



# TND524VS

## Excellent Power Device Single-phase High Side Drive, Single VEC8

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 referenced to GND)

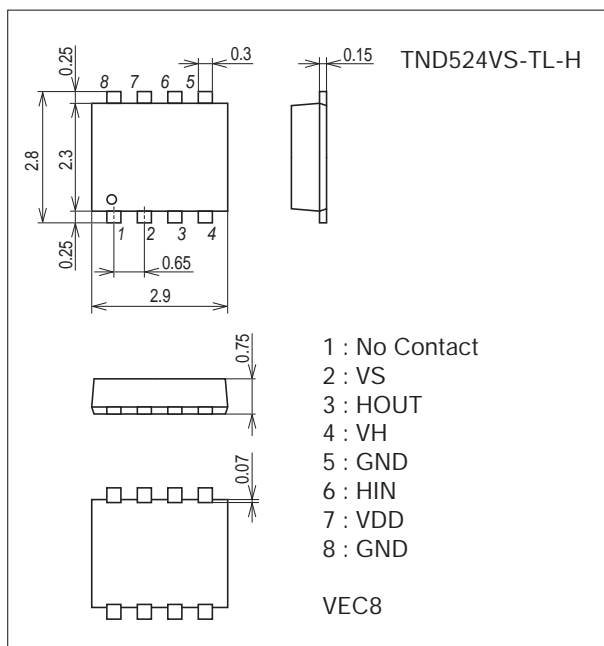
Parameter	Symbol	Conditions	Ratings	Unit
High Side Floating Supply Voltage	V <sub>H</sub>		-0.3 to 625	V
High Side Floating Supply Offset Voltage	V <sub>S</sub>		V <sub>H</sub> -25 to V <sub>H</sub> +0.3	V
High Side Output Voltage	V <sub>HOUT</sub>		V <sub>S</sub> -0.3 to V <sub>H</sub> +0.3	V
Logic 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	PD	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

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)

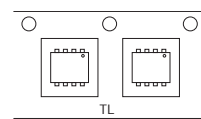
7012-013



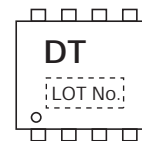
### Product & Package Information

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

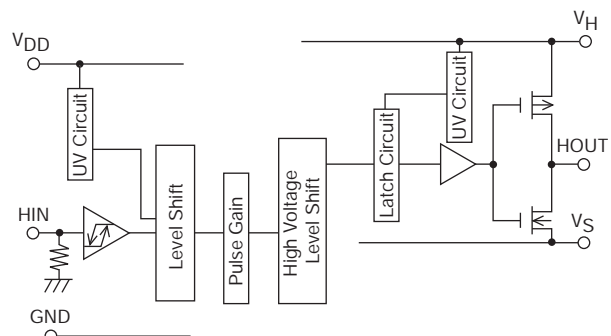
### Packing Type: TL



### 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>HS</sub> =15V	-5 to 600	V
High Side Output Voltage	V <sub>HOUT</sub>		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>HIN</sub>		0 to V <sub>DD</sub>	V
Ambient Temperature	T <sub>opr</sub>		-40 to +125	°C

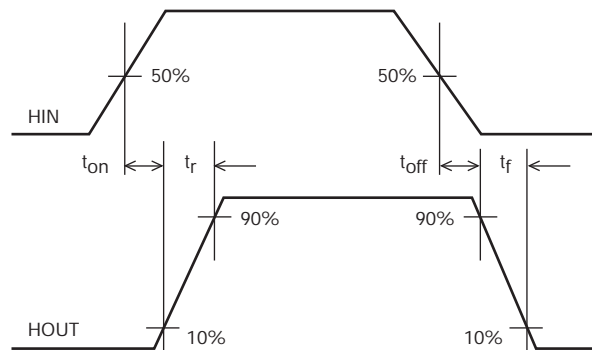
## AC Characteristics at Ta=25°C (V<sub>DD</sub>=V<sub>HS</sub>=15V, C<sub>L</sub>=1000pF)

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>HS</sub>=15V)

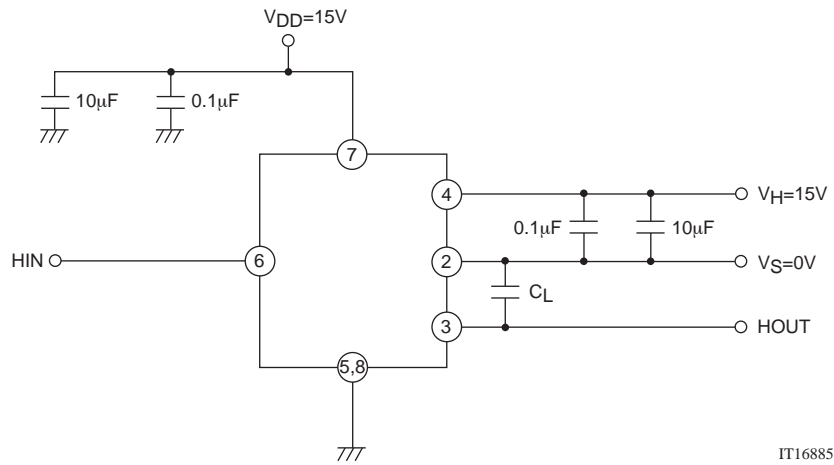
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Logic "1" Input Voltage	V <sub>IH</sub>	V <sub>DD</sub> =10 to 20V	3.0			V
Logic "0" Input Voltage	V <sub>IL</sub>	V <sub>DD</sub> =10 to 20V			0.8	V
High-level Output Voltage, V <sub>BIAS</sub> -V <sub>O</sub>	V <sub>OH</sub>	V <sub>HIN</sub>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

## Switching Time Waveform Definition



# TND524VS

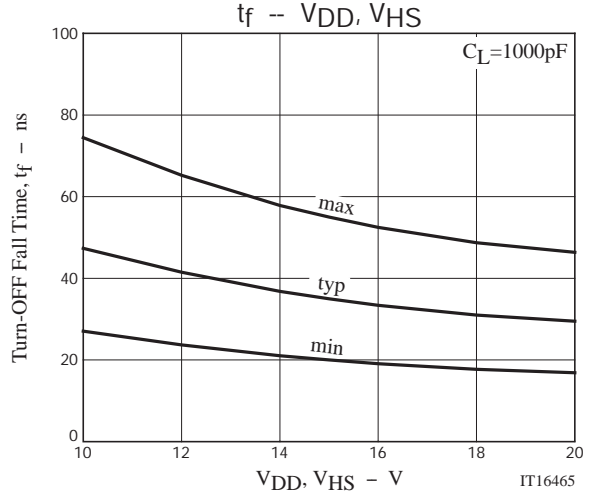
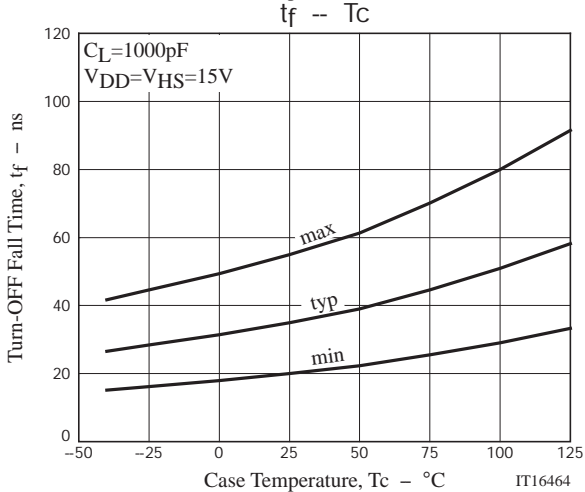
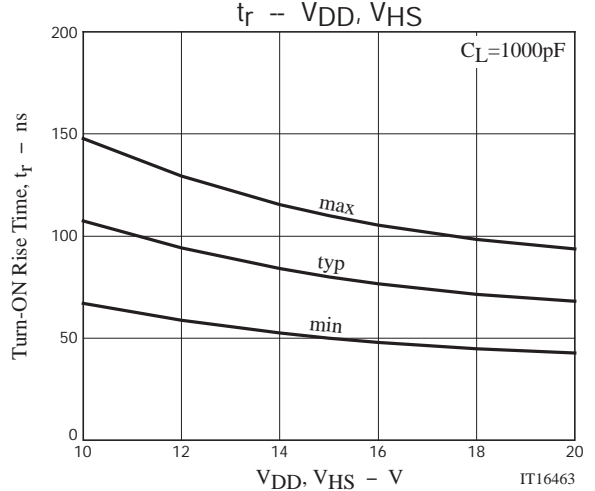
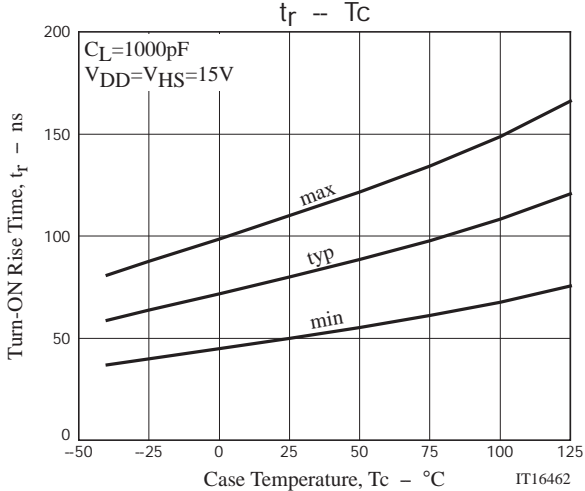
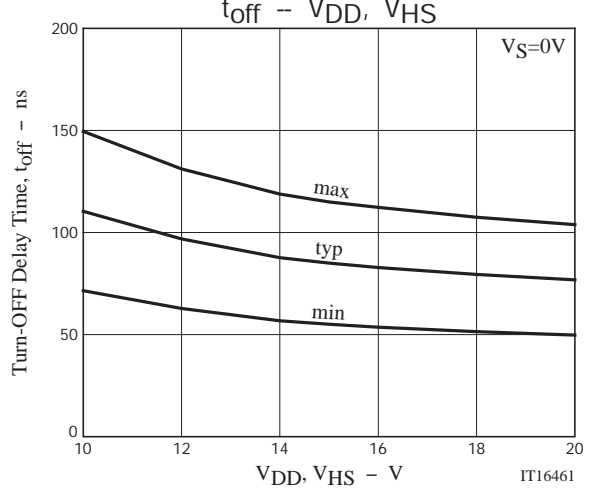
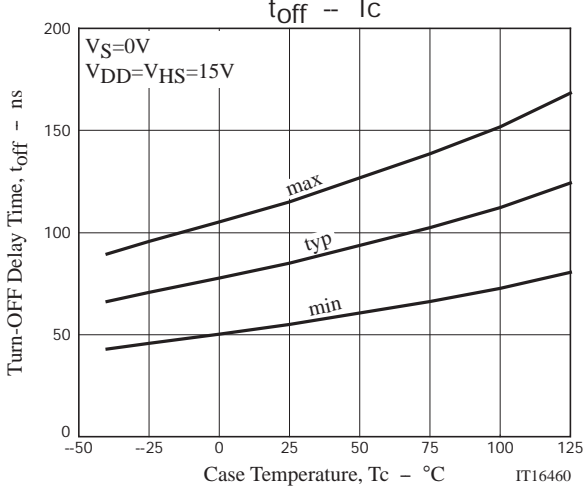
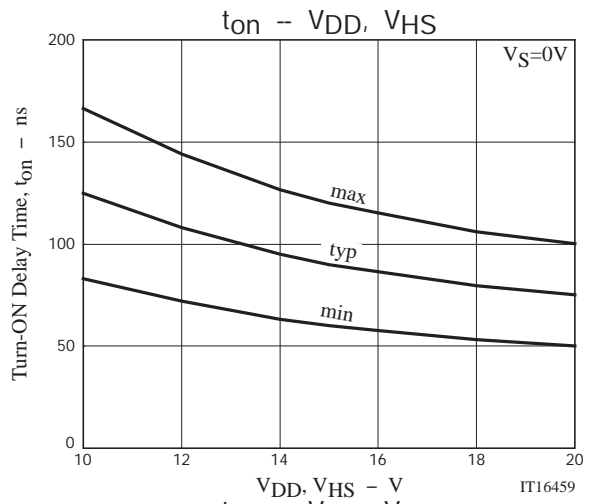
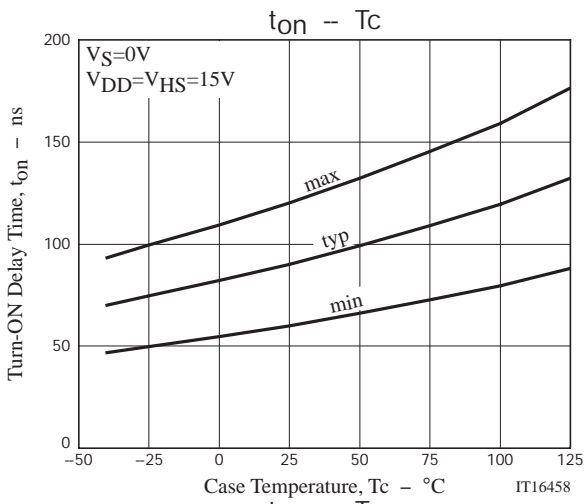
## Switching Time Test Circuit



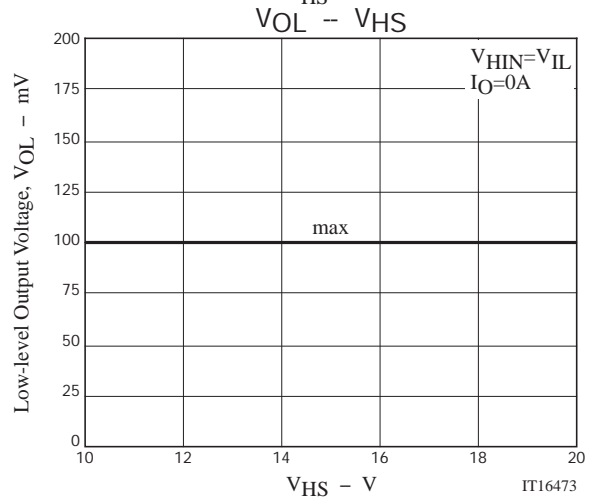
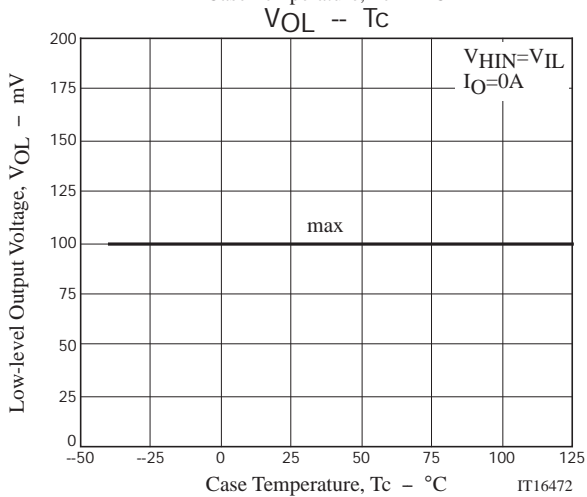
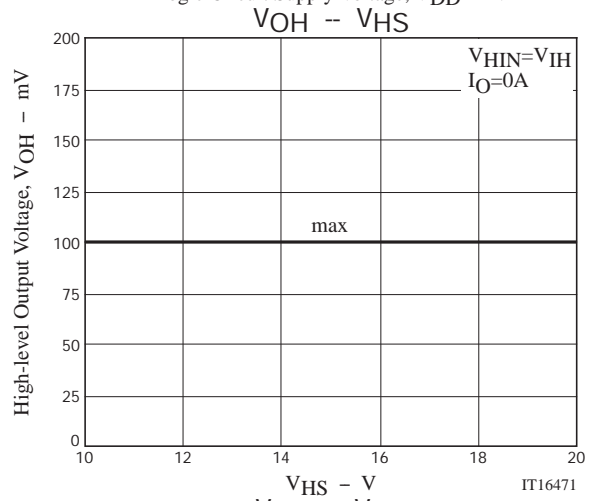
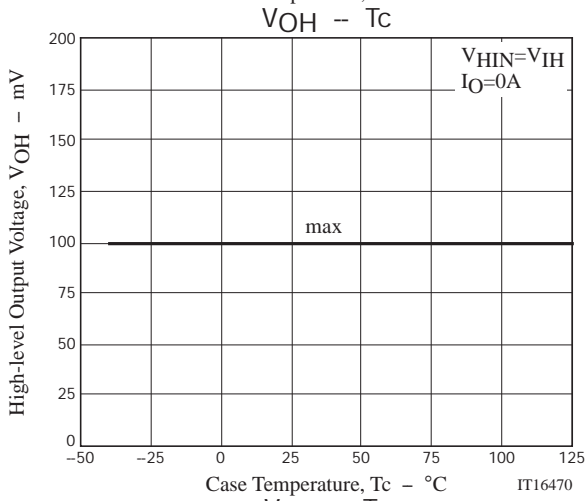
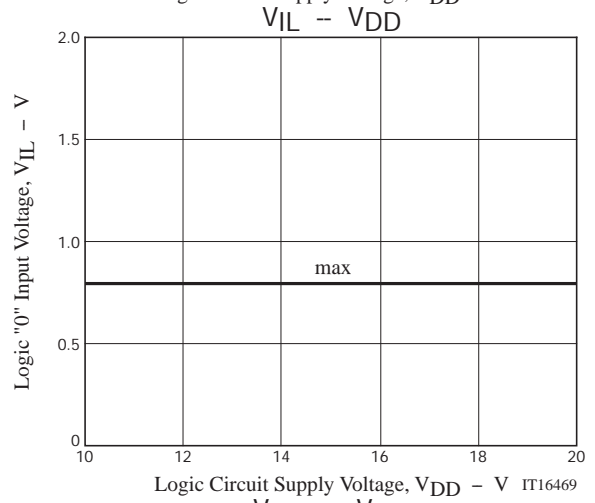
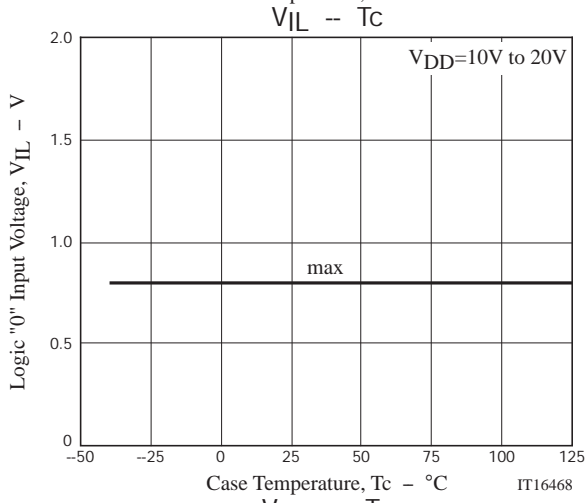
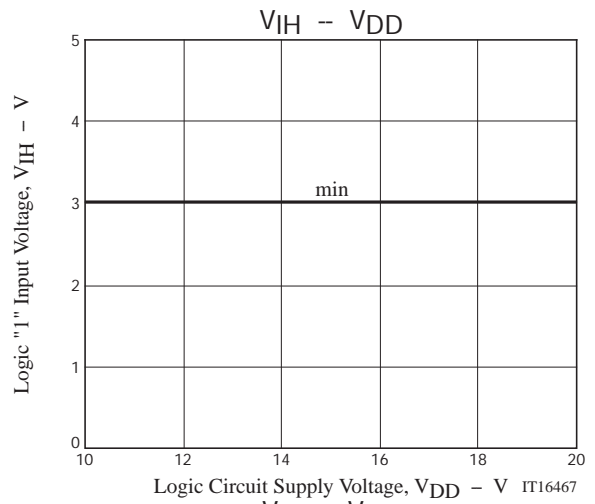
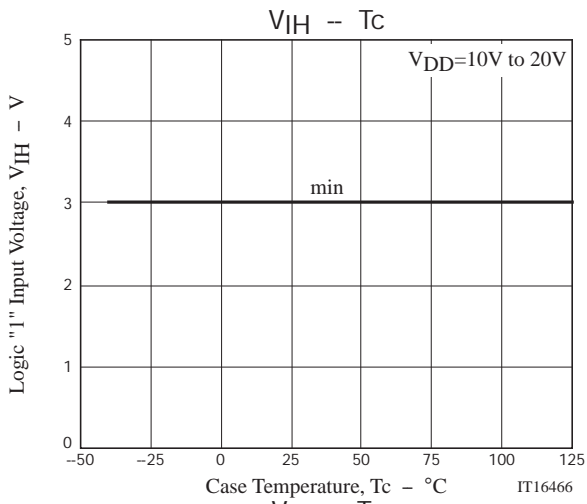
## Ordering Information

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

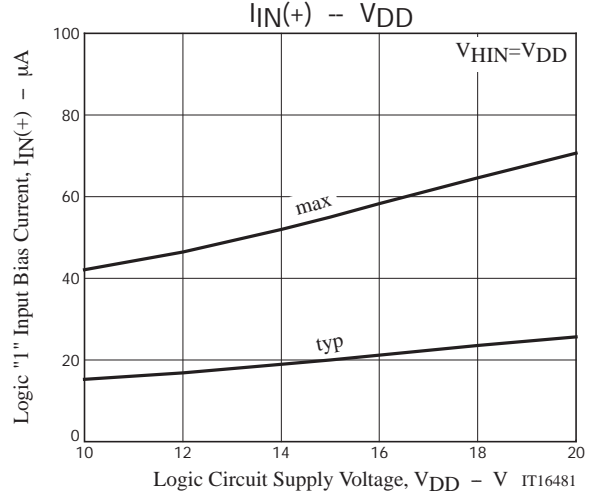
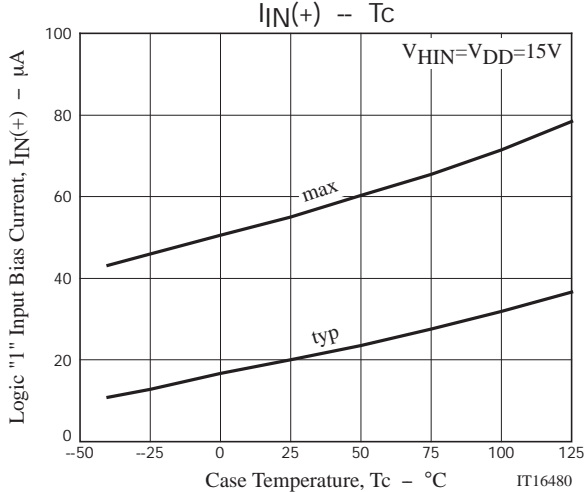
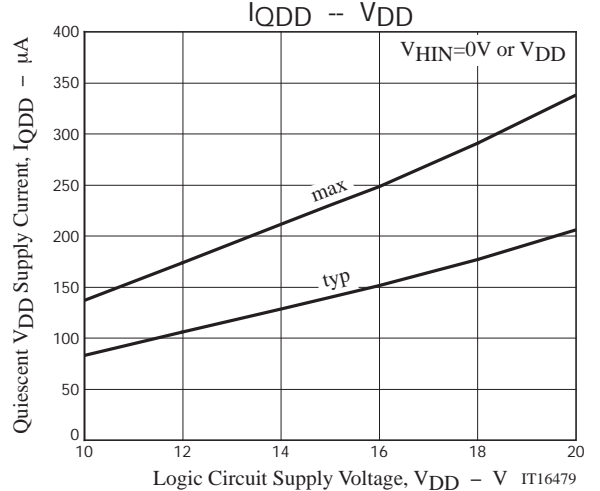
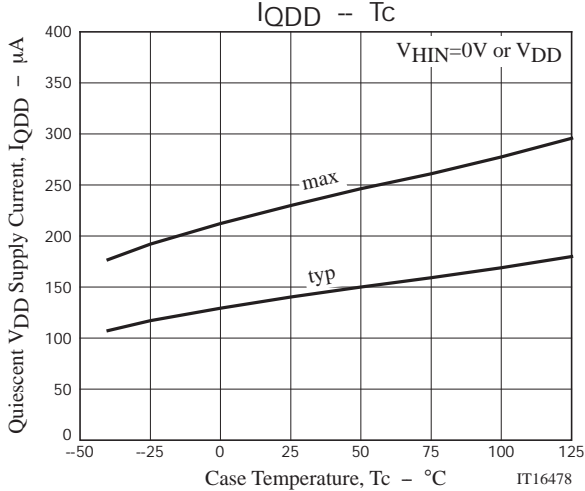
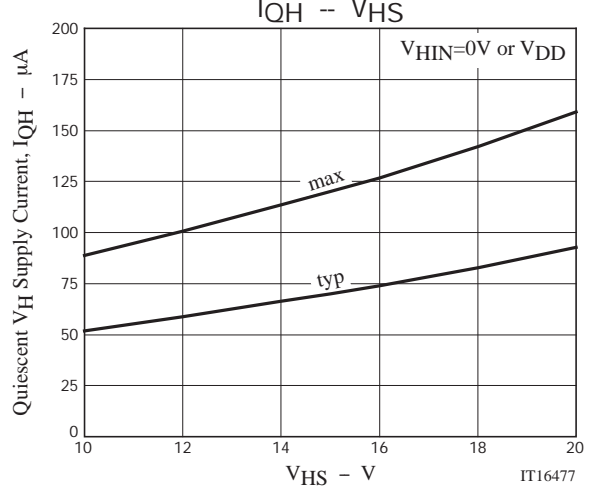
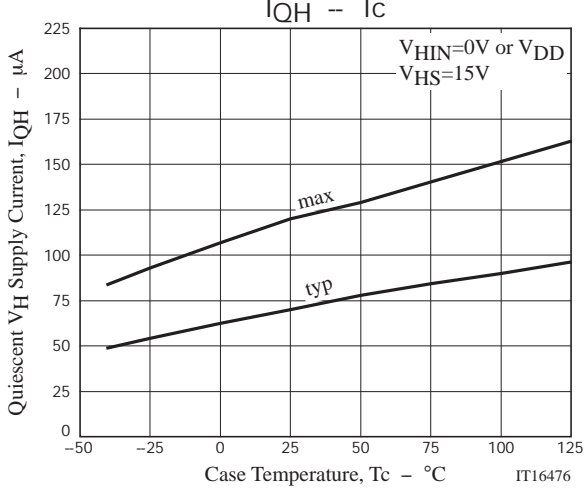
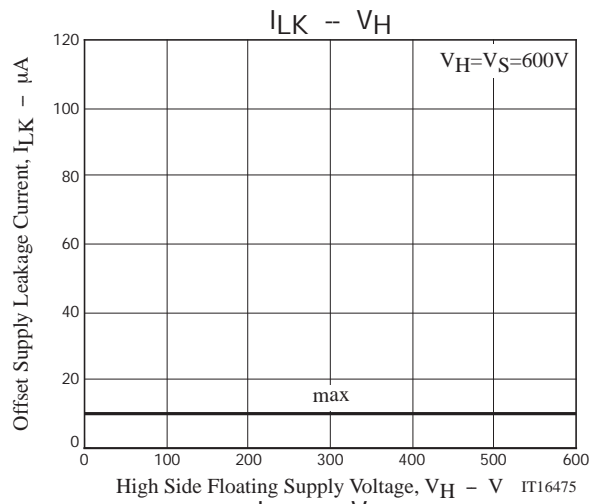
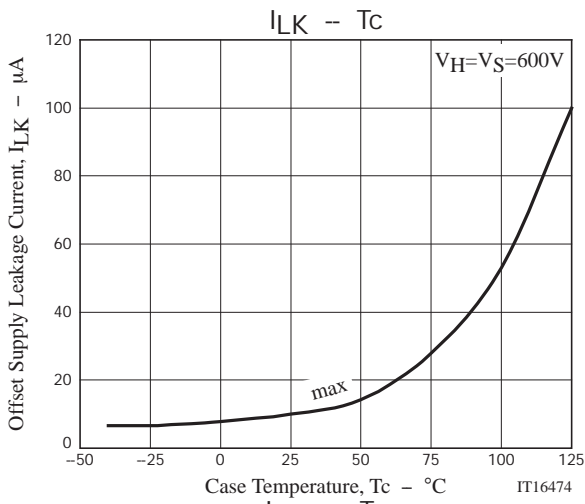
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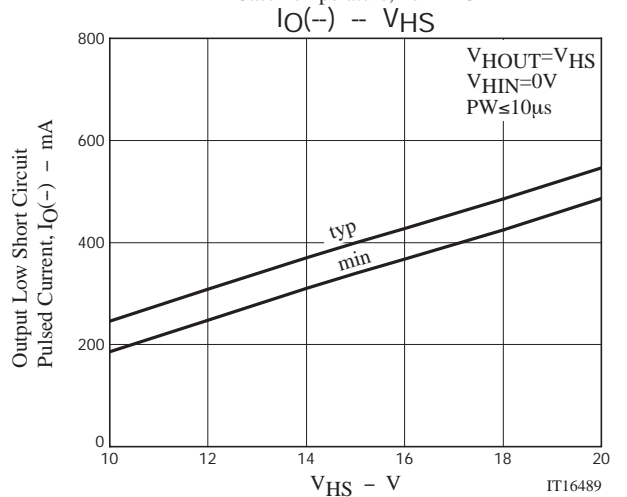
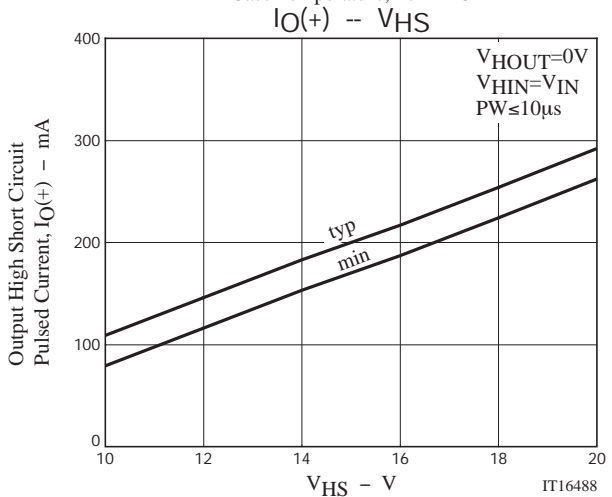
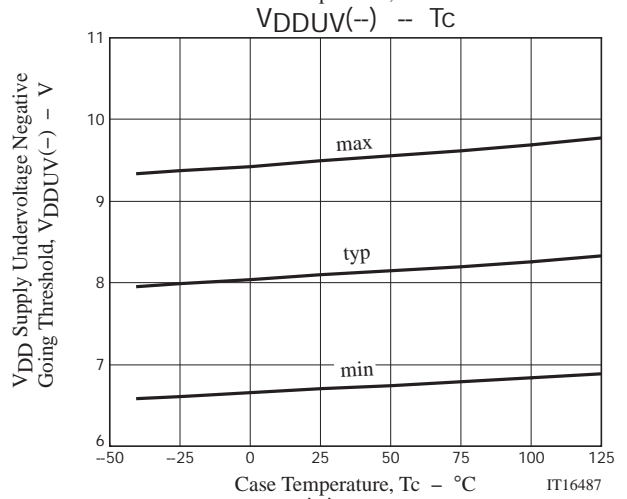
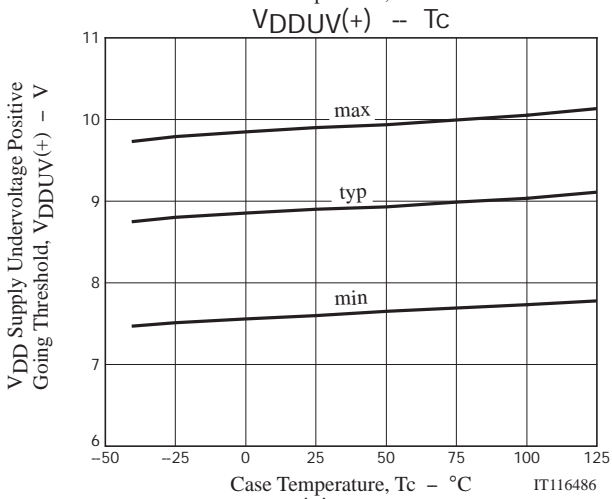
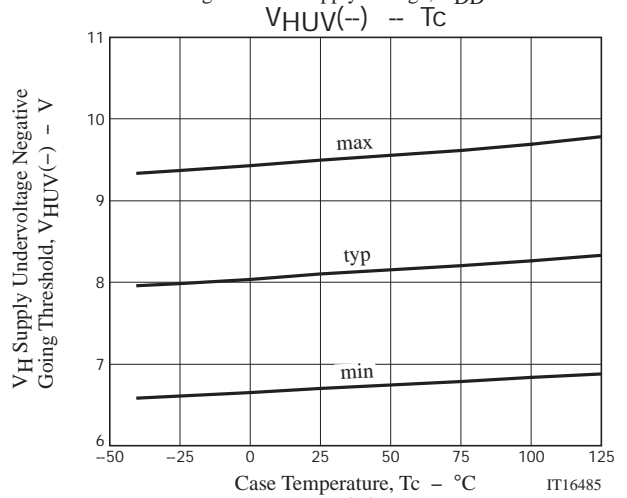
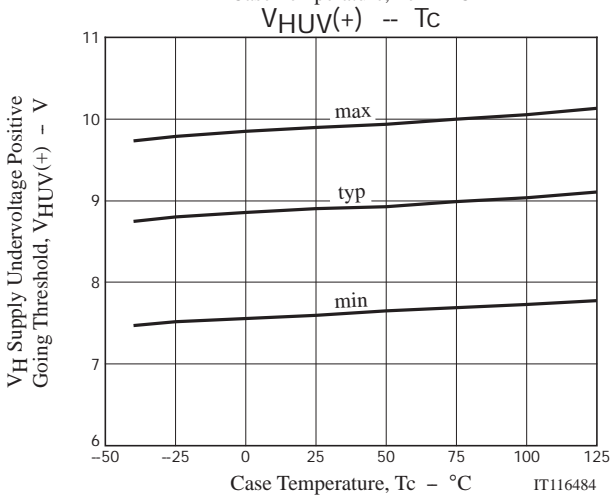
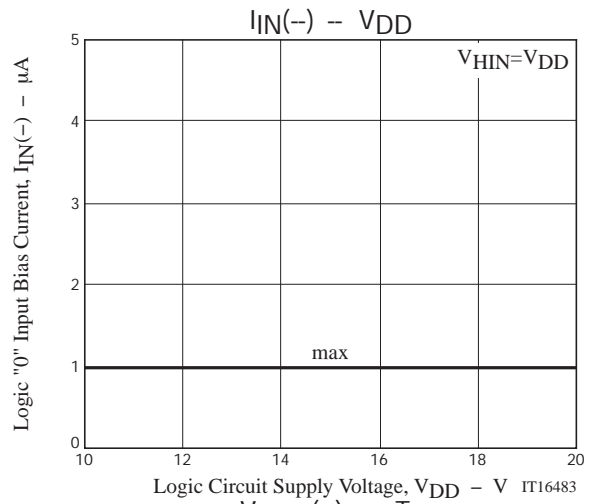
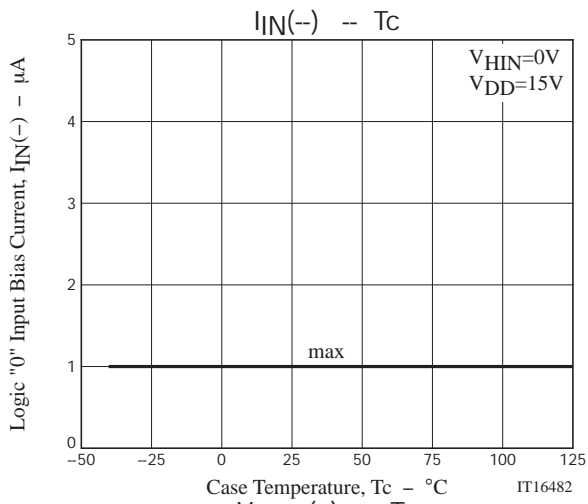
# TND524VS



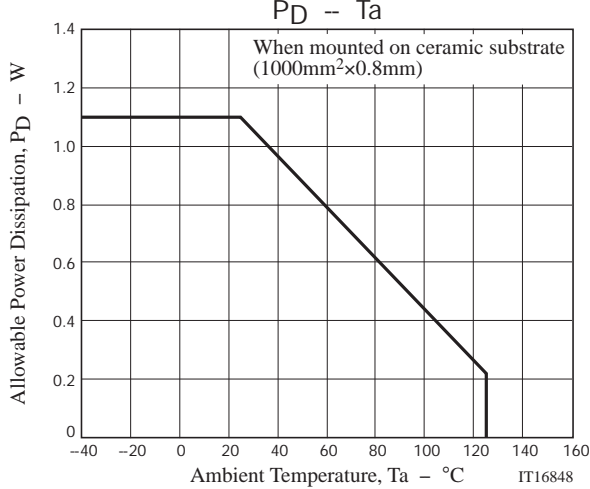
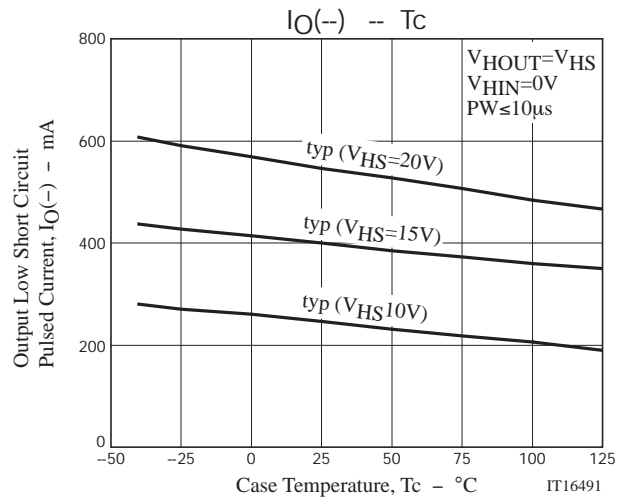
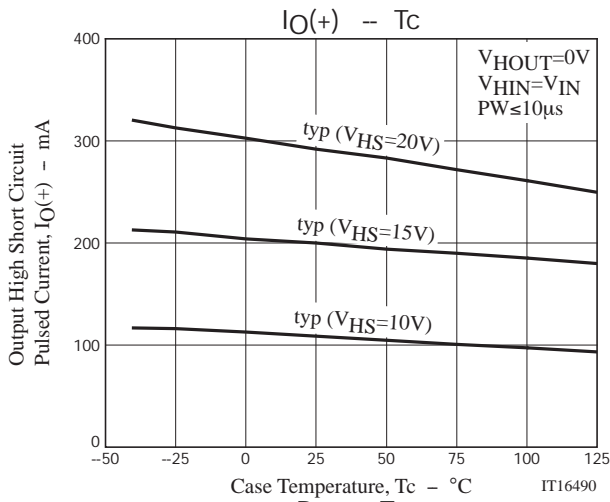
# TND524VS



# TND524VS



# TND524VS



## Taping Specification

### TND524VS-TL-H

#### 1. Packing Format

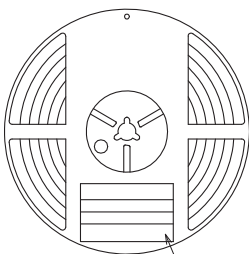
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
VEC8	CPH6	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Reel label, Inner box label  
(unit:mm)

Outer box label

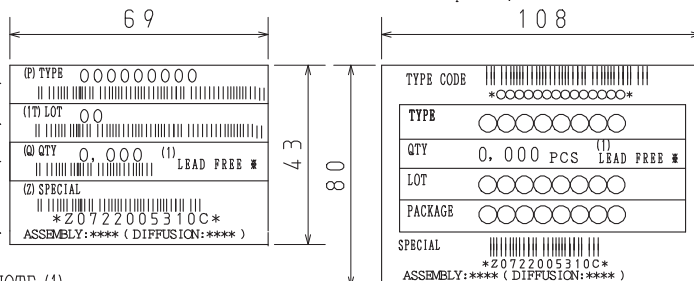
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

#### Packing method



Reel label

Type No.  
LOT No.  
Quantity  
Origin



NOTE (1)

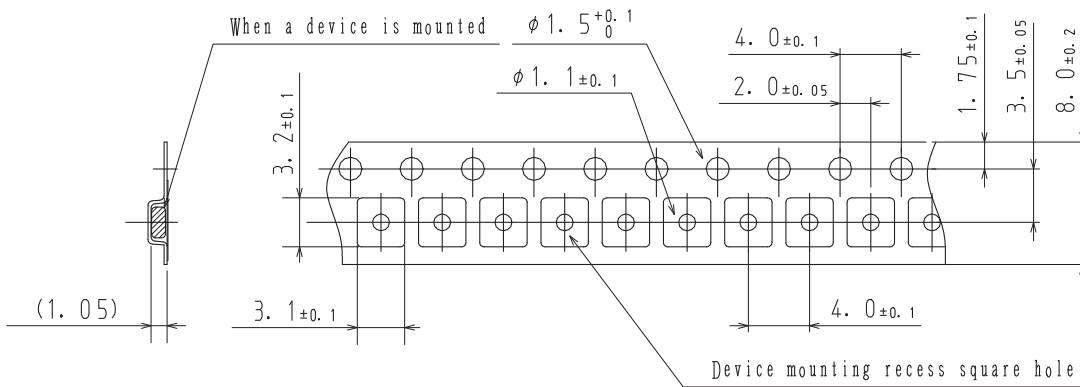
The LEAD FREE \* description shows that the surface treatment of the terminal is lead free.

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

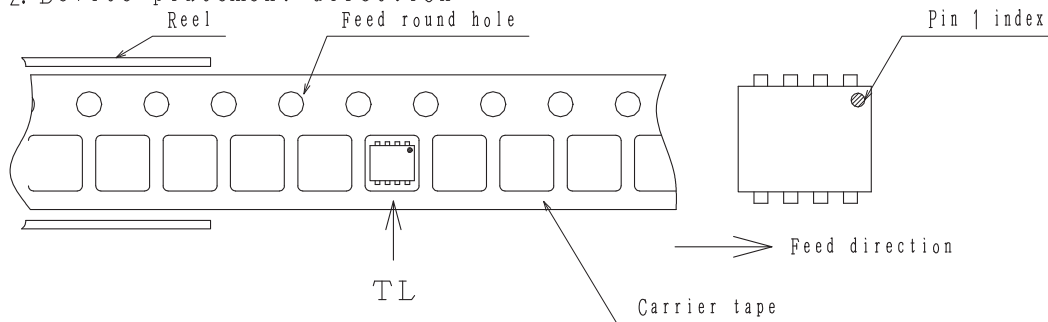


2. Taping configuration

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

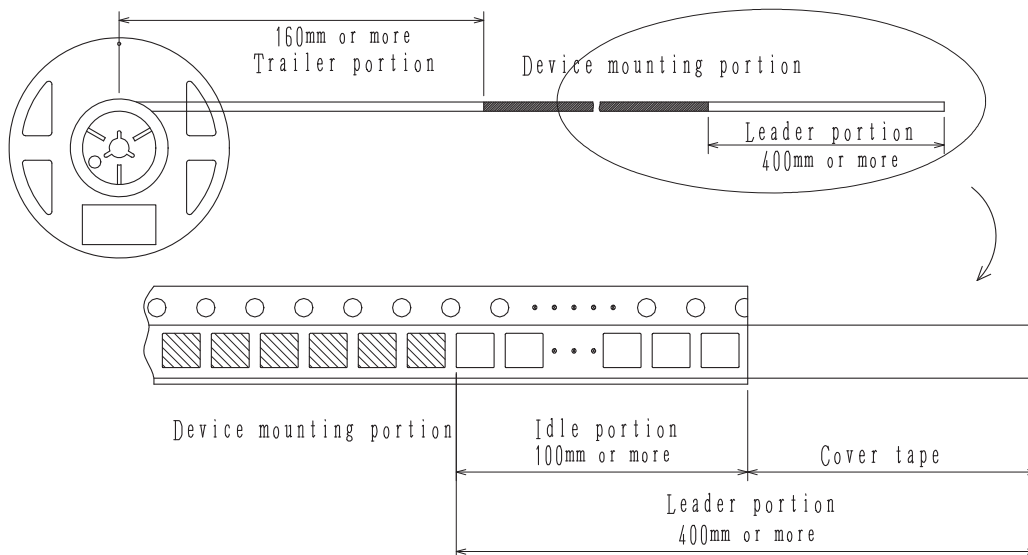


2-2. Device placement direction



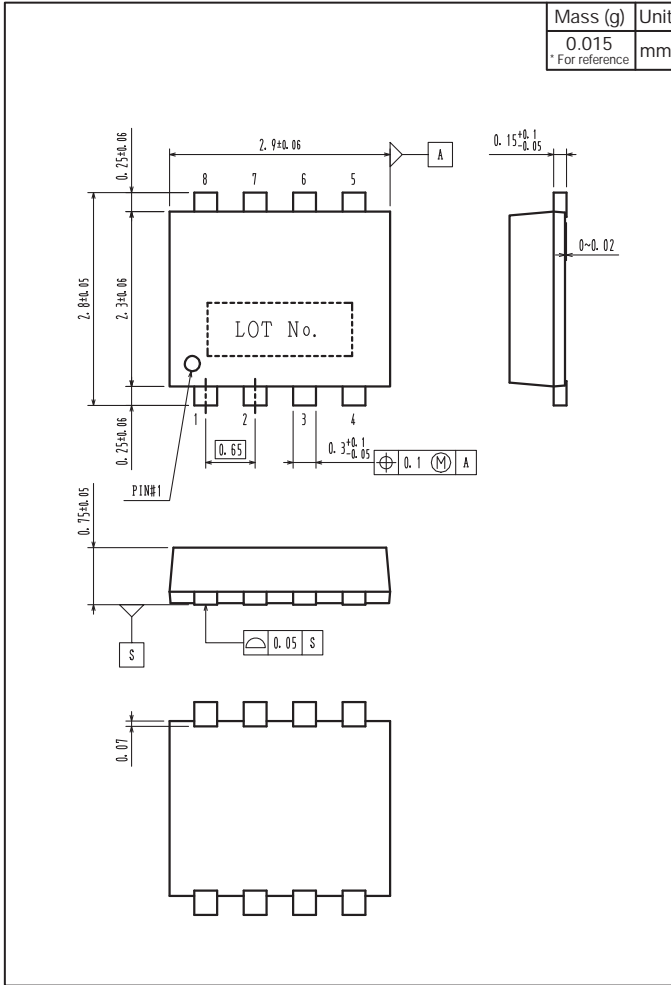
Those with one electrode terminal on the feed hole side.....TL

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

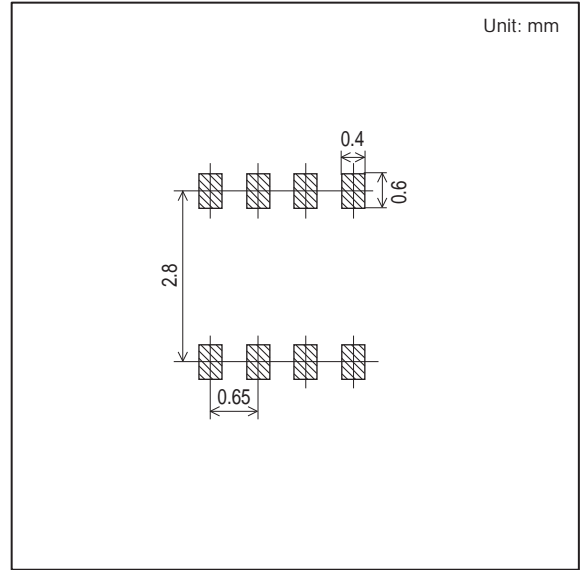


# TND524VS

## Outline Drawing TND524VS-TL-H



## Land Pattern Example



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