Ordering number : EN9005A

TND523SS

Excellent Power Device
Single-phase High Side Drive, Single SOIC8

ON Semiconductor®
http://onsemi.com

Features

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

Specifications

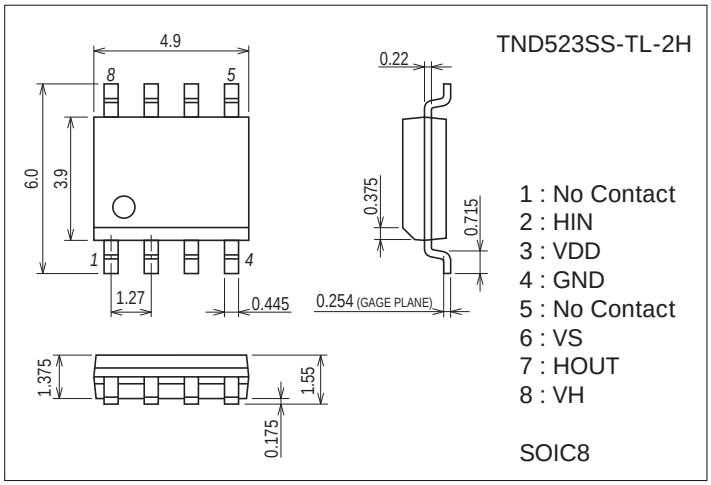
Absolute Maximum Ratings at Ta=25°C (All voltage parameters are absolute voltage feferenced to GND)

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
The Maximum Allowable Offset Voltage Supply	dV_S/dt		50	V/ns
Allowable Power Dissipation	P_D		0.3	W
		When mounted on ceramic substrate (1200mm²×0.8mm)	1.1	W
Junction Temperature	Tj		−55 to +150	°C
Storage Temperature	Tstg		−55 to +150	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

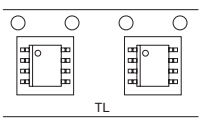
unit : mm (typ)
7072-004



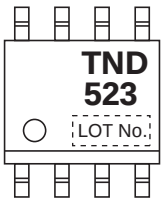
Product & Package Information

- Package : SOIC8
- JEITA, JEDEC : SC-87, SOT-96
- Minimum Packing Quantity : 2,500 pcs./reel

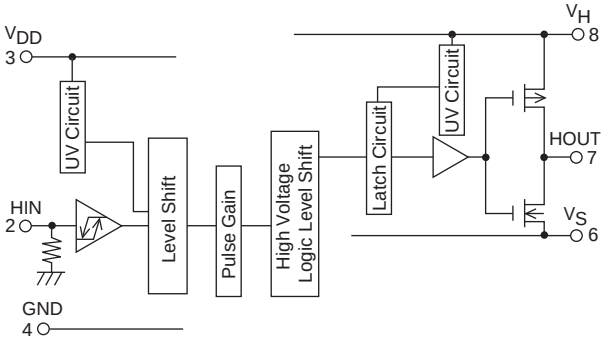
Packing Type: TL



Marking



Block Diagram



Recommend 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

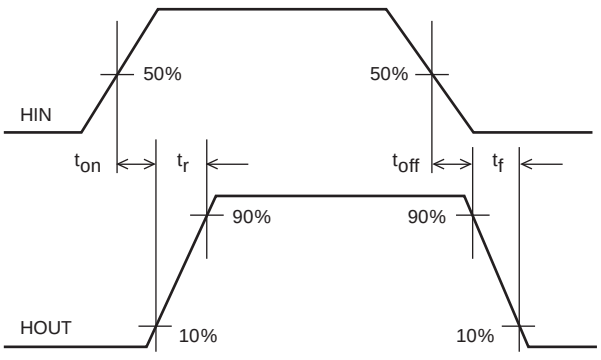
AC Characteristics at Ta=25°C (V_{DD}=V_{HS}=15V, C_L=1000pF)

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	t_{on}	V_S=0V	60	90	120	ns
Turn-OFF Delay Time	t_{off}	V_S=0V	55	85	115	ns
Turn-ON Rise Time	t_r		50	80	110	ns
Turn-OFF Fall Time	t_f		20	35	55	ns

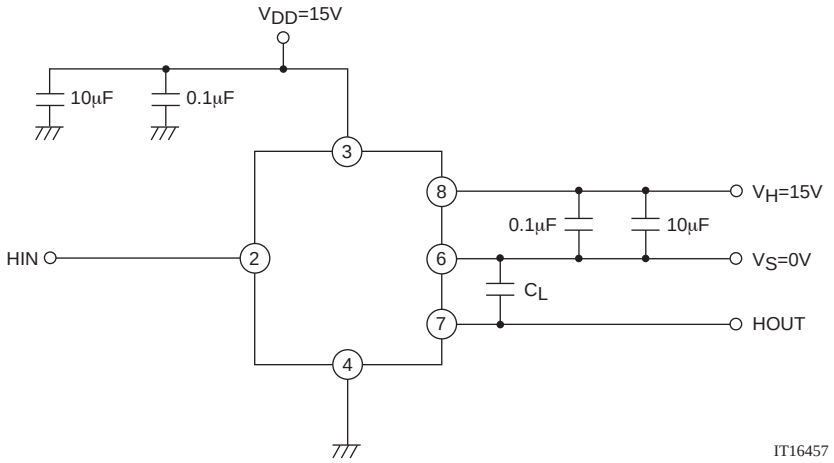
DC Characteristics at Ta=25°C (V_{DD}=V_{HS}=15V)

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 VH Supply Current	I_{QH}	V_{HIN}=0V or V_{DD}		70	120	μA
Quiescent VDD 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

Switching Time Waveform Definition

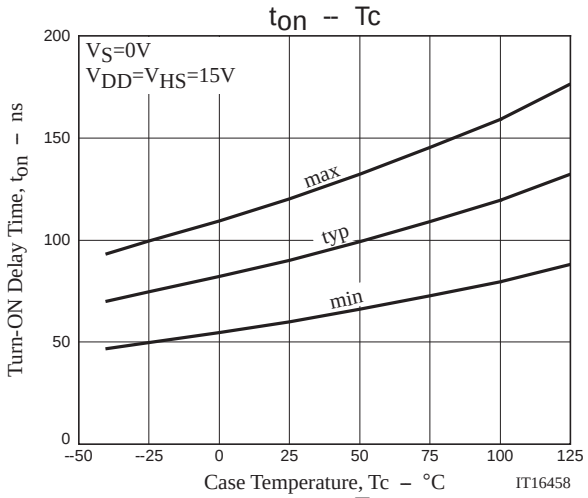


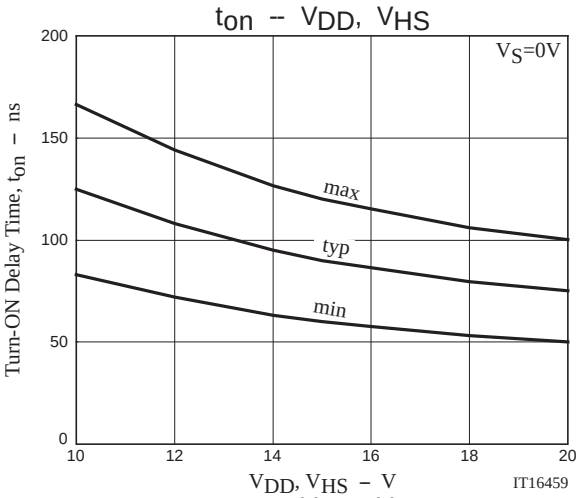
Switching Time Test Circuit

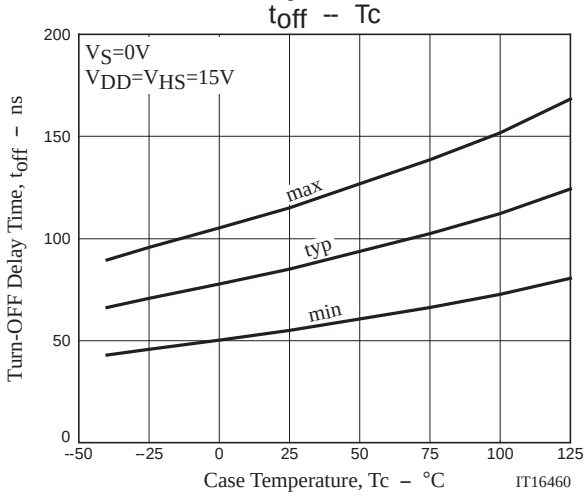


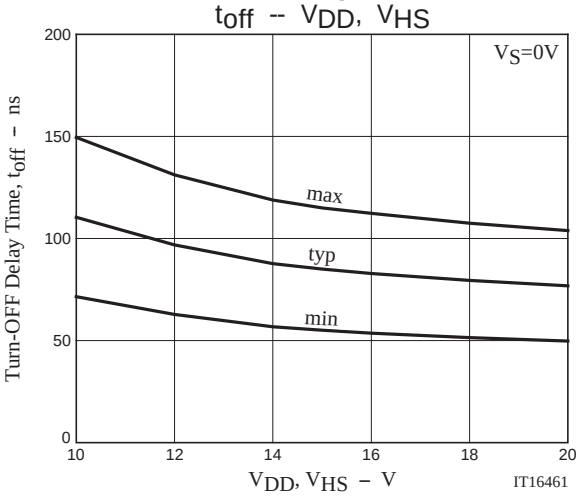
Ordering Information

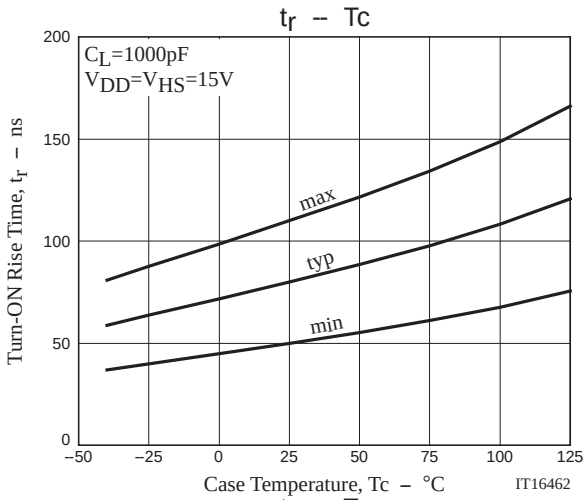
Devices	Package	Shipping	memo
TND523SS-TL-2H	SOIC8	2,500pcs./reel	Pb Free and Halogen Free

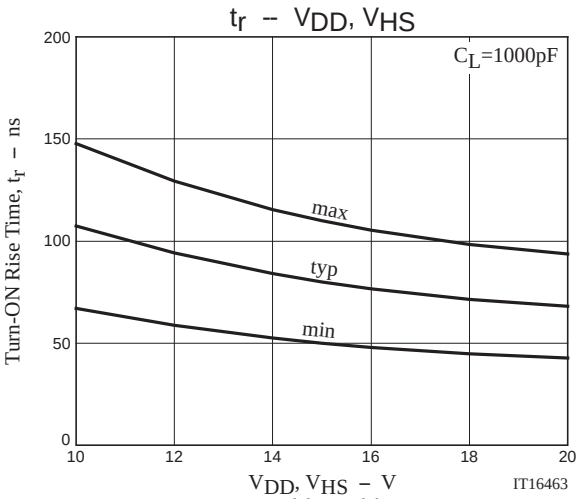


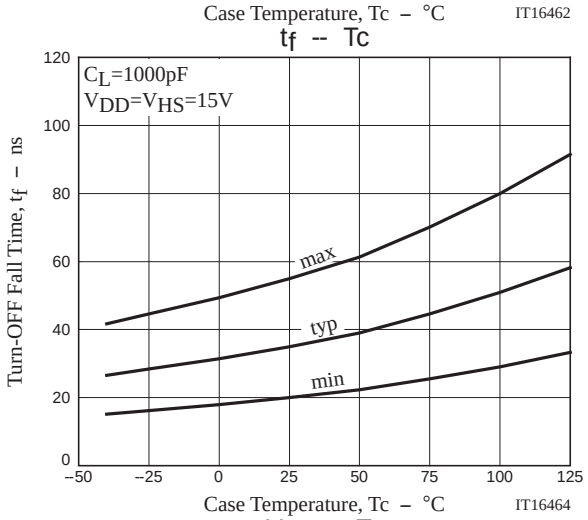


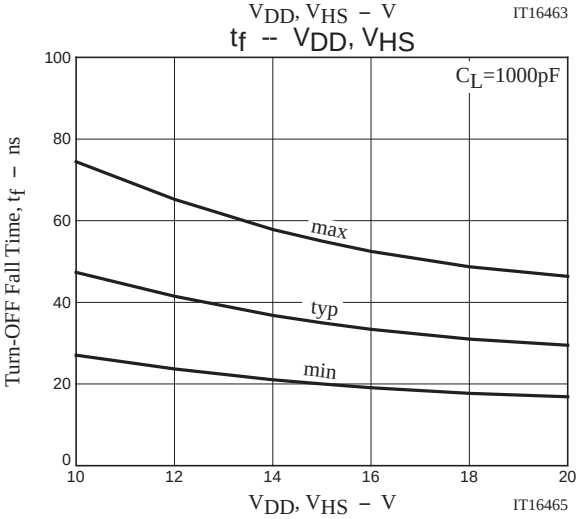


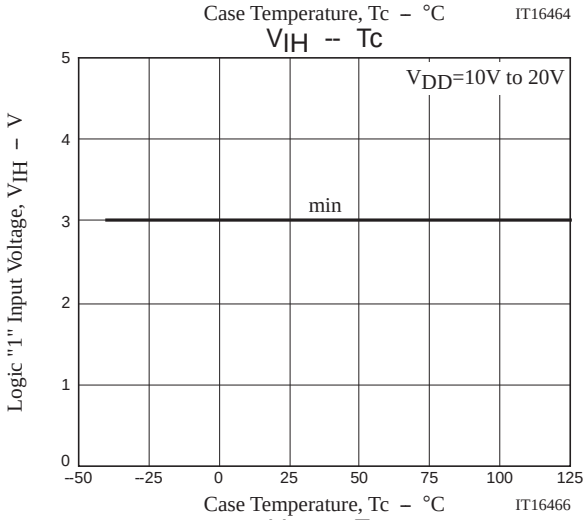


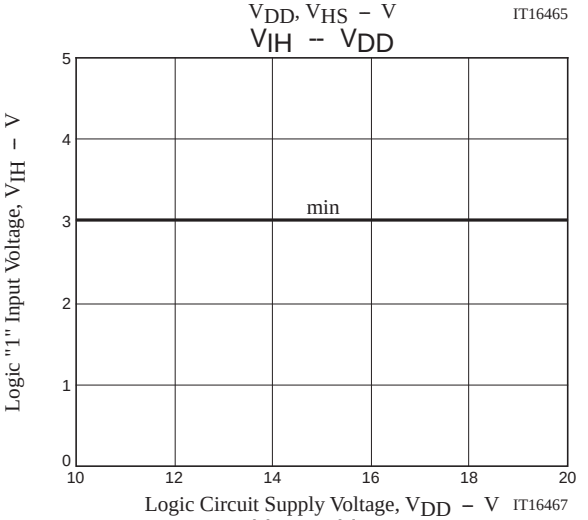

tr -- Tc
CL=1000pF
VDD=VHS=15V
max
typ
min
Turn-ON Rise Time, tr – ns
Case Temperature, Tc – °C
IT16462

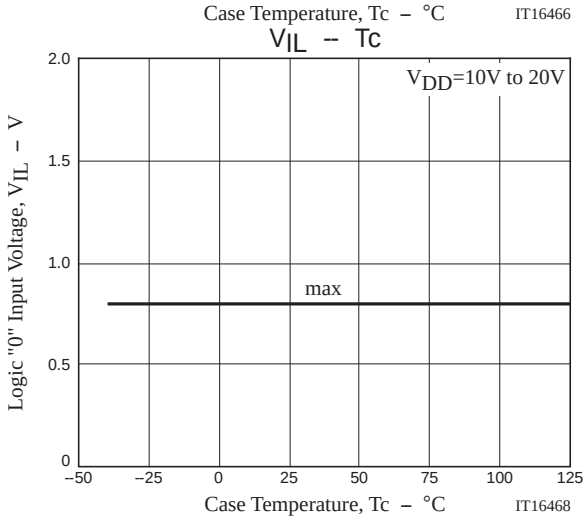

tr -- VDD, VHS
CL=1000pF
max
typ
min
Turn-ON Rise Time, tr – ns
VDD, VHS – V
IT16463

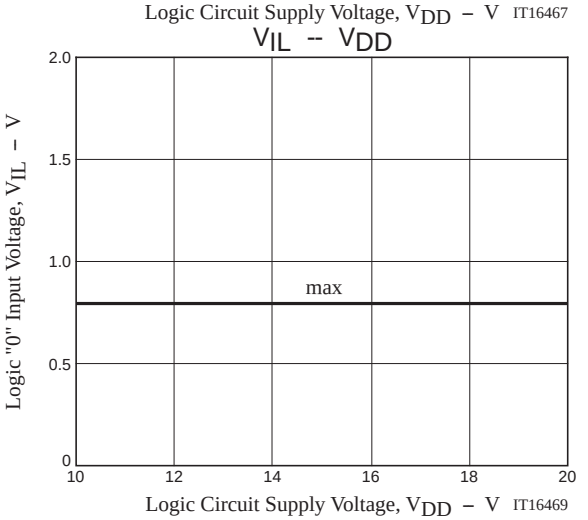

tf -- Tc
CL=1000pF
VDD=VHS=15V
max
typ
min
Turn-OFF Fall Time, tf – ns
Case Temperature, Tc – °C
IT16464

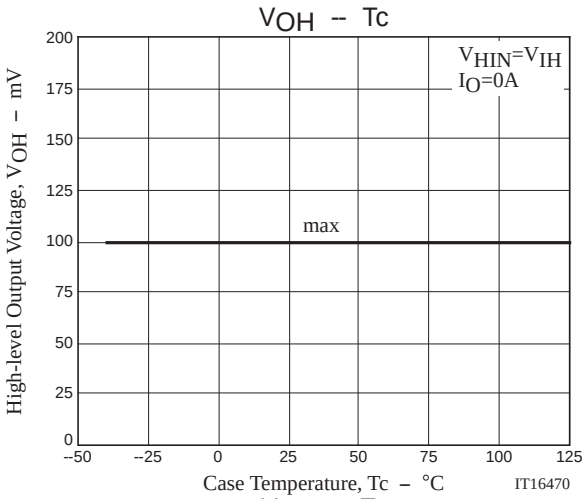

tf -- VDD, VHS
CL=1000pF
max
typ
min
Turn-OFF Fall Time, tf – ns
VDD, VHS – V
IT16465

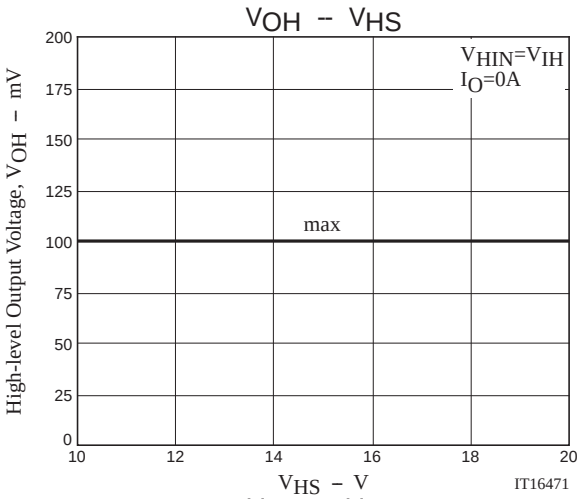

VIH -- Tc
VDD=10V to 20V
min
Logic "1" Input Voltage, VIH – V
Case Temperature, Tc – °C
IT16466

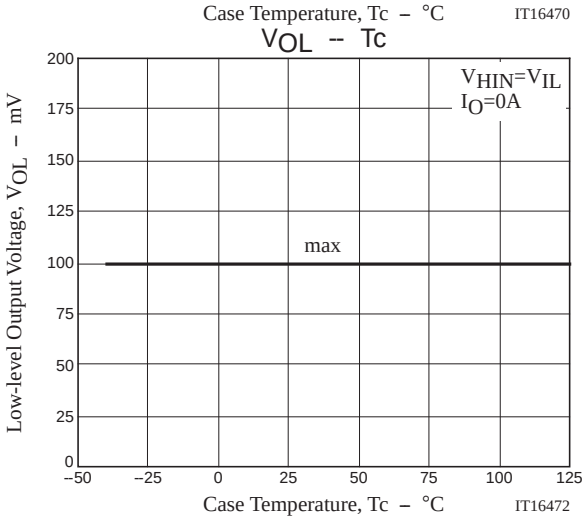

VIH -- VDD
min
Logic "1" Input Voltage, VIH – V
Logic Circuit Supply Voltage, VDD – V
IT16467

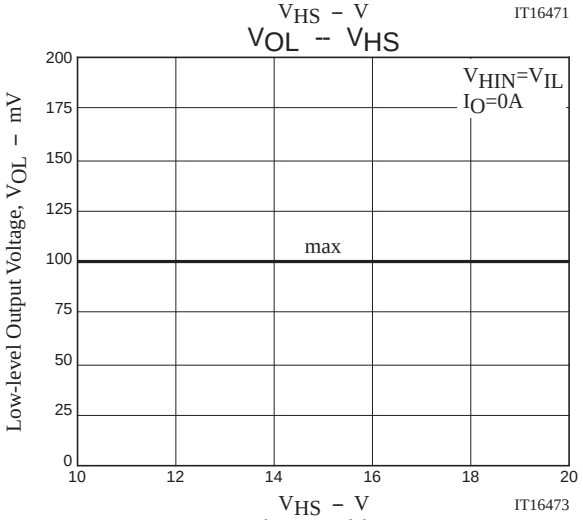

VIL -- Tc
VDD=10V to 20V
max
Logic "0" Input Voltage, VIL – V
Case Temperature, Tc – °C
IT16468

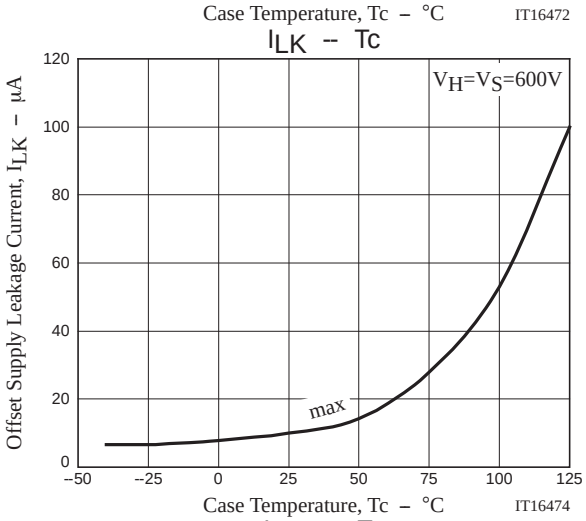

VIL -- VDD
max
Logic "0" Input Voltage, VIL – V
Logic Circuit Supply Voltage, VDD – V
IT16469

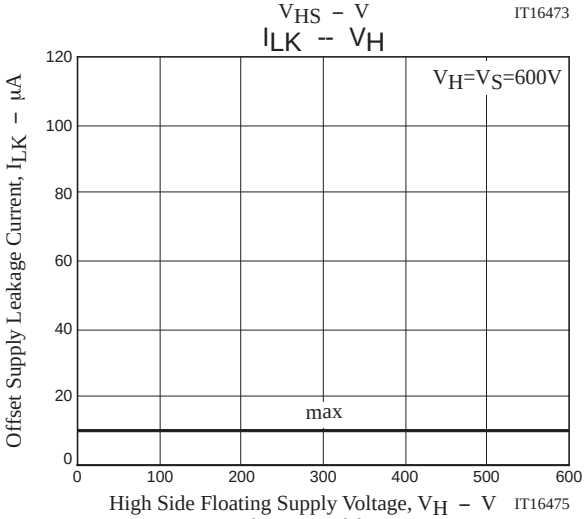

VOH -- Tc
VHIN=VIH
IO=0A
max
High-level Output Voltage, VOH – mV
Case Temperature, Tc – °C
IT16470

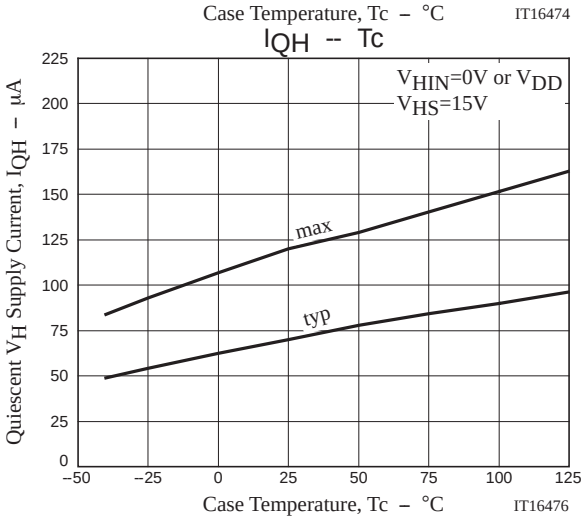

VOH -- VHS
VHIN=VIH
IO=0A
max
High-level Output Voltage, VOH – mV
VHS – V
IT16471

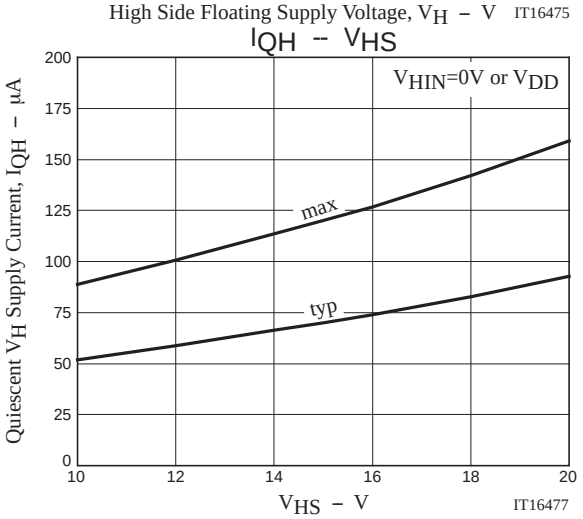

VOL -- Tc
VHIN=VIL
IO=0A
max
Low-level Output Voltage, VOL – mV
Case Temperature, Tc – °C
IT16472

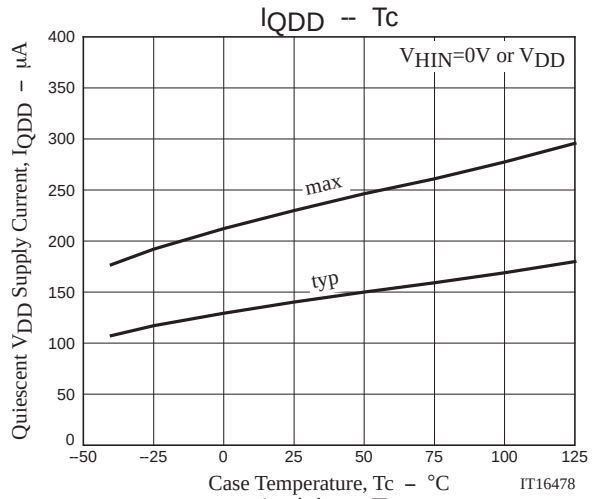

VOL -- VHS
VHIN=VIL
IO=0A
max
Low-level Output Voltage, VOL – mV
VHS – V
IT16473

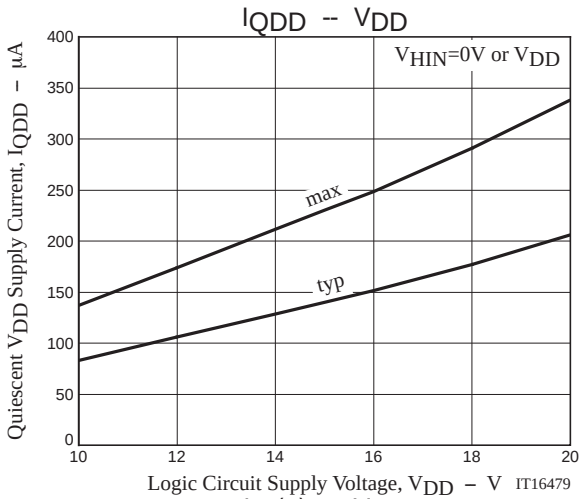

ILK -- Tc
VH=VS=600V
max
Offset Supply Leakage Current, ILK – µA
Case Temperature, Tc – °C
IT16474

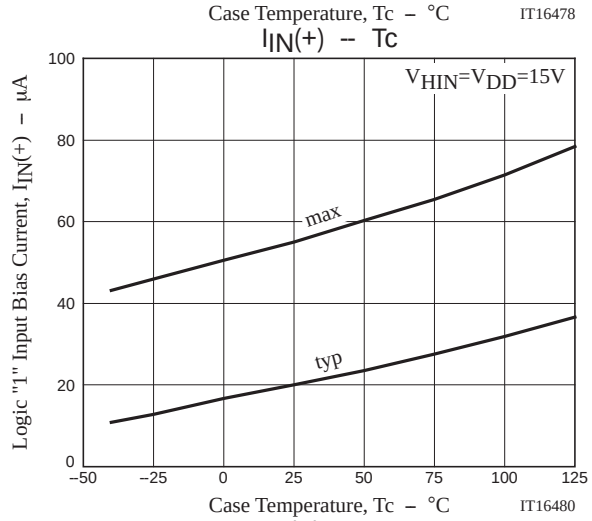

ILK -- VH
VH=VS=600V
max
Offset Supply Leakage Current, ILK – µA
High Side Floating Supply Voltage, VH – V
IT16475

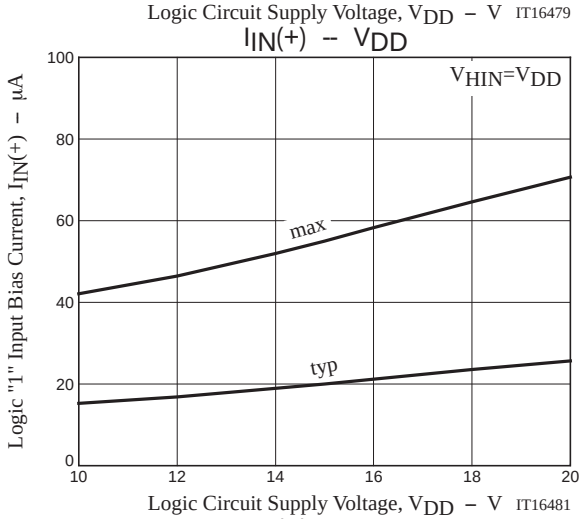

IQH -- Tc
VHIN=0V or VDD
VHS=15V
max
typ
Quiescent VH Supply Current, IQH – µA
Case Temperature, Tc – °C
IT16476

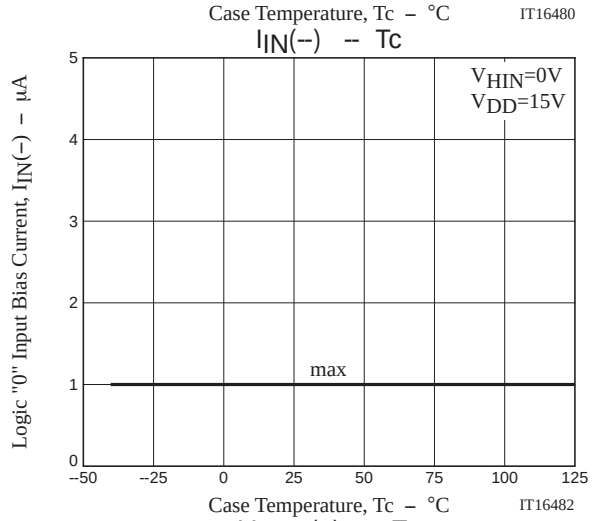

IQH -- VHS
VHIN=0V or VDD
max
typ
Quiescent VH Supply Current, IQH – µA
VHS – V
IT16477

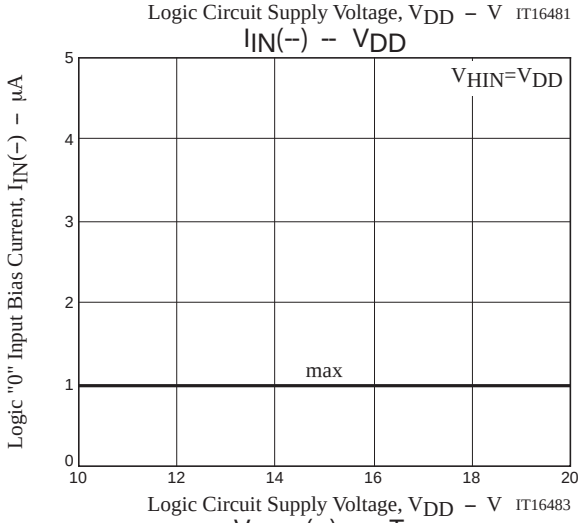

IQDD -- Tc
VHIN=0V or VDD
max
typ
Quiescent VDD Supply Current, IQDD – µA
Case Temperature, Tc – °C
IT16478

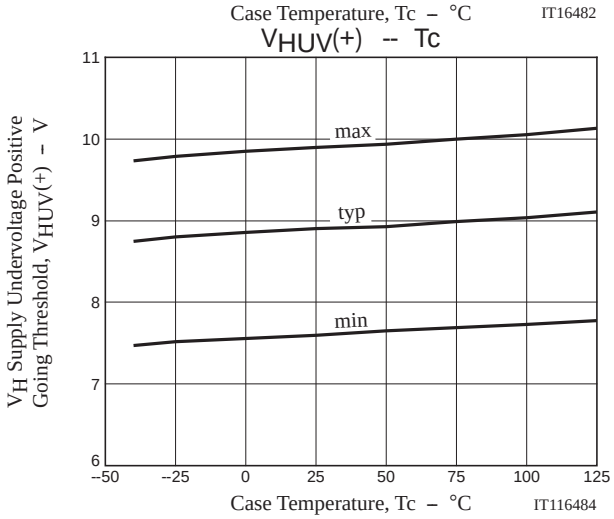

IQDD -- VDD
VHIN=0V or VDD
max
typ
Quiescent VDD Supply Current, IQDD – µA
Logic Circuit Supply Voltage, VDD – V
IT16479

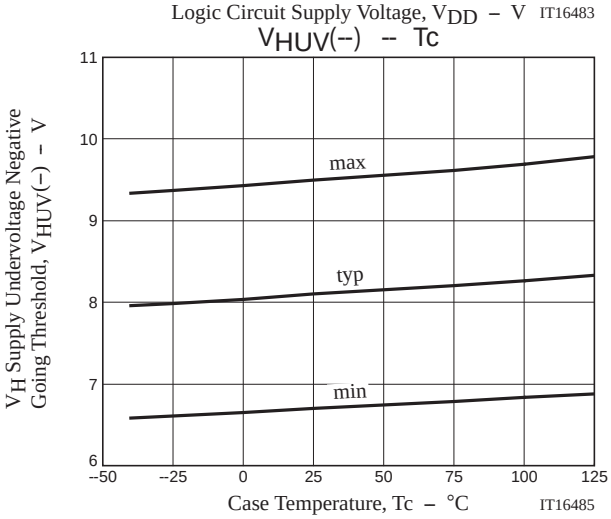

IIN(+) -- Tc
VHIN=VDD=15V
max
typ
Logic "1" Input Bias Current, IIN(+) – µA
Case Temperature, Tc – °C
IT16480


IIN(+) -- VDD
VHIN=VDD
max
typ
Logic "1" Input Bias Current, IIN(+) – µA
Logic Circuit Supply Voltage, VDD – V
IT16481

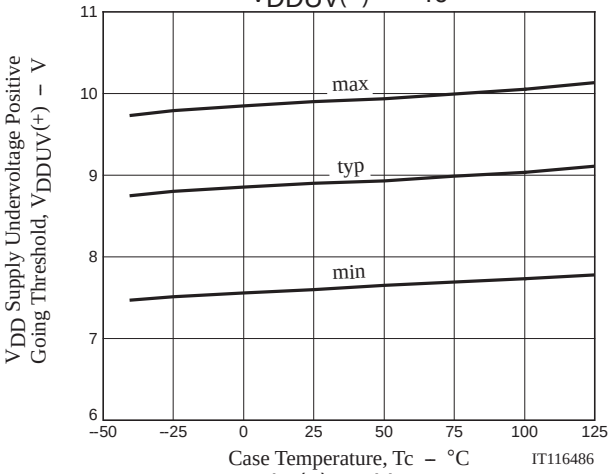

IIN(--) -- Tc
VHIN=0V
VDD=15V
max
Logic "0" Input Bias Current, IIN(–) – µA
Case Temperature, Tc – °C
IT16482


IIN(--) -- VDD
VHIN=VDD
max
Logic "0" Input Bias Current, IIN(–) – µA
Logic Circuit Supply Voltage, VDD – V
IT16483

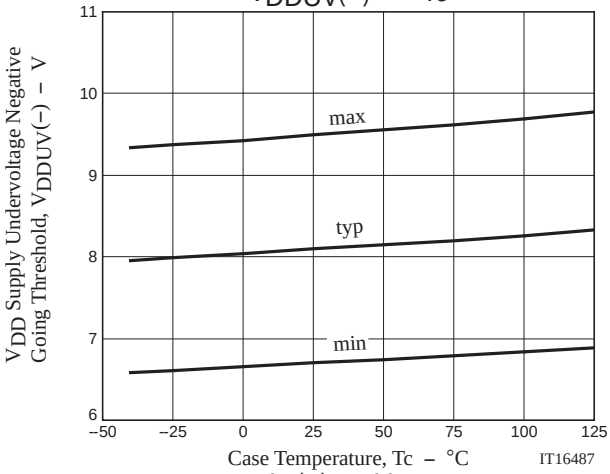

VHUV(+) -- Tc
max
typ
min
VH Supply Undervoltage Positive Going Threshold, VHUV(+) – V
Case Temperature, Tc – °C
IT116484


VHUV(--) -- Tc
max
typ
min
VH Supply Undervoltage Negative Going Threshold, VHUV(–) – V
Case Temperature, Tc – °C
IT16485

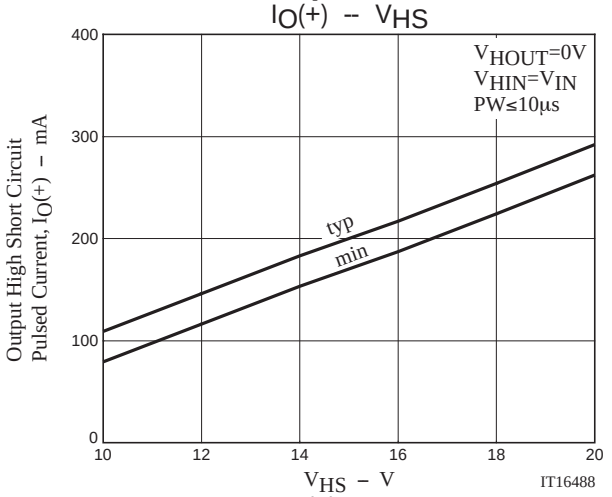
$V_{DDUV(+)}$ -- Tc



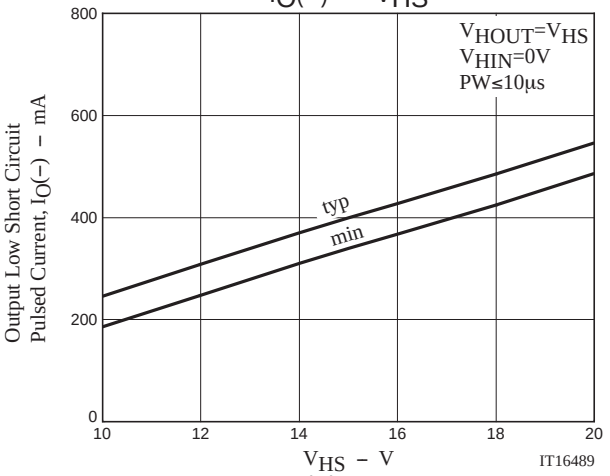
$V_{DDUV(-)}$ -- Tc



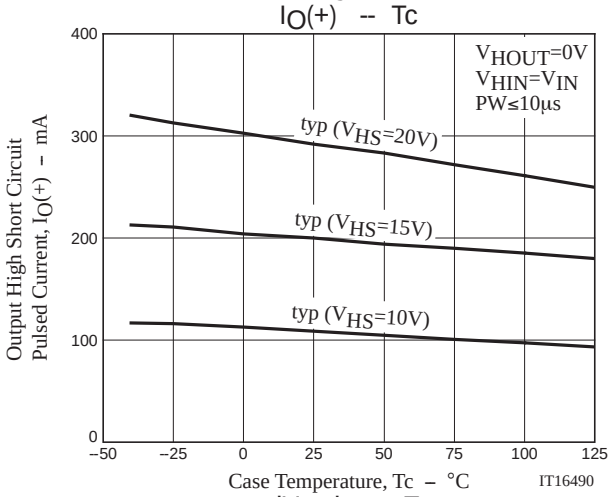
$I_{O(+)}$ -- V_{HS}



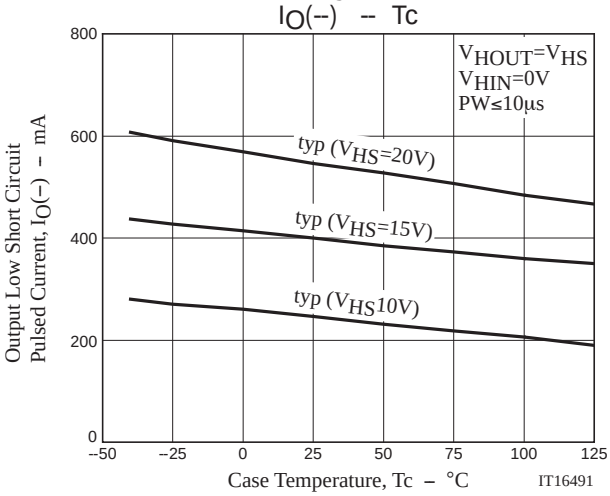
$I_{O(-)}$ -- V_{HS}



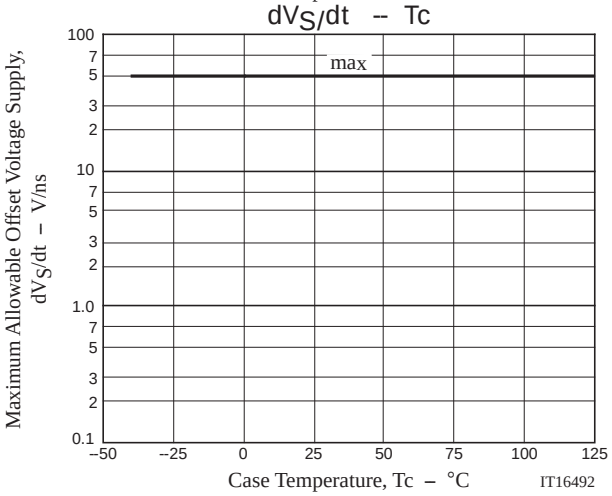
$I_{O(+)}$ -- Tc



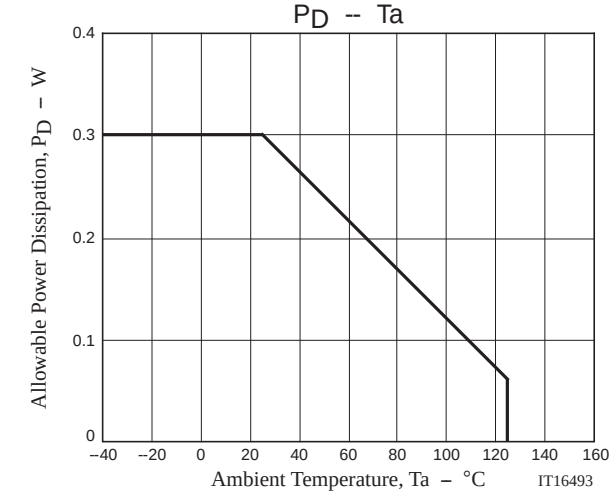
$I_{O(-)}$ -- Tc

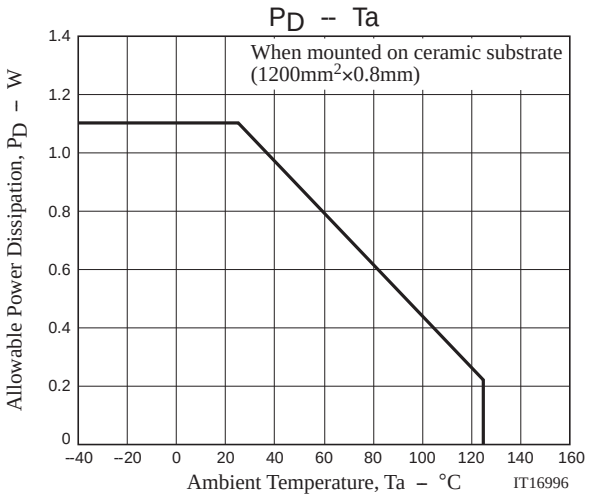


dV_S/dt -- Tc



P_D -- Ta




PD -- Ta
When mounted on ceramic substrate
(1200mm2×0.8mm)
Allowable Power Dissipation, PD – W
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0
–40
–20
0
20
40
60
80
100
120
140
160
Ambient Temperature, Ta – °C
IT16996

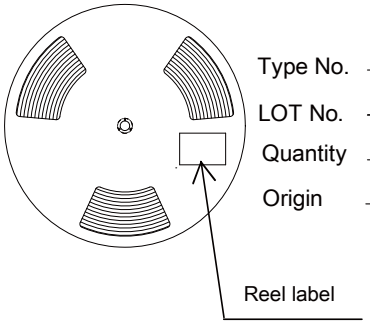
Taping Specification

TND523SS-TL-2H

1. Packing Format

Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX W206-112	Outer BOX W207-124
SOIC8	B202-101	2,500	12,500	25,000	5 reels contained Dimensions :mm(external) 340×95×340	2 inner boxes contained Dimensions :mm(external) 360×210×375

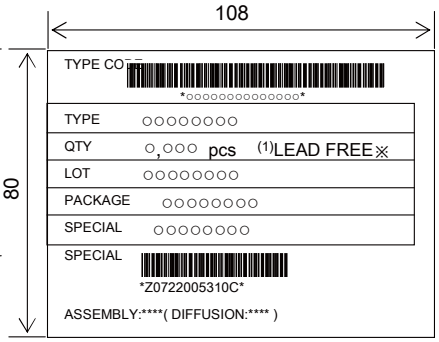
Packing method



Reel label,Inner box label
(unit: mm)

NOTE(1)
The LEAD FREE 4 description shows that it is complete lead free.

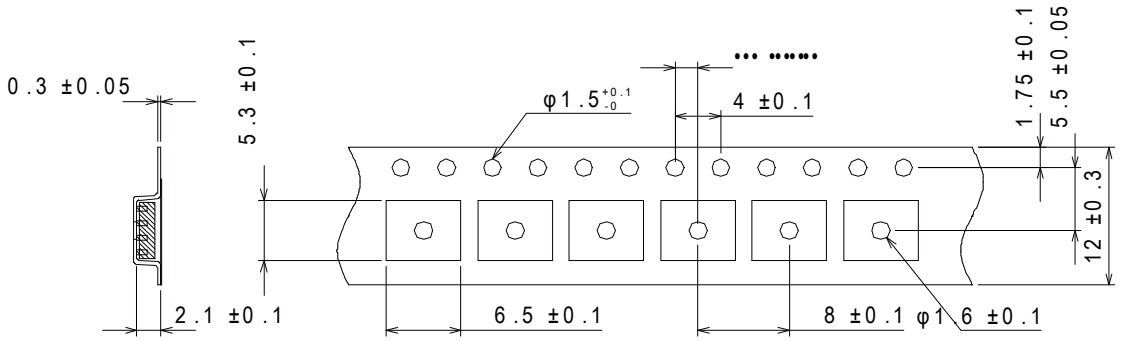
Outer box label
It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.



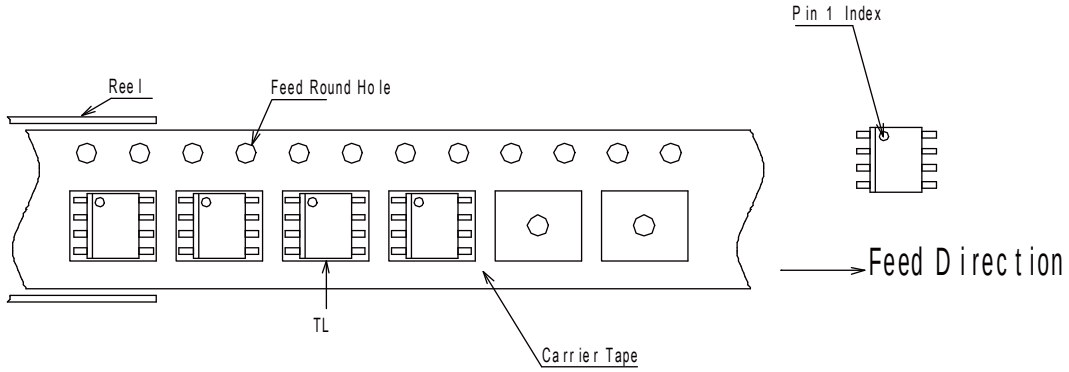
Label	JEITA Phase
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

2-1. Carrier tape size (unit: mm)

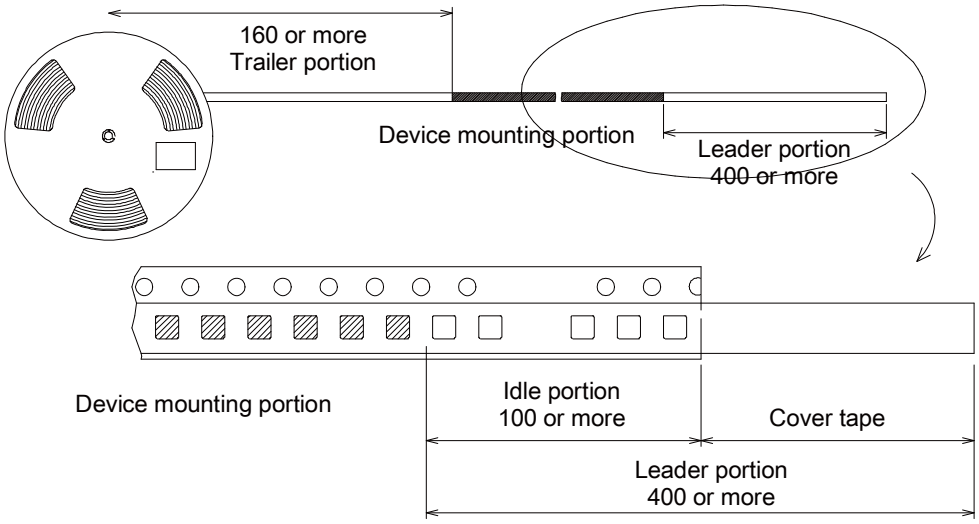


2-2. Device placement direction



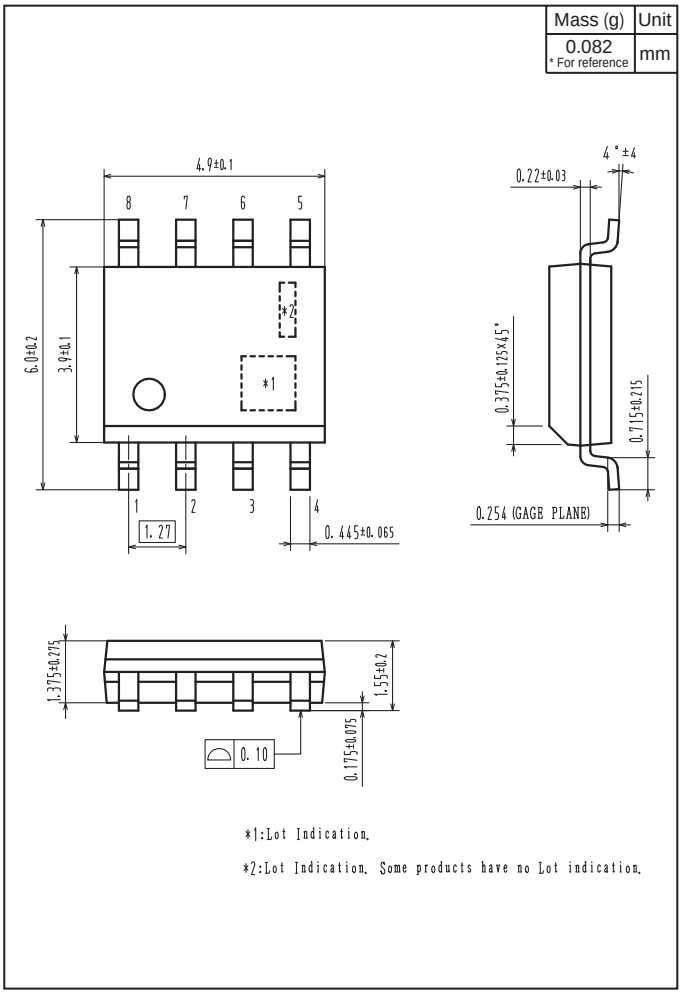
Packing type·····TL

2-3. Leader portion and trailer portion (unit: mm)

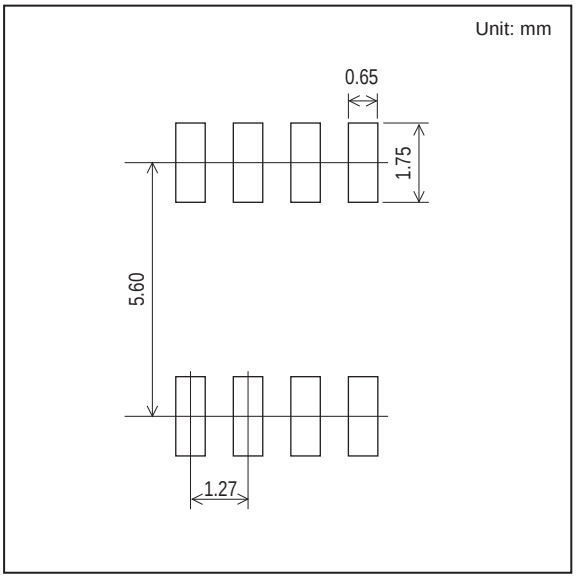


Outline Drawing

TND523SS-TL-2H



Land Pattern Example



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