SCOPE: MONOLITHIC CMOS, ANALOG MULTIPLEXER

Device Type	Generic Number
01	DG508AA(x)/883B
02	DG509AA(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
K	GDIP1-T16 or CDIP2-T16	16 LEAD CERDIP	J16
L	CDFP4-16	16 LEAD FLATPACK	F16
P	GDIP1-T16 or CDIP2-T16	16 LEAD Sidebraze	R16
Z	CQCC1-N20	20-Pin Ceramic LCC	L20

Absolute Maximum Ratings

Voltage Referenced to V^-

V^+ to V^- 44V
V^+ to GND 25V
Digital Inputs, Overvoltage Range 1/..... -2V to (V^+ +2V)
or 20mA (whichever occurs first)
Continuous Current, Any terminal except S or D 30mA
Continuous Current, S or D 20mA
Peak Current (Pulsed at 1ms, 10% duty cycle max) 40mA
Lead Temperature (soldering, 10 seconds) ..... +300°C
Storage Temperature ..... -65°C to +150°C

Continuous Power Dissipation ..... T_A=+70°C
16 lead FLATPACK (derate 6.1mW/°C above +70°C) 485mW
16 lead CERDIP(derate 10.0mW/°C above +70°C) 800mW
16 lead Side Braze(derate 10.5mW/°C above +70°C) 842mW
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 FLATPACK ..... 65°C/W
Case Outline 16 lead CERDIP..... 50°C/W
Case Outline 16 lead Side Braze..... 45°C/W
Case Outline 20 lead LCC ..... 20°C/W
Thermal Resistance, Junction to Ambient, ΘJA:
Case Outline 16 lead FLATPACK ..... 165°C/W
Case Outline 16 lead CERDIP..... 100°C/W
Case Outline 16 lead Side Braze..... 95°C/W
Case Outline 20 lead LCC ..... 110°C/W

Recommended Operating Conditions.

Ambient Operating Range (T_A) ..... -55°C to +125°C

NOTE 1: Signals on S, D, IN exceeding V+ or V- will be clamped by internal diodes. Limit forward diode current to maximum current ratings.

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, GND=0V V_{AH}=2.4V, V_{AL}=0.8V Unless otherwise specified	Group A Subgroup	Device type	Limits Min	Limits Max	Units
SWITCH							
Analog-Signal Range	V_{ANALOG}	V_S=±15V	1,2,3	All	-15	15	V
Drain-Source ON Resistance 3/	$r_{DS(ON)}$	I_S =-200µA, V_D=±10V, V_{AL}=0.8V, V_{AH}=2.4V,Sequence each switch on	1 2,3	All		300 400	Ω
Source-OFF Leakage Current	$I_{S(OFF)}$	V_S =10V, V_D=-10V, V_{EN}=0V	1 2,3	All		0.5 50	nA
Source-OFF Leakage Current	$I_{S(OFF)}$	V_S =-10V, V_D=10V, V_{EN}=0V	1 2,3	All	-0.5 -50		nA
Drain-OFF Leakage Current	$I_{D(OFF)}$	V_S =10V, V_D=-10V, V_{EN}=0V	1 2,3	01	-2 -200		nA
Drain-OFF Leakage Current	$I_{D(OFF)}$	V_S =-10V, V_D=10V, V_{EN}=0V	1 2,3	01		2 200	nA
Drain-OFF Leakage Current	$I_{D(OFF)}$	V_S =10V, V_D=-10V, V_{EN}=0V	1 2,3	02	-2 -100		nA
Drain-OFF Leakage Current	$I_{D(OFF)}$	V_S =-10V, V_D=10V, V_{IN}=0V	1 2,3	02		2 100	nA
Drain-ON Leakage Current NOTE 2	$I_{D(ON)}$	$V_{S(ALL)}$=V_D=10V, V_{AL}=0.8V, V_{AH}=2.4V Sequence each channel on	1 2,3	01		2 200	nA
Drain-ON Leakage Current NOTE 2	$I_{D(ON)}$	$V_{S(ALL)}$=V_D=-10V, V_{AL}=0.8, V_{AH}=2.4V Sequence each channel on	1 2,3	01	-2 -200		nA
Drain-ON Leakage Current NOTE 2	$I_{D(ON)}$	$V_{S(ALL)}$=V_D=10V, V_{AL}=0.8V, V_{AH}=2.4V Sequence each channel on	1 2,3	02		2 100	nA
Drain-ON Leakage Current NOTE 2	$I_{D(ON)}$	$V_{S(ALL)}$=V_D=-10V, V_{AL}=0.8V,V_{AH}=2.4V Sequence each channel on	1 2,3	02	-2 -100		nA
INPUT							
Input Current/Voltage High	I_{AH}	V_A= 2.4V	1 2,3	All	-10 -30		µA
		V_A=15V	1 2,3	All		10 30	
Input Current/Voltage Low	I_{AL}	V_{EN}=0V or 2.4V; All V_A=0V	1 2,3	All	-10 -30		µA
SUPPLY							
Positive Supply Range for Continuous Operation	V-, V+	NOTES 3, 4	1	All	±4.5	±18	V
Positive Supply Current	I+	V_{EN}=2.4V, All V_A=0V or 2.4V	1	All		0.2	mA

TABLE 1. ELECTRICAL TESTS

TEST	Symbol	CONDITIONS -55 °C <=T_A<= +125°C V+=+15V, V-=-15V, GND=0V V_{AH}=2.4V, V_{AL}=0.8V Unless otherwise specified	Group A Subgroup	Device type	Limits Min	Limits Max	Units
Negative Supply Current	I-	V_{EN}=2.4V, All V_A=0V or 2.4V	1	All	-0.1		mA
Positive Supply Current in Standby	I+	V_{EN}=0V, all V_A=0V or 2.4V	1	All		0.2	mA
Negative Supply Current in Standby	I-	V_{EN}=0V, all V_A=0V or 2.4V	1	All	-0.1		mA
DYNAMIC							
Transition Time	t_{RANS}	Figure 1	9 10,11	All		1.0 1.5	µs
Break Before Make Time	t_{OPEN}	Figure 3	9	All	5		ns
Enable Turn-On Time	$t_{ON(EN)}$	Figure 2	9 10,11	All		1.0 2.0	µs
Enable Turn-Off Time	$t_{OFF(EN)}$	Figure 2	9 10,11	All		0.7 2.0	µs

NOTE 2: $ID_{(ON)}$ is leakage from driver into "on" switch.

NOTE 3: Electrical Characteristics (such as on resistance) will change when power supplies other than ±15Vare used.

NOTE 4: For designs requiring single 5V or dual ±5V operation, refer to Maxim's improved MAX338 and MAX339. Minimum operating voltage for DG508ADY and DG509ADY is ±9V.

FIGURE 1: SWITCHING TIME TEST CIRCUIT: See Commercial Data Sheet

FIGURE 2: ENABLE TIME TEST CIRCUIT: See Commercial Data Sheet

FIGURE 3: BREAK-BEFORE-MAKE TEST CIRCUIT: See Commercial Data Sheet

TRUTH TABLE

A2	A1	A0	EN	DG508A ON SWITCH
X	X	X	0	None
0	0	0	1	1
0	0	1	1	2
0	1	0	1	3
0	1	1	1	4
1	0	0	1	5
1	0	1	1	6
1	1	0	1	7
1	1	1	1	8

	A1	A0	EN	DG509A 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	01 DG508A	02 DG509A	01 DG508A	02 DG509A
	J16, R16 & F16	J16, R16 &F16	L20	L20
1	A0	A0	NC	NC
2	EN	EN	A0	A0
3	V-	V-	EN	EN
4	S1	S1A	V-	V-
5	S2	S2A	S1	S1A
6	S3	S3A	NC	NC
7	S4	S4A	S2	S2A
8	D	DA	S3	S3A
9	S8	DB	S4	S4A
10	S7	S4B	D	DA
11	S6	S3B	NC	NC
12	S5	S2B	S8	DB
13	V+	S1B	S7	S4B
14	GND	V+	S6	S3B
15	A2	GND	S5	S2B
16	A1	A1	NC	NC
17			V+	S1B
18			GND	V+
19			A2	GND
20			A1	A1

ORDERING INFORMATION:			
DG508AAK/883B	16 CDIP	DG509AAK/883B	16 CDIP
DG508AAL/883B	16 FLATPACK	DG509AAL/883B	16 FLATPACK
DG508AAP/883B	16 SIDE BRAZE	DG509AAP/883B	16 SIDE BRAZE
DG508AAZ/883B	20 LCC	DG509AAZ/883B	20 LCC

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.