TRUTH TABLE

LED	V_{DD} − V_{SS} “Positive Going” (Turn−on)	V_{DD} − V_{SS} “Negative Going” (Turn−off)	V_O
Off			

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

Symbol	Parameter	Value	Unit
T_{STG}	Storage Temperature	−40 to +125	°C
T_{OPR}	Operating Temperature	−40 to +100	°C
T_J	Junction Temperature	−40 to +125	°C
T_{SOL}	Lead Solder Temperature – Wave Solder (Refer to Reflow Temperature Profile, page 15)	260 for 10 seconds	°C
$I_{F(AVG)}$	Average Input Current (Note 1)	25	mA
$I_{F(tr, tf)}$	LED Current Minimum Rate of Rise/Fall	250	ns
V_R	Reverse Input Voltage	5	V
$I_{OH(PEAK)}$	“High” Peak Output Current (Note 2)	3	A
$I_{OL(PEAK)}$	“Low” Peak Output Current (Note 2)	3	A
$V_{DD} – V_{SS}$	Supply Voltage	−0.5 to 35	V
$V_{O(PEAK)}$	Output Voltage	0 to V_{DD}	V
P_O	Output Power Dissipation (Note 3)	250	mW
P_D	Total Power Dissipation (Note 4)	295	mW

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Derate linearly above +79°C free air temperature at a rate of 0.37mA/°C.
2. Maximum pulse width = 10 μs, maximum duty cycle = 11%.
3. Derate linearly above +79°C, free air temperature at the rate of 5.73 mW/°C.
4. No derating required across operating temperature range.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
$V_{DD} – V_{SS}$	Power Supply	10 to 30	V
$I_{F(ON)}$	Input Current (ON)	10 to 16	mA
$V_{F(OFF)}$	Input Voltage (OFF)	−3.0 to 0.8	V

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

ELECTRICAL−OPTICAL CHARACTERISTICS (DC) (Apply over all recommended conditions, typical value is measured at V_{DD} = 30 V, V_{SS} = 0 V, T_A = 25°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
I_{OH}	High Level Output Current	V_{OH} = (V_{DD} – V_{SS} – 1 V)	0.5	0.9	–	A
		V_{OH} = (V_{DD} – V_{SS} – 6 V)	2.5	–	–	
I_{OL}	Low Level Output Current	V_{OL} = (V_{DD} – V_{SS} + 1 V)	0.5	1	–	A
		V_{OL} = (V_{DD} – V_{SS} + 6 V)	2.5	–	–	
V_{OH}	High Level Output Voltage (Note 5, 6)	I_O = −100 mA	V_{DD} – 0.5	–	–	V
V_{OL}	Low Level Output Voltage (Note 5, 6)	I_O = 100 mA	–	–	V_{SS} + 0.5	V
I_{DDH}	High Level Supply Current	Output Open, I_F = 10 to 16 mA	–	2.6	4.0	mA
I_{DDL}	Low Level Supply Current	Output Open, V_F = −3.0 to 0.8 V	–	2.5	4.0	mA
I_{FLH}	Threshold Input Current Low to High	I_O = 0 mA, V_O > 5 V	–	3.0	7.5	mA
V_{FHL}	Threshold Input Voltage High to Low	I_O = 0 mA, V_O < 5 V	0.8	–	–	V
V_F	Input Forward Voltage	I_F = 10 mA	1.1	1.43	1.8	V
ΔV_F / T_A	Temperature Coefficient of Forward Voltage	I_F = 10 mA	–	−1.5	–	mV/°C
V_{UVLO+}	UVLO Threshold	V_O > 5V, I_F = 10 mA	7	8.3	9	V
$V_{UVLO–}$		V_O < 5V, I_F = 10 mA	6.5	7.7	8.5	V
$UVLO_{HYST}$	UVLO Hysteresis		–	0.6	–	V
BV_R	Input Reverse Breakdown Voltage	I_R = 10 μA	5	–	–	V
C_{IN}	Input Capacitance	f = 1 MHz, V_F = 0 V	–	25	–	pF

5. In this test, V_{OH} is measured with a dc load current of 100 mA. When driving capacitive load V_{OH} will approach V_{DD} as I_{OH} approaches zero amps.
6. Maximum pulse width = 1 ms, maximum duty cycle = 20%.

SWITCHING CHARACTERISTICS (Apply over all recommended conditions, typical value is measured at V_{DD} = 30 V, V_{SS} = 0 V, T_A = 25°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
t_{PLH}	Propagation Delay Time to High Output Level (Note 7)	I_F = 10 mA, R_g = 10 Ω, f = 250 kHz, Duty Cycle = 50%, C_g = 10 nF	50	120	210	ns
t_{PHL}	Propagation Delay Time to Low Output Level (Note 7)		50	145	210	ns
P_{WD}	Pulse Width Distortion (Note 8)		–	35	65	ns
P_{DD} ($t_{PHL} – t_{PLH}$)						

TYPICAL PERFORMANCE CURVES

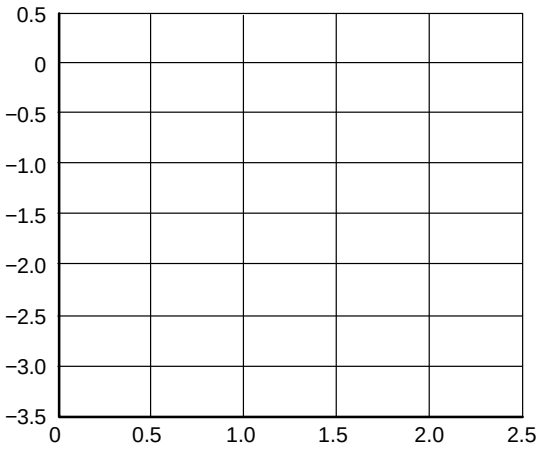


Figure 1. Output High Voltage Drop vs. Output High Current

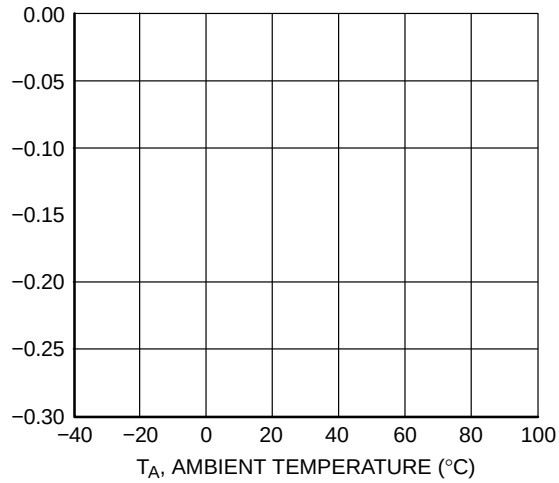


Figure 2. Output High Voltage Drop vs. Ambient Temperature

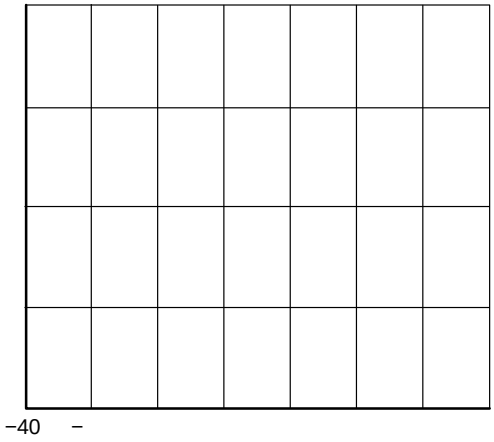


Figure 3. Output High Current vs. Ambient Temperature

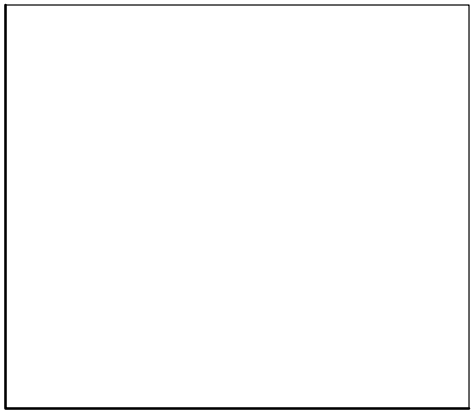


Figure 4. Output High Current vs. Ambient Temperature

Figure 5. Output Low Voltage vs. Output Low Current

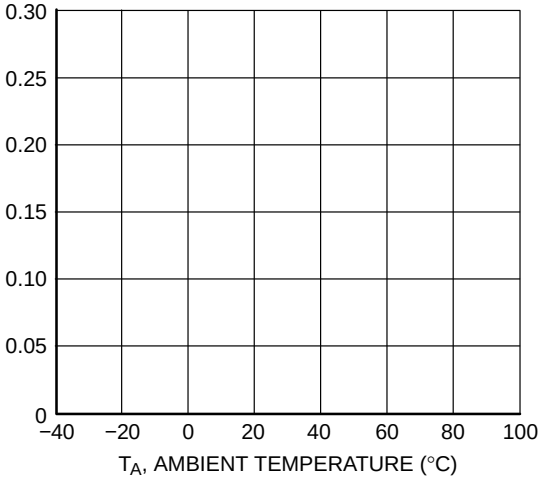


Figure 6. Output Low Voltage vs. Ambient Temperature

TYPICAL PERFORMANCE CURVES (Continued)

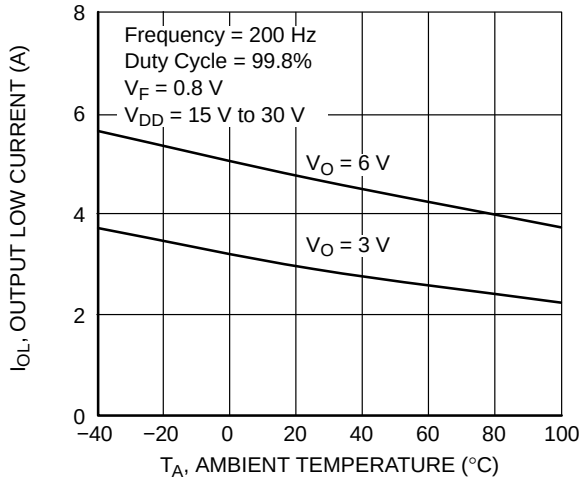


Figure 7. Output Low Current vs. Ambient Temperature

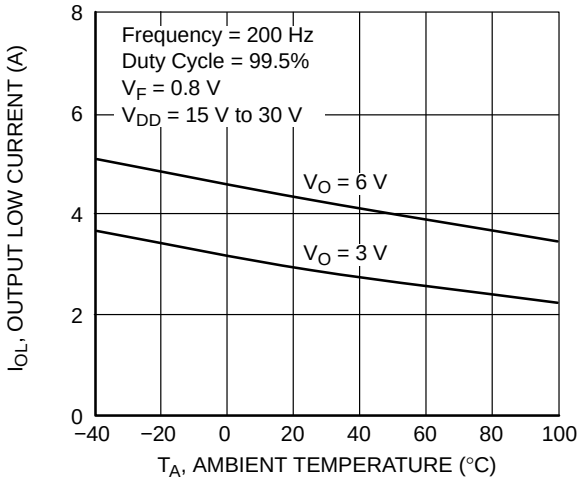


Figure 8. Output Low Current vs. Ambient Temperature

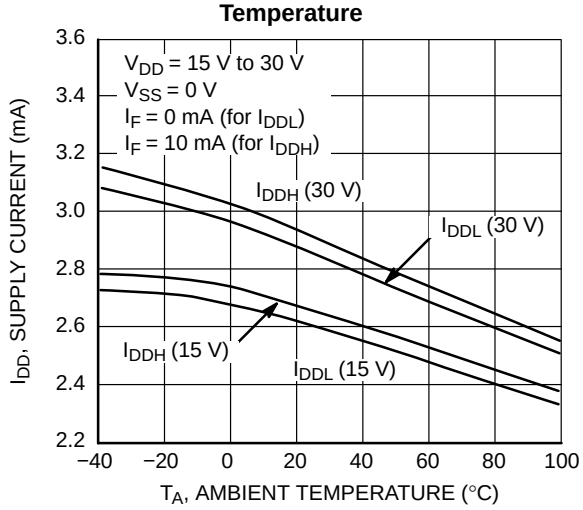


Figure 9. Supply Current vs. Ambient Temperature

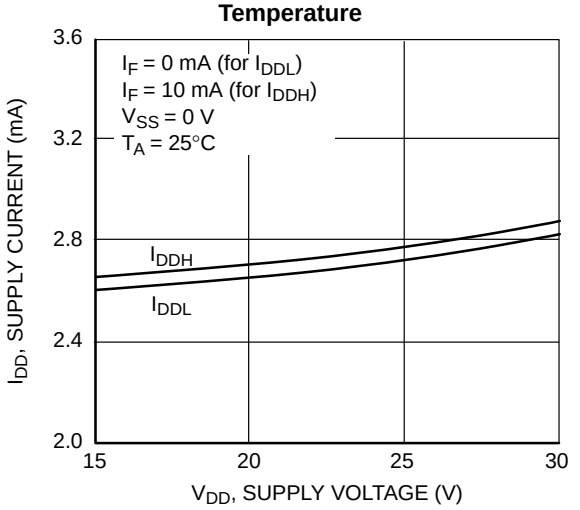


Figure 10. Supply Current vs. Supply Voltage

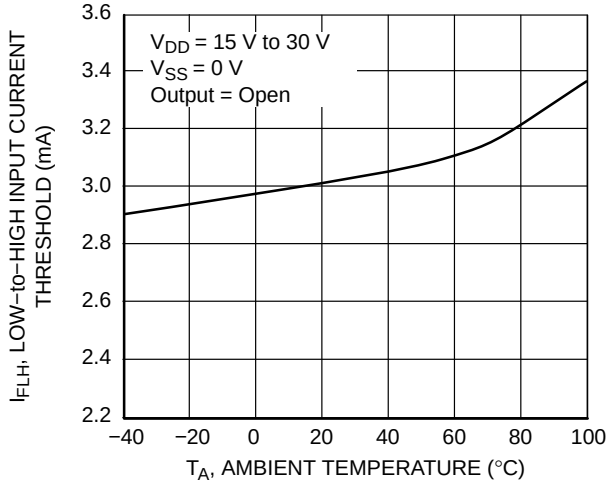


Figure 11. Low−to High Input Current Threshold vs. Ambient Temperature

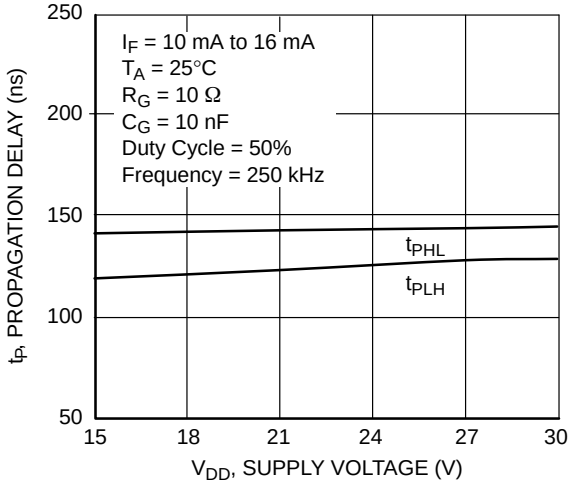


Figure 12. Propagation Delay vs. Supply Voltage

TYPICAL PERFORMANCE CURVES (Continued)

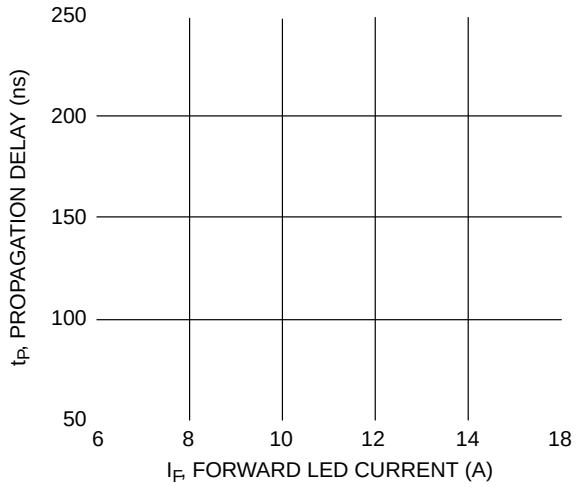


Figure 13. Propagation Delay vs. LED Forward Current

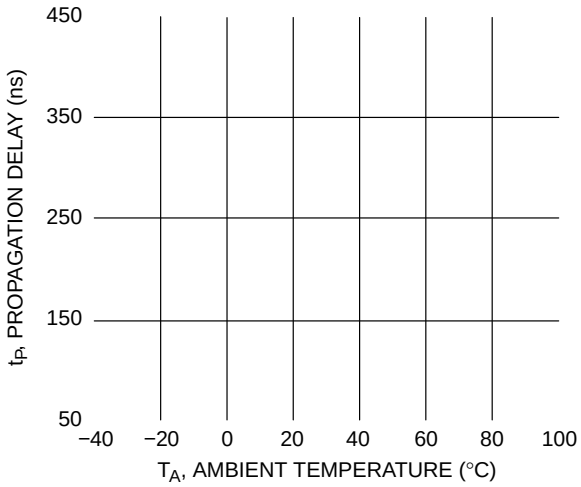


Figure 14. Propagation Delay vs. Ambient Temperature

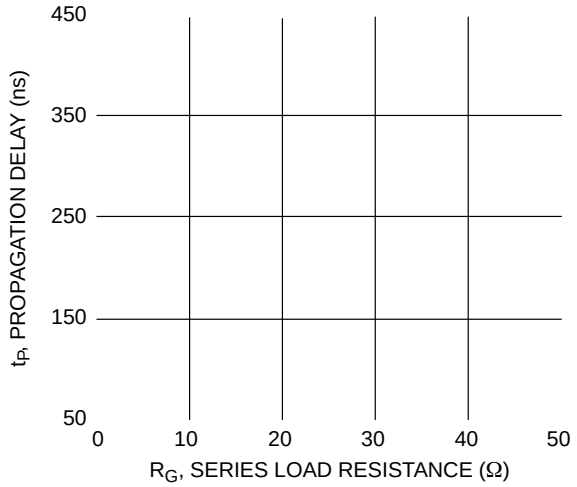


Figure 15. Propagation Delay vs. Series Load Resistance

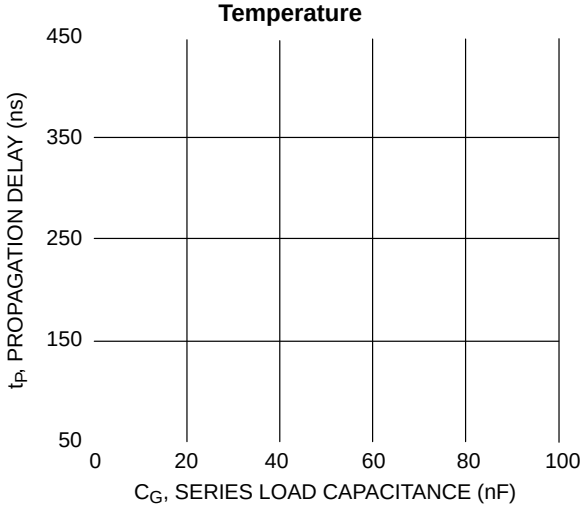


Figure 16. Propagation Delay vs. Series Load Capacitance

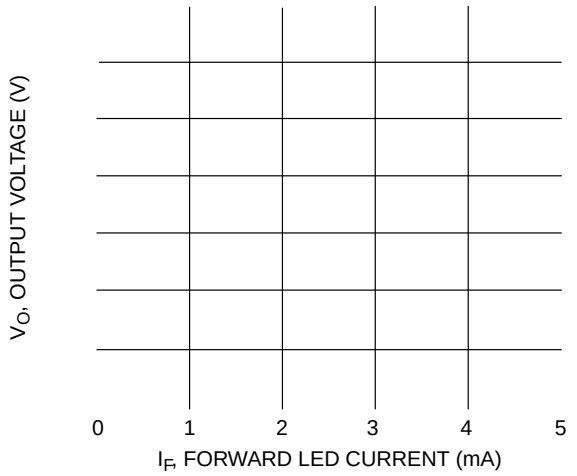


Figure 17. Transfer Characteristics

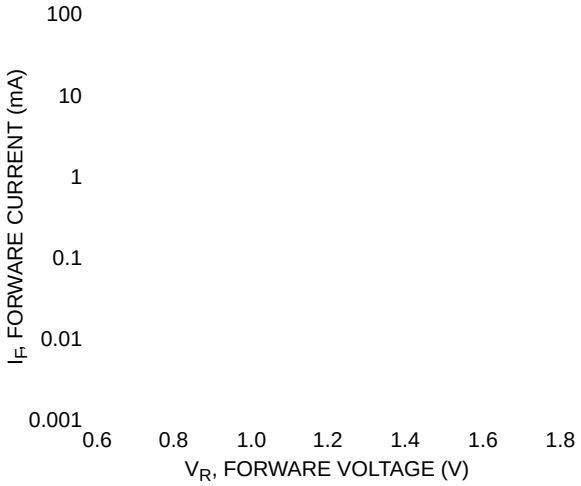


Figure 18. Input Forward Current vs. Forward Voltage

TYPICAL PERFORMANCE CURVES (Continued)

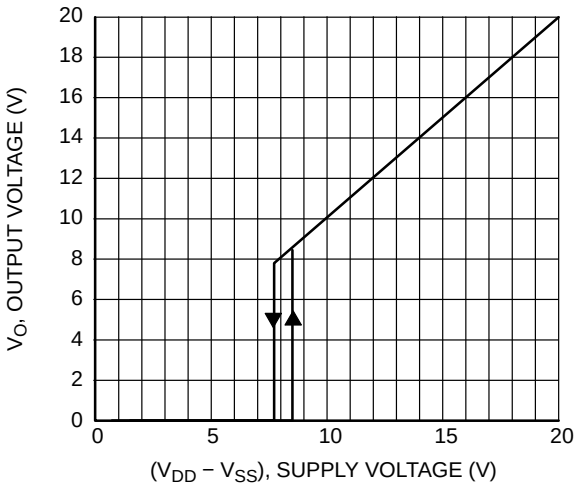


Figure 19. Under Voltage Lockout

TEST CIRCUIT

TEST CIRCUIT (Continued)

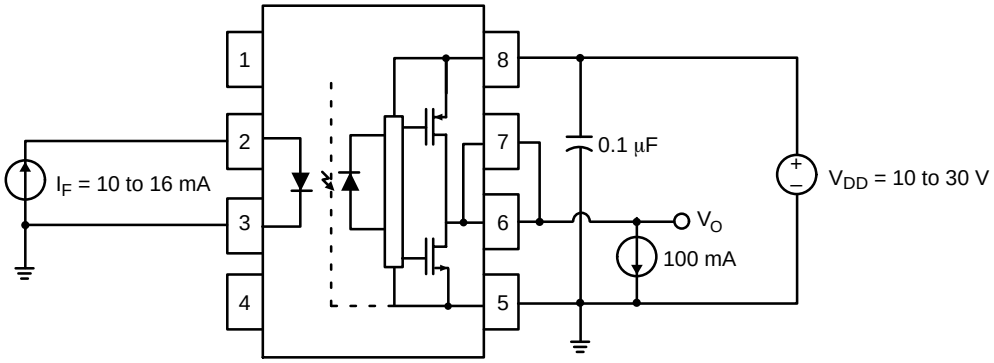


Figure 22. V_{OH} Test Circuit

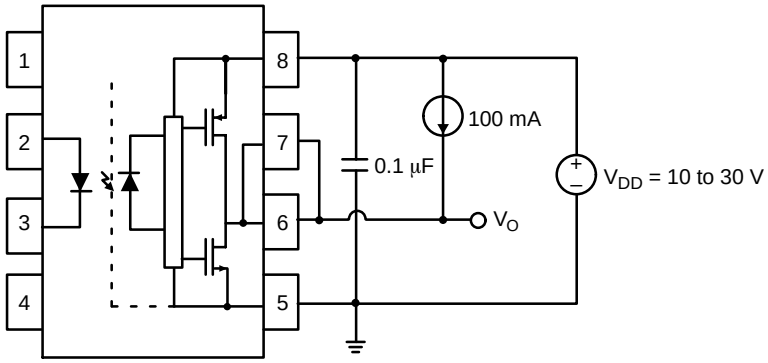


Figure 23. V_{OL} Test Circuit

TEST CIRCUIT (Continued)

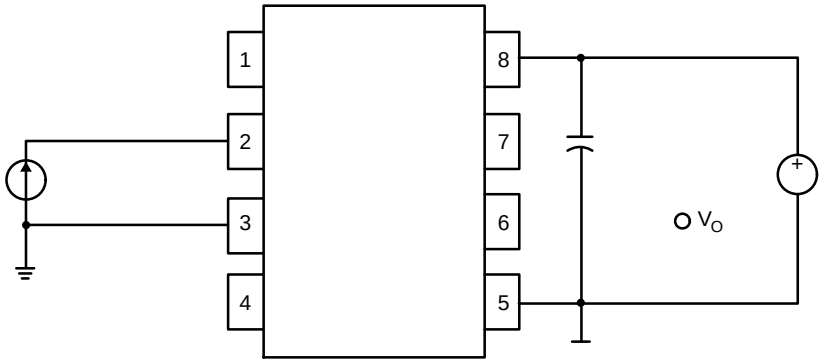
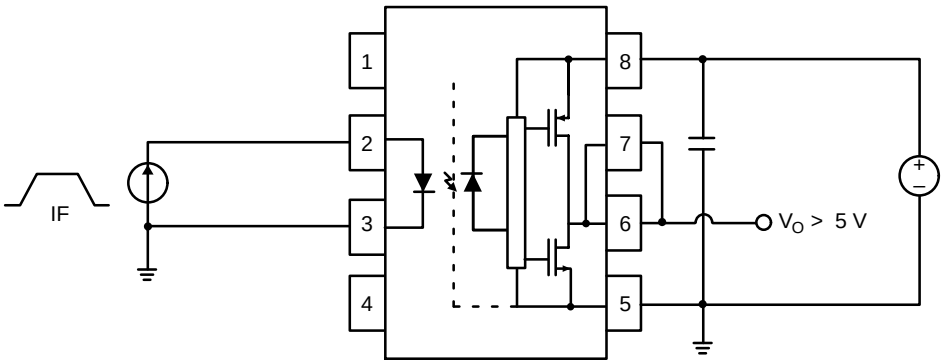
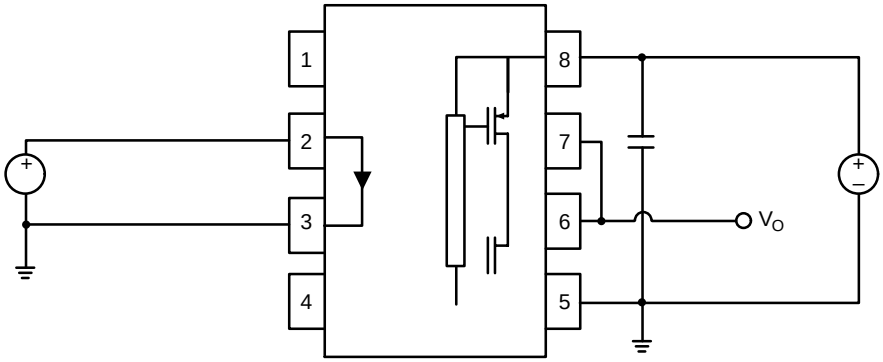


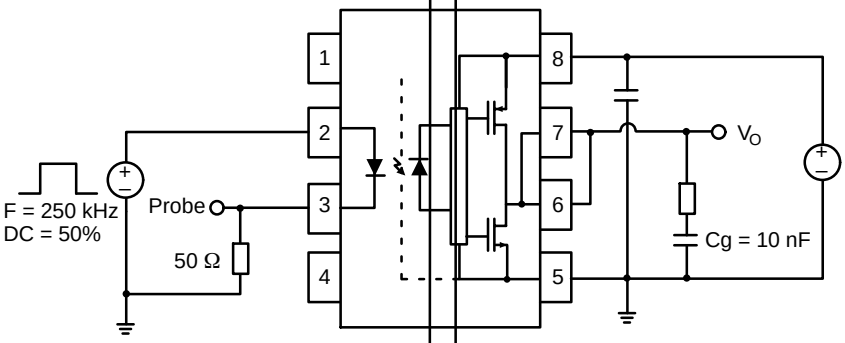
Figure 24. I_{DDH} Test Circuit

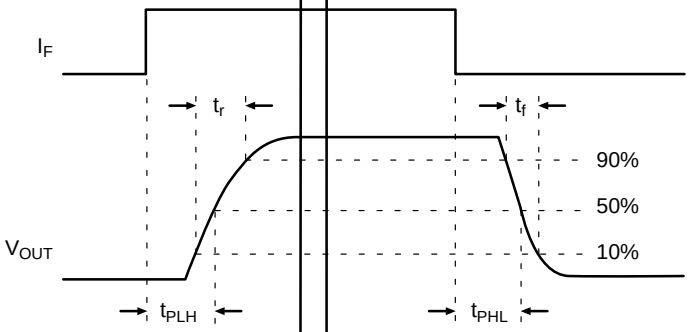
TEST CIRCUIT (Continued)

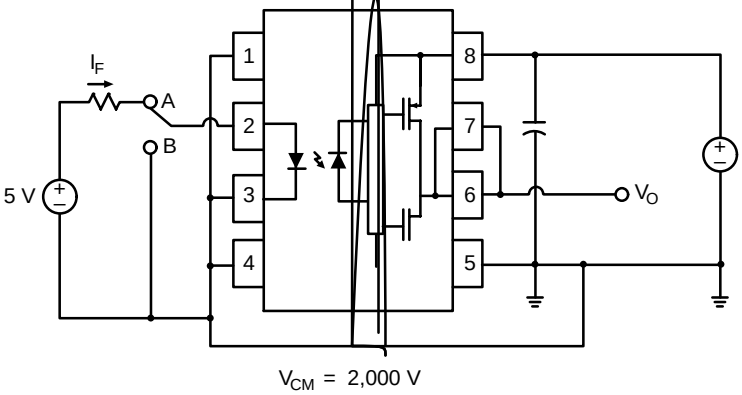




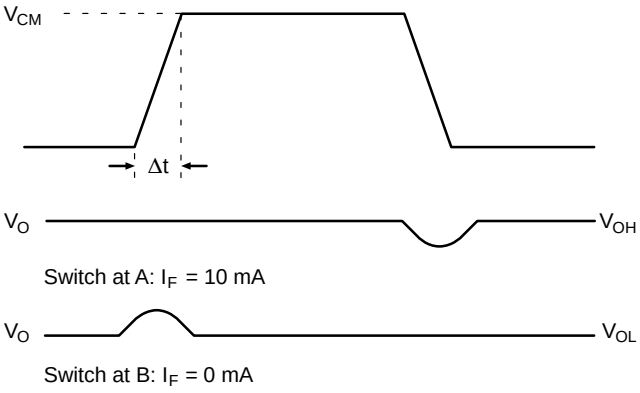
TEST CIRCUIT (Continued)







V_{CM} = 2,000 V



REFLOW PROFILE

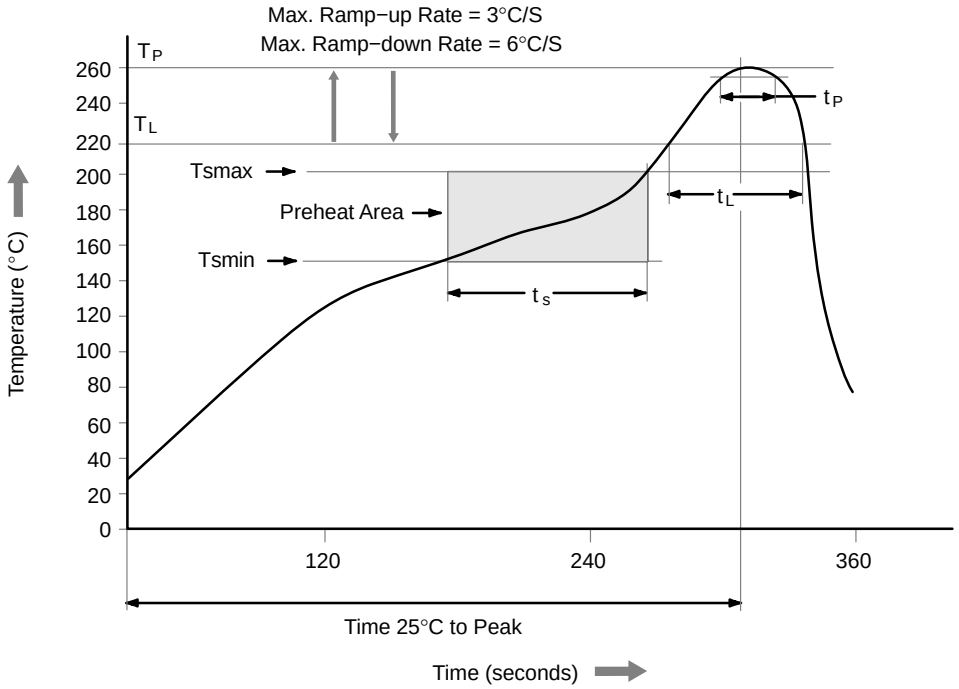


Figure 31. Reflow Profile

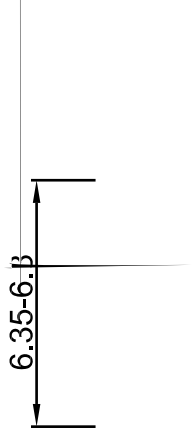
Table 1.

Profile Freature	Pb−Free Assembly Profile
Temperature Min. (Tsmin)	150°C
Temperature Max. (Tsmax)	200°C
Time (t_S) from (Tsmin to Tsmax)	60–120 seconds
Ramp−up Rate (t_L to t_P)	3°C/second max.
Liquidous Temperature (T_L)	217°C
Time (t_L) Maintained Above (T_L)	60–150 seconds
Peak Body Package Temperature	260°C +0°C / –5°C
Time (t_P) within 5°C of 260°C	30 seconds

ORDERING INFORMATION

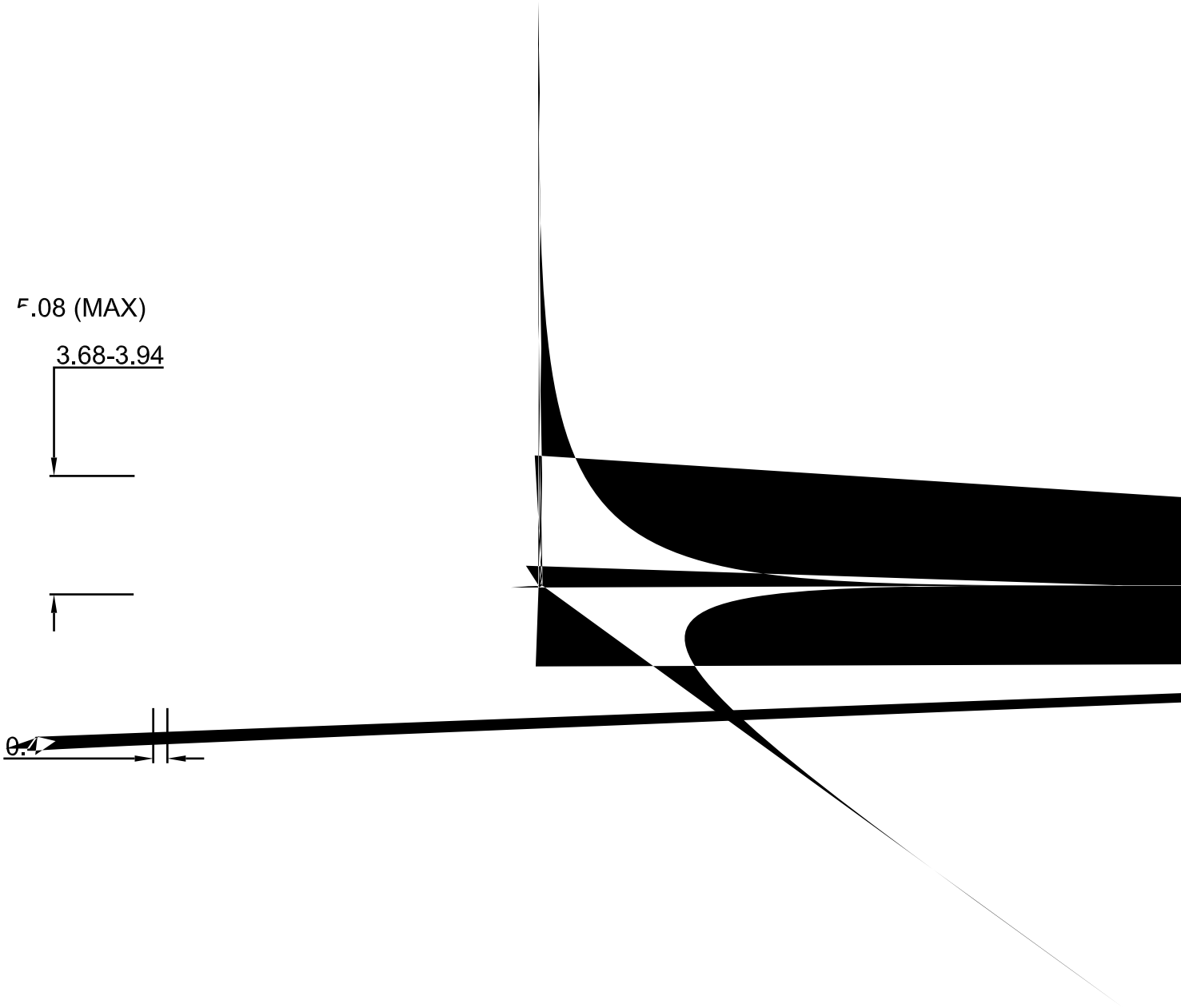
Part Number	Package	Shipping†
FOD3182	PDIP8 9.655x6.61, 2.54P DIP 8−Pin	50 Units / Tube
FOD3182S	PDIP8 GW SMT 8−Pin (Lead Bend)	50 Units / Tube
FOD3182SD	PDIP8 GW SMT 8−Pin (Lead Bend)	1,000 / Tape and Reel
FOD3182V	PDIP8 9.655x6.61, 2.54P DIP 8−Pin, IEC60747−5−2 option	50 Units / Tube
FOD3182SV	PDIP8 GW SMT 8−Pin (Lead Bend), DIN EN/IEC 60747−5−2 option	50 Units / Tube
FOD3182SDV	PDIP8 GW SMT 8−Pin (Lead Bend), DIN EN/IEC 60747−5−2 option	1,000 / Tape and Reel
FOD3182TV	PDIP8 6.6x3.81, 2.54P DIP 8−Pin, 0.4” Lead Spacing, DIN EN/IEC 60747−5−2 option	50 Units / Tube
FOD3182TSV		

PDIP8 6.6x3.81, 2.54P



PDIP8 9.655x6.6, 2.54P
CASE 646CQ
ISSUE O

DATE 18 SEP 2017



PDIP8 GW
CASE 709AC
ISSUE O

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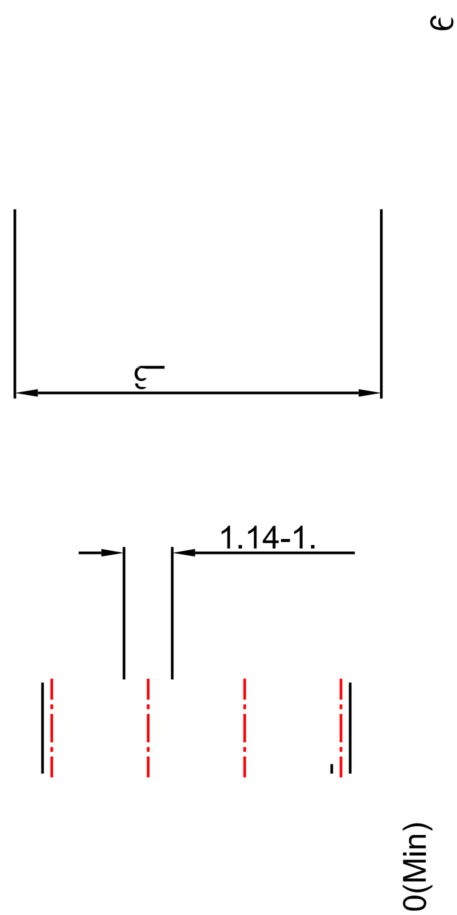
B) ALL DIMEN

PDIP8 GW
CASE 709AD
ISSUE O

DATE 31 JUL 2016



NOTES:
A) NO STA