Switches and Multiplexers Portfolio

Analog Devices offers a large range of switches and multiplexers covering single to multiple switch elements with various signal ranges and in a variety of packages to best suit customer application needs.

Analog Devices switches can be classified into families when choosing based on supply voltage. High voltage switches are optimized when using the maximum signal range, but are also specified for use at lower voltages. The following families of parts exist:

ADG54xxF *New*

- Fault detection and protection, best-in-class for switch/mux fault protection
- ±55 V OVP in power-on and power-off states, high ESD, latch-up immune
- Operational up to ±22 V dual supply and +44 V single supply

ADG52xx

- Latch-up immune under all conditions, high ESD, lowest leakage at temperature in ±15 V class
- Operational up to ±22 V dual supply and +40 V single supply
- Optimized for robustness and precision operation

ADG54xx

- Latch-up immune under all conditions, highest ESD in the ±15 V class
- Operational up to ±22 V dual supply and +40 V single supply
- Optimized for robustness and precision operation

ADG14xx

- Lowest R_{ON} in ±15 V class; minimum distortion and high continuous current
- Min 1 Ω R_{ON}, 0.2 Ω R_{ON} flatness

ADG12xx

- Lowest Q_{INJ} and capacitance in ±15 V class
- <1 pC Q_{INJ}, 2 pF off capacitance

ADG13xx

- ±15 V R_{ON} and Q_{INJ} optimized
- Optimized for standard performance applications

ADG5xx

- ±15 V and ±5 V low Q_{INJ} and capacitance
- R_{ON} = 30 Ω to 280 Ω, Q_{INJ} = 4 pC to 11 pC
- ADG5xxF ±15 V with overvoltage/fault protection –40 V to +55 V

ADG4xx

- ±15 V low R_{ON} and low Q_{INJ}; R_{ON} = 4 Ω to 50 Ω, Q_{INJ} = 1 pC to 20 pC
- ADG4xxF ±15 V with overvoltage/fault protection –40 V to +55 V

ADG2xx

- ±15 V low Q_{INJ} and capacitance
- R_{ON} = 30 Ω to 115 Ω, Q_{INJ} = 10 pC to 20 pC

ADG46xx

- ±5 V power-off protection with overvoltage –5.5 V to +16 V
- Optimized for robustness and protection

ADG16xx

- Lowest R_{ON} in ±5 V class; minimum distortion and high continuous current
- Min 1 Ω R_{ON}, 0.2 Ω R_{ON} flatness

ADG6xx

- ±5 V low R_{ON} and low Q_{INJ}
- R_{ON} = 2 Ω to 85 Ω, Q_{INJ} = 0.5 pC to 50 pC

ADG8xx

- <5.5 V ultralow R_{ON} and minimum distortion and high continuous current
- R_{ON} = 0.25 Ω to 0.8 Ω, 0.05 Ω to 0.17 Ω R_{ON} flatness

ADG7xx

- <5.5 V low R_{ON}
- R_{ON} = 2.2 Ω to 15 Ω, Q_{INJ} = 2 pC to 14 pC

ADG9xx

- Low voltage dc to high frequency RF
- –3 dB BW = 2.5 GHz to 4.5 GHz

ADG3xxx

- Low voltage level translators/bus switches
- Unidirectional and bidirectional digital

ADG21xx

- Unbuffered crosspoint switches
- Dual- and single-supply I²C controlled

Enhanced Product and Automotive Parts

- Please contact ADI technical support and sales for details

analog.com/switch-mux

ANALOG DEVICES

Part Number	Function	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)	5	12	36	±5	±15	±20		TSSOP	LFCSP	DIP	SOIC	PLCC	Cerdip	LCC	SSOP	SOT/ SOT-8	MSOP	DIE	
Unbuffered Analog Crosspoint Arrays																								
ADG2188	8 × 8 array	30	0.03	3.5	300		•		•			I²C		•										4.21
ADG2128	8 × 12 array	30	0.03	3.5	300		•		•			I²C		•										6.29
±15 V Analog																								
ADG1401/ADG1402	SPST × 1	1	0.2	12	120	•	•		•	•		Parallel		•								•		1.44
ADG417	SPST × 1	25	0.1	7		•	•		•	•		Parallel			•	•								1.02
ADG1201/ADG1202	SPST × 1	120	0.04	0.8	660		•		•	•		Parallel									•			0.79
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										•		0.99
ADG1411/ADG1412/ADG1413	SPST × 4	1.5	0.15	20	170	•	•		•	•		Parallel	•	•										2.66
ADG451/ADG452/ADG453	SPST × 4	4	0.04	20		•	•		•	•		Parallel	•		•	•								1.95
ADG431/ADG432/ADG433	SPST × 4	17	0.1	5		•	•		•	•		Parallel			•	•							•	1.95
ADG411/ADG412/ADG413	SPST × 4	25	0.1	5		•	•		•	•		Parallel	•		•	•							•	1.95
ADG201HS	SPST × 4	30	0.1	10			•		•	•		Parallel			•	•	•						•	2.72
ADG441/ADG442/ADG444	SPST × 4	40	0.08	1		•	•		•	•		Parallel			•	•							•	0.75
ADG201A/ADG202A	SPST × 4	60	0.5	20					•	•		Parallel			•	•	•						•	1.62
ADG221	SPST × 4	60	0.5	20					•	•		Parallel			•	•	•							1.49
ADG211A/ADG212A	SPST × 4	115	0.5	20						•		Parallel			•	•	•							1.39
ADG1211/ADG1212/ADG1213	SPST × 4	120	0.02	0.3	1000		•		•	•		Parallel	•	•										1.53
ADG1311/ADG1312/ADG1313	SPST × 4	130	10	2	600		•			•		Parallel	•			•								1.17
ADG1414	SPST × 8	9.5	0.1	10	256	•	•		•	•		SPI	•	•										3.14
ADG1419	SPDT × 1	2.1	0.2	16	135		•		•	•		Parallel		•								•		1.52
ADG419	SPDT × 1	25	0.4			•	•		•	•		Parallel			•	•		•				•	•	1.28
ADG1219	SPDT × 1	120	0.02	0.1	520		•		•	•		Parallel									•			0.93
ADG1436	SPDT × 2	1.5	0.1	20	110	•	•		•	•		Parallel	•	•										2.53
ADG436	SPDT × 2	12	0.05	10		•	•		•	•		Parallel			•	•								2.31
ADG1236	SPDT × 2	120	0.02	1	1000		•		•	•		Parallel	•	•										1.44
ADG1433/ADG1434	SPDT × 3/SPDT × 4	4	0.05	50	200	•	•		•	•		Parallel	•	•										2.17
ADG333A	SPDT × 4	20	0.1	2		•	•		•	•		Parallel			•	•				•				2.73
ADG1233/ADG1234	SPDT × 3/SPDT × 4	120	0.02	0.5	900		•		•	•		Parallel	•	•										2.17
ADG1334	SPDT × 4	130	10	2	700		•			•		Parallel								•				2.15
ADG1404F	4:1 mux	1.5	0.1	20	55	•	•		•	•		Parallel	•	•										2.53
ADG1204	4:1 mux	120	0.02	0.7	800		•		•	•		Parallel	•	•										1.44
ADG1408/ADG1409	8:1 diff/4:1 mux	4	0.1	50	60/115	•	•		•	•		Parallel	•	•										2.55
ADG1438/ADG1439	8:1 diff/4:1 mux	9.5	0.1	4	82/130	•	•		•	•		SPI	•	•										2.96
ADG408/ADG409	8:1 diff/4:1 mux	40	1	20		•	•		•	•		Parallel	•		•	•								2.48
ADG428	8:1 mux	60	1	4		•			•	•		Parallel			•	•	•						•	3.14
ADG1208/ADG1209	8:1 diff/4:1 mux	120	0.02	0.4	550		•		•	•		Parallel	•	•		•								2.55
ADG1308/ADG1309	8:1 diff/4:1 mux	130	1	2	500		•			•		Parallel	•			•								1.95
ADG508A/ADG509A	8:1 diff/4:1 mux	280	0.04	4			•		•	•		Parallel			•	•	•	•	•				•	2.44
ADG1406/ADG1407	16:1 diff/8:1 mux	9.5	0.05	10	60/110	•	•		•	•		Parallel	•	•										4.81
ADG406/ADG407	16:1 diff/8:1 mux	50	1	8		•	•		•	•		Parallel			•		•							5.54
ADG426	16:1 mux	50	1	8		•	•		•	•		Parallel			•					•				5.36
ADG1206/ADG1207	16:1 diff/8:1 mux	120	0.08	0.5	280/490		•		•	•		Parallel	•	•										4.14
ADG506A/ADG507A	16:1 diff/8:1 mux	280	0.04	4			•		•	•		Parallel	•		•	•	•	•	•				•	5.41
ADG526A/ADG527A	16:1 diff/8:1 mux	280	0.04	4			•		•	•		Parallel			•	•	•	•					•	5.38

Part Number	Function	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.)
								Single			Dual							
				R_{ON} Typ (Ω)	On Leakage Typ (nA)	Q_{INJ} Typ (pC)	BW (MHz)	5	12	36	±5	±15	±20		TSSOP	LFCSP	MSOP	
±15 V Latch-Up Immune																		
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
ADG5412F/ADG5413	SPST × 4	8	8	9.8	0.1	240	167		•	•		•	•	Parallel	•	•		2.18
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	•	•		2.41
ADG5208/ADG5209	8:1 diff/4:1 mux	2	8	160	0.01	0.4	54/133		•	•		•	•	Parallel	•	•		2.41
ADG5206/ADG5207	16:1 diff/8:1 mux	1	8	155	0.02	0.35	60/140		•	•		•	•	Parallel	•	•		4.40

Part Number	Function	Special Feature	HBM ESD Level (kV)	Specifications					Characterization Voltages (V_{NOM})						Interface	Packaging		Price @ 1k ($U.S.)
									Single			Dual						
				R_{ON} Typ (Ω)	R_{ON} Flatness (Ω)	On Leakage Typ (nA)	Q_{INJ} Typ (pC)	BW (MHz)	5	12	36	±5	±15	±20		TSSOP	LFCSP	
Fault Detection and Protection; –55 V OVP to +55 V OVP																		
ADG5412F/ADG5413F ***New***	SPST × 4	Unidirectional fault detection and protection	5.5	10	0.5	0.3	680	270		•	•		•	•	Parallel	•		3.96
ADG5412BF/ADG5413BF ***New***	SPST × 4	Bidirectional fault detection and protection	3	10	0.5	0.3	680	270		•	•		•	•	Parallel	•		3.96
ADG5404F ***New***	4:1 mux	Unidirectional fault detection and protection	4	10	0.5	0.3	654	108		•	•		•	•	Parallel	•		3.86

Part Number	Function	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)	5	12	36	±5	±15	±20		TSSOP	LFCSP	DIP	SOIC	PLCC	SSOP	SOT/ SOT-8	MSOP	DIE	
Fault Protection; –40 V OVP to +40 V OVP																						
ADG438F/ADG439F	8:1 diff/4:1 mux	250	0.01	4						•		Parallel			•	•						3.64
ADG508F/ADG509F	8:1 diff/4:1 mux	300	0.04	4						•		Parallel	•		•	•						3.27
ADG528F	8:1 mux	300	0.04	4						•		Parallel					•					3.86
Channel Fault Protection; –40 V OVP to +40 V OVP																						
ADG465	Channel protector × 1	80	0.2							•		Parallel							•	•		0.75
ADG467	Channel protector × 8	60	0.2		21					•		Parallel				•		•				2.15
Fault Protection; –5.5 V OVP to +16 V OVP																						
ADG4612/ADG4613	SPST × 4	5.2	10	225	293	•	•		•			Parallel	•	•								1.84

Part Number	Function	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	Cerdip	SOIC	SOT/ SOT-8	MSOP	QSOP	DIE	
±5 V Analog																						
ADG601/ADG602	SPST × 1	2	0.01	250	180		•				•		Parallel						•	•	•	0.89
ADG621	SPST × 2	4	0.01	110	230		•				•		Parallel							•		0.94
ADG1611/ADG1612/ADG1613	SPST × 4	1	0.2	140	42			•				•	Parallel	•	•							1.75
ADG511/ADG512/ADG513	SPST × 4	30	0.05	11			•		•				Parallel			•	•	•				2.04
ADG611/ADG612/ADG613	SPST × 4	85	0.01	0.5	680		•				•		Parallel	•								1.45
ADG619	SPDT × 1	4	0.01	110	190		•				•		Parallel						•	•		0.94
ADG1636	SPDT × 2	1	0.3	130	25			•				•	Parallel	•	•							1.83
ADG636	SPDT × 2	85	0.01	1.2	610		•				•		Parallel	•								1.55
ADG1633	SPDT × 3	4.5	0.02	12.5	103			•				•	Parallel	•	•							1.72
ADG633	SPDT × 3	52	0.005	2	580	•				•			Parallel	•	•							0.85
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	•								1.55
ADG1608/ADG1609	8:1 diff/4:1 mux	4.5	0.03	24	40/71			•				•	Parallel	•	•							1.98
ADG658/ADG659	8:1 diff/4:1 mux	45	0.005	2	160	•				•			Parallel	•	•						•	0.85
ADG1606/ADG1607	16:1 diff/8:1 mux	4.5	0.1	27	21/37			•				•	Parallel	•	•							3.20

Part Number	Function	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/ SOT-8	MSOP	QSOP	WLCSP	TQFP	SC70	
<5.5 V Analog																				
ADG801/ADG802	SPST × 1	0.25	0.01	50	12			•		Parallel				•	•					0.90
ADG841/ADG842	SPST × 1	0.28	0.2	200	21	•				Parallel									•	0.57
ADG701/ADG702/ADG701L/ADG702L	SPST × 1	2	0.01	5	200			•		Parallel				•	•					0.60
ADG741/ADG742	SPST × 1	2	0.01	5	200			•		Parallel									•	0.65
ADG751	SPST × 1	15	0.01	1	300			•		Parallel				•	•					0.90
ADG821/ADG822/ADG823	SPST × 2	0.5	0.01	15	24			•		Parallel					•					1.02
ADG721/ADG722/ADG723	SPST × 2	2.5	0.01	2	200			•		Parallel		•			•					0.65
ADG811/ADG812	SPST × 4	0.5	0.2	30	90	•				Parallel	•									1.22
ADG711/ADG712/ADG713	SPST × 4	2.5	0.01	3	200			•		Parallel	•		•							0.90
ADG781/ADG782/ADG783	SPST × 4	2.5	0.01	3	200			•		Parallel		•								0.90
ADG714	SPST × 8	2.5	0.01	3	155		•		•	SPI	•									1.75
ADG715	SPST × 8	2.5	0.01	3	155		•		•	I²C	•									1.75
ADG819	SPDT × 1	0.5	0.01	20	17			•		Parallel				•	•		•			0.93
ADG849	SPDT × 1	0.5	0.04	50	38			•		Parallel									•	0.64
ADG852	SPDT × 1	0.8	0.03	30	100			•		Parallel		•								0.61
ADG719	SPDT × 1	2.5	0.01		200			•		Parallel				•	•					0.65
ADG749	SPDT × 1	2.5	0.01		200			•		Parallel									•	0.70

Part Number	Function	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/ SOT-8	MSOP	QSOP	WLCSP	TQFP	SC70	
<5.5 V Analog (continued)																				
ADG779	SPDT × 1	2.5	0.01	2	200			•		Parallel									•	0.64
ADG752	SPDT × 1	15	0.01		250			•		Parallel				•	•					1.17
ADG884	SPDT × 2	0.28	0.2	125	18			•		Parallel		•			•		•			0.90
ADG824	SPDT × 2	0.5	0.2	27	90	•				Parallel		•								0.80
ADG836/ADG836L	SPDT × 2	0.5	0.2	40	57	•				Parallel		•			•					0.98
ADG854	SPDT × 2	0.8	0.03	30	100			•		Parallel		•								0.91
ADG736/ADG736L	SPDT × 2	2.5	0.01		200			•		Parallel					•					0.90
ADG787	SPDT × 2	2.5	0.05	14	145			•		Parallel		•			•		•			0.92
ADG772	SPDT × 2	6.7	0.2	0.5	630	•				Parallel		•								0.81
ADG733	SPDT × 3	2.5	0.01	3	160			•	•	Parallel	•					•				1.10
ADG786	SPDT × 3	2.5	0.01	3	160			•	•	Parallel		•								1.10
ADG858	SPDT × 4	0.58	0.01	45	70			•		Parallel		•								1.27
ADG774	SPDT × 4	2.2	0.01	7	240			•		Parallel			•			•				1.45
ADG784	SPDT × 4	2.2	0.01	10	240			•		Parallel		•								1.45
ADG774A	SPDT × 4	2.2	0.001	6	400			•		Parallel		•				•				1.49
ADG734	SPDT × 4	2.5	0.01	3	160			•	•	Parallel	•									1.35
ADG788	SPDT × 4	2.5	0.01	3	160			•	•	Parallel		•								1.35
ADG794	SPDT × 4	5	0.001	6	300		•			Parallel						•				1.23
ADG790	SPDT × 4 diff/4:1 mux	5.9/3.9	10	0.57/6.2	550/230	•				Parallel							•			2.64
ADG888	DPDT × 2	0.4	0.2	70	29			•		Parallel	•	•					•			1.60
ADG804	4:1 mux	0.5	0.1	28	33	•				Parallel					•					0.98
ADG704	4:1 mux	2.5	0.01	3	200			•		Parallel					•					0.95
ADG728/ADG729	8:1 diff/4:1 mux	2.5	0.01	3	65/100		•			I²C	•									1.60
ADG738/ADG739	8:1 diff/4:1 mux	2.5	0.01	3	65/100		•			SPI	•									1.60
ADG708/ADG709	8:1 diff/4:1 mux	3	0.01	3	55			•	•	Parallel	•									1.25
ADG758/ADG759	8:1 diff/4:1 mux	3	0.01	3	55			•	•	Parallel		•								1.25
ADG706/ADG707	16:1 diff/8:1 mux	2.5	0.01	5	25/36			•	•	Parallel	•									2.55
ADG726/ADG732	32:1 diff-dual/16:1 mux	4	0.05	5	34/18			•	•	Parallel		•						•		4.51
ADG725/ADG731	32:1 diff-dual/16:1 mux	4	0.05	5	34/18			•	•	SPI		•						•		4.59

Part Number	Function	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/Level Translators																					
ADG3241	1-bit bidirectional	4.5	225	3.2	1500			•				Down								•	0.43
ADG3242	2-bit bidirectional	4.5	225	3.2	1500			•				Down			•			•			0.56
ADG3243	2-bit bidirectional	4.5	225	3.2	1500			•				Down			•						0.56
ADG3245	8-bit bidirectional	4.5	225	3.2	1244			•				Down	•	•							0.71
ADG3246	10-bit bidirecional	4.5	225	3.2	1244			•				Down	•								0.74
ADG3247	16-bit bidirecional	4.5	225	3.2	1244			•				Down		•							0.98
ADG3248	1-bit 2:1 bidirectional	4.5	225	3.2	1244			•				Down								•	0.56
ADG3257	4-bit 2:1 bidirectional	2	100	5	933				•			Down					•				0.59
Level Translators																					
ADG3231	1-bit unidirectional	N/A	4000	N/A			•					Up/down			•						0.43
ADG3233	1-bit bypass unidirectional	N/A	3500	4			•					Up/down			•	•					0.57
ADG3123	8-bit CMOS to HV unidirectional	N/A	8000		0.2					•	•	Up	•								2.30
ADG3301	1-bit bidirectional	N/A	5000	1000	50	•						Up/down								•	0.46
ADG3304	4-bit bidirectional	N/A	5000	1000	50	•						Up/down	•	•					•		0.96
ADG3300	8-bit bidirectional	N/A	5000	1000	50	•						Up/down	•								1.60
ADG3308/ADG3308-1	8-bit bidirectional	N/A	5000	1000	50	•						Up/down	•	•					•		1.60

Part Number	Function	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		•	•	1.03
ADG918/ADG919	SPDT × 1	37 dB (1 GHz)	0.8 dB (1 GHz)	17	4000	1.65 to 2.75	Parallel		•	•	1.07
ADG936/ADG936-R	SPDT × 2	36 dB (1 GHz)	0.9 dB (1 GHz)	16	4000	1.65 to 2.75	Parallel	•	•		1.52
ADG904/ADG904-R	4:1 mux	37 dB (1 GHz)	1.1 dB (1 GHz)	16	2500	1.65 to 2.75	Parallel	•	•		1.52

Choosing the Correct Switch or Multiplexer for Your Application

Supply voltage, configuration, specifications, robustness level, and package are the key requirements in choosing the correct switch/mux for your application. As an individual switch cannot be optimized in all respects, Analog Devices offers a large and varied selection of options that cover differing supply voltages and configurations, high performance, and industry-leading package sizes.

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. Low voltage switches can offer performance advantages over higher voltage switches. High voltage switches are optimized when using the maximum signal range, but are specified for use at lower voltages also. ADI offers a varied range of supply voltages from:

- ±15 V
- ±5 V
- Low voltage (up to 5 V)
- 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 and the performance will degrade as the voltage is reduced.

Configuration

Do you need a switch or a multiplexer? If 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)? What interface do you require?

- I^2C: 2-wire digital interface; SCL (clock) and SDA (data)
- SPI: 3-wire serial interface; FSYNC, DATA, SCLK
- Parallel: simple digital interface; logic high/low on the pin dictates the state of the switch
- SPI and I^2C offers the advantage of reducing the number of digital pins required when using switches/muxes of large array size

Robustness Feature Set

Do you require a switch/mux optimized for robustness with fault detection capabilities, overvoltage protection up to ±55 V, latch-up immunity, and power-off protection (with overvoltage)? Then ADI has the product to meet your needs.

Fault detection means the parts offer a digital indicator to signal the presence of a fault condition, thereby enabling the channel in fault to be avoided or corrective action to be taken. Overvoltage protection means the switch is guaranteed to withstand specified voltages on the analog inputs that exceed the supplies. Latch-up immunity means that latch-up will not occur regardless of the power sequence to the device. Power-off protection means the device is guaranteed in a high impedance off state with no power supplies present.

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.

Specifications

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 signal from control input	Lower is better
BW (bandwidth)	Frequency range of the switch in the on state where the switch attenuates the input signal by 3 dB	Higher is better
Off isolation	Transfer function of the switch when in the off state	Higher is better
Insertion loss	Transfer function of the switch when 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 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

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.

Technical Support and Sales

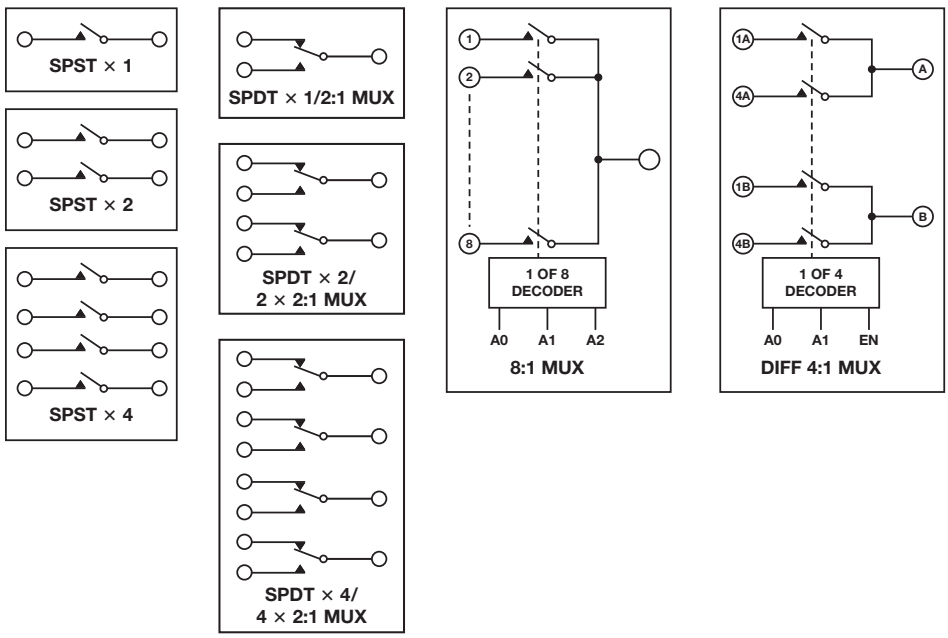
Applications engineers are available by phone or email to discuss any queries with regard to any of our switches. Details can be found on our website *www.analog.com.* Samples are available for all our switches and can be requested through your local ADI representative.

Examples of Some of the Package Types Available

Package		Lead Count Options	Example Body Size (mm)	Example Board Area (sq 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[2]
MSOP		8/10	3.0 × 3.0 × 1.1 (8-lead)	14.7 (8-lead)	0.65 (8-lead)	RM-X[2]
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[2]
SOT-23		5/6/8	2.9 × 1.6 × 1.175 (5-lead)	8.12 (5-lead)	0.95 (5-lead)	RT/RJ-X[2]
SC70		5/6	1.25 × 2.0 × 0.65 (5-lead)	4.2 (5-lead)	0.65 (5-lead)	KS-X[2]
SOT-66		6	1.66 × 1.2 × 0.57 (6-lead)	2.74 (6-lead)	0.5 (6-lead)	RY-X[2]
Mini LFCSP		10/16	1.3 × 1.6 × 0.6 (10-lead)	2.08 (10-lead)	0.4 (10-lead)	CP-X[2]
WLCSP[1]		5/6/10/12/16	0.9 × 1.29 × 0.5 (5-ball)	1.16 (5-ball)	0.5 (5-ball)	CB-X[2]

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

Common Switch and Multiplexer Configurations



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

I²C refers to a communications protocol originally developed by Philips Semiconductors (now NXP Semiconductors).

Printed in the U.S.A. STx-x-x/14(G)

Analog Devices, Inc.
Worldwide Headquarters
Analog Devices, Inc.
One Technology Way
P.O. Box 9106
Norwood, MA 02062-9106
U.S.A.
Tel: 781.329.4700
(800.262.5643,
U.S.A. only)
Fax: 781.461.3113

Analog Devices, Inc.
Europe Headquarters
Analog Devices, Inc.
Wilhelm-Wagenfeld-Str. 6
80807 Munich
Germany
Tel: 49.89.76903.0
Fax: 49.89.76903.157

Analog Devices, Inc.
Japan Headquarters
Analog Devices, KK
New Pier Takeshiba
South Tower Building
1-16-1 Kaigan, Minato-ku,
Tokyo, 105-6891
Japan
Tel: 813.5402.8200
Fax: 813.5402.1064

Analog Devices, Inc.
Asia Pacific Headquarters
Analog Devices
5F, Sandhill Plaza
2290 Zuchongzhi Road
Zhangjiang Hi-Tech Park
Pudong New District
Shanghai, China 201203
Tel: 86.21.2320.8000
Fax: 86.21.2320.8222

ANALOG DEVICES