

MAXIM

Dual Power MOSFET Drivers

MAX626/627/628/TSC426/427/428/883B

1.0 SCOPE

1.1 This specification covers the detail requirements for six MOSFET drivers in two configurations (inverting and noninverting). These circuits are processed in accordance with MIL-STD-883 and are fully compliant to paragraph 1.2.1.

It is highly recommended that this data sheet be used as a baseline for new military or aerospace source control drawings.

For typical applications and operating characteristics, consult Maxim's data books.

1.2 Part Numbers

Device	Part Number
-1	MAX626M(X)/883B
-2	MAX627M(X)/883B
-3	MAX628M(X)/883B
-4	TSC426M(Y)/883B
-5	TSC427M(Y)/883B
-6	TSC428M(Y)/883B

1.3 Package

(X)	Package	Description
JA	J-8	8-Pin Ceramic Dual-In-Line Package (CERDIP)
LP	L-20	20-Pin Leadless Chip Carrier (LCC)
(Y)	Package	Description
JA	J-8	8-Pin Ceramic Dual-In-Line Package (CERDIP)
NP	L-20	20-Pin Leadless Chip Carrier (LCC)

Note: See *Package Information* section for package drawing and dimensions.

1.4 Absolute Maximum Ratings

($T_A = +25^\circ\text{C}$, unless otherwise noted.)

V_{DD+} to GND	20V
Input Voltage	($V_{DD} + 0.3\text{V}$) to (GND - 0.3V)
Output Current (per pin, capacitive load)	1.5ADC
Peak Supply Current Or GND Current (per pin)	3ADC
Power Dissipation ($T_A = +70^\circ\text{C}$, $T_j = +150^\circ\text{C}$)	
8-Pin CERDIP (derate $8.00\text{mW}/^\circ\text{C}$ above $+70^\circ\text{C}$)	640mW
20-Pin LCC (derate $9.09\text{mW}/^\circ\text{C}$ above $+70^\circ\text{C}$)	727mW
Operating Temperature Range	-55°C to $+125^\circ\text{C}$
Storage Temperature Range	-65°C to $+150^\circ\text{C}$
Lead Temperature (soldering, 10 sec)	$+300^\circ\text{C}$

1.5 Thermal Resistance $\Theta_{JC} = 55^\circ\text{C}/\text{W}$ for J-8 and L-20
 $\Theta_{JA} = 110^\circ\text{C}/\text{W}$ for J-8 and L-20

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2.0 REQUIREMENTS

2.1 Electrical performance characteristics are specified in Table 1 and apply over the full ambient operating temperature range, unless otherwise specified.

TABLE 1. ELECTRICAL PERFORMANCE CHARACTERISTICS (Note 1)

CHARACTERISTICS	SYMBOL	CONDITIONS	DEVICE TYPES	GROUP A SUB-GROUPS	LIMITS		UNITS
					MIN	MAX	
Logic 1 Input Voltage	V_{IH}		All	1, 2, 3	2.4		V
Logic 0 Input Voltage	V_{IL}		All	1, 2, 3		0.8	V
Input Voltage Range	V_{IN}		All	1, 2, 3	0	V_{DD}	V
Input Current	I_{IN}	$0V \leq V_{IN} \leq 18V$	All	1		± 1	μA
				2, 3		± 10	
High Output Voltage	V_{OH}	$R_L = \infty$	All	1, 2, 3	$V_{DD}-25$		mV
Low Output Voltage	V_{OL}	$R_L = \infty$	All	1, 2, 3		25	mV
Output Resistance (Notes 2, 3)	R_{OUT}	$V_{DD} = 18V, I_{LOAD} = 10mA$	All	1, 2		20	Ω
				3		15	
Power-Supply Current	I_{SUPP}	$V_{IN} = 3V$ both inputs	All	1, 2		8	mA
				3		12	
		$V_{IN} = 0V$ both inputs	All	1, 2		0.4	
				3		0.6	
Rise Time	t_r	Figure 1	All	9		30	ns
			-1, -2, -3	10, 11		40	
			-4, -5, -6	10, 11		60	
Fall Time	t_f	Figure 1	All	9		30	ns
			All	10, 11		40	
Delay Time	t_{D1}	Figure 1	-1, -2, -3	9		30	ns
			-1, -2, -3	10, 11		40	
			-4, -5, -6	9		40	
			-4, -5, -6	10, 11		60	
Delay Time	t_{D2}	Figure 1	-1, -2, -3	9		50	ns
			-1, -2, -3	10, 11		75	
			-4, -5, -6	9		60	
			-4, -5, -6	10, 11		120	

Note 1: $V_{DD} = 4.5V$ to $18V$, unless otherwise noted.
Note 2: $V_{IN} = 0.8V$ for inverting stages, $V_{IN} = 2.4V$ for noninverting stages.
Note 3: $V_{IN} = 2.4V$ for inverting stages, $V_{IN} = 0.8V$ for noninverting stages.

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3.0 QUALITY ASSURANCE

- 3.1** Sampling and inspection procedures shall be in accordance with MIL-M-38510 and, to the extent specified, with MIL-STD-883.
- 3.2** 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) $T_A = +125^\circ\text{C}$, minimum.
 - (3) Interim and final electrical test requirements shall be as specified in Table 2.
- 3.3** 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.
- 3.4** Groups 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, or D.
 - (2) $T_A = +125^\circ\text{C}$, minimum.
 - (3) Test duration, 1000 hours, except as permitted by Method 1005 of MIL-STD-883.

TABLE 2. ELECTRICAL TEST REQUIREMENTS

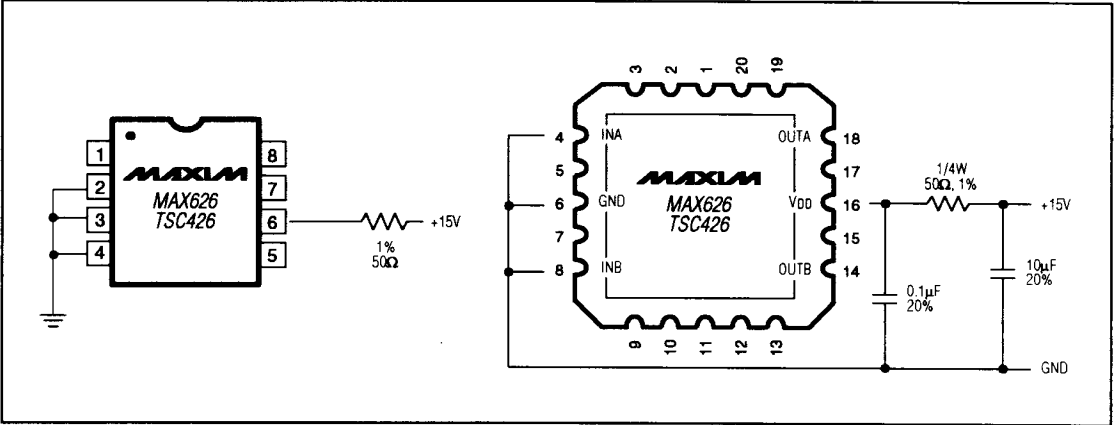
MIL-STD-883 Test Requirements	Subgroups (per Method 5005, Table 1)
Interim Electrical Parameters (Method 5004)	1
Final Electrical Parameters (Method 5004)	1,* 2, 3, 9
Group A Test Requirements (Method 5005)	1, 2, 3 9, 10,** 11**
Groups C and D End-Point Electrical Parameters (Method 5005)	1

*PDA applies to Subgroup 1 only.

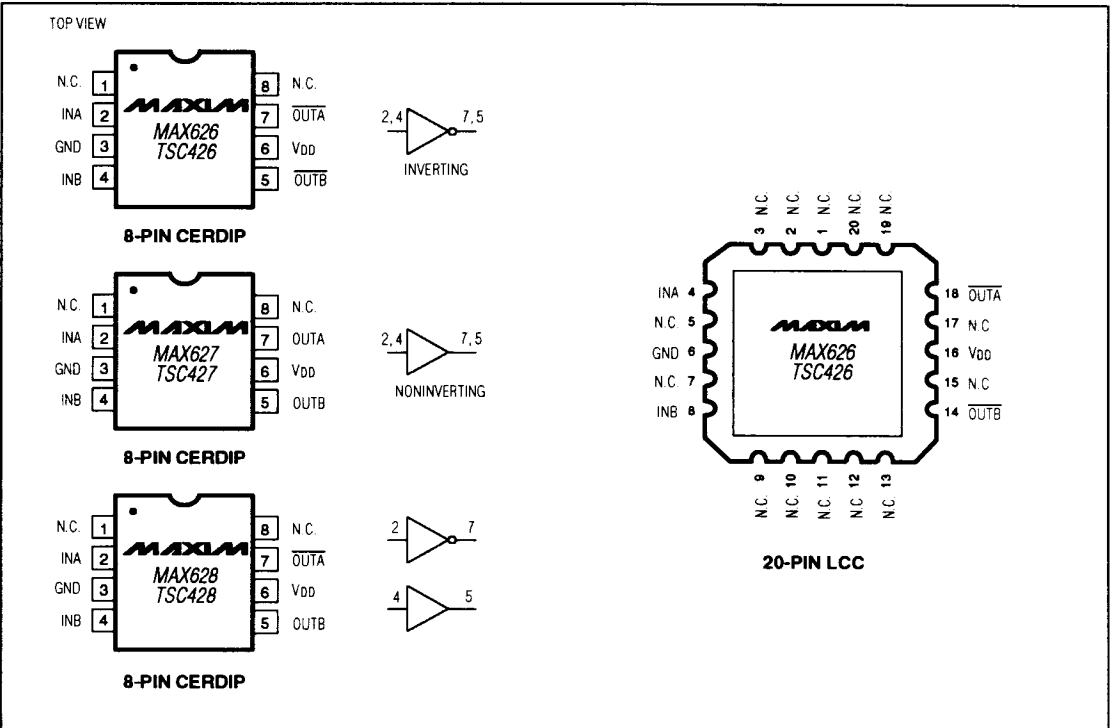
**Subgroups 10 and 11, if not tested, shall be guaranteed to the limits in Table 1.

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4.0 Life Test/Burn-In Circuits



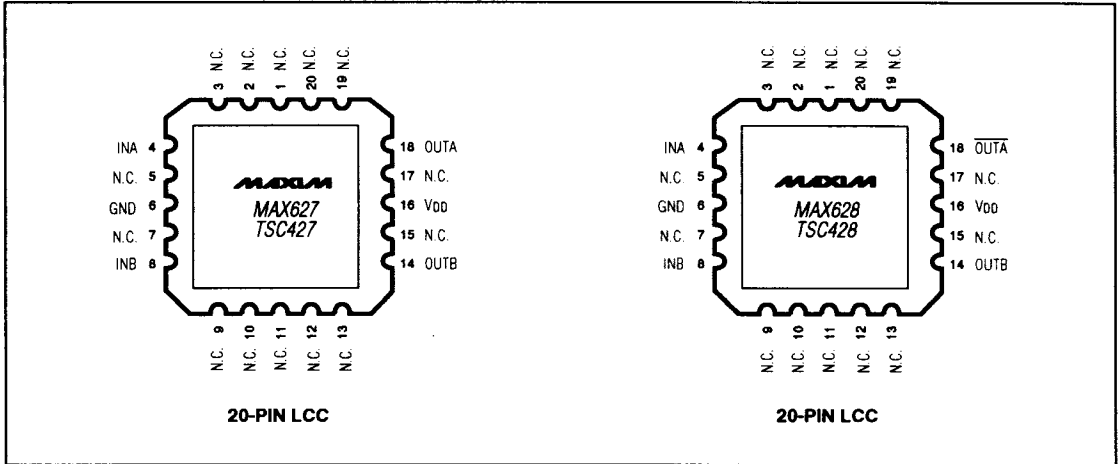
4.1 Pin Configurations



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4.1 Pin Configurations (continued)



4.2 Timing Diagram/Test Circuit

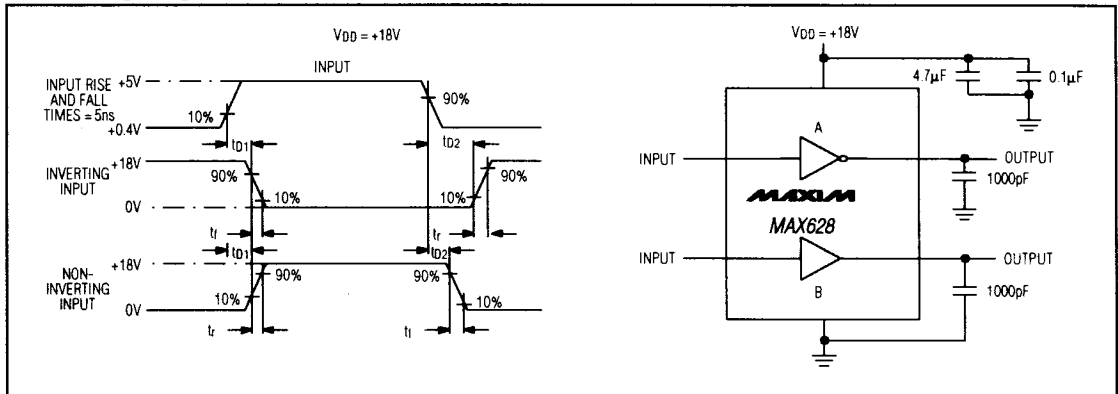


Figure 1. Switching-Time Test Circuit