

SCOPE: POWER MOSFET DRIVER

<u>Device Type</u>	<u>Generic Number</u>	<u>Circuit Function</u>
01	MAX4429M(x)/883B	Inverting Power MOSFET Driver
02	MAX4420M(x)/883B	Noninverting Power MOSFET Driver

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>
JA	GDIP1-T8 or CDIP2-T8	8 LEAD Cerdip	J8
LP	CQCC1-N20	20 Leadless Carrier	LCC

Absolute Maximum Ratings

Supply Voltage V_{DD} to GND	20V
Input Voltage	$V_S + 0.3V$ to GND -5.0V
Output Current (per pin capacitance load)	6.0A
Peak Supply Current or GND current (per pin)	6.0A

Lead Temperature (soldering, 10 seconds)	+300°C
Storage Temperature	-65°C to +150°C

Continuous Power Dissipation	$T_A = +70^\circ\text{C}$
8 pin Cerdip(derate 8.0mW/°C above +70°C)	640mW
20 pin LCC(derate 9.1mW/°C above +70°C)	727mW
Junction Temperature T_J	+150°C
Thermal Resistance, Junction to Case, θ_{JC}	
8 pin Cerdip	55°C/W
20 pin LCC	20°C/W
Thermal Resistance, Junction to Ambient, θ_{JA} :	
8 pin Cerdip	125°C/W
20 pin LCC	110°C/W

Recommended Operating Conditions

Ambient Operating Range (T_A)	-55°C to +125°C
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Package	ORDERING INFORMATION:	SMD Number
8 pin Cerdip	MAX4429MJA/883B	5962-8877002PA
20 pin LCC	MAX4429MLP/883B	5962-88770022A
8 pin Cerdip	MAX4420MJA/883B	5962-8877003PA
20 pin LCC	MAX4420MLP/883B	5962-88770032A

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 4.5V ≤ V _S ≤ 18V Unless otherwise specified	Group A Subgroup	Device type	Limits Min	Limits Max	Units
Input Voltage Range	V _{IN(max)}		1,2,3	All	-5.0	V _S +0.3	V
Logic 1 Input Voltage	V _{IH}		1,2,3	All	2.4		V
Logic 0 Input Voltage	V _{IL}		1,2,3	All		0.8	V
Input Current	I _{IN}	-5V ≤ V _{IN} ≤ 0V	1,2,3	All		±10	mA
		0V ≤ V _{IN} ≤ V _S	1 2,3			±1 ±10	μA
Output High Voltage	V _{OH}	R _L =∞ NOTE 1	1,2,3	All	V _{DD} -25		mV
Output Low Voltage	V _{OL}	R _L =∞ NOTE 1	1,2,3	All		25	mV
Output Resistance	R _{O1}	V _S =18V, I _{OUT} =10mA, V _{IN} =0.8V	1	01 02		2.8 2.5	Ω
			2,3	All		5.0	
Output Resistance	R _{O2}	V _S =18V, I _{OUT} =10mA, V _{IN} =2.4V	1	01 02		2.5 2.8	Ω
			2,3	All		5.0	
Quiescent Supply Current	I _{S1}	V _{IN} =+3V	1 2,3	01		1.5 3.0	mA
Quiescent Supply Current	I _{S2}	V _{IN} =0V	1 2,3	01		0.15 0.4	mA
Rise Time NOTE 2	t _r	V _S =18V, C _L =2500pF	9 10,11	All		35 60	ns
Fall Time NOTE 2	t _f	V _S =18V, C _L =2500pF	9 10,11	All		35 60	ns
Delay Time NOTE 2	t _{D1}	V _S =18V, C _L =2500pF	9 10,11	All		75 100	ns
Delay Time NOTE 2	t _{D2}	V _S =18V, C _L =2500pF	9 10,11	All		75 100	ns

NOTE 1: Guaranteed by design.

NOTE 2: Subgroups 10 and 11 are guaranteed if not tested to the limits specified in Table 1.

See Figure 1.

FIGURE 1: See Commercial Datasheet, Switching-Time Measurement Circuit.

TERMINAL CONNECTIONS FOR 01 AND 02.

8 Lead Cerdip		20 Lead LCC			
1	VS	1	NC	11	NC
2	INPUT	2	NC	12	NC
3	NC	3	VS	13	GND
4	GND	4	NC	14	NC
5	GND	5	NC	15	OUTPUT
6	OUTPUT	6	INPUT	16	OUTPUT
7	OUTPUT	7	NC	17	NC
8	VS	8	NC	18	NC
		9	GND	19	VS
		10	NC	20	NC

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, 10**, 11**
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.