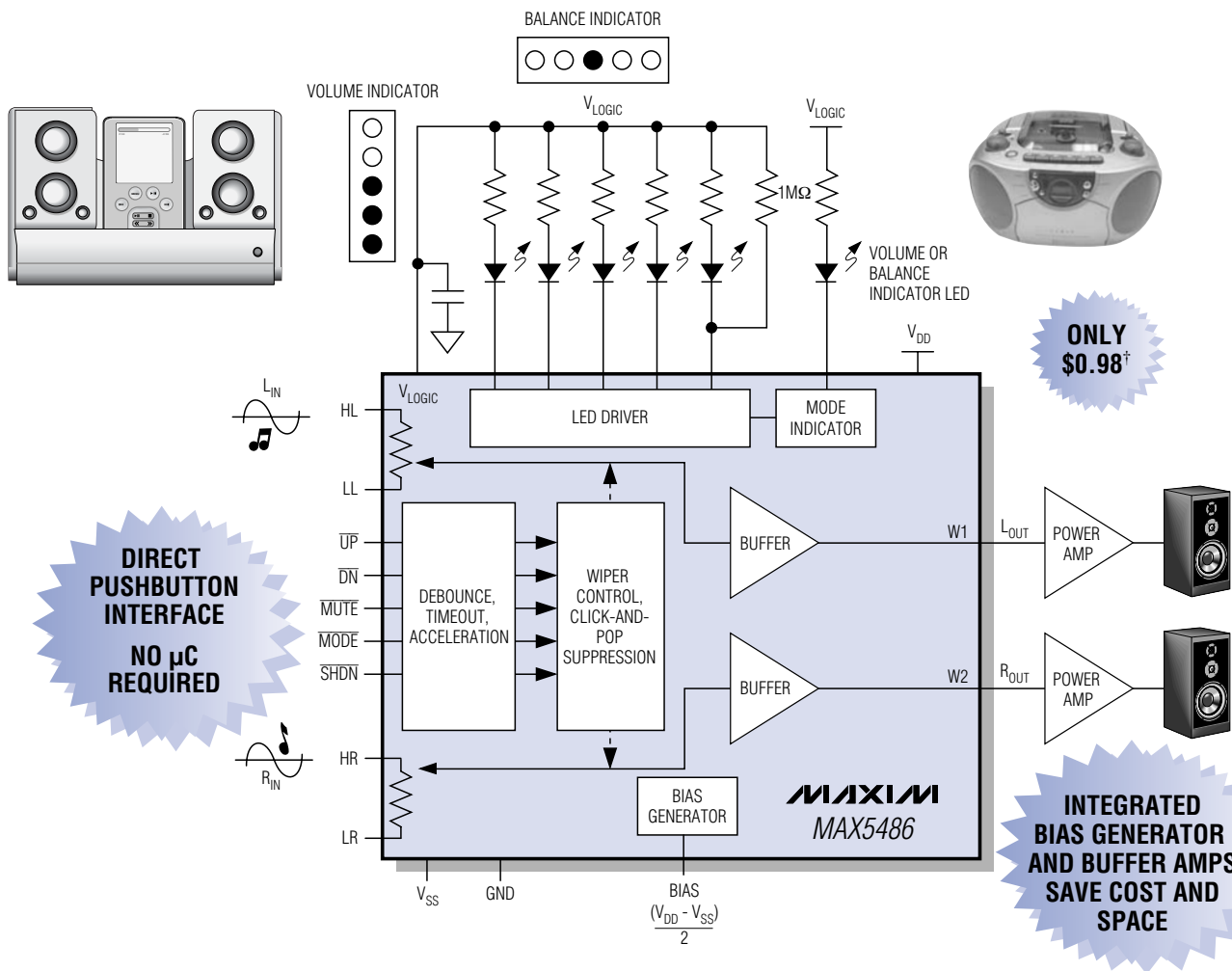


- Two NV, 64-Tap, Linear Taper Potentiometers
- Integrated Wiper-Buffering Amplifiers with Selectable Gains of 1, 2, or 4
- 100kΩ End-to-End Resistance
- Low 10ppm/°C Ratiometric Temperature Coefficient
- Up to Eight Devices on a Single I²C Bus
- +3V to +5.5V Supply Voltage Range
- 3mm x 3mm, 14-Pin TDFN Package

NEW Pushbutton Stereo Volume and Balance Controller Has 5-Segment LED Driver

Integration Saves Space, No μC Needed

The MAX5486 volume and balance controller features Maxim's proprietary enhanced SmartWiper™ architecture. SmartWiper eliminates the need for a μC by automatically advancing the wiper at a rate of 4Hz for presses between 250ms and 500ms, at a rate of 8Hz for presses between 500ms and 1s, and at a rate of 11Hz for presses > 1s.



- Debounced Pushbutton Interface Directly Controls Volume and Balance
- Integrated Low-Power Wiper Buffers Provide 0.003% THD+N
- SmartWiper Control with Accelerated Auto-Advance
- Clickless Switching
- Integrated Bias Generator
- 5-Segment LED Indicator Driver Provides Volume or Balance Level
- 32-Tap Log Taper with 2dB Step Size
- Power-On Reset to -12dBFS Wiper Position
- -90dB Mute

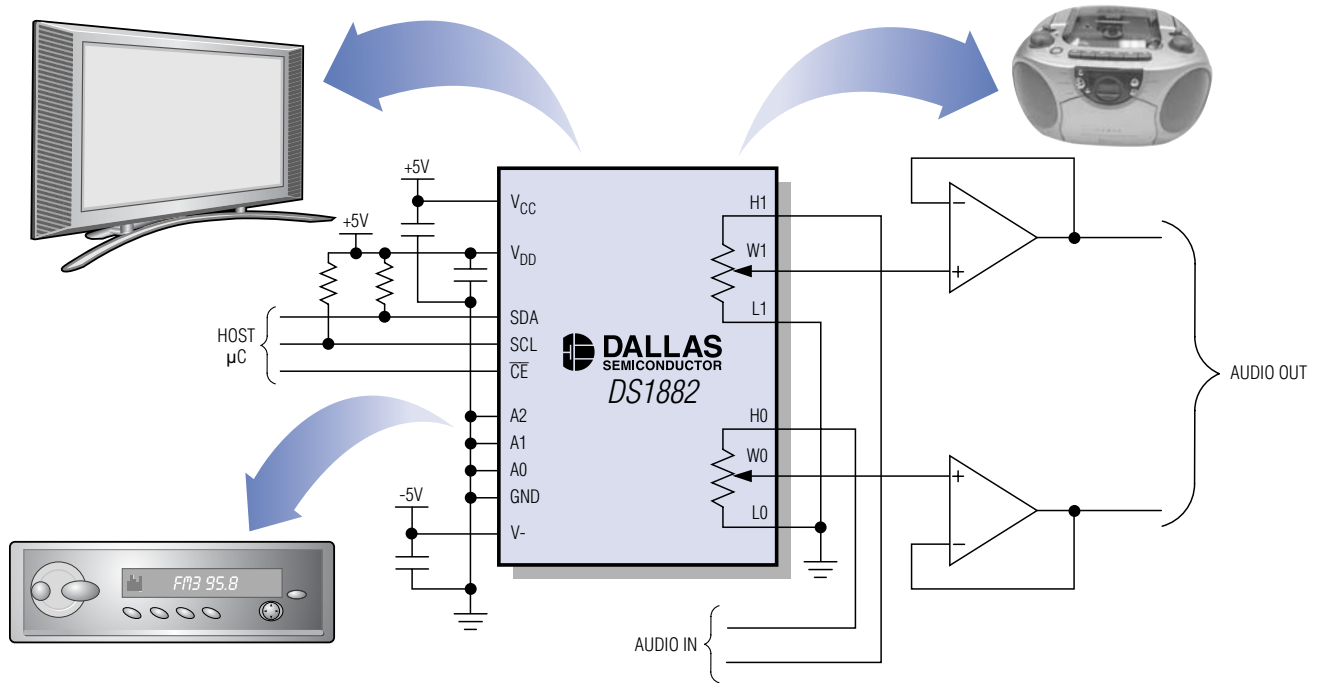
SmartWiper is a trademark of Maxim Integrated Products, Inc.

†1000-up recommended resale. Prices provided are for design guidance and are FOB USA. 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.

NEW

Dual NV Audio Potentiometers Provide Low-Noise, Low-Distortion Digital Volume Control

Available in Single (+5V) and Dual ($\pm 7V$) Supply Versions



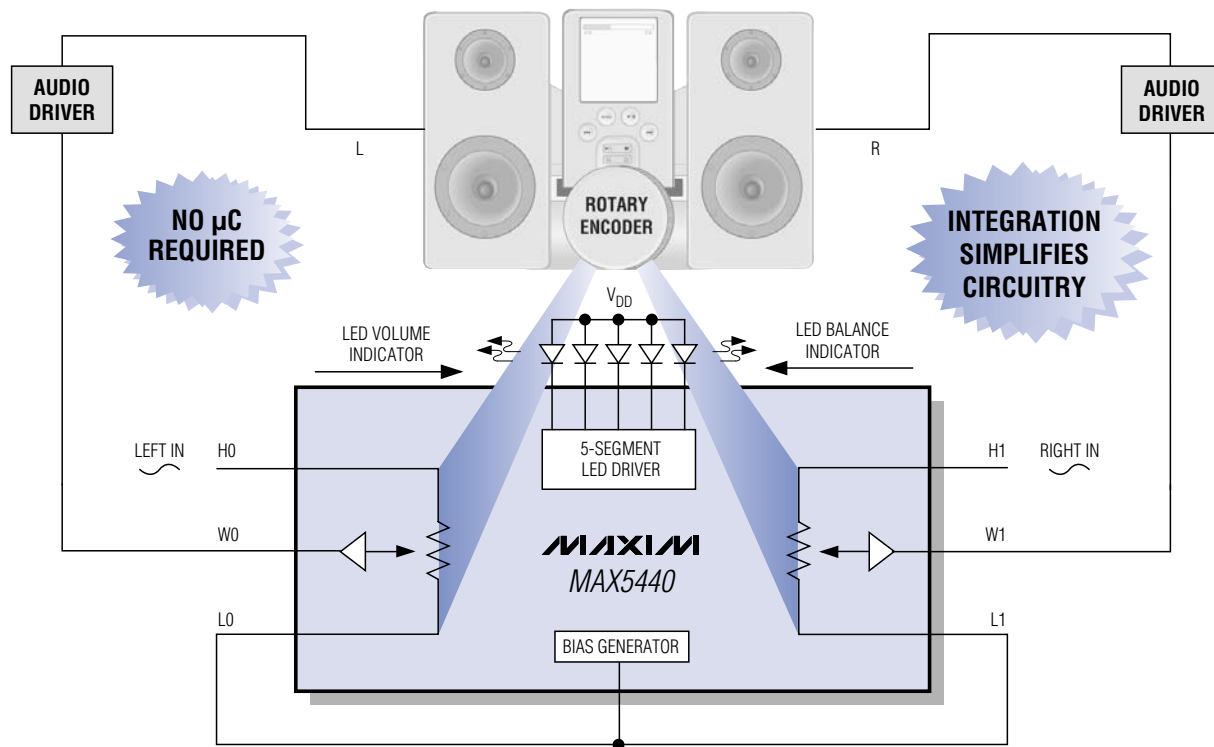
- **Two User-Configurable Attenuation Options**
 - 63 Positions + Mute (> 90dB) (1dB/Step from 0 to -62dB)
 - 32 Positions + Mute (> 90dB) (1dB/Step for 12 Steps, 2dB/Step for 12 Steps, and 3dB/Step for 8 Steps)
- **Dual Audio Taper Potentiometers**
- **Low THD+N (0.005%, typ) and Crosstalk (110dB, typ)**
- **NV Wiper Storage Option**
- **Zero-Crossing Detector Eliminates Switching Noise**
- **I²C-Compatible Serial Interface**
- **Three Address Pins Allow Up to Eight Devices on I²C Bus**
- **45k Ω Potentiometer End-to-End Resistance**
- **Available in Lead-Free Packages**
- **Pin Compatible with the DS1808**
- **Single +5V (DS1881) or Dual $\pm 7V$ (DS1882) Supply Versions**

Part	Analog Supply Range (V)	Temp Range ($^{\circ}C$)	Package	Price [†] (\$)
DS1881E-050+	0 to +5	-40 to +85	16-TSSOP	0.95
DS1881Z-050+	0 to +5		16-SO	0.95
DS1882E-050+	-7 to +7		16-TSSOP	1.16
DS1882Z-050+	-7 to +7		16-SO	1.16

[†]1000-up recommended resale. Prices provided are for design guidance and are FOB USA. 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.

Rotary-Encoder IC Controls Volume and Balance Without μC

Integrated Bias Generator and Buffered Outputs Save Op Amps



**Ideal for Stereo Desktop Speakers, Docking Stations,
Set-Top Boxes, and Other Consumer Audio Products**

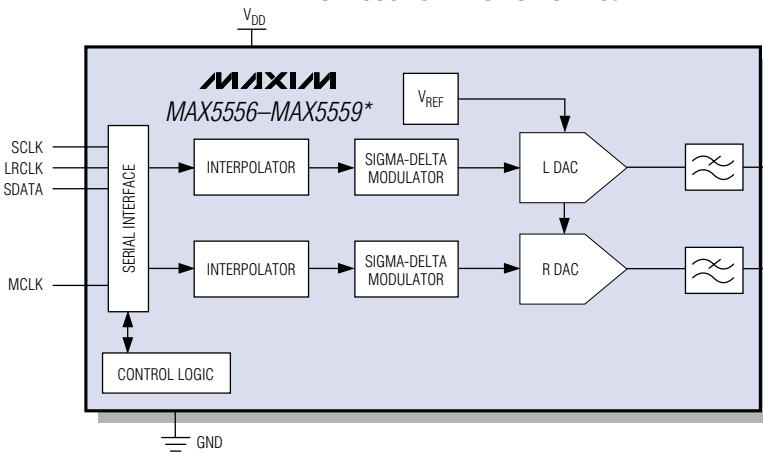
- Debounced Rotary-Encoder Interface Directly Controls Volume and Balance
- Integrated Low-Power Wiper Buffers Provide $< 0.003\%$ THD
- Clickless Switching
- 5-Segment LED Setting Indicator Shows Volume or Balance Level
- 32-Tap Audio Taper
- -90dB Mute
- -12dB Power-On Reset

For More Information About the MAX5440,
Go to: www.maxim-ic.com/MAX5440

Highly Integrated

Premium Products for Set-Top Boxes, LCD Monitors/TVs, Automotive

LOW-COST STEREO AUDIO DACS



MAX5556-MAX5559* Are Direct Upgrades to CS4334/5/8/9

- Line-Level Outputs Swing $3.5V_{P,P}$ (typ) with $10k\Omega$ Load
- THD+N > -87dBc, 87dB Dynamic Range
- Sigma-Delta Stereo DACs with Built-In Interpolation and Analog Output Filters
- Output Muted During Loss of Clock; Glitch-Free Return to Normal Operation When Clock Is Restored
- Click-/Pop-Free Power-Up and Power-Down
- Operation with $f_s = 2kHz$ to $48kHz$ from an MCLK Up to $25MHz$
- Automatic Detection of Clock Divisor (MCLK/LRCLK)

CLICK-/POP-FREE GLITCHLESS OPERATION

IDEAL FOR AUTOMOTIVE MULTIMEDIA AND SET-TOP BOXES



Multiple Interface DACs

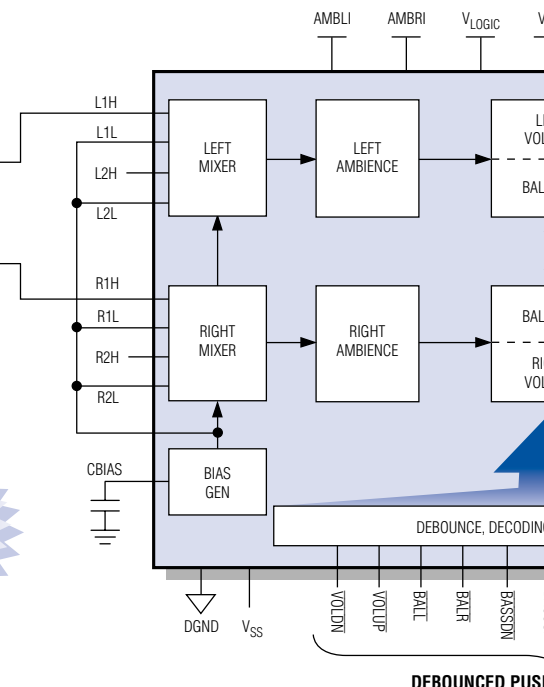
Part	Interface	Temp Range (°C)	Package	Price†(\$)
MAX5556	16-bit to 24-bit I ² S	-40 to +85	8-SO	0.99
MAX5557*	16-bit to 24-bit, left justified			
MAX5558*	16-bit, right justified			
MAX5559*	18-bit, right justified			

SPI is a trademark of Motorola, Inc.

*Future product—contact factory for availability.

†1000-up recommended resale. Prices provided are for design guidance and are FOB USA. 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.

ENHANCED AUDIO



MAX5406 Stereo

- SmartWiper Circuitry Automatically Controls Rate of Wiper Advance
- 21-Tap Bass and Treble Controls with $\pm 10dB$ Adjustments
- Bass-Boost Mode and Subwoofer Control
- Ambience and Pseudostereo Features
- Debounced Pushbutton Interface with Momentary Switches or μC s

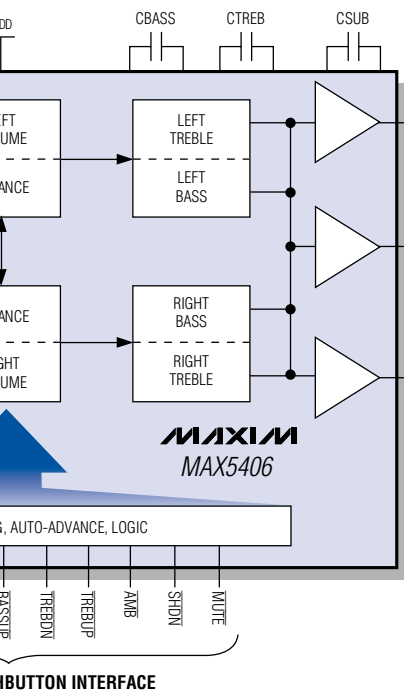
Audio C

Part	Description	Control Interface
MAX5406	Pushbutton audio processor	Debounced pushbutton up and down
MAX5407	Stereo audio digital pot	Direction and clock
MAX5408/10	Stereo audio digital pot	3-wire serial, SPI™
MAX5409/11	Stereo audio digital pot	3-wire serial, SPI
MAX5440	Stereo volume control with rotary-encoder interface	Rotary encoder
MAX5456/57	Stereo audio digital pot volume/balance with pushbutton interface	Debounced pushbutton up and down
MAX5486	Stereo volume/balance control with pushbutton interface	Debounced pushbutton up and down

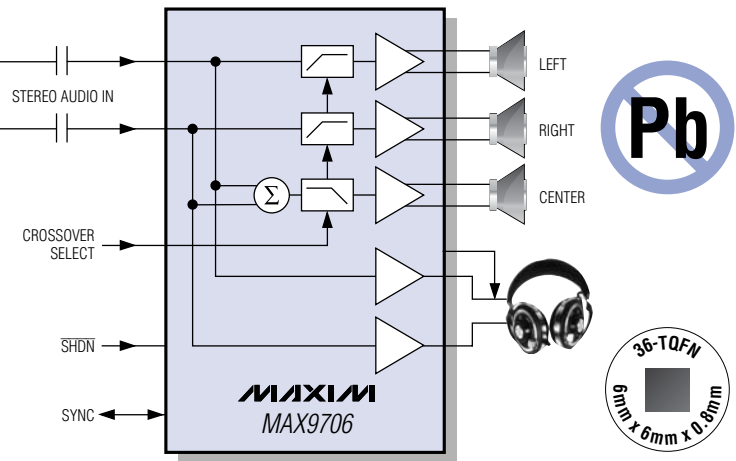
Audio Solutions

Multimedia, Docking Stations, and Portable Consumer Electronics

AUDIO CONTROLLER



INTEGRATED SPEAKER AMPLIFIER



MAX9706 Triple Class-D Amplifiers

- Deliver 3 x 2.4W into 4Ω
- Internal Active Filter with Adjustable Crossover Frequency
- Enhanced Click-and-Pop Suppression
- Low-EMI, Spread-Spectrum Modulation
- 90% Efficiency
- High 75dB PSRR
- Low 0.1% THD+N

Audio Processor

- 32-Tap Volume Control in 2dB Steps plus Mute
- Low 0.01% THD+N
- Low -70dB Crosstalk
- Built-In Passive RF-Rejection Filters
- Single +2.7V to +5.5V or Dual ±2.7V Operation



IDEAL FOR NOTEBOOK PC, LCD MONITOR, LCD TV, AND PORTABLE DVD APPLICATIONS



Controllers

End-to-End Resistance (kΩ)	Special Features	Package (mm x mm)
—	Subwoofer output, volume, balance, ambience, and tone control	48-TSSOP (12.5 x 8)
20	—	8-SOT23 (3 x 3)
10	—	16-QSOP/QFN (4 x 4)
10	Dual wipers per resistor string	16-QSOP/QFN (4 x 4)
—	5-segment LED volume/balance indicator driver	24-SSOP (8 x 8)
10	Volume and balance control	16-QSOP (5 x 6)
40	Buffered wipers provide 0.003% THD+N and 5-segment LED volume/balance indicator driver	24-TSSOP (6 x 8)

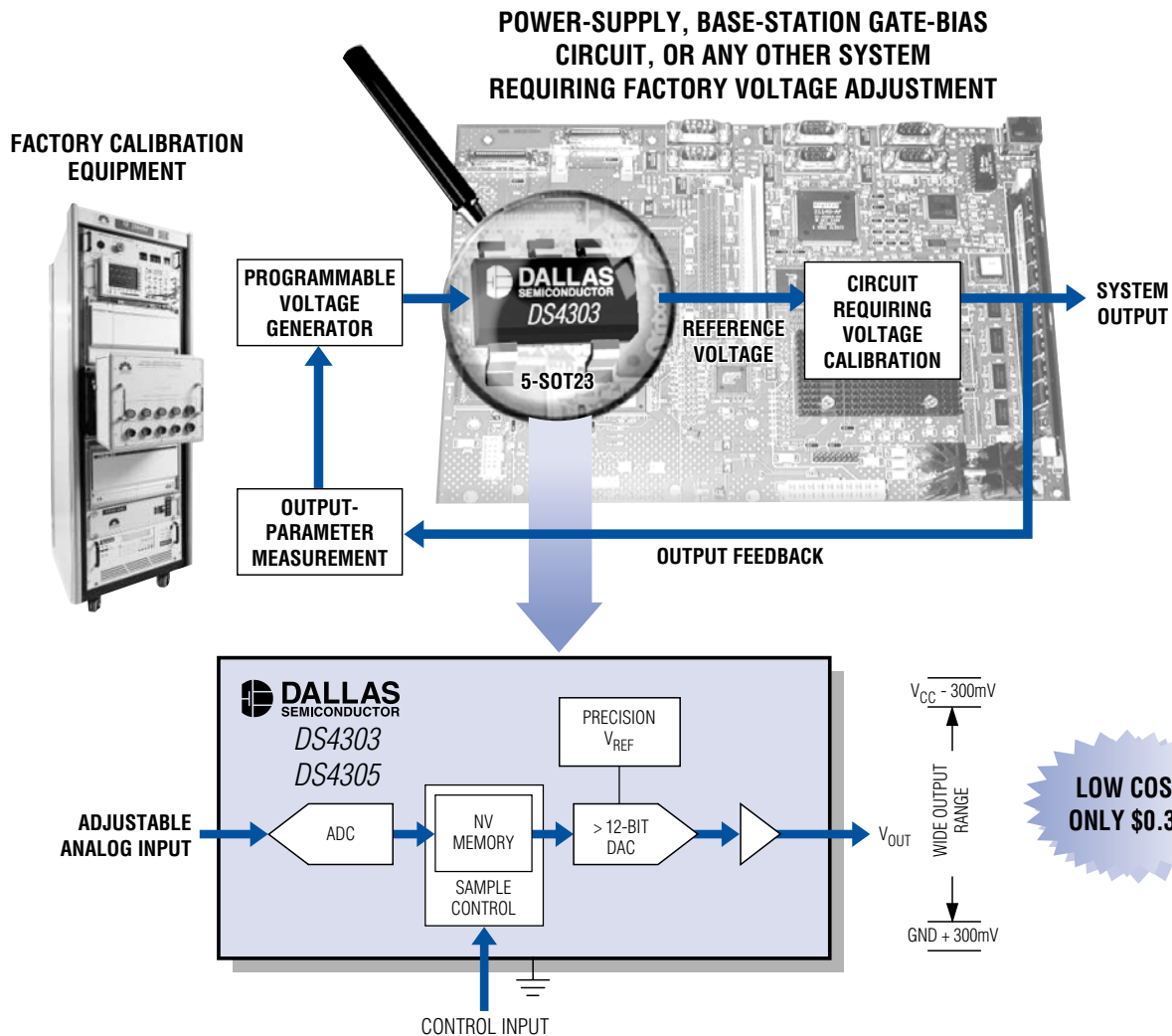
Speaker Amplifiers

Part	P _{OUT} (W)	Package (mm x mm)
MAX9700	1.2	10-μMAX®, 12-TQFN/UCSP™
MAX9701	1.5	24-TQFN, 20-TSSOP/UCSP
MAX9705	2	10-μMAX, 12-TQFN/UCSP
MAX9706/07	2.4	36-TQFN (6 x 6)
MAX9713/03	6/10	32-QFN (5 x 5)
MAX9714/04	6/10	32-QFN (7 x 7)
MAX9759	3.2	16-TQFN/TSSOP

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

Industry's First Sample-and-Infinite-Hold ICs

Automate Factory Calibration for Faster Production, Improved Quality, and Lower Costs



- Precise, Electronically Adjustable Voltage Reference
- Highly Integrated, Low-Cost Calibration Solution
- Wide Output-Voltage Range—Within 300mV of the Supply Rails
- NV Memory Permanently Stores the Selected Output Voltage

Part	Supply Range (V)	Resolution (mV)	Temp Range (°C)	Package
DS4303R	+2.4 to +3.6	±1	-40 to +85	5-SOT23
DS4305R	+4.0 to +5.5	±1.5	-40 to +85	5-SOT23

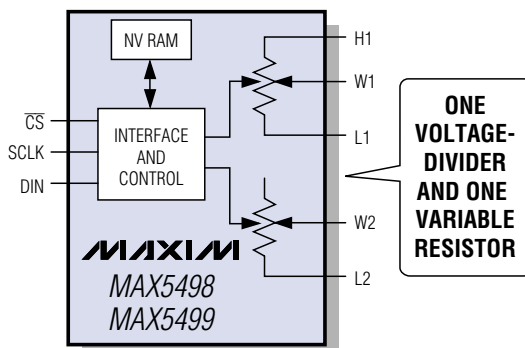
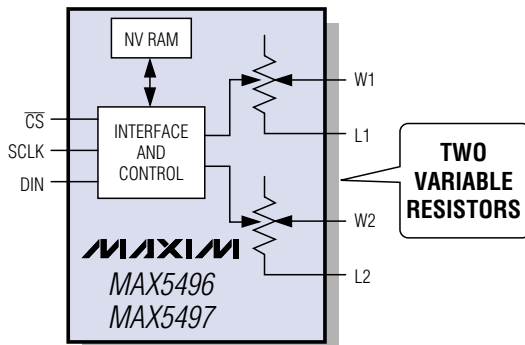
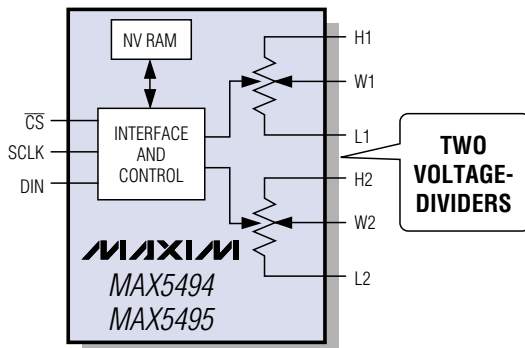
For Free Samples, EV Boards, and Detailed Applications Information, Go to: www.maxim-ic.com/DS4303

†10k-up recommended resale. Prices provided are for design guidance and are FOB USA. 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.

Tiny, 1024-Step, NV Digital Potentiometers Offer Ultra-Low Tempco

Add More Resolution to Contrast, Gain, and Offset Control

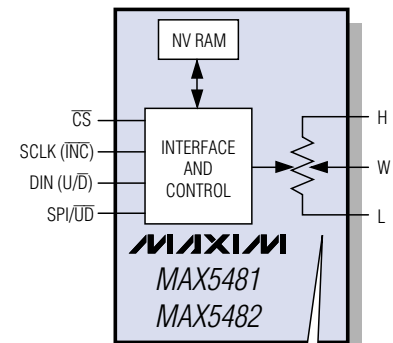
SPI INTERFACE



**ULTRA-LOW 35ppm/°C
END-TO-END AND
5ppm/°C RATIOMETRIC
TEMPERATURE DRIFT**

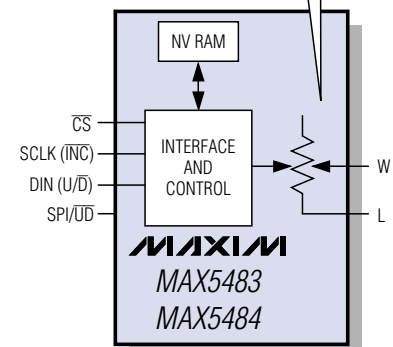
- NV Memory Recalls Wiper Position at Power-Up
- 10kΩ and 50kΩ End-to-End Resistance Values
- 1μA Standby Current
- Operate from +2.7V to +5.25V Single Supply or ±2.5V Dual Supply
- Glitchless Switching
- -40°C to +85°C Temp Range
- 3mm x 3mm, 16-Pin TQFN (Single)
- 5mm x 5mm, 16-Pin TQFN (Dual)

SIMPLE, 3-WIRE PIN-SELECTABLE SPI OR UP/DOWN INTERFACE



VOLTAGE-DIVIDER

VARIABLE RESISTOR



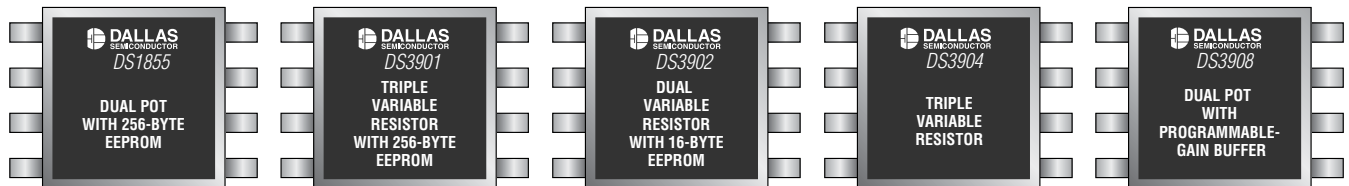
Part	Configuration	Resistance (kΩ)	Package	Price† (\$)
MAX5481	Voltage-divider	10	16-TQFN/14-TSSOP	1.95
MAX5482	Voltage-divider	50		
MAX5483	Variable resistor	10	16-TQFN	3.60
MAX5484	Variable resistor	50		
MAX5494	Two voltage-dividers	10		
MAX5495	Two voltage-dividers	50		
MAX5496	Two variable resistors	10		
MAX5497	Two variable resistors	50		
MAX5498	One voltage-divider and one variable resistor	10		
MAX5499	One voltage-divider and one variable resistor	50		

† 1000-up recommended resale. Prices provided are for design guidance and are FOB USA. 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.

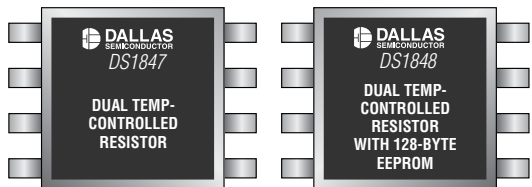
Industry's Largest Selection of Control and Monitoring Products for Optical Transceivers

Our leading optical control and monitoring products range from simple, low-cost NV resistors to fully integrated, temperature-compensated control and digital-diagnostics devices. With products offering variable resistors, potentiometers, temperature compensation, user EEPROM, muxed-input ADCs for digital diagnostics, and I²C serial interfaces, we have a product to meet your requirements and budget.

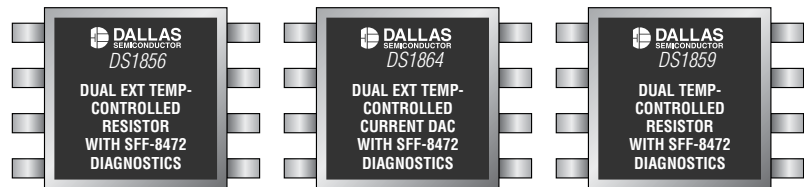
SIMPLE CONTROL (NO TEMPERATURE COMPENSATION)



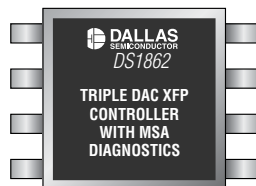
TEMPERATURE-CONTROLLED RESISTORS



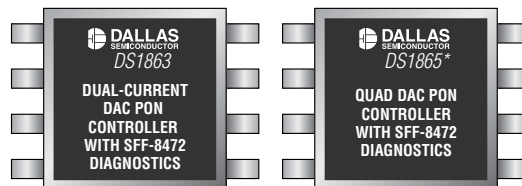
INTEGRATED SFP CONTROLLER-MONITORS



INDUSTRY'S FIRST XFP CONTROLLER



INDUSTRY'S FIRST PON CONTROLLERS



Part	Control Element	No. of Control Elements	NV	Resistance Options (k Ω)	No. of Steps	User EEPROM (Bytes)	Digital Diagnostics
DS3901	Variable resistor	3	✓	50/30/20	256	256	Password protection
DS3902	Variable resistor	2	✓	50/30, 50/15	256	16	—
DS3904	Variable resistor	3	✓	20	128	—	—
DS1855	Potentiometer	2	✓	10/10, 10/50	100/256	256	—
DS3908	Potentiometer	2	✓	100	64	—	Programmable-gain buffer
DS1847	Variable resistor and temp compensation	2	✓	10/10, 10/50	256	—	—
DS1848	Variable resistor and temp compensation	2	✓	10/10, 10/50	256	128	—
DS1856	Variable resistor and temp compensation	2	✓	20/20, 50/50	256	256	Compliant with SFF-8472 diagnostics, password protection
DS1859	Variable resistor and temp compensation	2	✓	20/20, 50/50	256	256	Compliant with SFF-8472 diagnostics
DS1862	DAC	3	✓	2x current, 1x voltage	8-bit I, 13-bit I, 8-bit V	Per XFP MSA	Compliant with XFP MSA diagnostics
DS1863	DAC	2	✓	1x current, 1x voltage	13-bit I, 8-bit V	128	PON controller compliant with SFF-8472 diagnostics
DS1864	DAC	2	✓	2x current	8-bit	392	Compliant with SFF-8472 diagnostics
DS1865*	DAC	4	✓	1x current, 3x voltage	13-bit I, 8-bit V	256	PON controller compliant with SFF-8472 diagnostics

*Future product—contact factory for availability.

Digital Potentiometers

Part	Smallest Available Package	No. of Tap Positions	No. of Pots in Package	Resistor Taper	Supply Voltage (V)	End-to-End Resistor Values (k Ω)	Digital Interface	NV	Comments	Price 1000-up† (\$)
DS1866	8-SO	8	1	Log	2.7 to 5.5	10	3-wire		Low-cost trimming or volume control	1.08
DS4301	8- μ SOP	32	1	Linear	2.4 to 5	200	Up/down	✓	Low-cost NV pot in μ SOP	0.60
MAX5407	8-SOT23	32	1	Log	2.7 to 5.5	20	Up/down		SOT-PoT™	0.79
MAX5160	8- μ MAX	32	1	Linear	2.7 to 5.5	50, 100, 200	Up/down		Ideal for LCD screen adjustment, volume control, and mechanical pot replacement	0.68
MAX5161	6-SOT23	32	1	Linear	2.7 to 5.5	50, 100, 200	Up/down		SOT-PoT	0.68
MAX5427	16-QFN	32	1	Linear	2.7 to 5.5	100	Up/down	✓	One-time programmable	0.69
MAX5428	16-QFN	32	1	Linear	2.7 to 5.5	50	Up/down	✓	One-time programmable	0.69
MAX5429	16-QFN	32	1	Linear	2.7 to 5.5	10	Up/down	✓	One-time programmable	0.69
MAX5432	8-TDFN	32	1	Linear	2.7 to 5.5	50	I ² C	✓	I ² C voltage-divider in TDFN with EEPROM	0.65
MAX5433	8-TDFN	32	1	Linear	2.7 to 5.5	100	I ² C	✓	I ² C voltage-divider in TDFN with EEPROM	0.65
MAX5434	6-SOT23	32	1	Linear	2.7 to 5.5	50	I ² C	✓	I ² C variable resistor in SOT23 with EEPROM	0.65
MAX5435	6-SOT23	32	1	Linear	2.7 to 5.5	100	I ² C	✓	I ² C variable resistor in SOT23 with EEPROM	0.65
MAX5460	5-SC70	32	1	Linear	2.7 to 5.5	100	Up/down		Low-cost FleaPoT™	0.57
MAX5461	6-SC70	32	1	Linear	2.7 to 5.5	100	Up/down		Low-cost FleaPoT	0.56
MAX5462	6-SC70	32	1	Linear	2.7 to 5.5	100	Up/down		Low-cost FleaPoT	0.56
MAX5463	5-SC70	32	1	Linear	2.7 to 5.5	50	Up/down		Low-cost FleaPoT	0.57
MAX5464	6-SC70	32	1	Linear	2.7 to 5.5	50	Up/down		Low-cost FleaPoT	0.56
MAX5465	6-SC70	32	1	Linear	2.7 to 5.5	50	Up/down		Low-cost FleaPoT	0.56
MAX5466	5-SOT23	32	1	Linear	2.7 to 5.5	10	Up/down		Low-cost SOT-PoT	0.68
MAX5467	6-SOT23	32	1	Linear	2.7 to 5.5	10	Up/down		Low-cost SOT-PoT	0.68
MAX5471	6-SOT23	32	1	Linear	2.7 to 5.5	50	Up/down	✓	Digital pot in SOT23 with EEPROM	0.53
MAX5472	6-SOT23	32	1	Linear	2.7 to 5.5	100	Up/down	✓	Digital pot in SOT23 with EEPROM	0.53
MAX5474	6-SOT23	32	1	Linear	2.7 to 5.5	50	Up/down	✓	Digital pot in SOT23 with EEPROM	0.57
MAX5475	8-SOT23	32	1	Linear	2.7 to 5.5	100	Up/down	✓	Digital pot in SOT23 with EEPROM	0.57
DS1669	8-SO	64	1	Linear	± 4 to ± 8	10, 50, 100	Up/down	✓	Replaces mechanical variable resistors	2.48
DS1809	8- μ SOP	64	1	Linear	4.5 to 5.5	10, 50, 100	Up/down	✓	Digital or pushbutton control	1.27
DS1869	8-SO	64	1	Linear	± 2.7 to ± 8	10, 50, 100	Up/down	✓	Replaces mechanical variable resistors	2.10
MAX5527/8/9	8-TDFN	64	1	Linear	2.7 to 5.5	100/50/10	Up/down	✓	One-time programmable	0.70
DS1804	8- μ SOP	100	1	Linear	2.7 to 5.5	10, 50, 100	Up/down	✓	Low-cost, NV μ SOP pot	1.29
DS1666	16-SO	128	1	Log	± 4.5 to ± 5.5	10, 50, 100	Up/down	✓	Suitable for audio applications	1.71
DS3501*	10- μ MAX	128	1	Linear	2.7 to 5.5	10	I ² C	✓	0 to 15V pot terminals with internal temp compensation	0.50
MAX5128	8- μ JDFN	128	1	Linear	2.7 to 5.25	20	Up/down	✓	2mm x 2mm NV digital pot	0.68
MAX5436	10- μ MAX	128	1	Linear	± 15 , ± 30	50	SPI		High-voltage pot in μ MAX	2.49
MAX5437	14-TSSOP	128	1	Linear	± 15 , ± 30	50	SPI		High-voltage pot with on-chip amplifier	3.24
MAX5438	10- μ MAX	128	1	Linear	± 15 , ± 30	100	SPI		High-voltage pot in μ MAX	2.49
MAX5439	14-TSSOP	128	1	Linear	± 15 , ± 30	100	SPI		High-voltage pot with on-chip amplifier	3.24
DS1805	14-TSSOP	256	1	Linear	2.7 to 5.5	10, 50, 100	2-wire		Low-cost multidroppable pot	1.15
DS2890	CSP	256	1	Linear	2.8 to 6	100	1-Wire®		1-Wire interface	1.44
MAX5400/01	8-SOT23	256	1	Linear	2.7 to 5.5	100, 50	SPI		SOT-PoT	0.95
MAX5402	8- μ MAX	256	1	Linear	2.7 to 5.5	10	SPI		μ PoT™	0.95
MAX5417	8-TDFN	256	1	Linear	2.7 to 5.25	50	I ² C	✓	I ² C, 256-tap, single pot in TDFN	1.25
MAX5418	8-TDFN	256	1	Linear	2.7 to 5.25	100	I ² C	✓	I ² C, 256-tap, single pot in TDFN	1.25
MAX5419	8-TDFN	256	1	Linear	2.7 to 5.25	200	I ² C	✓	I ² C, 256-tap, single pot in TDFN	1.25
MAX5422	8-TDFN	256	1	Linear	2.7 to 5.25	50	SPI	✓	SPI, 256-tap, single pot in TDFN	1.25
MAX5423	8-TDFN	256	1	Linear	2.7 to 5.25	100	SPI	✓	SPI, 256-tap, single pot in TDFN	1.25
MAX5424	8-TDFN	256	1	Linear	2.7 to 5.25	200	SPI	✓	SPI, 256-tap, single pot in TDFN	1.25

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Not all packages are offered in 1k piece increments, and some may require minimum order quantities.

*Future product—contact factory for availability.

SOT-PoT, FleaPoT, and μ PoT are trademarks of Maxim Integrated Products, Inc.
1-Wire is a registered trademark of Dallas Semiconductor Corp.

Digital Potentiometers (continued)

Part	Smallest Available Package	No. of Tap Positions	No. of Pots in Package	Resistor Taper	Supply Voltage (V)	End-to-End Resistor Values (k Ω)	Digital Interface	NV	Comments	Price 1000-up [†] (\$)
DUAL										
DS1808	16-SO	32	2	Log	+4.5 to \pm 13.2	45	2-wire		High-voltage dual supply with mute position	2.36
MAX5406	48-TSSOP	32	2	Log	2.7 to 5.25, \pm 2.7	10	Up/down		Volume, tone, and balance control plus subwoofer output	2.17
MAX5408	16-QFN	32	2	Log	2.7 to 3.6	10	SPI		Features one wiper per resistor	1.55
MAX5409	16-QFN	32	2	Log	2.7 to 3.6	10	SPI		Features dual wipers per resistor	2.11
MAX5410	16-QFN	32	2	Log	4.5 to 5.5	10	SPI		Features one wiper per resistor	1.55
MAX5411	16-QFN	32	2	Log	4.5 to 5.5	10	SPI		Features dual wipers per resistor	2.11
MAX5456/7	16-QFN	32	2	Log	2.7 to 5.25, \pm 2.7	10	Up + down		4-wire/3-wire, debounced pushbutton interface	1.47
MAX5440	24-SSOP	32	2	Log	2.5 to 5.25, \pm 2.7	40	Rotary		Rotary-encoder volume control with buffered outputs	1.47
MAX5486	24-TSSOP	32	2	Log	2.7 to 5.5, \pm 2.7	40	Up + down		Stereo volume and balance control with buffered output	1.57
DS1881	16-TSSOP	32/63	2	Log	0 to 5	45	I ² C	✓	Configurable NV, low-noise, low-distortion audio control	0.95
DS1882	16-TSSOP	32/63	2	Log	\pm 7	45	I ² C	✓	Configurable NV, low-noise, low-distortion audio control	1.16
DS1801	14-TSSOP	65	2	Log	2.7 to 5.5	45	3-wire		Zero-crossing detection eliminates noise caused by wiper movement	2.75
DS3908	14-TDFN	64	2	Linear	3 to 5.5	100	I ² C		Programmable-gain output	0.79
DS1802	20-TSSOP	65	2	Log	2.7 to 5.5	45	3-wire or pushbutton		Zero-crossing detection eliminates noise caused by wiper movement	3.50
DS1807	14-TSSOP	65	2	Log	2.7 to 5.5	45	2-wire		Zero-crossing detection eliminates noise caused by wiper movement	2.75
DS1855	4 x 4 BGA	100/256	2	Linear	2.7 to 5.5	10/10 or 10/50	2-wire	✓	Two NV digital pots, 256-byte EEPROM	1.78
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; includes dual pots, EEPROM	1.78
DS1267	20-TSSOP	256	2	Linear	+4.5 to \pm 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 \pm 5.5	10, 50, 100	3-wire	✓	NV version of DS1267	3.62
DS1868	20-TSSOP	256	2	Linear	+2.7 to \pm 3.3	10, 50, 100	3-wire		Low-voltage version of DS1267	2.49
DS3902	8- μ SOP	256	2	Linear	2.4 to 5.5	50/30, 50/15	I ² C	✓	Dual, NV variable resistors with user EEPROM	0.70
MAX5403/4/5	10- μ MAX	256	2	Linear	2.7 to 5.5	10/50/100	SPI		Ultra-small dual pot	1.25
MAX5413/4/5	14-TSSOP	256	2	Linear	2.7 to 5.5	10/50/100	SPI		Ultra-low power consumption	1.25
MAX5450/2/4	10- μ MAX	256	2	Linear	2.7 to 5.5	10/50/100	Up/down		Up/down interface version of MAX5405/04/03	1.25
MAX5451/3/5	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
MAX5477/8/9	12-TQFN	256	2	Linear	2.7 to 5.25	10/50/100	I ² C	✓	I ² C, 256-tap, dual pot in TDFN	1.60
MAX5487/8/9	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	2.7 to 5.5	16.7	2-wire	✓	Two 3-output DACs, EEPROM, user I/Os	1.95
MAX5494	16-TDFN	1024	2	Linear	2.7 to 5.25	10	SPI	✓	Two voltage-dividers	3.60
MAX5495	16-TDFN	1024	2	Linear	2.7 to 5.25	50	SPI	✓	Two voltage-dividers	3.60
MAX5496	16-TDFN	1024	2	Linear	2.7 to 5.25	10	SPI	✓	Two variable resistors	3.60
MAX5497	16-TDFN	1024	2	Linear	2.7 to 5.25	50	SPI	✓	Two variable resistors	3.60
MAX5498	16-TDFN	1024	2	Linear	2.7 to 5.25	10	SPI	✓	One voltage-divider/one variable resistor	3.60
MAX5499	16-TDFN	1024	2	Linear	2.7 to 5.25	50	SPI	✓	One voltage-divider/one variable resistor	3.60

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Digital Potentiometers (continued)

Part	Smallest Available Package	No. of Tap Positions	No. of Pots in Package	Resistor Taper	Supply Voltage (V)	End-to-End Resistor Values (k Ω)	Digital Interface	NV	Comments	Price 1000-up [†] (\$)
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
DS3904/5	8- μ SOP/10- μ SOP	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- μ SOP	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	I ² C	✓	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 DIGITAL POTENTIOMETERS										
DS1847/8	4 x 4 BGA	256	2	Linear	3.0 to 5.5	10, 50	2-wire	✓	Ideal for optical transceivers; includes temp sensor, NV lookup table, variable resistors, and user EEPROM (DS1848 only)	2.16/2.37
DS1851	4 x 4 BGA	256	2	Linear	3.0 to 5.5	—	—	✓	Ideal for optical transceivers; includes temp sensor, NV lookup table, and 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
DS1857/8	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	I ² C	✓	Temp-controlled resistors, 256-byte EEPROM, ADC with internal calibration	2.53
DS1870	16-TSSOP	256	2	Linear	4.5 to 5.5	13	I ² C	✓	LD MOS RF power-amplifier bias controller	3.72
MAX5420	8- μ MAX	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%	1.26
MAX5421	10- μ MAX	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	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%	1.26
MAX5431	10- μ MAX	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	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%	1.40
MAX5490	5-SOT23	1	1	—	—	10	—		30V precision voltage-divider	0.67
MAX5491/2	3-SOT23	1	1	—	—	30/(10, 100)	—		45V/80V precision voltage-divider	0.67
DS4303	5-SOT23	—	—	—	2.4 to 3.6	—	—	✓	Voltage sample and infinite hold	0.39
DS4305	5-SOT23	—	—	—	4.0 to 5.5	—	—	✓	Voltage sample and infinite hold	0.39

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