

1.5A HIGH-SPEED 30V MOSFET DRIVERS

TC4431 TC4431

ABSOLUTE MAXIMUM RATINGS*

Supply Voltage	36V
Input Voltage (Note 1)	$V_{DD} + 0.3V$ to GND
Maximum Chip Temperature	+150°C
Storage Temperature Range	- 65°C to +150°C
Lead Temperature (Soldering, 10 sec)	+300°C
Package Thermal Resistance	
CerDIP $R_{\theta J-A}$	150°C/W
CerDIP $R_{\theta J-C}$	50°C/W
PDIP $R_{\theta J-A}$	125°C/W
PDIP $R_{\theta J-C}$	42°C/W
SOIC $R_{\theta J-A}$	250°C/W
SOIC $R_{\theta J-C}$	75°C/W

Operating Temperature Range

C Version	0°C to +70°C
E Version	- 40°C to +85°C
Package Power Dissipation ($T_A \leq 70^\circ\text{C}$)	
Plastic	730mW
CerDIP	800mW
SOIC	470mW

*Static-sensitive device. Unused devices must be stored in conductive material. Protect devices from static discharge and static fields. Stresses above 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 above those indicated in the operation sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS: $T_A = +25^\circ\text{C}$ with $5.0 \leq V_{DD} \leq 30V$, unless otherwise specified.

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Input						
V_{IH}	Logic 1 High Input Voltage		2.4	—	—	V
V_{IL}	Logic 0 Low Input Voltage		—	—	0.8	V
I_{IN}	Input Current (Note 1)	$0V \leq V_{IN} \leq V_{DD}$ (16V MAX)	-1	—	1	μA
Output						
V_{OH}	High Output Voltage	$I_{OUT} = 100\text{mA}$	$V_{DD} - 1.0$	$V_{DD} - 0.8$	—	V
V_{OL}	Low Output Voltage		—	—	0.025	V
R_O	Output Resistance (V_{OL})	$V_{DD} = 30V$, $I_O = 10\text{mA}$	—	7	10	Ω
I_{PK}	Peak Output Current	Source: $V_{DD} = 30V$ Sink: $V_{DD} = 30V$	—	3.0	—	A
I_{REV}	Latch-Up Protection Withstand Reverse Current	Duty Cycle $\leq 2\%$ $t \leq 300 \mu\text{sec}$	0.3	—	—	A
Switching Time (Note 2)						
t_R	Rise Time	Figure 1	—	25	40	nsec
t_F	Fall Time	Figure 1	—	33	50	nsec
t_{D1}	Delay Time	Figure 1	—	62	80	nsec
t_{D2}	Delay Time	Figure 1	—	78	90	nsec
Power Supply						
I_S	Power Supply Current	$V_{IN} = 3V$ $V_{IN} = 0V$	—	2.5	4	mA
V_S	Start-up Threshold		—	8.4	10	V
V_{DO}	Drop-out Threshold	(Note 3)	7	7.7	—	V

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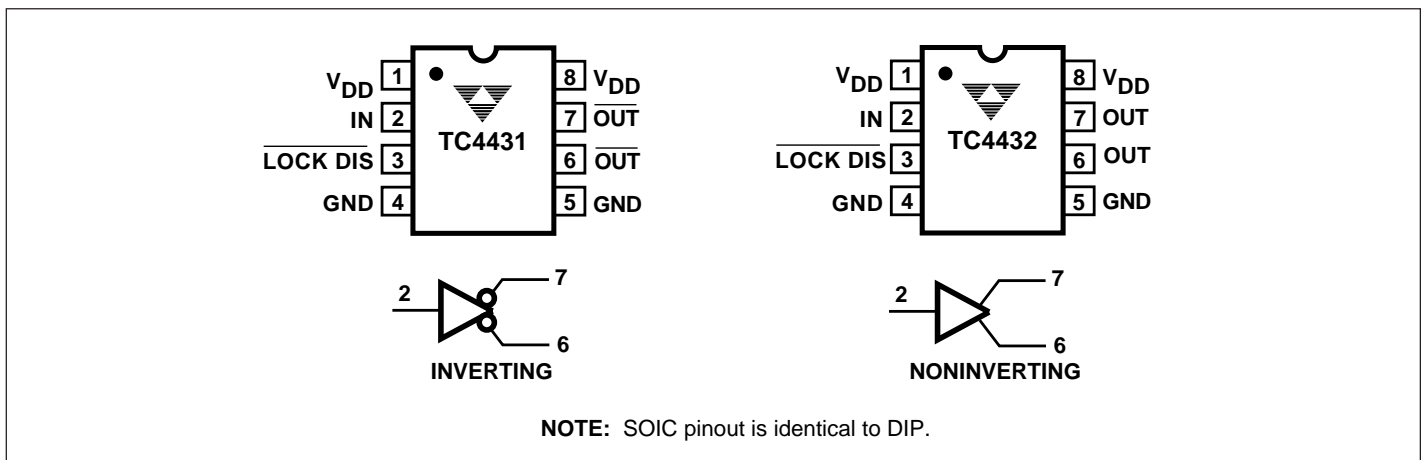
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ELECTRICAL CHARACTERISTICS (Cont.): Specifications measured over operating temperature range with $5.0V \leq V_{DD} \leq 30V$, unless otherwise specified.

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Input						
V_{IH}	Logic 1 High Input Voltage		2.4	—	—	V
V_{IL}	Logic 0 Low Input Voltage		—	—	0.8	V
I_{IN}	Input Current (Note 1)	$0V \leq V_{IN} \leq V_{DD}$ (16V MAX)	-1	—	1	μA
Output						
V_{OH}	High Output Voltage	$I_{OUT} = 100mA$	$V_{DD} - 1.2$	—	—	V
V_{OL}	Low Output Voltage		—	—	0.025	V
R_O	Output Resistance	$V_{DD} = 30V, I_O = 10mA$	—	—	12	Ω
Switching Time (Note 2)						
t_R	Rise Time	Figure 1	—	—	60	nsec
t_F	Fall Time	Figure 1	—	—	70	nsec
t_{D1}	Delay Time	Figure 1	—	—	100	nsec
t_{D2}	Delay Time	Figure 1	—	—	110	nsec
Power Supply						
I_S	Power Supply Current	$V_{IN} = 3V$ $V_{IN} = 0V$	—	—	6 0.7	mA
V_S	Start-up Threshold		—	8.4	10	V
V_{DO}	Drop-out Threshold	(Note 3)	7	7.7	—	V

- NOTES:** 1. For inputs >16V, add a 1k Ω resistor in series with the input. See graph on page 4 for input current.
2. Switching times are guaranteed by design.
3. For operation below 7V, the LOCK DIS., Pin 3 can be grounded to disable the lockout and start-up circuit.

PIN CONFIGURATIONS



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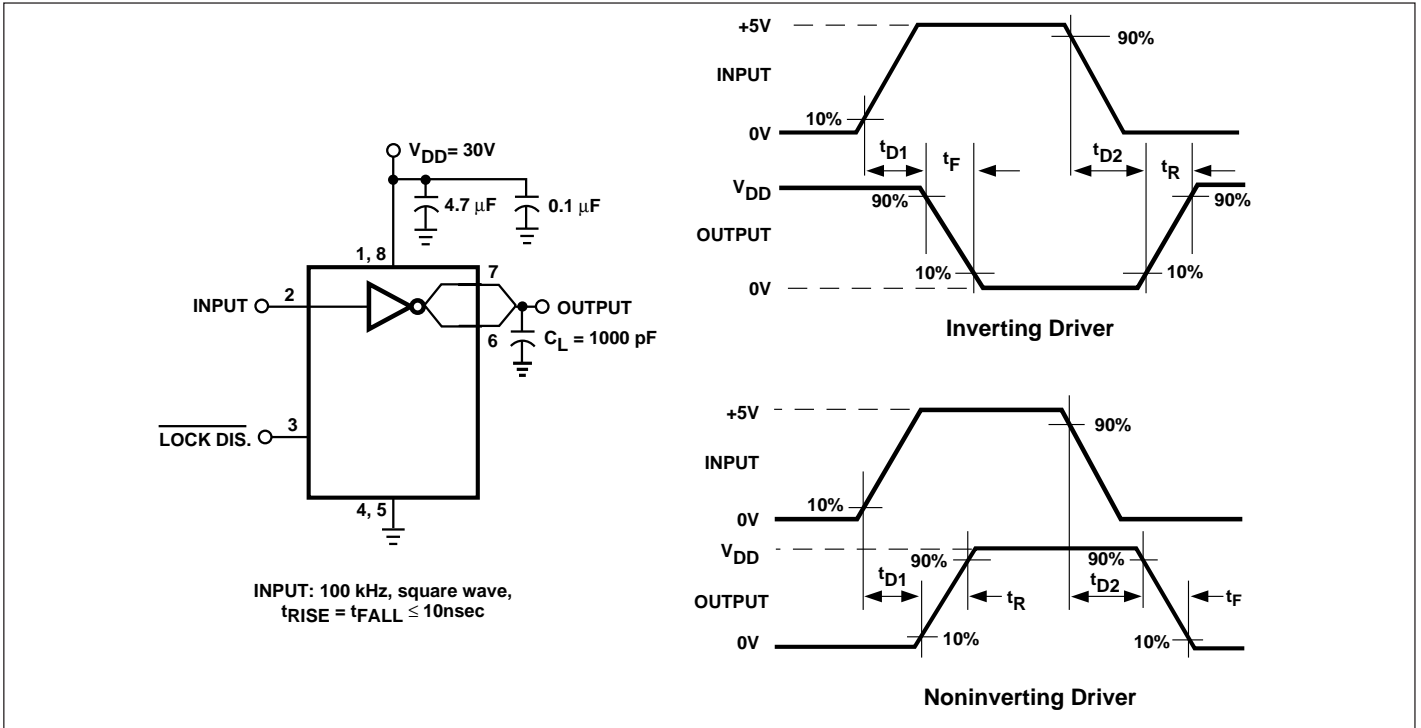


Figure 1. Switching Time Test Circuit

TYPICAL CHARACTERISTICS

