Ordering number : EN6957B

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

3LN01S — General-Purpose Switching Device Applications

Features

- Low ON-resistance
- Ultrahigh-speed switching
- 2.5V drive

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		30	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		0.15	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	0.6	A
Allowable Power Dissipation	P_D		0.15	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C

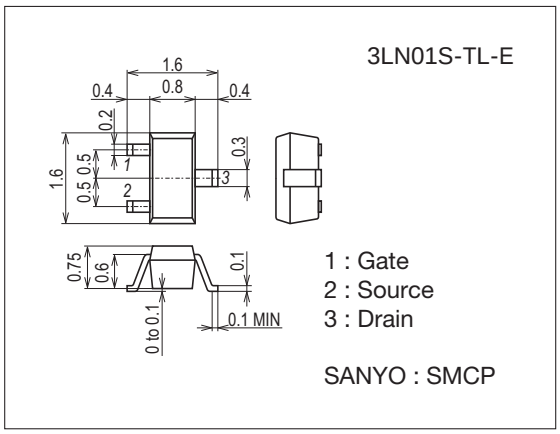
This product is designed to “ESD immunity < 200V*”, so please take care when handling.

* Machine Model

Package Dimensions

unit : mm (typ)

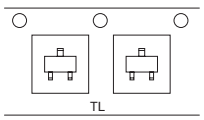
7013A-013



Product & Package Information

- Package : SMCP
- JEITA, JEDEC : SC-75, SOT-416
- Minimum Packing Quantity : 3,000 pcs./reel

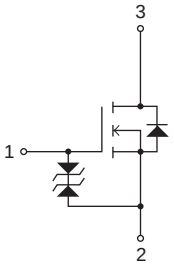
Packing Type: TL



Marking



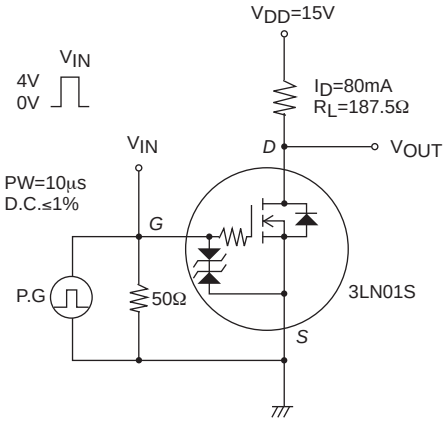
Electrical Connection



Electrical Characteristics at Ta=25°C

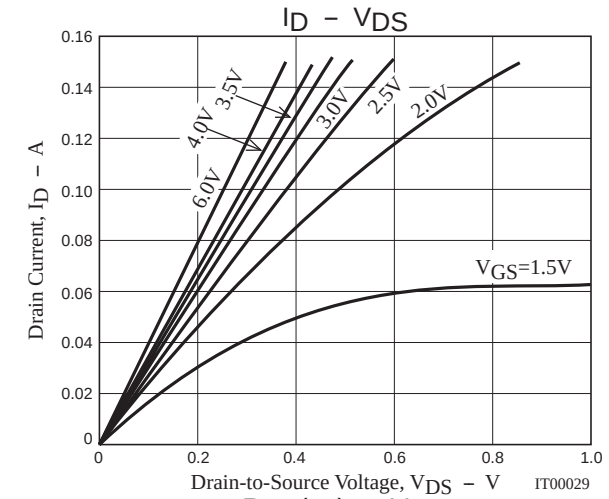
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=10V, I_D=100μA	0.4		1.3	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=80mA	0.15	0.22		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=80mA, V_{GS}=4V		2.9	3.7	Ω
	R_{DS}(on)2	I_D=40mA, V_{GS}=2.5V		3.7	5.2	Ω
	R_{DS}(on)3	I_D=10mA, V_{GS}=1.5V		6.4	12.8	Ω
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		7.0		pF
Output Capacitance	Coss			5.9		pF
Reverse Transfer Capacitance	Crss			2.3		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit.		19		ns
Rise Time	t_r			65		ns
Turn-OFF Delay Time	t_{d}(off)			155		ns
Fall Time	t_f			120		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_D=150mA		1.58		nC
Gate-to-Source Charge	Qgs			0.26		nC
Gate-to-Drain “Miller” Charge	Qgd			0.31		nC
Diode Forward Voltage	V_{SD}	I_S=150mA, V_{GS}=0V		0.87	1.2	V

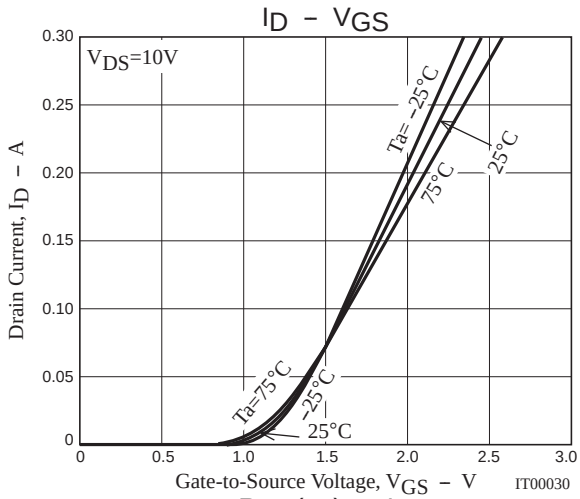
Switching Time Test Circuit

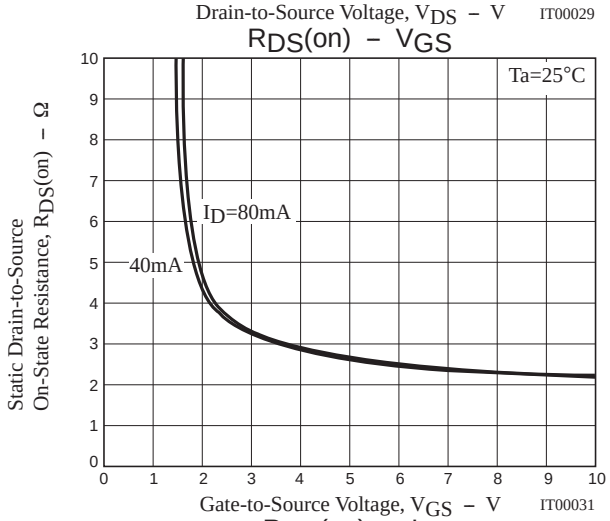


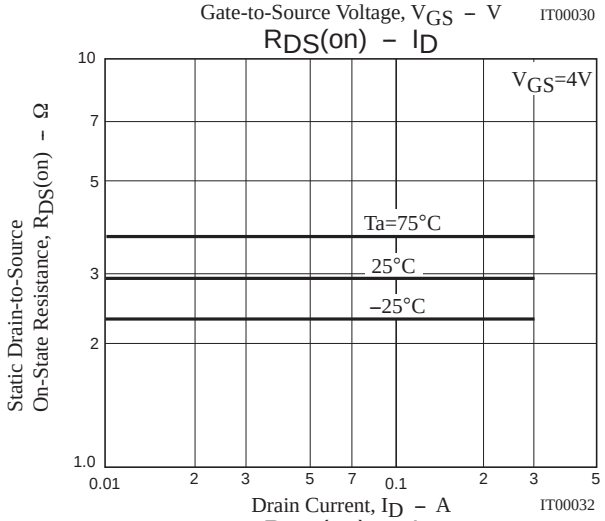
Ordering Information

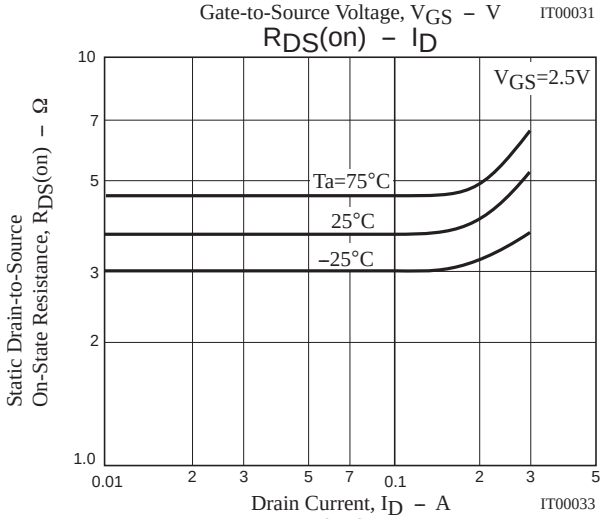
Device	Package	Shipping	memo
3LN01S-TL-E	SMCP	3,000pcs./reel	Pb Free

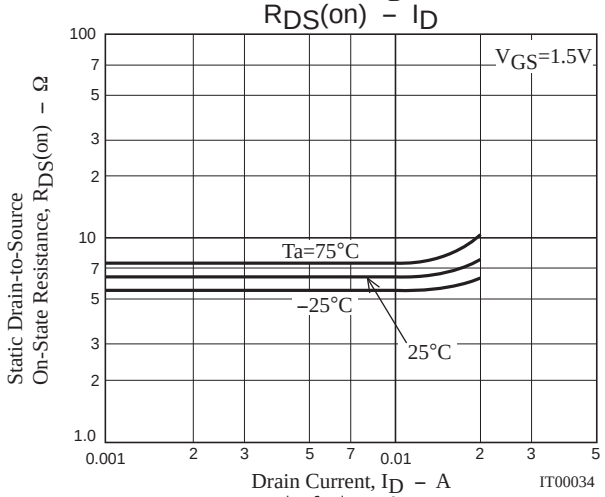

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT00029
4.0V
3.5V
6.0V
3.0V
2.5V
2.0V
VGS=1.5V

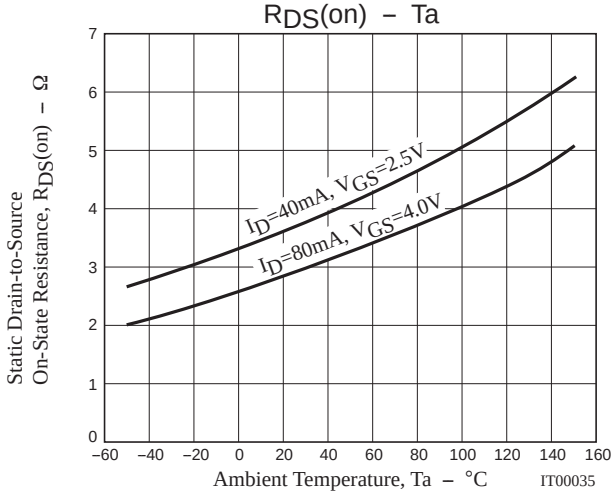

ID – VGS
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT00030
VDS=10V
Ta= –25°C
25°C
75°C
Ta=75°C
–25°C
25°C

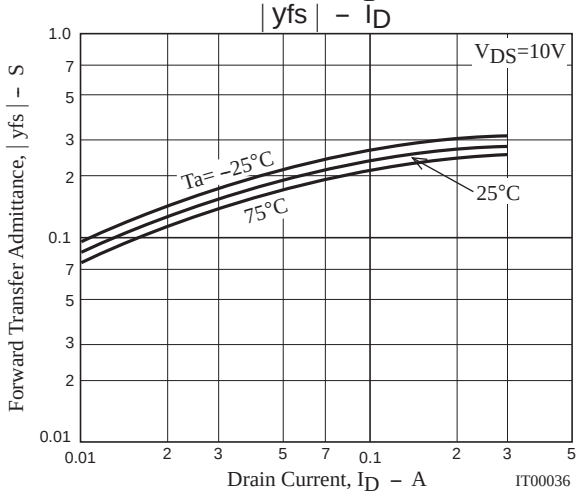

RDS(on) – VGS
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Gate-to-Source Voltage, VGS – V
IT00031
Ta=25°C
ID=80mA
40mA

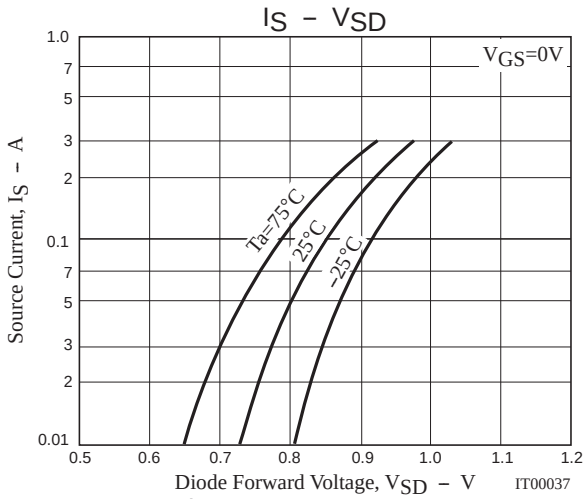

RDS(on) – ID
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00032
VGS=4V
Ta=75°C
25°C
–25°C

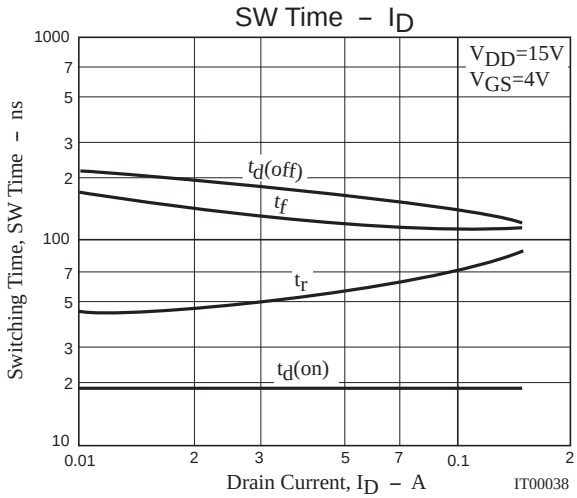

RDS(on) – ID
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00033
VGS=2.5V
Ta=75°C
25°C
–25°C

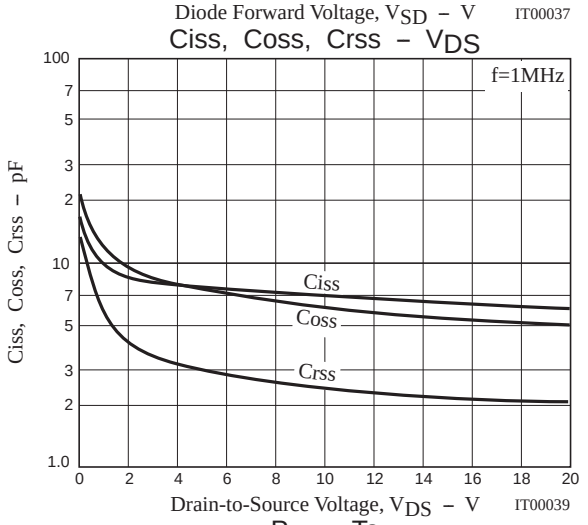

RDS(on) – ID
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00034
VGS=1.5V
Ta=75°C
–25°C
25°C

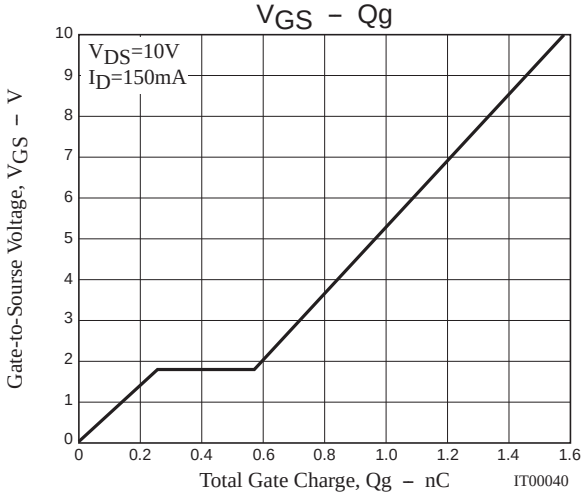

RDS(on) – Ta
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
IT00035
ID=40mA, VGS=2.5V
ID=80mA, VGS=4.0V

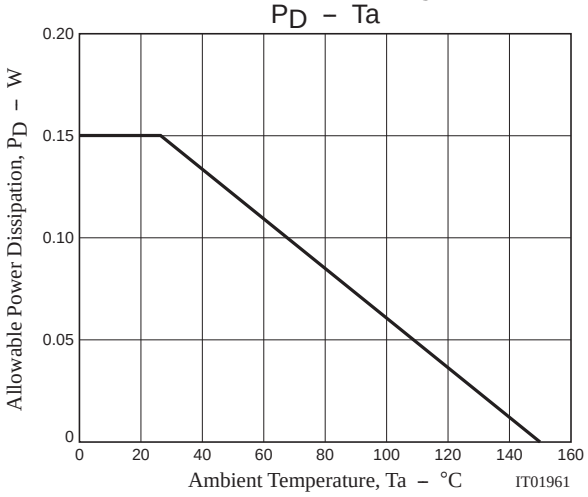

| yfs | – ID
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT00036
VDS=10V
Ta= –25°C
75°C
25°C


IS – VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT00037


SW Time – ID
VDD=15V
VGS=4V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT00038


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT00039


VGS – Qg
VDS=10V
ID=150mA
Gate-to-Sourse Voltage, VGS – V
Total Gate Charge, Qg – nC
IT00040


PD – Ta
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT01961

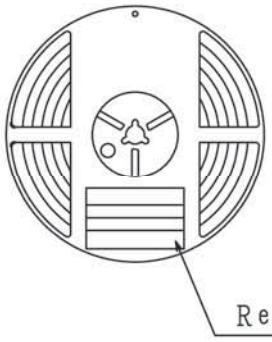
Embossed Taping Specification

3LN01S-TL-E

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)
SMCP	SMCP	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

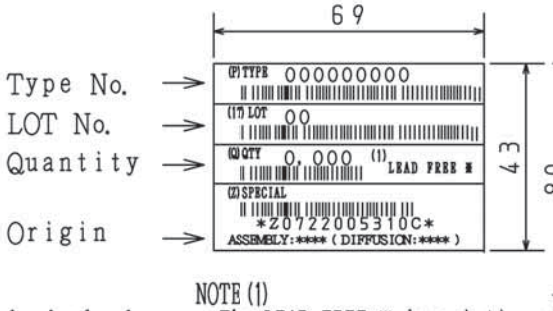
Packing method



Reel label

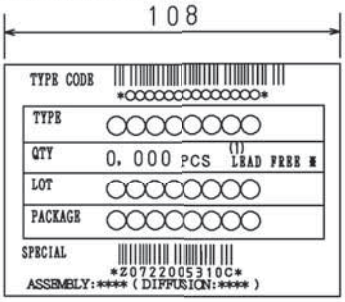
Reel label, Inner box label

(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.

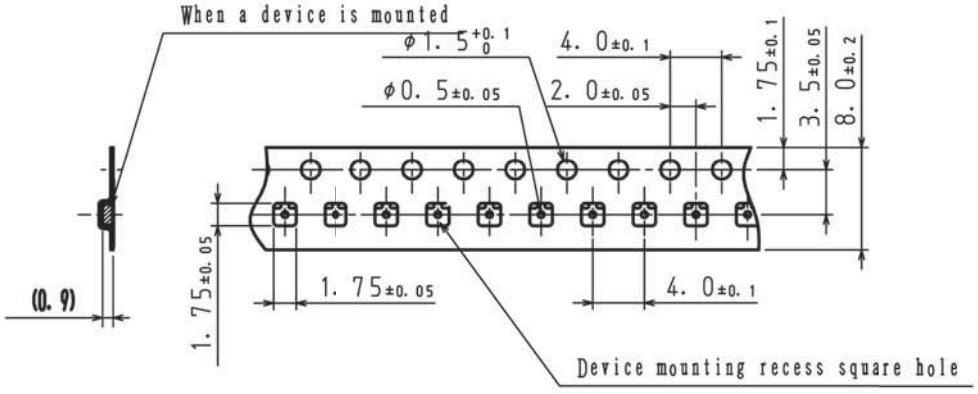


NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

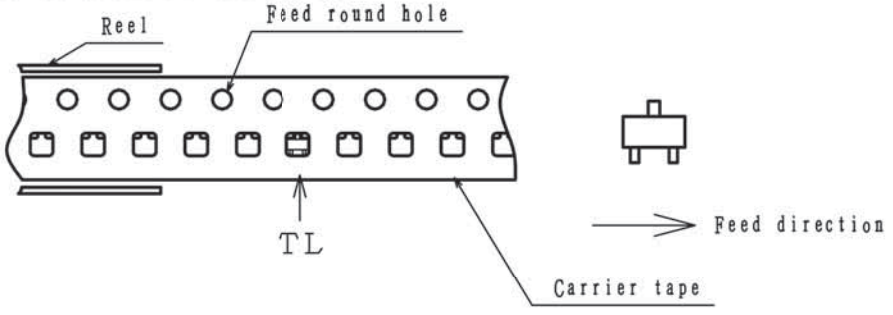
Label	JEITA Phase
••••••••••	JEITA Phase 3

2. Taping configuration

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



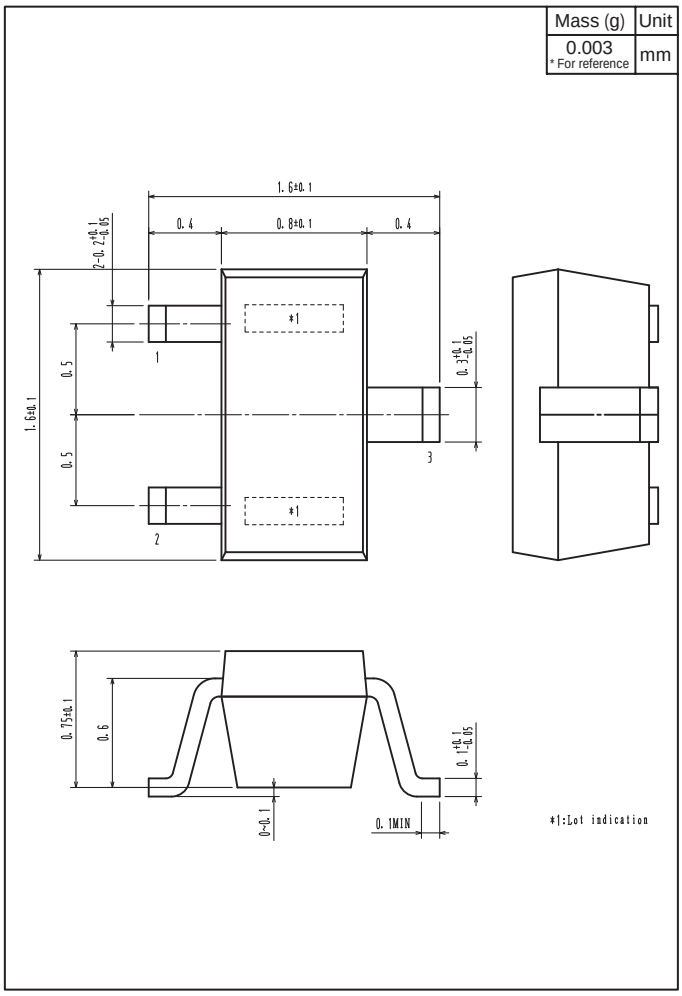
2-2. Device placement direction



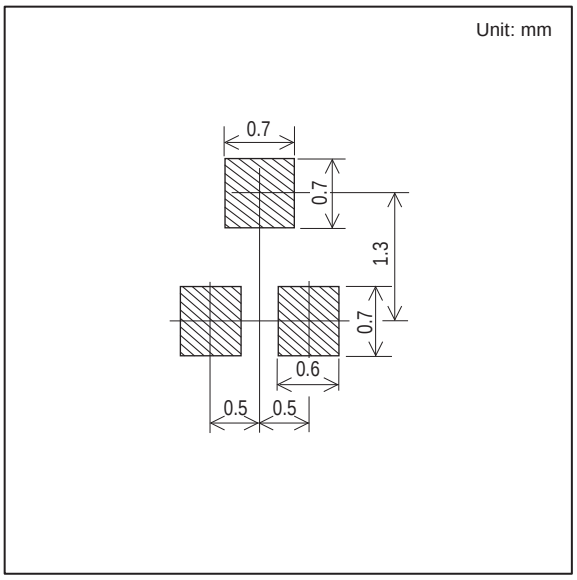
Those with one electrode terminal on the feed hole side·····TL

Outline Drawing

3LN01S-TL-E



Land Pattern Example



Note on usage : Since the 3LN01S is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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