19-0060; Rev 0; 8/92

MAXIM

Quad, SPST, CMOS, TTL-Compatible Analog Switches

1.0 SCOPE

1.1 This specification covers the detail requirements for two quad, SPST, CMOS switches. These circuits are processed in accordance with MIL-STD-883 and are fully compliant to paragraph 1.2.1.

It is highly recommended that this data sheet be used as a baseline for new military or aerospace source control drawings.

For typical applications and operating characteristics, consult Maxim's data books.

1.2 Part Numbers

Device	Part Number
-1	DG308AA(X)/883B
-2	DG309A(X)/883B

1.3 Package

(X)	Package	Description
K	K-16	16-Pin Ceramic Dual-In-Line Package (CERDIP)

Note: See *Package Information* section for package drawing and dimensions.

1.4 Absolute Maximum Ratings

(T_A = +25°C, unless otherwise noted.)

V+ to V- 44V
V+ to GND 25V
Digital Input Overvoltage Range ..... (V- - 2V) to (V+ + 2V) or 20mA (whichever comes first)
Current (any terminal except S or D) 30mA
Continuous Current (S or D) 20mA
(pulsed at 1ms, 10% duty cycle max) 70mA
Power Dissipation (Tj = +150°C)
up to +70°C 800mW
derate above +70°C ..... 10mW/°C
Operating Temperature Range ..... -55°C to +125°C
Storage Temperature Range ..... -65°C to +150°C
Lead Temperature (soldering, 10 sec) ..... +300°C

1.5 Thermal Resistance

Θ_{JC} = 50°C/W
Θ_{JA} = 100°C/W

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2.0 REQUIREMENTS

2.1 Electrical performance characteristics are specified in Table 1 and apply over the full ambient operating temperature range, unless otherwise specified.

TABLE 1. ELECTRICAL PERFORMANCE CHARACTERISTICS (Note 1)

CHARACTERISTICS	SYMBOL	CONDITIONS		DEVICE TYPES	GROUP A SUB-GROUPS	LIMITS MIN	LIMITS MAX	UNITS
Analog-Signal Range	V_{ANALOG}	V_S = ±15V		All	1, 2, 3	-15	15	V
Drain-Source On Resistance	$r_{DS(ON)}$	I_S = 1mA, V_D = ±10V, V_{IN} = 11V (DG308A), V_{IN} = 3.5V (DG309)		All	1, 3		100	Ω
					2		150	
Source-Off Leakage Current	$I_{S(OFF)}$	V_{IN} = 3.5V (DG308A), V_{IN} = 11V (DG309)	V_S = 14V, V_D = -14V	All	1	-1	1	nA
					2	-100	100	
			V_S = -14V, V_D = 14V		1	-1	1	
					2	-100	100	
Drain-Off Leakage Current	$I_{D(OFF)}$	V_{IN} = 3.5V (DG308A), V_{IN} = 11V (DG309)	V_S = 14V, V_D = -14V	All	1	-1	1	nA
					2	-100	100	
			V_S = -14V, V_D = 14V		1	-1	1	
					2	-100	100	
Drain-On Leakage Current	$I_{D(ON)}$	V_{IN} = 11V (DG308A) V_{IN} = 3.5V (DG309)	V_S = V_D = 14V	All	1	-1	1	nA
					2	-100	100	
			V_S = V_D = -14V		1	-1	1	
					2	-100	100	
Input Current with Voltage High	I_{INH}	V_{IN} = 15V		All	1, 2		1	µA
Input Current with Voltage Low	I_{INL}	V_{IN} = 0V		All	1, 2	-1		µA
Positive Supply Current	I+	All channels on or off, V_{IN} = 0V or 15V		All	1, 3		10	µA
					2		100	
Negative Supply Current	I-	All channels on or off, V_{IN} = 0V or 15V		All	1, 3	-10		µA
					2	-100		
DYNAMIC								
Turn-On Time	t_{ON}	Figure 1		All	9		200	ns
					10, 11		400	
Turn-Off Time	t_{OFF}	Figure 1		All	9		150	ns
					10, 11		350	

Note 1: V+ = 15V, V- = -15V, GND = 0V, V_{INH} = 11V, V_{INL} = 3.5V, unless otherwise noted.

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3.0 QUALITY ASSURANCE

3.1 Sampling and inspection procedures shall be in accordance with MIL-M-38510 and, to the extent specified, with MIL-STD-883.

3.2 Screening shall be in accordance with Method 5004 of MIL-STD-883. Burn-in test (Method 1015):
(1) Test condition A, B, C, or D.
(2) T_A = +125°C, minimum.
(3) Interim and final electrical test requirements shall be as specified in Table 2.

3.3 Quality conformance inspection shall be in accordance with Method 5005 of MIL-STD-883 including Groups A, B, C, and D inspection.
Group A inspection:
(1) Tests as specified in Table 2.
(2) Selected subgroups in Table 1, Method 5005 of MIL-STD-883 shall be omitted.

3.4 Groups C and D inspections:
a. End-point electrical parameters shall be specified in Table 1.
b. Steady-state life test (Method 1005 of MIL-STD-883):
(1) Test condition A, B, C, or D.
(2) T_A = +125°C, minimum.
(3) Test duration, 1000 hours, except as permitted by Method 1005 of MIL-STD-883.

TABLE 2. ELECTRICAL TEST REQUIREMENTS

MIL-STD-883 Test Requirements	Subgroups (per Method 5005, Table 1)
Interim Electrical Parameters (Method 5004)	1
Final Electrical Parameters (Method 5004)	1,* 2, 3, 9
Group A Test Requirements (Method 5005)	1, 2, 3, 9, 10,** 11**
Groups C and D End-Point Electrical Parameters (Method 5005)	1

* PDA applies to Subgroup 1 only.
** Subgroups 10 and 11, if not tested, shall be guaranteed to the limits in Table 1.

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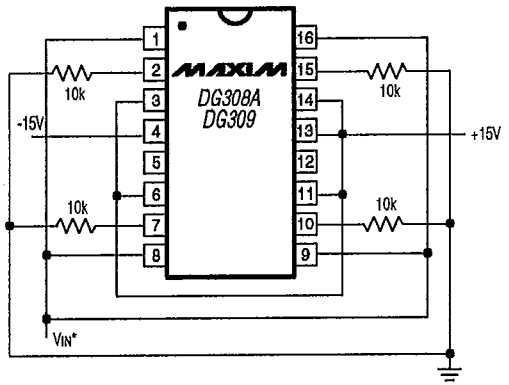
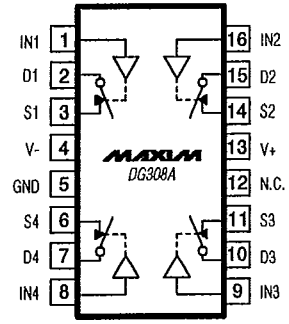
4.0 Life Test/Burn-In Circuit



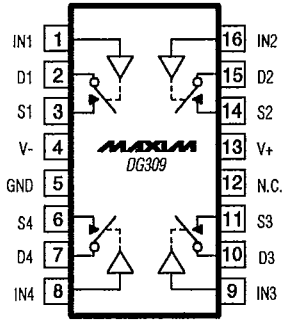
* VIN = 0V (DG308A)
VIN = +15V (DG309)

4.1 Pin Configurations/Functional Diagrams

TOP VIEW



16-PIN CERDIP



16-PIN CERDIP

DG308A	
Logic	Switch
0	OFF
1	ON

DG309	
Logic	Switch
0	ON
1	OFF

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4.3 Timing Diagram/Test Circuit

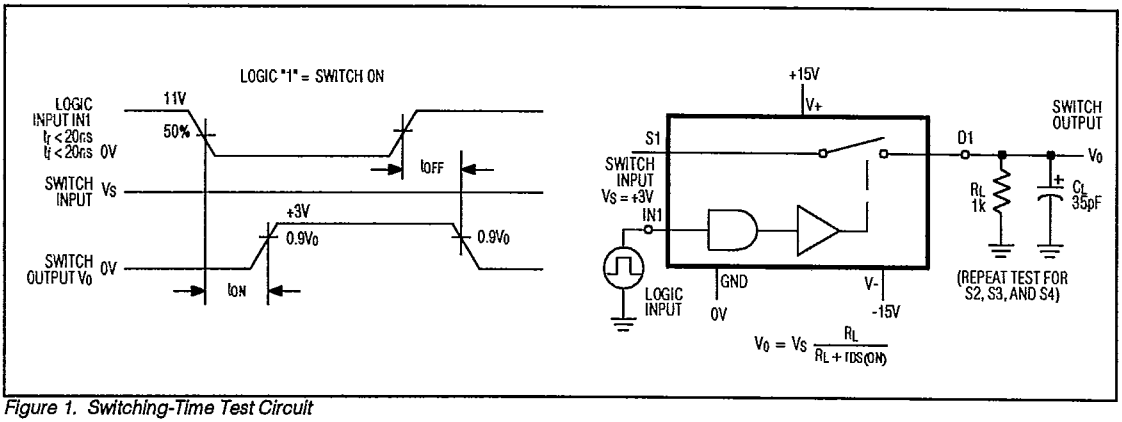

Figure 1. Switching-Time Test Circuit