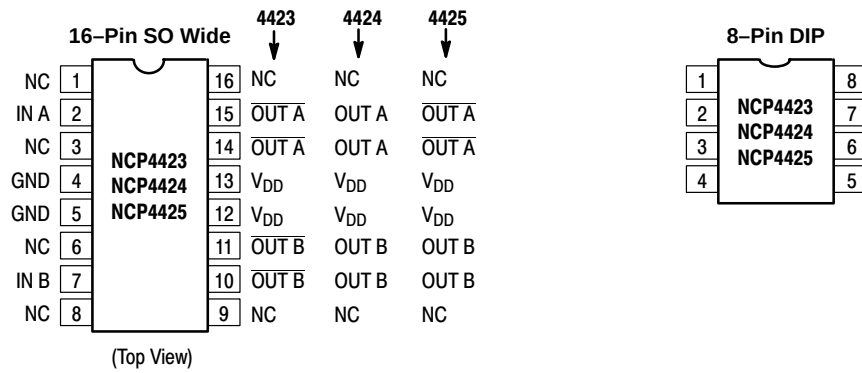


NCP4423, NCP4424, NCP4425

PIN CONNECTIONS



NC = NO CONNECTION

NOTE: Duplicate pins must **both** be connected for proper operation.

NCP4423, NCP4424, NCP4425

ABSOLUTE MAXIMUM RATINGS

Rating	Value	Unit
Supply Voltage	+22	V
Input Voltage, IN A or IN B ($V_{DD} + 0.3 \text{ V}$ to $\text{GND} - 5.0 \text{ V}$)	-5	V
Maximum Chip Temperature	+150	°C
Storage Temperature Range, T_{stg}	-65 to +150	°C
Lead Temperature (Soldering, 10 sec)	+300	°C
Package Thermal Resistance SOIC, $R_{\theta JA}$ PDIP, $R_{\theta JA}$ PDIP, $R_{\theta JC}$	155 -125 -45	°C/W
Operating Temperature Range	-40 to +85	°C
Package Power Dissipation ($T_A \leq 70^\circ\text{C}$) SOIC PDIP	470 730	mW mc

ELECTRICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$ with $4.5 \text{ V} \leq V_{DD} \leq 18 \text{ V}$, unless otherwise specified.)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
----------------	--------	-----------------	-----	-----	-----	------

Input

Logic 1 High Input Voltage	V_{OH}	—	2.4	—	—	V
Logic 0 Low Input Voltage	V_{IL}	—	—	—	0.8	V
Input Current	I_{IN}	$0 \text{ V} \leq V_{IN} \leq V_{DD}$	-1.0	—	1.0	μA

Output

High Output Voltage	V_{OH}	—	$V_{DD} - 0.025$	—	—	V
Low Output Voltage	V_{OL}	—	—	—	0.025	V
Output Resistance, High	R_{OH}	$I_{OUT} = 10 \text{ mA}$, $V_{DD} = 18 \text{ V}$	—	2.8	5.0	Ω
Output Resistance, Low	R_{OL}	$I_{OUT} = 10 \text{ mA}$, $V_{DD} = 18 \text{ V}$	—	3.5	5.0	Ω
Peak Output Current	I_{PK}	—	—	3.0	—	A
Latch-Up Protection Withstand Reverse Current	I_{REV}	Duty Cycle $\leq 2\%$ $t \leq 300 \mu\text{s}$	1.5	—	—	A

Switching Time (Note 1.)

Rise Time	t_R	Figure 1, $C_L = 1800 \text{ pF}$	—	23	35	nsec
Fall Time	t_F	Figure 1, $C_L = 1800 \text{ pF}$	—	25	35	nsec
Delay Time 1	t_{D1}	Figure 1, $C_L = 1800 \text{ pF}$	—	33	75	nsec
Delay Time 2	t_{D2}	Figure 1, $C_L = 1800 \text{ pF}$	—	38	75	nsec

Power Supply

Power Supply Current	I_S	$V_{IN} = 3.0 \text{ V}$ (Both Inputs) $V_{IN} = 0 \text{ V}$ (Both Inputs)	— —	1.5 0.15	2.5 0.25	mA
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1. Switching times guaranteed by design.

NCP4423, NCP4424, NCP4425

ELECTRICAL CHARACTERISTICS (Over operating temperature range with $4.5\text{ V} \leq V_{DD} \leq 18\text{ V}$, unless otherwise specified.)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
----------------	--------	-----------------	-----	-----	-----	------

Input

Logic 1 High Input Voltage	V_{IH}	—	2.4	—	—	V
Logic 0 Low Input Voltage	V_{IL}	—	—	—	0.8	V
Input Current	I_{IN}	$0\text{ V} \leq V_{IN} \leq V_{DD}$	−10	—	10	μA

Output

High Output Voltage	V_{OH}	—	$V_{DD} - 0.025$	—	—	V
Low Output Voltage	V_{OL}	—	—	—	0.025	V
Output Resistance, High	R_O	$I_{OUT} = 10\text{ mA}$, $V_{DD} = 18\text{ V}$	—	3.7	8.0	Ω
Output Resistance, Low	R_O	$I_{OUT} = 10\text{ mA}$, $V_{DD} = 18\text{ V}$	—	4.3	8.0	Ω
Peak Output Current	I_{PK}	—	—	3.0	—	A
Latch-Up Protection Withstand Reverse Current	I_{REV}	Duty Cycle $\leq 2\%$ $t \leq 300\text{ }\mu\text{sec}$	1.5	—	—	A

Switching Time (Note 1.)

Rise Time	t_R	Figure 1, $C_L = 1800\text{ pF}$	—	28	60	nsec
Fall Time	t_F	Figure 1, $C_L = 1800\text{ pF}$	—	32	60	nsec
Delay Time 1	t_{D1}	Figure 1, $C_L = 1800\text{ pF}$	—	32	100	nsec
Delay Time 2	t_{D2}	Figure 1, $C_L = 1800\text{ pF}$	—	38	100	nsec

Power Supply

Power Supply Current	I_S	$V_{IN} = 3.0\text{ V}$ (Both Inputs) $V_{IN} = 0\text{ V}$ (Both Inputs)	— —	2.0 0.2	3.5 0.3	mA
----------------------	-------	--	--------	------------	------------	----

1. Switching times guaranteed by design.

Test Circuit

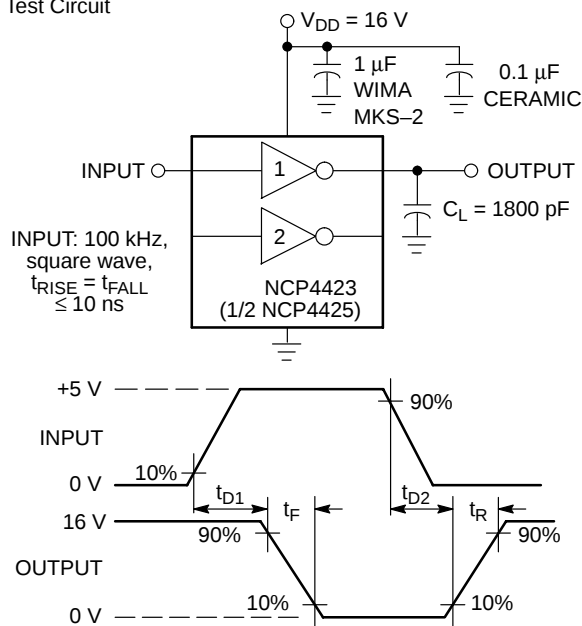


Figure 1. Inverting Driver Switching Time

Test Circuit

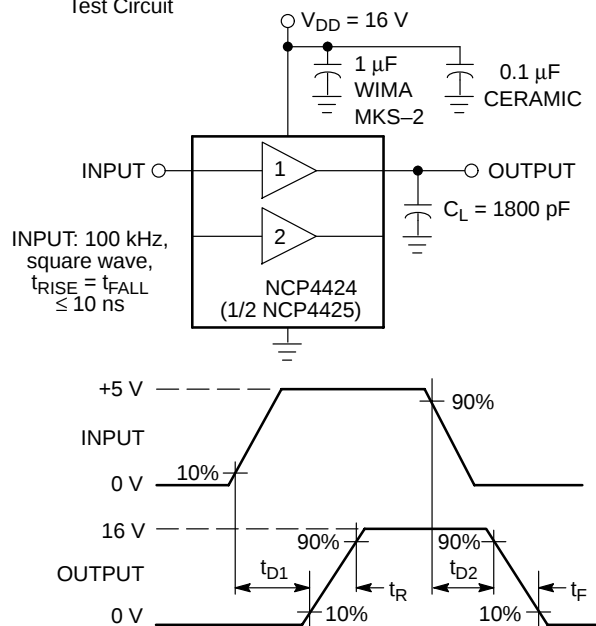


Figure 2. Noninverting Driver Switching Time

TYPICAL ELECTRICAL CHARACTERISTICS

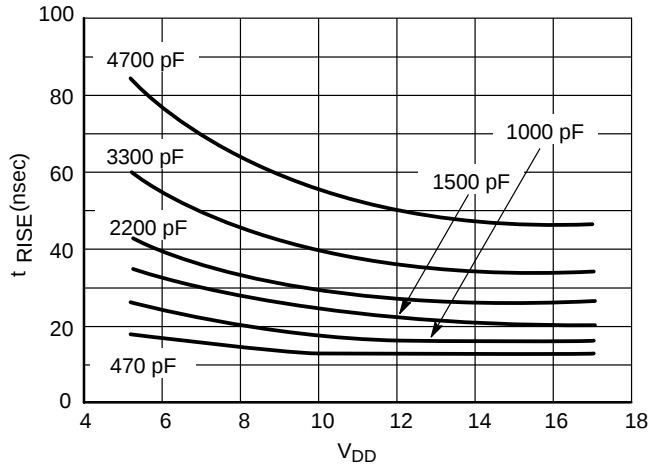


Figure 3. Rise Time vs. Supply Voltage

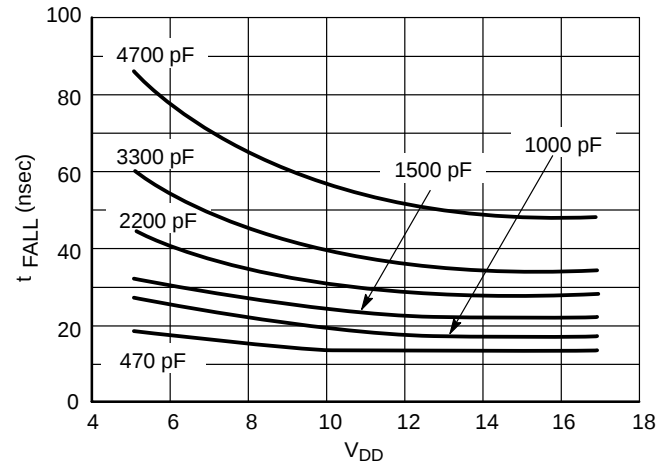


Figure 4. Fall Time vs. Supply Voltage

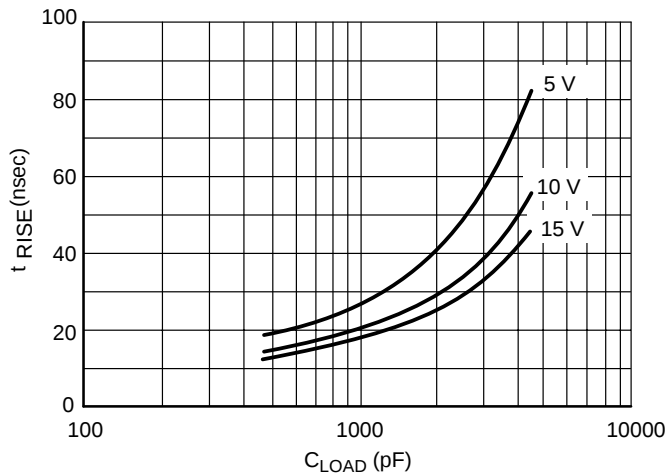


Figure 5. Rise Time vs. Capacitive Load

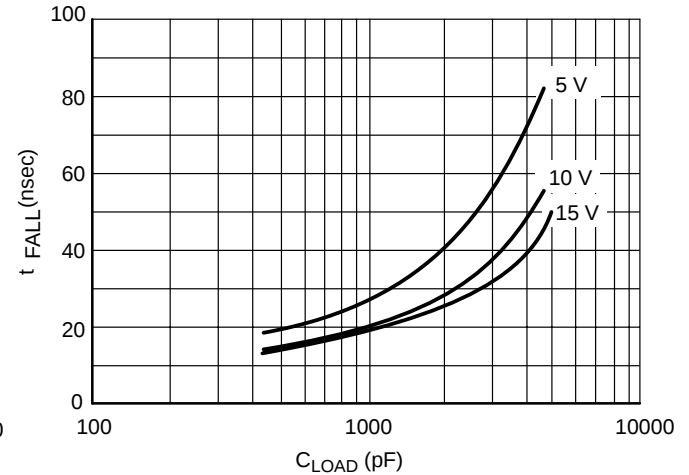


Figure 6. Fall Time vs. Capacitive Load

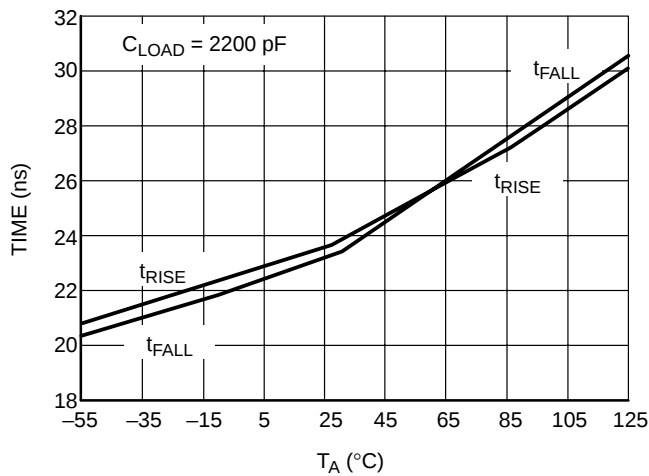


Figure 7. Rise and Fall Times vs. Temperature

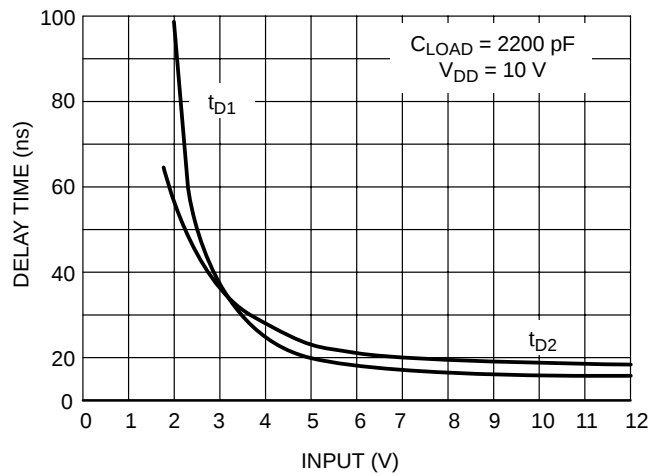


Figure 8. Propagation Delay vs. Input Amplitude

TYPICAL ELECTRICAL CHARACTERISTICS

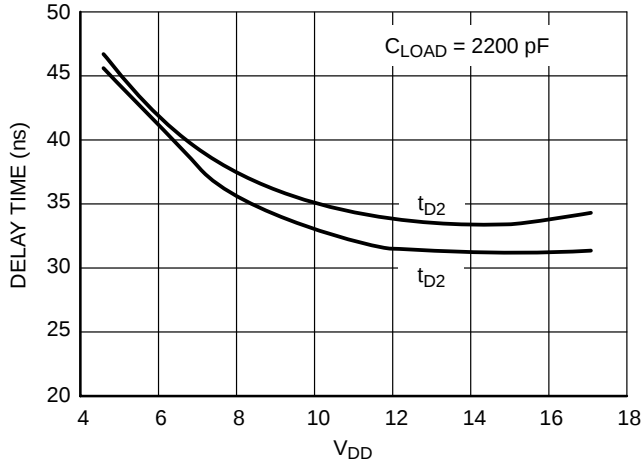


Figure 9. Propagation Delay Time vs. Supply Voltage

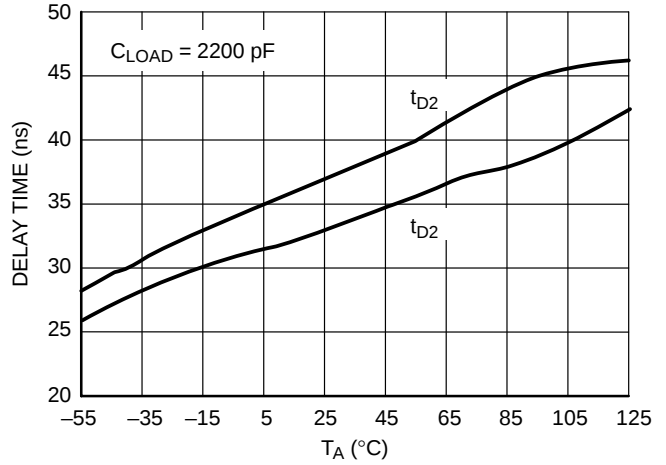


Figure 10. Delay Time vs. Temperature

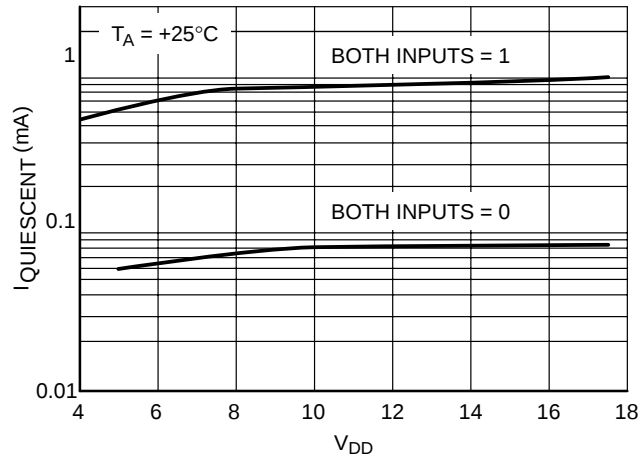


Figure 11. Quiescent Current vs. Supply Voltage

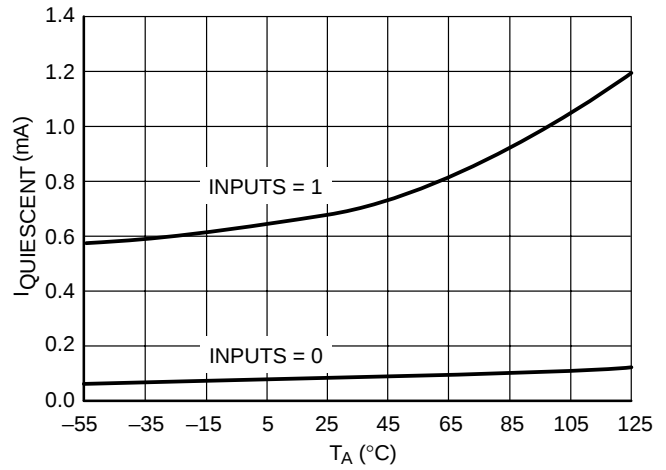


Figure 12. Quiescent Current vs. Temperature

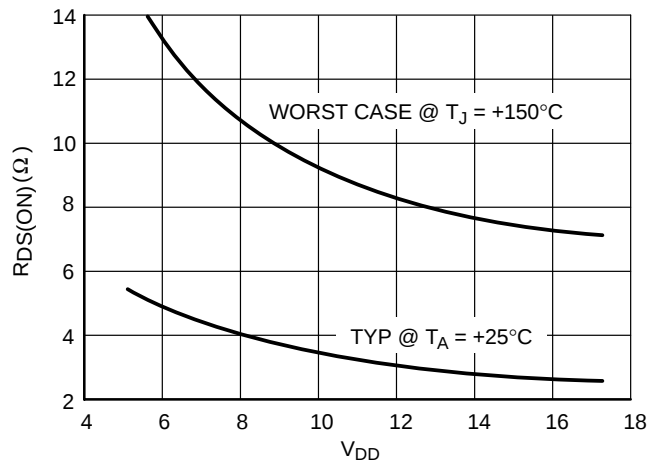


Figure 13. Output Resistance (Output High) vs. Supply Voltage

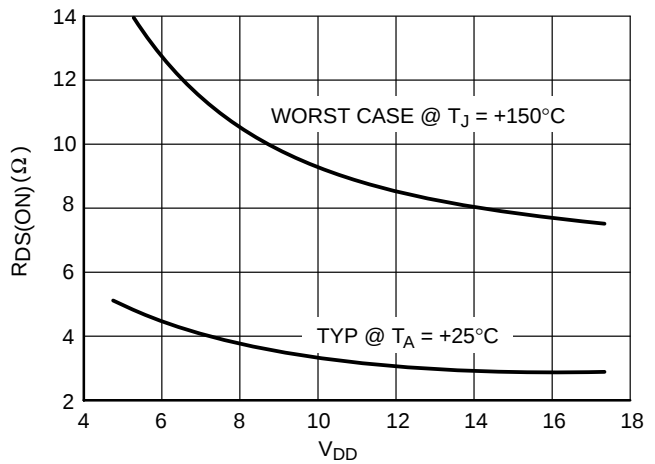


Figure 14. Output Resistance (Output Low) vs. Supply Voltage

TYPICAL ELECTRICAL CHARACTERISTICS

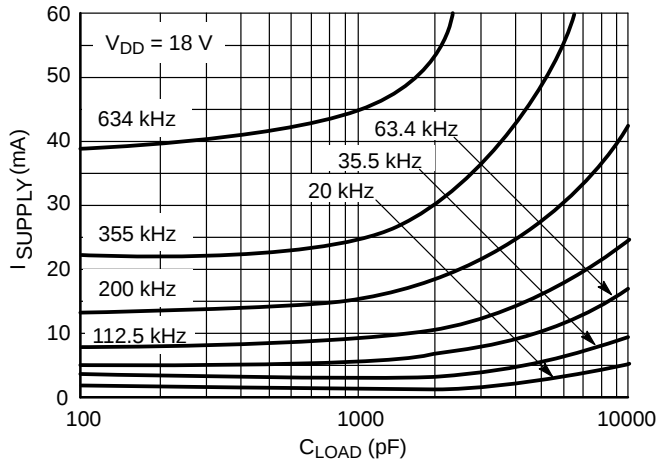


Figure 15. Supply Current vs. Capacitive Load

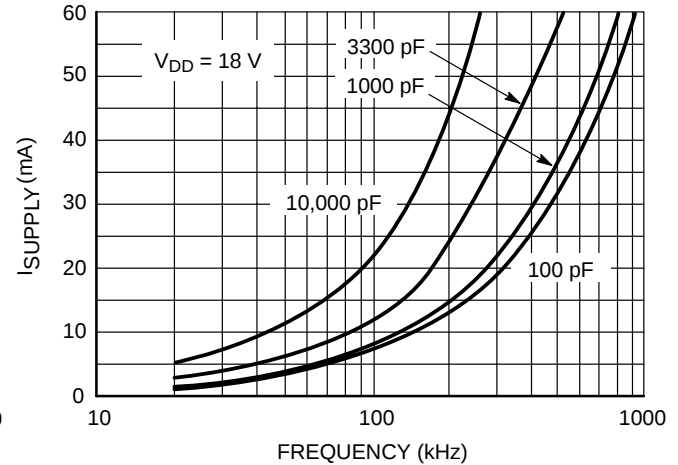


Figure 16. Supply Current vs. Frequency

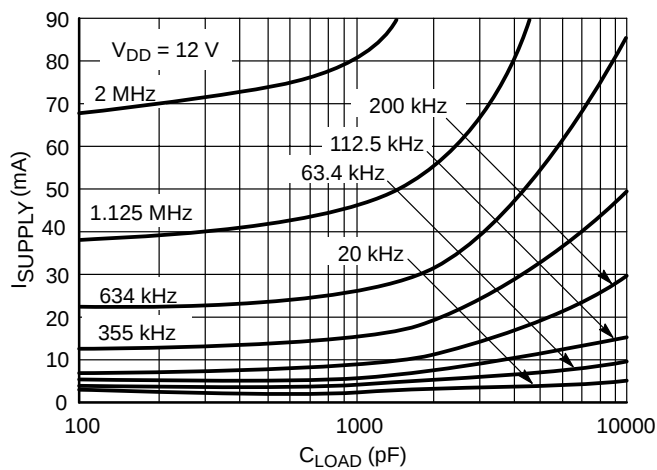


Figure 17. Supply Current vs. Capacitive Load

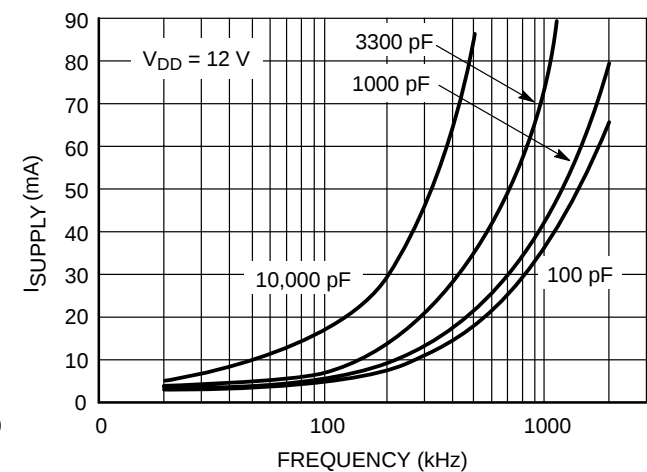


Figure 18. Supply Current vs. Frequency

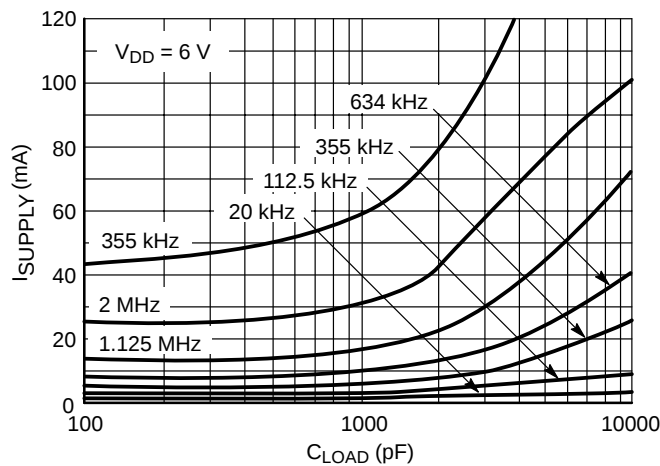


Figure 19. Supply Current vs. Capacitive Load

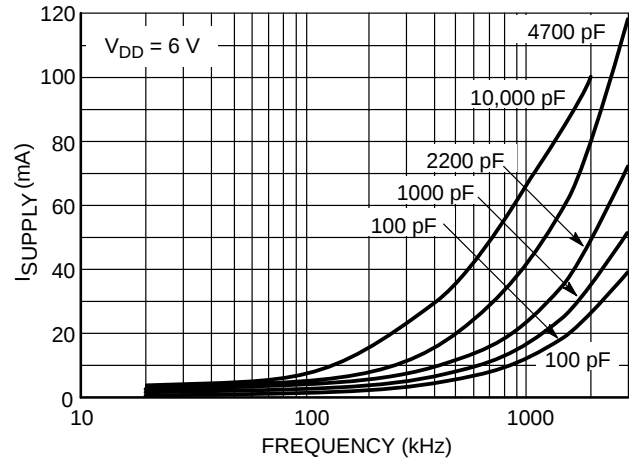


Figure 20. Supply Current vs. Frequency

TYPICAL ELECTRICAL CHARACTERISTICS

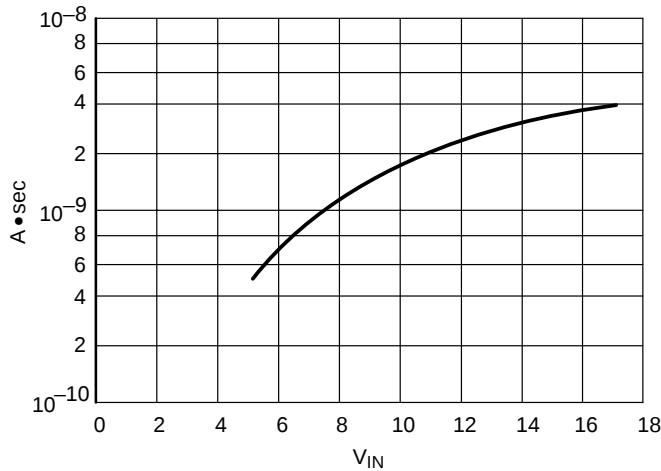


Figure 21. NCP4423 Crossover Energy

NOTE: The values on this graph represent the loss seen by both drivers in a package during one complete cycle. For a single driver, divide the stated values by 2. For a single transition of a single driver, divide the stated value by 4.

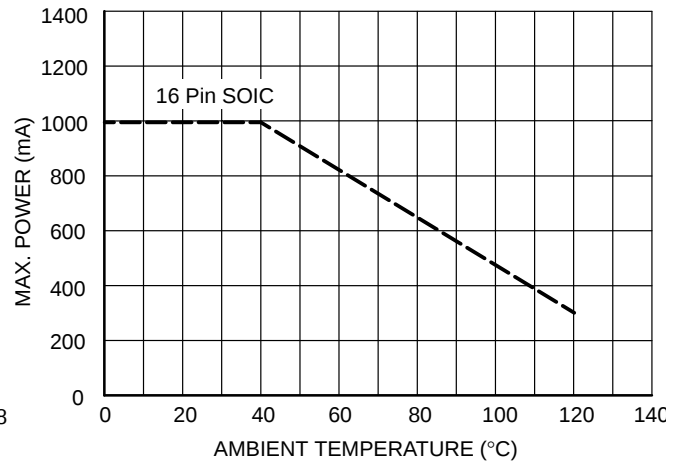


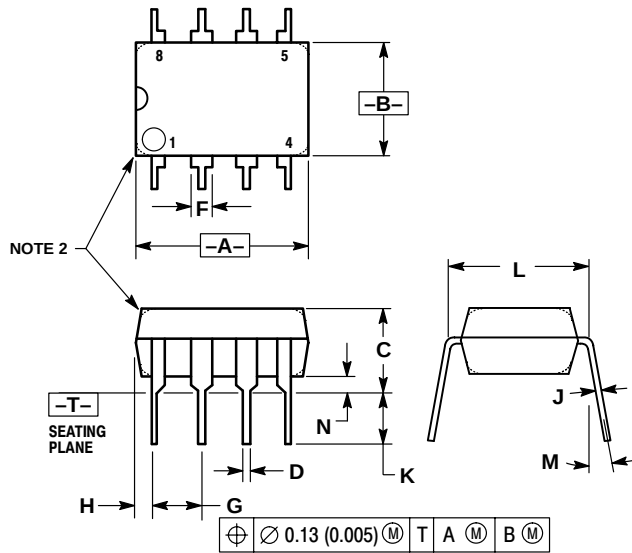
Figure 22. Thermal Derating Curves

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 (See page 2) 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 operational sections of the specifications is not implied. Exposure to Absolute Maximum Rating Conditions for extended periods may affect device reliability.

NCP4423, NCP4424, NCP4425

PACKAGE DIMENSIONS

PDIP-8
P SUFFIX
CASE 626-05
ISSUE K

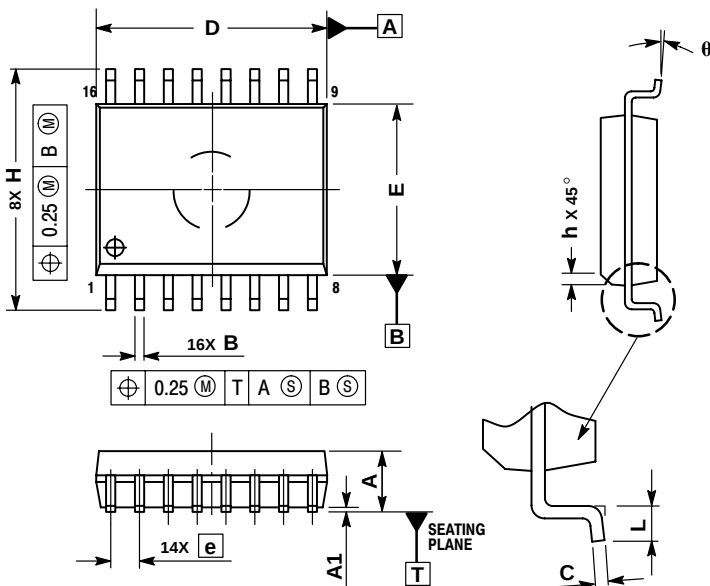


NOTES:

1. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
2. PACKAGE CONTOUR OPTIONAL (ROUND OR SQUARE CORNERS).
3. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.40	10.16	0.370	0.400
B	6.10	6.60	0.240	0.260
C	3.94	4.45	0.155	0.175
D	0.38	0.51	0.015	0.020
F	1.02	1.78	0.040	0.070
G	2.54 BSC		0.100 BSC	
H	0.76	1.27	0.030	0.050
J	0.20	0.30	0.008	0.012
K	2.92	3.43	0.115	0.135
L	7.62 BSC		0.300 BSC	
M	---	10°	---	10°
N	0.76	1.01	0.030	0.040

SO-16
DW SUFFIX
CASE 751G-03
ISSUE B



NOTES:

1. DIMENSIONS ARE IN MILLIMETERS.
2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994.
3. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
5. DIMENSION B DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.13 TOTAL IN EXCESS OF THE B DIMENSION AT MAXIMUM MATERIAL CONDITION.

DIM	MILLIMETERS	
	MIN	MAX
A	2.35	2.65
A1	0.10	0.25
B	0.35	0.49
C	0.23	0.32
D	10.15	10.45
E	7.40	7.60
e	1.27 BSC	
H	10.05	10.55
h	0.25	0.75
L	0.50	0.90
θ	0°	7°

Notes

Notes

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