SCOPE: +8V-CHANNEL/DUAL 4-CHANNEL MONOLITHIC CMOS, ANALOG MULTIPLEXER

Device Type	Generic Number
01	MAX359M(x)/883B

Case Outline(s). The case outlines shall be designated in Mil-Std-1835 and as follows:

Outline Letter		Mil-Std-1835	Case Outline	Package Code
MAXIM	SMD			
JE	E	GDIP1-T16 or CDIP2-T16	16 LEAD CERDIP	J16
LP	2	CQCC1-N20	20-Pin Ceramic LCC	L20

Absolute Maximum Ratings

Voltage Referenced to V^-

V^+ to V^- 44V
V^+ to GND 20V
V^- to GND ..... -20V
Digital Inputs, Overvoltage Range ..... -V to V^+ or 20mA whichever comes first
Analog Input Voltage ..... (V-) -25V to (V+)+25V
Lead Temperature (soldering, 10 seconds) ..... +300°C
Storage Temperature ..... -65°C to +150°C

Continuous Power Dissipation ..... T_A=+70°C
16 lead CERDIP(derate 10.0mW/°C above +70°C) 800mW
20 lead LCC (derate 9.1mW/°C above +70°C) 727mW
Junction Temperature T_J ..... +150°C
Thermal Resistance, Junction to Case, ΘJC:
Case Outline 16 lead CERDIP..... 50°C/W
Case Outline 20 lead LCC ..... 20°C/W
Thermal Resistance, Junction to Ambient, ΘJA:
Case Outline 16 lead CERDIP..... 100°C/W
Case Outline 20 lead LCC ..... 110°C/W

Recommended Operating Conditions.

Ambient Operating Range (T_A) ..... -55°C to +125°C
Positive Supply Voltage (V+) .....+15V
Negative Supply Voltage (V-) ..... -15V
Logic Low Level Address Input Voltage (V_{AL}) 0.8V
Logic High Level Address Input Voltage (V_{AH}) 2.4V
Enable Voltage (V_{EN}) 2.4V

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TABLE 1. ELECTRICAL TESTS

TEST	Symbol	CONDITIONS -55 °C <=T_A<= +125°C V+=+15V, V-=-15V, V_{EN}=2.4V Unless otherwise specified	Group A Subgroup	Device type	Limits Min	Limits Max	Units
SWITCH							
Input Leakage Current NOTE 1	I_{IH}	Measure address inputs sequentially, connect all unused address inputs to GND.	1,3 2	All	-1.0	1.0 10.0	µA
	I_{IL}		1,3 2	All	-1.0	1.0 10.0	
Switch ON Resistance	$r_{DS(ON)1}$	I_D =±100µA, V_S=-/+10V	1,3 2	All		1.5 2.0	kΩ
Switch ON Resistance	$r_{DS(ON)2}$ NOTE 2	I_D =±100µA, V_S=-/+5V, V+=+10V, V-=-10V	1,3 2	All		2.2 2.4	kΩ
Source-OFF Leakage Current	$+I_{S(OFF)}$	V_S =+10V, V_D=-10V, V_{EN}=0.8V, All unused inputs =-10V	1 2,3	All	-1.0 -50	1.0 50	nA
Source-OFF Leakage Current	$-I_{S(OFF)}$	V_S =-10V, V_D=+10V, V_{EN}=0.8V, All unused inputs =+10V	1,2	All	-1.0 -50	1.0 50	nA
Drain-OFF Leakage Current	$+I_{D(OFF)}$	V_D=+10V, V_{EN}=0.8V, All unused inputs =-10V	1,2	All	-1.0 -100	1.0 100	nA
Drain-OFF Leakage Current	$-I_{D(OFF)}$	V_D=-10V, V_{EN}=0.8V, All unused inputs =+10V	1,2	All	-1.0 -100	1.0 100	nA
Drain-ON Leakage Current	$+I_{D(ON)}$	V_D=+10V, V_S=+10V, All unused inputs =-10V	1,2,3	All	-2.0 -100	2.0 100	nA
Drain-ON Leakage Current	$-I_{D(ON)}$	V_D=-10V, V_S=-10V, All unused inputs =+10V	1,2,3	All	-2.0 -100	2.0 100	nA
Overage protected leakage current into the drain terminal of an "OFF" switch	$+I_{D(OFF)}$ (Over-voltage)	V_S=±25V, V_D=0V, V_{EN}=0.8V	1,3 2	All	-2.0 -5.0	+2.0 +5.0	µA
SUPPLY							
Positive Supply Current	I+	V_A=5.0V, V_{EN}=2.4V	1,2,3	All		2.0	mA
Negative Supply Current	I-	V_A=5.0V V_{EN}=2.4V	1,2,3	All	-1.0		mA
Standby Positive Supply Current	$+I_{SBY}$	V_A=0V, V_{EN}=0V	1,2,3	All		2.0	mA
Standby Negative Supply Current	$-I_{SBY}$	V_A=0V, V_{EN}=0V	1,2,3	All	-1.0		mA
FUNCTIONAL							
Capacitance: Address	C_A	V+=V-=0V, f=1MHz, NOTE 2	4	All		10	pF
Capacitance: Output Switch	C_{OS}	V+=V-=0V, f=1MHz, NOTE 2	4	All		85	pF
Capacitance: Input Switch	C_{IS}	V+=V-=0V, f=1MHz, NOTE 2	4	All		10	pF

TABLE 1. ELECTRICAL TESTS

TEST	Symbol	CONDITIONS -55 °C <=T_A<= +125°C V+=+15V, V-=-15V,V_{EN}=2.4V Unless otherwise specified	Group A Subgroup	Device type	Limits Min	Limits Max	Units
Charge Transfer Error	V_{CTE}	V_S=GND, V_{GEN}=0V to 5V, NOTE 2	7	All		10	mV
Single Channel Isolation	V_{ISO}	V_{GEN}=1Vp-p, f=200kHz, V_{EN}=0V, R_L=200kHZ NOTE 2	7	All		-50	dB
Crosstalk Between Channels	V_{CT}	V_{GEN}=1Vp-p, f=200kHz, NOTE 2	7	All		-50	dB
DYNAMIC							
Break Before Make Time Delay	t_D	NOTE 2	9	All	5.0		ns
Propagation Delay Times: Address Inputs to I/O Channels	$t_{ON(A)}$ $t_{OFF(A)}$	R_L=1kΩ, C_L=100pF, NOTE 2	9 10,11	All		1000 1500	ns
Enable to I/O	$t_{ON(EN)}$ $t_{OFF(EN)}$	R_L=1kΩ, C_L=100pF, NOTE 2	9 10,11	All		700 1500	ns

NOTE 1: Input current of one input mode
NOTE 2: Guaranteed, if not tested to the limits specified.

ORDERING INFORMATION:	SMD NUMBER	PACKAGE
MAX359MJE/883B	5962-8513106EA	J16
MAX359MLP/883B	5962-85131062C	L20

TRUTH TABLE

A1	A0	EN	MAX359 ON SWITCH
X	X	0	None
0	0	1	1
0	1	1	2
1	0	1	3
1	1	1	4

TERMINAL CONNECTION

TERMINAL NUMBER	MAX359	MAX359
	J16	L20
1	A0	NC
2	EN	A0
3	V-	EN
4	IN1A	V-
5	IN2A	IN1A
6	IN3A	NC
7	IN4A	IN2A
8	OUT A	IN3A
9	OUT B	IN4A
10	IN4B	OUT A
11	IN3B	NC
12	IN2B	OUT B
13	IN1B	IN4B
14	V+	IN3B
15	GND	IN2B
16	A1	NC
17		IN1B
18		V+
19		GND
20		A1

QUALITY ASSURANCE

Sampling and inspection procedures shall be in accordance with MIL-Prf-38535, Appendix A as specified in Mil-Std-883.

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. TA = +125°C minimum.
3. Interim and final electrical test requirements shall be specified in Table 2.

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.

Group 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, D.
   2. TA = +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 Electric Parameters Method 5004	1
Final Electrical Parameters Method 5005	1*, 2, 3, 4, 9
Group A Test Requirements Method 5005	1, 2, 3, 4,**,7, 9, 10, 11***
Group C and D End-Point Electrical Parameters Method 5005	1

* PDA applies to Subgroup 1 only.
** Subgroup 4 (capacitance measurements) shall be measured only for the initial test and after process or design changes which may affect capacitance.
*** Subgroups 10 and 11, if not tested, shall be guaranteed to the specified limits in Table 1.