Ordering number : ENA0421A

# TND315S

## Excellent Power Device

### Dual buffer driver for general purpose, Dual SOIC8

ON Semiconductor®

http://onsemi.com

## Features

- Dual 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)
- Monolithic structure (High voltage CMOS process adopted)
- Wide range of operating voltage : 4.5V to 25V
- Fast switching time (30ns typical at 1000pF load)
- Built-in input pull-down resistance

## Specifications

### Absolute Maximum Ratings at Ta=25°C

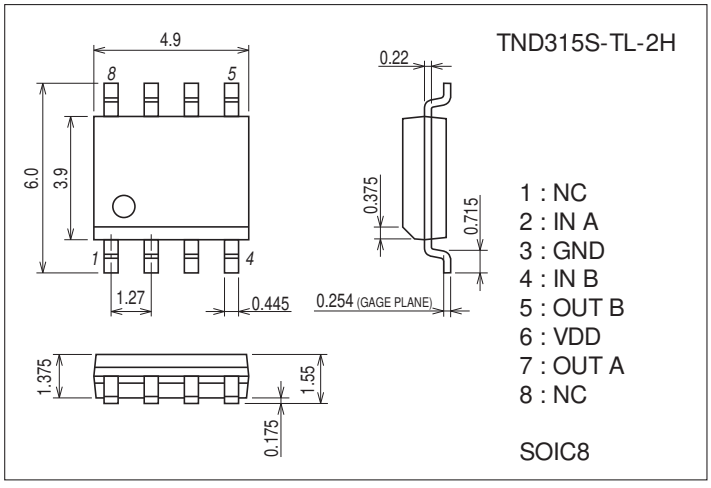
| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Supply Voltage | $V_{DD}$ | | 0 to 25 | V |
| Input Voltage | $V_{IN}$ | | GND −0.3 to $V_{DD}$+0.3 | V |
| Allowable Power Dissipation | $P_D$ max | | 0.3 | V |
| Junction Temperature | Tj | | −55 to 150 | °C |
| Storage Temperature | 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)

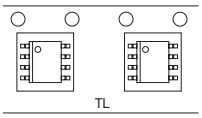
7072-005



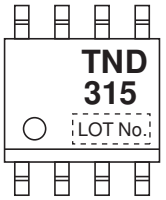

### Product & Package Information

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

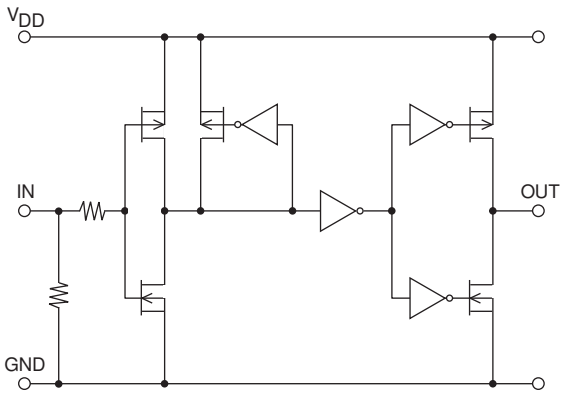
### Packing Type: TL




### Marking




### Block Diagram



## Recommend Operating Conditions at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Operating Supply Voltage | $V_{DD}$ | | 4.5 to 25 | V |
| Operating Temperature | Topr | | −40 to +125 | °C |

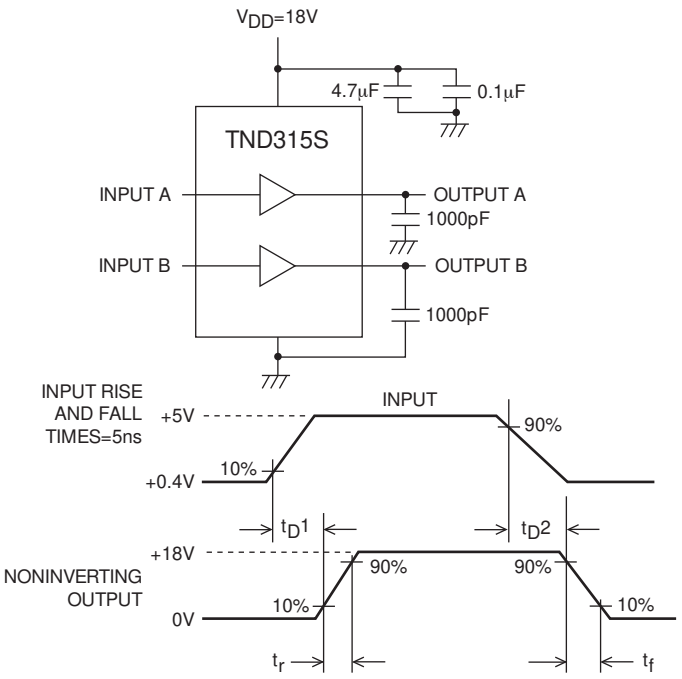
## Electrical Characteristics (AC Characteristics) at Ta=25°C, $V_{DD}$=18V, $V_{IN}$=5V

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Turn-ON Rise Time | $t_r$ | $C_L$=1000pF | | 30 | 45 | ns |
| Turn-OFF Fall Time | $t_f$ | $C_L$=1000pF | | 30 | 45 | ns |
| Delay Time | $t_{D}1$ | $C_L$=1000pF | | 30 | 45 | ns |
| | $t_{D}2$ | $C_L$=1000pF | | 45 | 60 | ns |

## Electrical Characteristics (DC Characteristics) at Ta=25°C, $V_{DD}$=4.5 to 25V

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Logic “1” Input Voltage | $V_{IH}$ | | 2.6 | | | V |
| Logic “0” Input Voltage | $V_{IL}$ | | | | 0.8 | V |
| Logic “1” Input Bias Current | $I_{IN+}$ | $V_{IN}$=$V_{DD}$=25V | | 40 | 100 | μA |
| Logic “0” Input Bias Current | $I_{IN-}$ | $V_{IN}$=0V or $V_{DD}$ | −1 | | 1 | μA |
| High Level Output Voltage | $V_{OH}$ | $I_O$=0A | $V_{DD}$-0.1 | | | V |
| Low Level Output Voltage | $V_{OL}$ | $I_O$=0A | | | 0.1 | V |
| $V_{DD}$ Supply Current | Isupp | $V_{DD}$=10V, $V_{IN}$=3V, (both inputs) | | 1.0 | 4.5 | mA |
| | | $V_{DD}$=10V, $V_{IN}$=0V, (both inputs) | | | 0.2 | mA |
| Output High Short Circuit Pulse Current | $I_{O+}$ | $V_{DD}$=18V, PW≤10μs, $V_{OUT}$=0V | | 1.0 | | A |
| Output Low Short Circuit Pulse Current | $I_{O-}$ | $V_{DD}$=18V, PW≤10μs, $V_{OUT}$=18V | | 1.0 | | A |
| Output On Resistance | ROUT | $V_{DD}$=18V, Iload=10mA, $V_{OUT}$=“H” | | 8 | 12 | Ω |
| | | $V_{DD}$=18V, Iload=10mA, $V_{OUT}$=“L” | | 6 | 10 | Ω |

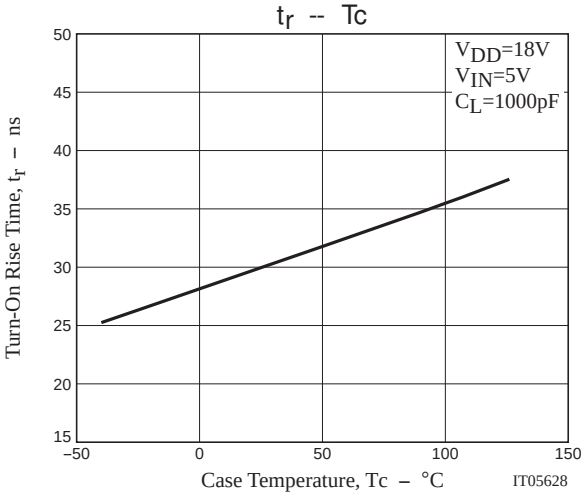
## Switching Time Test Circuit



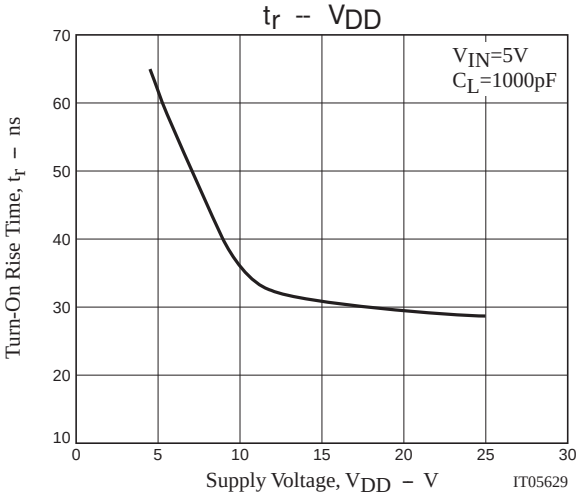

## Ordering Information

| Devices | Package | Shipping | memo |
|---|---|---|---|
| TND315S-TL-2H | SOIC8 | 2,500pcs./reel | Pb Free and Halogen Free |

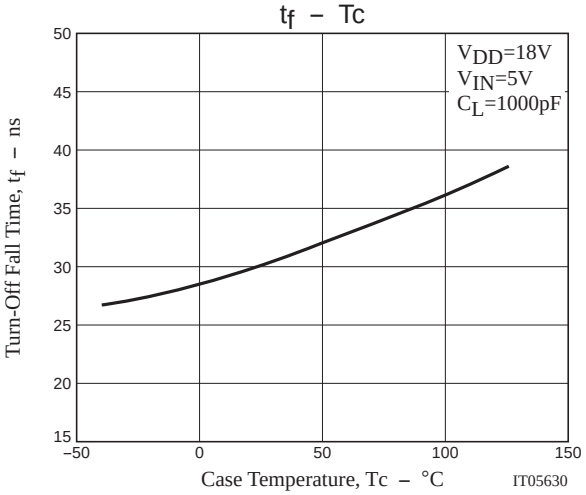
$t_r$ -- Tc



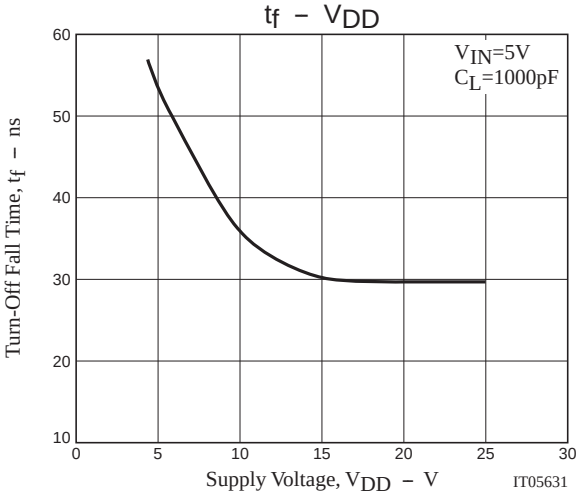

$t_r$ – $V_{DD}$



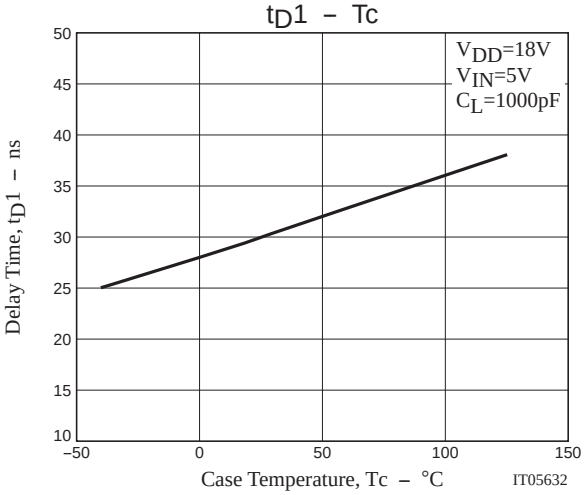

$t_f$ – Tc



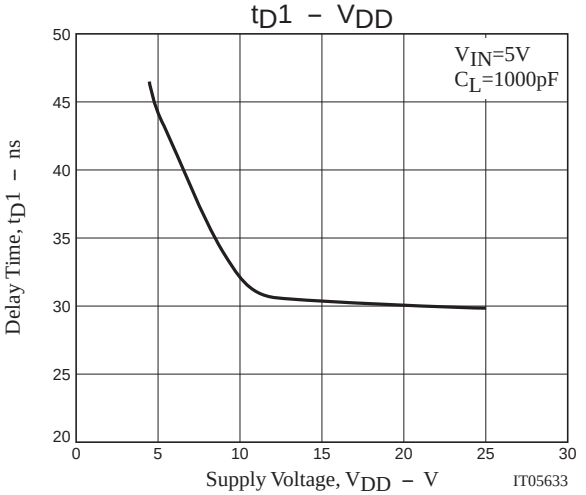

$t_f$ – $V_{DD}$



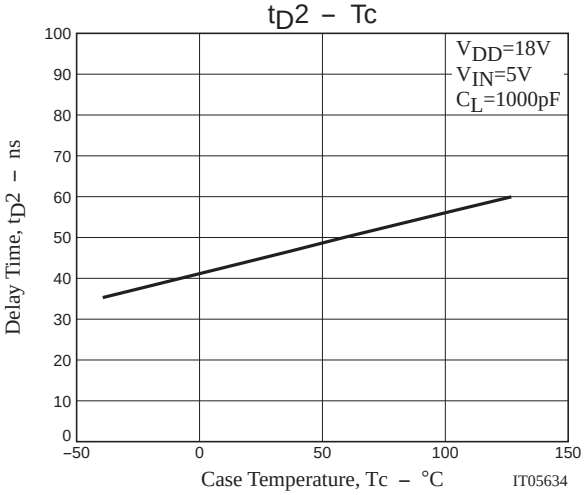

$t_{D1}$ – Tc



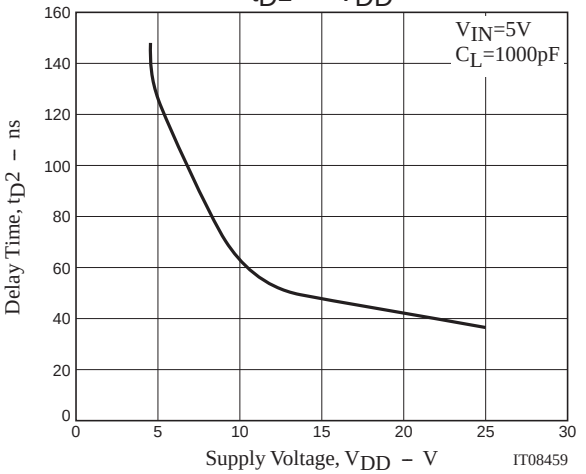

$t_{D1}$ – $V_{DD}$

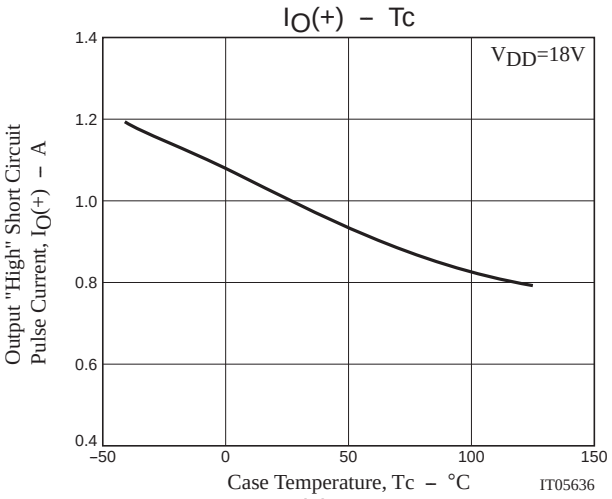


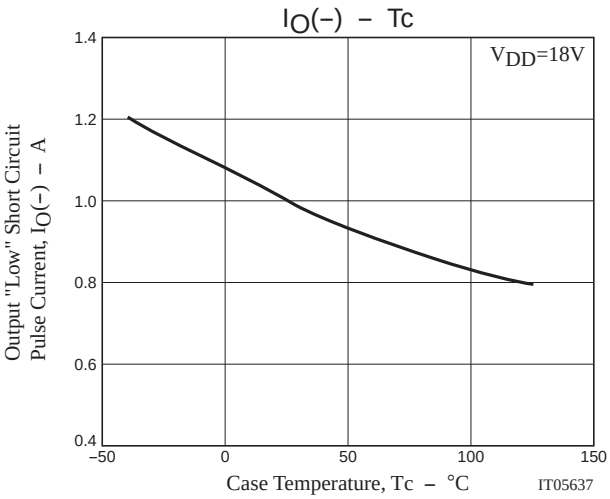

$t_{D2}$ – Tc

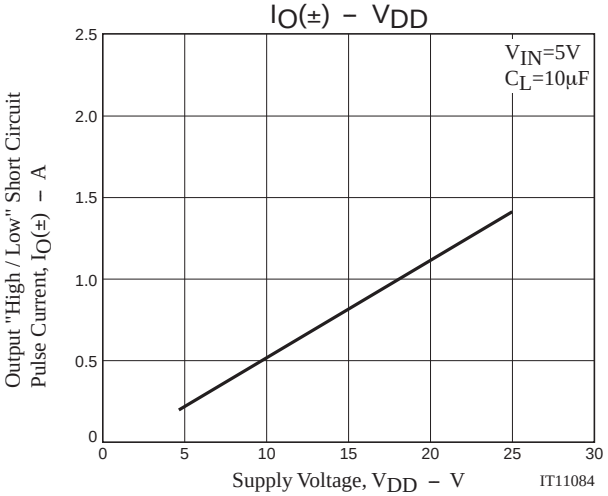


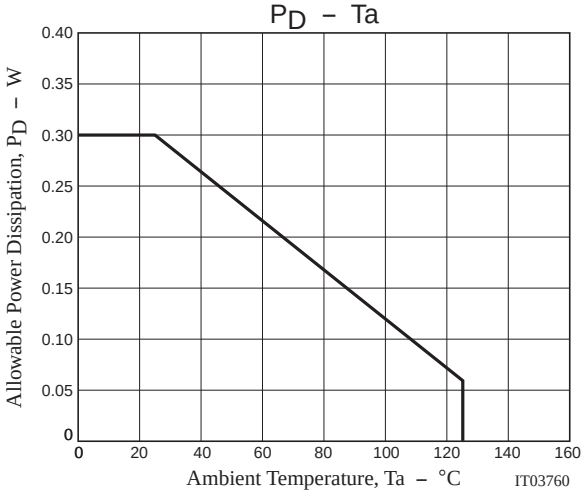

$t_{D2}$ – $V_{DD}$




IO(+) – Tc
VDD=18V
Output "High" Short Circuit Pulse Current, IO(+) – A
1.4
1.2
1.0
0.8
0.6
0.4
–50
0
50
100
150
Case Temperature, Tc – °C
IT05636


IO(–) – Tc
VDD=18V
Output "Low" Short Circuit Pulse Current, IO(–) – A
1.4
1.2
1.0
0.8
0.6
0.4
–50
0
50
100
150
Case Temperature, Tc – °C
IT05637


IO(±) – VDD
VIN=5V
CL=10µF
Output "High / Low" Short Circuit Pulse Current, IO(±) – A
2.5
2.0
1.5
1.0
0.5
0
0
5
10
15
20
25
30
Supply Voltage, VDD – V
IT11084


PD – Ta
Allowable Power Dissipation, PD – W
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0
0
20
40
60
80
100
120
140
160
Ambient Temperature, Ta – °C
IT03760

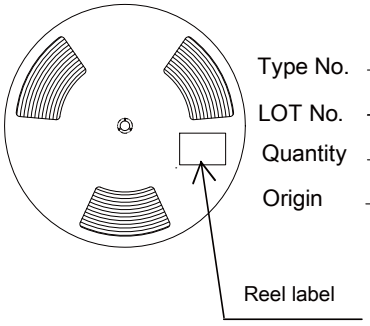
## Taping Specification

TND315S-TL-2H

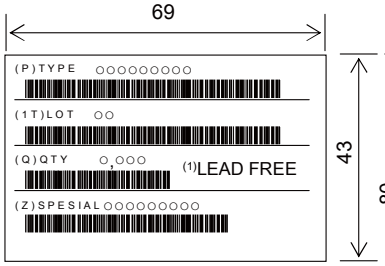
1. Packing Format

| 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

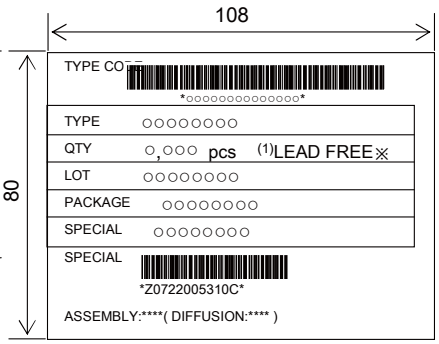



Reel label,Inner box label
(unit: mm)




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

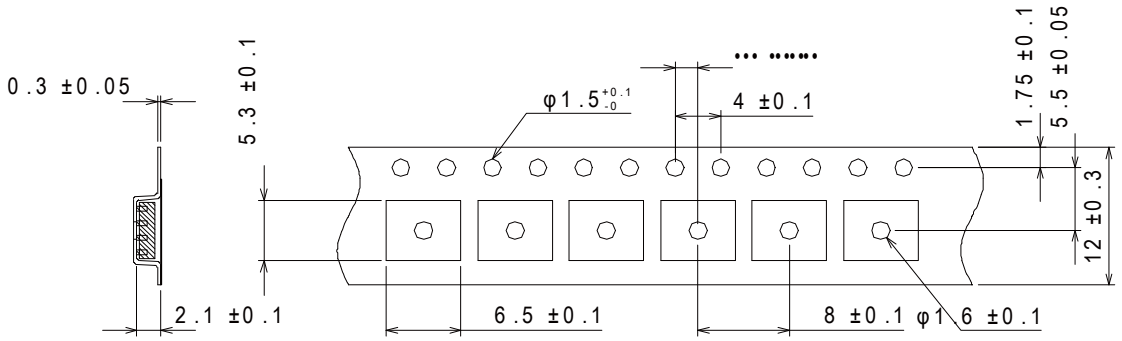
Outer box label
It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.



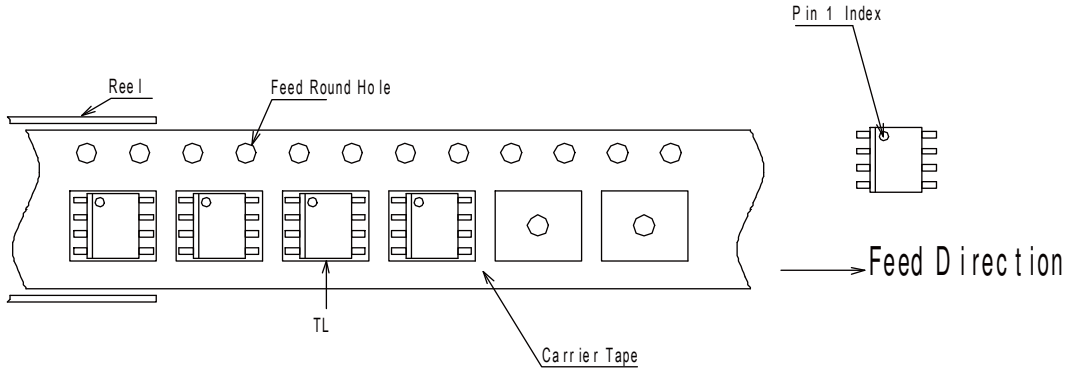

| Label | JEITA Phase |
|---|---|
| LEAD FREE 4 | JEITA Phase 3 |

2. Taping configuration

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

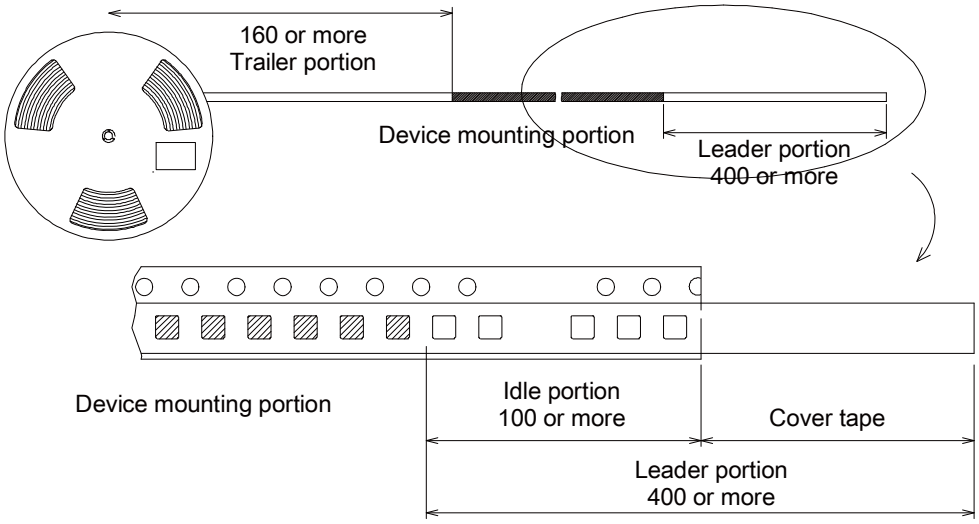



2-2. Device placement direction



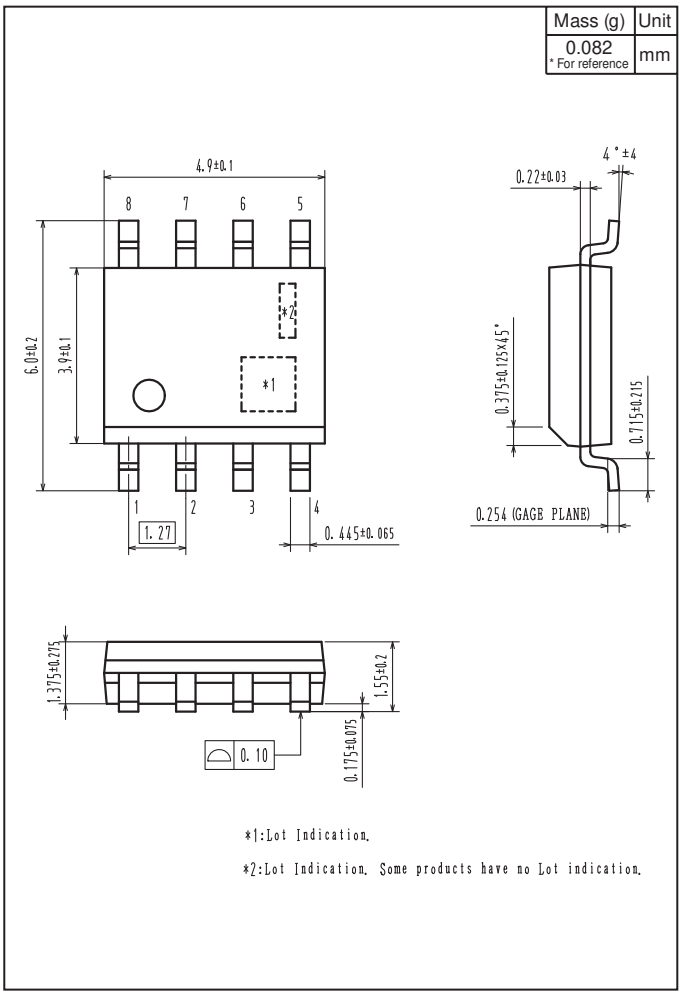

Packing type·····TL

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

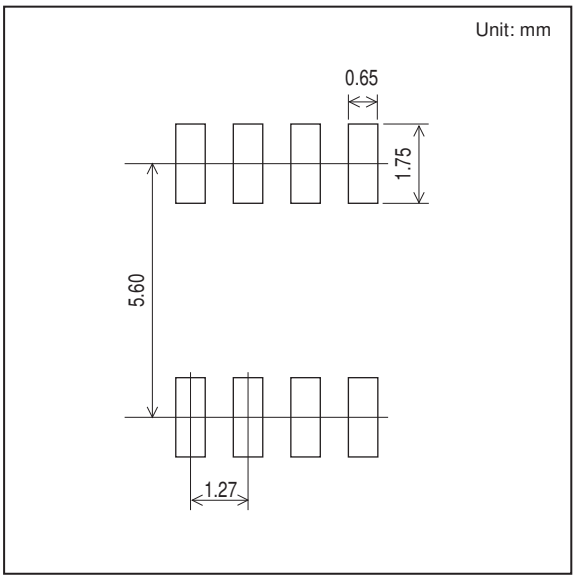


## Outline Drawing

TND315S-TL-2H




## Land Pattern Example



ON Semiconductor and the ON logo are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.