TC4426A/TC4427A/TC4428A

1.5A Dual High-Speed Power MOSFET Drivers

Features

- High Peak Output Current – 1.5A
- Wide Operating Range
  - 4.5V to 18V
- High Capacitive Load Drive Capability – 1000pF in 25nsec Typ.
- Short Delay Times – 30nsec Typ.
- Matched Rise, Fall and Delay Times
- Low Supply Current:
  - With Logic "1" Input – 1mA
  - With Logic "0" Input – 100µA
- Low Output Impedance – 7Ω
- Latch-Up Protected: Will Withstand 0.5A Reverse Current
- Input Will Withstand Negative Inputs Up to 5V
- ESD Protected – 4kV
- Pinouts Same as TC426/TC427/TC428

Applications

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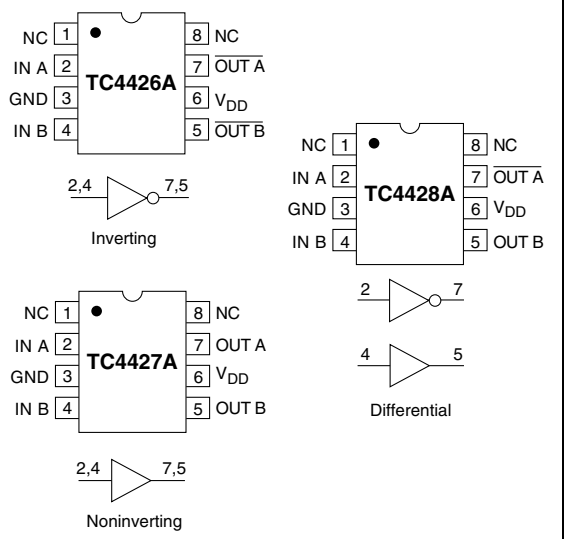
Device Selection Table

Part Number	Package	Temp. Range
TC4426ACOA	8-Pin SOIC	0°C to +70°C
TC4426ACPA	8-Pin PDIP	0°C to +70°C
TC4426AEOA	8-Pin SOIC	-40°C to +85°C
TC4426AEPA	8-Pin PDIP	-40°C to +85°C
TC4426AMJA	8-Pin CERDIP	-55°C to +125°C
TC4427ACOA	8-Pin SOIC	0°C to +70°C
TC4427ACPA	8-Pin PDIP	0°C to +70°C
TC4427AEOA	8-Pin SOIC	-40°C to +85°C
TC4427AEPA	8-Pin PDIP	-40°C to +85°C
TC4427AMJA	8-Pin CERDIP	-55°C to +125°C
TC4428ACOA	8-Pin SOIC	0°C to +70°C
TC4428ACPA	8-Pin PDIP	0°C to +70°C
TC4428AEOA	8-Pin SOIC	-40°C to +85°C
TC4428AEPA	8-Pin PDIP	-40°C to +85°C
TC4428AMJA	8-Pin CERDIP	-55°C to +125°C

Package Type

8-Pin PDIP/SOIC/CERDIP



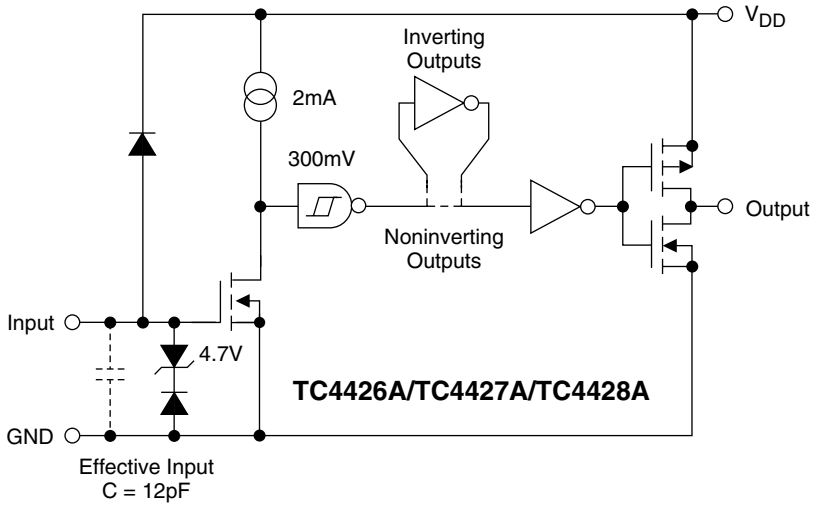
NC = No internal connection.
NOTE: SOIC pinout is identical to DIP.

General Description

The TC4426A/TC4427A/TC4428A are improved versions of the earlier TC426/TC427/TC428 family of buffer/drivers (with which they are pin compatible). They will not latch up under any conditions within their power and voltage ratings. They are not subject to damage when up to 5V of noise spiking (of either polarity) occurs on the ground pin. They can accept, without damage or logic upset, up to 500mA of reverse current (of either polarity) being forced back into their outputs. All terminals are fully protected against up to 4kV of electrostatic discharge.

As MOSFET drivers, the TC4426A/TC4427A/TC4428A can easily switch 1000pF gate capacitances in under 30nsec, and provide low enough impedances in both the ON and OFF states to ensure the MOSFET's intended state will not be affected, even by large transients.

Functional Block Diagram



NOTES: 1. TC4426A has 2 inverting drivers; TC4427A has 2 noninverting drivers.
2. TC4428A has one inverting and one noninverting driver.
3. Ground any unused driver input.

1.0 ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings*

Supply Voltage ..... +22V
Input Voltage, IN A or IN B
.....(V_{DD} + 0.3V) to (GND – 5V)
Package Power Dissipation ($T_A \leq 70°C$)
PDIP 730mW
CERDIP 800mW
SOIC 470mW
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 $R_{\theta J-A}$ ..... 155°C/W
SOIC $R_{\theta J-C}$ ..... 45°C/W
Operating Temperature Range
C Version .....0°C to +70°C
E Version ..... -40°C to +85°C
M Version..... -55°C to +125°C
Storage Temperature Range ..... -65°C to +150°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.

TC4426A/TC4427A/TC4428A ELECTRICAL SPECIFICATIONS

Electrical Characteristics: Over operating temperature range with 4.5V $\leq V_{DD} \leq$ 18V, 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 -10	— —	1 10	µA	$0V \leq V_{IN} \leq V_{DD}$
Output						
V_{OH}	High Output Voltage	V_{DD} – 0.025	—	—	V	DC Test
V_{OL}	Low Output Voltage	—	—	0.025	V	DC Test
R_O	Output Resistance	— — —	7 7 8	9 10 11	Ω	I_{OUT} = 10mA, V_{DD} = 18V, T_A = +25°C $0°C \leq T_A \leq +70°C$ $-40°C \leq T_A \leq +85°C$
I_{PK}	Peak Output Current	—	1.5	—	A	V_{DD} = 18V
I_{REV}	Latch-Up Protection Withstand Reverse Current	0.5	—	—	A	Duty cycle $\leq$ 2%, t $\leq$ 300µsec V_{DD} = 18V

Note 1: Switching times ensured by design.

Symbol	Parameter	Min	Typ	Max	Units	Test Conditions
Switching Time (Note 1)						
t_R	Rise Time	— — —	25 27 29	35 40 40	nsec	T_A = +25°C 0°C ≤ T_A ≤ +70°C -40°C ≤ T_A ≤ +85°C, Figure 3-1
t_F	Fall Time	— — —	25 27 29	35 40 40	nsec	T_A = +25°C 0°C ≤ T_A ≤ +70°C -40°C ≤ T_A ≤ +85°C, Figure 3-1
t_{D1}	Delay Time	— — —	30 33 35	35 40 45	nsec	T_A = +25°C 0°C ≤ T_A ≤ +70°C -40°C ≤ T_A ≤ +85°C, Figure 3-1
t_{D2}	Delay Time	— — —	30 33 35	35 40 45	nsec	T_A = +25°C 0°C ≤ T_A ≤ +70°C -40°C ≤ T_A ≤ +85°C, Figure 3-1
Power Supply						
I_S	Power Supply Current	— —	1.0 0.1	2.0 0.2	mA	V_{IN} = 3V (Both inputs) V_{IN} = 0V (Both inputs), V_{DD} = 18V

Note 1: Switching times ensured by design.

2.0 PIN DESCRIPTIONS

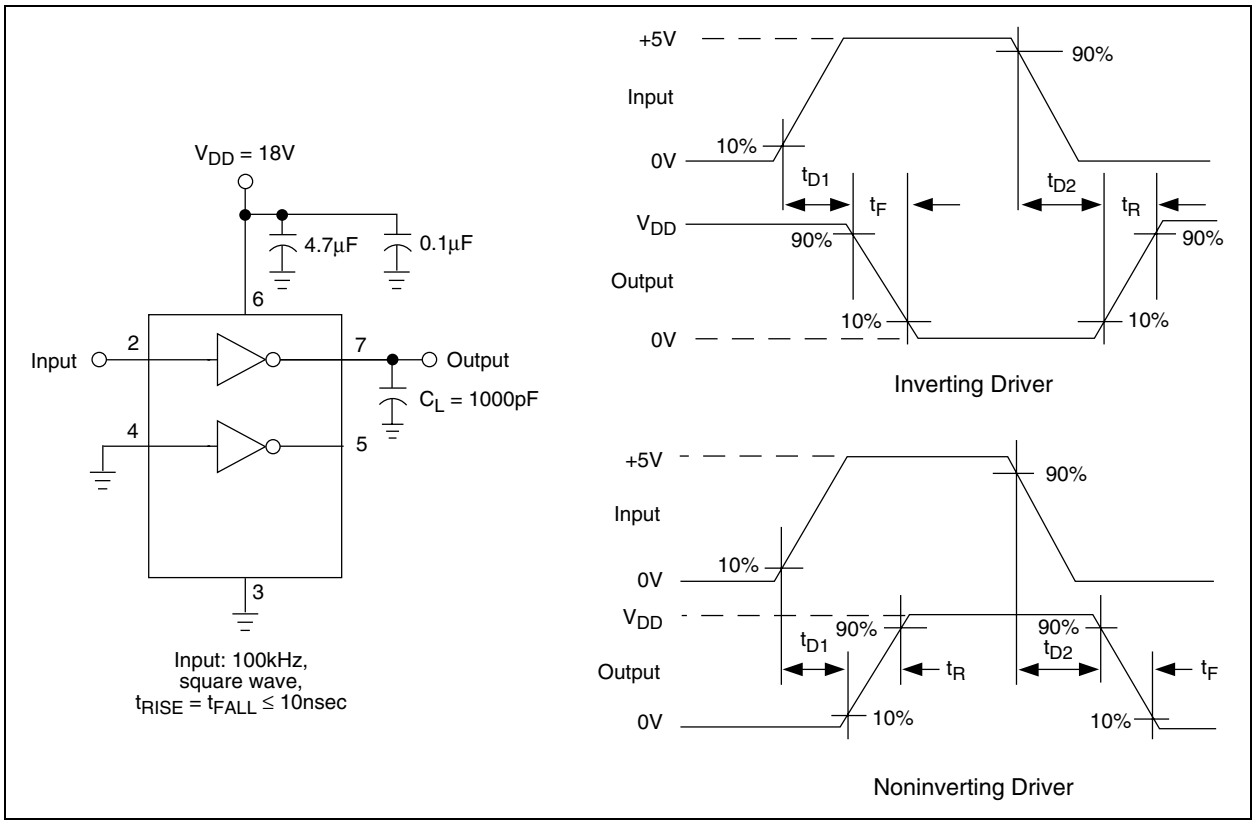
The descriptions of the pins are listed in Table 2-1.

TABLE 2-1: PIN FUNCTION TABLE

Pin No. (8-Pin PDIP, SOIC, CERDIP)	Symbol	Description
1	NC	No connect.
2	IN A	
3	GND	Ground.
4	IN B	
5	OUT B	
6	V_{DD}	
7	OUT A	
8	NC	No connect.

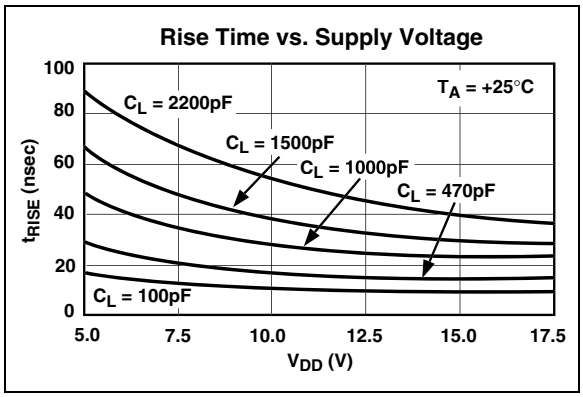
3.0 APPLICATIONS INFORMATION

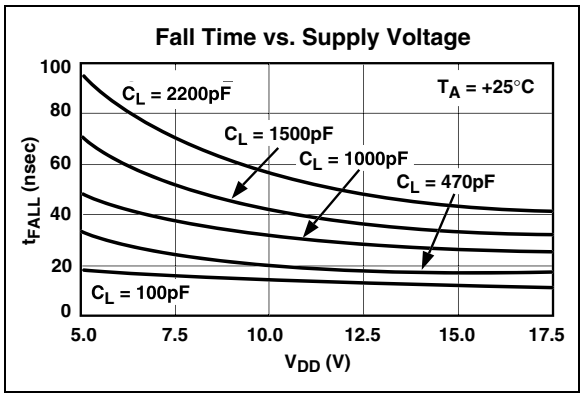
FIGURE 3-1: SWITCHING TIME TEST CIRCUIT

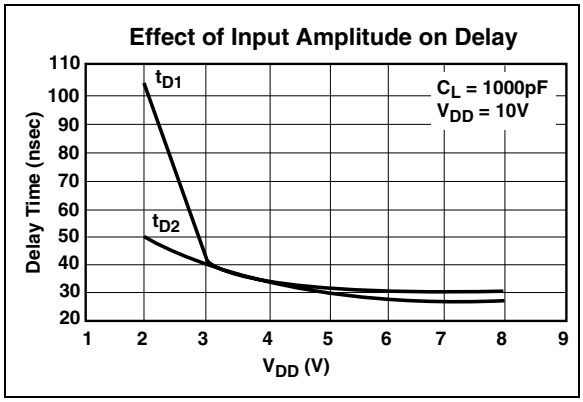


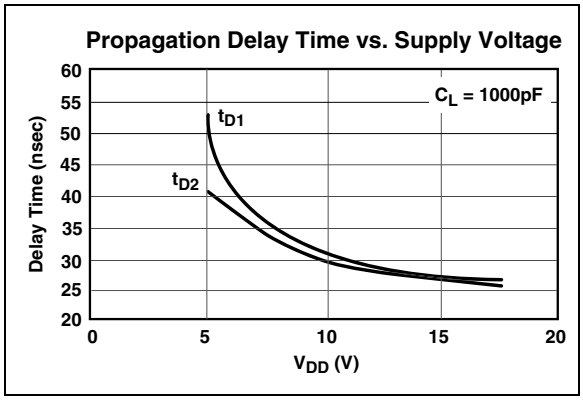
4.0 TYPICAL CHARACTERISTICS

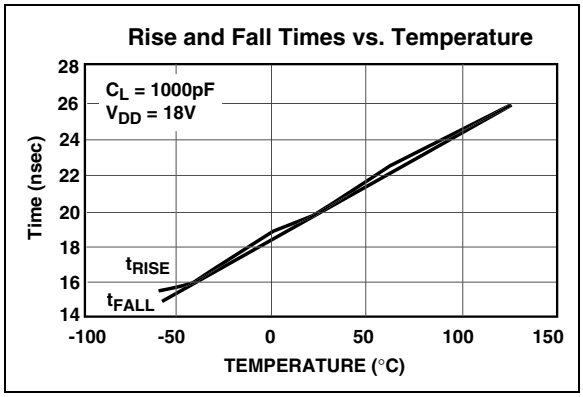
Note: The graphs and tables provided following this note are a statistical summary based on a limited number of samples and are provided for informational purposes only. The performance characteristics listed herein are not tested or guaranteed. In some graphs or tables, the data presented may be outside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

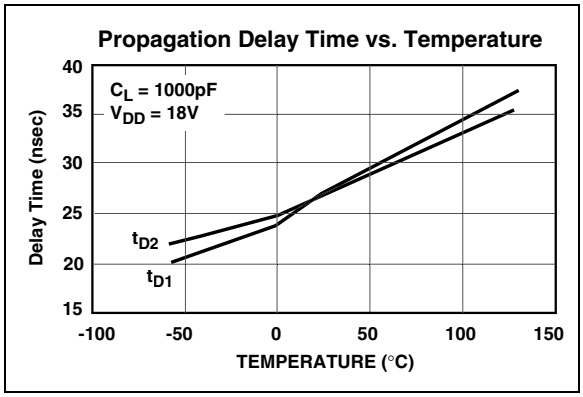




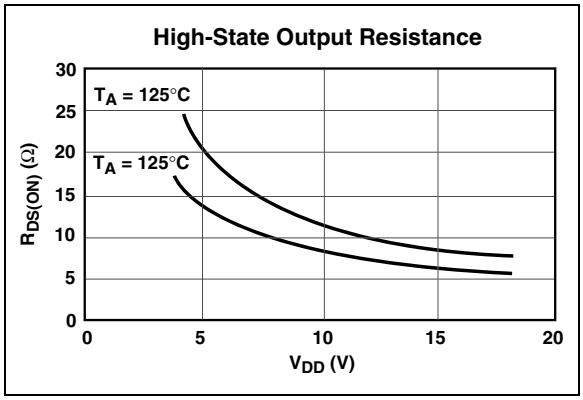


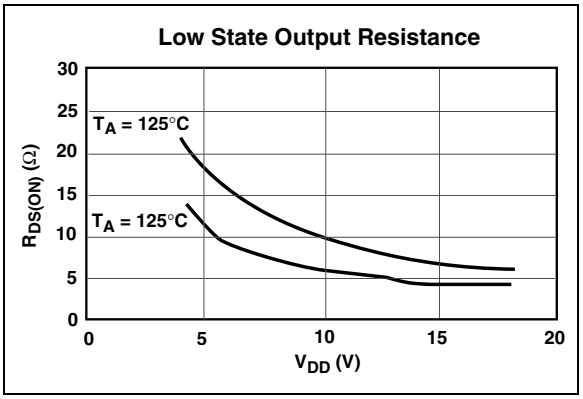


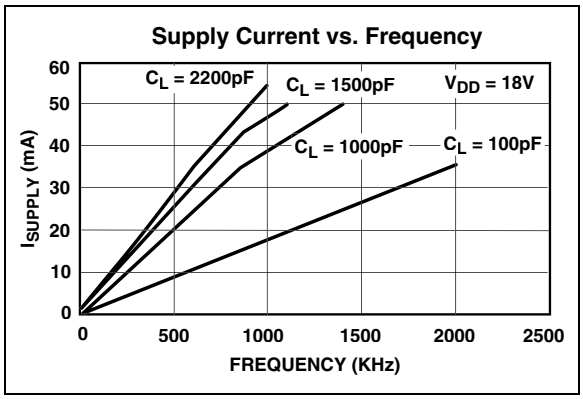


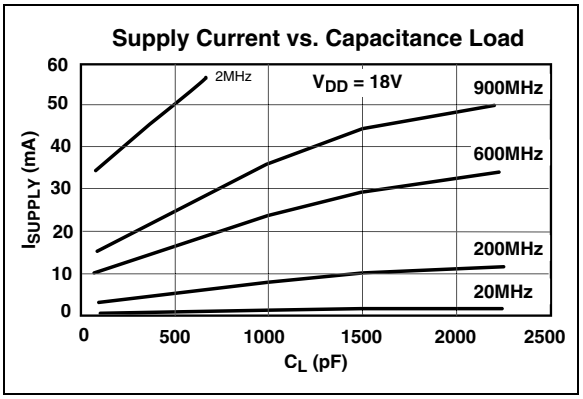


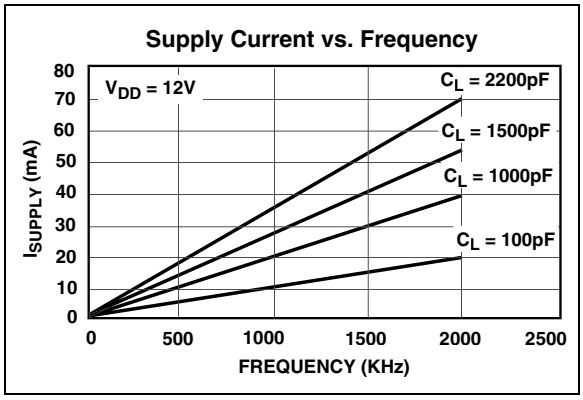
TYPICAL CHARACTERISTICS (CONTINUED)

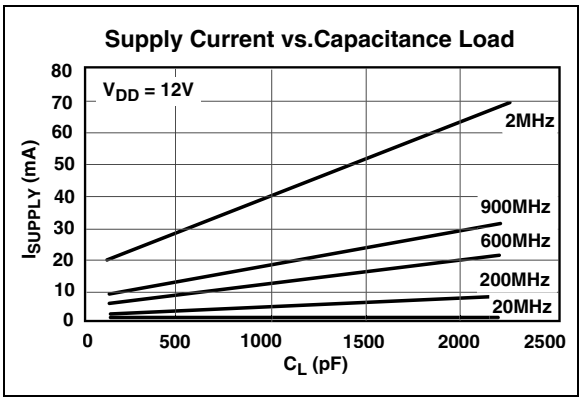




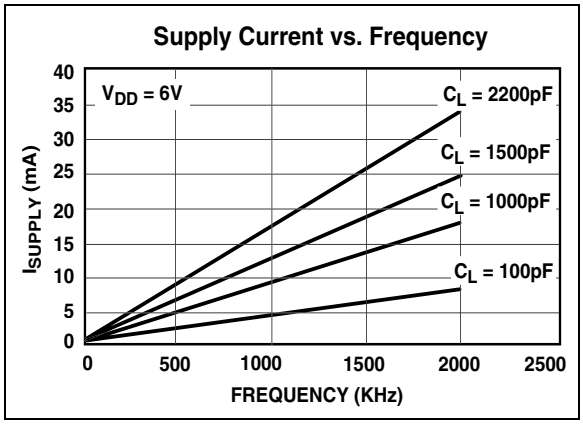


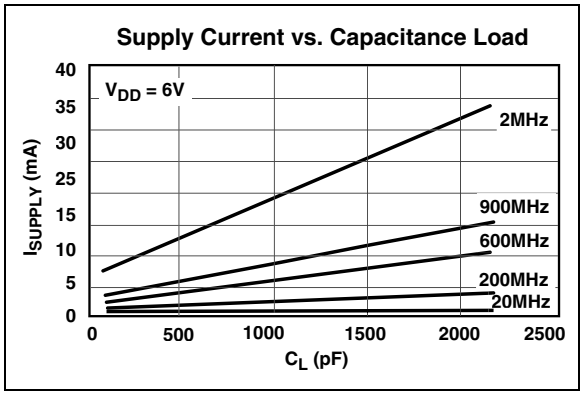


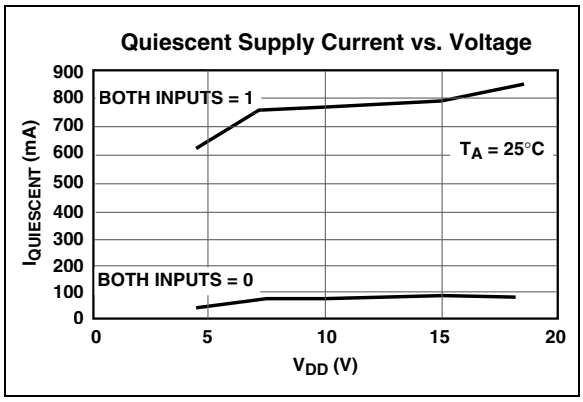


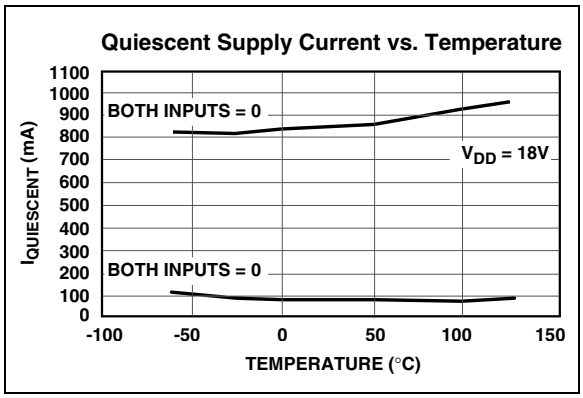


TYPICAL CHARACTERISTICS (CONTINUED)







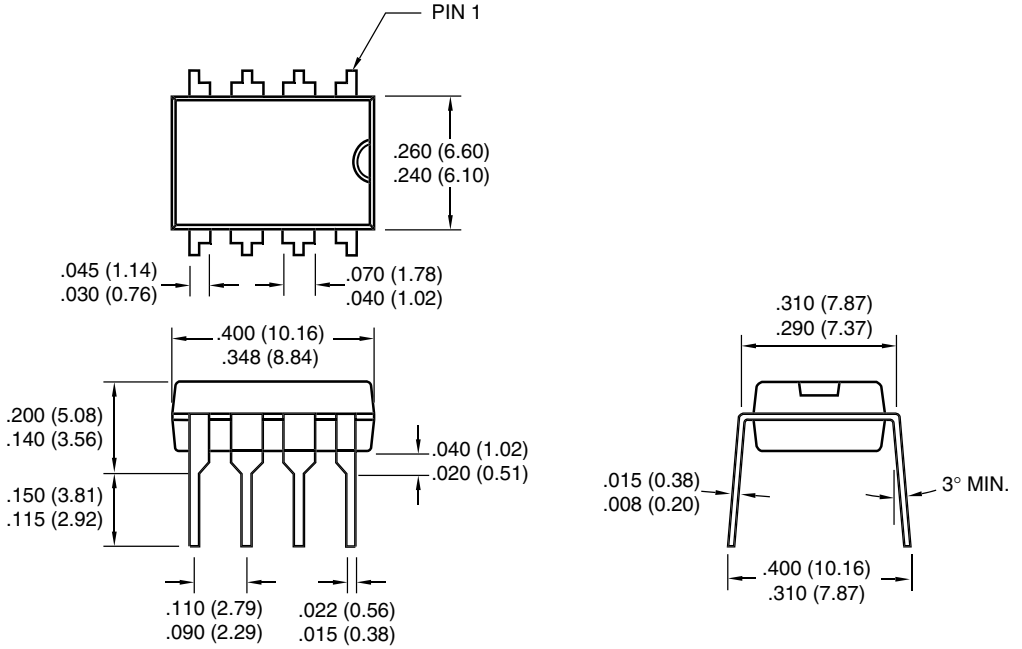


5.0 PACKAGING INFORMATION

Package marking data not available at this time.

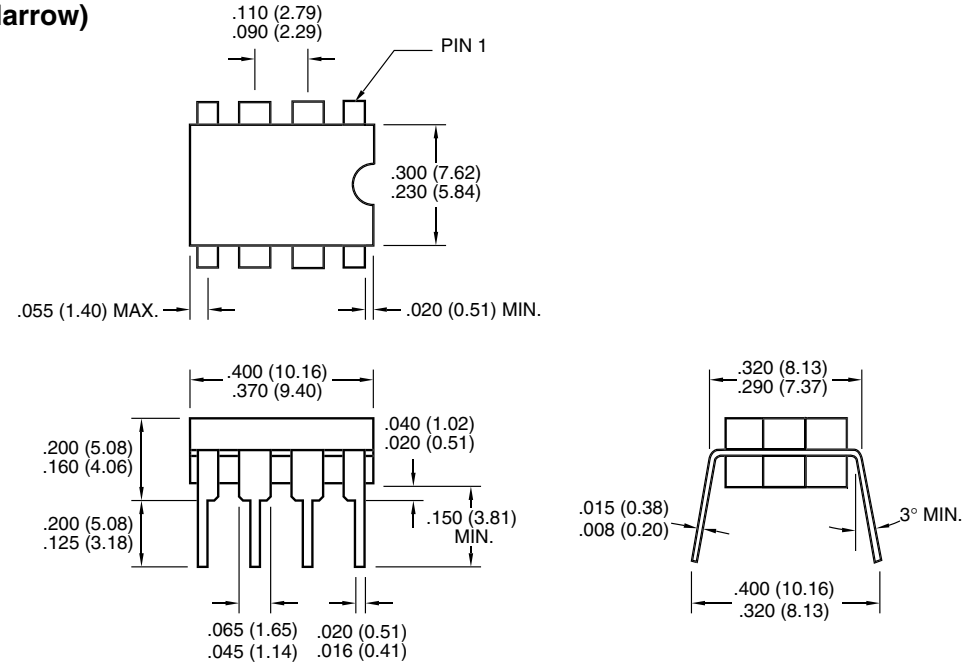
5.1 Package Dimensions

8-Pin Plastic DIP



Dimensions: inches (mm)

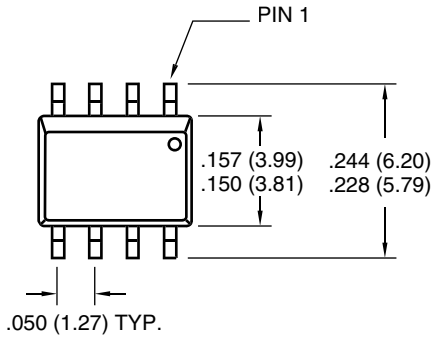
8-Pin CDIP (Narrow)

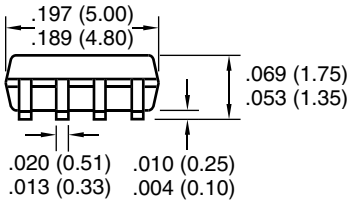


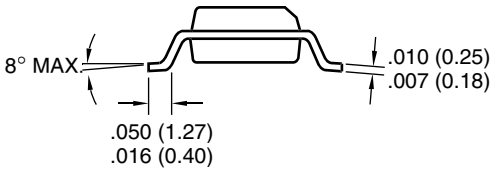
Dimensions: inches (mm)

Package Dimensions (Continued)

8-Pin SOIC







Dimensions: inches (mm)

NOTES:

Sales and Support

Data Sheets
Products supported by a preliminary Data Sheet may have an errata sheet describing minor operational differences and recommended workarounds. To determine if an errata sheet exists for a particular device, please contact one of the following:

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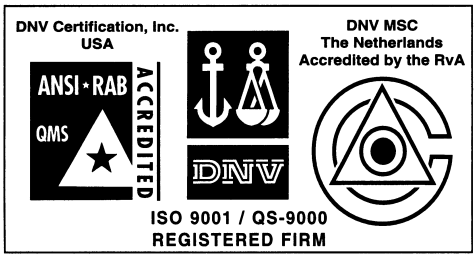
NOTES:



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