

SCOPE: DUAL, SPST, HIGH-SPEED CHANNEL ANALOG SWITCH

<u>Device Type</u>	<u>Generic Number</u>	<u>SMD Number</u>
01	DG405A(x)/883B	5962-89961

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>
<u>SMD</u>	<u>Maxim</u>		
E	K	GDIP1-T16 or CDIP2-T16	16 LEAD Cerdip
2	Z	CQCC1-N20	20-Pin Ceramic LCC

Absolute Maximum Ratings

Voltage Referenced to V⁻

V ⁺ to V ⁻	44V
V ⁺ to GND	25V
V _L	(GND-0.3V) to (V ⁺ +0.3V)
Digital Inputs, V _S , V _D 1/	(V ⁻ -2V) to (V ⁺ +2V) or 20mA (whichever occurs first.)
Continuous Current, Any terminal	30mA
Continuous Current, S or D	20mA
Current, S or D (Pulsed at 1ms, 10% duty cycle max)	100mA
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 9.1 mW/°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
Positive Supply Voltage (V ⁺)	+15V
Negative Supply Voltage (V ⁻)	-15V
Logic Supply Voltage (V _L)	+5V
Charge Injection	60pC
Crosstalk (channel-to-channel) 2/	90dB

1/ Signals on S, D or IN exceeding V⁺ or V⁻ are clamped by internal diodes. Limit forward current to maximum current ratings.

2/ Crosstalk performance is improved with case outline for 20LCC.

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 Unless otherwise specified	Group A Subgroup	Device type	Limits Min	Limits Max	Units
SWITCH							
Drain-Source ON Resistance	r _{DS(ON)}	V ⁺ = +13.5V, V ⁻ = -13.5V, I _S = -10mA, V _D = ±10V	1 2,3	All		35 45	Ω
ΔDrain-Source ON Resistance	Δr _{DS(ON)}	V ⁺ = +16.5V, V ⁻ = -16.5V, I _S = -10mA, V _D = +5V, 0V, -5V	1 2,3	All		3.0 5.0	Ω
Switch-OFF Leakage Current	I _{S(OFF)}	V ⁺ = +16.5V, V ⁻ = -16.5V, V _D = ±15.5V, V _S = ±15.5V	1 2	All	-0.25 -20	0.25 20	nA
Drain-OFF Leakage Current	I _{D(OFF)}	V ⁺ = +16.5V, V ⁻ = -16.5V, V _D = ±15.5V, V _S = ±15.5V	1 2	All	-0.25 -20	0.25 20	nA
Channel-ON Leakage Current	I _{D(ON)} + I _{S(ON)}	V ⁺ = +16.5V, V ⁻ = -16.5V, V _D = ±15.5V, V _S = ±15.5V	1 2	All	-0.4 -40	0.4 40	nA
INPUT							
Input Current/Voltage High	I _{IH}	V _{IN} = 2.4V, all others = 0.8V	1,2	All	-1.0	1.0	μA
Input Current/Voltage Low	I _{IL}	V _{IN} = 0.8V, all others = 2.4V	1,2	All	-1.0	1.0	μA
SUPPLY							
Positive Supply Current	I ⁺	V ⁺ = +16.5V, V ⁻ = -16.5V, V _{IN} = 0V or 5V	1 2,3	All		1.0 5.0	μA
Negative Supply Current	I ⁻	V ⁺ = +16.5V, V ⁻ = -16.5V, V _{IN} = 0V or 5V	1 2,3	All		-1.0 -5.0	μA
Logic Supply Current	I _L	All channels on or off, V ⁺ = +16.5V, V ⁻ = -16.5V, V _{IN} = 0V or 5V	1 2,3	All		1.0 5.0	μA
Ground Current	I _{GND}	All channels on or off, V ⁺ = +16.5V, V ⁻ = -16.5V, V _{IN} = 0V or 5V	1 2,3	All		-1.0 -5.0	μA
DYNAMIC							
Turn-On Time	t _{ON}	R _L = 300Ω, C _L = 35pF	9 10,11	All		150 275	ns
Turn-Off Time	t _{OFF}	R _L = 300Ω, C _L = 35pF	9 10 11	All		100 250 175	ns

ORDERING INFORMATION:		SMD Number
DG405AK/883B	16 CDIP	5962-8996101MEA
DG405AZ/883B	20 LCC	5962-8996101M2C

PIN CONFIGURATIONS:		
PIN	J16	LCC20
1	D ₁	NC
2	NC	D ₁
3	D ₃	NC
4	S ₃	D ₃
5	S ₄	S ₃
6	D ₄	NC
7	NC	S ₄
8	D ₂	D ₄
9	S ₂	NC
10	IN ₂	D ₂
11	V+	NC
12	VL	S ₂
13	GND	IN ₂
14	V-	V+
15	IN ₁	VL
16	S ₁	NC
17		GND
18		V-
19		IN ₁
20		S ₁

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 specified in Table 1.