



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## TND524VS — ExPD(Excellent Power Device) Single-phase High Side Drive Application

### 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

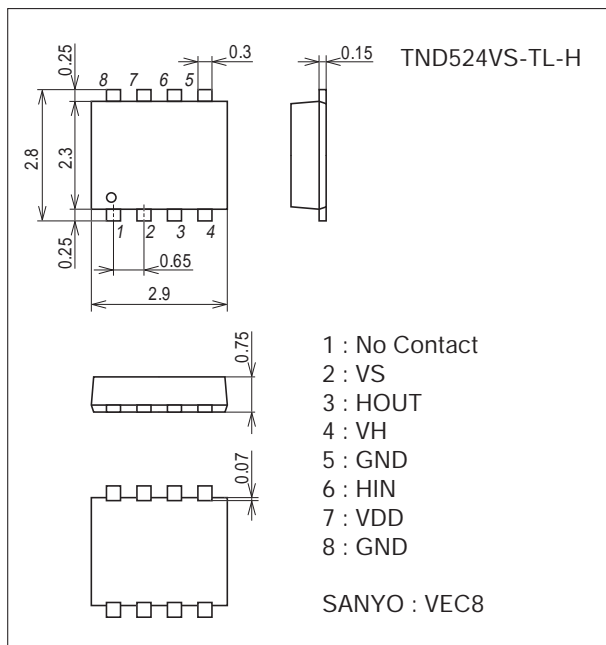
### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
High Side Floating Supply Voltage	V <sub>H</sub>		-0.3 to 625	V
High Side Floating Supply Offset Voltage	V <sub>S</sub>		V <sub>H</sub> -25 to V <sub>H</sub> +0.3	V
High Side Output Voltage	V <sub>HOUT</sub>		V <sub>S</sub> -0.3 to V <sub>H</sub> +0.3	V
Logic Supply Voltage	V <sub>DD</sub>		-0.3 to 25	V
Logic Input Voltage	V <sub>HIN</sub>		-0.3 to V <sub>DD</sub> +0.3	V
The Maximum Allowable Offset Voltage Supply	dV <sub>S</sub> /dt		50	V/ns
Allowable Power Dissipation	P <sub>D</sub>	When mounted on ceramic substrate (1000mm <sup>2</sup> ×0.8mm)	1.1	W
Junction Temperature	T <sub>j</sub>		-55 to +150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

### Package Dimensions

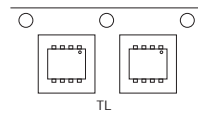
unit : mm (typ)  
7012-013



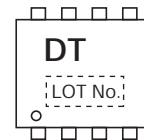
### Product & Package Information

- Package : VEC8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

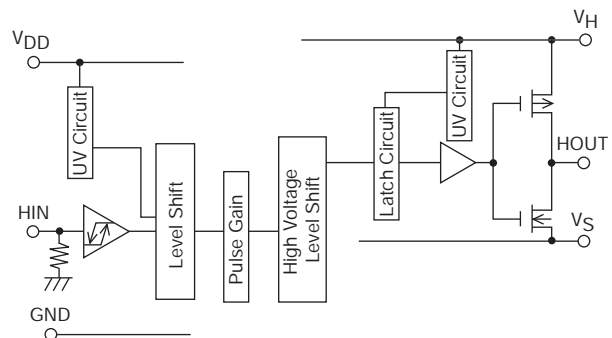
### Packing Type: TL



### Marking



### Block Diagram



# TND524VS

## Recommend Operating Conditions at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
High Side Floating Supply Voltage	V <sub>H</sub>		V <sub>S</sub> +10 to V <sub>S</sub> +20	V
High Side Floating Supply Offset Voltage	V <sub>S</sub>	V <sub>DD</sub> =V <sub>H</sub> S=15V	-5 to 600	V
High Side Output Voltage	V <sub>H</sub> OUT		V <sub>S</sub> to V <sub>H</sub>	V
Logic Supply Voltage	V <sub>DD</sub>		+10 to +20	V
Logic Input Voltage	V <sub>H</sub> IN		0 to V <sub>DD</sub>	V
Ambient Temperature	Topr		-40 to +125	°C

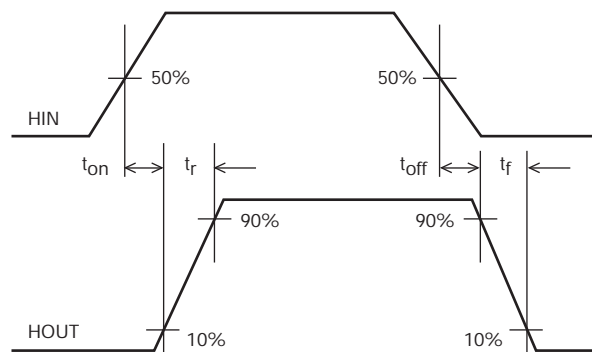
## AC Characteristics at Ta=25°C (V<sub>DD</sub>=V<sub>H</sub>S=15V, C<sub>L</sub>=1000pF)

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	t <sub>on</sub>	V <sub>S</sub> =0V	60	90	120	ns
Turn-OFF Delay Time	t <sub>off</sub>	V <sub>S</sub> =0V	55	85	115	ns
Turn-ON Rise Time	t <sub>r</sub>		50	80	110	ns
Turn-OFF Fall Time	t <sub>f</sub>		20	35	55	ns

## DC Characteristics at Ta=25°C (V<sub>DD</sub>=V<sub>H</sub>S=15V)

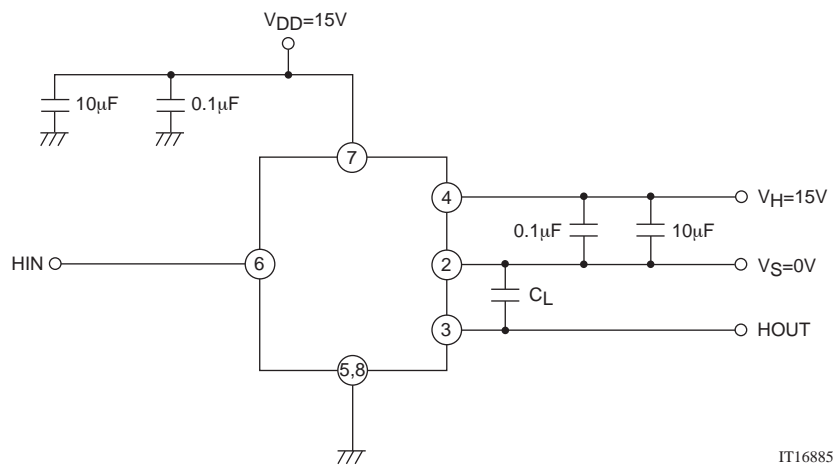
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Logic "1" Input Voltage	V <sub>IH</sub>	V <sub>DD</sub> =10 to 20V	3.0			V
Logic "0" Input Voltage	V <sub>IL</sub>	V <sub>DD</sub> =10 to 20V			0.8	V
High-level Output Voltage, V <sub>BIAS</sub> -V <sub>O</sub>	V <sub>OH</sub>	V <sub>H</sub> IN=V <sub>IH</sub> , I <sub>O</sub> =0A			0.1	V
Low-level Output Voltage, V <sub>O</sub>	V <sub>OL</sub>	V <sub>H</sub> IN=V <sub>IL</sub> , I <sub>O</sub> =0A			0.1	V
Offset Supply Leakage Current	I <sub>LK</sub>	V <sub>H</sub> =V <sub>S</sub> =600V			10	μA
Quiescent V <sub>H</sub> Supply Current	I <sub>QH</sub>	V <sub>H</sub> IN=0V or V <sub>DD</sub>		70	120	μA
Quiescent V <sub>DD</sub> Supply Current	I <sub>QDD</sub>	V <sub>H</sub> IN=0V or V <sub>DD</sub>		140	230	μA
Logic "1" Input Bias Current	I <sub>IN+</sub>	V <sub>H</sub> IN=V <sub>DD</sub>		20	55	μA
Logic "0" Input Bias Current	I <sub>IN-</sub>	V <sub>H</sub> IN=0V			1	μA
V <sub>H</sub> Supply Undervoltage Positive Going Threshold	V <sub>H</sub> UV+		7.6	8.9	9.9	V
V <sub>H</sub> Supply Undervoltage Negative Going Threshold	V <sub>H</sub> UV-		6.7	8.1	9.5	V
V <sub>DD</sub> Supply Undervoltage Positive Going Threshold	V <sub>DD</sub> UV+		7.6	8.9	9.9	V
V <sub>DD</sub> Supply Undervoltage Negative Going Threshold	V <sub>DD</sub> UV-		6.7	8.1	9.5	V
Output High Short Circuit Pulsed Current	I <sub>O+</sub>	V <sub>H</sub> OUT=0V, V <sub>H</sub> IN=15V, PW≤10μs	170	200		mA
Output Low Short Circuit Pulsed Current	I <sub>O-</sub>	V <sub>H</sub> OUT=15V, V <sub>H</sub> IN=0V, PW≤10μs	340	400		mA

## Switching Time Waveform Definition



# TND524VS

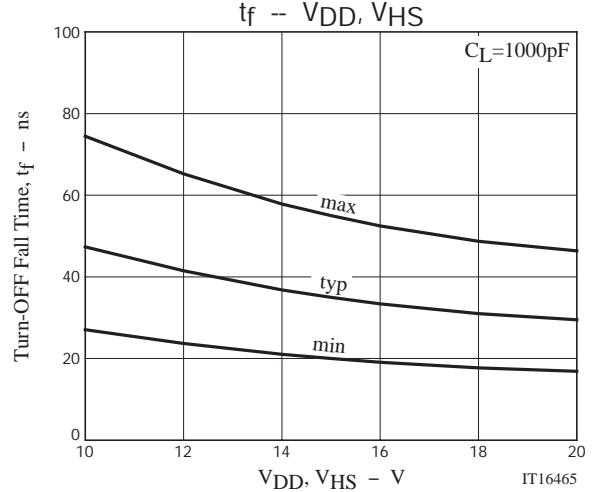
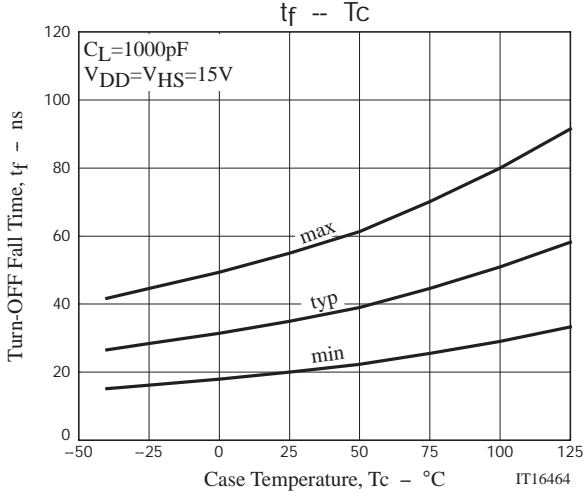
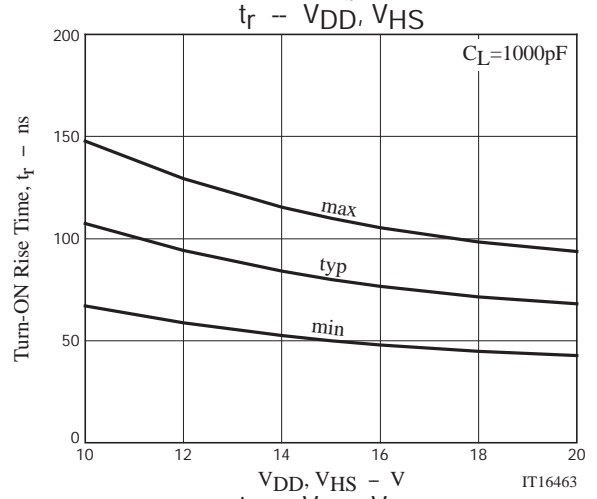
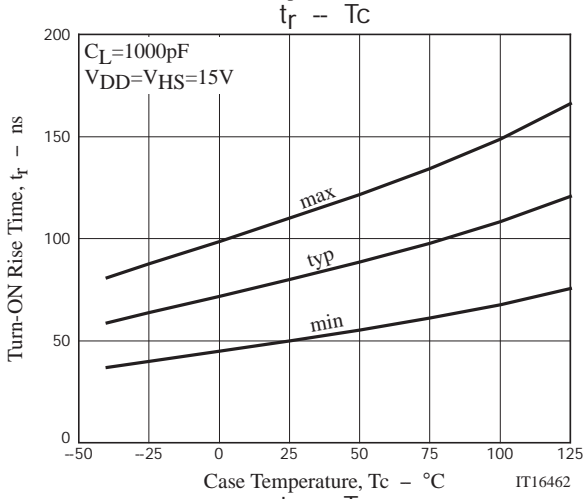
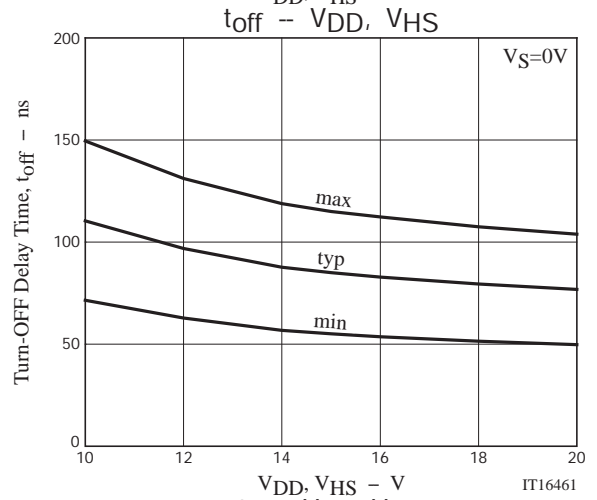
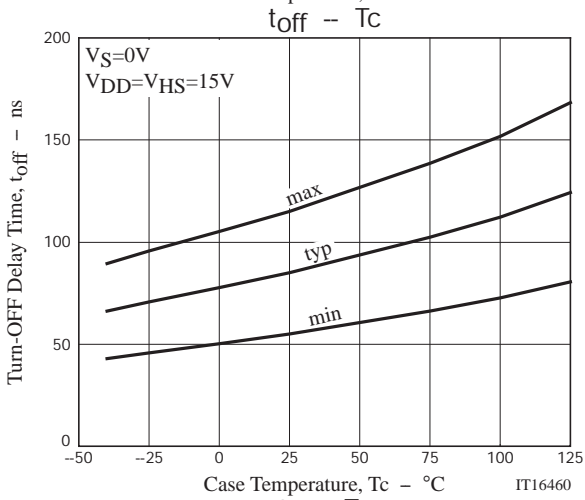
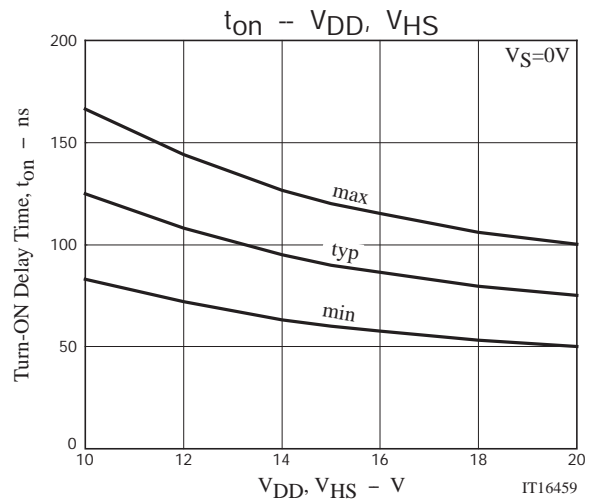
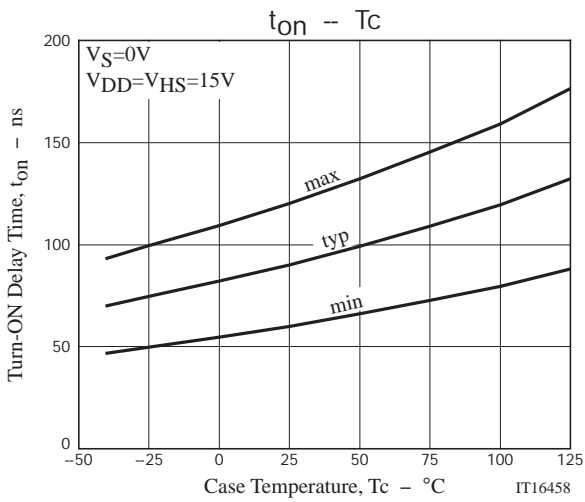
## Switching Time Test Circuit



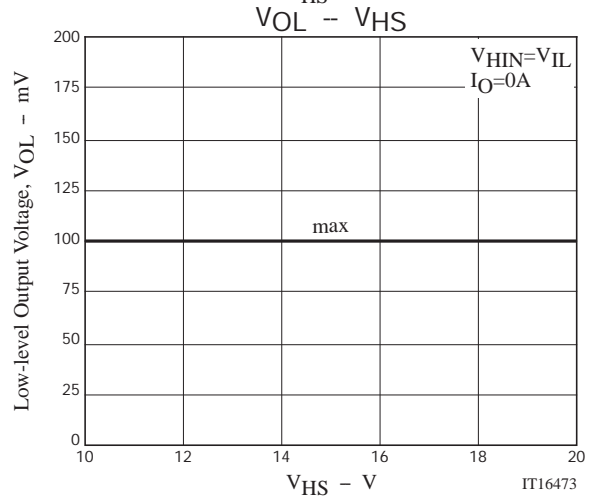
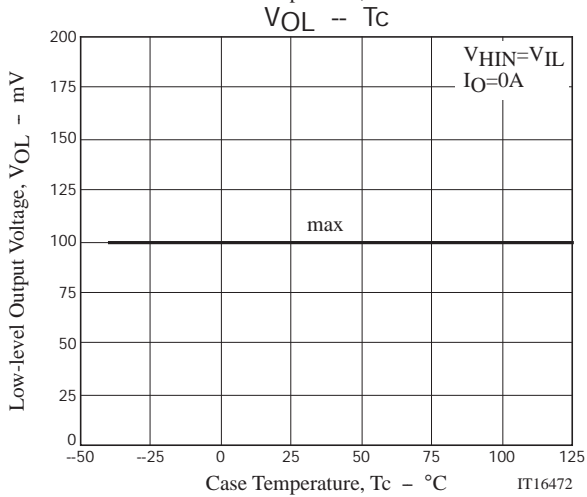
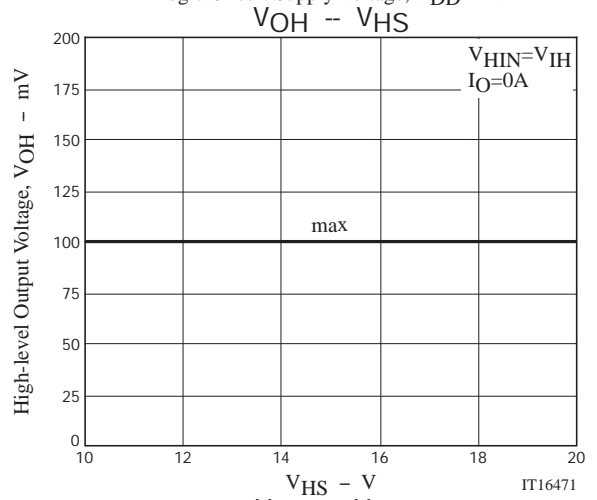
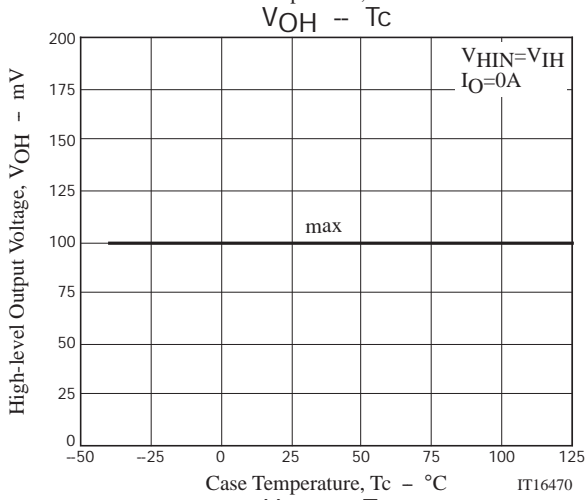
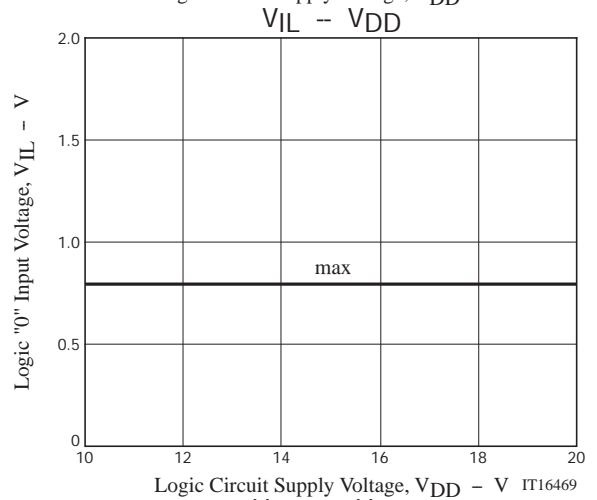
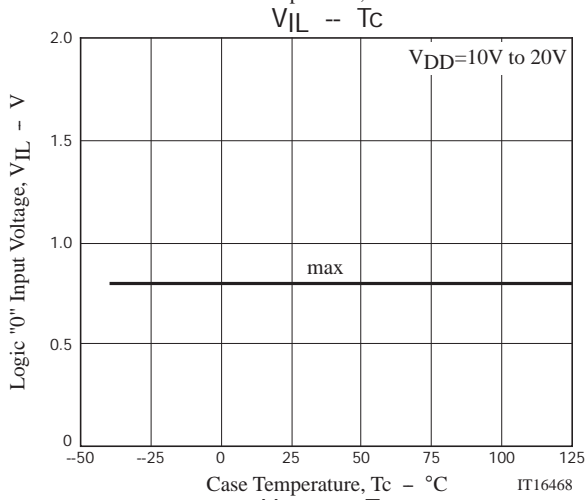
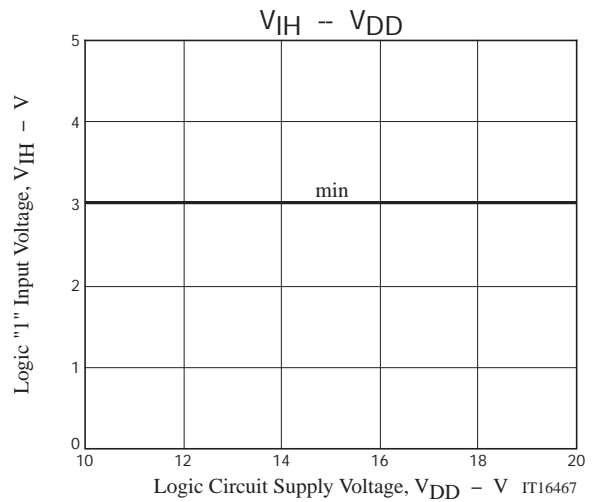
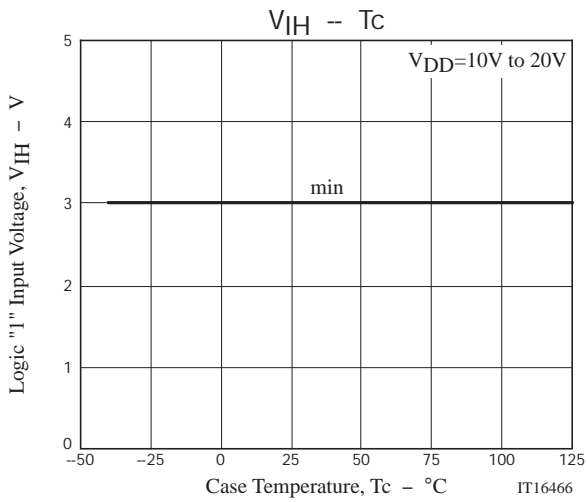
## Ordering Information

Device	Package	Shipping	memo
TND524VS-TL-H	VEC8	3,000pcs./reel	Pb Free and Halogen Free

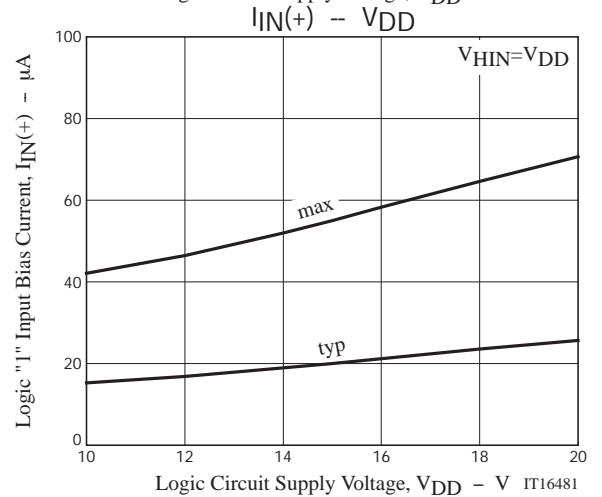
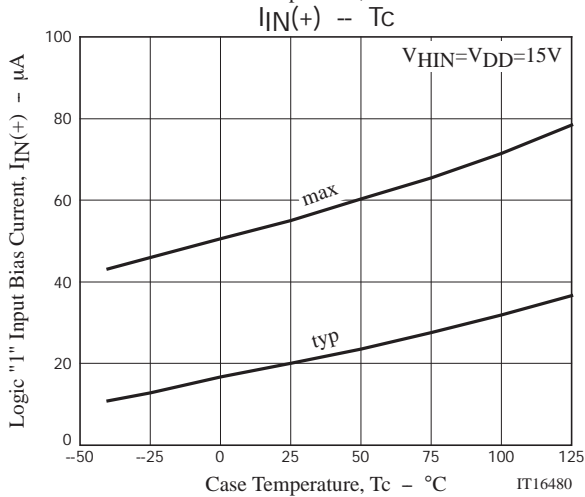
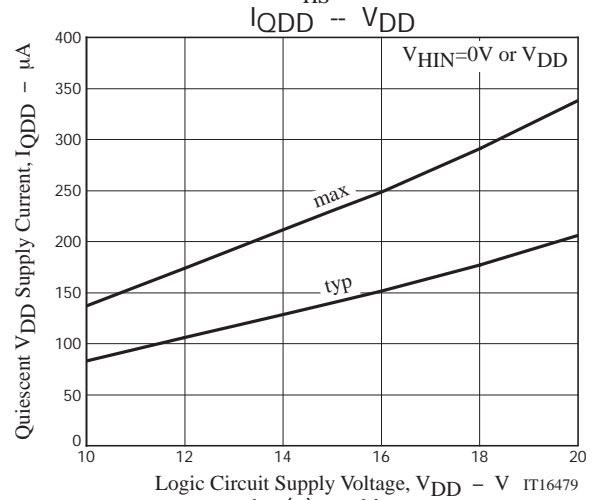
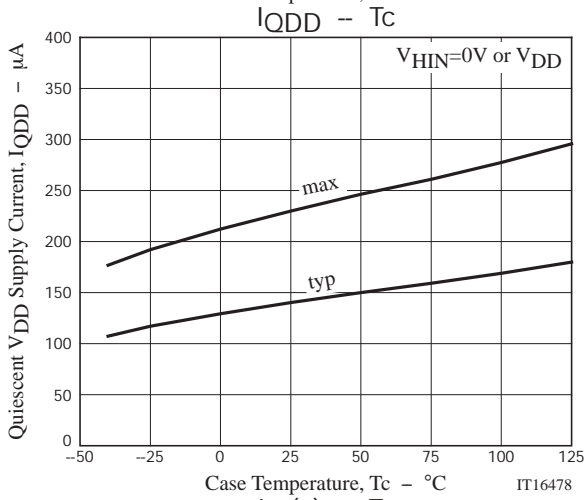
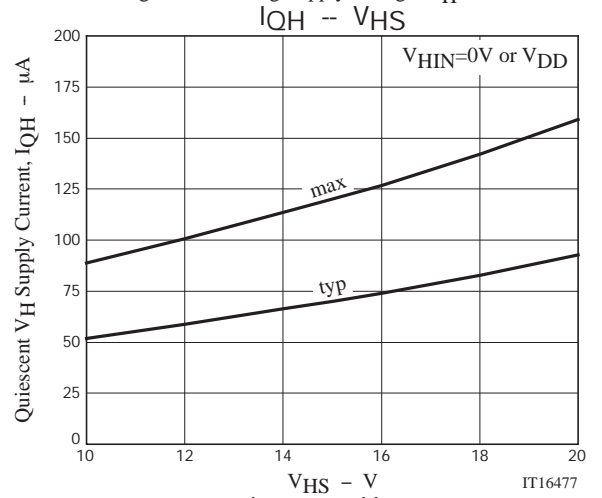
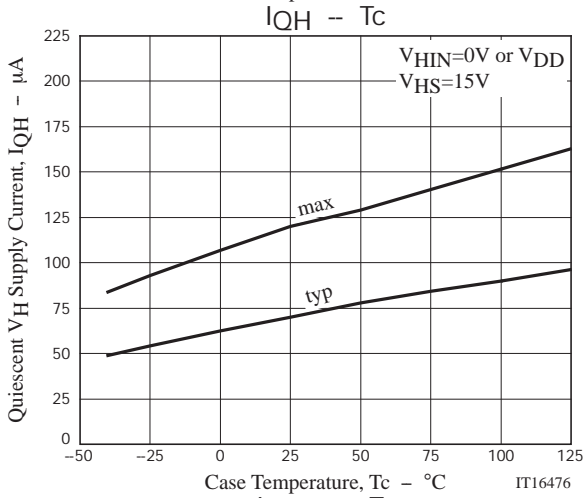
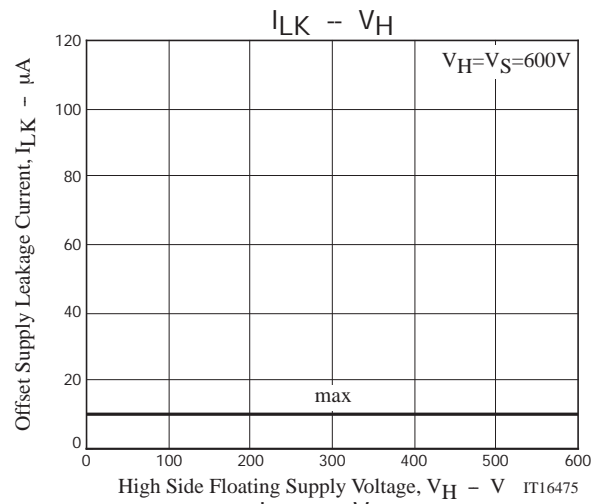
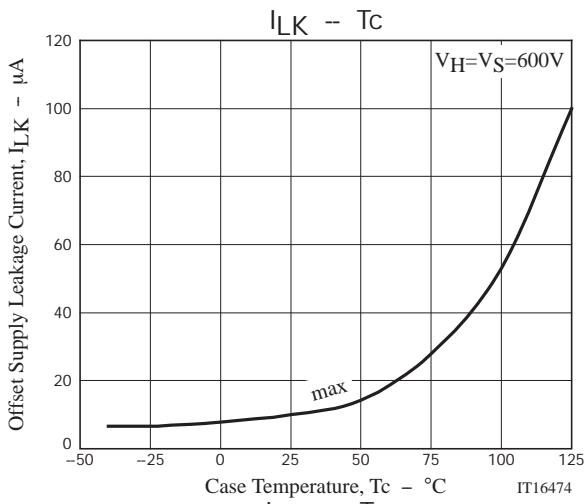
# TND524VS



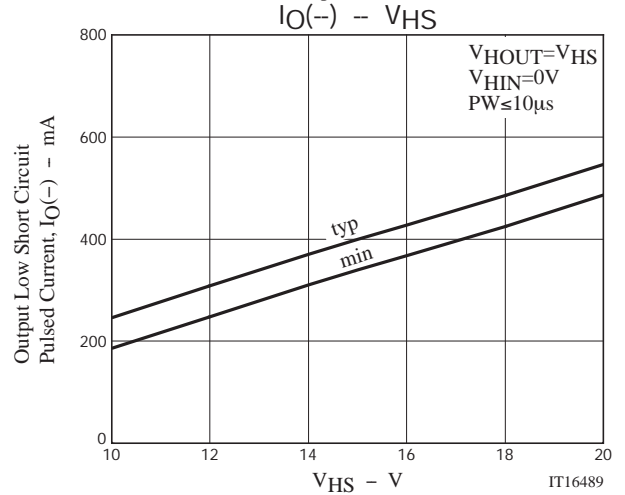
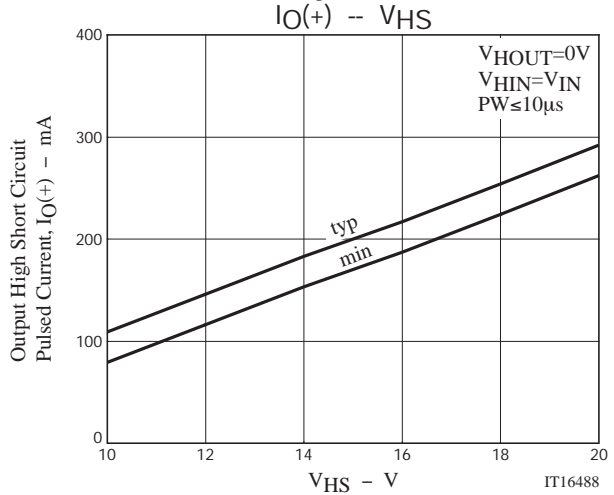
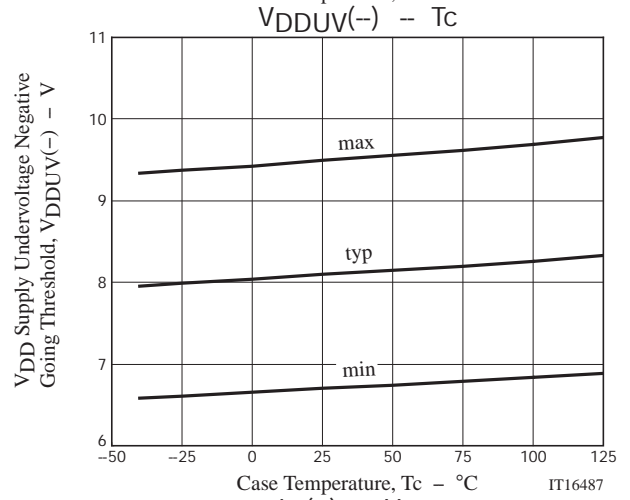
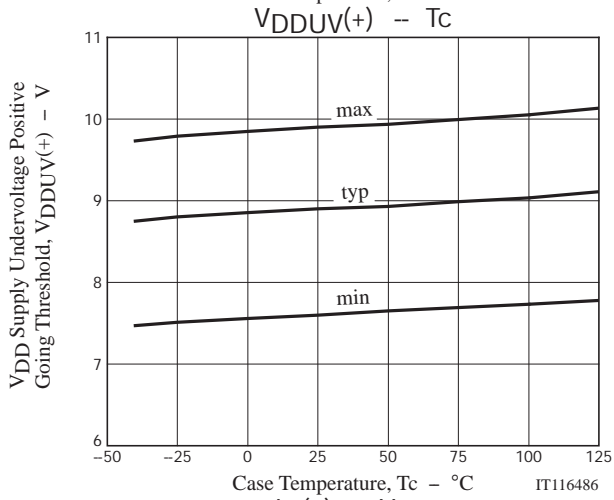
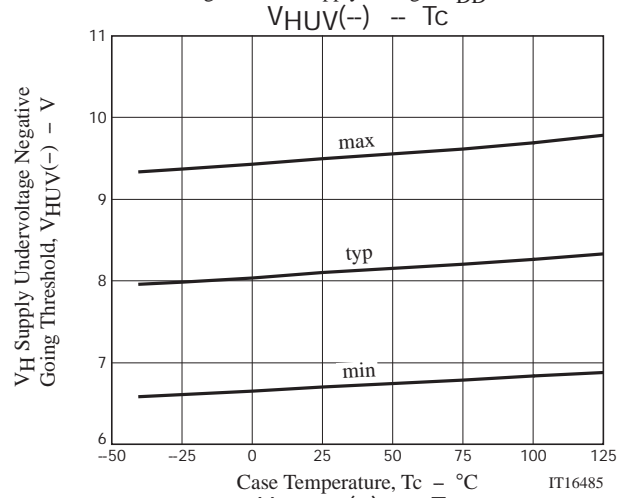
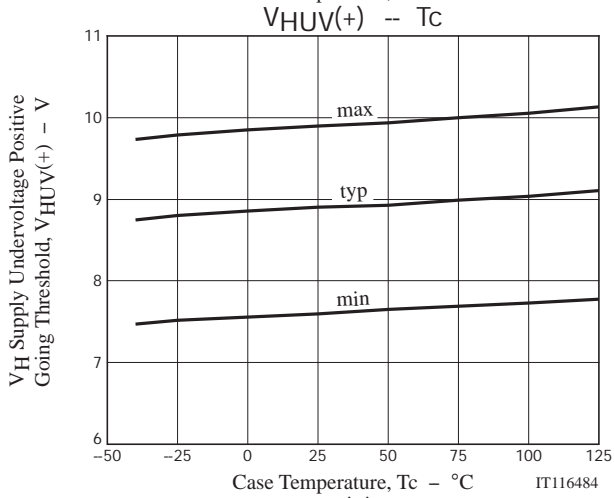
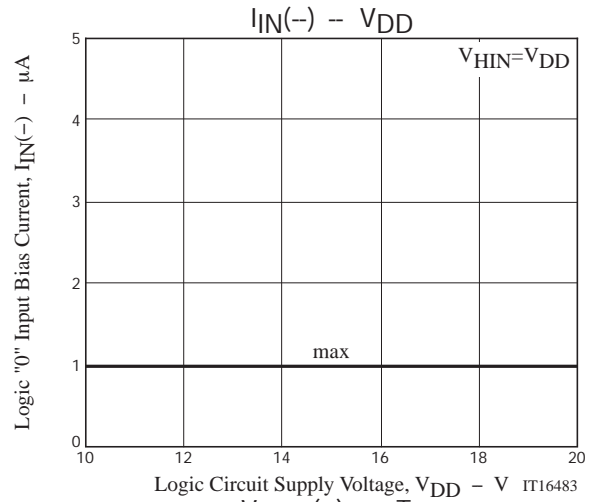
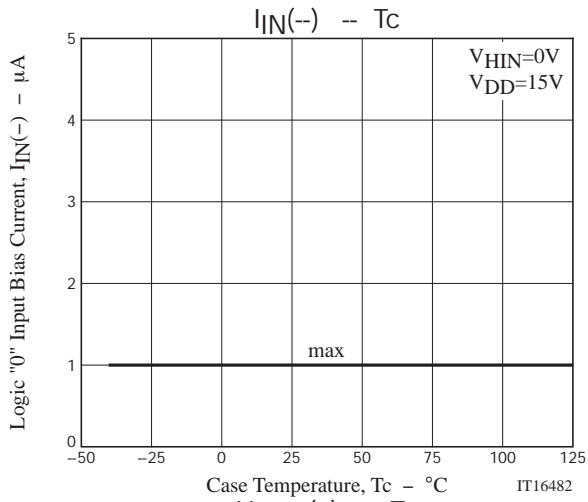
# TND524VS



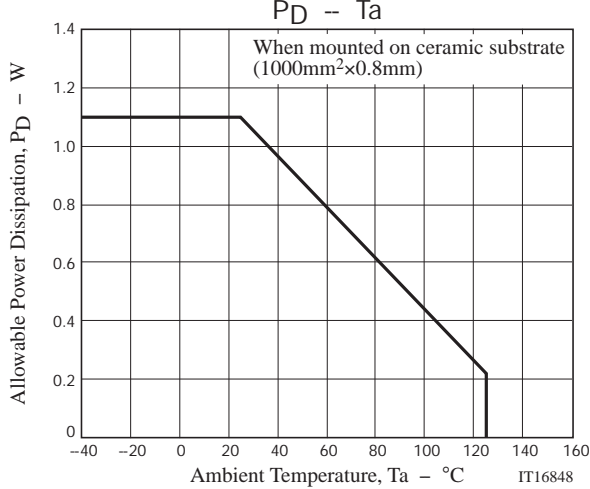
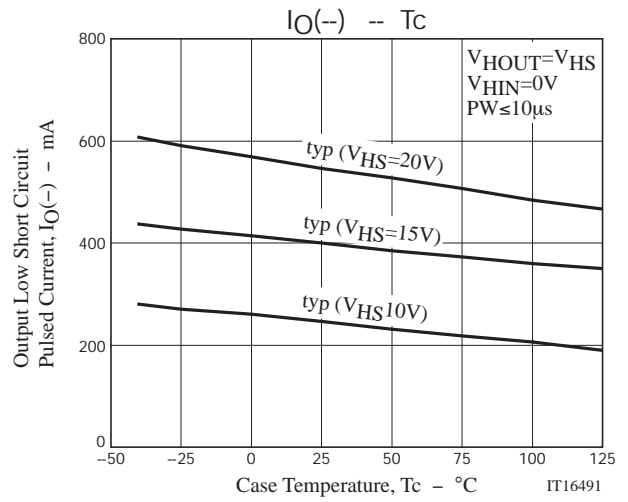
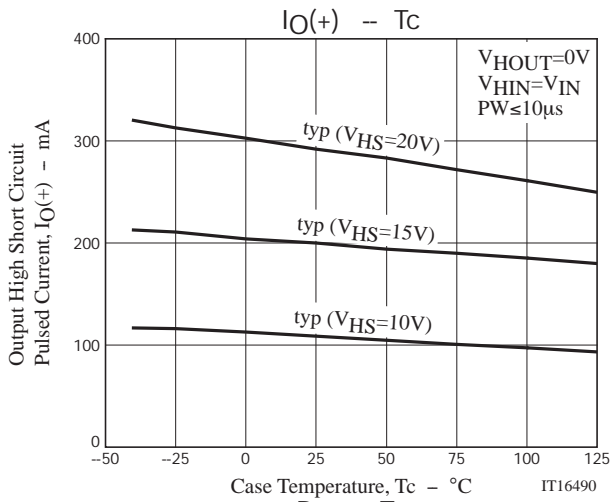
# TND524VS



# TND524VS



# TND524VS



## Taping Specification

### TND524VS-TL-H

#### 1. Packing Format

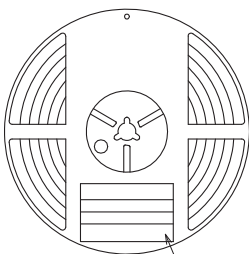
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
VEC8	CPH6	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Reel label, Inner box label  
(unit:mm)

Outer box label

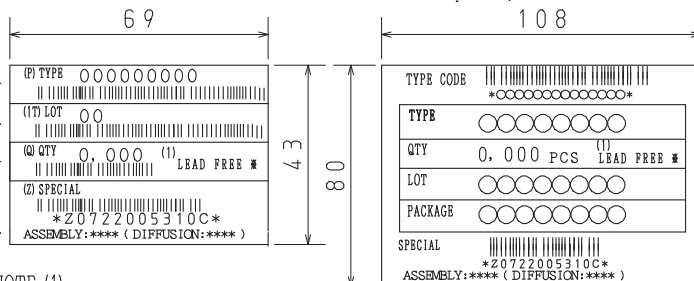
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

#### Packing method



Reel label

Type No.  
LOT No.  
Quantity  
Origin



NOTE (1)

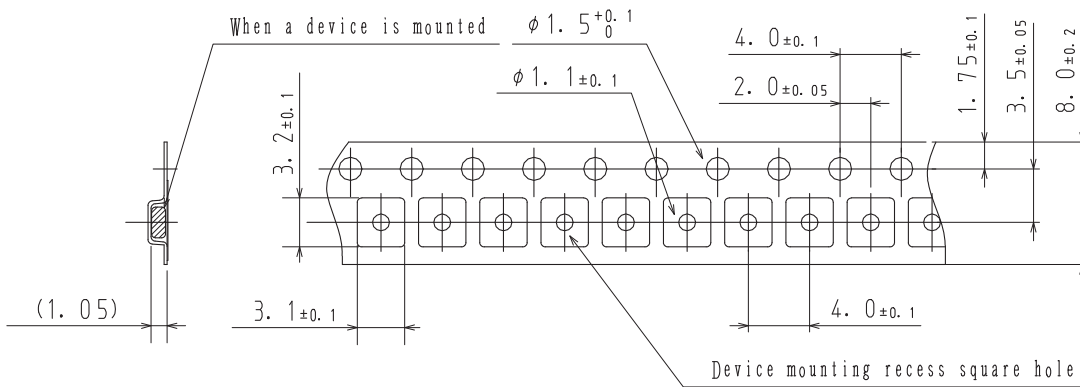
The LEAD FREE \* description shows that the surface treatment of the terminal is lead free.

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

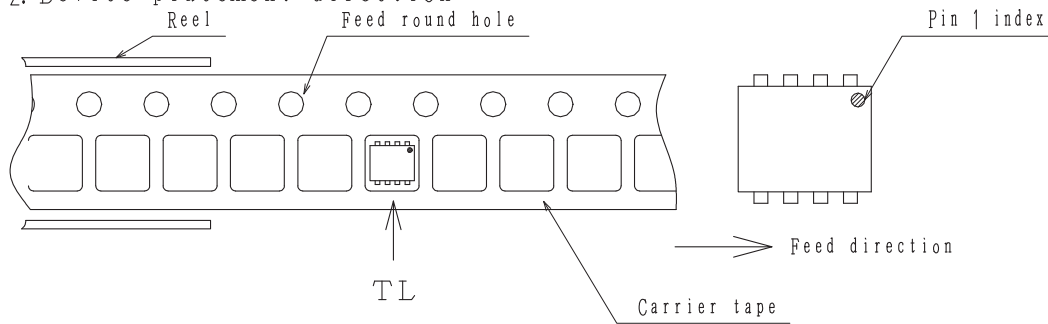


2. Taping configuration

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

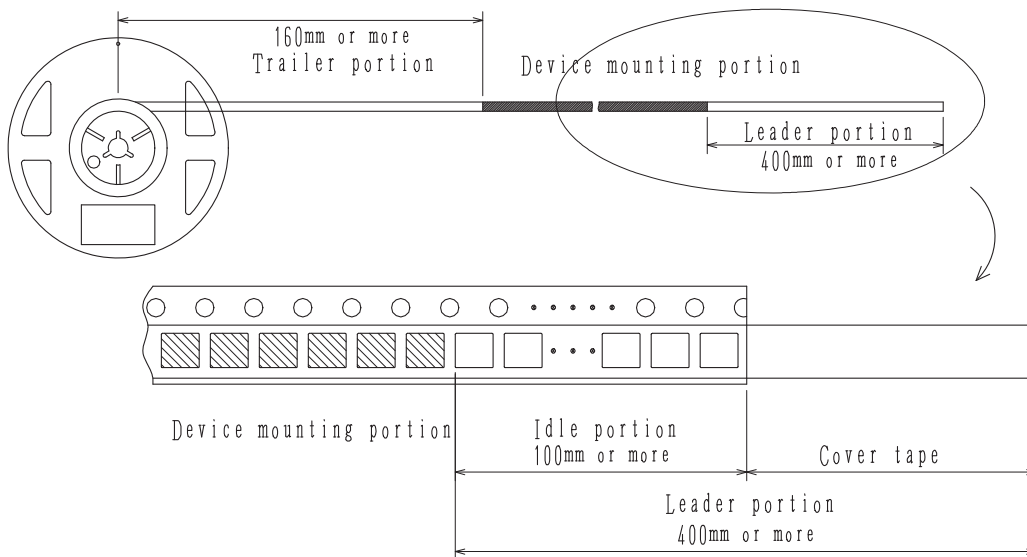


2-2. Device placement direction



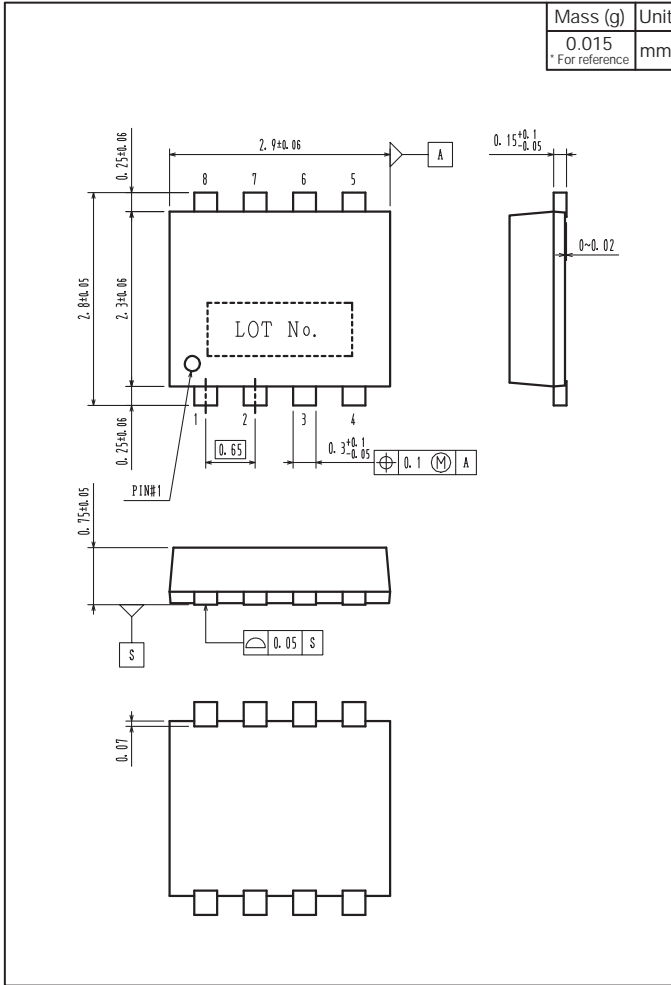
Those with one electrode terminal on the feed hole side.....TL

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

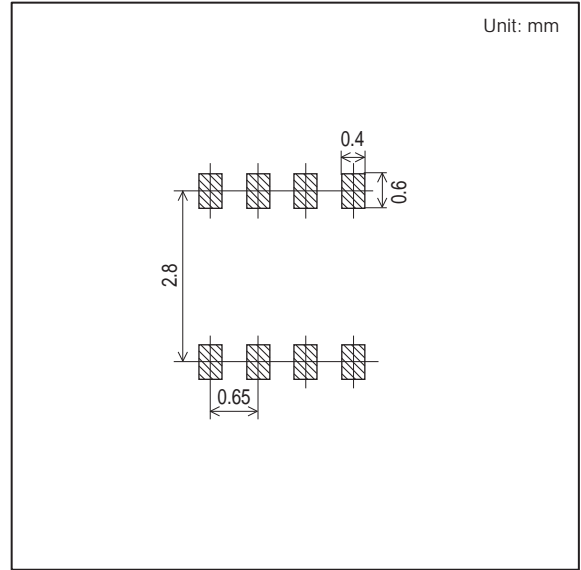


# TND524VS

## Outline Drawing TND524VS-TL-H



## Land Pattern Example



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