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# TND316S

## Excellent Power Device

Inverter and buffer driver for general purpose, Dual SOIC8

ON Semiconductor®

<http://onsemi.com>

### Features

- Inverter buffer
- Withstand voltage of 25V is assured
- Peak output current : 1A
- Fully compatible input to TTL / CMOS ( $V_{IH}$ =up to 2.6V, at  $V_{DD}$ =4.5 to 25V)
- Built-in input pull-down resistance
- Monolithic structure (High voltage CMOS process adopted)
- Wide range of operating voltage : 4.5V to 25V
- Fast switching time (30ns typical at 1000pF load)

### Specifications

**Absolute Maximum Ratings** at  $T_a=25^\circ\text{C}$

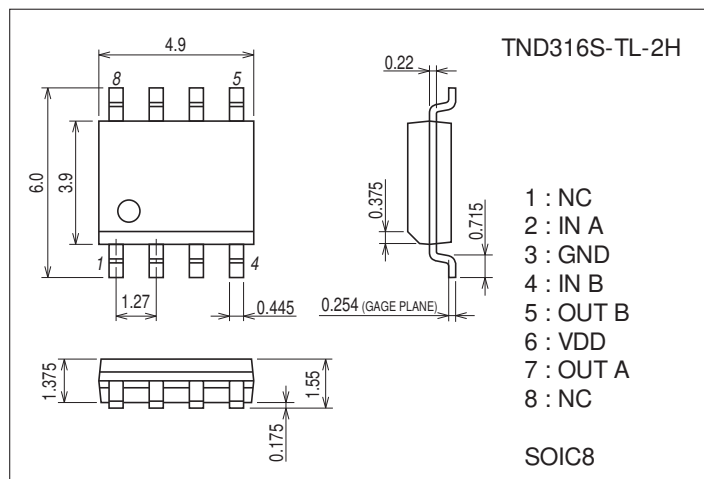
| Parameter                   | Symbol    | Conditions | Ratings                 | Unit             |
|-----------------------------|-----------|------------|-------------------------|------------------|
| Supply Voltage              | $V_{DD}$  |            | 0 to 25                 | V                |
| Input Voltage               | $V_{IN}$  |            | GND-0.3 to $V_{DD}+0.3$ | V                |
| Allowable Power Dissipation | $P_D$ max |            | 0.3                     | W                |
| Junction Temperature        | $T_J$     |            | -55 to +150             | $^\circ\text{C}$ |
| Storage Temperature         | $T_{stg}$ |            | -55 to +150             | $^\circ\text{C}$ |

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)

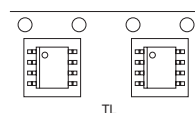
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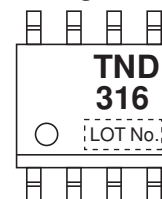
### Product & Package Information

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

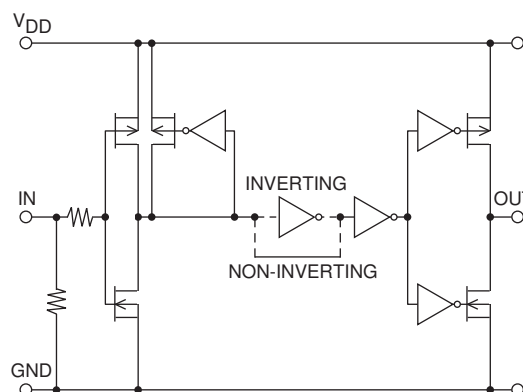
### Packing Type: TL



### Marking



### Block Diagram



# TND316S

## Recommend Operating Conditions at Ta=25°C

| Parameter                | Symbol          | Conditions | Ratings     | Unit |
|--------------------------|-----------------|------------|-------------|------|
| Operating Supply Voltage | V <sub>DD</sub> |            | 4.5 to 25   | V    |
| Operating Temperature    | Topr            |            | -40 to +125 | °C   |

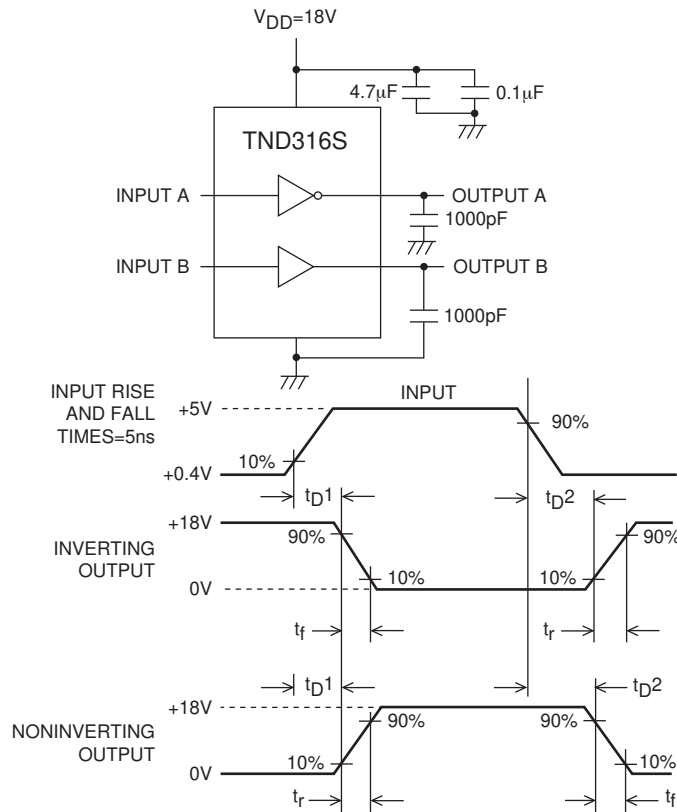
## Electrical Characteristics (AC Characteristics) at Ta=25°C, V<sub>DD</sub>=18V, V<sub>IN</sub>=5V

| Parameter          | Symbol          | Conditions             | Ratings |     |     | Unit |
|--------------------|-----------------|------------------------|---------|-----|-----|------|
|                    |                 |                        | min     | typ | max |      |
| Turn-On Rise Time  | t <sub>r</sub>  | C <sub>L</sub> =1000pF |         | 30  | 45  | ns   |
| Turn-Off Fall Time | t <sub>f</sub>  | C <sub>L</sub> =1000pF |         | 30  | 45  | ns   |
| Delay Time         | t <sub>D1</sub> | C <sub>L</sub> =1000pF |         | 30  | 45  | ns   |
|                    | t <sub>D2</sub> | C <sub>L</sub> =1000pF |         | 45  | 60  | ns   |

## Electrical Characteristics (DC Characteristics) at Ta=25°C, V<sub>DD</sub>=4.5 to 25V

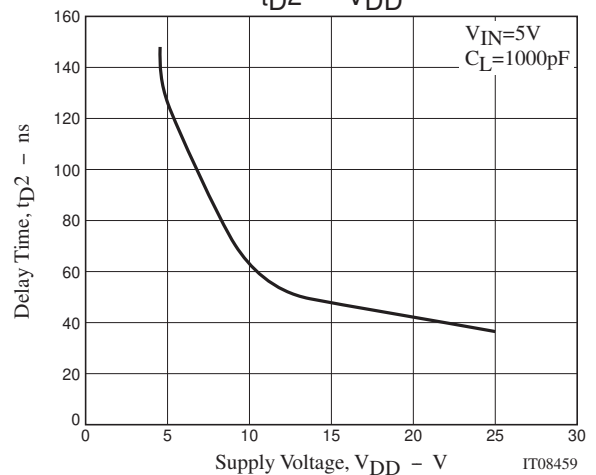
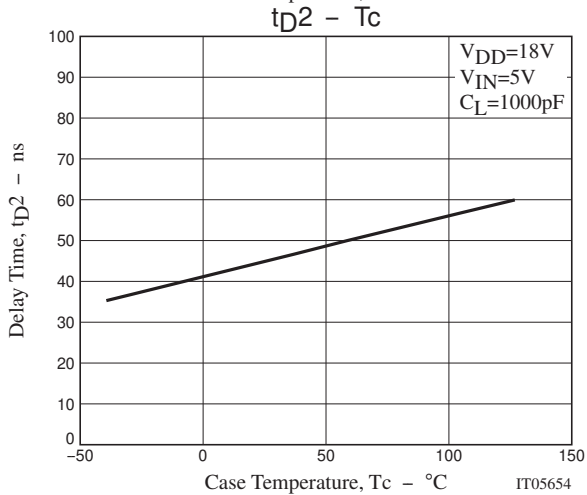
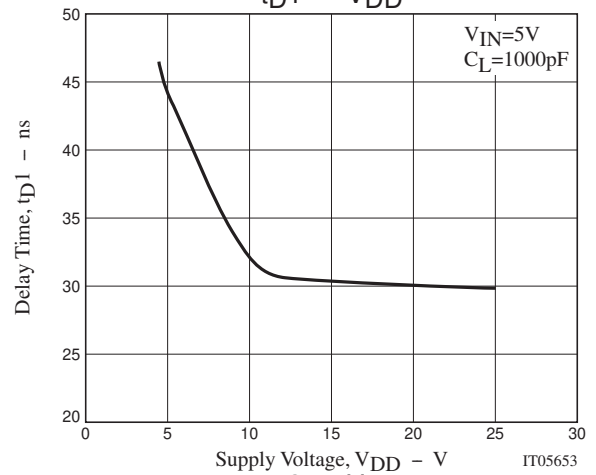
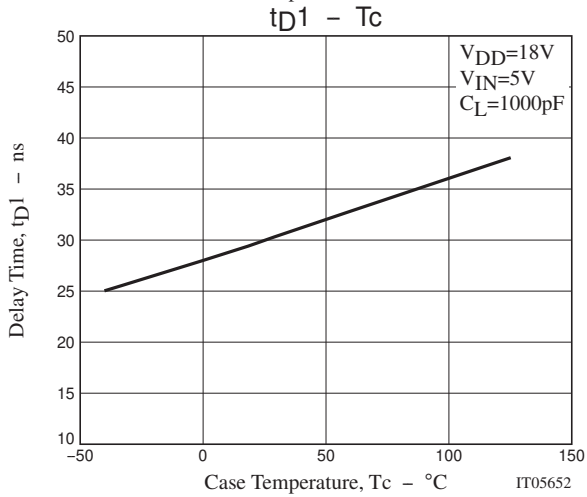
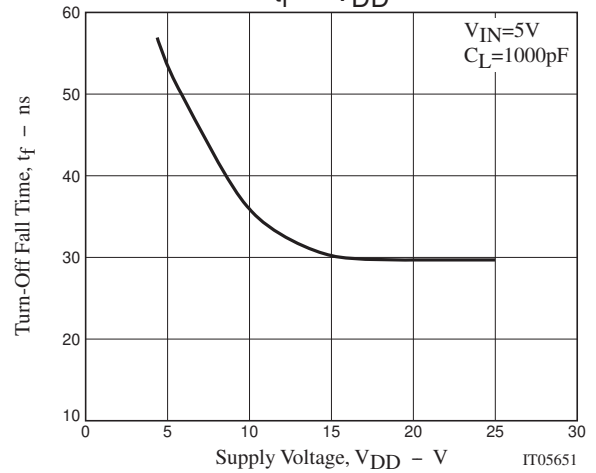
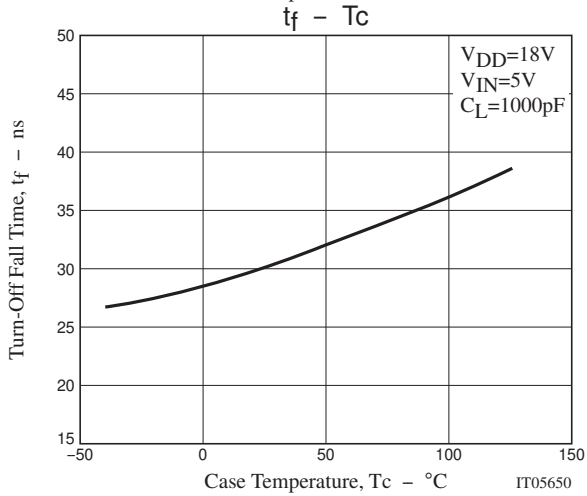
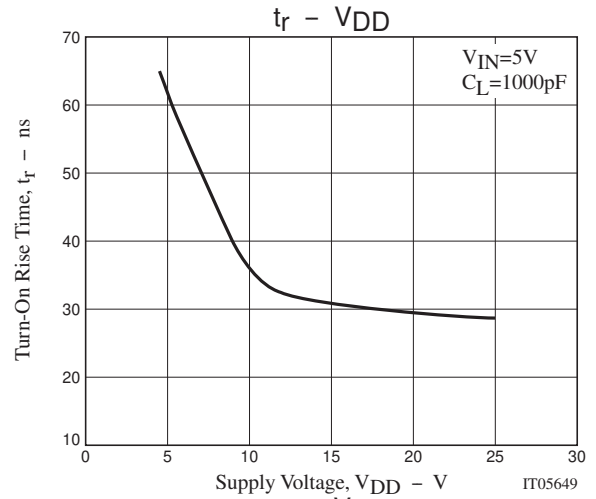
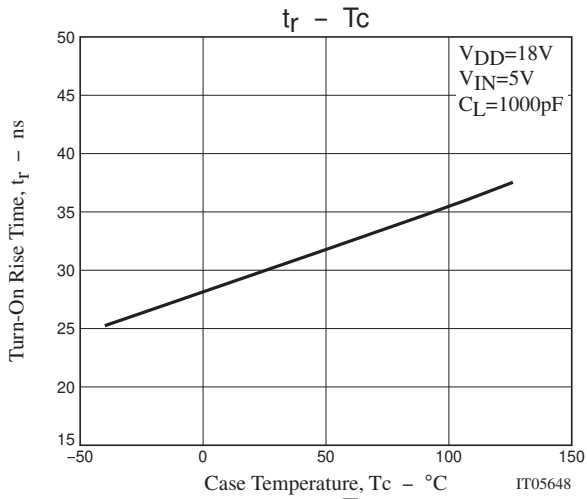
| Parameter                                | Symbol            | Conditions   | Ratings              |     |     | Unit |
|--|-------------------|--|----------------------|-----|-----|------|
|  |                   |  | min                  | typ | max |      |
| Logic "1" Input Voltage                  | V <sub>IH</sub>   |  | 2.6                  |     |     | V    |
| Logic "0" Input Voltage                  | V <sub>IL</sub>   |  |                      |     | 0.8 | V    |
| Logic "1" Input Bias Current             | I <sub>IN+</sub>  | V <sub>IN</sub> =V <sub>DD</sub> =25V                                |                      | 40  | 100 | μA   |
| Logic "0" Input Bias Current             | I <sub>IN-</sub>  | V <sub>IN</sub> =0V or V <sub>DD</sub>                               | -1                   |     | 1   | μA   |
| High-level Output Voltage                | V <sub>OH</sub>   | I <sub>O</sub> =0A   | V <sub>DD</sub> -0.1 |     |     | V    |
| Low-level Output Voltage                 | V <sub>OL</sub>   | I <sub>O</sub> =0A   |                      |     | 0.1 | V    |
| V <sub>DD</sub> Supply Current           | I <sub>supp</sub> | V <sub>DD</sub> =10V, V <sub>IN</sub> =3V, (both inputs)             |                      | 1.0 | 4.5 | mA   |
|  |                   | V <sub>DD</sub> =10V, V <sub>IN</sub> =0V, (both inputs)             |                      |     | 0.2 | mA   |
| Output High Short Circuit Pulsed Current | I <sub>O+</sub>   | V <sub>DD</sub> =18V, PW≤10μs, V <sub>OUT</sub> =0V                  |                      | 1.0 |     | A    |
| Output Low Short Circuit Pulsed Current  | I <sub>O-</sub>   | V <sub>DD</sub> =18V, PW≤10μs, V <sub>OUT</sub> =18V                 |                      | 1.0 |     | A    |
| Output On Resistance                     | R <sub>OUT</sub>  | V <sub>DD</sub> =18V, I <sub>load</sub> =10mA, V <sub>OUT</sub> ="H" |                      | 8   | 12  | Ω    |
|  |                   | V <sub>DD</sub> =18V, I <sub>load</sub> =10mA, V <sub>OUT</sub> ="L" |                      | 6   | 10  | Ω    |

## Switching Time Test Circuit

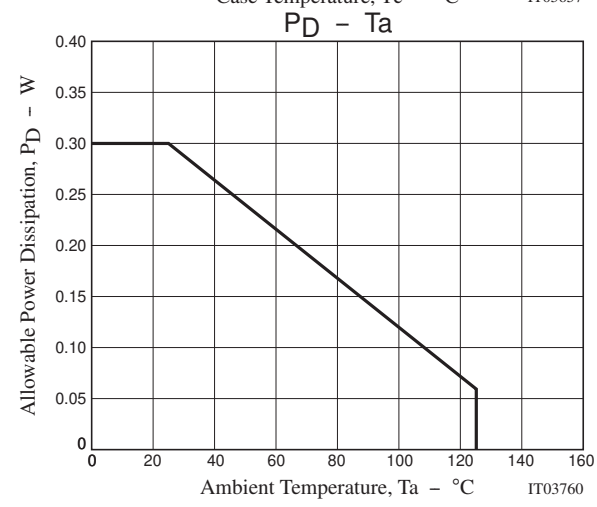
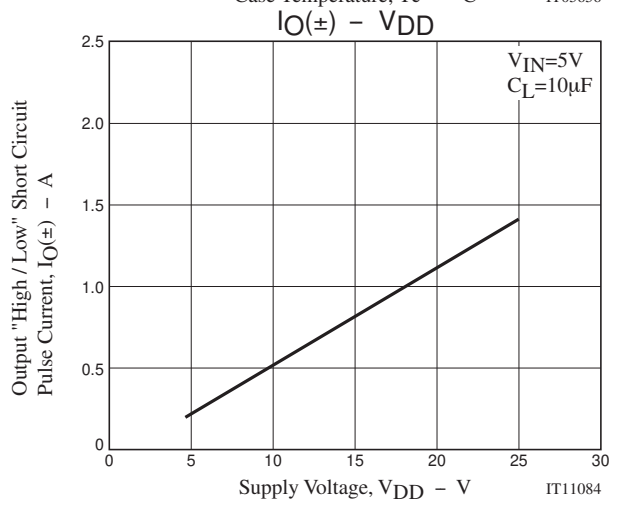
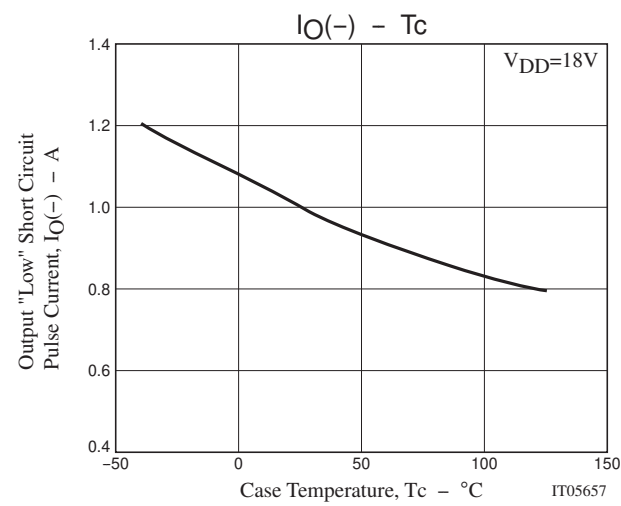
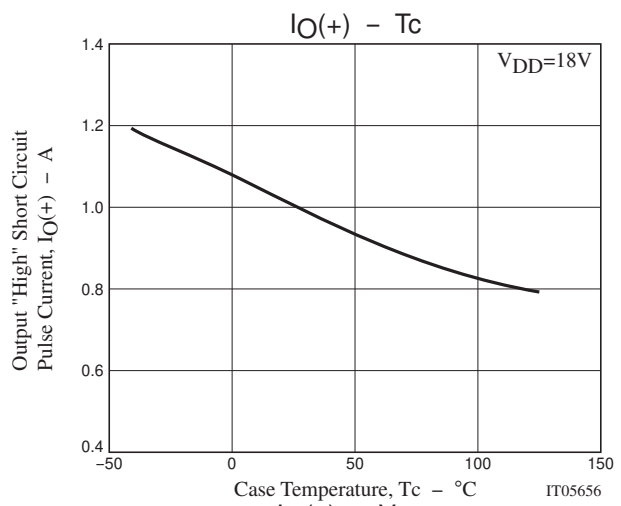


## Ordering Information

| Devices       | Package | Shipping       | memo                     |
|---------------|---------|----------------|--------------------------|
| TND316S-TL-2H | SOIC8   | 2,500pcs./reel | Pb Free and Halogen Free |







## Taping Specification

TND316S-TL-2H

### 1. Packing Format

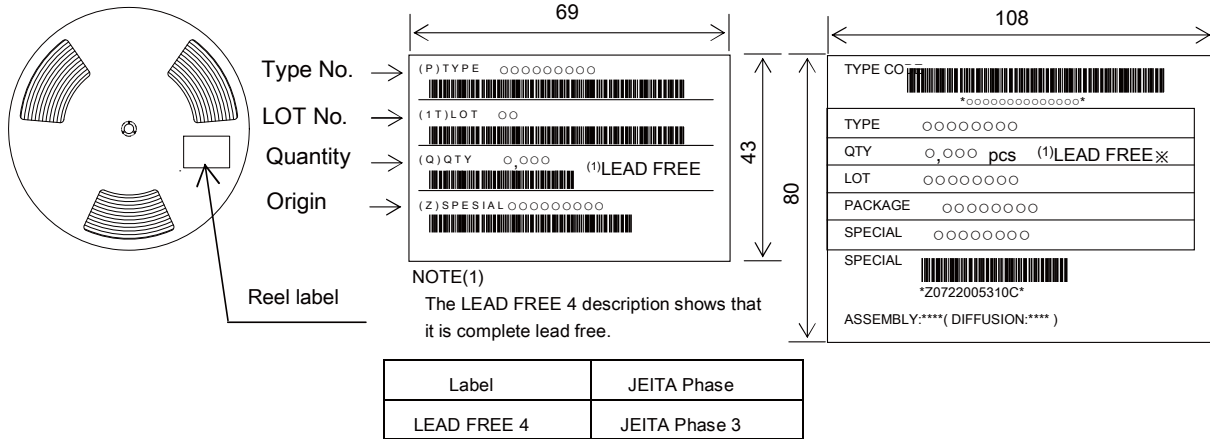
| Package Name | Carrier Tape Type | Maximum Number of devices contained (pcs) |           |           | Packing format  |  |
|--------------|-------------------|---|-----------|-----------|---|--|
|              |                   | Reel                                      | Inner box | Outer box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

#### Packing method

#### Reel label, Inner box label (unit: mm)

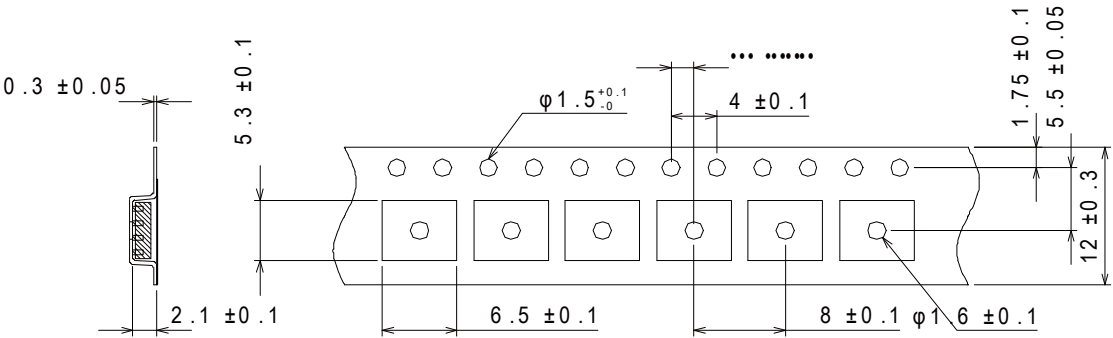
#### Outer box label

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

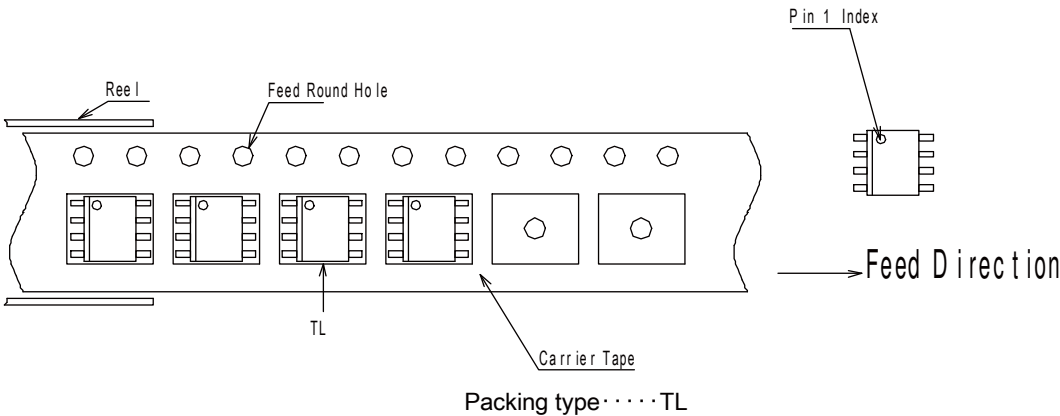


2. Taping configuration

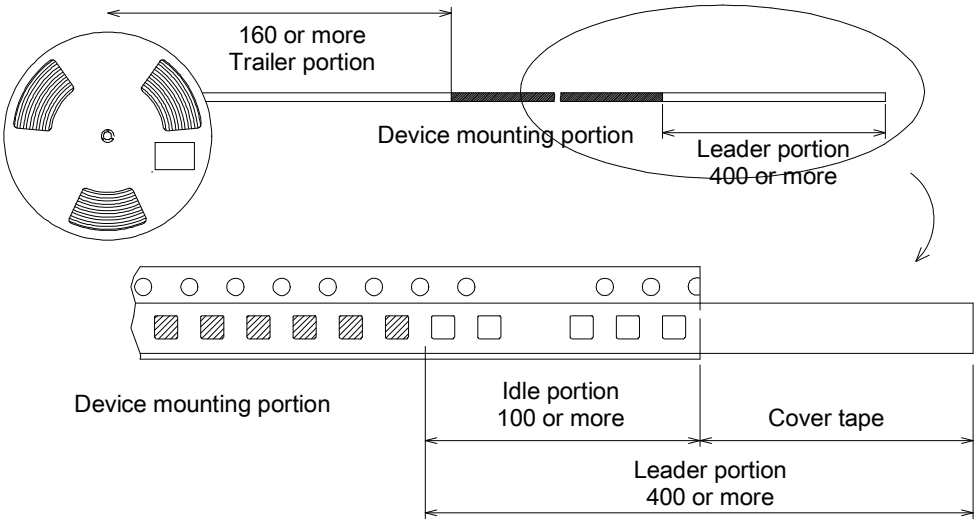
2-1. Carrier tape size (unit: mm)



2-2. Device placement direction



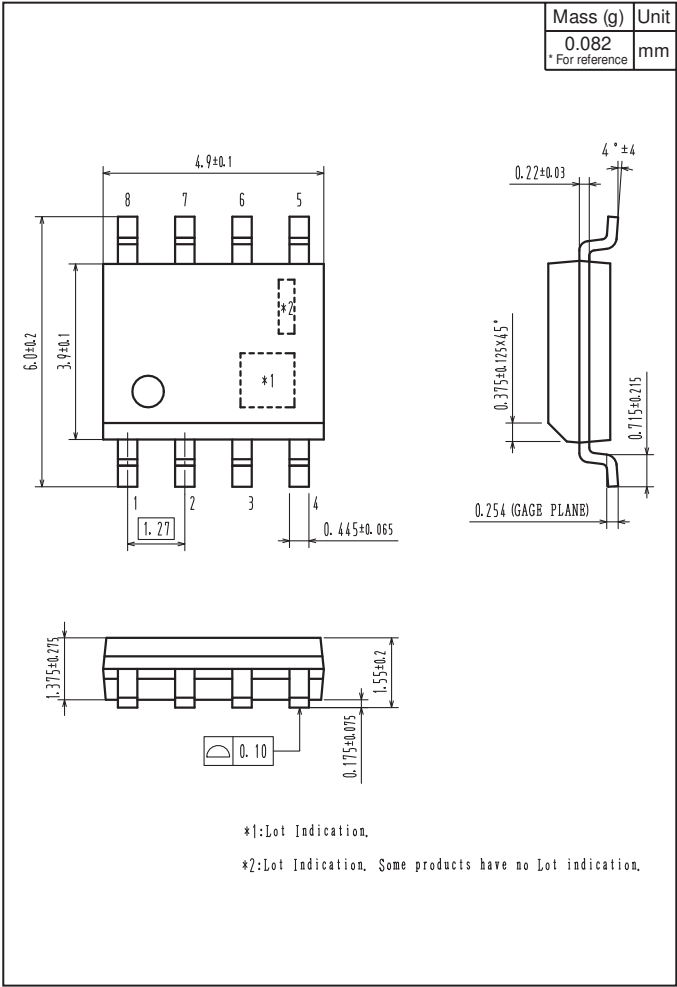
2-3. Leader portion and trailer portion (unit: mm )



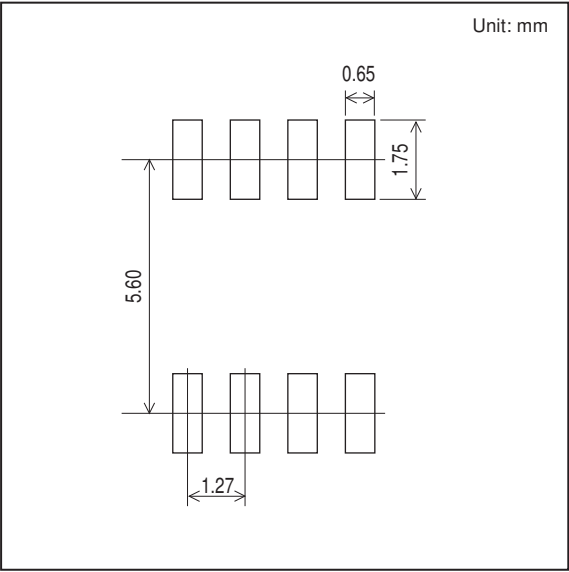
TND316S

Outline Drawing

TND316S-TL-2H



Land Pattern Example





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