Ordering number : ENA0422A

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 Ta=25°C

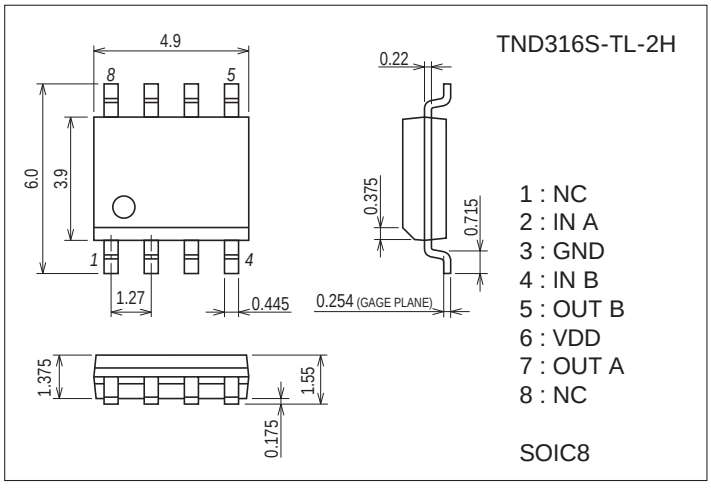
Parameter	Symbol	Conditions	Ratings	Unit
Supply Voltage	V_{DD}		0 to 25	V
Input Voltage	V_{IN}		GND−0.3 to V_{DD}+0.3	V
Allowable Power Dissipation	P_D max		0.3	W
Junction Temperature	Tj		−55 to +150	°C
Storage Temperature	Tstg		−55 to +150	°C

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)

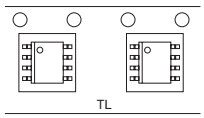
7072-005



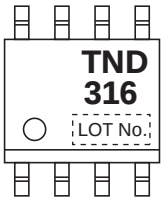
Product & Package Information

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

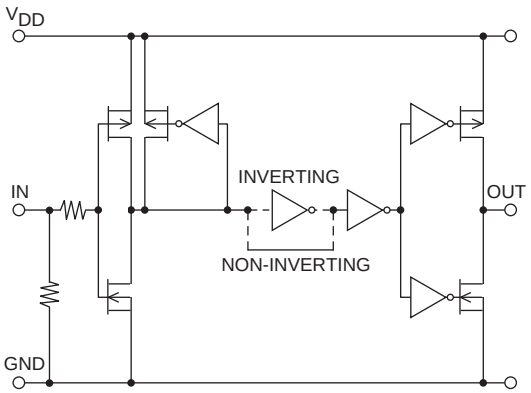
Packing Type: TL



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

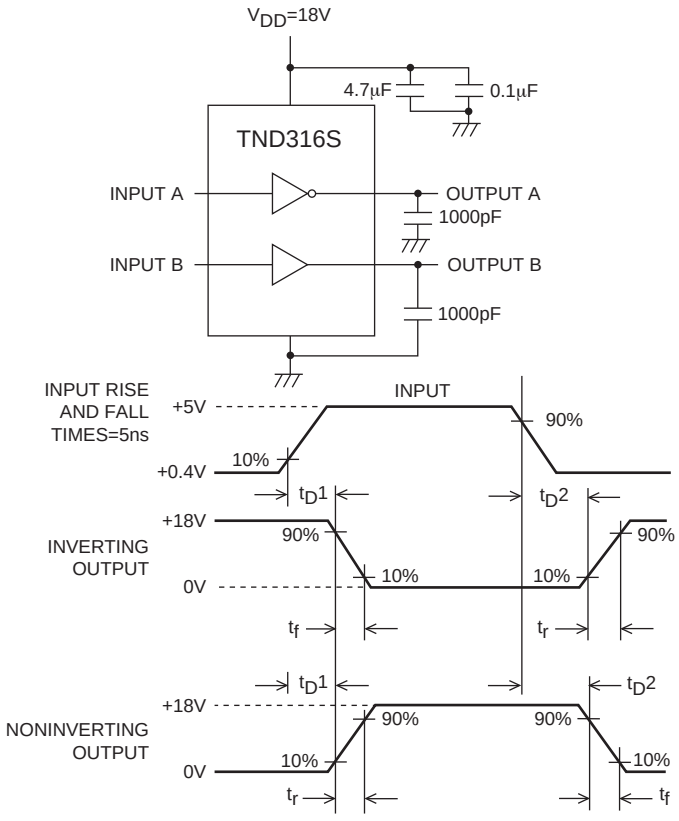
Electrical Characteristics (AC Characteristics) at Ta=25°C, V_{DD}=18V, V_{IN}=5V

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 Pulsed Current	I_O+	V_{DD}=18V, PW≤10μs, V_{OUT}=0V		1.0		A
Output Low Short Circuit Pulsed 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

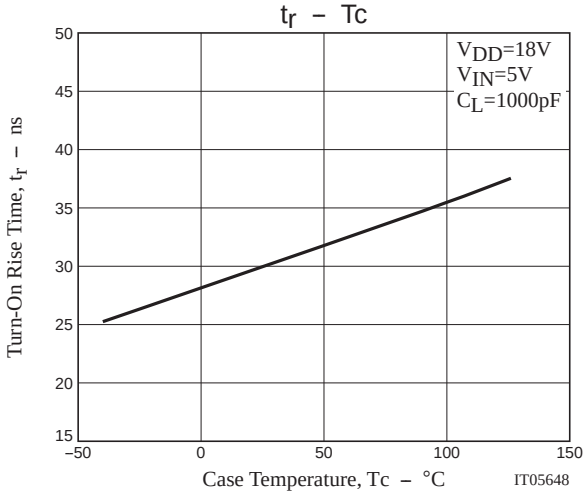
Switching Time Test Circuit



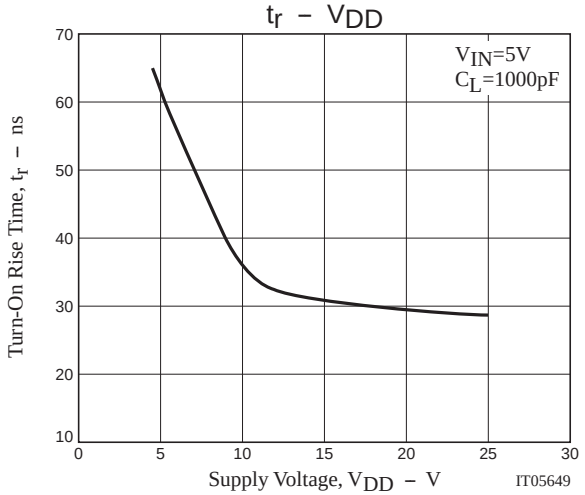
Ordering Information

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

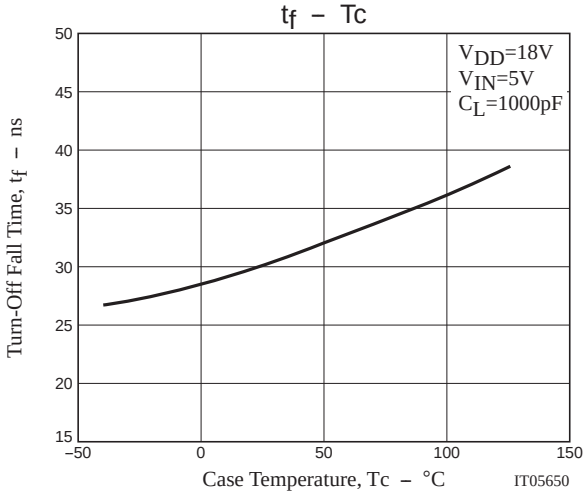
t_r – Tc



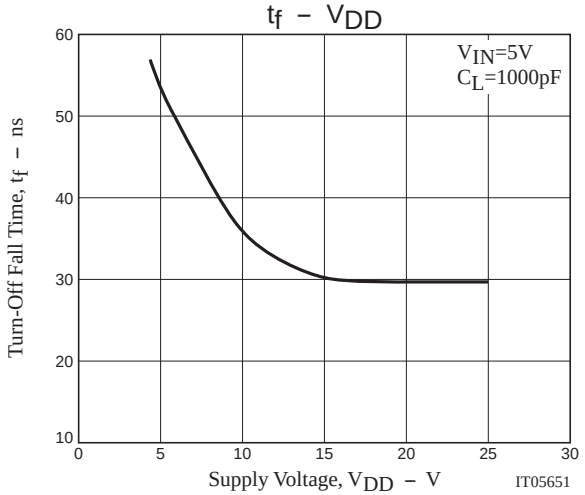
t_r – V_{DD}



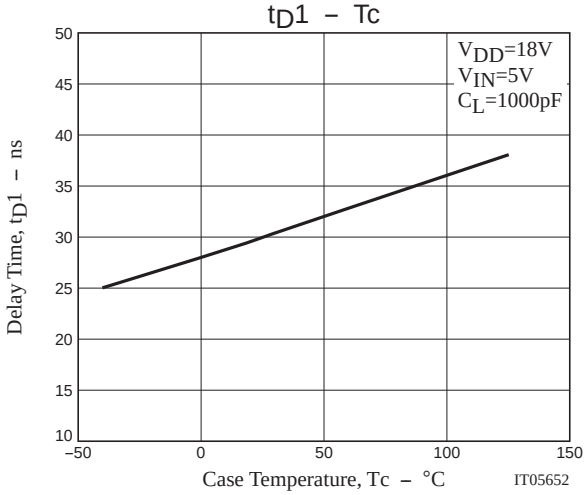
t_f – Tc



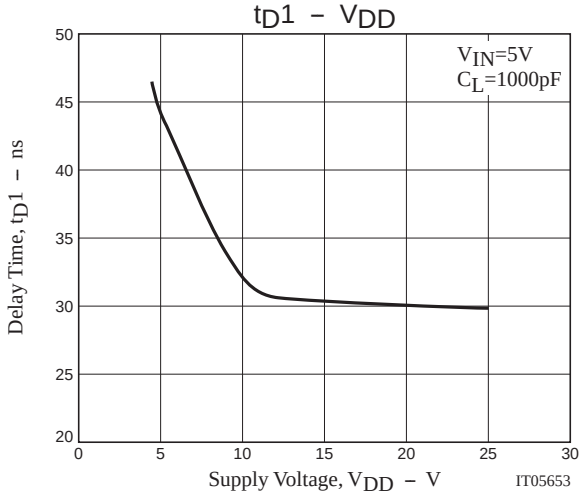
t_f – V_{DD}



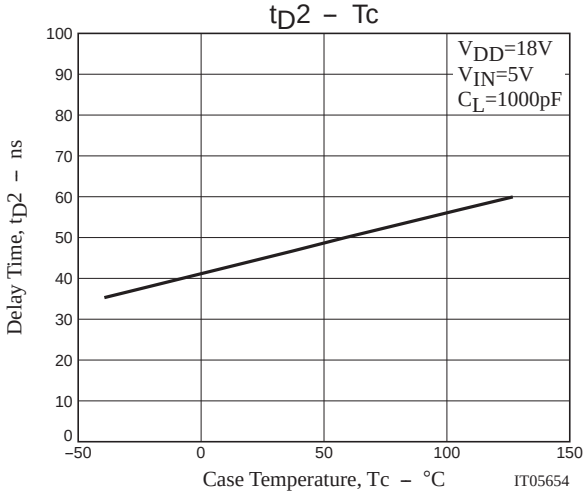
$t_{D}1$ – Tc



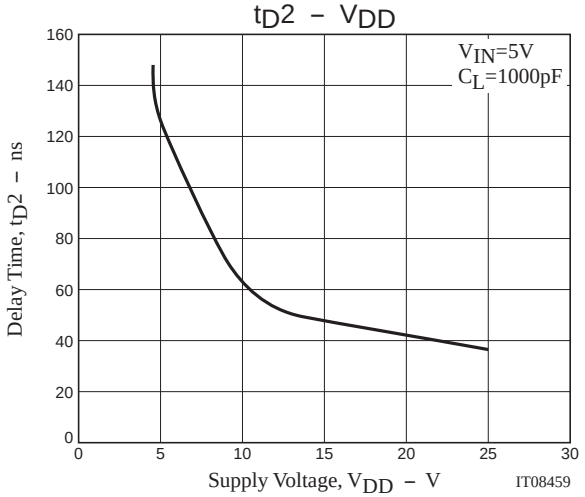
$t_{D}1$ – V_{DD}

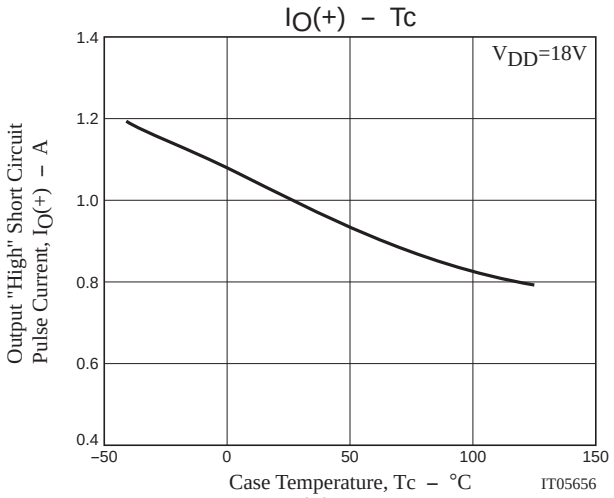


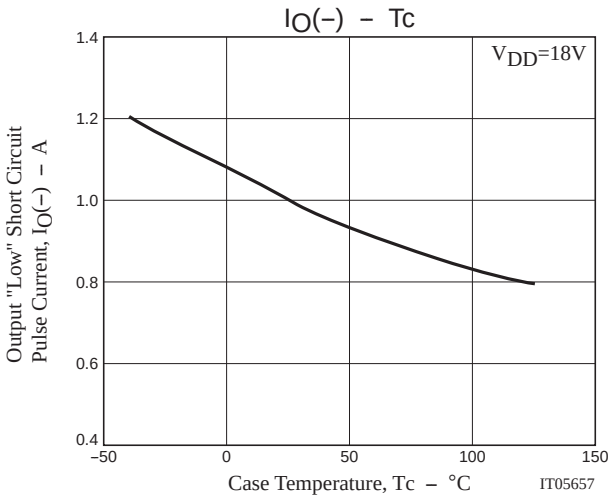
$t_{D}2$ – Tc

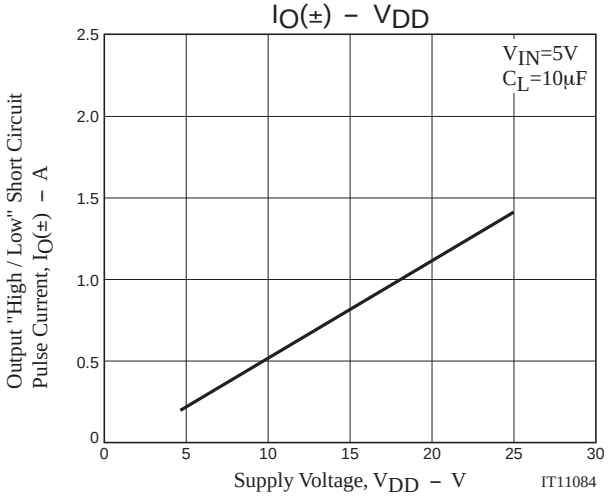


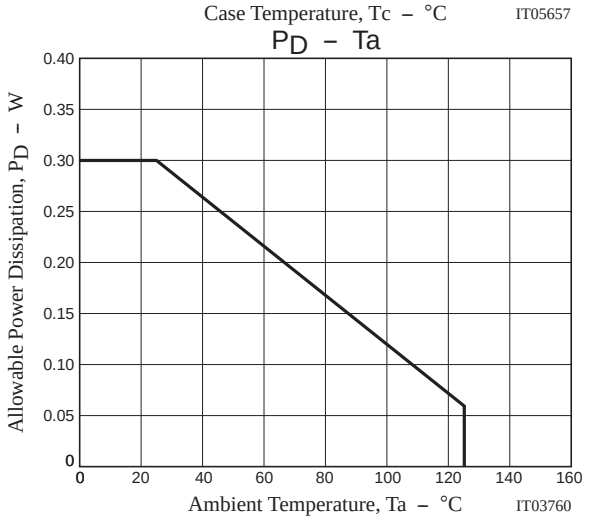
$t_{D}2$ – V_{DD}




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
IT05656


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
IT05657


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

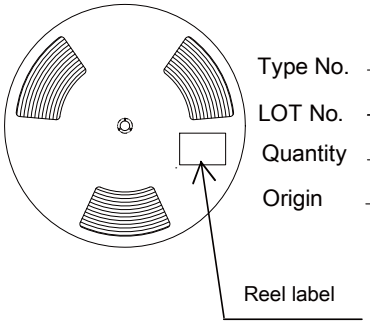
Taping Specification

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 Dimensions :mm(external) 340×95×340	2 inner boxes contained Dimensions :mm(external) 360×210×375

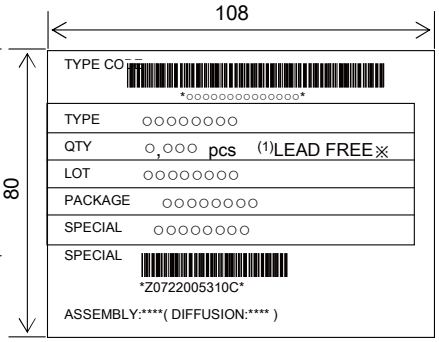
Packing method



Reel label,Inner box label
(unit: mm)

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

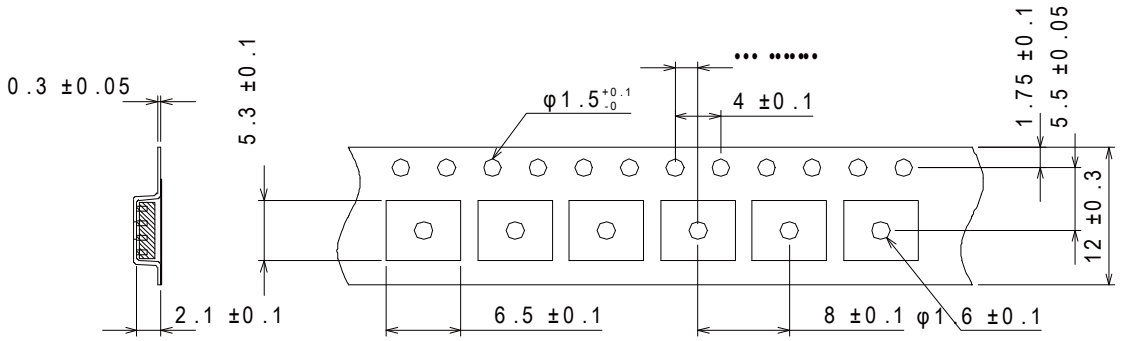
Outer box label
It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.



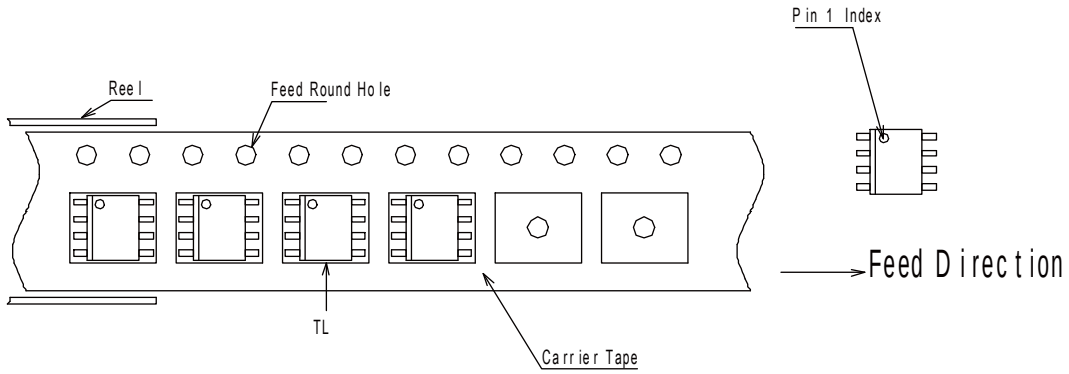
Label	JEITA Phase
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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

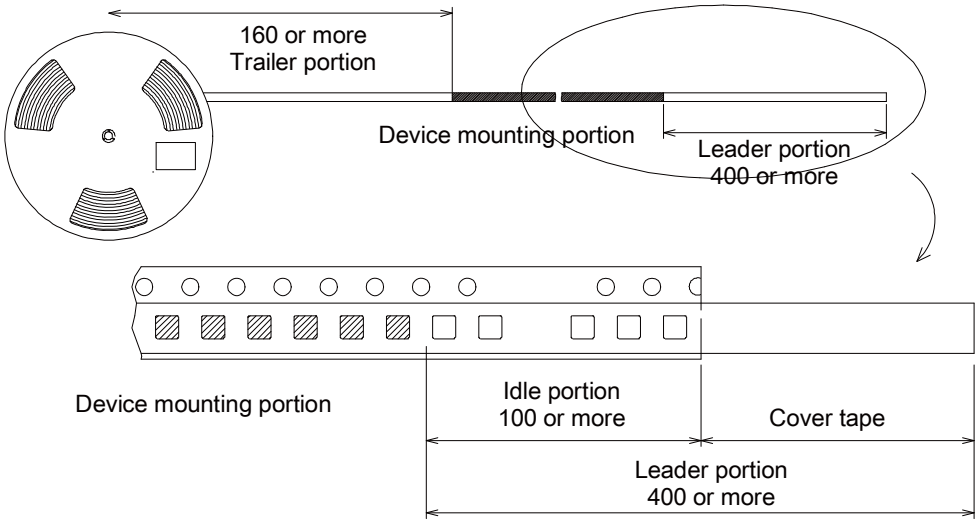


2-2. Device placement direction



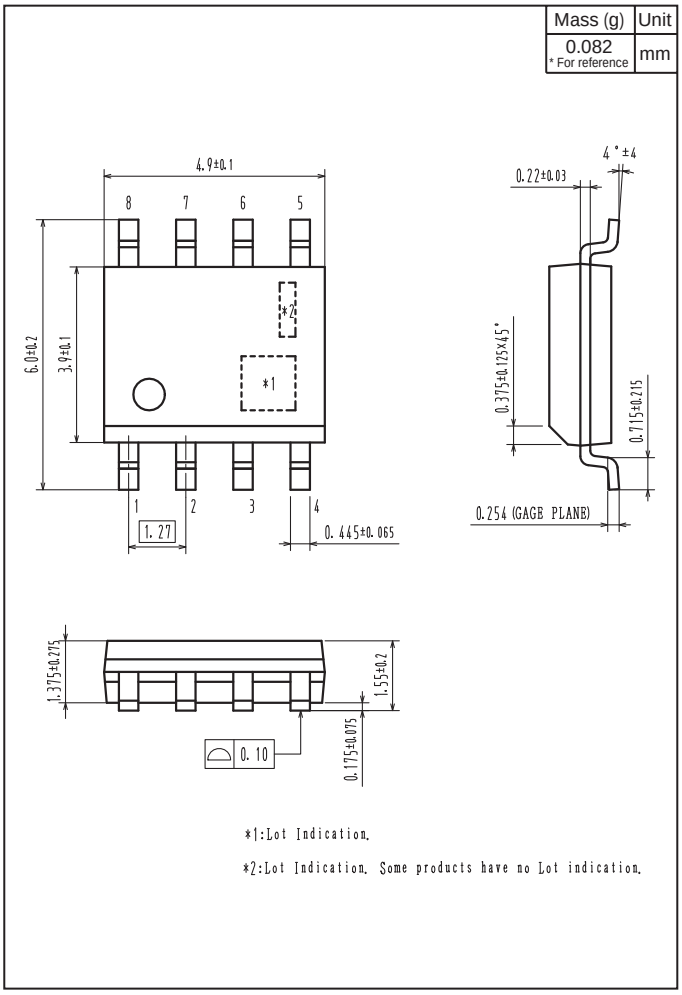
Packing type·····TL

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



Outline Drawing

TND316S-TL-2H



Land Pattern Example