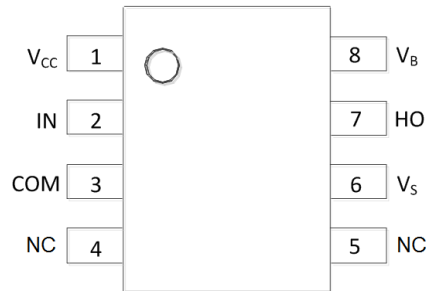
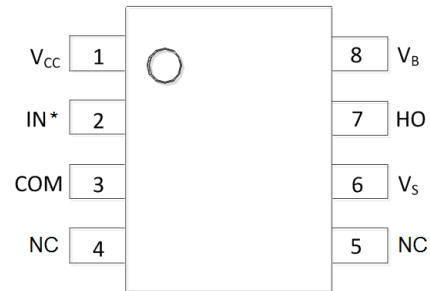


Pin Diagrams



DGD2117



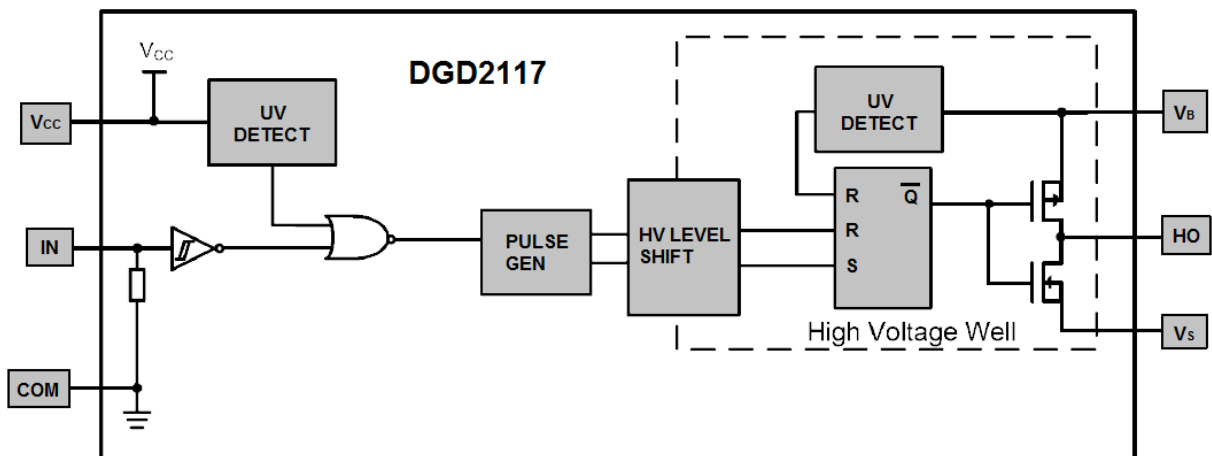
DGD2118

Top View SO-8

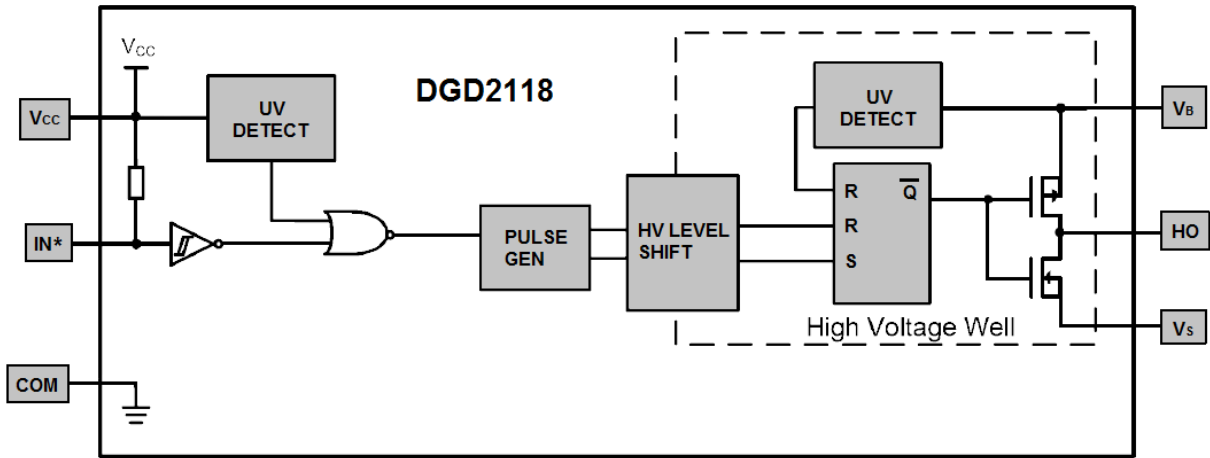
Pin Descriptions

Pin Number	Pin Name	Function
1	V_{CC}	Logic and gate driver supply
2	IN	DGD2117 Logic input for gate driver output (HO), in phase with HO
2	IN^*	DGD2118 Logic input for gate driver output (HO), out of phase with HO
3	COM	Logic ground
4, 5	NC	No Connection (No Internal Connection)
6	V_S	High-side floating supply return
7	HO	High-side gate drive output
8	V_B	High-side floating supply

Functional Block Diagram



Functional Block Diagram (continued)



Absolute Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
High-Side Floating Supply Voltage	V_B	-0.3 to +624	V
High-Side Floating Supply Offset Voltage	V_S	$V_B - 24$ to $V_B + 0.3$	V
High-Side Floating Output Voltage	V_{HO}	$V_S - 0.3$ to $V_B + 0.3$	V
Logic Supply Voltage	V_{CC}	-0.3 to +24	V
Logic Input Voltage	V_{IN}	-0.3 to $V_{CC} + 0.3$	V
Allowable Offset Supply Voltage Transient	dV_S / dt	50	V/ns

Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation Linear Derating Factor (Note 5)	P_D	0.625	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case (Note 6)	$R_{\theta JC}$	45	$^\circ\text{C}/\text{W}$
Operating Temperature	T_J	+150	$^\circ\text{C}$
Lead Temperature (Soldering, 10s)	T_L	+300	
Storage Temperature Range	T_{STG}	-55 to +150	

Note: 5. When mounted on a standard JEDEC 2-layer FR-4 board.

Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
High Side Floating Supply Absolute Voltage	V_B	$V_S + 10$	$V_S + 20$	V
High Side Floating Supply Offset Voltage	V_S	(Note 6)	600	V
High Side Floating Output Voltage	V_{HO}	V_S	V_B	V
Low Side and Logic Fixed Supply Voltage	V_{CC}	10	20	V
Logic Input Voltage	V_{IN}	0	V_{CC}	V
Ambient Temperature	T_A	-40	+125	$^\circ\text{C}$

Note: 6. Logic operation for $V_S = -5\text{V}$ to +600V.

DC Electrical Characteristics ($V_{BIAS} (V_{CC}, V_{BS}) = 15V$, @ $T_A = +25^\circ C$, unless otherwise specified.) (Note 7)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Logic "1" (DGD2117) & Logic "0" (DGD2118) Input Voltage (Note 8)	V_{IH}	9.5	—	—	V	—
Logic "0" (DGD2117) & Logic "1" (DGD2118) Input Voltage (Note 8)	V_{IL}	—	—	6.0	V	—
High Level Output Voltage, $V_{BIAS} - V_O$	V_{OH}	—	0.05	0.2	V	$I_O = 2mA$
Low Level Output Voltage, V_O	V_{OL}	—	0.02	0.1	V	$I_O = 2mA$
Offset Supply Leakage Current	I_{LK}	—	—	50	μA	$V_B = V_S = 600V$
Quiescent V_{BS} Supply Current	I_{BSQ}	—	50	240	μA	$V_{IN} = 0V$ or V_{CC}
Quiescent V_{CC} Supply Current	I_{CCQ}	—	70	340	μA	$V_{IN} = 0V$ or V_{CC}
Logic "1" Input Bias Current	DGD2117	I_{IN+}	—	20	μA	$V_{IN} = V_{CC}$
	DGD2118					$V_{IN} = 0V$
Logic "0" Input Bias Current	DGD2117	I_{IN-}	—	—	μA	$V_{IN} = 0V$
	DGD2118					$V_{IN} = V_{CC}$
V_{BS} Supply Under-Voltage Positive Going Threshold	V_{BSUV+}	7.6	8.6	9.6	V	—
V_{BS} Supply Under-Voltage Negative Going Threshold	V_{BSUV-}	7.2	8.2	9.2	V	—
V_{CC} Supply Under-Voltage Positive Going Threshold	V_{CCUV+}	7.6	8.6	9.6	V	—
V_{CC} Supply Under-Voltage Negative Going Threshold	V_{CCUV-}	7.2	8.2	9.2	V	—
Output High Short Circuit Pulsed Current	I_{O+}	200	290	—	mA	$V_O = 0V$, $V_{IN} = \text{Logic "1"}$, $PW \leq 10\mu s$
Output Low Short Circuit Pulsed Current	I_{O-}	420	600	—	mA	$V_O = 15V$, $V_{IN} = \text{Logic "0"}$, $PW \leq 10\mu s$

Notes: 7. The V_{IN} and I_{IN} parameters are referenced to COM and are applicable to the logic input pins: IN and IN*. The V_O and I_O parameters are referenced to COM and are applicable to the output pin: HO.
8. For optimal operation, it is recommended that the input pulses (IN and IN*) should have a minimum amplitude of 9.5V with a minimum pulse width of 250ns.

AC Electrical Characteristics ($V_{BIAS} (V_{CC}, V_{BS}) = 15V$, $C_L = 1000pF$, @ $T_A = +25^\circ C$, unless otherwise specified.)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Turn-On Propagation Delay	t_{ON}	—	125	200	ns	$V_S = 0V$
Turn-Off Propagation Delay	t_{OFF}	—	105	180	ns	$V_S = 600V$
Turn-On Rise Time	t_r	—	75	130	ns	—
Turn-Off Fall Time	t_f	—	35	65	ns	—

Timing Waveforms

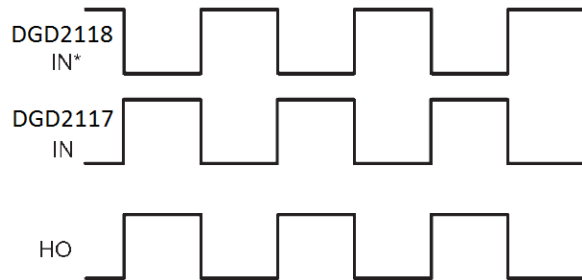


Figure 1. Input / Output Timing Diagram

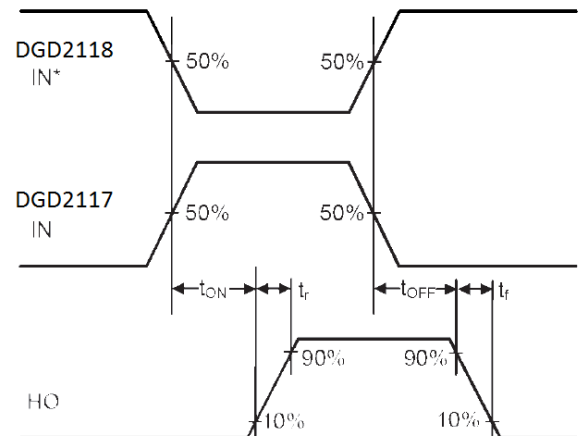


Figure 2. Switching Time Waveform Definitions

Typical Performance Characteristics ($V_{CC} = 15V$, $@T_A = +25^\circ C$, unless otherwise specified.)

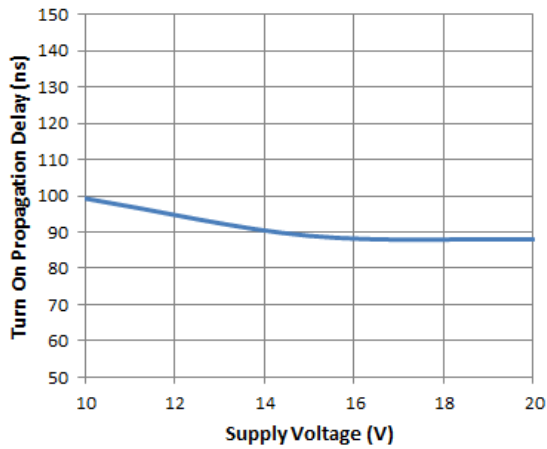


Figure 3. Turn-on Propagation Delay vs. Supply Voltage

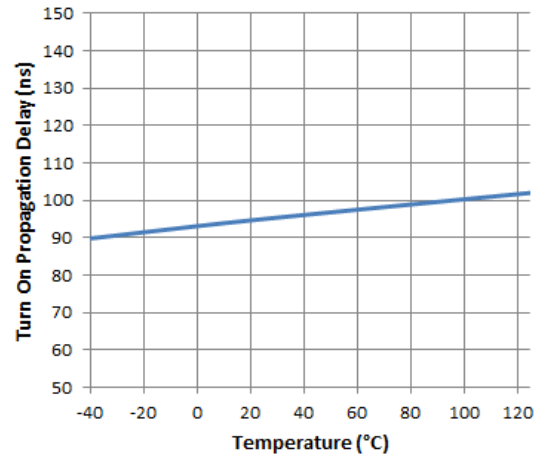


Figure 4. Turn-on Propagation Delay vs. Temperature

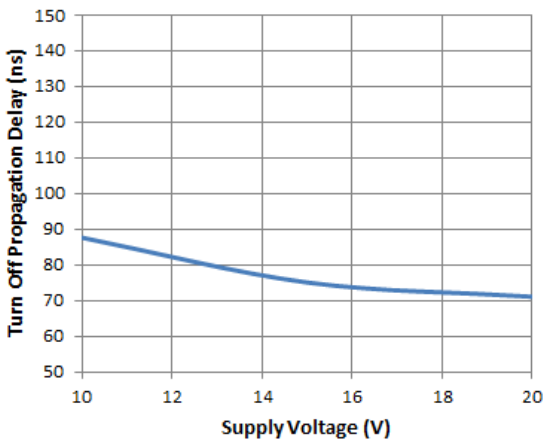


Figure 5. Turn-off Propagation Delay vs. Supply Voltage

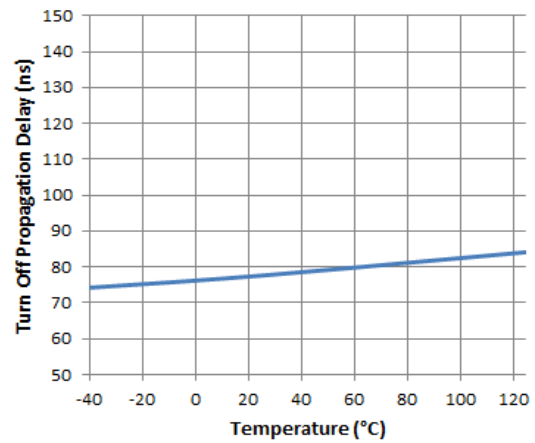


Figure 6. Turn-off Propagation Delay vs. Temperature

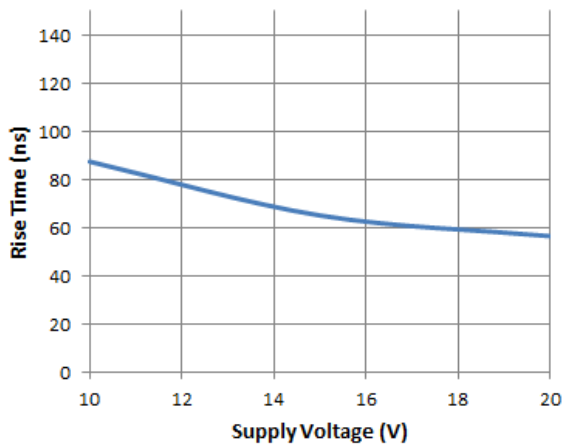


Figure 7. Rise Time vs. Supply Voltage

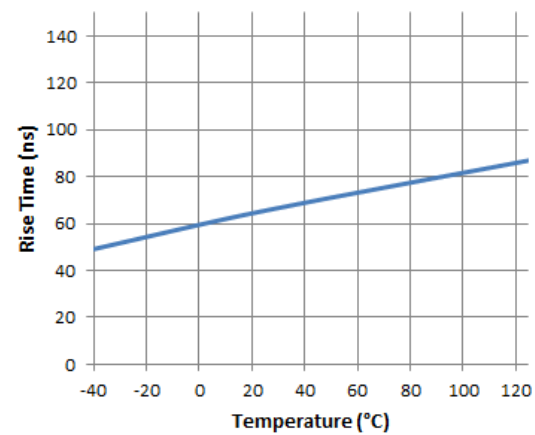


Figure 8. Rise Time vs. Temperature

Typical Performance Characteristics (continued)

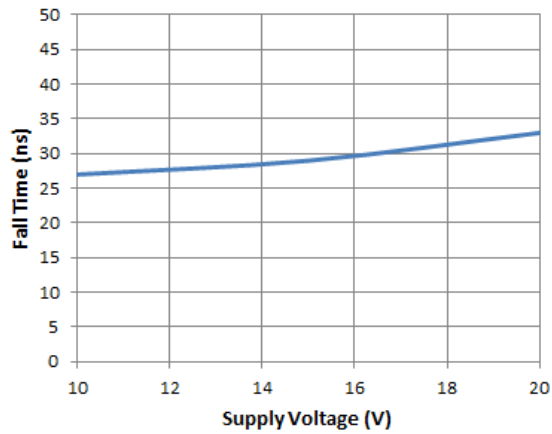


Figure 9. Fall Time vs. Supply Voltage

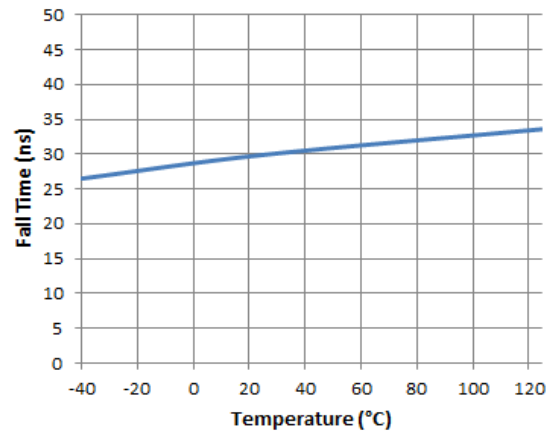


Figure 10. Fall Time vs. Temperature

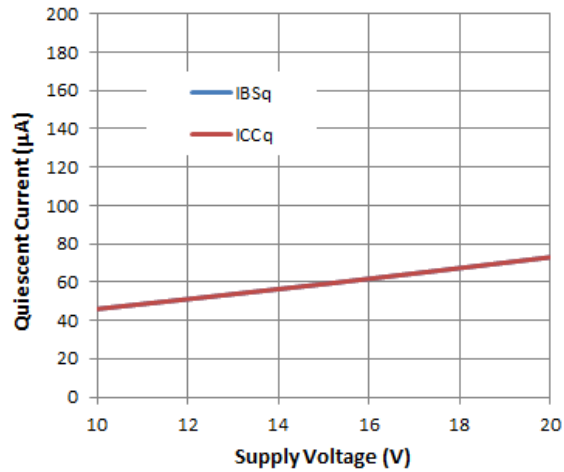


Figure 11. Quiescent Current vs. Supply Voltage

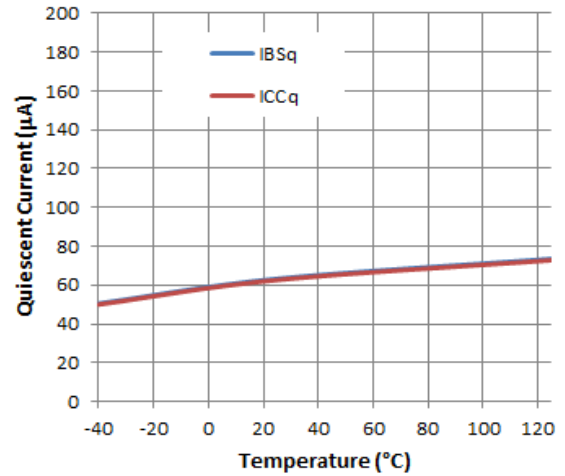


Figure 12. Quiescent Current vs. Temperature

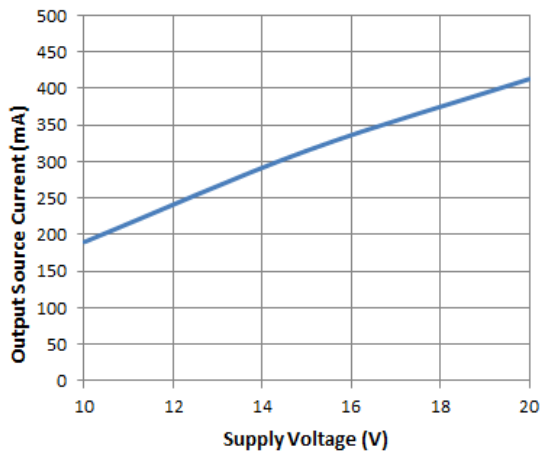


Figure 13. Output Source Current vs. Supply Voltage

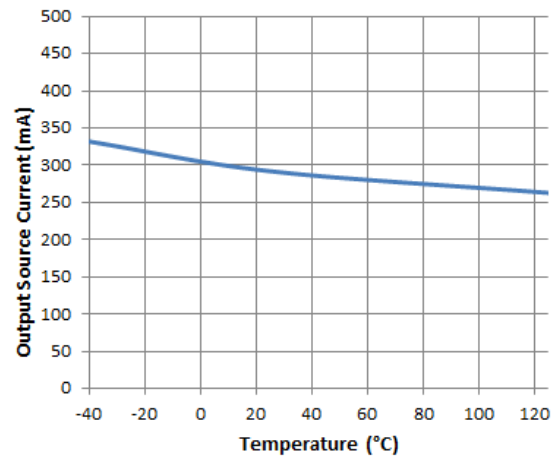


Figure 14. Output Source Current vs. Temperature

Typical Performance Characteristics (continued)

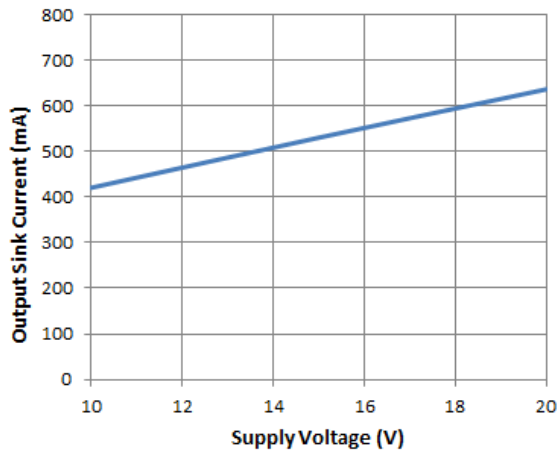


Figure 15. Output Sink Current vs. Supply Voltage

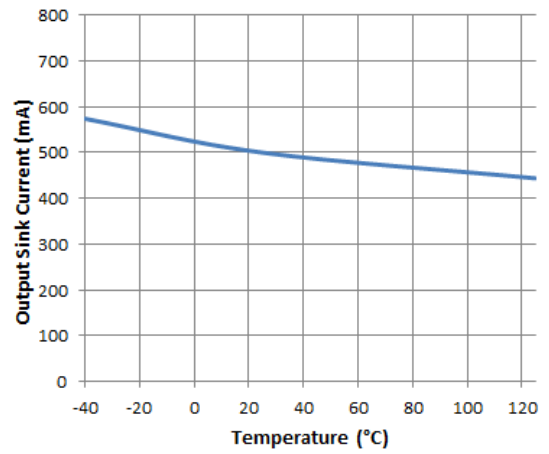


Figure 16. Output Sink Current vs. Temperature

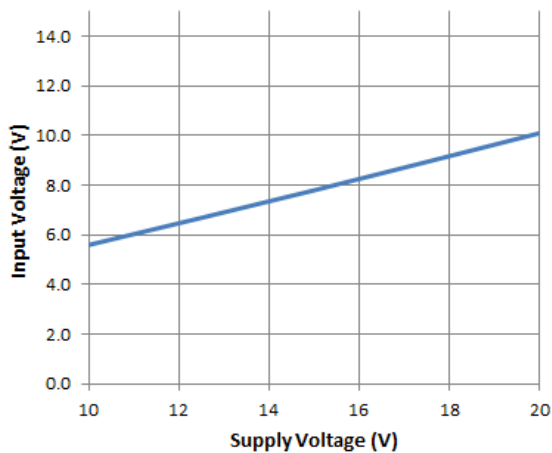


Figure 17. DGD2117 Logic 1 (DGD2118 Logic 0)
Input Voltage vs. Supply Voltage

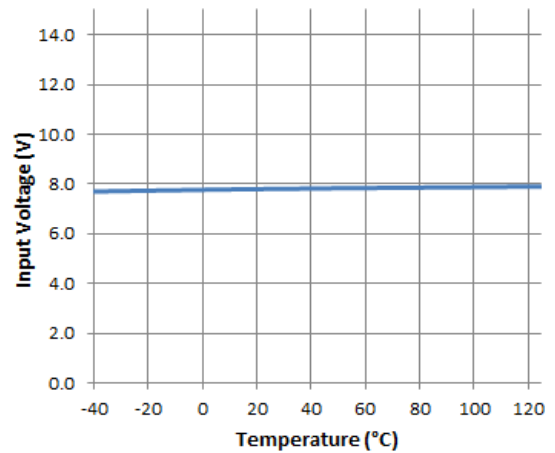


Figure 18. DGD2117 Logic 1 (DGD2118 Logic 0)
Input Voltage vs. Temperature

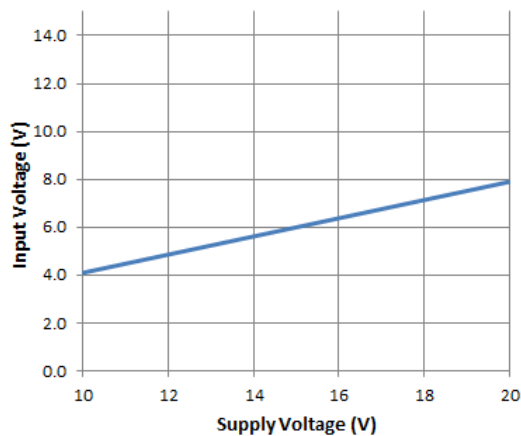


Figure 19. DGD2117 Logic 0 (DGD2118 Logic 1)
Input Voltage vs. Supply Voltage

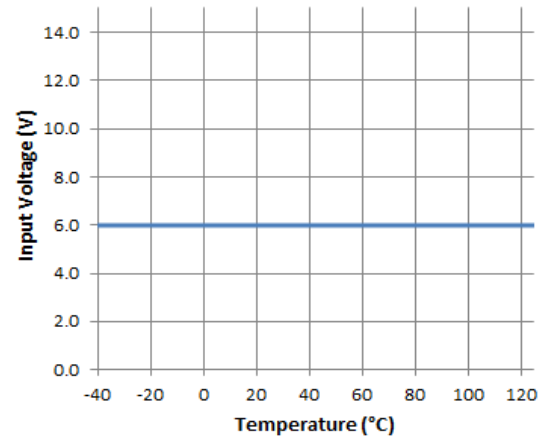


Figure 20. DGD2117 Logic 0 (DGD2118 Logic 1)
Input Voltage vs. Temperature

Typical Performance Characteristics (continued)

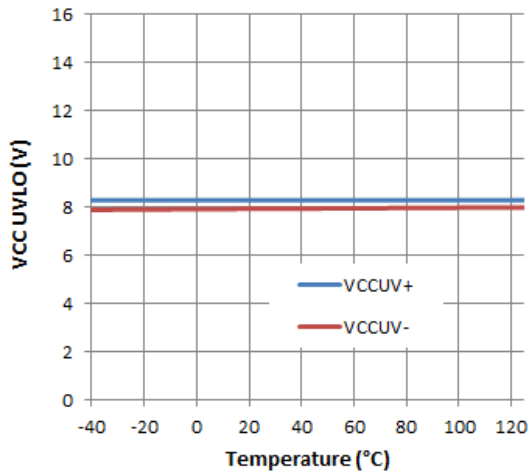


Figure 21. VCC UVLO vs. Temperature

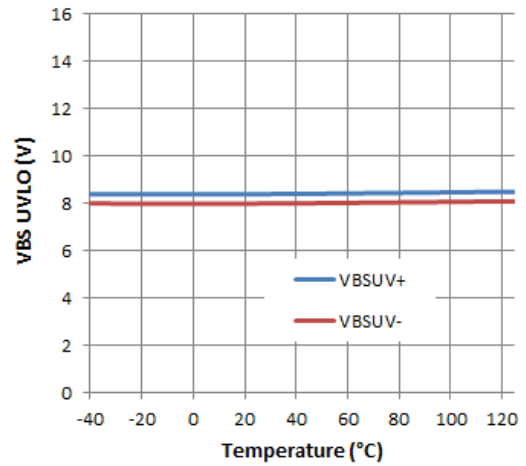


Figure 22. VBS UVLO vs. Temperature

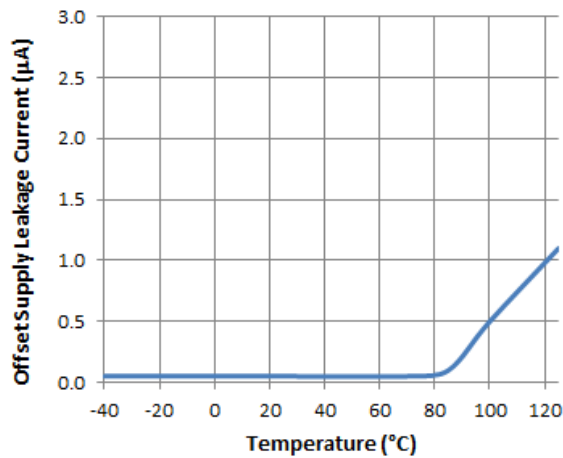
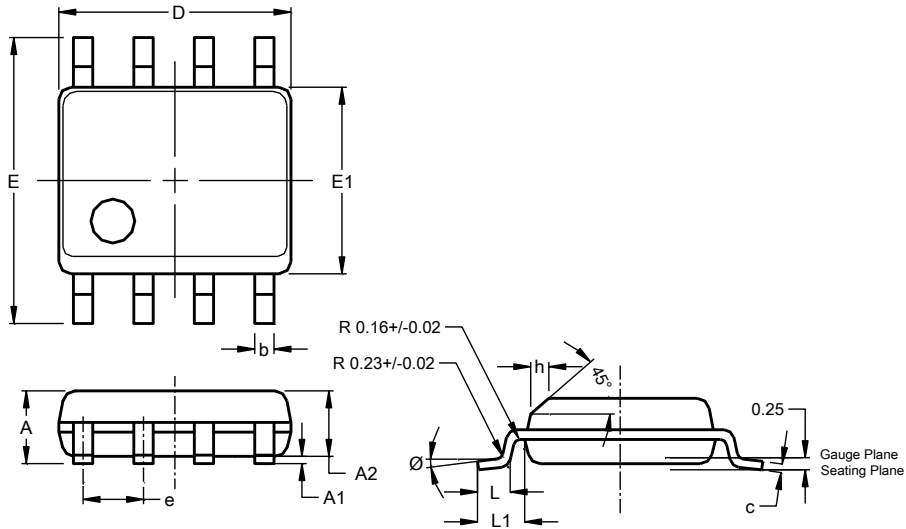


Figure 23. Offset Supply Leakage Current vs. Temperature

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SO-8 (Type TH)

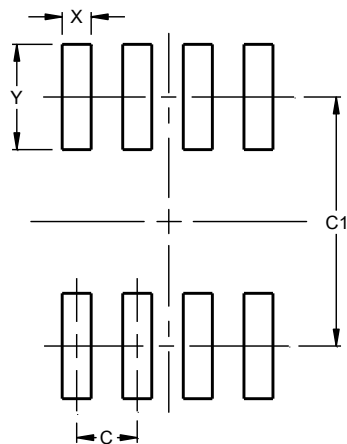


SO-8 (Type TH)			
Dim	Min	Max	Typ
A	1.35	1.75	--
A1	0.10	0.25	--
A2	--	--	1.45
b	0.35	0.51	--
c	0.190	0.248	--
D	4.80	5.00	4.90
E	5.80	6.20	6.00
E1	3.80	4.00	3.90
e	--	--	1.27
h	0.25	0.50	--
L	0.41	1.27	--
L1	--	--	1.04
Ø	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SO-8 (Type TH)



Dimensions	Value (in mm)
C	1.27
C1	5.20
X	0.60
Y	2.20

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device Terminals and PCB tracking.

IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or
2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2019, Diodes Incorporated

www.diodes.com