SWITCHES AND MULTIPLEXERS PORTFOLIO

Analog Devices offers a large range of switches and multiplexers based on different technology strands (MEMS switch, analog, digital, etc.), single and multiple switch elements with various signal ranges, and in a variety of packages to suit a breadth of application needs. Switches can be classified into families based on technology choice, supply voltage, precision, robustness, and overvoltage fault detection and protection. The following table details this classification of the portfolio:

Portfolio Overview

	Industry Standard	Precision Lowest R_{on}, Lowest Leakage, Q_{inj}, and Capacitance	System Expansion SPI Interface	Robust Guaranteed Latch-up Immunity and High ESD	Fault Protection Overvoltage Protection and Detection	MEMS
Low R_{ON}	ADG4xx* ADG6xx* LTC13xx* ADG7xx ADG8xx	ADG14xx ADG16xx	ADGS14xx ADGS54xx ADGS16xx	ADG54xx	ADG54xxF ***New*** ADG4xxF* ADG5xxF*	
Low Capacitance, Q_{INJ}, Leakage	ADG5xx* ADG2xx* LTC2xx*	ADG12xx	ADGS12xx	ADG52xx	ADG52xxF	
Specialty SW/Mux (0 GHz to 4.5 GHz bandwidth, level translators, crosspoint)	ADG9xx ADG3xx ADG21xx					
MEMS Switch						ADGM1304 ***New*** 0 Hz/dc to 14.5 GHz ADGM1004 ***New*** 2.5 kV HBM ESD

±15 V supply
±22 V supply
±5 V and or less than 5 V single supply

* Indicates switch and/or multiplexer(s) within that family that are in production but not recommended for new design.

"F" signifies fault protection and detection

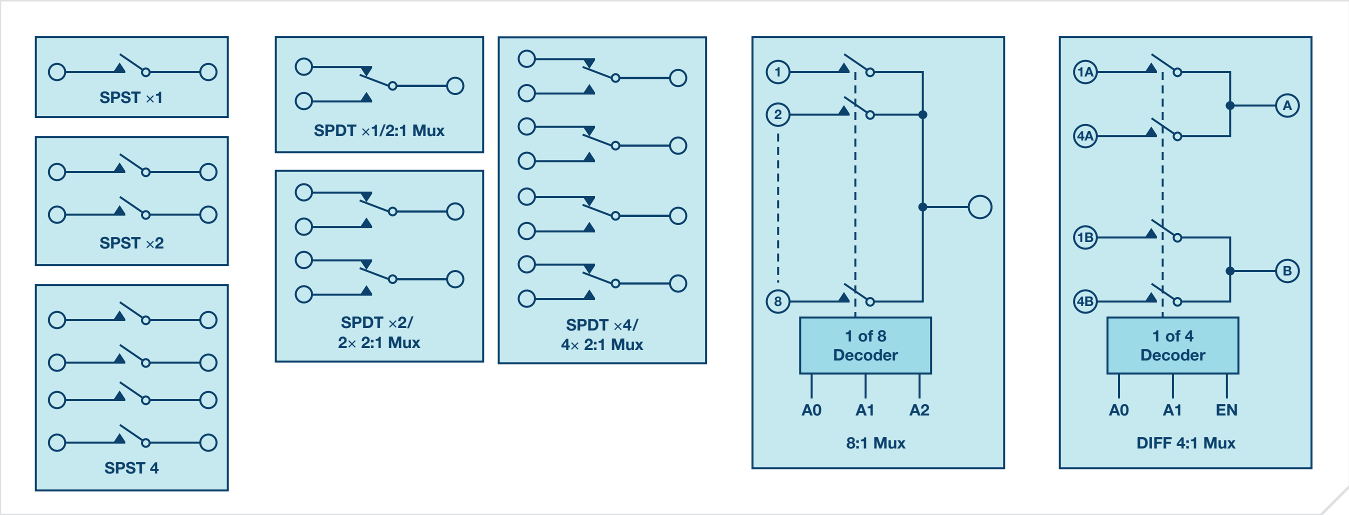
For die, contact Analog Devices

Visit *analog.com/switch-mux*

Configuration

Do you need a switch or a multiplexer? For a switch, do you need an SPST (single-pole, single throw) or an SPDT (single-pole, double throw)? How many channels do you need? Do you need a bus switch or level translator (for digital signals)? Consider the following common configurations to see which best suits your needs.

Common Switch and Multiplexer Configurations



Package

All ADI switches are offered in a number of different package options, offering, in some cases, up to 75% savings on board space vs. the nearest competitor. Details of these package types and information on package sizes can be seen on the back page of this guide.

Examples of Some of the Package Types Available

Package		Lead Count Options	Example Body Size (mm)	Example Board Area (mm × mm)	Example Pitch (mm)	Package Code
TSSOP		14/16/20/24/28/38	5.0 × 4.4 × 0.65 (14-lead)	32 (14-lead)	0.65 (14-lead)	RU-X[1]
MSOP		8/10	3.0 × 3.0 × 1.1 (8-lead)	14.7 (8-lead)	0.65 (8-lead)	RM-X[1]
LFCSP		8/10/12/16/20/24/32/40/48	3.0 × 3.0 × 0.9 (8-lead)	9 (8-lead)	0.65 (8-lead)	CP-X[1]
SOT-23		5/6/8	2.9 × 1.6 × 1.175 (5-lead)	8.12 (5-lead)	0.95 (5-lead)	RT/RJ-X[1]
SC70		5/6	1.25 × 2.0 × 0.65 (5-lead)	4.2 (5-lead)	0.65 (5-lead)	KS-X[1]
Mini LFCSP		10/16	1.3 × 1.6 × 0.6 (10-lead)	2.08 (10-lead)	0.4 (10-lead)	CP-X[1]
WLCSP[2]		5/6/10/12/16	0.9 × 1.29 × 0.5 (5-ball)	1.16 (5-ball)	0.5 (5-ball)	CB-X[1]

[1] X denotes number of leads.
[2] Dimensions dependent by part.

Technical Support and Sales

Applications engineers are available by phone or email to discuss any queries with regard to any of our switches. Details can be found on *analog.com*. Samples are available for all our switches and can be requested through your local ADI representative.

Do you require enhanced product features (typically used for military/aerospace applications) or automotive qualified (AECQ-100) parts? Please contact ADI technical support and sales for details.

For more information on ADI switches and multiplexers, visit our website at *analog.com/switch-mux*.

Choosing the Correct Switch or Multiplexer for Your Application

Supply voltage, configuration, precision, specifications, robustness level, and package are the key considerations when choosing the correct switch/mux for your application. As an individual switch cannot be optimized on every vector, Analog Devices offers a large and varied portfolio of switch technology choices. These options offer different supply voltages and configurations, are optimized for different performance vectors and robustness levels, and they come in industry-leading package sizes.

Interface

What interface do you require? The portfolio offers many interface options: parallel, I²C/SMBus, SPI, and SPI+.

Supply Voltage

Depending on the supply voltage that you require, ADI can offer you a number of high performance switches and multiplexers that suit your application. High voltage switches are optimized when using the maximum signal range, but are also specified for use at lower voltages. The ADI portfolio offers a varied range of supply voltages including tradition supply levels of : ±15 V, ±5 V, low voltage (up to 5 V), and single- and dual-supply options.

If, for example, you are using a 5 V power supply in your circuit and require a switch, then the best switch to choose would be one of our low voltage (<5 V) switches and not one of our high voltage (±15 V) parts.

Likewise, if you require high voltage operation, then the ±15 V will be optimized for operation at these voltages.

Specifications

The portfolio offers a breath of precision performance capability. Across applications there will be differences in the key performance specification requirements and priorities for the switch. This table summarizes key switch performance specifications and a general indicator for performance targets.

Parameter	Definition	Indicator
Supply Voltage	Voltage of the analog switch circuit	Must be bigger than signal amplitude
R_{ON} (On Resistance)	Resistance of the closed switch path	Lower is better
On Leakage	Leakage currents into/out of a switch channel	Lower is better
Q_{INJ} (Charge Injection)	Disturbance to the signal from the control input	Lower is better
BW (Bandwidth)	Frequency range of the switch in the on state and where the switch attenuates the input signal by 3 dB	Higher is better
Off Isolation	Measure of the signal coupling through a switch in the off state	Higher is better
Insertion Loss	Measure of the loss when the switch is in the on state.	Lower is better
Power	Maximum signal power the switch can pass in the on state	Higher is better
Propagation Delay	Time required for signal to travel through the switch	Lower is better
Bus Enable	Time required to enable or disable the bus switch	Lower is better
Data Rate	Speed of data that the switch/mux can handle	Higher is better

Overvoltage Protection and Detection Technology—ADG5401F *NEW*

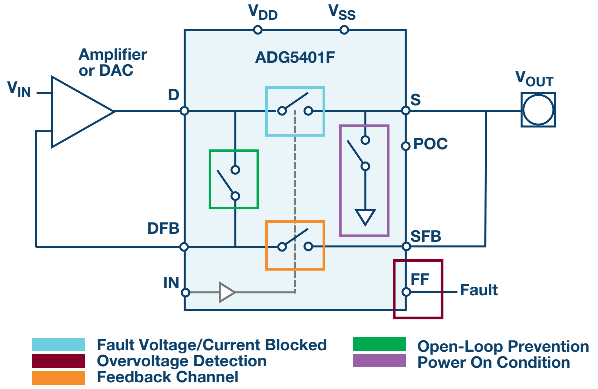
Analog Devices offers an existing range of switches that guarantee latch-up immunity and overvoltage protection up to ±55 V for harsh environment or industrial applications with supply operating voltages up to ±22 V. Using ADI's trench isolation process, these devices are immune to latch-up, which is an undesirable high current state that persists until the power supply is turned off and that can lead to device failure.

Family Benefits:

The newest member of the family is the ADG5401F, which provides analog output overvoltage protection up to ±60 V while ensuring open-loop prevention around the output drive amplifier.

- Overvoltage protection: The switch turns off and is guaranteed to withstand specified voltages on the analog inputs that exceed the switch supply voltage. For overvoltage conditions, the switch is guaranteed to be in a high impedance state protecting downstream analog components.
- Overvoltage detection: A digital indicator to signal the presence of an overvoltage condition, thereby enabling the channel in fault to be avoided or corrective action to be taken.
- Feedback channel: This higher resistance channel is used to eliminate any error that would otherwise be caused by the switch resistance.
- Open-loop prevention: Internal switch that prevents the amplifier from going into an open-loop state.
- Power-on condition: User selectable feature that prevents source node from floating.
- Power-off protection: The device is guaranteed in a high impedance off state with no power supplies present.

Optimized for robustness and protection, the overvoltage protection and detection family also offers high performance in industry-leading small packages. The ADG5401F protection is delivered in a 3 mm × 2 mm LFCSP package.



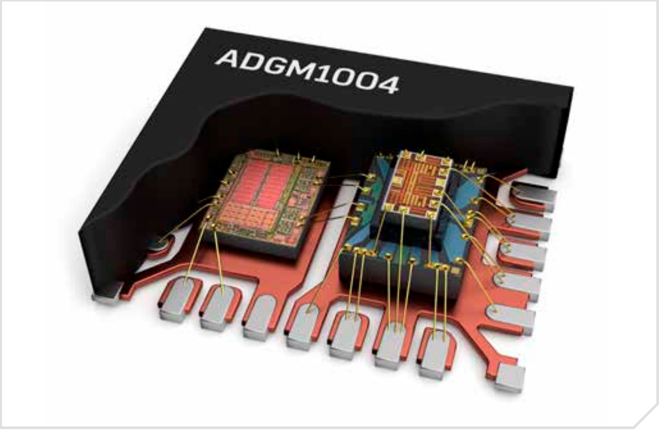
MEMS Switch Technology—ADGM1304 and ADGM1004 *NEW*

Do you want to replace your bulky, unreliable mechanical RF relays and reed relays?

Analog Devices' MEMS switch solution enables a vastly smaller, more reliable, power-saving, lighter, faster switching, and wider bandwidth relay replacement solution. This state-of-the art technology offers:

- High dc precision performance coupled with highly linear RF performance.
- Low R_{ON} leakage performance, with 0 Hz/dc to GHz bandwidth operation.

The first two devices, ADGM1304 and ADGM1004, have characterized performance from 0 Hz/dc to 14 GHz and 13 GHz, respectively. These devices are also extremely easy to use, having an integrated driver IC that removes the need for external drivers,and the ADGM1004 is further enhanced with a 2.5 kV HBM ESD rating.



ADGM1004 MEMS switch showing built-in, low voltage/low power driver on left, MEMS switch on right (SP4T) with mounted, solid-state, 5 kV HBM ESD protection die on RF pins.

For more information on ADI MEMS switch technology, visit our website at *analog.com/MEMS-switches*.

Lineage Table

Use the lineage tables below to select an alternative switch using your current switch part number. Use the *i*CMOS® alternative table to select a switch with industry-leading performance in a very small form factor. If robustness is key, use the latch-up immune and overvoltage protection and detection alternative tables.

*i*CMOS Switch Alternative

Update a vintage switch to a new *i*CMOS switch using the *i*CMOS alternative lineage table. *i*CMOS switches are available in TSSOP and ultrasmall LFCSP packages, enabling up to a 75% space savings compared to industry-standard solutions.

- ADG12xx: Switches and multiplexers that offer groundbreaking low capacitance per channel, as well as the industry's lowest, most stable charge injection performance, over the full signal range, with only 1.5 pF off capacitance and >1 pC charge injection.
- ADG14xx: The ADG14xx family of ±15 V switches and multiplexers has the industry lowest on resistance (5 Ω max) and excellent on-resistance flatness (0.5 Ω).

Latch-Up Immune and High ESD Alternative

Utilize the latch-up immune alternative table to transition from an *i*CMOS switch to a latch-up immune switch or use a combination of the *i*CMOS alternative table and the latch-up immune and high ESD alternative table to upgrade from a vintage switch to a latch-up and high ESD alternative. The latch-up immune switches are pin for pin compatible with *i*CMOS switches.

- ADG54xx: Latch-up immune, low R_{ON}, high ESD protected switches and multiplexers.
- ADG52xx: Latch-up immune, low Q_{INJ}, low leakage switches and multiplexers.

Overvoltage Protection and Detection Alternative

Use the overvoltage protection and detection alternative table to transition from *i*CMOS, latch-up immune, or a previous overvoltage protection switch to the new overvoltage protection and detection family. The overvoltage protection and detection family devices also provide latch-up immunity.

- ADG54xxF: Overvoltage protection and detection switches and multiplexers with high ESD protection, optimized for low R_{ON}.
- ADG52xxF: Overvoltage protection and detection switches and multiplexers with high ESD optimized for low leakage Q_{INJ} and capacitance.

*i*CMOS Alternative

Vintage Switch	*i*CMOS Switch
ADG201A/ADG202A	ADG1211/ADG1212
ADG211A/ADG212A	ADG1211/ADG1212
LTC201A/LTC202/LTC203	ADG1211/ADG1212/ADG1213
LTC221/LTC222	ADG1211/ADG1212
ADG221/ADG222	ADG1411/ADG1412
ADG406/ADG407	ADG1406/ADG1407
ADG408/ADG409	ADG1408/ADG1409
ADG411	ADG1411
ADG412	ADG1412
ADG413	ADG1413
ADG417	ADG1401
ADG417	ADG1402
ADG419	ADG1419
ADG426	ADG1406
ADG428	ADG1408
ADG431/ADG432	ADG1411/ADG1412
ADG433	ADG1413
ADG436	ADG1436
ADG441/ADG442	ADG1211/ADG1212
ADG444	ADG1213
ADG451	ADG1411
ADG452	ADG1412
ADG453	ADG1413
ADG506A/ADG507A	ADG1206/ADG1207
ADG508A	ADG1208
ADG509A	ADG1209
ADG526A	ADG1206
ADG527A	ADG1207
ADG528A	ADG1208
ADG529A	ADG1209

Latch-Up Immune and High ESD Alternative

*i*CMOS/Vintage Switch	Latch-Up Immune Switch
ADG1204	ADG5204
ADG1206	ADG5206
ADG1207	ADG5207
ADG1208	ADG5208
ADG1209	ADG5209
ADG1212	ADG5212
ADG1213	ADG5213
ADG1233	ADG5233
ADG1234	ADG5234
ADG1236	ADG5236
ADG1401	ADG5401
ADG1402	ADG5401
ADG1404	ADG5404
ADG1408	ADG5408
ADG1409	ADG5409
ADG1411/ADG1412	ADG5412
ADG1413	ADG5413
ADG1421	ADG5421
ADG1423	ADG5423
ADG1433	ADG5433
ADG1434	ADG5434
ADG1436	ADG5436

Overvoltage Protection and Detection Alternative

Switch Family	Part Number	New Overvoltage Protection and Detection Switch
*i*CMOS	ADG1208	ADG5208F/ADG5248F
	ADG1209	ADG5209F/ADG5249F
	ADG1233	ADG5243F
	ADG1404	ADG5404F
	ADG1411	ADG5412F/ADG5412BF
	ADG1412	ADG5412F/ADG5412BF
	ADG1413	ADG5413F/ADG5413BF
	ADG1436	ADG5436F
Latch-Up Immune	ADG5208	ADG5208F/ADG5248F
	ADG5209	ADG5209F/ADG5249F
	ADG5233	ADG5243F
	ADG5404	ADG5404F
	ADG5412	ADG5412F/ADG5412BF
	ADG5413	ADG5413F/ADG5413BF
	ADG5436	ADG5436F
Previous Overvoltage Protection	ADG438F	ADG5208F/ADG5248F
	ADG439F	ADG5209F/ADG5249F
	ADG4612	ADG5412F/ADG5412BF
	ADG4613	ADG5413F/ADG5413BF
	ADG465	ADG5462F
	ADG467	ADG5462F
	ADG508F	ADG5208F/ADG5248F
	ADG509F	ADG5209F/ADG5249F
	ADG528F	ADG5208F/ADG5248F

4 signifies low R_{ON}
2 signifies low leakage, Q_{INJ}, capacitance
F signifies fault protection and detection

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Part Number	Configuration	Specifications: R_{ON} Typ (Ω)	Off Leakage Typ (nA)	Frequency Response Min (Hz)	Frequency Response Max (GHz)	Insertion Loss Typ (dB)	Off Isolation Typ (dB)	IIP3 Typ (dBm)	Input Power Max (dBm)	Specified at Frequency (GHz)	Interface	HBM ESD Level—RF Pins (kV)	Packaging: LFCSP	Price @ 1k ($U.S.)
0 Hz/DC to RF Performance, MEMS Switches with Integrated Driver														
ADGM1304 ***New***	(4:1) × 1	1.6	0.5	0	14	0.26	24	69	36	2.5	Parallel	0.1	•	36.58
ADGM1004 ***New***	(4:1) × 1	1.6	0.5	0	13	0.45	24	67	32	2.5	Parallel	5	•	39.34

Part Number	Configuration	HBM ESD Level (kV)	Specifications					Characterization Voltages (V_{NOM})				Interface	Packaging		Price @ 1k ($U.S.)
			R_{ON} Typ (Ω)	R_{ON} Flatness (Ω)	On Leakage Typ (nA)	Q_{INJ} Typ (pC)	BW (MHz)	Single 12	Single 36	Dual ±15	Dual ±20		TSSOP	LFCSP	
Overvoltage Detection and Protection –60 V OVP to +60 V OVP															
ADG5401F ***New***	SPST ×1 with additional feedback channel	5.5	7	0.5	0.2			•	•	•	•	Parallel		•	
ADG5421F ***New***	SPST x 2	5.5	20	2	0.1			•	•	•	•	Parallel		•	
Overvoltage Detection and Protection: –55 V OVP to +55 V OVP															
ADG5412F/ ADG5413F	SPST ×4	5.5	10	0.6	0.3	680	270	•	•	•	•	Parallel	EP	•	3.96
ADG5412BF/ADG5413BF	SPST ×4	3	10	0.6	0.3	680	270	•	•	•	•	Parallel	•	•	3.96
ADG5436F	SPDT ×2	6	10	0.6	0.3	654	108	•	•	•	•	Parallel	•	•	3.86
ADG5243F	SPDT ×3	3.5	270	7	0.3	0.8	350	•	•	•	•	Parallel	•	•	4.10
ADG5404F	4:1 mux	5	10	0.6	0.3	680	108	•	•	•	•	Parallel	•	•	3.86
ADG5208F/ADG5209F	8:1/diff 4:1 mux	3.5	250	6.5	0.3	0.4	190/290	•	•	•	•	Parallel	•	•	4.21
ADG5248F/ADG5249F	8:1/diff 4:1 mux	3.5	250	6.5	0.3	0.8	190/320	•	•	•	•	Parallel	•	•	4.55
Channel Overvoltage Detection and Protection: –55 V OVP to +55 V OVP															
ADG5462F	Channel protector ×4	4	10	0.6	0.3	N/A	318	•	•	•	•		•	•	3.86

Part Number	Configuration	Specifications					Characterization Voltages (V_{NOM})				Interface	Packaging								Price @ 1k ($U.S.)
		R_{ON} Typ (Ω)	R_{ON} Flatness (Ω)	On Leakage Typ (nA)	Q_{INJ} Typ (pC)	BW (MHz)	Single 5	Single 12	Dual ±5	Dual ±15		TSSOP	LFCSP	DIP	SOIC	PLCC	SSOP	SOT/ SOT-8	MSOP	
Channel Overvoltage Protection: –40 V OVP to +40 V OVP																				
ADG465	Channel protector ×1	80		0.2						•	Parallel							•	•	0.84
ADG467	Channel protector ×8	62		0.2		21				•	Parallel				•		•			2.75
Overvoltage Protection: –5.5 V OVP to +16 V OVP																				
ADG4612/ADG4613	SPST ×4	5.2	1.4	10	225	293	•	•	•		Parallel	•	•							1.84

Part Number	Configuration	Specifications				Characterization Voltages (V_{NOM})							Interface	Packaging	Price @ 1k ($U.S.)
		R_{ON} Typ (Ω)	On Leakage Typ (nA)	Q_{INJ} Typ (pC)	BW (MHz)	Single 3.3	Single 5	Single 12	Single 36	Dual ±5	Dual ±15	Dual ±20		LFCSP	
SPI+ Interface with Digital Error Detection															
ADGS1412	SPST ×4	1.5	0.15	20	170		•	•		•	•		SPI+	•	4.37
ADGS5412	SPST ×4	9.8	0.1	245	167			•	•		•	•	SPI+	•	3.58
ADGS1212	SPST ×4	120	0.02	0.9	1000			•		•	•		SPI+	•	3.41
ADGS1612	SPST ×4	1	0.2	120	34	•	•	•		•			SPI+	•	2.88
ADGS5414	SPST ×8	13.5	0.15	125	200			•	•		•	•	SPI+	•	5.16
ADGS1208/ADGS1209	8:1/diff 4:1 mux	120	0.02	0.4	550			•			•		SPI+	•	4.41
ADGS1408/ADGS1409	8:1/diff 4:1 mux	4	0.1	50	60		•	•		•	•		SPI+	•	4.93

Part Number	Configuration	HBM ESD Level I/O Port to I/O Port (kV)	HBM ESD Level—All Other Pins (kV)	Specifications				Characterization Voltages (V_{NOM})				Interface	Packaging			Price @ 1k ($U.S.)
				R_{ON} Typ (Ω)	On Leakage Typ (nA)	Q_{INJ} Typ (pC)	BW (MHz)	Single 12	Single 36	Dual ±15	Dual ±20		TSSOP	LFCSP	MSOP	
±15 V Latch-Up Immune and High ESD																
ADG5401	SPST ×1	8	8	6.5	0.2	220	170	•	•	•	•	Parallel		•	•	1.60
ADG5421/ADG5423	SPST ×2	8	8	13.5	0.1	240	250	•	•	•	•	Parallel		•	•	1.85
ADG5412/ADG5413	SPST ×4	8	8	9.8	0.1	240	167	•	•	•	•	Parallel	•	•		2.18

Part Number	Configuration	HBM ESD Level I/O Port to I/O Port (kV)	HBM ESD Level—All Other Pins (kV)	Specifications				Characterization Voltages (V_{NOM})				Interface	Packaging			Price @ 1k ($U.S.)
				R_{ON} Typ (Ω)	On Leakage Typ (nA)	Q_{INJ} Typ (pC)	BW (MHz)	Single 12	Single 36	Dual ±15	Dual ±20		TSSOP	LFCSP	MSOP	
±15 V Latch-Up Immune and High ESD (Continued)																
ADG5212/ADG5213	SPST ×4	2.5	2.5	160	0.02	0.07	435	•	•	•	•	Parallel	•	•		2.18
ADG5419	SPDT ×1	8	8	13.5	0.1	130	190	•	•	•	•	Parallel		•	•	1.71
ADG5436	SPDT ×2	8	8	9.8	0.1	200	102	•	•	•	•	Parallel	•	•		2.26
ADG5236	SPDT ×2	2	2	160	0.02	0.6	266	•	•	•	•	Parallel	•	•		2.26
ADG5433	SPDT ×3	8	8	13.5	0.1	130	145	•	•	•	•	Parallel	•	•		2.15
ADG5233	SPDT ×3	1.5	8	160	0.08	0.6	205	•	•	•	•	Parallel	•	•		2.15
ADG5434	SPDT ×4	8	8	13.5	0.1	130	145	•	•	•	•	Parallel	•	•		3.04
ADG5234	SPDT ×4	1.5	8	160	0.08	0.6	205	•	•	•	•	Parallel	•	•		3.04
ADG5404	4:1 mux	8	8	9.8	0.1	220	53	•	•	•	•	Parallel	•	•		2.26
ADG5204	4:1 mux	2	2	160	0.02	0.6	136	•	•	•	•	Parallel	•	•		2.26
ADG5408/ADG5409	8:1/diff 4:1 mux	8	8	13.5	0.1	115	50	•	•	•	•	Parallel	•	EP		2.41
ADG5208/ADG5209	8:1/diff 4:1 mux	2	8	160	0.01	0.4	54/133	•	•	•	•	Parallel	EP	•		2.41
ADG5206/ADG5207	16:1/diff 8:1 mux	1	8	155	0.02	0.35	60/140	•	•	•	•	Parallel	•	•		4.40

Part Number	Configuration	Specifications				Characterization Voltages (V_{NOM})				Interface	Packaging								Price @ 1k ($U.S.)
		R_{ON} Typ (Ω)	On Leakage Typ (nA)	Q_{INJ} Typ (pC)	BW (MHz)	Single 5	Single 12	Dual ±5	Dual ±15		TSSOP	LFCSP	DIP	SOIC	SOT	MSOP	DIE	Other	
±15 V Analog																			
ADG1401/ADG1402	SPST ×1	1	0.2	12	120	•	•	•	•	Parallel		•				•			1.44
ADG417	SPST ×1	25	0.1	7		•	•	•	•	Parallel			•	•					1.03
ADG1201	SPST ×1	120	0.04	0.8	660		•	•	•	Parallel					•				1.01
ADG1421/ADG1422/ADG1423	SPST ×2	2.1	0.2	5	180	•	•	•	•	Parallel		•				•			1.62
ADG1221/ADG1222/ADG1223	SPST ×2	120	0.01	0.1	960		•	•	•	Parallel						•			1.27
ADG1411/ADG1412/ADG1413	SPST ×4	1.5	0.15	20	170	•	•	•	•	Parallel	•	•							2.66
ADG1211/ADG1212/ADG1213	SPST ×4	120	0.02	0.3	1000		•	•	•	Parallel	EP	•							1.94
ADG1311/ADG1312/ADG1313	SPST ×4	130	10	2	600		•		•	Parallel	•			•					1.05
ADG1414	SPST ×8	9.5	0.1	10	256	•	•	•	•	SPI	•	•							3.14
ADG1419	SPDT ×1	2.1	0.2	16	135		•	•	•	Parallel		•				•			1.52
ADG1219	SPDT ×1	120	0.02	0.1	520		•	•	•	Parallel					•				1.51
ADG1436	SPDT ×2	1.5	0.1	20	110	•	•	•	•	Parallel	•	•							2.83
ADG1236	SPDT ×2	120	0.02	1	1000		•	•	•	Parallel	•	•							1.94
ADG1433/ADG1434	SPDT ×3/SPDT ×4	4	0.05	50	200	•	•	•	•	Parallel	•	•							2.55
ADG1233/ADG1234	SPDT ×3/SPDT ×4	120	0.02	0.5	900		•	•	•	Parallel	•	•							2.30
ADG1334	SPDT ×4	130	10	2	700		•		•	Parallel								SSOP	1.62
ADG1404	4:1 mux	1.5	0.1	20	55	•	•	•	•	Parallel	•	•							2.83
ADG1204	4:1 mux	120	0.02	0.7	800		•	•	•	Parallel	•	•							2.07
ADG1408/ADG1409	8:1/diff 4:1 mux	4	0.1	50	60/115	•	•	•	•	Parallel	EP	•							3.00
ADG1438/ADG1439	8:1/diff 4:1 mux	9.5	0.1	4	82/130	•	•	•	•	SPI	•	•							2.96
ADG1208/ADG1209	8:1/diff 4:1 mux	120	0.02	0.4	550		•	•	•	Parallel	•	•		•					2.38
ADG1308/ADG1309	8:1/diff 4:1 mux	130	1	2	500		•		•	Parallel	•			•					1.47
ADG1406/ADG1407	16:1/diff 8:1 mux	9.5	0.05	10	60/110	•	•	•	•	Parallel	•	•							4.81
ADG1206/ADG1207	16:1/diff 8:1 mux	120	0.08	0.5	280/490		•	•	•	Parallel	•	•							4.36

Part Number	Configuration	Specifications				Characterization Voltages (V_{NOM})							Interface	Packaging							Price @ 1k ($U.S.)
		R_{ON} Typ (Ω)	On Leakage Typ (nA)	Q_{INJ} Typ (pC)	BW (MHz)	Single 2 to 12	Single 2.7 to 5.5	Single 3.3 to 16	Dual ±5	Dual ±2 to ±6	Dual ±2.7 to ±5.5	Dual ±3.3 to ±8		TSSOP	LFCSP	DIP	SOT	MSOP	DIE	Other	
±5 V Analog																					
ADG601/ADG602	SPST ×1	2	0.01	250	180		•				•		Parallel				•	•	•		0.90
ADG621	SPST ×2	4	0.01	110	230		•				•		Parallel					•			1.04
ADG1611/ADG1612/ADG1613	SPST ×4	1	0.2	140	42			•				•	Parallel	•	•						1.75
ADG511/ADG512/ADG513	SPST ×4	30	0.05	11			•				•		Parallel			•				CerDIP, SOIC	2.47
ADG611/ADG612/ADG613	SPST ×4	85	0.01	0.5	680		•				•		Parallel	EP							1.47
ADG619	SPDT ×1	4	0.01	110	190		•				•		Parallel				EP	•			0.95
ADG1636	SPDT ×2	1	0.3	130	25			•				•	Parallel	•	•						1.83
ADG636	SPDT ×2	85	0.01	1.2	610		•				•		Parallel	•							1.84
ADG1633	SPDT ×3	4.5	0.02	12.5	103			•				•	Parallel	•	•						1.72

Part Number	Configuration	Specifications				Characterization Voltages (V_{NOM})							Interface	Packaging							Price @ 1k ($U.S.)
						Single			Dual												
		R_{ON} Typ (Ω)	On Leakage Typ (nA)	Q_{INJ} Typ (pC)	BW (MHz)	2 to 12	2.7 to 5.5	3.3 to 16	±5	±2 to ±6	±2.7 to ±5.5	±3.3 to ±8		TSSOP	LFCSP	DIP	SOT	MSOP	DIE	Other	
±5 V Analog (Continued)																					
ADG633	SPDT ×3	52	0.005	2	580	•				•			Parallel	•	•						0.86
ADG1634	SPDT ×4	4.5	0.02	12.5	103			•				•	Parallel	•	•						2.35
ADG1604	4:1 mux	1	0.2	140	15			•				•	Parallel	•	•						1.83
ADG604	4:1 mux	85	0.01	1	280		•				•		Parallel	•							1.84
ADG608/ADG609	8:1/diff 4:1 mux	22	0.05	6			•				•		Parallel	•		•				SOIC	1.98
ADG1608/ADG1609	8:1/diff 4:1 mux	4.5	0.03	24	40/71			•				•	Parallel	•	•						1.98
LTC1380/LTC1393	8:1/diff 4:1 mux	35	0.05	1			•		•				SMBus							SOIC, QSOP	3.71
ADG658/ADG659	8:1/diff 4:1 mux	45	0.005	2	160	•				•			Parallel	•	•					QSOP	1.65
LTC1390	8:1 mux	45	0.05	2			•		•				SPI			•				SOIC	2.46
LTC1391	8:1 mux	45	0.05	2			•		•				SPI			•				SOIC, QSOP	3.11
ADG1606/ADG1607	16:1/diff 8:1 mux	4.5	0.1	27	21/37			•				•	Parallel	•	•						3.20

Part Number	Configuration	Specifications				Characterization Voltages (V_{NOM})	Interface	Packaging			Price @ 1k ($U.S.)
		Off Isolation	Insertion Loss	Power (dBm)	–3 dB BW (MHz)	Single		TSSOP	LFCSP	MSOP	
Low Voltage, DC to High Frequency RF											
ADG901/ADG902	SPST ×1	37 dB (1 GHz)	0.8 dB (1 GHz)	17	4500	1.65 to 2.75	Parallel		EP	•	1.20
ADG918/ADG919	SPDT ×1	37 dB (1 GHz)	0.8 dB (1 GHz)	17	4000	1.65 to 2.75	Parallel		•	•	1.26
ADG936/ADG936-R	SPDT ×2	36 dB (1 GHz)	0.9 dB (1 GHz)	16	4000	1.65 to 2.75	Parallel	•	•		1.78
ADG904/ADG904-R	4:1 mux	37 dB (1 GHz)	1.1 dB (1 GHz)	16	2500	1.65 to 2.75	Parallel	•	EP		1.73

Part Number	Configuration	Specifications				Characterization Voltages (V_{NOM})		Interface	Packaging	Price @ 1k ($U.S.)
						Single	Dual			
		R_{ON}	On Leakage Typ (nA)	Q_{INJ} Typ (pC)	BW (MHz)	12	±5		LFCSP	
Unbuffered Analog Crosspoint Arrays										
ADG2128	8 × 12 array	30	0.03	3.5	300	•	•	I²C	•	6.25
ADG2188	8 × 8 array	30	0.03	3.5	300	•	•	I²C	•	4.26

Part Number	Configuration	Specifications				Characterization Voltages (V_{NOM})						Level Translation	Packaging								Price @ 1k ($U.S.)
						Single				Dual											
		R_{ON} Typ (Ω)	Propagation Delay Max (ps)	Bus Enable Typ (ns)	Data Rate (Mbps)	1.15 to 5.5	1.65 to 3.6	2.3 to 3.6	3.3 to 5.0	0 to –24.2	10.8 to 35		TSSOP	LFCSP	SOT/ SOT-8	MSOP	QSOP	DIE	WLCSP	SC70	
Bus Switches																					
ADG3241	1-bit bidirectional	4.5	225	3.2	1500			•				Down								•	0.54
ADG3242	2-bit bidirectional	4.5	225	3.2	1500			•				Down			•			•			0.70
ADG3243	2-bit bidirectional	4.5	225	3.2	1500			•				Down			•						0.69
ADG3245	8-bit bidirectional	4.5	225	3.2	1244			•				Down	•	•							0.83
ADG3246	10-bit bidirecional	4.5	225	3.2	1244			•				Down		•							0.88
ADG3247	16-bit bidirecional	4.5	225	3.2	1244			•				Down	•								1.39
ADG3248	1-bit 2:1 bidirectional	4.5	225	3.2	1244			•				Down								•	0.70
ADG3257	4-bit 2:1 bidirectional	2	100	5	933				•			Down					•				0.70
Level Translators																					
ADG3231	1-bit unidirectional	N/A	4000	N/A			•					Up/down			•						0.54
ADG3233	1-bit bypass unidirectional	N/A	3500	4			•					Up/down			•	•					0.68
ADG3123	8-bit CMOS to HV unidirectional	N/A	8000		0.2					•	•	Up	•								2.33
ADG3301	1-bit bidirectional	N/A	5000	1000	50	•						Up/down								•	0.47
ADG3304	4-bit bidirectional	N/A	5000	1000	50	•						Up/down	EP	•					•		0.97
ADG3300	8-bit bidirectional	N/A	5000	1000	50	•						Up/down	•								1.62
ADG3308/ADG3308-1	8-bit bidirectional	N/A	5000	1000	50	•						Up/down	•	•					•		1.62

Part Number	Configuration	Specifications				Characterization Voltages (V_{NOM})				Interface	Packaging								Price @ 1k ($U.S.)
						Single			Dual										
		R_{ON} Typ (Ω)	On Leakage Typ (nA)	Q_{INJ} Typ (pC)	BW (MHz)	1.65 to 3.6	2.7 to 5.5	1.8 to 5.5	±2.5		TSSOP	LFCSP	SOIC	SOT	MSOP	WLCSP	SC70	Other	
<5.5 V Analog																			
ADG801/ADG802	SPST ×1	0.25	0.01	50	12			•		Parallel				•	•				0.91
ADG841/ADG842	SPST ×1	0.28	0.2	200	21	•				Parallel							•		0.71

Part Number	Configuration	Specifications				Characterization Voltages (V_{NOM})				Interface	Packaging								Price @ 1k ($U.S.)
		R_{ON} Typ (Ω)	On Leakage Typ (nA)	Q_{INJ} Typ (pC)	BW (MHz)	Single			Dual										
						1.65 to 3.6	2.7 to 5.5	1.8 to 5.5	±2.5		TSSOP	LFCSP	SOIC	SOT	MSOP	WLCSP	SC70	Other	
<5.5 V Analog (Continued)																			
ADG701/ADG702/ADG701L/ADG702L	SPST ×1	2	0.01	5	200			•		Parallel				•	•				0.61
ADG741/ADG742	SPST ×1	2	0.01	5	200			•		Parallel							•		0.66
ADG751	SPST ×1	15	0.01	1	300			•		Parallel				•	•				1.06
ADG821/ADG822/ADG823	SPST ×2	0.5	0.01	15	24			•		Parallel					•				1.21
ADG721/ADG722/ADG723	SPST ×2	2.5	0.01	2	200			•		Parallel		•			•				0.66
ADG811/ADG812	SPST ×4	0.5	0.2	30	90	•				Parallel	•								1.49
ADG711/ADG712/ADG713	SPST ×4	2.5	0.01	3	200			•		Parallel	•		•						0.91
ADG781/ADG782/ADG783	SPST ×4	2.5	0.01	3	200			•		Parallel		•							1.06
ADG714	SPST ×8	2.5	0.01	3	155		•		•	SPI	•	•							1.77
ADG715	SPST ×8	2.5	0.01	3	155		•		•	I^2C	•								2.07
ADG819	SPDT ×1	0.5	0.01	20	17			•		Parallel				•	•	•			0.94
ADG839	SPDT ×1	0.35	0.2	70	25	•				Parallel							•		0.77
ADG849	SPDT ×1	0.5	0.04	50	38			•		Parallel							•		0.65
ADG852	SPDT ×1	0.8	0.03	30	100			•		Parallel		•							0.61
ADG719	SPDT ×1	2.5	0.01		200			•		Parallel				EP	•				0.69
ADG749	SPDT ×1	2.5	0.01		200			•		Parallel							•		0.71
ADG779	SPDT ×1	2.5	0.01	2	200			•		Parallel							•		0.65
ADG752	SPDT ×1	15	0.01		250			•		Parallel				•	•				1.17
ADG884	SPDT ×2	0.28	0.2	125	18			•		Parallel		•			•	•			0.91
ADG824	SPDT ×2	0.5	0.2	27	90	•				Parallel		•							0.80
ADG836/ADG836L	SPDT ×2	0.5	0.2	40	57	•				Parallel		•			•				1.21
ADG854	SPDT ×2	0.8	0.03	30	100			•		Parallel		•							0.91
ADG736/ADG736L	SPDT ×2	2.5	0.01		200			•		Parallel					•				0.91
ADG787	SPDT ×2	2.5	0.05	14	145			•		Parallel		•			•	•			0.93
ADG772	SPDT ×2	6.7	0.2	0.5	630	•				Parallel		•							0.81
ADG733	SPDT ×3	2.5	0.01	3	160			•	•	Parallel	•							QSOP	1.30
ADG786	SPDT ×3	2.5	0.01	3	160			•	•	Parallel		•							1.30
ADG858	SPDT ×4	0.58	0.01	45	70			•		Parallel		•							1.27
ADG774	SPDT ×4	2.2	0.01	7	240			•		Parallel			•					QSOP	1.77
ADG784	SPDT ×4	2.2	0.01	10	240			•		Parallel		•							1.72
ADG774A	SPDT ×4	2.2	0.001	6	400			•		Parallel		•						QSOP	1.84
ADG734	SPDT ×4	2.5	0.01	3	160			•	•	Parallel	•								1.37
ADG788	SPDT ×4	2.5	0.01	3	160			•	•	Parallel		•							1.37
ADG794	SPDT ×4	5	0.001	6	300		•			Parallel								QSOP	0.66
ADG888	DPDT ×2	0.4	0.2	70	29			•		Parallel	•	•				•			1.62
ADG804	4:1 mux	0.5	0.1	28	33	•				Parallel					•				1.21
ADG704	4:1 mux	2.5	0.01	3	200			•		Parallel					•				0.96
ADG728/ADG729	8:1/diff 4:1 mux	2.5	0.01	3	65/100		•			I^2C	•								1.90
ADG738/ADG739	8:1/diff 4:1 mux	2.5	0.01	3	65/100		•			SPI	•								1.62
ADG708/ADG709	8:1/diff 4:1 mux	3	0.01	3	55			•	•	Parallel	•								1.27
ADG758/ADG759	8:1/diff 4:1 mux	3	0.01	3	55			•	•	Parallel		•							1.27
ADG706/ADG707	16:1/diff 8:1 mux	2.5	0.01	5	25/36			•	•	Parallel	•								2.58
ADG726/ADG732	32:1/diff-dual 16:1 mux	4	0.05	5	34/18			•	•	Parallel		•						TQFP	4.56
ADG725/ADG731	32:1/diff-dual 16:1 mux	4	0.05	5	34/18			•	•	SPI		•						TQFP	4.65

Part Number	Configuration	Temperature Range	Specifications				Characterization Voltages (V_{NOM})							Interface	Packaging				Price @ 1k ($U.S.)
			R_{ON} Max (Ω)	On Leakage Max (nA)	Q_{INJ} (pC)	BW (MHz)	Single				Dual				Ceramic Flatpack	TSSOP (–55 to 175)	KGD	Ceramic Flatpack RFG[1]	
							3	5	12	36	±2.5	±15	±20						
High Temperature																			
ADG798	8:1 mux	−55°C to +210°C	10	2600	3	55	•	•			•			Parallel	•	•	•	•	95.00
ADG5298	8:1 mux	−55°C to +210°C	400	70	0.2	110			•	•		•	•	Parallel	•	•		•	123.50

Note:

Not all products listed: Switch and multiplexer products not recommended for new designs are not listed here.

EP: Enhanced product switch available in addition to standard switch for specific package.

SPI+: SPI device, which has multiple modes of operation. See Interface section for further details.

[1] Reverse formed gullwing leads.