

TC4626/TC4627

1.0 ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings*

Supply Voltage	6.2V
Input Voltage, Any Terminal	$V_S + 0.3V$ to GND – 0.3V
Package Power Dissipation ($T_A \leq 70^\circ\text{C}$)	
PDIP	730mW
CERDIP	800mW
SOIC	760mW
Derating Factor PDIP	5.6 mW/ $^\circ\text{C}$ Above 36°C
CERDIP	6.0mW/ $^\circ\text{C}$
Operating Temperature Range (Ambient)	
C Version	0°C to $+70^\circ\text{C}$
E Version	-40°C to $+85^\circ\text{C}$
M Version	-55°C to $+125^\circ\text{C}$
Storage Temperature Range	-65°C to $+150^\circ\text{C}$

*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.

TC4626/TC4627 ELECTRICAL SPECIFICATIONS

Electrical Characteristics: $T_A = +25^\circ\text{C}$, $V_{DD} = 5V$, $C_1 = C_2 = C_3 = 10\mu\text{F}$ unless otherwise noted.						
Symbol	Parameter	Min	Typ	Max	Units	Test Conditions
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	-1	—	1	μA	$0V \leq V_{IN} \leq V_{DRIVE}$
Output						
V_{OH}	High Output Voltage	$V_{BOOST} - 0.025$	—	—	V	
V_{OL}	Low Output Voltage	—	—	0.025	V	
R_O	Output Resistance, High	—	10	15	Ω	$I_{OUT} = 10\text{mA}$, $V_{DD} = 5V$
R_O	Output Resistance, Low	—	8	10	Ω	$I_{OUT} = 10\text{mA}$, $V_{DD} = 5V$
I_{PK}	Peak Output Current	—	1.5	—	A	
Switching Time						
t_R	Rise Time	—	33	40	nsec	Figure 3-1, Figure 3-2
t_F	Fall Time	—	27	35	nsec	Figure 3-1, Figure 3-2
t_{D1}	Delay Time	—	35	45	nsec	Figure 3-1, Figure 3-2
t_{D2}	Delay Time	—	45	55	nsec	Figure 3-1, Figure 3-2
F_{MAX}	Maximum Switching Frequency	1.0	—	—	MHz	$V_{DD} = 5V$, $V_{BOOST} > 8.5V$, Figure 3-1
Voltage Booster						
R_3	Voltage Tripler Output Source Resistance	—	300	400	Ω	$I_L = 10\text{mA}$, $V_{DD} = 5V$
R_2	Voltage Doubler Output Source Resistance	—	120	200	Ω	
F_{OSC}	Oscillator Frequency	12	—	28	kHz	
V_{OSC}	Oscillator Amplitude Measured at C1-	4.5	—	10	V	$R_{LOAD} = 10k\Omega$
$UV @ V_{BOOST}$	Undervoltage Threshold	7.0	7.8	8.5	V	
$V_{START} @ V_{BOOST}$	Start Up Voltage	10.5	11.3	12	V	
V_{BOOST}	@ $V_{DD} = 5V$	14.6	—	—	V	No Load

TC4626/TC4627 ELECTRICAL SPECIFICATIONS (CONTINUED)

Symbol	Parameter	Min	Typ	Max	Units	Test Conditions
Power Supply						
I_{DD}	Power Supply Current	—	—	2.5	mA	$V_{IN} = \text{LOW or HIGH}$
V_{DD}	Supply Voltage	4.0	—	6.0	V	
Electrical Characteristics: Over operating temperature range, $V_{DD} = 5V$, $C_1 = C_2 = C_3 = 10\mu F$ unless otherwise noted.						
Symbol	Parameter	Min	Typ	Max	Units	Test Conditions
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	-10	—	1	μA	$0V \leq V_{IN} \leq V_{BOOST}$
Output						
V_{OH}	High Output Voltage	$V_{DRIVE} - 0.025$	—	—	V	
V_{OL}	Low Output Voltage	—	—	0.025	V	
R_O	Output Resistance, High	—	15 15	20 25	Ω	$I_{OUT} = 10mA$, $V_{DD} = 5V$ C & E Version ($T_A = 70^\circ C$ or $85^\circ C$) M Version ($T_A = 125^\circ C$)
R_O	Output Resistance, Low	—	10 10	13 15	Ω	$I_{OUT} = 10mA$, $V_{DD} = 5V$ C & E Version ($T_A = 70^\circ C$ or $85^\circ C$) M Version ($T_A = 125^\circ C$)
I_{PK}	Peak Output Current	—	1.5	—	A	
Switching Time						
t_R	Rise Time	—	—	55	nsec	Figure 3-1, Figure 3-2
t_F	Fall Time	—	—	50	nsec	Figure 3-1, Figure 3-2
t_{D1}	Delay Time	—	—	60	nsec	Figure 3-1, Figure 3-2
t_{D2}	Delay Time	—	—	70	nsec	Figure 3-1, Figure 3-2
F_{MAX}	Maximum Switching Frequency	750	—	—	kHz	$V_{DD} = 5V$, $V_{BOOST} > 8.5V$, Figure 3-1
Voltage Booster						
R_3	Voltage Boost Output Source Resistance	—	400	500	Ω	$I_L = 10mA$, $V_{DD} = 5V$
R_2	Voltage Doubler Output Source Resistance	—	170	300	Ω	
F_{OSC}	Oscillator Frequency	5	—	50	kHz	
V_{OSC}	Oscillator Amplitude Measured at C1-	4.5	—	10	V	$R_{LOAD} = 10k\Omega$
$UV @ V_{BOOST}$	Undervoltage Threshold	7.0	7.8	8.5	V	
$V_{START} @ V_{BOOST}$	Start Up Voltage	10.5	11.3	12	V	
V_{BOOST}	@ $V_{DD} = 5V$	14.6	—	—	V	No Load
Power Supply						
I_{DD}	Power Supply Current	—	—	4	mA	$V_{IN} = \text{LOW or HIGH}$
V_{DD}	Supply Voltage	4.0	—	6.0	V	

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2.0 PIN DESCRIPTIONS

The descriptions of the pins are listed in Table 2-1.

TABLE 2-1: PIN FUNCTION TABLE

Pin No. (8-Pin PDIP, CERDIP)	Symbol	Description
1	C1-	
2	C1+	
3	C2	
4	GND	Ground.
5	OUT	
6	V _{BOOST}	
7	IN	
8	V _{DD}	

Pin No. (16-Pin SOIC Wide)	Symbol	Description
1	C1-	
2	NC	No connect.
3	C1+	
4	NC	No connect.
5	C2	
6	NC	No connect.
7	NC	No connect.
8	GND	Ground.
9	OUT	
10	NC	No connect.
11	V _{BOOST}	
12	NC	No connect.
13	IN	
14	NC	No connect.
15	NC	No connect.
16	V _{DD}	

3.0 APPLICATIONS INFORMATION

FIGURE 3-1: INVERTING DRIVER SWITCHING TIME

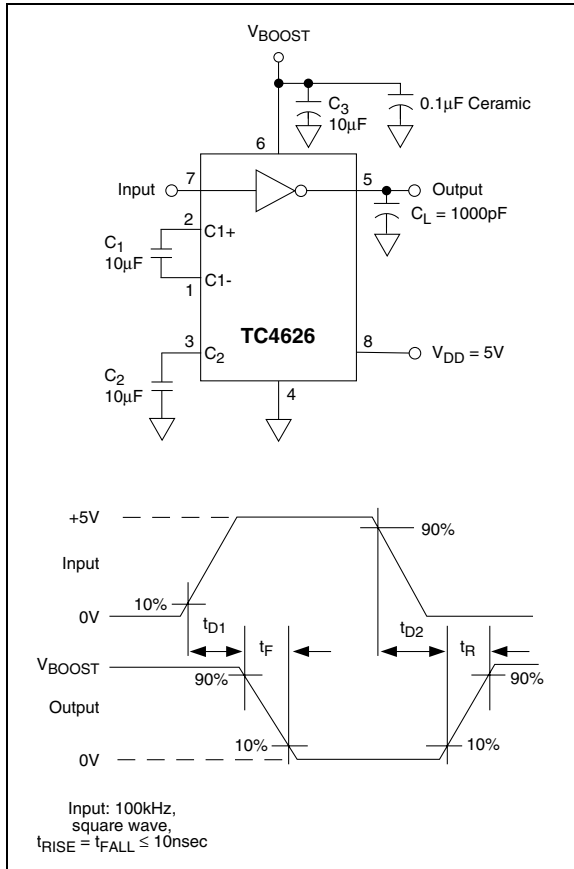
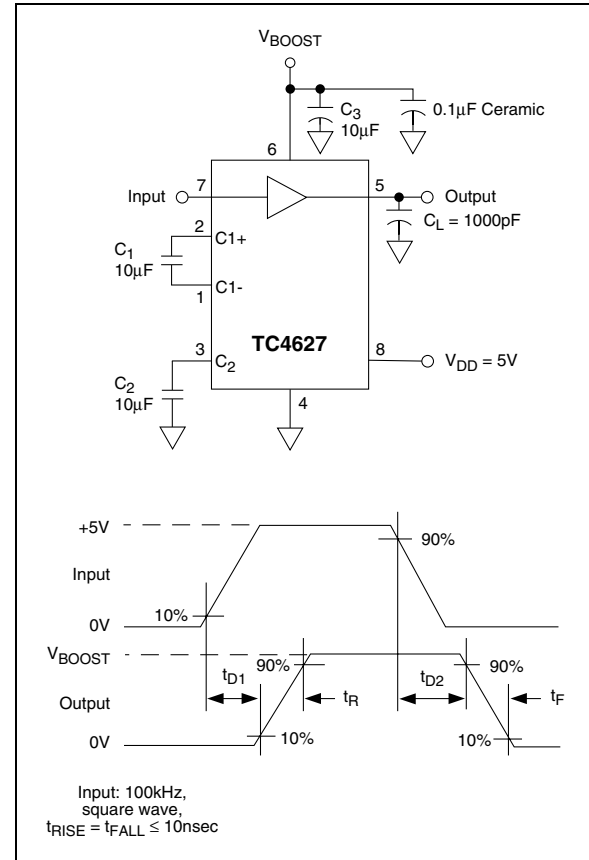


FIGURE 3-2: NONINVERTING DRIVER SWITCHING TIME



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3.1 BOOSTER FUNCTION

The voltage booster is an unregulated voltage tripler circuit. The tripler consists of three sets of internal switches and three external capacitors. S1a and S1b charge capacitor C1 to V_{DD} potential. S2a and S2b add

C1 potential to V_{DD} input to charge C2 to $2 \times V_{DD}$. S3a and S3b add C1 potential to C2 to charge C3 to $3 \times V_{DD}$. The position of the switches is controlled by the internal 4 phase clock.

FIGURE 3-3: VOLTAGE BOOSTER

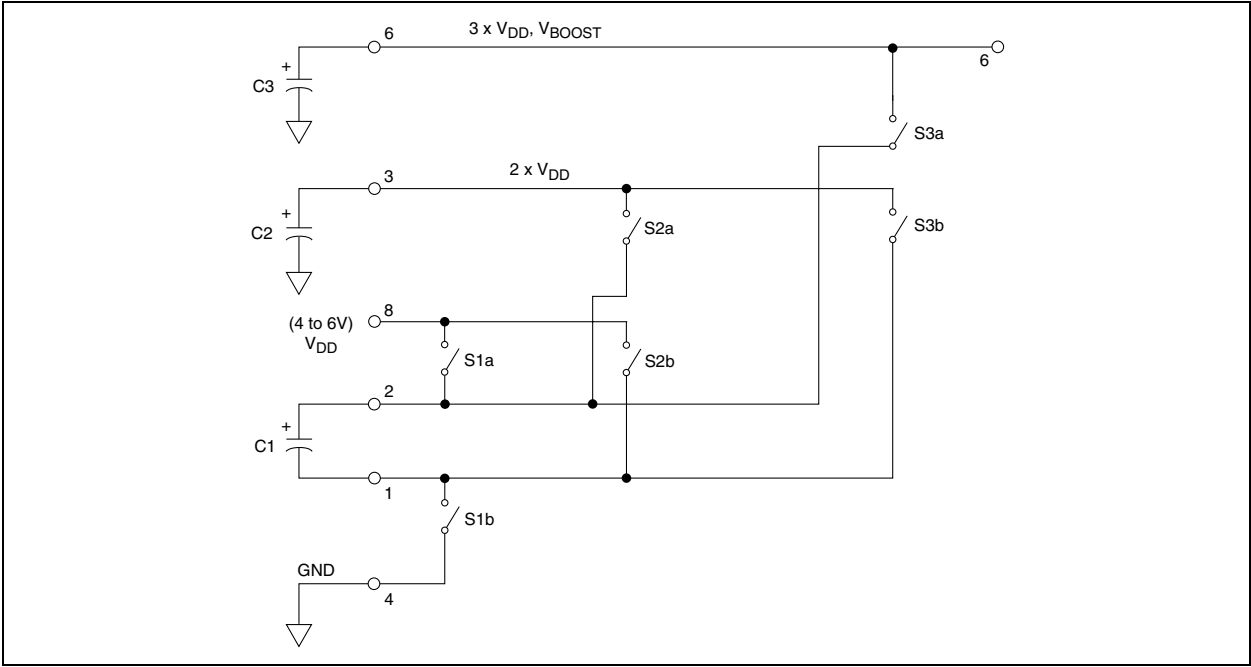
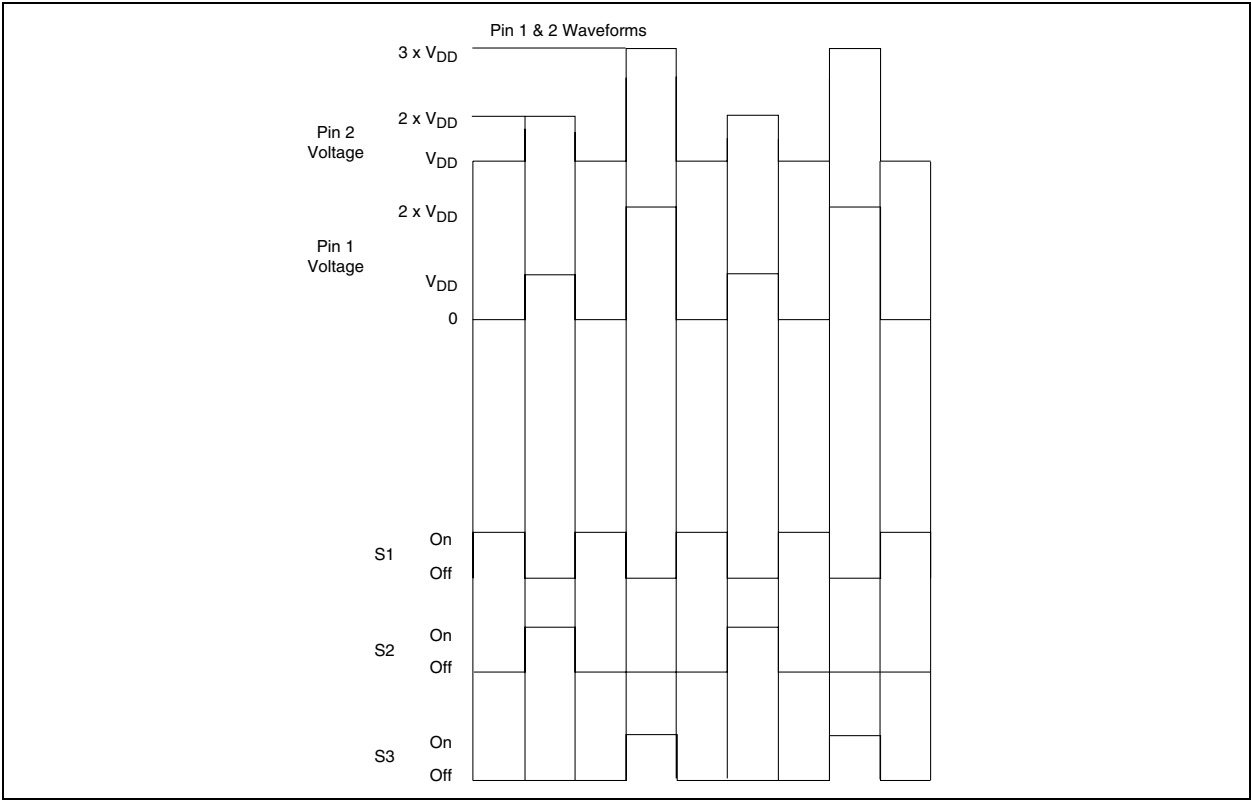
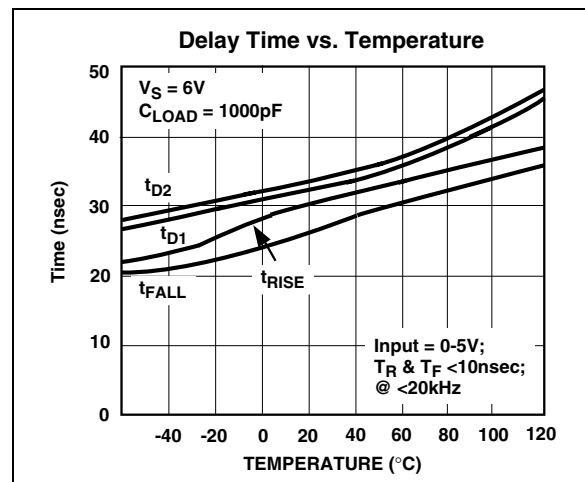
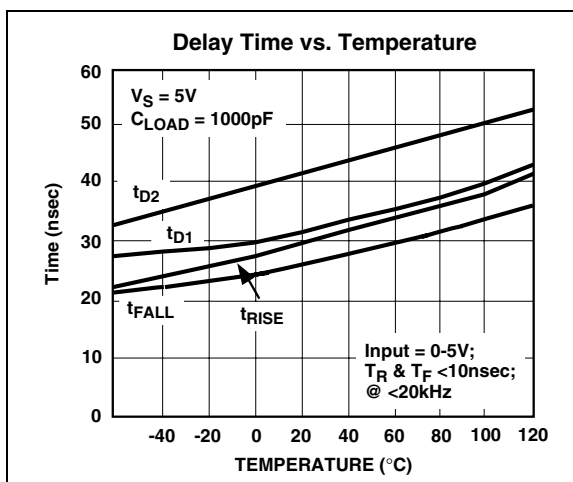
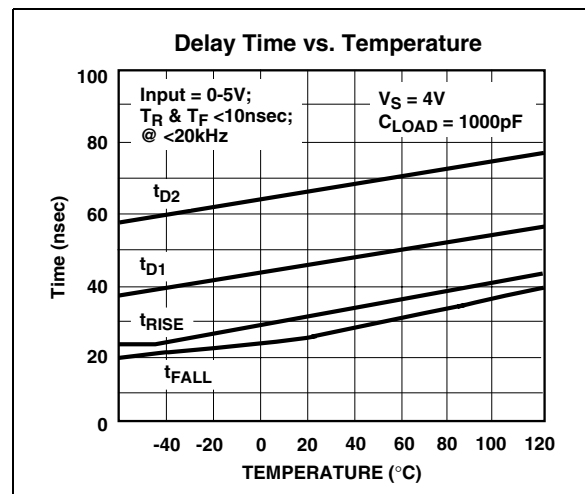
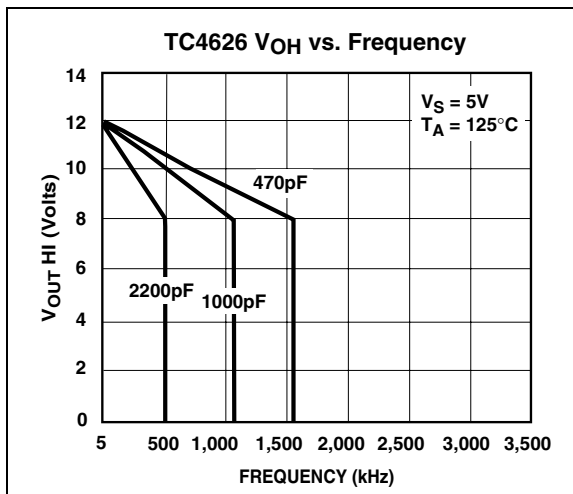
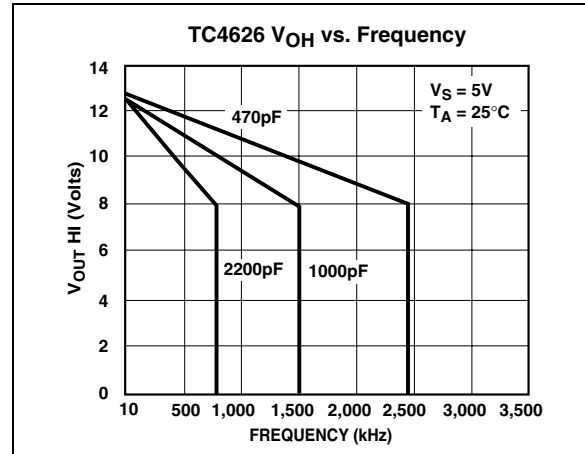
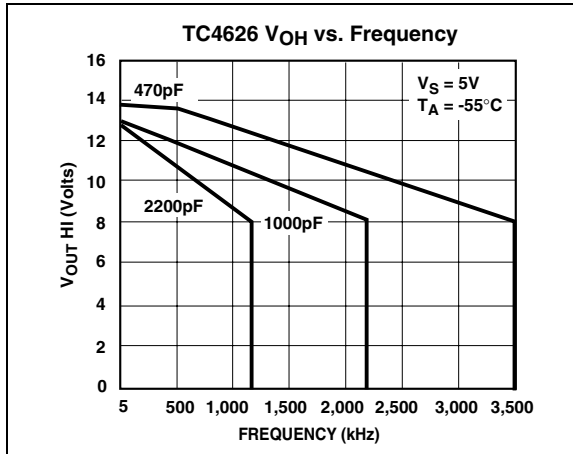


FIGURE 3-4: POSITION OF SWITCHES



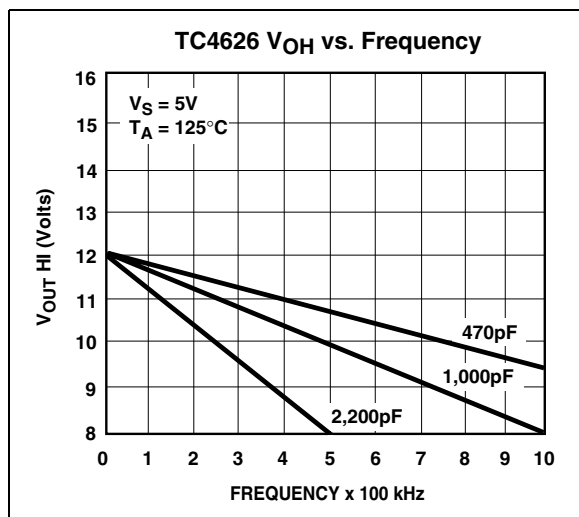
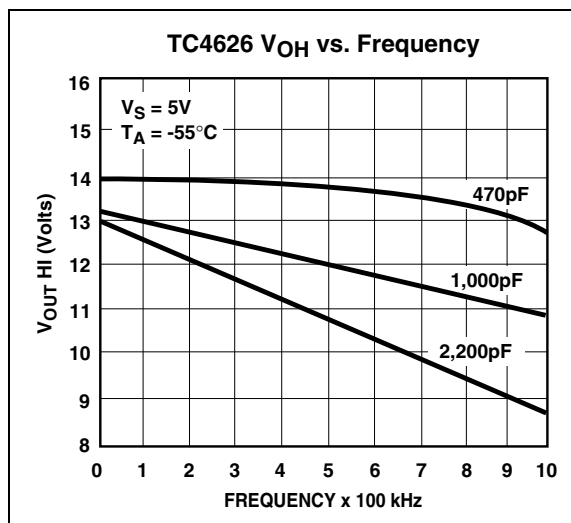
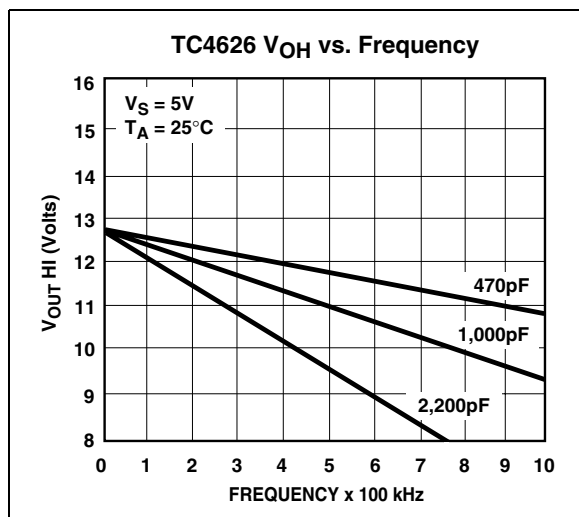
4.0 TYPICAL CHARACTERISTICS

Note: The graphs and tables provided following this note are a statistical summary based on a limited number of samples and are provided for informational purposes only. The performance characteristics listed herein are not tested or guaranteed. In some graphs or tables, the data presented may be outside the specified operating range (e.g., outside specified power supply range) and therefore outside the warranted range.



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TYPICAL CHARACTERISTICS (CONTINUED)

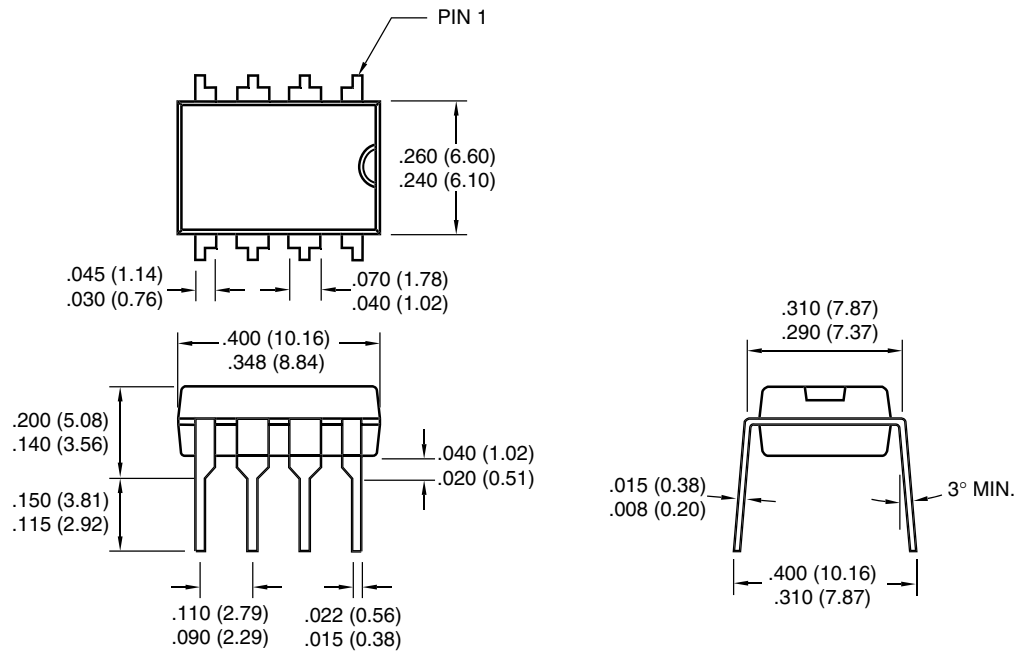


5.0 PACKAGING INFORMATION

Package marking data not available at this time.

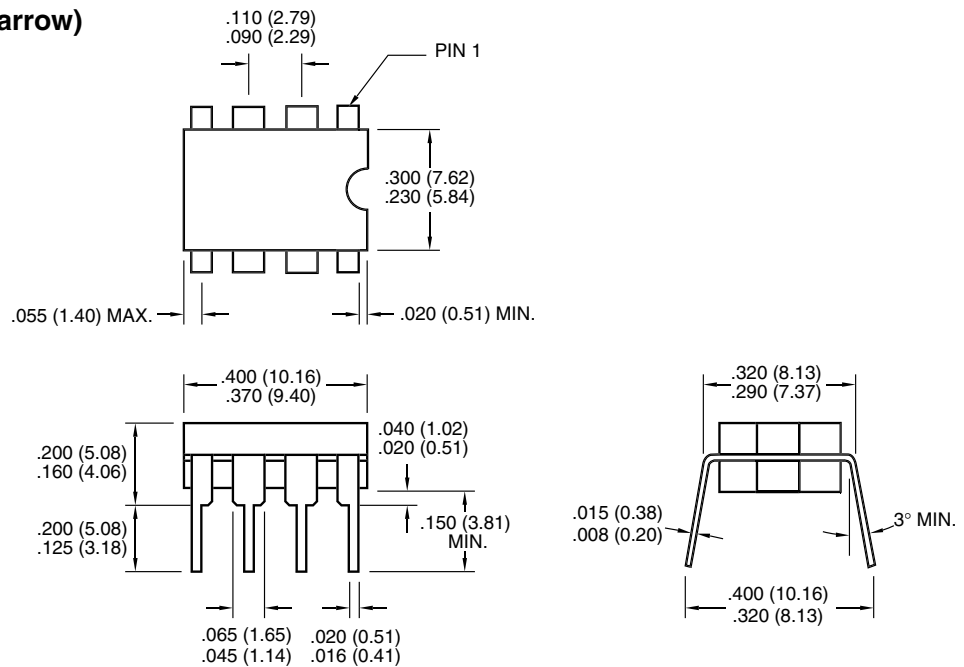
5.1 Package Dimensions

8-Pin Plastic DIP



Dimensions: inches (mm)

8-Pin CDIP (Narrow)

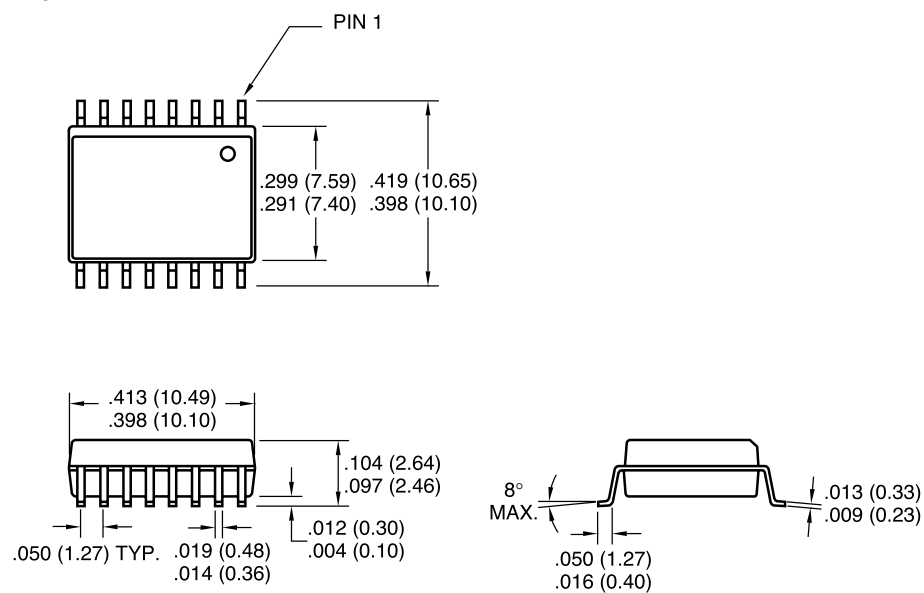


Dimensions: inches (mm)

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Package Dimensions (Continued)

16-Pin SOIC (Wide)



Dimensions: inches (mm)

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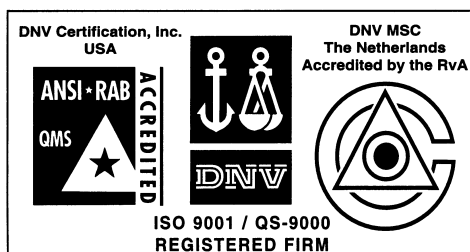
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