



SANYO Semiconductors

**DATA SHEET****TND507S**

ExPD (Excellent Power Device)

**Ballast, General Purpose Driver for Applications Including PDP Sustain Pulse Drive, DC / AC Motor Drive, Induction Heating, Battery Charger, High Frequency Switching Power Supply, and Switching Amplifiers**

**Features**

- Monolithic structure.
- Single input and two output.
- Allows simplified configuration of driver circuit.
- Withstand voltage of 600V is assured.
- Built-in shutdown protection function.

**Specifications****Absolute Maximum Ratings** at Ta=25°C (All voltage parameters are absolute voltage referenced to GND)

Parameter	Symbol	Conditions	Ratings	Unit
High Side Floating Supply Absolute Voltage	V <sub>H</sub>		-0.3 to 625	V
High Side Floating Supply Offset Voltage	V <sub>HFG</sub>		V <sub>H</sub> -25 to V <sub>H</sub> +0.3	V
High Side Output Voltage	V <sub>HOUT</sub>		V <sub>HFG</sub> -0.3 to V <sub>H</sub> +0.3	V
Low Side Fixed Supply Voltage	V <sub>L</sub>		-0.3 to 25	V
Low Side Output Voltage	V <sub>LOUT</sub>		-0.3 to V <sub>L</sub> +0.3	V
Logic Input Voltage	V <sub>IN</sub>		-0.3 to V <sub>L</sub> +0.3	V
Allowable Power Dissipation	P <sub>D</sub>		0.3	W
Junction Temperature	T <sub>J</sub>		-55 to +150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

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**SANYO Semiconductor Co., Ltd.**

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**Recommended Operating Conditions** at  $T_a=25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings	Unit
High Side Floating Supply Absolute Voltage	$V_H$		$V_{HFG}+10$ to $V_{HFG}+20$	V
High Side Floating Supply Offset Voltage	$V_{HFG}$		0 to 600	V
High Side Output Voltage	$V_{HOUT}$		$V_{HFG}$ to $V_H$	V
Low Side Fixed Supply Voltage	$V_L$		10 to 20	V
Low Side Output Voltage	$V_{LOUT}$		0 to $V_L$	V
Logic Input Voltage	$V_{IN}$		0 to $V_L$	V
Ambient Temperature	$T_a$		-40 to +125	$^\circ\text{C}$

**AC Characteristics** at  $T_a=25^\circ\text{C}$  ( $V_L=V_{HHFG}=15\text{V}$ ,  $C_L=1000\text{pF}$ )

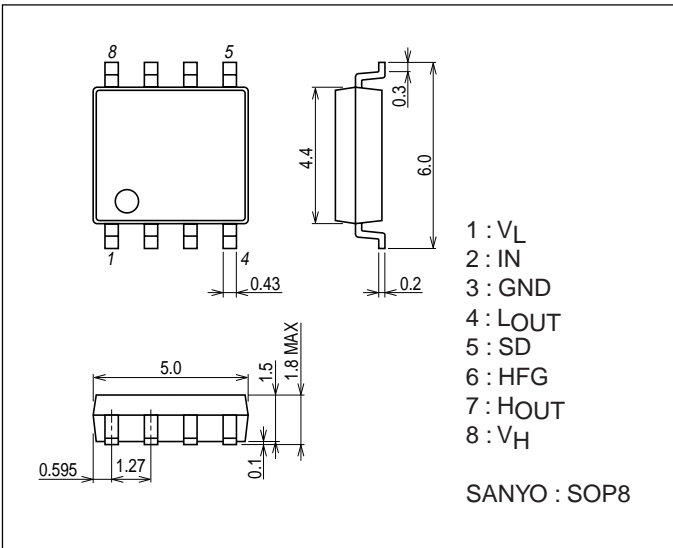
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{on}$	$V_{HFG}=0$		950		ns
Turn-OFF Delay Time	$t_{off}$	$V_{HFG}=600\text{V}$		150		ns
Turn-ON Rise Time	$t_r$	$C_L=1000\text{pF}$		120		ns
Turn-OFF Fall Time	$t_f$	$C_L=1000\text{pF}$		60		ns
Delay Matching	MT	$ Ht_{on}-L_{ton} ,  Ht_{off}-L_{toff} $		30		ns
Dead Time	DT			800		ns

**DC Characteristics** at  $T_a=25^\circ\text{C}$  ( $V_L=V_{HHFG}=15\text{V}$ )

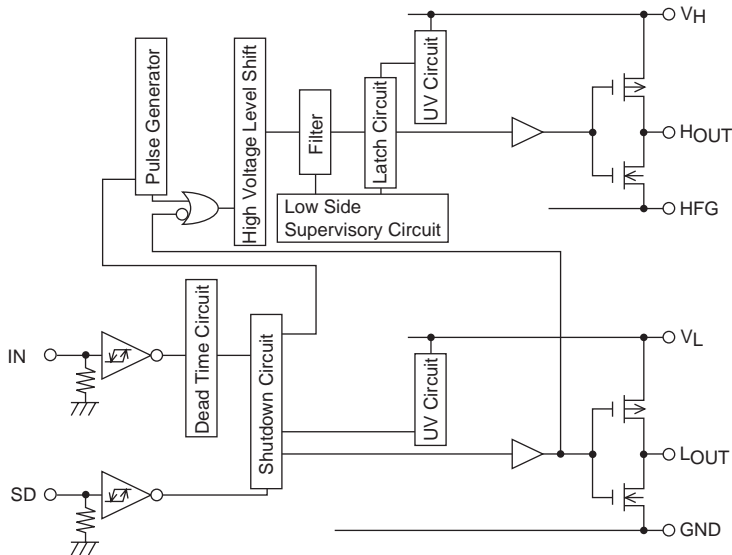
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Logic "1" Input Voltage	$V_{IH}$	$V_L=10\text{V}$	6.4			V
		$V_L=15\text{V}$	9.5			V
		$V_L=20\text{V}$	12.8			V
Logic "0" Input Voltage	$V_{IL}$	$V_L=10\text{V}$			3.7	V
		$V_L=15\text{V}$			5.8	V
		$V_L=20\text{V}$			7.7	V
High-level Output Voltage( $V_{BIAS}-V_O$ )	$V_{OH}$	$I_O=0$			100	mV
Low-level Output Voltage( $V_O$ )	$V_{OL}$	$I_O=0$			100	mV
Offset Supply Leakage Current	$I_{LK}$	$V_H=V_{HFG}=600\text{V}$			10	$\mu\text{A}$
Quiescent $V_H$ Supply Current	$I_{QH}$	$V_{IN}=0$ or $V_L$		50	100	$\mu\text{A}$
Quiescent $V_L$ Supply Current	$I_{QL}$	$V_{IN}=0$ or $V_L$		70	180	$\mu\text{A}$
Logic "1" Input Bias Current	$I_{IN+}$	$V_{IN}=15\text{V}$		20	40	$\mu\text{A}$
Logic "0" Input Bias Current	$I_{IN-}$	$V_{IN}=0$			1	$\mu\text{A}$
$V_H$ Supply Undervoltage Positive Going Threshold	$V_{HUV+}$		7.6	8.9	9.9	V
$V_H$ Supply Undervoltage Negative Going Threshold	$V_{HUV-}$		6.7	8.1	9.5	V
$V_L$ Supply Undervoltage Positive Going Threshold	$V_{LUV+}$		7.6	8.9	9.9	V
$V_L$ Supply Undervoltage Negative Going Threshold	$V_{LUV-}$		6.7	8.1	9.5	V
Output High Short Circuit Pulsed Current	$I_{O+}$	$V_{OUT}=0, PW\leq 10\mu\text{s}$	200	250		mA
Output Low Short Circuit Pulsed Current	$I_{O-}$	$V_{OUT}=15\text{V}, PW\leq 10\mu\text{s}$	420	500		mA

**Package Dimensions**

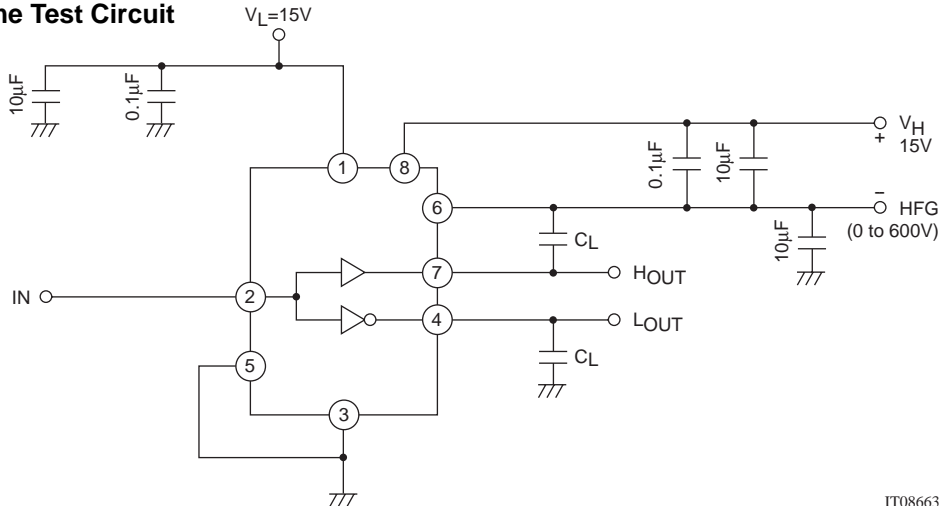
unit : mm (typ)  
7005-010



**Block Diagram**

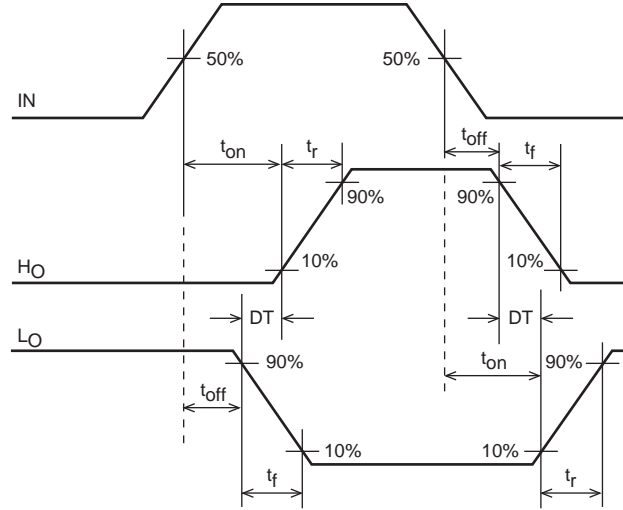


**Switching Time Test Circuit**

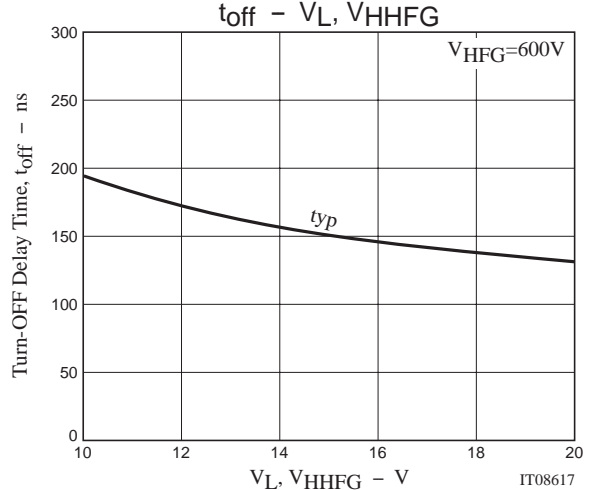
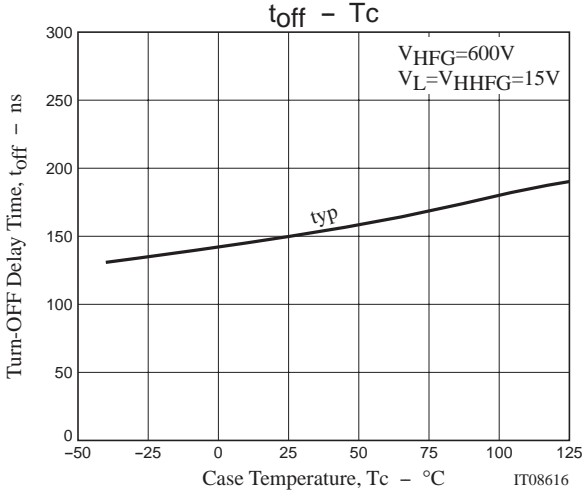
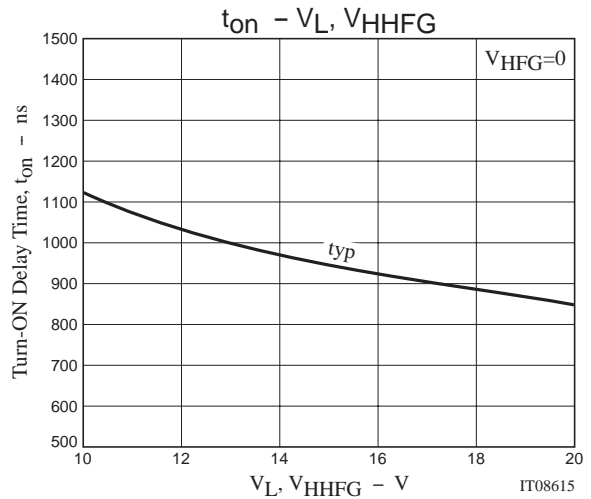
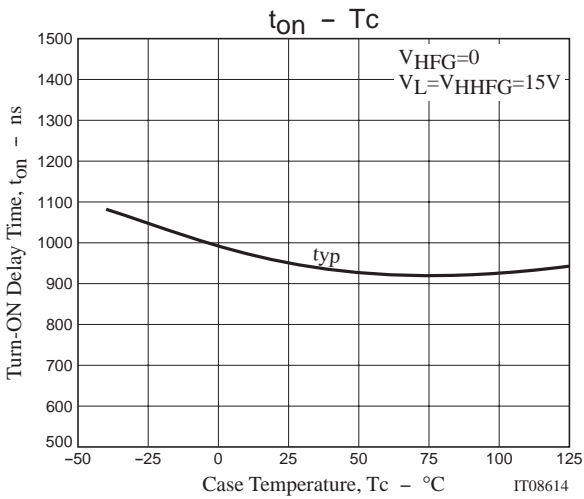


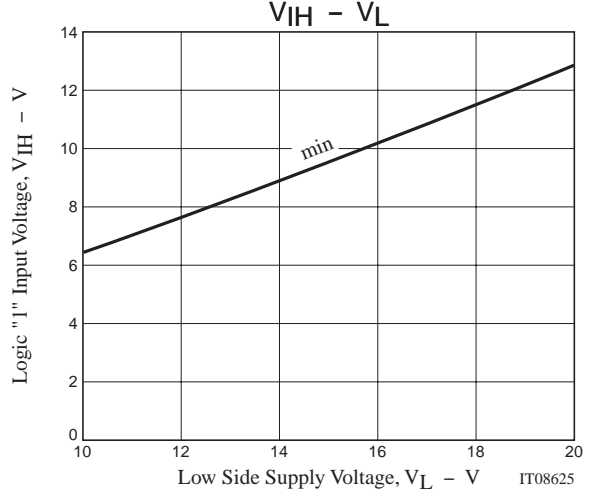
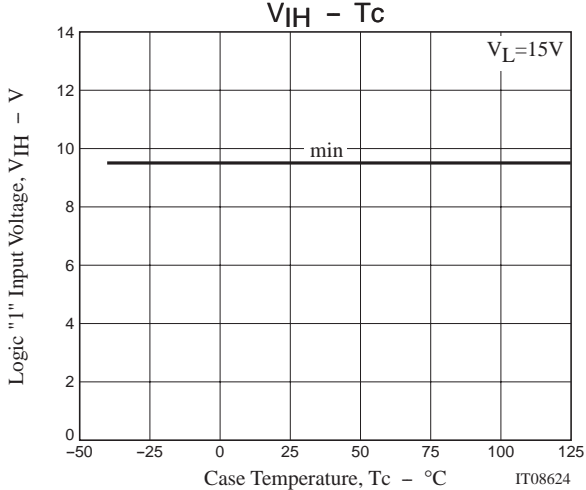
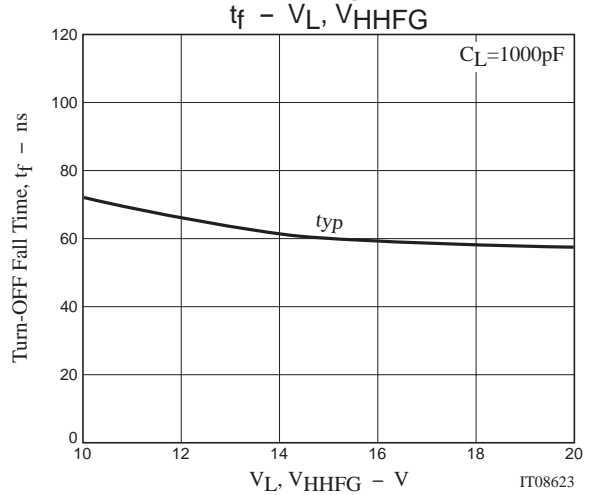
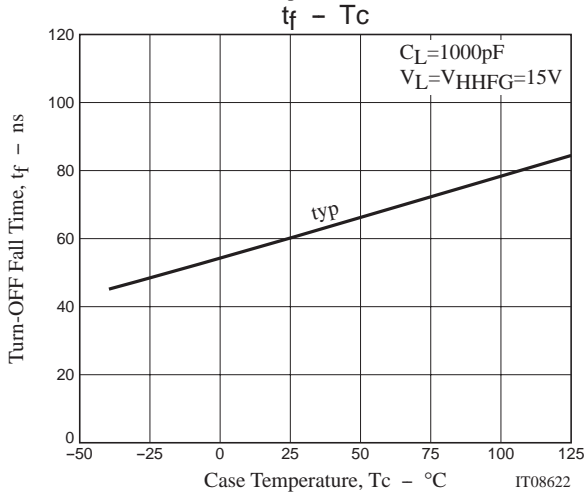
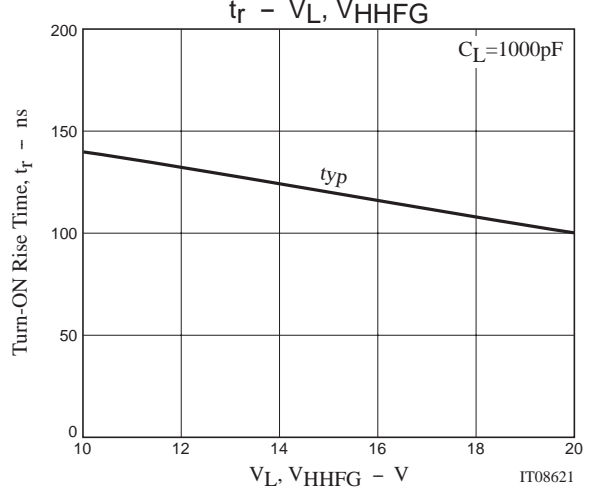
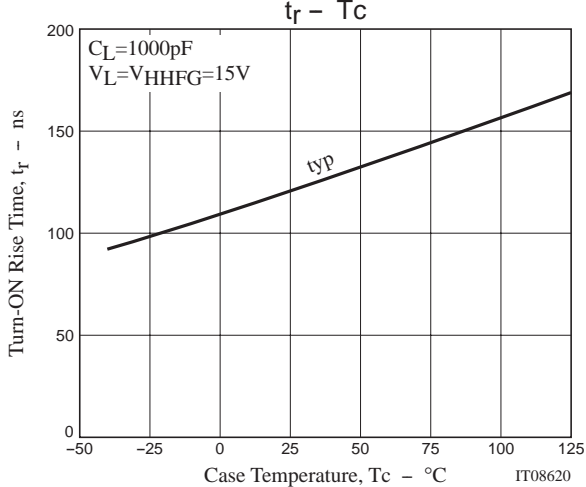
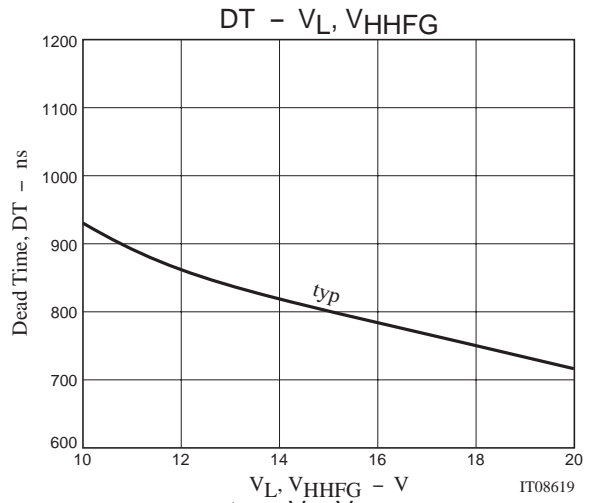
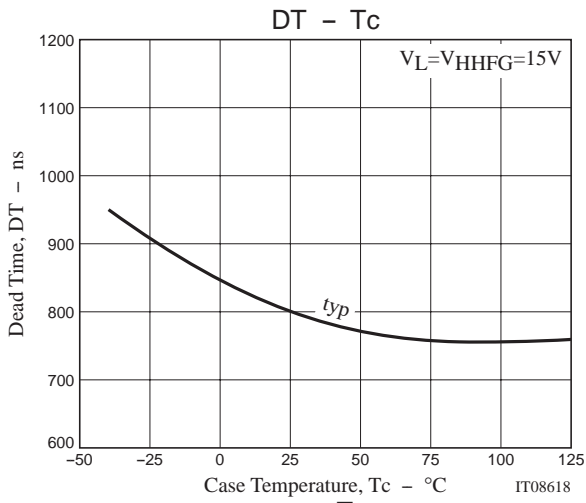
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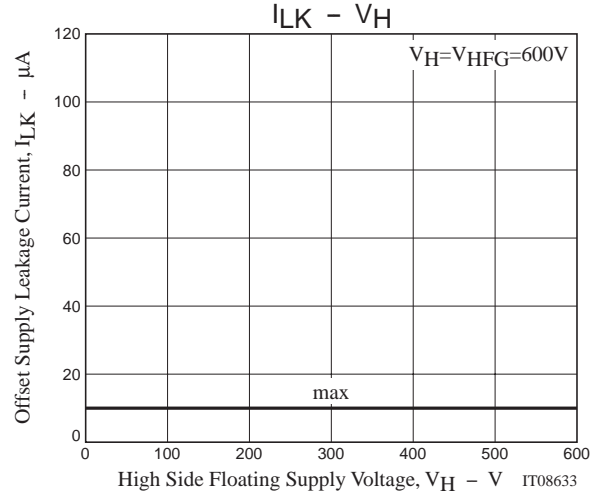
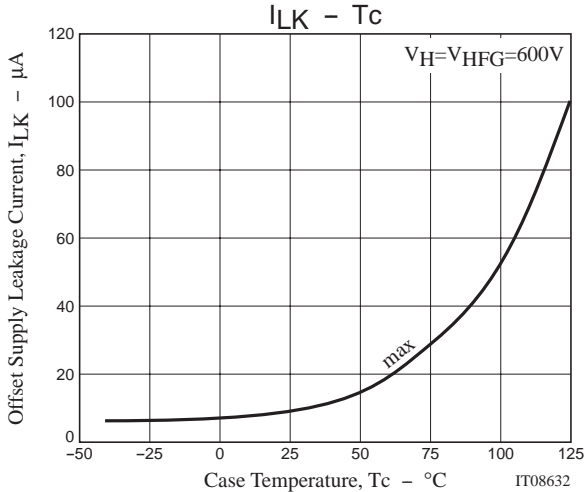
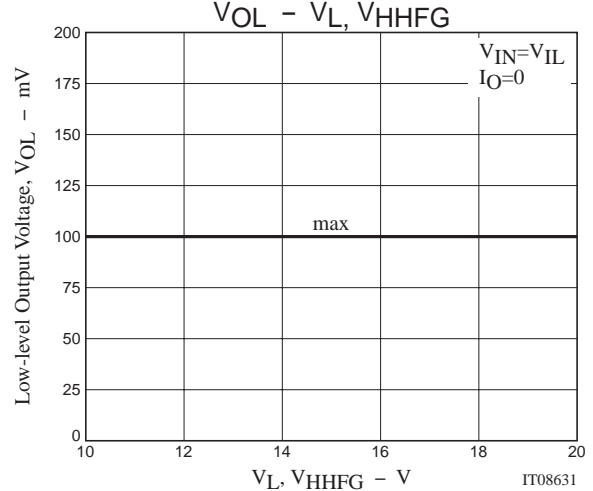
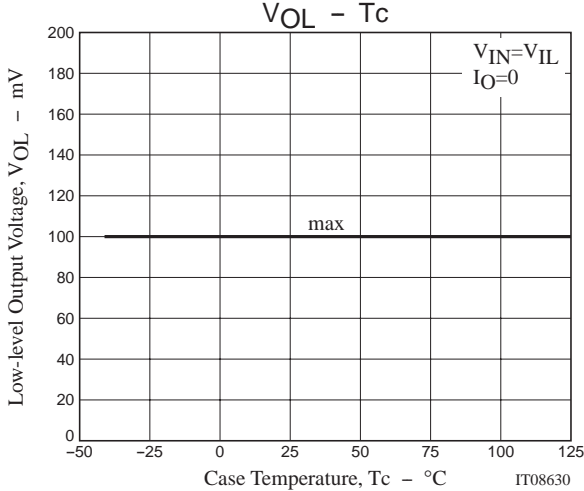
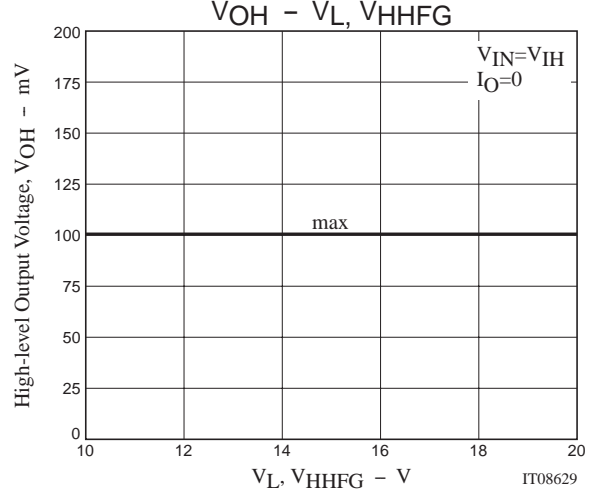
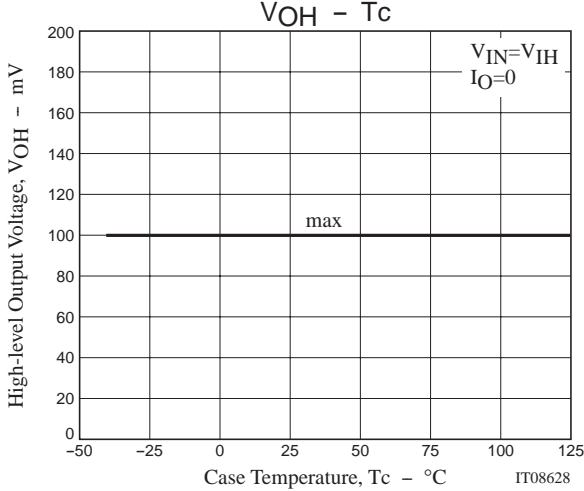
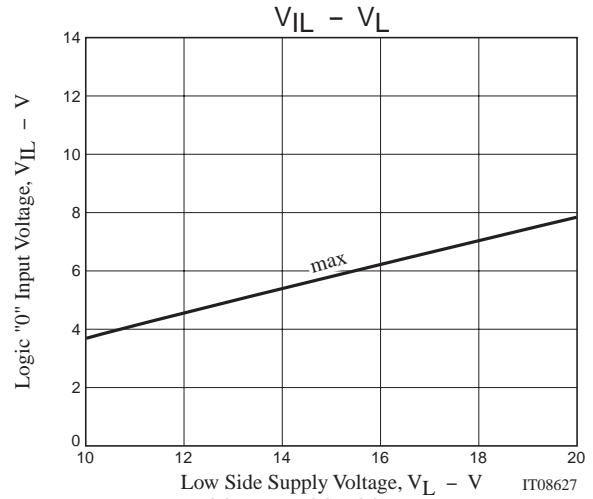
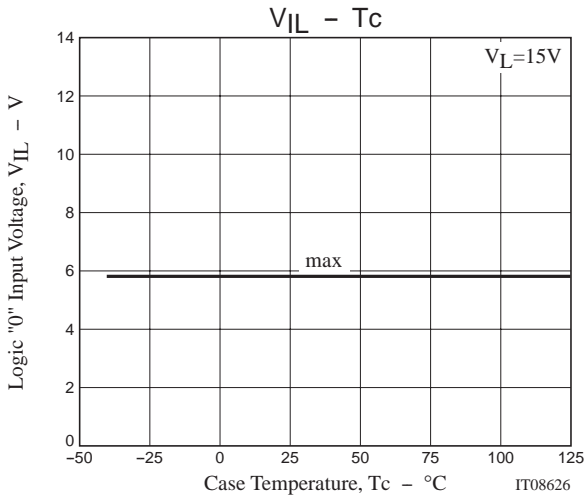
**Switching Time Waveform Definition**

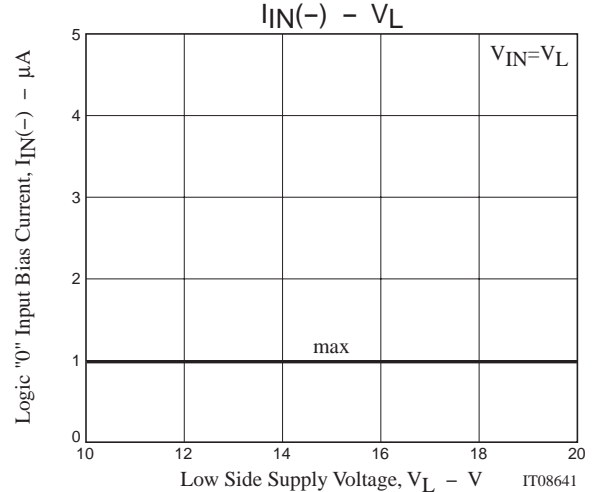
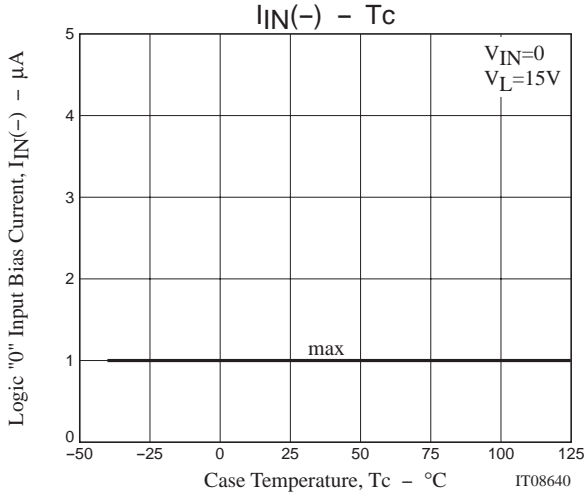
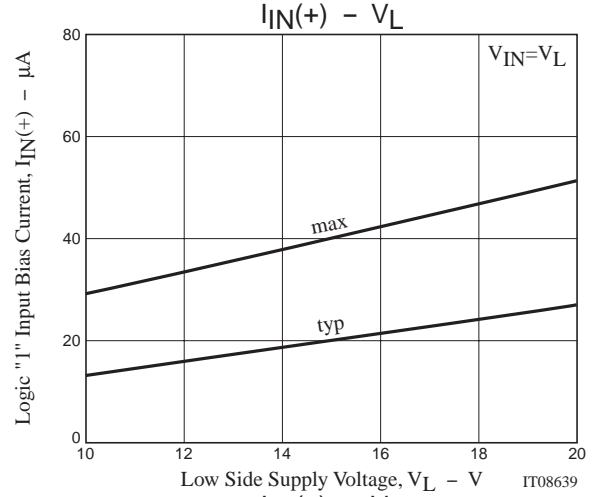
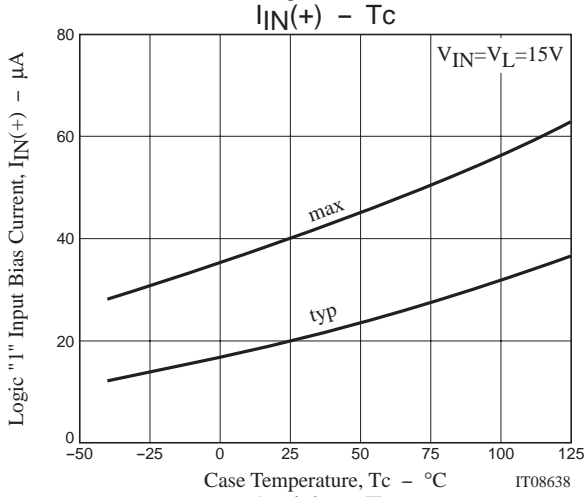
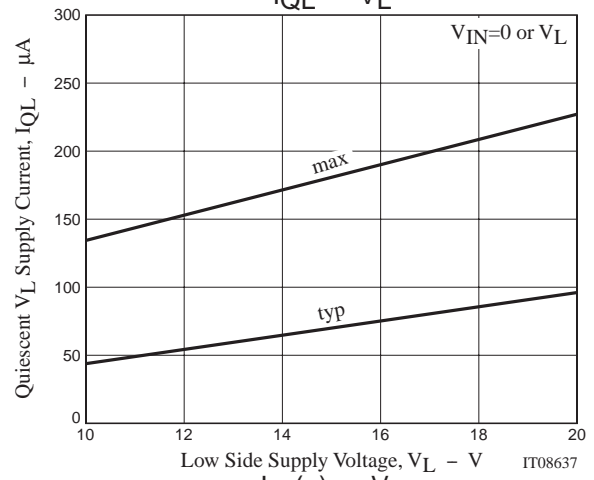
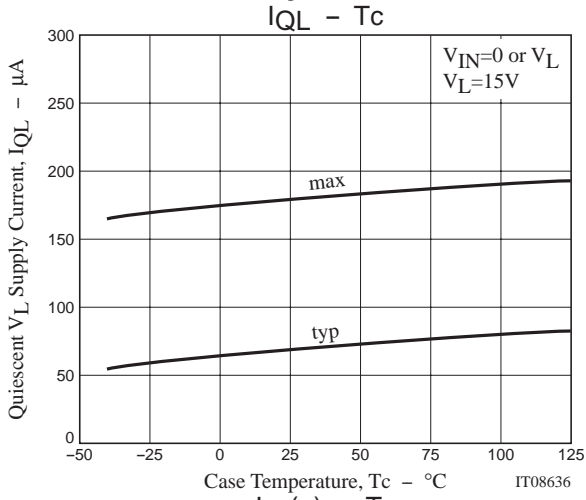
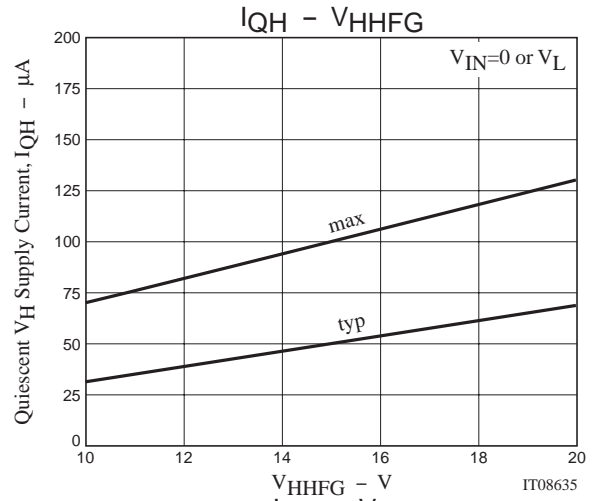
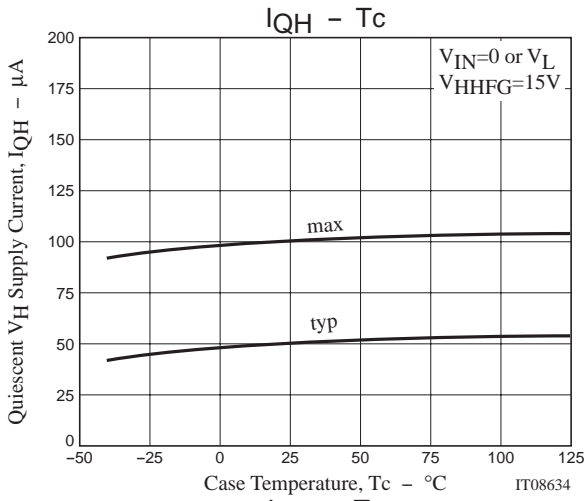


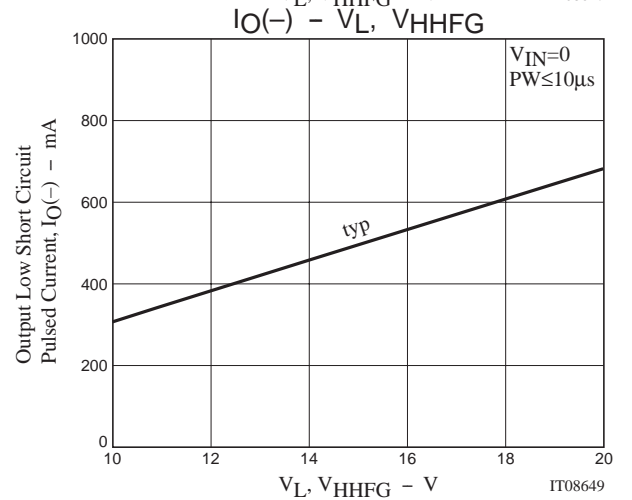
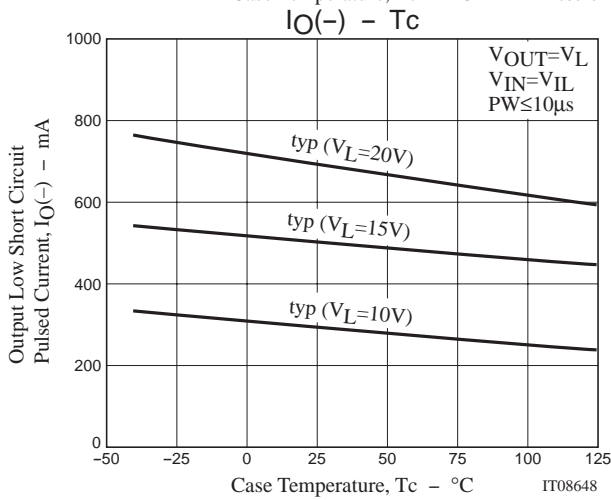
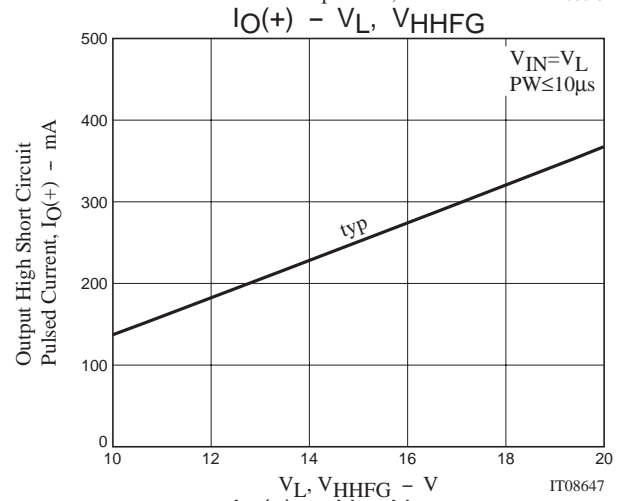
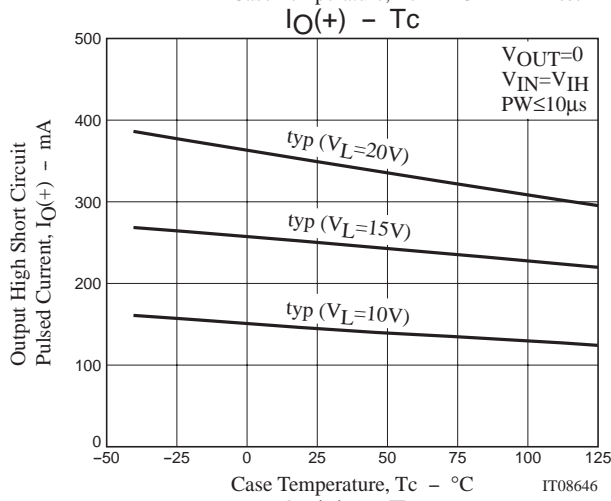
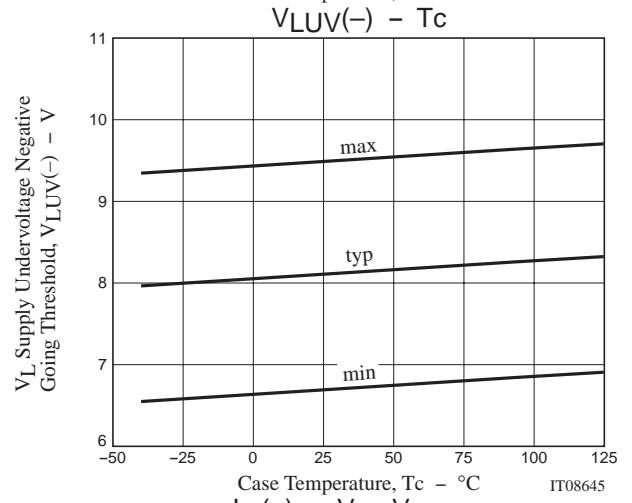
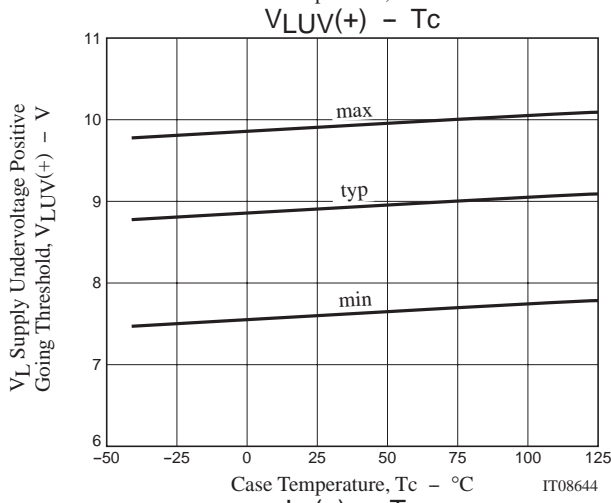
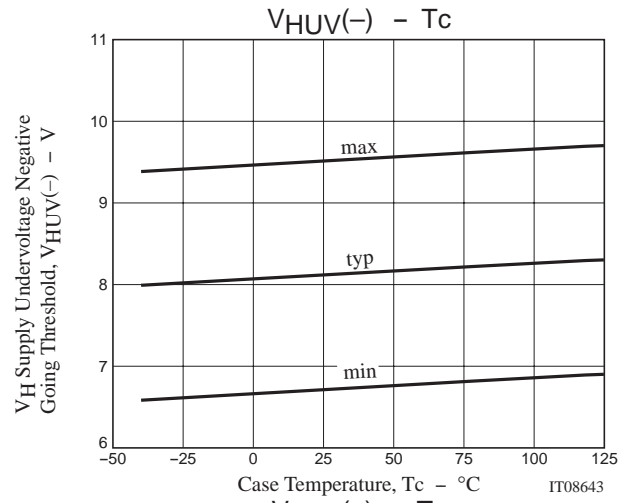
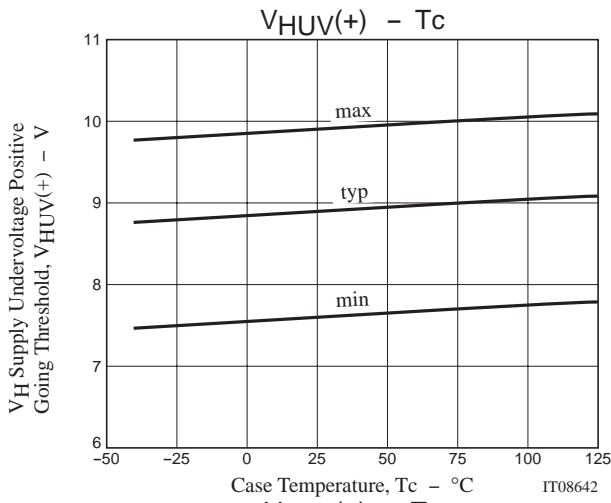
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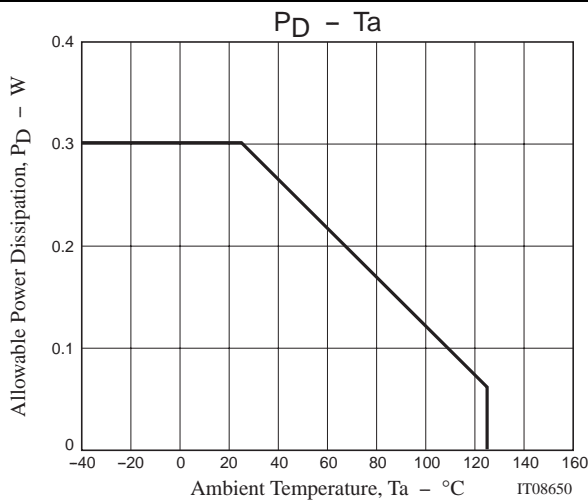












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