

**SCOPE: CMOS, TTL-COMPATIBLE ANALOG MULTIPLEXER**

<u>Device Type</u>	<u>Generic Number</u>
01	DG506AA(x)/883B
02	DG507AA(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>
K	GDIP1-T28 or CDIP2-T28	28 LEAD CERDIP	J28
R	GDIP1-T28 or CDIP2-T28	28 LEAD SIDEBRAZE	R28
Z	CQCC1-N28	28-Pin Ceramic LCC	L28

**Absolute Maximum Ratings**

Voltage Referenced to V<sup>-</sup>

V <sup>+</sup> to V <sup>-</sup> .....	44V
V <sup>+</sup> to GND .....	25V
Digital Inputs, Overvoltage Range .....	-2V to (V <sup>+</sup> +2V) or 20mA, whichever occurs first
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 <sub>A</sub> =+70°C
28 lead Sidebrazed (derate 20.0mW/°C above +70°C) .....	1600mW
28 lead CERDIP(derate 16.7mW/°C above +70°C) .....	1333mW
28 lead LCC (derate 10.2mW/°C above +70°C) .....	816mW
Junction Temperature T <sub>J</sub> .....	+150°C
Thermal Resistance, Junction to Case, Θ <sub>JC</sub> :	
Case Outline 28 lead Sidebrazed .....	15°C/W
Case Outline 28 lead CERDIP.....	25°C/W
Case Outline 28 lead LCC .....	15°C/W
Thermal Resistance, Junction to Ambient, Θ <sub>JA</sub> :	
Case Outline 28 lead Sidebrazed .....	50°C/W
Case Outline 28 lead CERDIP.....	60°C/W
Case Outline 28 lead LCC .....	98°C/W

**Recommended Operating Conditions.**

Ambient Operating Range (T <sub>A</sub> ) .....	-55°C to +125°C
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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 <sub>A</sub> ≤ +125 °C V <sub>+</sub> =+15V, V <sub>-</sub> =-15V, GND=0V V <sub>AH</sub> =2.4V, V <sub>AL</sub> =0.8V Unless otherwise specified					
<b>SWITCH</b>							
Analog-Signal Range	V <sub>ANALOG</sub>	V <sub>S</sub> =±15V	1,2,3	All	-15	15	V
Drain-Source ON Resistance	r <sub>DS(ON)</sub>	I <sub>S</sub> =-200µA, V <sub>D</sub> =±10V, V <sub>AL</sub> =0.8V, V <sub>AH</sub> =2.4V	1,3 2	All		400 500	Ω
Source OFF Leakage Current	I <sub>S(OFF)</sub>	V <sub>S</sub> =10V, V <sub>D</sub> =-10V, V <sub>EN</sub> =0V	1 2	All	-1 -50	1 50	nA
Source OFF Leakage Current	I <sub>S(OFF)</sub>	V <sub>S</sub> =-10V, V <sub>D</sub> =10V, V <sub>EN</sub> =0V	1 2	All	-1 -50	1 50	nA
Drain OFF Leakage Current	I <sub>D(OFF)</sub>	V <sub>S</sub> =10V, V <sub>D</sub> =-10V, V <sub>EN</sub> =0V	1 2	01	-10 -300	10 300	nA
Drain OFF Leakage Current	I <sub>D(OFF)</sub>	V <sub>S</sub> =-10V, V <sub>D</sub> =10V, V <sub>EN</sub> =0V	1 2	01	-10 -300	10 300	nA
Drain OFF Leakage Current	I <sub>D(OFF)</sub>	V <sub>S</sub> =10V, V <sub>D</sub> =-10V, V <sub>EN</sub> =0V	1 2	02	-5 -200	5 200	nA
Drain OFF Leakage Current	I <sub>D(OFF)</sub>	V <sub>S</sub> =-10V, V <sub>D</sub> =10V, V <sub>IN</sub> =0V	1 2	02	-10 -200	10 200	nA
Drain ON Leakage Current	I <sub>D(ON)</sub>	V <sub>D</sub> =V <sub>S</sub> =10V, V <sub>AL</sub> =0.8V, V <sub>AH</sub> =2.4V Sequence each channel on	1 2	01	-10 -300	10 300	nA
Drain ON Leakage Current	I <sub>D(ON)</sub>	V <sub>D</sub> =V <sub>S</sub> =-10V, V <sub>AL</sub> =0.8, V <sub>AH</sub> =2.4V Sequence each channel on	1 2	01	-10 -300	10 300	nA
Drain ON Leakage Current	I <sub>D(ON)</sub>	V <sub>D</sub> =V <sub>S</sub> =10V, V <sub>AL</sub> =0.8V, V <sub>AH</sub> =2.4V Sequence each channel on	1 2	02	-5 -200	5 200	nA
Drain ON Leakage Current	I <sub>D(ON)</sub>	V <sub>D</sub> =V <sub>S</sub> =-10V, V <sub>AL</sub> =0.8V, V <sub>AH</sub> =2.4V Sequence each channel on	1 2	02	-5 -200	5 200	nA
<b>INPUT</b>							
Input Current/Voltage High	I <sub>AH</sub>	V <sub>IN</sub> = 2.4V	1,3 2	All	-10 -30		µA
		V <sub>IN</sub> =15V	1,3 2	All		10 30	
Input Current/Voltage Low	I <sub>AL</sub>	V <sub>EN</sub> =0V, 2.4V; V <sub>A</sub> =0V	1,3 2	All	-10 -30		µA
<b>SUPPLY</b>							
Positive Supply Current	I <sub>+</sub>	V <sub>EN</sub> =V <sub>A</sub> =0V	1	All		2.4	mA
Negative Supply Current	I <sub>-</sub>	V <sub>EN</sub> =V <sub>A</sub> =0V	1	All	-1.5		mA
<b>DYNAMIC</b>							
Transition Time	t <sub>TRANS</sub>	Figure 1	9 10,11	All		1 1.5	µs

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

<b>ORDERING INFORMATION:</b>			
DG506AAK/883B	28 CDIP	DG507AAK/883B	28 CDIP
DG506AAR/883B	28 SB	DG507AAR/883B	28 SB
DG506AAZ/883B	28 LCC	DG507AAZ/883B	28 LCC

**TRUTH TABLE**

**TERMINAL CONNECTION**

A3	A2	A1	A0	EN	DG506A ON SWITCH	TERMINAL NUMBER	01 DG506A	02 DG507A	02 DG507A
X	X	X	X	X	None		J28, R28 & L28	J28 & R28	L28
0	0	0	0	1	1	1	V+	V+	V <sub>DD</sub>
0	0	0	1	1	2	2	NC	DB	DB
0	0	1	0	1	3	3	NC	NC	NC
0	0	1	1	1	4	4	S16	S8B	S8B
0	1	0	0	1	5	5	S15	S7B	S7B
0	1	0	1	1	6	6	S14	S6B	S6B
0	1	1	0	1	7	7	S13	S5B	S5B
0	1	1	1	1	8	8	S12	S4B	S4B
1	0	0	0	1	9	9	S11	S3B	S3B
1	0	0	1	1	10	10	S10	S2B	S2B
1	0	1	0	1	11	11	S9	S1B	S1B
1	0	1	1	1	12	12	GND	GND	GND
1	1	0	0	1	13	13	NC	NC	NC
1	1	0	1	1	14	14	A3	NC	NC
1	1	1	0	1	15	15	A2	A2	A2
1	1	1	1	1	16	16	A1	A1	A1
						17	A0	A0	A0
					<b>DG507A</b>	18	EN	EN	EN
	<b>A2</b>	<b>A1</b>	<b>A0</b>	<b>EN</b>	<b>ON SWITCH</b>	19	S1	S1A	S1A
	X	X	X	X	None	20	S2	S2A	S2A
	0	0	0	1	1	21	S3	S3A	S3A
	0	0	1	1	2	22	S4	S4A	S4A
	0	1	0	1	3	23	S5	S5A	S5A
	0	1	1	1	4	24	S6	S6A	S6A
	1	0	0	1	5	25	S7	S7A	S7A
	1	0	1	1	6	26	S8	S8A	S8A
	1	1	0	1	7	27	V-	V-	V <sub>SS</sub>
	1	1	1	1	8	28	D	DA	DA

## 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.

\*\* Subgroups 10 and 11, if not tested shall be guaranteed to the limits of Table 1.