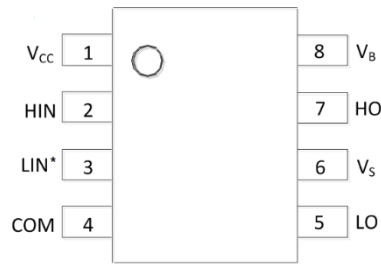


## Pin Diagrams

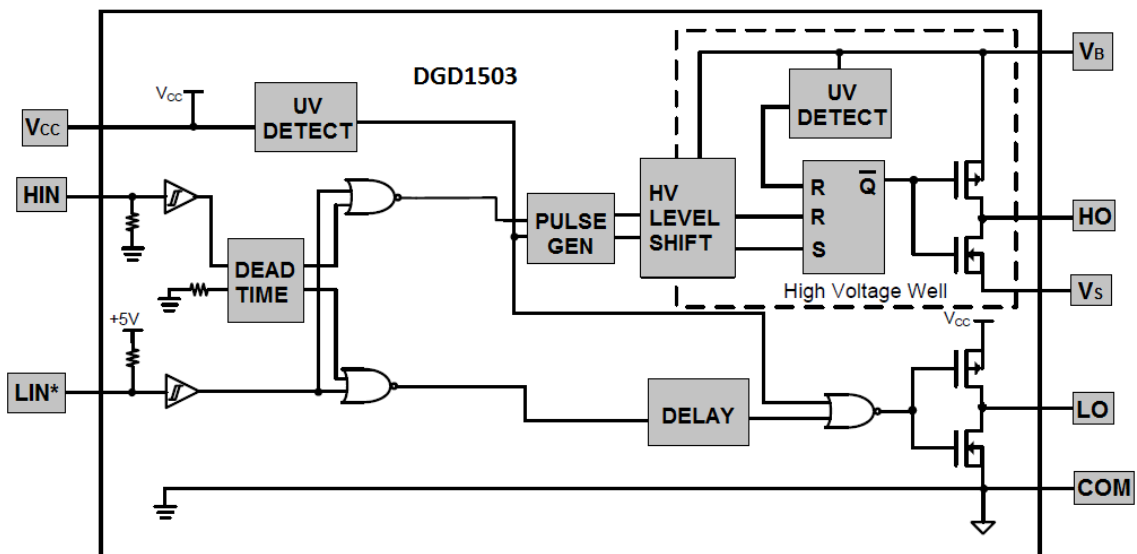


Top view: SO-8

## Pin Descriptions

Pin Number	Pin Name	Function
1	V <sub>CC</sub>	Logic and Low Side Supply
2	HIN	Logic Input for High-Side Gate Driver Output in Phase with HO
3	LIN*	Logic input for Low-Side Gate Driver Output out of Phase with LO
4	COM	Low-Side and Logic Return
5	LO	Low-Side Gate Drive Output
6	V <sub>S</sub>	High-Side Floating Supply Return
7	HO	High-Side Gate Drive Output
8	V <sub>B</sub>	High-Side Floating Supply

## Functional Block Diagram



**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
High-Side Floating Supply Voltage	V <sub>B</sub>	-0.3 to +274	V
High-Side Floating Supply Offset Voltage	V <sub>S</sub>	V <sub>B</sub> -24 to V <sub>B</sub> +0.3	V
High-Side Floating Output Voltage	V <sub>HO</sub>	V <sub>S</sub> -0.3 to V <sub>B</sub> +0.3	V
Offset Supply Voltage Transient	dV <sub>S</sub> / dt	50	V/ns
Low-Side Fixed Supply Voltage	V <sub>CC</sub>	-0.3 to +24	V
Low-Side Output Voltage	V <sub>LO</sub>	-0.3 to V <sub>CC</sub> +0.3	V
Logic Input Voltage (HIN and LIN*)	V <sub>IN</sub>	-0.3 to V <sub>CC</sub> +0.3	V

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation Linear Derating Factor (Note 5)	P <sub>D</sub>	0.625	W
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	200	°C/W
Operating Temperature	T <sub>J</sub>	+150	°C
Lead Temperature (soldering, 10s)	T <sub>L</sub>	+300	
Storage Temperature Range	T <sub>STG</sub>	-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 <sub>B</sub>	V <sub>S</sub> + 10	V <sub>S</sub> + 20	V
High-Side Floating Supply Offset Voltage	V <sub>S</sub>	(Note 6)	250	V
High-Side Floating Output Voltage	V <sub>HO</sub>	V <sub>S</sub>	V <sub>B</sub>	V
Low-Side Supply Voltage	V <sub>CC</sub>	10	20	V
Low-Side Output Voltage	V <sub>LO</sub>	0	V <sub>CC</sub>	V
Logic Input Voltage (HIN & LIN*)	V <sub>IN</sub>	0	5	V
Ambient Temperature	T <sub>A</sub>	-40	+125	°C

Note: 6. Logic operation for V<sub>S</sub> of -5V to +250V.

## DC Electrical Characteristics

( $V_{BIAS}$  ( $V_{CC}$ ,  $V_{BS}$ ) = 15V, @ $T_A$  = +25°C, unless otherwise specified.) (Note 7)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Logic "1" (HIN) & Logic "0" (LIN*) Input Voltage	$V_{IH}$	2.5	–	–	V	$V_{CC}$ = 10V to 20V
Logic "0" (HIN) & Logic "1" (LIN*) Input Voltage	$V_{IL}$	–	–	0.8	V	$V_{CC}$ = 10V to 20V
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	$V_B = V_S = 250V$
Quiescent $V_{BS}$ Supply Current	$I_{BSQ}$	–	60	100	μA	$V_{IN} = 0V$ or 5V
Quiescent $V_{CC}$ Supply Current	$I_{CCQ}$	–	350	500	μA	$V_{IN} = 0V$ or 5V
Logic "1" Input Bias Current	$I_{IN+}$	–	3	10	μA	$HIN = 5V$ , $LIN^* = 0V$
Logic "0" Input Bias Current	$I_{IN-}$	–	–	5	μA	$HIN = 0V$ , $LIN^* = 5V$
$V_{CC}$ Supply Undervoltage Positive Going Threshold	$V_{CCUV+}$	7.4	8.5	9.6	V	–
$V_{CC}$ Supply Undervoltage Negative Going Threshold	$V_{CCUV-}$	7.1	7.8	8.8	V	–
$V_{BS}$ Supply Undervoltage Positive Going Threshold	$V_{BSUV+}$	5.5	6.5	7.5	V	–
$V_{BS}$ Supply Undervoltage Negative Going Threshold	$V_{BSUV-}$	5.3	6.3	7.3	V	–
Output High Short Circuit Pulsed Current	$I_{O+}$	130	290	–	mA	$V_O = 0V$ , $PW \leq 10\mu s$
Output Low Short Circuit Pulsed Current	$I_{O-}$	270	600	–	mA	$V_O = 15V$ , $PW \leq 10\mu s$

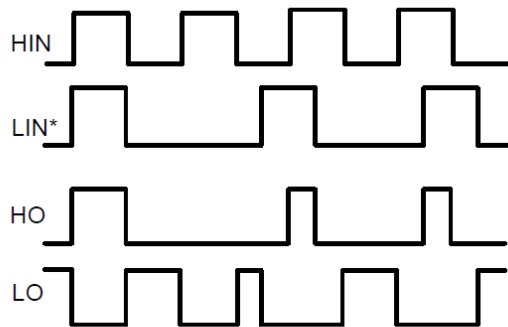
Note: 7. The  $V_{IN}$  and  $I_{IN}$  parameters are applicable to the two logic pins: HIN and LIN\*. The  $V_O$  and  $I_O$  parameters are applicable to the respective output pins: HO and LO.  
8. For optimal operation, it is recommended that the input pulses (HIN and LIN\*) should have a minimum amplitude of 2.5V with a minimum pulse width of 860ns.

## AC Electrical Characteristics

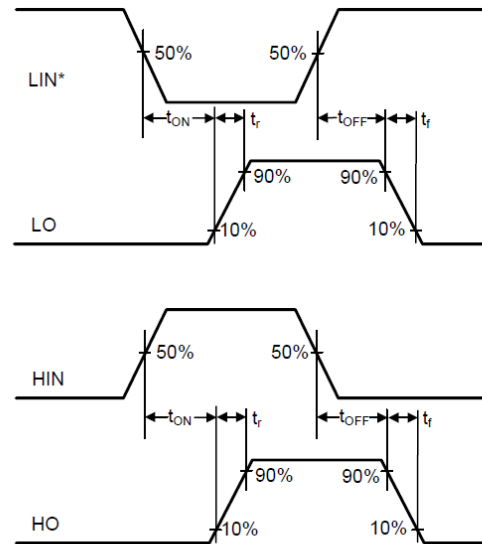
( $V_{BIAS}$  ( $V_{CC}$ ,  $V_{BS}$ ) = 15V,  $C_L$  = 1000pF, @ $T_A$  = +25°C, unless otherwise specified.)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Turn-on Propagation Delay	$t_{ON}$	–	680	820	ns	$V_S = 0V$
Turn-off Propagation Delay	$t_{OFF}$	–	150	220	ns	$V_S = 250V$
Delay Matching, HO & LO turn-on/turn-off	$t_{DM}$	–	–	60	ns	–
Turn-on Rise Time	$t_r$	–	70	170	ns	$V_S = 0V$
Turn-off Fall Time	$t_f$	–	35	90	ns	$V_S = 0V$
Deadtime: $t_{DT\ LO-HO}$ & $t_{DT\ HO-LO}$	$t_{DT}$	300	430	550	ns	–

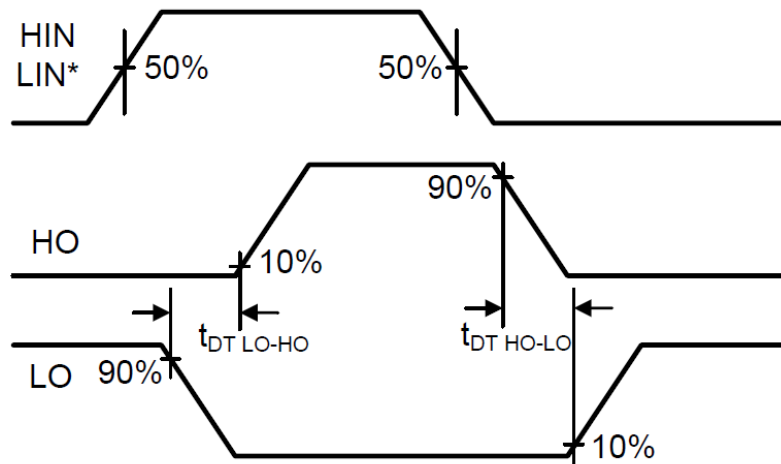
## Timing Waveforms



**Figure 1.** Input / Output Timing Diagram

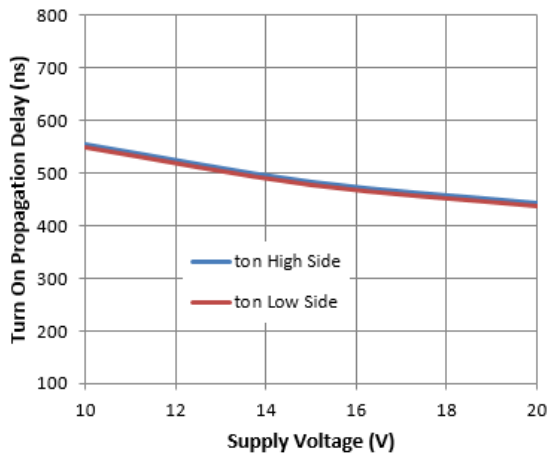


**Figure 2.** Switching Time Waveform Definitions

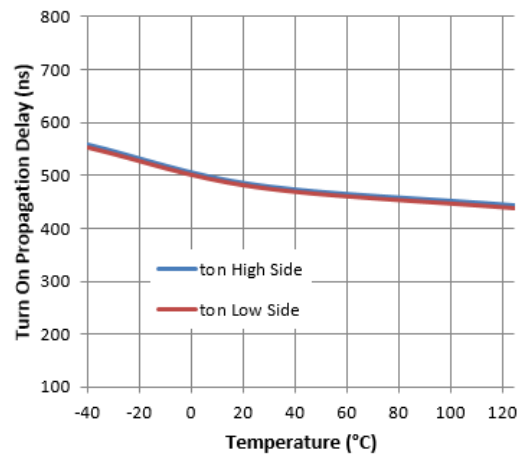


**Figure 3.** Deadtime Waveform Definitions

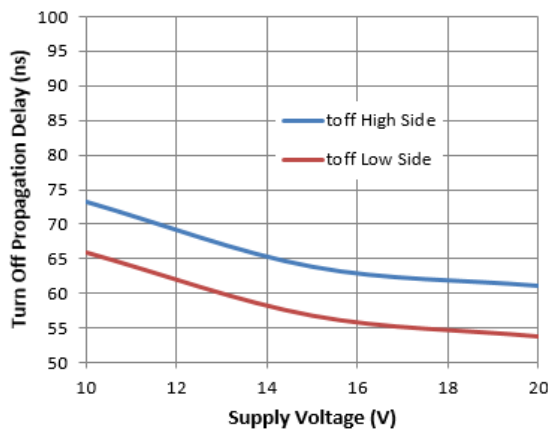
**Typical Performance Characteristics** ( $V_{CC}=15V$ ,  $@T_A = +25^{\circ}C$ , unless otherwise specified.)



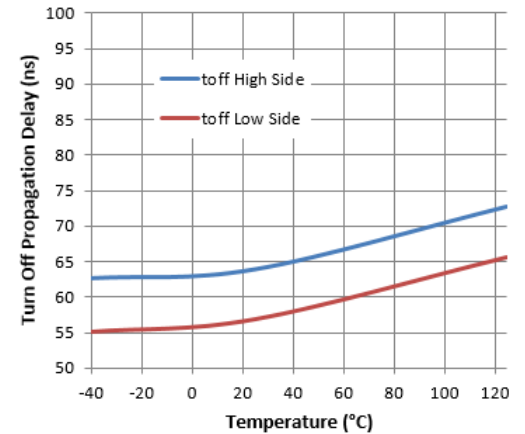
**Figure 4.** Turn-on Propagation Delay vs. Supply Voltage



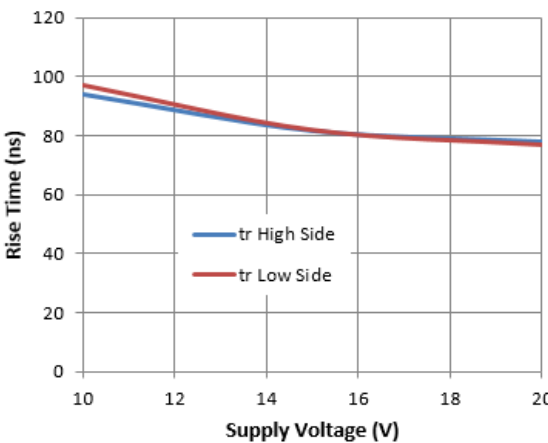
**Figure 5.** Turn-on Propagation Delay vs. Temperature



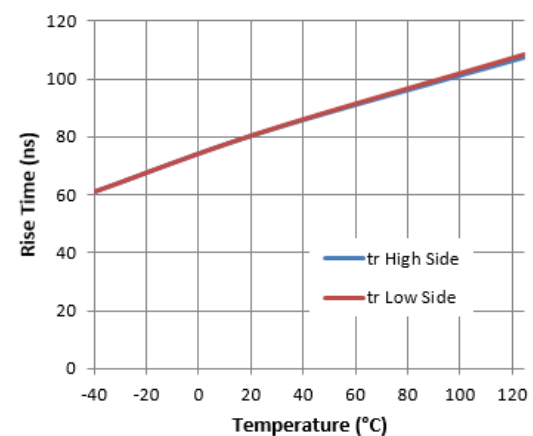
**Figure 6.** Turn-off Propagation Delay vs. Supply Voltage



**Figure 7.** Turn-off Propagation Delay vs. Temperature



**Figure 8.** Rise Time vs. Supply Voltage



**Figure 9.** Rise Time vs. Temperature

## Typical Performance Characteristics (continued)

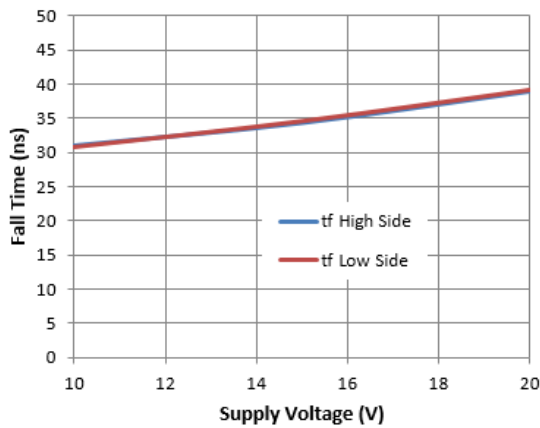


Figure 10. Fall Time vs. Supply Voltage

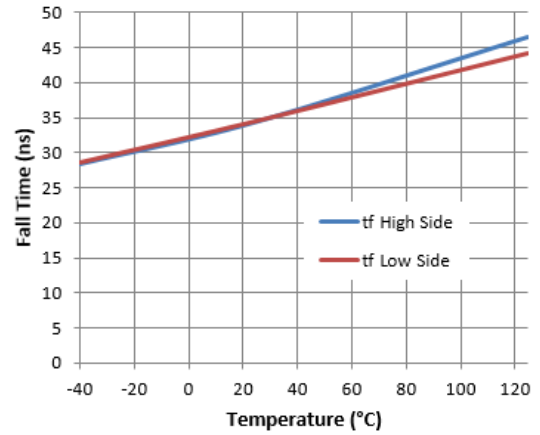


Figure 11. Fall Time vs. Temperature

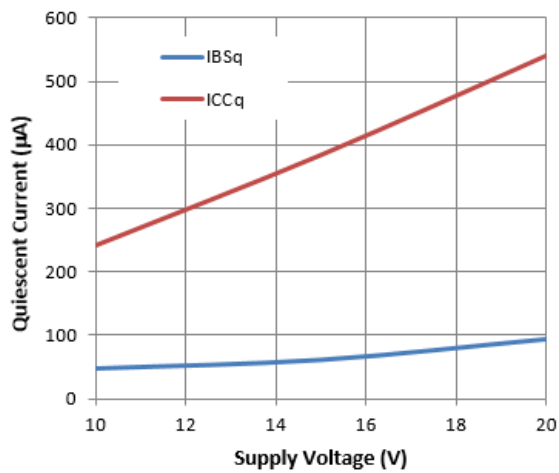


Figure 12. Quiescent Current vs. Supply Voltage

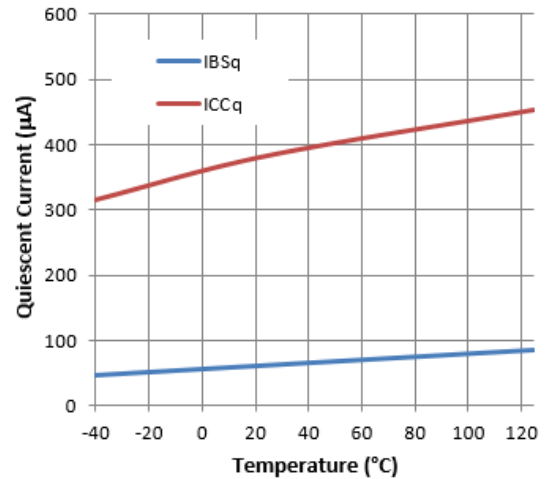


Figure 13. Quiescent Current vs. Temperature

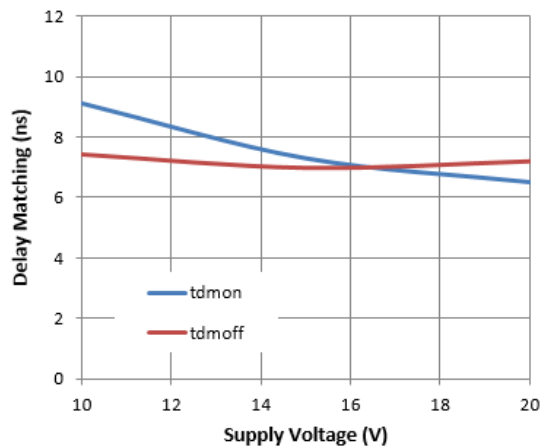


Figure 14. Delay Matching vs. Supply Voltage

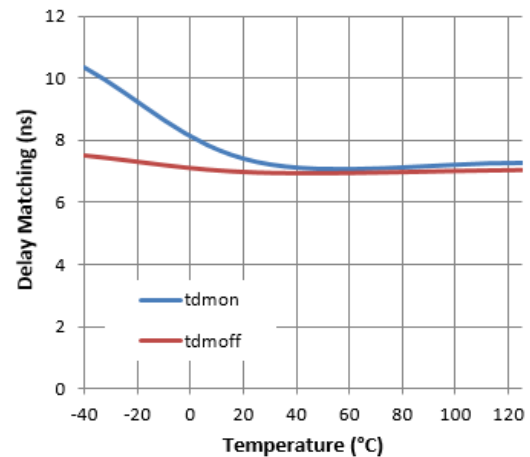
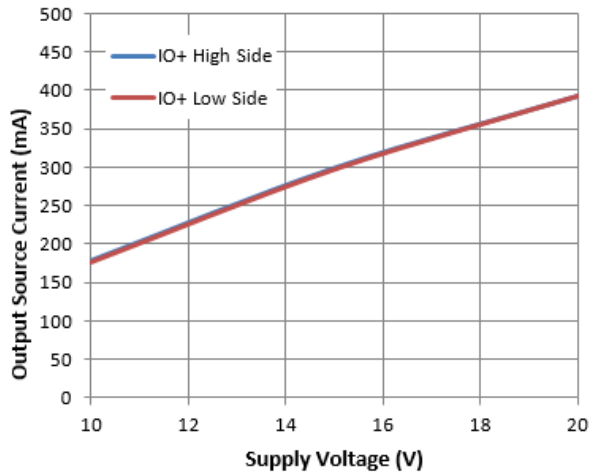
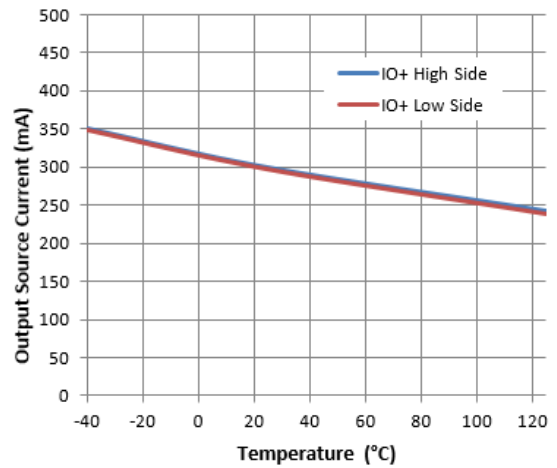


Figure 15. Delay Matching vs. Temperature

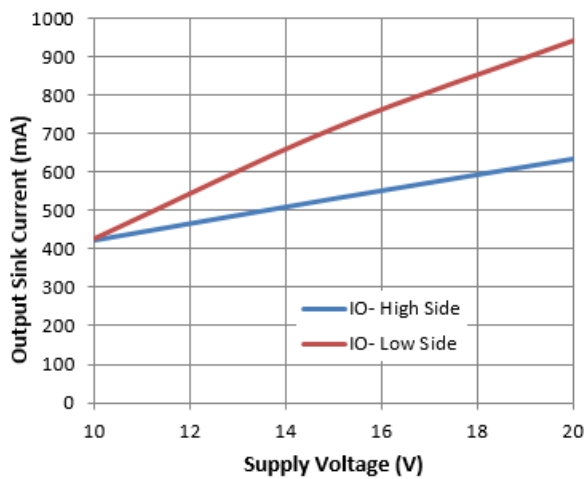
## Typical Performance Characteristics (cont.)



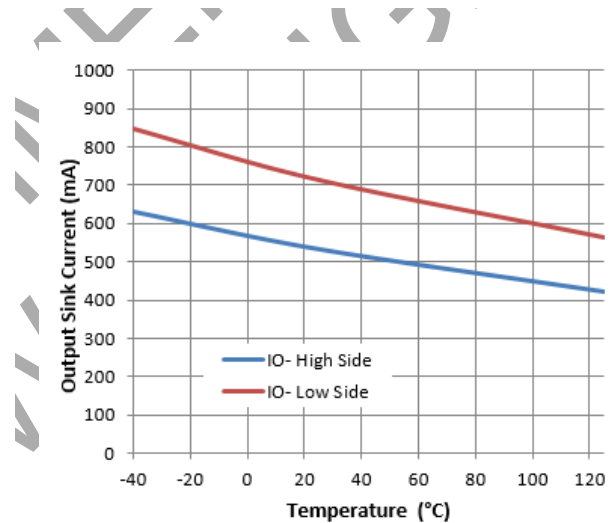
**Figure 16.** Output Source Current vs. Supply Voltage



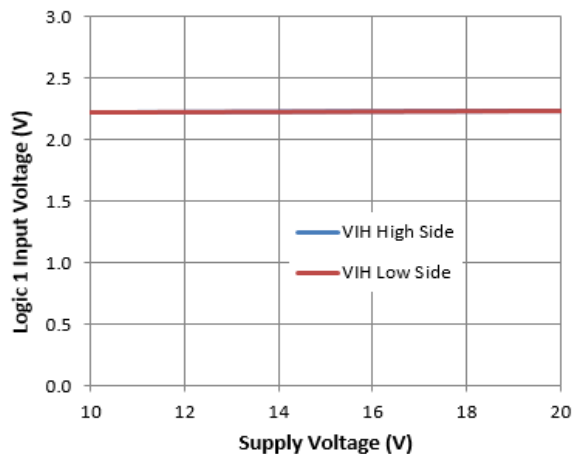
**Figure 17.** Output Source Current vs. Temperature



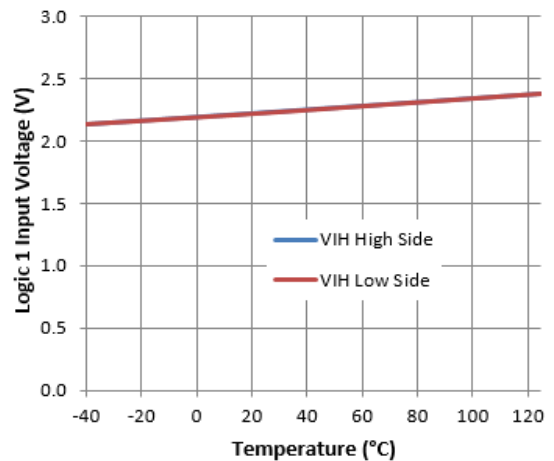
**Figure 18.** Output Sink Current vs. Supply Voltage



**Figure 19.** Output Sink Current vs. Temperature

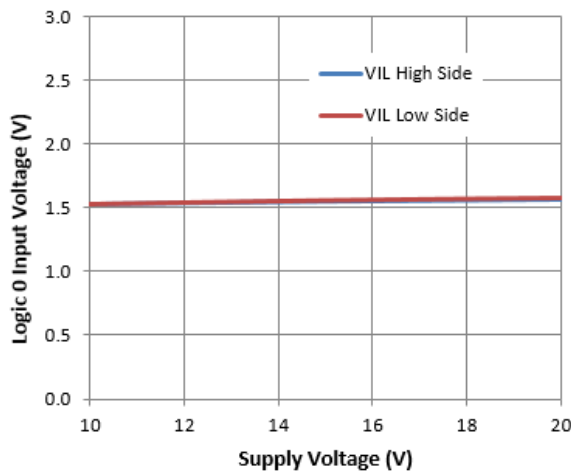


**Figure 20.** Logic 1 Input Voltage vs. Supply Voltage

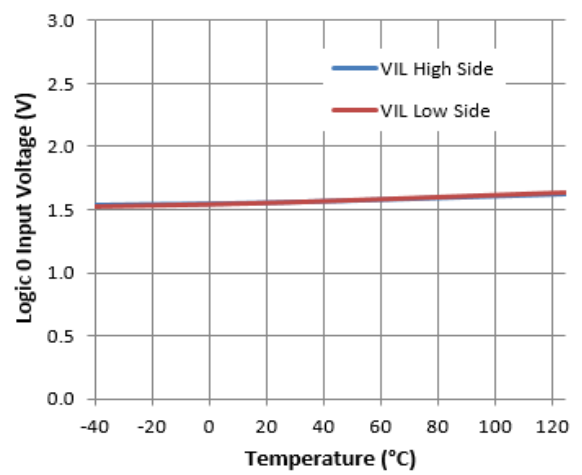


**Figure 21.** Logic 1 Input Voltage vs. Temperature

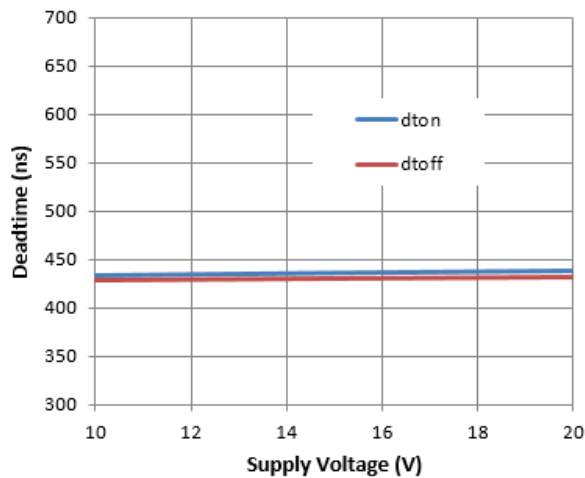
## Typical Performance Characteristics (cont.)



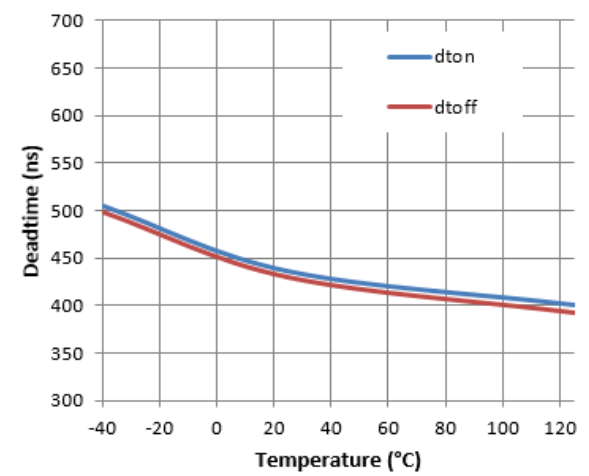
**Figure 22.** Logic 0 Input Voltage vs. Supply Voltage



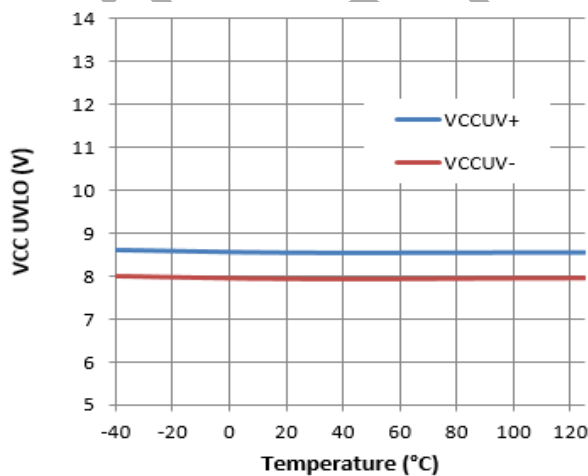
**Figure 23.** Logic 0 Input Voltage vs. Temperature



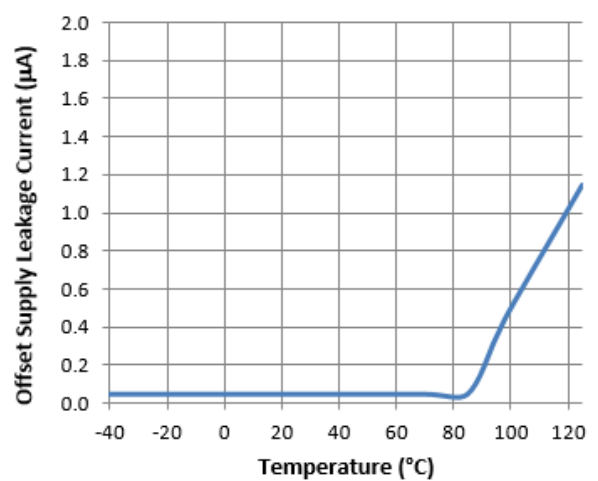
**Figure 24.** Deadtime vs. Supply Voltage



**Figure 25.** Deadtime vs. Temperature



**Figure 26.** VCC UVLO vs. Temperature



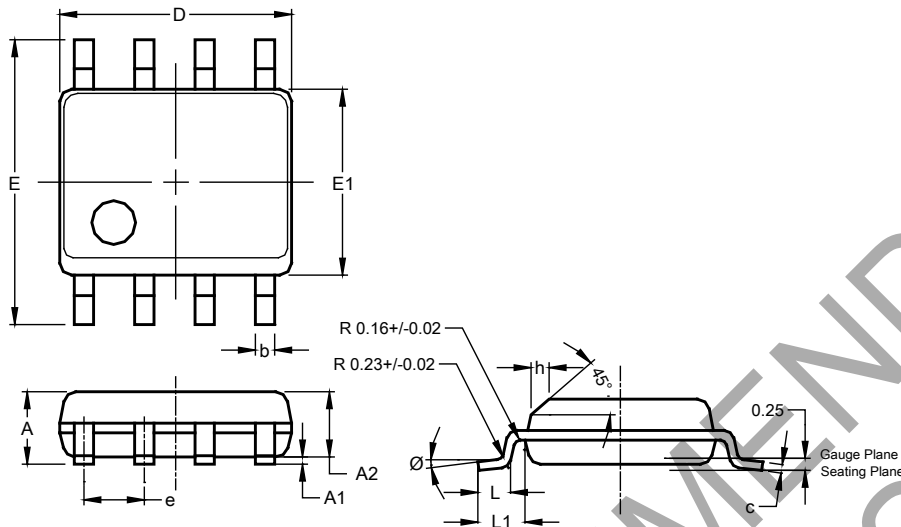
**Figure 27.** Offset Supply Leakage Current vs. Temperature



## Package Outline Dimensions

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

### SO-8 (Type TH)

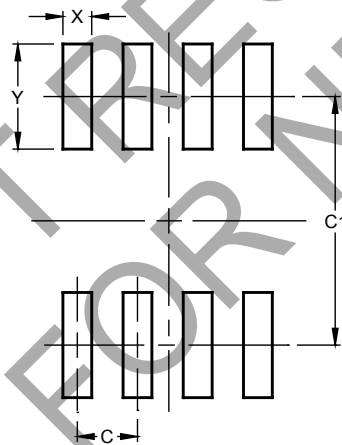


SO-8 (Type TH)			
Dim	Min	Max	Typ
A	1.35	1.75	--
A1	0.10	0.25	--
A2	--	--	1.45
b	0.35	0.51	--
c	0.190	0.248	--
D	4.80	5.00	4.90
E	5.80	6.20	6.00
E1	3.80	4.00	3.90
e	--	--	1.27
h	0.25	0.50	--
L	0.41	1.27	--
L1	--	--	1.04
Ø	0°	8°	--
All Dimensions in mm			

## 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.

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