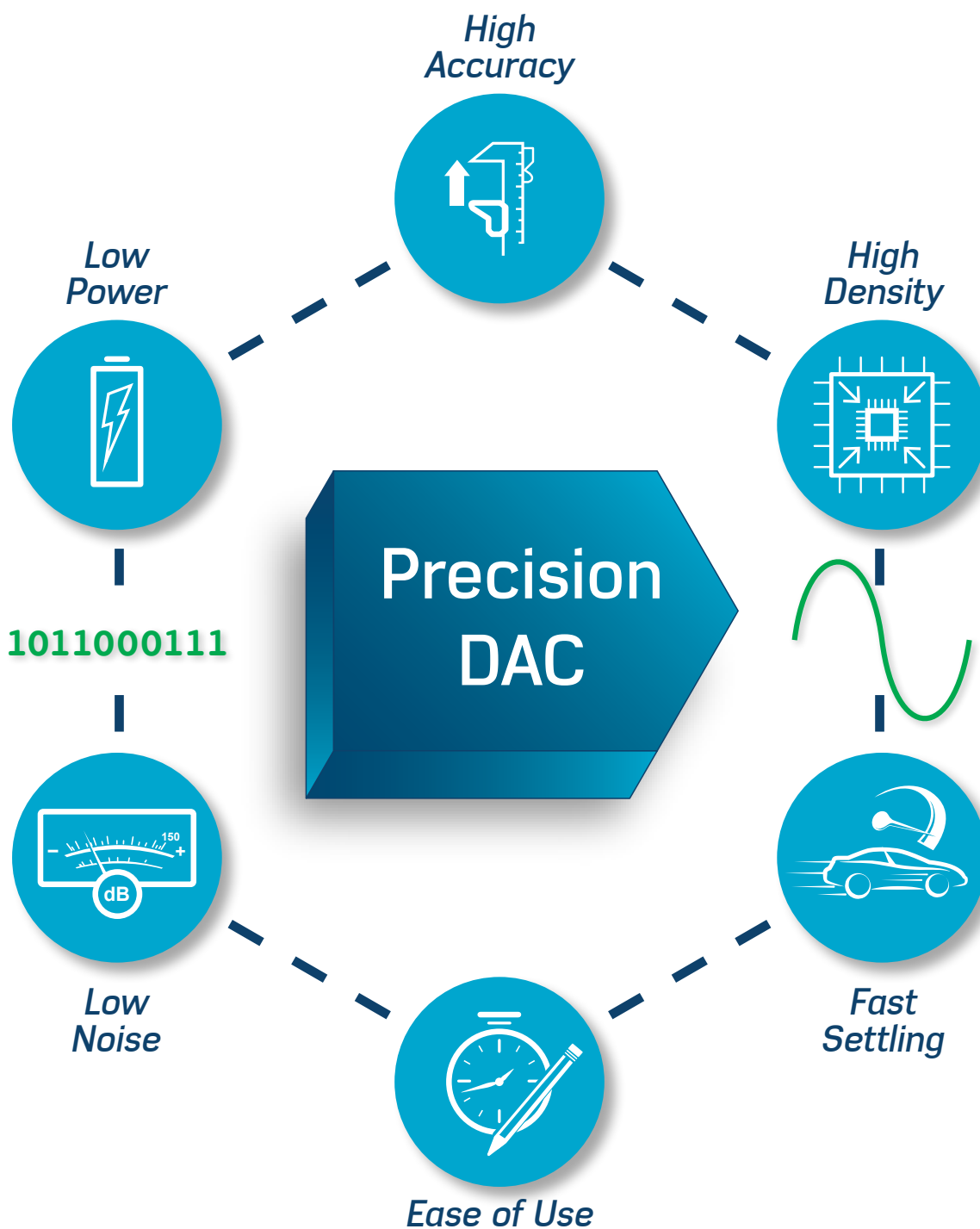


PRECISION DAC SELECTOR GUIDE



CONTENTS

Introduction

Welcome to the Analog Devices Digital-to-Analog Converter (DAC) Selection Guide. This guide is designed to help facilitate product selection based on your application needs. We've organized the guide to distinguish the strengths of each product relative to alternatives. For further details, including temperature operating range or suitability for applications such as aerospace or automotive, please visit the website parametric tables. A detailed data sheet review and product evaluation should be performed before selecting the right product for your application. Each DAC is supported with a demo system associated with the free, easy-to-use, software tools and example code that enables users to evaluate the performance of these digital to analog converters, quickly and easily.

Voltage Output (V_{OUT}) DACs

Analog Devices offers a comprehensive family of resistor string and R-2R voltage output (V_{OUT}) digital to analog converters (DACs). From 8 bits up to industry leading 20 bits of resolution, single channel to as many as 40 channels in high density packages, flexible I/O, high DC precision and lowest glitch, we have a DAC to suit your application. Our DACs work well in a wide variety of open-loop or closed-loop systems, adjusting gain, offset, and many other signals, as well as fast settling DACs suitable for AC applications such as waveform generation.

Single Channel to 8-Channel Low Voltage Single Supply Voltage Output DACs	3
Single Channel to 8-Channel Bipolar Voltage Output DACs.....	5
16-Channel to 40-Channel Voltage Output DACs.....	6
Parallel Interface Voltage Output DACs.....	7
Multiplying (I_{OUT}) DACs.....	8

Analog Devices' family of high precision, multiplying current output (I_{OUT}) R-2R digital to analog converters (DACs) feature guaranteed ± 1 LSB INL and DNL specifications, from 8 bits up to 18 bits of resolution, and include single and multichannel DAC options with parallel, serial SPI or I²C interfaces. Current output R-2R DACs allow the choice of an external amplifier optimized for specific applications.

Special Function DACs

PWM to Voltage Output DACs.....	10
Micropower Voltage Output DACs.....	10
Current Source-Sink DACs.....	11
High Voltage DACs.....	11
Fast Precision DACs (>30 Msps).....	11
4 mA to 20 mA Loop DACs.....	12
ADC/DAC Combos.....	12

COLOR KEY		
	Higher Accuracy	Indicates that the DAC is higher precision (better INL, noise, glitch) versus a similar product in same cell.
	Lower Power	Indicates that the DAC enables lower power operation versus a similar product in same cell.
	Smaller Solution	Indicates that the DAC enables a smaller solution size versus a similar product in same cell. The DAC may have a smaller package footprint or integrate additional functionality such as output amplifiers or monitoring multiplexer.
	≥ 9 I ² C Addresses	Indicates that the DAC may be configured for 9 or more I ² C user-selectable slave addresses, allowing many DACs on the same bus and minimizing address conflicts with other components.
	Lower Glitch	Indicates lower mid-scale glitch impulse versus a similar product in same cell, making it possible to produce higher frequency, lower noise output waveforms
	ADC/DAC Combo	These devices offer ADCs, DACs, GPIO and temp sensor functionality in a single IC.
	>5 MHz Bandwidth	Indicates a higher bandwidth multiplying DAC, which is more suitable for signal generation. The multiplying bandwidth is specified as the reference-input frequency at which the gain is compressed by -3 dB.

Voltage Output (V_{OUT}) DACs

Single Channel to 8-Channel Low Voltage Single Supply Voltage Output DACs

Analog Devices offers the broadest portfolio of low voltage single-supply DACs in the industry, serving a wide class of applications due to the low power, smallest solution footprint and robust range of features, with flexible SPI or I²C interfaces. ADI's *nanoDAC+*® products offer enhanced features such as higher accuracy, improved DC performance, increased robustness, and lower glitch energy, among other advantages.

Featured Product:

AD5676R: Octal, 16-Bit, *nanoDAC+* with 2ppm/°C Reference

- ▶ High Relative Accuracy (INL): ± 3 LSB Maximum at 16 Bits
- ▶ Total Unadjusted Error (TUE): $\pm 0.14\%$ of FSR Maximum
- ▶ Low Drift 2.5V Reference: 2ppm/°C typical, 5ppm/°C Maximum
- ▶ -40°C to $+125^{\circ}\text{C}$ Operation
- ▶ 2.7V to 5.5V Power Supply Range
- ▶ 20-Lead, TSSOP and 4 mm x 4 mm LFCSP

	Output Type	Interface	1-Channel Unbuffered	1-Channel		2-Channel		4-Channel		8-Channel	
			Ext. Ref	Ext. Ref	Int. Ref	Ext. Ref	Int. Ref	Ext. Ref	Int. Ref	Ext. Ref	Int. Ref
Resolution	18-Bit	Unipolar Single Supply		AD 5680 ^M							
	16-Bit	Unipolar Single Supply	SPI	LTC 2641-16 AD 5541A AD 5062 ^M	AD 5683 AD 5662 ^M AD 5060 ^M	AD 5683R AD 5660 ^M	AD 5689 ^M AD 5663 ^M AD 5065 ^M	AD 5689R ^M AD 5663R ^M	AD 5686 ^M AD 5664 AD 5064 ^M LTC 2604 ^M AD 5066 ^M	AD 5686R ^M AD 5664R LTC 2654-16 ^M	AD 5676 ^M LTC 2600 AD 5668 ^M LTC 2656-16 ^M AD 5678
			I ² C		AD 5693 LTC 2606 ^M	AD 5693R LTC 2607 ^M	AD 5667 LTC 2609 ^M	AD 5667R	AD 5696 ^M AD 5665 ^M LTC 2609 ^M	AD 5696R ^M AD 5665R ^M LTC 2655-16 ^M	AD 5675 ^M LTC 2605 ^M
	14-Bit	Unipolar Single Supply	SPI	LTC 2641-14 AD 5551	AD 5040 ^M AD 5641 LTC 2611 ^M	AD 5682R AD 5640 ^M	AD 5045 ^M LTC 2612	AD 5643R	AD 5044 ^M LTC 2614 ^M	AD 5685R ^M AD 5644R	LTC 2610 AD 5392 AD 5648 ^M
I ² C				LTC 2616 ^M	AD 5692R	LTC 2617 ^M	AD 5647R	LTC 2619 ^M	AD 5695R ^M AD 5645R ^M	LTC 2615 ^M	AD 5392

^M Reset to Mid-Scale or Zero-Scale Options

^Z Reset to Hi-Z, Mid-Scale or Zero-Scale Options

 Higher Accuracy

 Lower Power

 Smaller Solution

 ≥ 9 I²C Addresses

 Lower Glitch

 ADC/DAC Combo

Single Channel to 8-Channel Low Voltage Single Supply Voltage Output DACs (Continued)

	Output Type	Interface	1-Channel Unbuffered	1-Channel		2-Channel		4-Channel		8-Channel	
			Ext. Ref	Ext. Ref	Int. Ref	Ext. Ref	Int. Ref	Ext. Ref	Int. Ref	Ext. Ref	Int. Ref
Resolution	12-Bit	Unipolar Single Supply	PWM				LTC 2644-12 ^Z		LTC 2645-12 ^Z		
			SPI	LTC 2641-12 AD 5512A ^M	AD 5621 AD 5320	AD 5681R LTC 2630-12 ^M LTC 2640-12 ^M AD 5620 ^M	AD 5687 ^M AD 5322 AD 5323 LTC 2622	AD 5687R ^M LTC 2632-12 ^M AD 5623R	AD 5684 ^M AD 5624 AD 5024 ^M LTC 2624 ^M	AD 5684R ^M AD 5624R LTC 2654-12 ^M LTC 2634-12 ^M	LTC 2620 AD 5328 AD 5672 ^M AD 5628 ^M LTC 2656-12 ^M LTC 2636-12 ^M AD 5592R
			I ² C	AD 5622 AD 5321	AD 5691R LTC 2631-12 ^M	AD 5339 AD 5627 LTC 2627 ^M	LTC 2633-12 ^Z AD 5627R AD 5697R ^M	AD 5694 ^M AD 5326 AD 5325 AD 5625 ^M LTC 2629 ^M	AD 5694R ^M AD 5625R ^M LTC 2655-12 ^M LTC 2635-12 ^Z	LTC 2625 ^M	AD 5671R ^M AD 5629R ^M LTC 2657-12 ^M LTC 2637-12 ^M AD 5593R
	10-Bit	Unipolar Single Supply	PWM				LTC 2644-10 ^Z		LTC 2645-10 ^Z		
			SPI	AD 5611 AD 5310	AD 5310R LTC 2630-10 ^M LTC 2640-10 ^M	LTC 1662 AD 5313 AD 5312	AD 5313R ^M LTC 2632-10 ^M	AD 5314 LTC 1664 AD 5317	AD 5317R ^M LTC 2634-10 ^M	AD 5318 LTC 1660	LTC 2636-10 ^M
			I ² C	AD 5612 AD 5311	AD 5311R LTC 2631-10 ^M LTC 1669	AD 5338	AD 5338R LTC 2633-10 ^Z	AD 5316 AD 5315	AD 5316R ^M LTC 2635-10 ^Z		LTC 2637-10 ^M
			SMBus		LTC 1663						
	8-Bit	Unipolar Single Supply	PWM				LTC 2644-8 ^Z		LTC 2645-8 ^Z		
			SPI	AD 5601 AD 5300	LTC 2630-8 ^M LTC 2640-8 ^M	AD 5302 AD 7303	LTC 2632-8 ^M	AD 5307 AD 5304	LTC 2634-8 ^M	AD 5308 LTC 1665	LTC 2636-8 ^M
			I ² C	AD 5602 AD 5301	LTC 2631-8 ^M	AD 5337	LTC 2633-8 ^M	AD 5306 AD 5305	LTC 2635-8 ^M		LTC 2637-8 ^M

^M Reset to Mid-Scale or Zero-Scale Options^Z Reset to Hi-Z, Mid-Scale or Zero-Scale Options Higher Accuracy Lower Power Smaller Solution ≥9 I²C Addresses Lower Glitch ADC/DAC Combo

Single Channel to 8-Channel Bipolar Voltage Output DACs

Analog Devices' family of bipolar voltage output DACs offers exceptional 1 ppm level accuracy at up to 20-bit resolutions and robust output drive, capable of driving a variety of demanding loads. SoftSpan™ versions enable each output range to be individually configured via software or pin-strapping. This provides flexibility in reuse across multiple product platforms, reduces the complexity of board design and layout, in addition to providing a more accurate signal chain resulting in higher system performance and faster design times.

Featured Product:

AD5761R: Multiple Range, 16-Bit, Bipolar Voltage Output DACs with 2 ppm/°C Reference

- ▶ 8 Software-Programmable Output Ranges: 0V to 5V, 0V to 10V, 0V to 16V, 0V to 20V, $\pm 3V$, $\pm 5V$, $\pm 10V$, and $-2.5V$ to $+7.5V$; 5 % Overrange
- ▶ Low Drift 2.5V Reference: ± 2 ppm/°C Typical
- ▶ Total Unadjusted Error (TUE): 0.1 % FSR Maximum
- ▶ 16-Bit Resolution: ± 2 LSB Maximum INL
- ▶ AD5761R-EP Supports Defense and Aerospace Applications

	Output Type	Interface	1-Channel Unbuffered	1-Channel		2-Channel		4-Channel		8-Channel	
			Ext. Ref	Ext. Ref	Int. Ref	Ext. Ref	Int. Ref	Ext. Ref	Int. Ref	Ext. Ref	Int. Ref
Resolution	20-Bit	Bipolar	SPI	AD 5790 AD 5791							
	18-Bit	Bipolar	SPI	AD 5780 AD 5781							
	16-Bit	SoftSpan Bipolar	SPI		AD 5761 ^M AD 5761R ^M	AD 5752 ^M AD 5752R ^M	AD 5752 ^M AD 5752R ^M	LTC 2704-16 AD 5754 ^M AD 5754R ^M	LTC 2664-16 ^M AD 5754R ^M		LTC 2666-16 ^M
		Bipolar	SPI	AD 5760 AD 5570 LTC 2642-16 AD 5542A	AD 5570 AD 7849	AD 5763	AD 5762R	AD 5764 AD 5765	AD 5764R	AD 5362	
		SoftSpan Bipolar	SPI			AD 5732 ^M	AD 5732R ^M	AD 5734 ^M LTC 2704-14	AD 5734R ^M		
	14-Bit	Bipolar	SPI	LTC 2642-14 AD 5552	AD 5531			AD 7834	AD 5744R	AD 5363	
		SoftSpan Bipolar	SPI		AD 5721 ^M AD 5721R ^M	AD 5722 ^M AD 5722R ^M	AD 5722 ^M AD 5722R ^M	LTC 2704-12 AD 5724 ^M AD 5724R ^M	LTC 2664-12 ^M AD 5724R ^M		LTC 2666-12 ^M
	12-Bit	Bipolar	SPI	LTC 2642-12 AD 5512A	AD 5530		AD 7249	AD 5726 AD 7398			
		Bipolar $\pm 5V$	SPI					AD 7399			
	8-Bit	Bipolar $\pm 5V$	SPI					AD 7304			

^M Reset to Mid-Scale or Zero-Scale Options

^Z Reset to Hi-Z, Mid-Scale or Zero-Scale Options

 Higher Accuracy

 Lower Glitch

16-Channel to 40-Channel Voltage Output DACs

Targeted at optical communications including Mach-Zehnder modulator bias control, as well as LED displays, analog output modules, antenna arrays, and system biasing, these high density, high channel count DACs offer high output current capability, output monitoring multiplexers, and output span flexibility for ease of reuse, in the industry's smallest footprints.

Featured Products:

LTC2668: 16-Channel, 16-/12-Bit Voltage Output DACs with 10 ppm/°C Max Reference

- ▶ 16 DACs in Small 6 mm × 6 mm QFN Package
- ▶ Internal Precision Reference: 10 ppm/°C (Max)
- ▶ Independently Programmable Output Ranges: 0V to 5V, 0V to 10V, ±2.5V, ±5V, ±10V
- ▶ Maximum INL Error: ±4 LSB (16 Bits), ±1 LSB (12 Bits)
- ▶ Output Buffers Drive ±10 mA and 1000 pF Loads
- ▶ Channel Monitoring Multiplexer
- ▶ 1.8V to 5V SPI Serial Interface
- ▶ -40 °C to 125 °C Operation

AD5766/AD5767: 16-Channel, 16-/12-Bit Voltage Output DACs

- ▶ 16 DACs in Small 4 mm x 4 mm WLCSP or 6 mm x 6 mm LFCSP Packages
- ▶ Integrated DAC Output Buffers with ±20 mA Output Current Capability
- ▶ Independently Programmable Output Ranges: -20V to 0V, -16V to 0V, -10V to 0V, -10V to +6V, -12V to +14V, -16V to +10V, ±5V, and ±10V
- ▶ Maximum INL Error: ±16 LSB (16 Bits), ±1 LSB (12 Bits)
- ▶ Integrated Reference Buffers
- ▶ Channel Monitoring Multiplexer
- ▶ 1.8V to 5V SPI Serial Interface
- ▶ -40 °C to +105 °C Operation

	Output Type	Interface	16-Channel		32-Channel		40-Channel	
			Ext. Ref	Int. Ref	Ext. Ref	Int. Ref	Ext. Ref	Int. Ref
Resolution	16-Bit	SoftSpan Bipolar		LTC 2668-16 ^M				
		Bipolar	AD 5766 AD 5360		AD 5372		AD 5370	
		Unipolar Single Supply		LTC 2668-16 ^M AD 5679R		AD 5382		AD 5384
	14-Bit	Bipolar	AD 5361		AD 5373 AD 5378	AD 5532B/HS	AD 5371 AD 5379	
		Unipolar Single Supply		AD 5390		AD 5382		AD 5380
				AD 5390		AD 5382		AD 5380
	12-Bit	SoftSpan Bipolar		LTC 2668-12 ^M				
		Bipolar	AD 5767 AD 5516					
		Unipolar Single Supply		LTC 2668-12 ^M AD 5674R AD 5391 AD 5590		AD 5383		AD 5381
				AD 5391		AD 5383		AD 5381

^M Reset to Mid-Scale or Zero-Scale Options

^Z Reset to Hi-Z, Mid-Scale or Zero-Scale Options

 Lower Power

 Smaller Solution

Parallel Interface Voltage Output DACs

	Output Type	Interface	1-Channel		2-Channel		4-Channel		8-Channel	32-Channel	40-Channel
			Ext. Ref	Int. Ref	Ext. Ref	Int. Ref	Ext. Ref	Int. Ref	Ext. Ref	Int. Ref	Int. Ref
Resolution	16-Bit	Bipolar	AD 7846 LTC 1821								
		Unipolar Single Supply		LTC 1657							
	14-Bit	Bipolar					AD 7835 AD 7836		AD 7841	AD 5378	
		Unipolar Single Supply								AD 5382	AD 5380
	12-Bit	Bipolar			AD 7847 AD 7837	AD 7247 AD 7237	DAC 8412 DAC 8413 ^M AD 5725 ^M				
		Unipolar Single Supply	AD 5340 AD 5341	LTC 1450	AD 5342 AD 5343		AD 5344 AD 5725 ^M			AD 5383	AD 5381
	10-Bit	Bipolar					AD 5583				
		Unipolar Single Supply	AD 5331		AD 5333		AD 5335 AD 5336		AD 5347		
	8-Bit	Bipolar	AD 7224				AD 7225 AD 7226 AD 7305		AD 7228		
		Unipolar Single Supply	AD 5330 AD 7801		AD 5332 AD 7302		AD 5334 AD 7305	AD 7339	AD 5346		

^M Reset to Mid-Scale or Zero-Scale Options

^Z Reset to Hi-Z, Mid-Scale or Zero-Scale Options

Multiplying (I_{OUT}) DACs

A *multiplying* R-2R current output (I_{OUT}) DAC differs from a *fixed-reference* DAC in that it can apply a high-resolution digitally set gain to a varying wideband analog signal at the reference input, making them inherently suitable for AC signal-processing applications. The SoftSpan feature allows software selectable output spans that reduce the solution size by eliminating the need to add precision gain stages and the associated external jumpers, costly precision resistors, and amplifier circuitry. Integrated precision resistors allow reference inversion, bipolar offset, offset, and gain adjustment.

Featured Products

LTC2756/LTC2758: 18-Bit, Single and Dual Current Output (I_{OUT}) DACs with SoftSpan Outputs

- ▶ Maximum 18-Bit INL Error: ± 1 LSB Over Temperature
- ▶ Program or Pin-Strap Six Output Ranges: 0V to 5V, 0V to 10V, -2.5 V to 7.5 V, ± 2.5 V, ± 5 V, ± 10 V
- ▶ Glitch Impulse 0.4 nV•s (3V), 2 nV•s (5V)
- ▶ 18-Bit Settling Time: 2.1 μ s
- ▶ 2.7 V to 5.5 V Single Supply Operation
- ▶ 1 μ A Maximum Supply Current
- ▶ Voltage-Controlled Offset and Gain Trims
- ▶ Serial Interface with Readback of All Registers

	Output Type	Interface	1-Channel	2-Channel	4-Channel	8-Channel
Resolution	18-Bit	SoftSpan Bipolar	SPI	LTC 2756	LTC 2758	
			Parallel	LTC 2757		
	16-Bit	SoftSpan Bipolar	SPI	LTC 1592	LTC 2752	LTC 2754-16
			Parallel	LTC 2751-16	LTC 2753-16	LTC 2755-16
		Bipolar	SPI	AD 5543 LTC 1596 ^M LTC 1595	AD 5545 ^M	AD 5544 ^M
			Parallel	AD 5546 ^M LTC 1597 ^M	AD 5547 ^M	
	14-Bit	SoftSpan Bipolar	SPI	LTC 1589		
			Parallel	LTC 2751-14	LTC 2753-14	LTC 2755-14
		Bipolar	SPI	AD 5453 AD 5553 AD 5446	AD 5555 ^M	AD 5554 ^M
			Parallel	LTC 1591 ^M AD 5556 ^M	AD 5557 ^M	

^M Reset to Mid-Scale or Zero-Scale Options

 >5 MHz Bandwidth

Multiplying (I_{OUT}) DACs (Continued)

	Output Type	Interface	1-Channel	2-Channel	4-Channel	8-Channel
Resolution	SoftSpan Bipolar	SPI				
		Parallel				
	Bipolar	SPI	   	  		
		Parallel		 		
	Bipolar	SPI	 			
		Parallel				
8-Bit	Bipolar	SPI	  			
		Parallel				

^M Reset to Mid-Scale or Zero-Scale Options

 >5 MHz Bandwidth

Special Function DACs

PWM to Voltage Output DACs

Analog Devices' LTC2645 and LTC2644 PWM to V_{OUT} DACs convert a PWM (pulse width modulation) input to an accurate, stable, buffered voltage without the ripple, slow settling, and external passive components of discrete filter implementations. This family of products provides a simple bolt-on solution to accurately set and adjust up to four voltages without a single line of code required. Applications include isolated motor control, automotive headlights, industrial lighting, flight telemetry, medical monitors, and many other applications that benefit from the simple control interface.

	Voltage Output Range	Interface	2-Channel	4-Channel
Resolution	12-Bit	PWM	LTC 2644-12	LTC 2645-12
	10-Bit	PWM	LTC 2644-10	LTC 2645-10
	8-Bit	PWM	LTC 2644-8	LTC 2645-8

Key Features:

- ▶ No Latency PWM-to-Voltage Conversion
- ▶ Voltage Output Updates and Settles within 8 μ s
- ▶ 100 kHz to 30 Hz PWM Input Frequency
- ▶ ± 2.5 LSB Max INL; ± 1 LSB Max DNL (12-Bit)
- ▶ Pin-Selectable Internal or External Reference
- ▶ 2.7V to 5.5V Supply Range
- ▶ 1.71V to 5.5V Input Voltage Range
- ▶ Low Power: 4 mA at 3V, <1 μ A Power-Down
- ▶ -40 °C to 125 °C Operation

Micropower Voltage Output DACs

Micropower DACs are ideal for portable battery-operated equipment, and for generating bias or control voltages in a variety of space-constrained and power-sensitive applications.

Featured Product:

AD5641: 2.7V to 5.5V, <100 μ A, 14-Bit *nano*DAC in LFCSP and SC70

- ▶ Single 14-Bit Voltage Output DAC
- ▶ Micropower Operation: 100 μ A Maximum at 5V
- ▶ Power-Down to Typically 0.2 μ A at 3V
- ▶ ± 4 LSB INL (B Version)
- ▶ 2.7V to 5.5V Power Supply
- ▶ 6-Lead LFCSP and SC70 Packages

	Interface	1-Channel	2-Channel				4-Channel		8-Channel	
		I _Q (3V)	Ext. Ref	I _Q (3V)	Int. Ref	I _Q (3V)	Ext. Ref	I _Q (3V)	Ext. Ref	I _Q (3V)
Resolution	14-Bit	AD 5641 60 μA								
	12-Bit	AD 5340 AD 5341 115 μA								
	10-Bit	SPI		LTC 1662 3 μA LTC 1661 95 μA			LTC 1664 186 μA	LTC 1660 340 μA		
		I ² C			LTC 1669 60 μA					
		SMBus			LTC 1663 60 μA					
		Parallel	AD 5331 115 μA							
	8-Bit	SPI					LTC 1665 340 μA			
		Parallel	AD 5330 115 μA							

Current Source-Sink DACs

Analog Devices' current source DAC portfolio is ideal for photonics control applications where low current noise density, low dropout voltage, and high power efficiency, in addition to high channel density, is critical to system performance. The flexibility of the configurable current source DAC outputs, and 300 mA current delivery, make them suitable for resistive heaters and proportional solenoid drive.

The current sinking AD5398A and AD5821A are designed for autofocus, image stabilization, and optical zoom applications in camera phones, digital still cameras, and camcorders. They are also suitable for many industrial applications, such as controlling temperature, light, and movement without derating over temperatures ranging from -30°C to $+85^{\circ}\text{C}$.

Featured Product

LTC2662: Five-Channel, 300 mA Current-Source-Output 16-/12-Bit SoftSpan DACs

- ▶ Eight Per-Channel Programmable Output Ranges:
 - 300 mA, 200 mA, 100 mA, 50 mA, 25 mA, 12.5 mA, 6.25 mA and 3.125 mA
 - Can Be Paralleled for Up to 1.5 A
- ▶ Flexible 2.85 V to 33 V Supply Voltage
- ▶ 1 V Dropout Guaranteed
- ▶ Separate Voltage Supply per Output Channel
- ▶ Internal Switches to Optional Negative Supply
- ▶ -40°C to 125°C Operation

	Interface	Channels	Current Sink		Current Source	
			Part Number	Output Range	Part Number	Output Ranges
Resolution	16-Bit	SPI	5		LTC 2662-16	Software Selectable All Channels: 3.125 mA, 6.25 mA, 12.5 mA, 25 mA, 50 mA, 100 mA, 200 mA, 300 mA
	12-Bit	SPI	5		LTC 2662-12	Software Selectable All Channels: 3.125 mA, 6.25 mA, 12.5 mA, 25 mA, 50 mA, 100 mA, 200 mA, 300 mA
	10-Bit	I ² C	1	AD 5398A AD 5821A	3 mA to 120 mA	

High Voltage DACs

High voltage DACs are targeted at optical MEMS (microelectromechanical systems), micropositioning applications for piezo actuators, and level setting for automotive test and measurement.

Featured Product

AD5535B: 32-Channel, 14-Bit V_{OUT} DAC with Full-Scale Programmable Output from 50 V to 200 V

- ▶ 32-Channel, 14-Bit denseDAC[®] with Integrated High Voltage Output Amplifier
- ▶ 15 mm × 15 mm CSP_BGA Package
- ▶ Full-Scale Output Voltage Programmable from 50 V to 200 V via Reference Input
- ▶ 550 μA Drive Capability
- ▶ Integrated Silicon Diode for Temperature Monitoring
- ▶ 1.2 MHz Channel Update Rate
- ▶ -10°C to $+85^{\circ}\text{C}$ Operation

	Voltage Output Range	Interface	1-Channel	4-Channel	32-Channel
Resolution	14-Bit	50V to 200V	SPI		AD 5535B
	12-Bit	30V or 60V	SPI	AD 5501 AD 5504	

Fast Precision DACs (>30 Msps)

For test and measurement applications demanding both DC and AC performance, our fast precision DACs enable higher speed waveform generation of up to 12.5 Msps with 4x oversampling with clean signal spectrums.

		Output Type	Interface	1-Channel	
				Part Number	Speed
Resolution	16-Bit	Current Steering	Parallel		50 Msps
	14-Bit	Current Steering	Parallel		50 Msps
	12-Bit	Current Steering	Parallel		50 Msps

4 mA to 20 mA Loop DACs

4 mA to 20 mA Loop DACs are employed in process control and factory automation applications. Combined with ADI's family of HART modems like the AD5700, the 4 mA to 20 mA converters can be used together to realize a robust, accurate, and HART Foundation registered solution.

Analog Devices' portfolio extends from the highly integrated AD5421, a loop powered device that offers an internal regulator and output driver, to devices such as the AD5422/AD5412, offering voltage outputs with force/sense capability to ensure that the correct voltage is applied across the load, along with a compensation pin for driving large capacitive loads. The quad channel AD5755-1 offers a unique dynamic power control mode to minimize power dissipation and improve thermal management in current mode.

	Current Output Range	Interface	Voltage Output Range	1-Channel	4-Channel
Resolution	16-Bit	SPI	None	AD 5420 AD 5421	
			0V to 5V, 0V to 10V, ±5V, ±10V	AD 5422	
	4 mA to 20 mA				AD 5755-1
	12-Bit	SPI	None	AD 5410	
			0V to 5V, 0V to 10V, ±5V, ±10V	AD 5412	



Loop
Powered



Dynamic
Power Control

ADC/DAC Combos

Analog Devices' comprehensive portfolio of integrated monitoring and control components combine ADCs, DACs, temperature sensors, GPIOs, and current sensing technologies in a wide range of configurations. These integrated solutions save space over discrete implementations and provide greater versatility and configurability for applications requiring general system monitoring and control.

	Output Type	Interface	4-Channel		8-Channel		16-Channel	
			Part Number	# of ADC Channels	Part Number	# of ADC Channels	Part Number	# of ADC Channels
Resolution	12-Bit	Bipolar			AD 7293	4		
		SPI			AD 5592R	8	AD 5590	16
	Unipolar Single Supply	I ² C	AD 7294-2	2	AD 5593R	8		
			AD 7294	4				
		SPI/I ² C	AD 7517	4				
10-Bit	Unipolar Single Supply	SPI	AD 7292	8				
		SPI/I ² C	AD 7516	4				

Featured Products:

AD5592R/AD5593R: 8-Channel, 12-Bit, Configurable ADC/DAC with On-Chip Reference

- ▶ 8-Channel, Configurable ADC/DAC/GPIO
- ▶ Configurable as any Combination of
 - 8 × 12-Bit DAC Channels
 - 8 × 12-Bit ADC Channels
 - 8 × General-Purpose Digital Input/Output Pins
- ▶ Integrated Temperature Sensor
- ▶ SPI (AD5592R) or I²C (AD5593R) Interface
- ▶ Available in
 - 16-Ball, 2 mm × 2 mm WLCSP
 - 16-Lead, 3 mm × 3 mm LFCSP and TSSOP

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