Ordering number : ENA1071A

SANYO Semiconductors

DATA SHEET

TND516SS — ExPD(Excellent Power Device)
Single-phase High Side Drive Application

Features

- Single-phase high side driver.
- Monolithic structure.
- Allows simplified configuration of driver circuit.
- Withstand voltage of 600V is assured.
- Fully compatible input to LSTTL/CMOS.
- High-speed switching.
- Output current : 170mA Source, 340mA Sink.

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 Voltage	V_H		-0.3 to 625	V
High Side Floating Supply Offset Voltage	V_S		V_H-25 to V_H+0.3	V
High Side Output Voltage	V_{HOUT}		V_S-0.3 to V_H+0.3	V
Logic Supply Voltage	V_{DD}		-0.3 to 25	V
Logic Input Voltage	V_{HIN}		-0.3 to V_{DD}+0.3	V
Allowable Power Dissipation	P_D		0.3	W
Junction Temperature	Tj		-55 to +150	°C
Storage Temperature	Tstg		-55 to +150	°C

Recommended Operating Conditions at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
High Side Floating Supply Voltage	V_H		V_S+10 to V_S+20	V
High Side Floating Supply Offset Voltage	V_S		0 to 600	V
High Side Output Voltage	V_{HOUT}		V_S to V_H	V
Logic Supply Voltage	V_{DD}		10 to 20	V
Logic Input Voltage	V_{HIN}		0 to V_{DD}	V
Ambient Temperature	Topr		-40 to +125	°C

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SANYO Semiconductor Co., Ltd.

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

AC Characteristics at Ta=25°C (V_{DD}=V_{HS}=15V, C_L=1000pF)

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	t_{on}	V_S=0V		155		ns
Turn-OFF Delay Time	t_{off}	V_S=600V		135		ns
Turn-ON Rise Time	t_r			110		ns
Turn-OFF Fall Time	t_f			40		ns

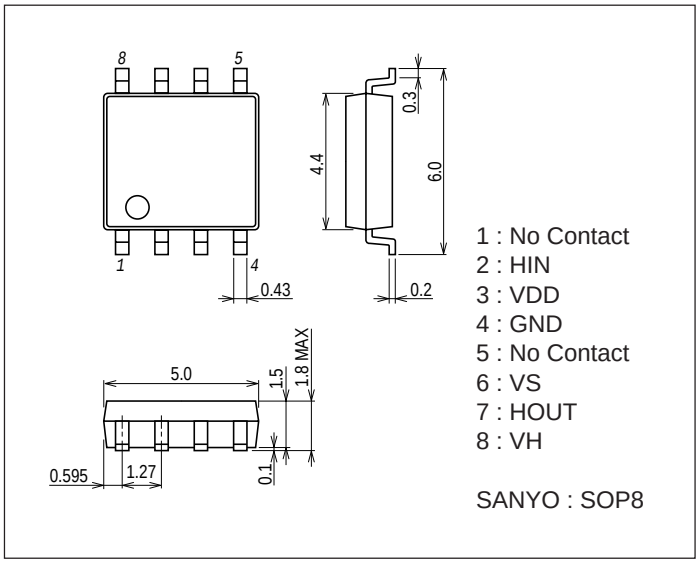
DC Characteristics at Ta=25°C (V_{DD}=V_{HS}=15V)

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Logic “1” Input Voltage	V_{IH}	V_{DD}=10 to 20V	3.0			V
Logic “0” Input Voltage	V_{IL}	V_{DD}=10 to 20V			0.8	V
High-level Output Voltage, VBIAS-V_O	V_{OH}	V_{HIN}=V_{IH}, I_O=0A			0.1	V
Low-level Output Voltage, V_O	V_{OL}	V_{HIN}=V_{IL}, I_O=0A			0.1	V
Offset Supply Leakage Current	I_{LK}	V_H=V_S=600V			10	μA
Quiescent V_H Supply Current	I_{QH}	V_{HIN}=0V or V_{DD}		50	100	μA
Quiescent V_{DD} Supply Current	I_{QDD}	V_{HIN}=0V or V_{DD}		140	230	μA
Logic “1” Input Bias Current	I_{IN}+	V_{HIN}=V_{DD}		20	55	μA
Logic “0” Input Bias Current	I_{IN}-	V_{HIN}=0V			1	μA
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_{DD} Supply Undervoltage Positive Going Threshold	V_{DDUV}+		7.6	8.9	9.9	V
V_{DD} Supply Undervoltage Negative Going Threshold	V_{DDUV}-		6.7	8.1	9.5	V
Output High Short Circuit Pulsed Current	I_O+	V_{HOUT}=0V, V_{HIN}=15V, PW≤10μs	170	200		mA
Output Low Short Circuit Pulsed Current	I_O-	V_{HOUT}=15V, V_{HIN}=0V, PW≤10μs	340	400		mA

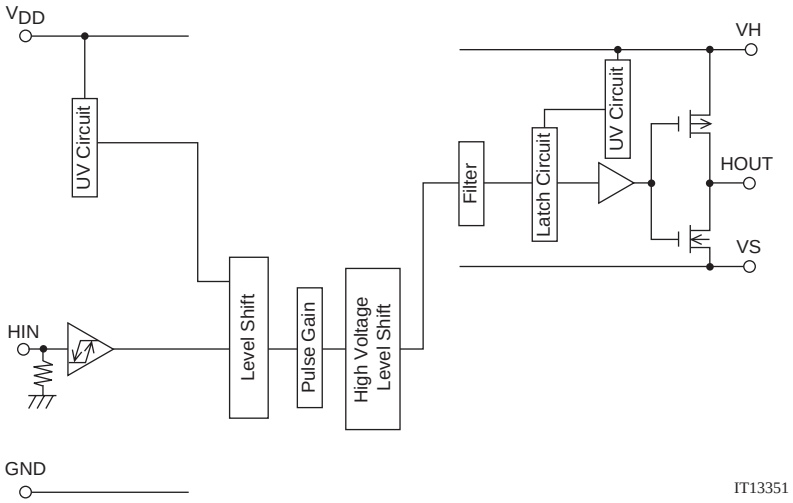
Package Dimensions

unit : mm (typ)

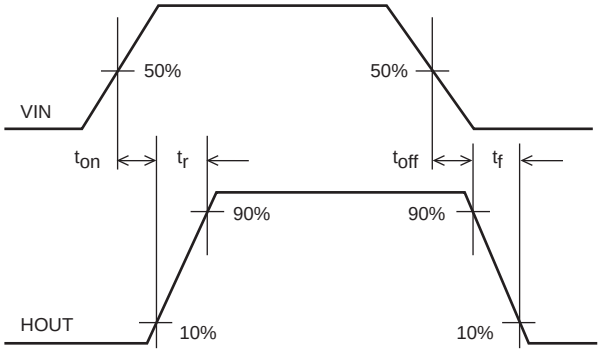
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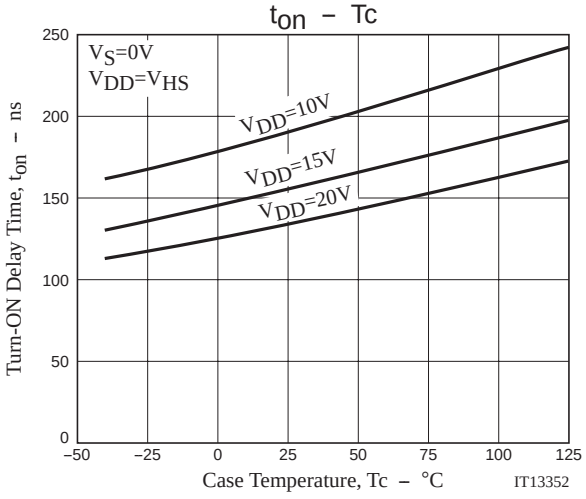


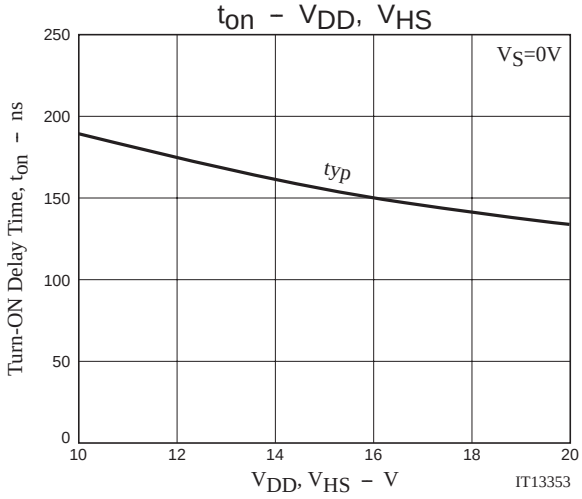
Block Diagram



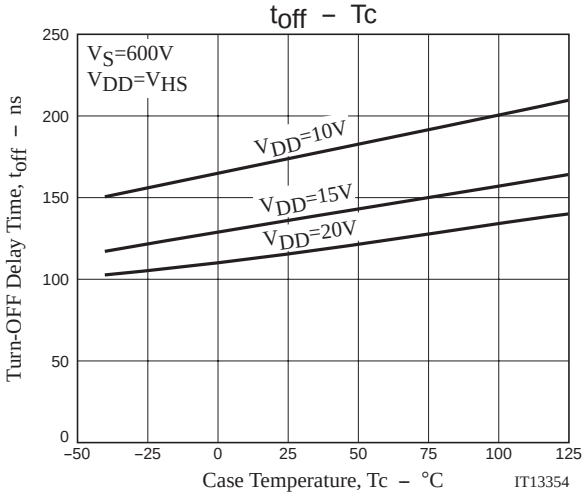
Switching Time Waveform Definition



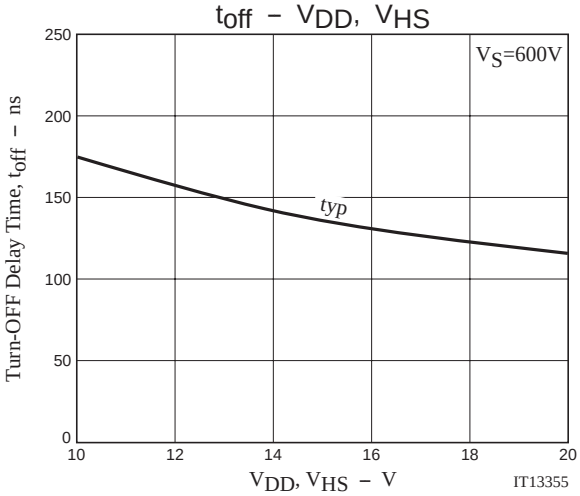




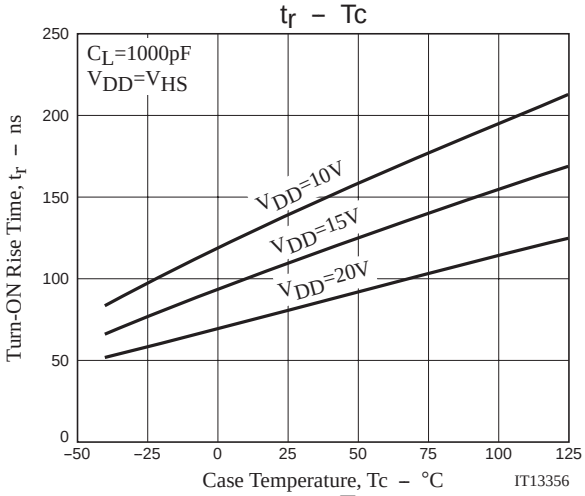
t_{off} – Tc



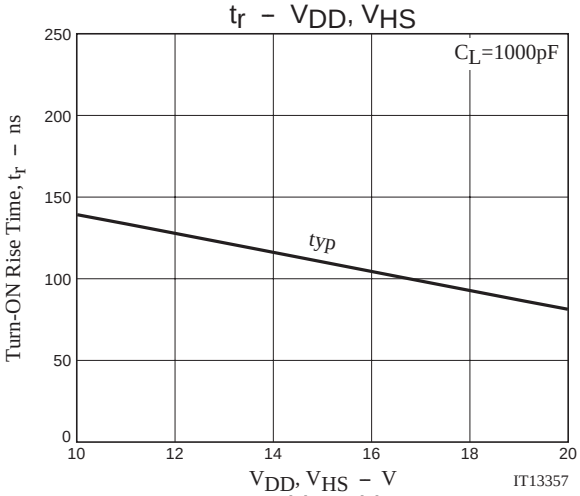
t_{off} – V_{DD}, V_{HS}



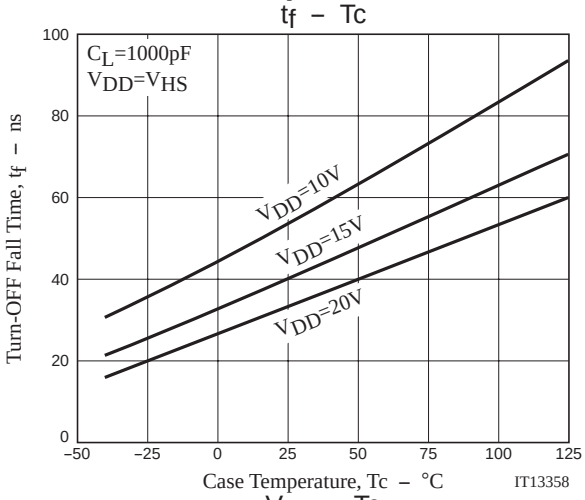
t_r – Tc



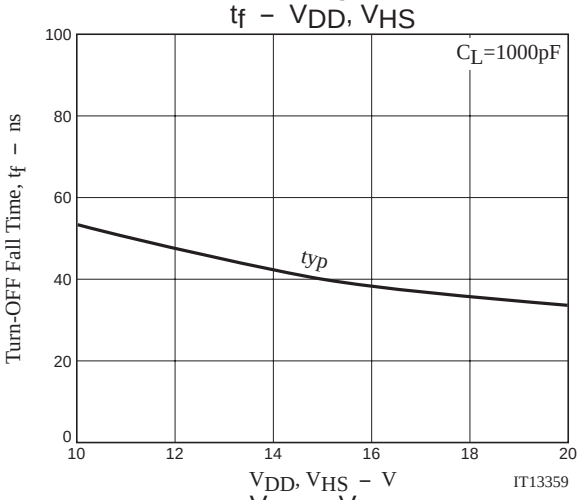
t_r – V_{DD}, V_{HS}



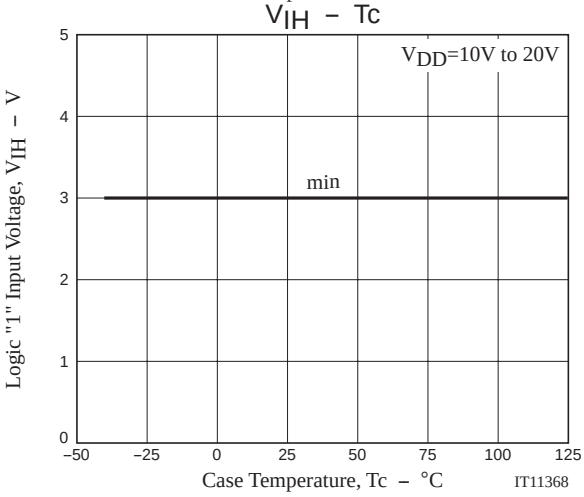
t_f – Tc



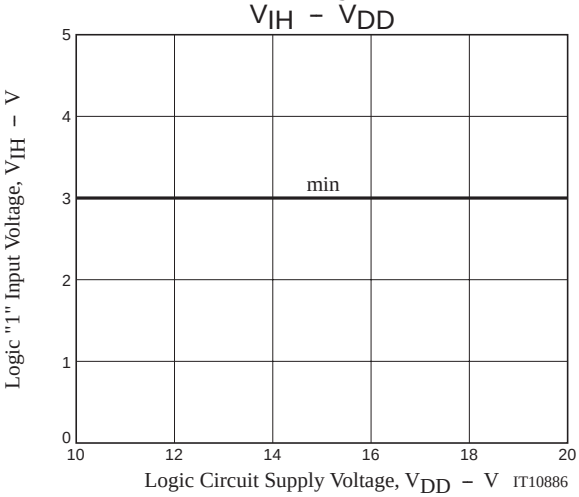
t_f – V_{DD}, V_{HS}



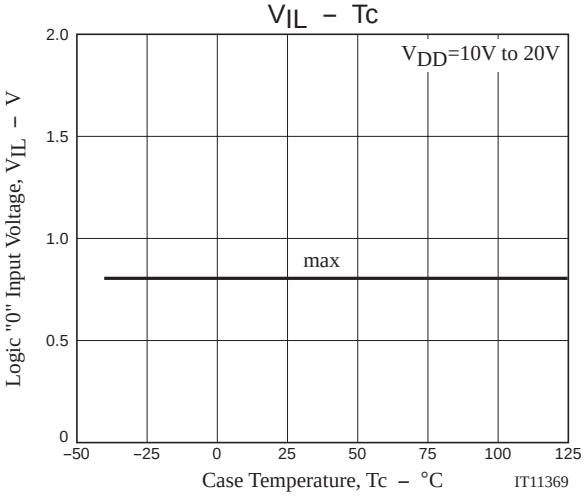
V_{IH} – Tc



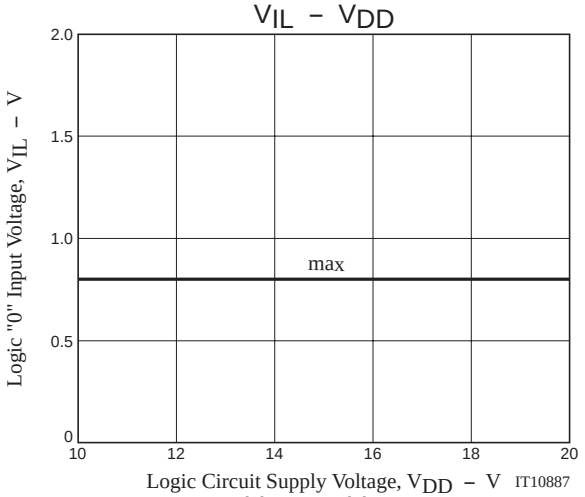
V_{IH} – V_{DD}



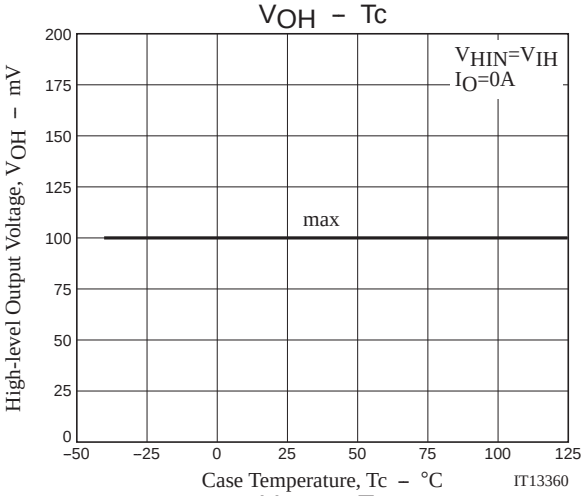
V_{IL} – Tc



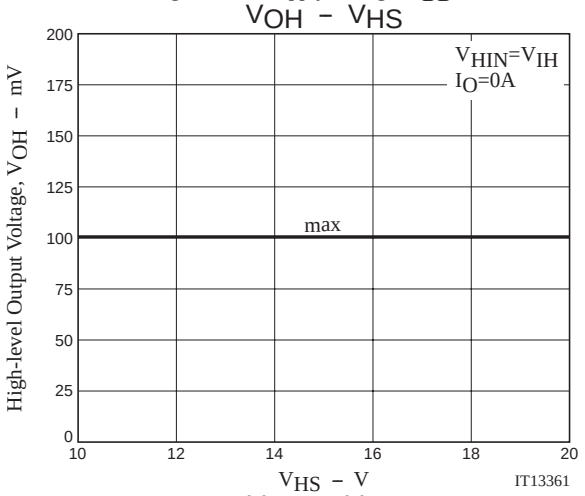
V_{IL} – V_{DD}



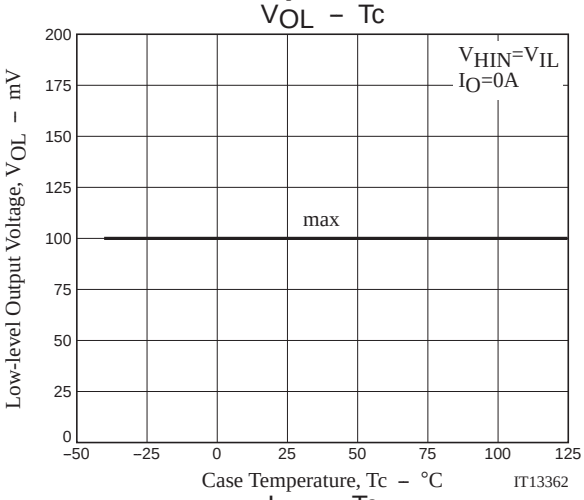
V_{OH} – Tc



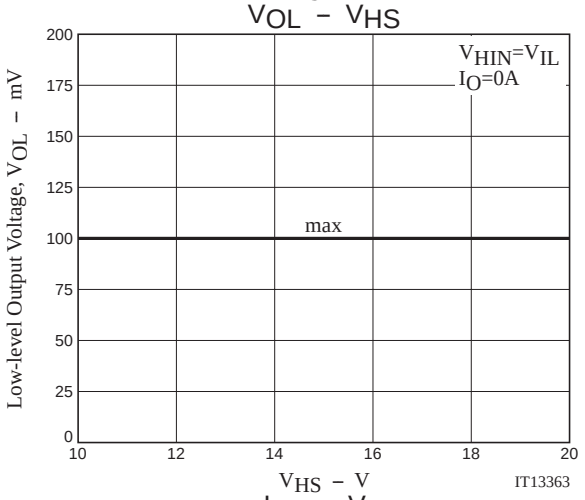
V_{OH} – V_{HS}



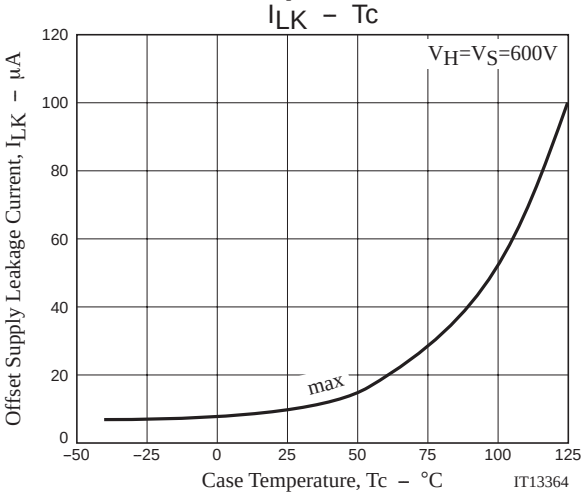
V_{OL} – Tc



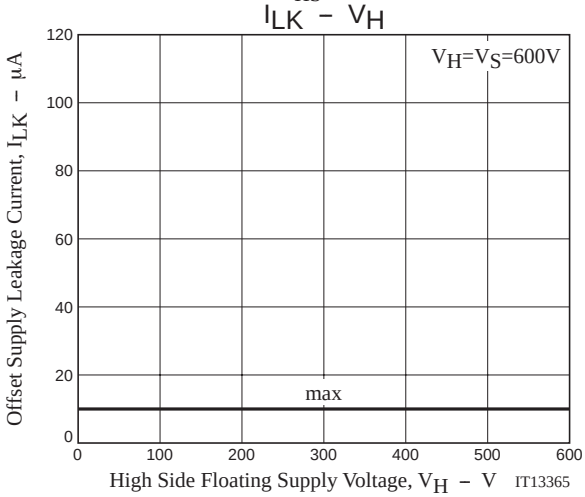
V_{OL} – V_{HS}

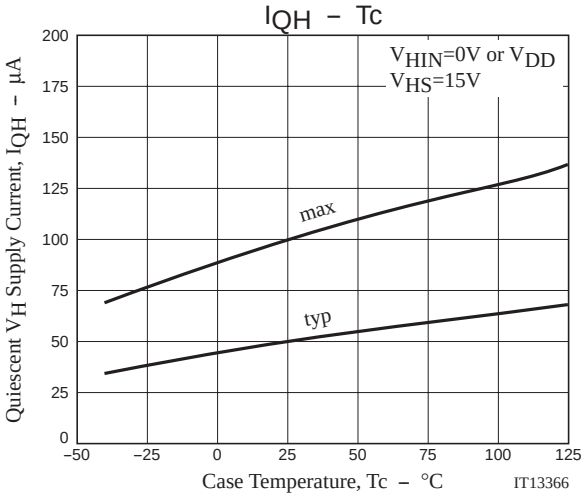


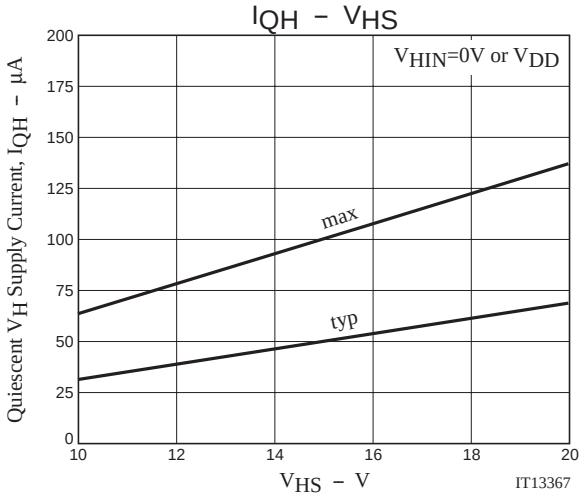
I_{LK} – Tc

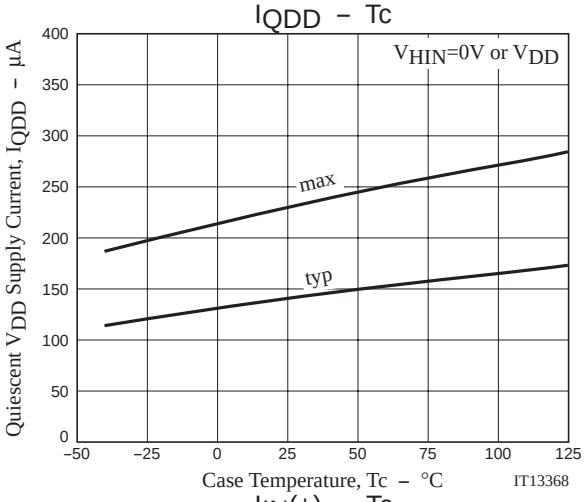


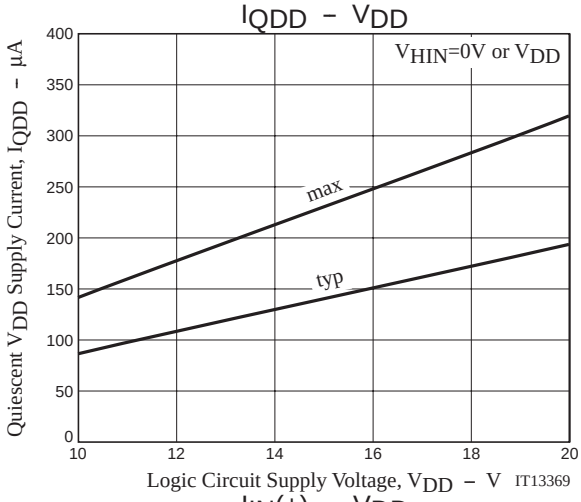
I_{LK} – V_H

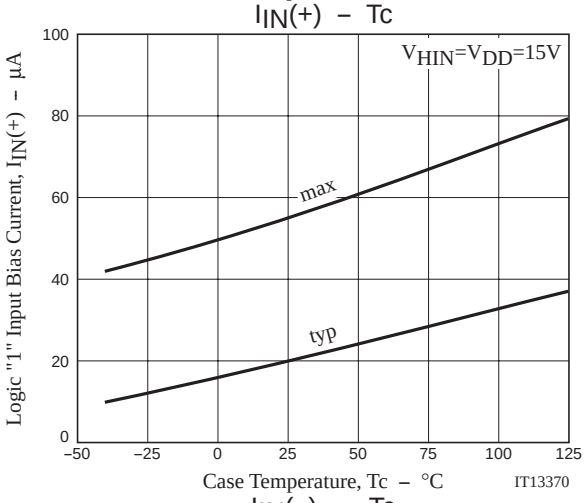


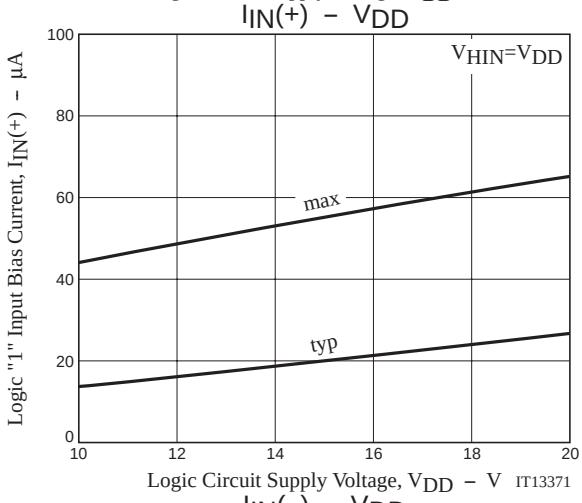

I_{QH} – Tc
V_{HIN}=0V or V_{DD}
V_{HS}=15V
max
typ
Quiescent V_H Supply Current, I_{QH} – µA
Case Temperature, Tc – °C
IT13366

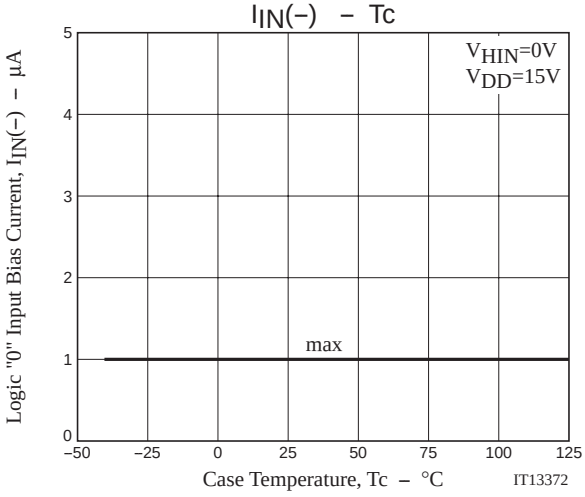

I_{QH} – V_{HS}
V_{HIN}=0V or V_{DD}
max
typ
Quiescent V_H Supply Current, I_{QH} – µA
V_{HS} – V
IT13367

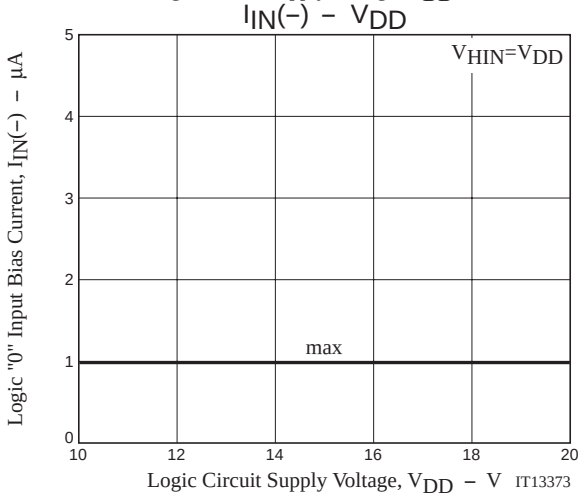

I_{QDD} – Tc
V_{HIN}=0V or V_{DD}
max
typ
Quiescent V_{DD} Supply Current, I_{QDD} – µA
Case Temperature, Tc – °C
IT13368


I_{QDD} – V_{DD}
V_{HIN}=0V or V_{DD}
max
typ
Quiescent V_{DD} Supply Current, I_{QDD} – µA
Logic Circuit Supply Voltage, V_{DD} – V
IT13369

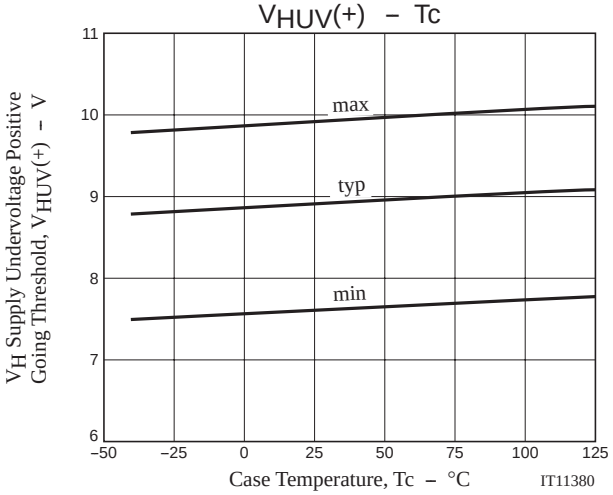

$I_{IN(+)}$ – Tc
V_{HIN}=V_{DD}=15V
max
typ
Logic "1" Input Bias Current, $I_{IN(+)}$ – µA
Case Temperature, Tc – °C
IT13370


$I_{IN(+)}$ – V_{DD}
V_{HIN}=V_{DD}
max
typ
Logic "1" Input Bias Current, $I_{IN(+)}$ – µA
Logic Circuit Supply Voltage, V_{DD} – V
IT13371

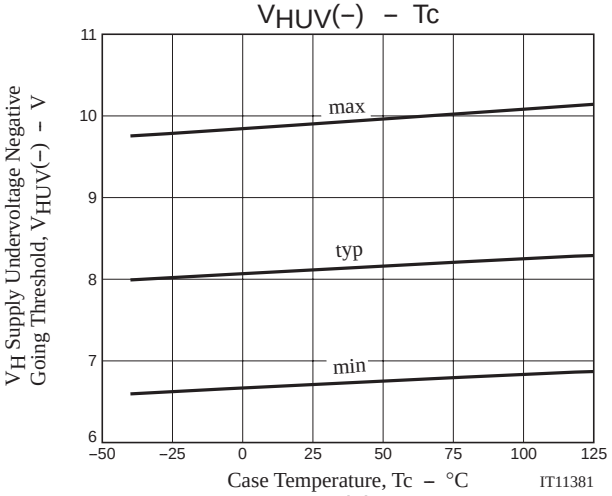

$I_{IN(-)}$ – Tc
V_{HIN}=0V
V_{DD}=15V
max
Logic "0" Input Bias Current, $I_{IN(-)}$ – µA
Case Temperature, Tc – °C
IT13372


$I_{IN(-)}$ – V_{DD}
V_{HIN}=V_{DD}
max
Logic "0" Input Bias Current, $I_{IN(-)}$ – µA
Logic Circuit Supply Voltage, V_{DD} – V
IT13373

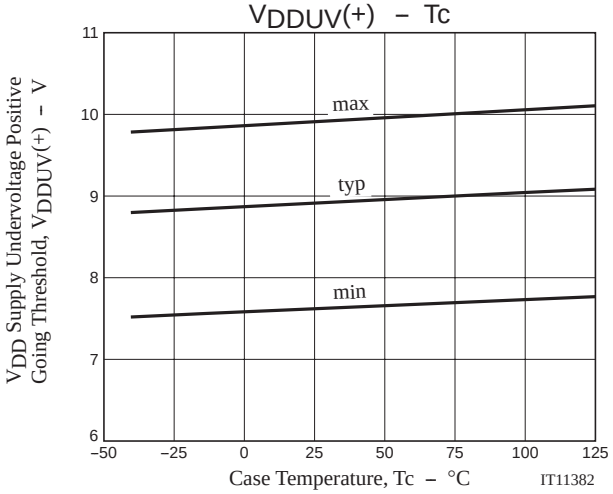
$V_{HUV(+)}$ – Tc



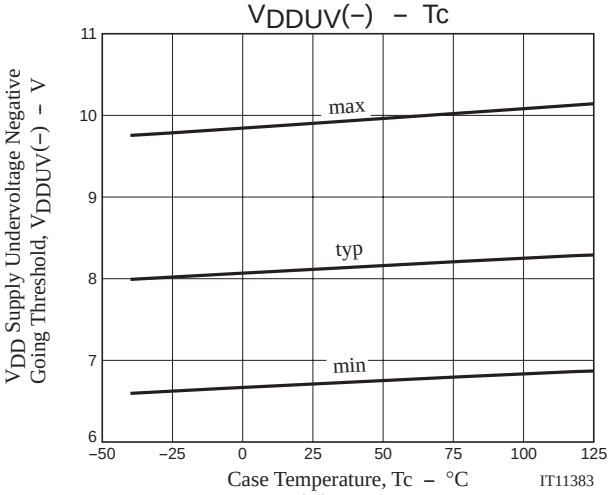
$V_{HUV(-)}$ – Tc



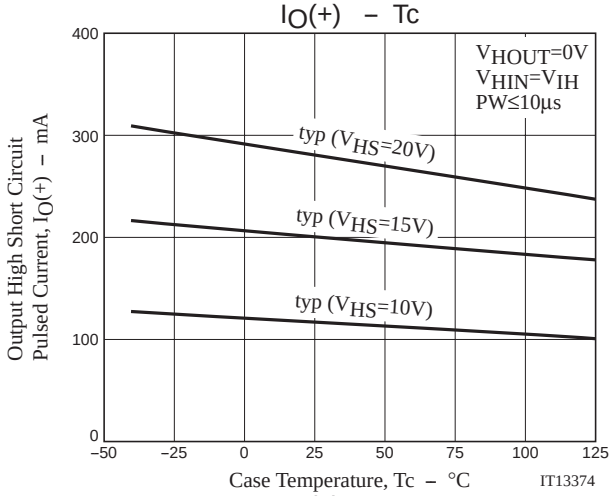
$V_{DDUV(+)}$ – Tc



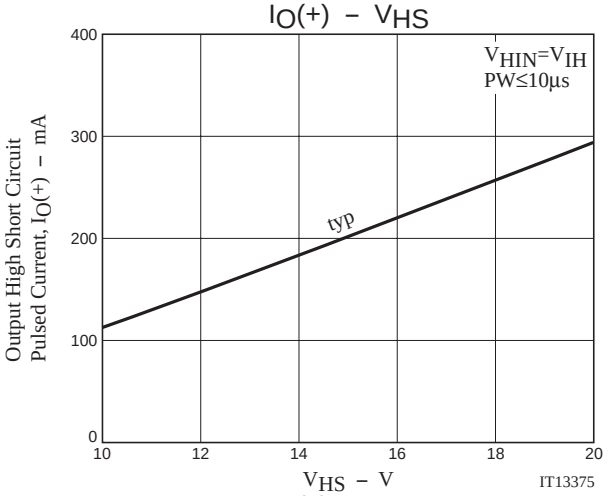
$V_{DDUV(-)}$ – Tc



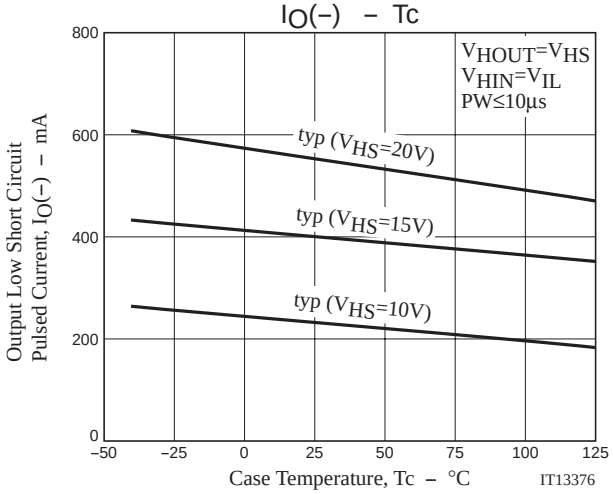
$I_{O(+)}$ – Tc



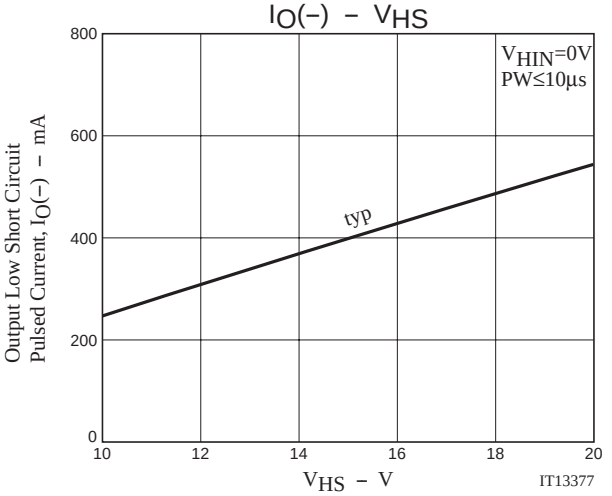
$I_{O(+)}$ – V_{HS}

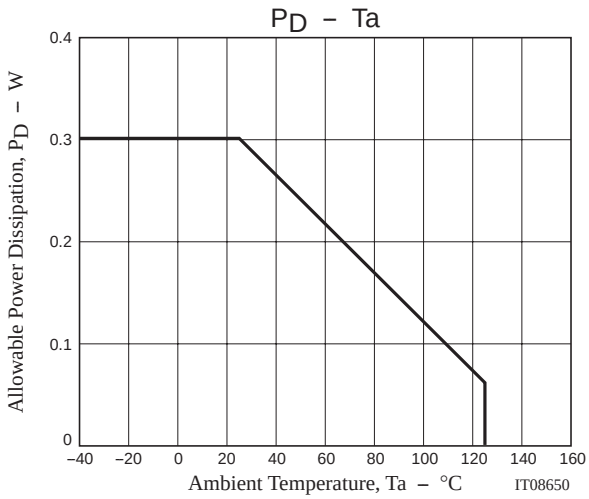


$I_{O(-)}$ – Tc



$I_{O(-)}$ – V_{HS}





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