

SCOPE: CMOS RF/VIDEO ANALOG MULTIPLEXER

<u>Device Type</u>	<u>Generic Number</u>
01	MAX310(x)/883B
02	MAX311(x)/883B

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

<u>Outline Letter</u>	<u>Mil-Std-1835</u>	<u>Case Outline</u>	<u>Package Code</u>
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 ⁺	+36V
V ⁻	+24V
Digital Inputs	V ⁻ to V ⁺

Input Current:

S and COMMON OUT	±50mA
All pins except S and COM OUT	±30mA

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, Θ_{JC}:

Case Outline 16 lead CERDIP..... 50°C/W

Case Outline 20 lead LCC 20°C/W

Thermal Resistance, Junction to Ambient, Θ_{JA}:

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

Supply Voltage Range ±4V to +15V

V_{AL} (max) +0.8V

V_{AH} (min) + 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	Group A Subgroup	Device type	Limits Min	Limits Max	Units
		-55 °C ≤ T _A ≤ +125°C V ₊ =+15V, V ₋ =-15V, GND=0V V _{AH} =+2.4V, V _{AL} =+0.8V Unless otherwise specified					
SWITCH							
Analog-Signal Range	V _{ANALOG}	V ₊ , V ₋ =±15V V ₊ , V ₋ =±5V	1,2,3	All	-15 -5	+12 +2	V
Channel -ON Resistance	R _{ON}	V _{IN} =±5V, I _{OUT} =10mA	1 2,3	All		250 300	Ω
OFF Input Leakage Current	I _{S(OFF)}	V _S = ±5V, V _{EN} =2.4V, Figure 10 V _{IH} =2.4V, V _{IL} =0.8V	1 2,3	All	-10 -100	10 100	nA
OFF Output Leakage Current	I _{D(OFF)}	V _S =V _D =±5V, V _{EN} =V _A =0.8V Figure 11	1 2,3	01	-10 -100	10 100	nA
			1 2,3	02	-10 -50	10 50	
ON Channel Leakage Current	I _{D(ON)}	V _S =V _D =±5V, V _{IL} =0.8V, V _{EN} =2.4V Figure 12	1 2,3	01	-10 -200	10 200	nA
			1 2,3	02	-10 -100	10 100	
INPUT							
Input High Threshold	V _{AH}	V ₊ , V ₋ =±15V, ±5V	1,2,3	All	2.4		V
Input Low Threshold	V _{AL}	V ₊ , V ₋ =±15V, ±5V	1,2,3	All		0.8	V
Input Current (Logic)	I _A	V _A =0V or 5V	1,2,3	All		±10	μA
OFF Isolation Single Channel to OUT	ISO _{SC}	V _{S1} =3.2Vrms @ 5mhz Figure 3	1	All	-66		dB
SUPPLY							
Power Supply Range			1	All	±4.5	±16.5	V
Positive Supply Current	I ₊	E _N , A ₀ , A ₁ , A ₂ , =0V or +5V	1,2,3	All		200	μA
Negative Supply Current	I ₋	E _N , A ₀ , A ₁ , A ₂ , =0V or +5V	1,2,3	All		100	μA
DYNAMIC							
Access Time	t _{ACC}	V _{IH} =3V, V _{IL} =0V, V _{EN} =2.4V, V _{S1} =-5V, V _{S8} =+5V, R _L =1kΩ, Figure 7	9 10,11	All		1.5 2.0	μs
Break-Before-Make Delay	t _{ON} -t _{OFF}	V _{S1} =V _{S8} =±5V, V _{AH} =3V, V _{AL} =0V, V _{EN} =2.4V, R _L =1kΩ, Figure 9	9,10,11	All	30		ns
Enable Delay ON or OFF	t _{EN} (ON/OFF)	V _{ENH} =3V, V _{ENL} =0V, V _A =0.8V, V _S =±5V, R _L =1kΩ, Figure 8	9 10,11	All		1.0 2.0	μs

- FIGURE 3: Single Channel OFF Isolation (ISO_{SC}):** See Commercial Data Sheet
FIGURE 7: Access Time (t_A) Test Circuit: See Commercial Data Sheet
FIGURE 8: Enable Delay (t_{EN(ON/OFF)}) Test Circuit: See Commercial Data Sheet
FIGURE 9: Break-Before-Make Delay (t_{ON-t_{OFF}}): See Commercial Data Sheet
FIGURE 10: OFF Input Leakage Current Test Circuit: See Commercial Data Sheet
FIGURE 11: OFF Output Leakage Current Test Circuit: See Commercial Data Sheet
FIGURE 12: ON Output Leakage Current Test Circuit: See Commercial Data Sheet

	ORDERING INFORMATION:	SMD Drawing #	Pkg Code
01	MAX310MJE/883B	5962-9455601MEA	J16
01	MAX310MLP/883B	5962-9455601M2C	L20
02	MAX311MJE/883B	5962-9455602MEA	J16
02	MAX311MLP/883B	5962-9455602M2C	L20

TRUTH TABLE

TERMINAL CONNECTION

A2	A1	A0	EN	MAX310 ON CHANNEL	PIN #	01 MAX310	01 MAX310	02 MAX311	02 MAX311
X	X	X	0	ALL OFF					
0	0	0	1	1	1	S1	S1	S1A	S1A
0	0	1	1	2	2	S2	S2	S2A	S2A
0	1	0	1	3	3	S3	NC	S3A	NC
0	1	1	1	4	4	S4	S3	S4A	S3A
1	0	0	1	5	5	S5	S4	S1B	S4A
1	0	1	1	6	6	S6	S5	S2B	S1B
1	1	0	1	7	7	S7	S6	S3B	S2B
1	1	1	1	8	8	S8	S7	S4B	S3B
					9	V-	NC	V-	NC
				MAX311 ON CHANNEL	10	OUT	S8	OUTB	S4B
					11	V+	V-	V+	V-
	A1	A0	EN	CHANNEL	12	EN	NC	EN	NC
	X	X	0	ALL OFF	13	A0	OUT	A0	OUTB
	0	0	1	1A + 1B	14	A1	V+	A1	V+
	0	1	1	2A + 2B	15	A2	EN	GND	EN
	1	0	1	3A + 3B	16	GND	A0	OUTA	A0
	1	1	1	4A + 4B	17		A1		A1
					18		NC		NC
					19		A2		GND
					20		GND		OUTA

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, 9
Group A Test Requirements Method 5005	1, 2, 3, 9, 10, 11
Group C and D End-Point Electrical Parameters Method 5005	1

* PDA applies to Subgroup 1 only.