19-0091; Rev 0; 11/92

MAXIM

Quad, SPST, CMOS RF/Video Analog Switch

1.0 SCOPE

1.1 This specification covers the detail requirements for a quad, SPST, CMOS switch. This circuit is processed in accordance with MIL-STD-883 and is 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	IH5352M(X)/883B

1.3 Package

(X)	Package	Description
JE	J-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 GND 18V
V- to GND ..... -18V
V_L to GND ..... V+ to V-
Logic Control Voltage ..... V+ to V-
Analog Input Voltage ..... V+ to V-
Current, Any Terminal 50mA
Power Dissipation (T_j = +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
Input Logic Current High	I_{INH}	$V_{IN} \geq 2.4V$		All	1, 3		±1	µA
					2		±10	
Input Logic Current Low	I_{INL}	$V_{IN} = 0V$		All	1, 3		±1	µA
					2		±10	
Switch On Resistance	$r_{DS(ON)}$	$I_S = 10mA$, $V_{IN} \geq 2.4V$ (Note 2)	$V_D = ±5V$	All	1, 3		75	Ω
					2		100	
			$V_D = ±10V$		1, 3		125	
					2		175	
		$I_S = 10mA$, $V_{IN} = 3V$, $V_D = ±3V$, $V- = -5V$, $V+ = V_L = 5V$			1, 3		250	
					2		350	
Switch-Off Leakage Current	$I_{D(OFF)}$	$V_D = ±5V$, $V_S = ∓5V$	$V_{IN} \leq 0.8V$	All	1		±1.0	nA
					2		50	
	$I_{S(OFF)}$	$V_D = ±14V$, $V_S = ∓14V$			1		±1.0	
					2		50	
Switch-On Leakage Current	$I_{D(ON)}$ + $I_{S(ON)}$	$V_D = V_S = ±5V$	$V_{IN} \geq 2.4V$	All	1		±1	nA
					2		50	
		$V_D = V_S = ±14V$			1		±1	
					2		100	
Positive Supply Quiescent Current	I+	$V_{IN} = 0V$ or 5V		All	1, 3		1	µA
					2		10	
Negative Supply Quiescent Current	I-	$V_{IN} = 0V$ or 5V		All	1, 3		1	µA
					2		10	
Logic Supply Quiescent Current	I_L	$V_{IN} = 0V$ or 5V		All	1, 3		1	µA
					2		10	
Switch-On Time	t_{ON}	Figure 1		All	9, 10, 11		300	ns
Switch-Off Time	t_{OFF}	Figure 1		All	9, 10, 11		150	ns

Note 1: V+ = 15V, V- = -15V, V_L = +5V, unless otherwise noted.
Note 2: Some channels are turned off by high (1) logic inputs and other channels by low (0) inputs; however, 0.8V and 2.4V describe the minimum range for proper switching. Refer to logic diagrams for logical input value for on or off states.

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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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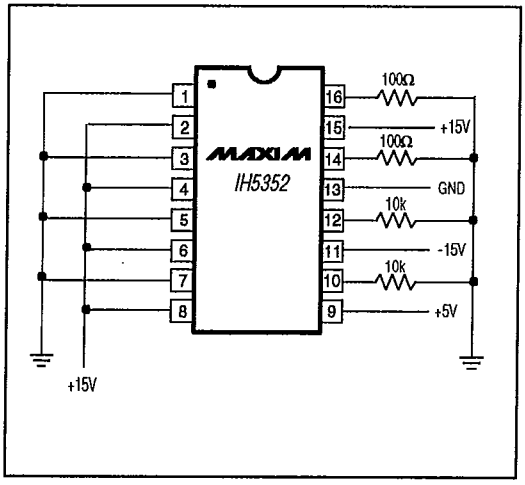
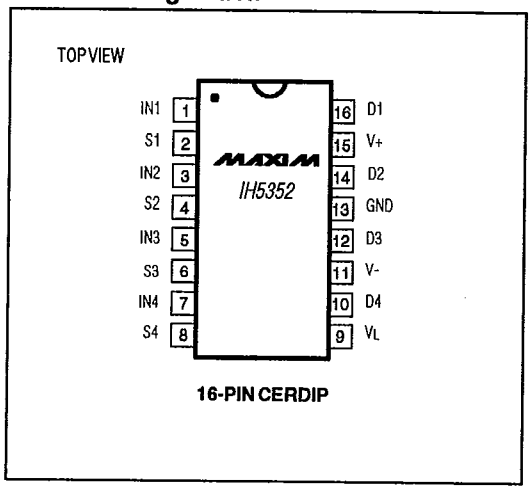
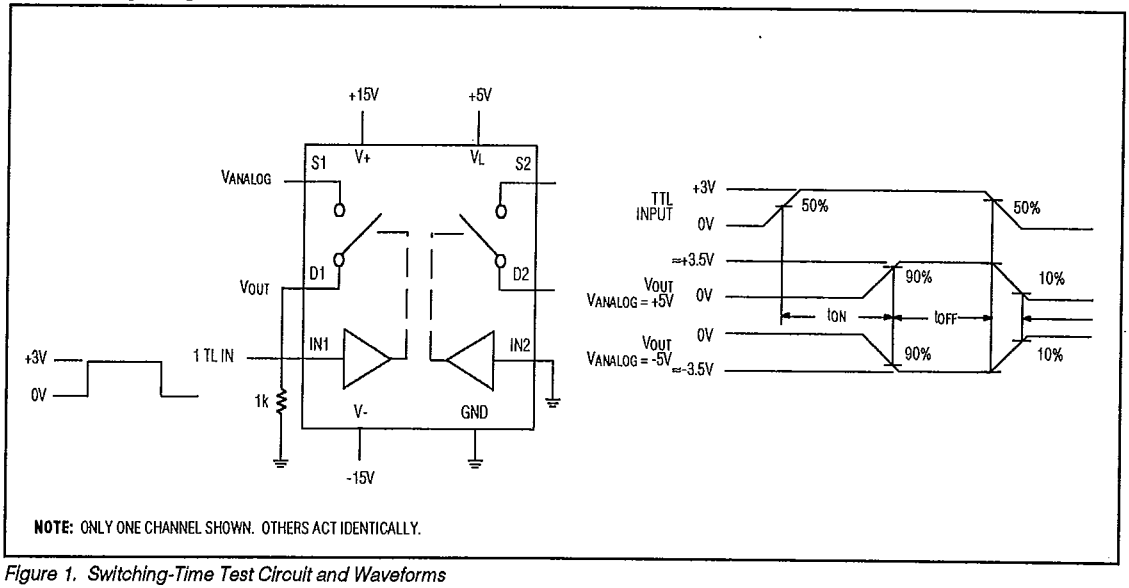
4.0 Life Test/Burn-In Circuit



4.1 Pin Configuration



4.2 Timing Diagrams



NOTE: ONLY ONE CHANNEL SHOWN. OTHERS ACT IDENTICALLY.

Figure 1. Switching-Time Test Circuit and Waveforms