Ordering number : EN6648B

3LP01SS

P-Channel Small Signal MOSFET
–30V, –0.1A, 10.4Ω, Single SSFP

ON Semiconductor®
http://onsemi.com

Features

- Low ON-resistance
- High-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		–0.1	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	–0.4	A
Allowable Power Dissipation	P_D		0.15	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		–55 to +150	°C

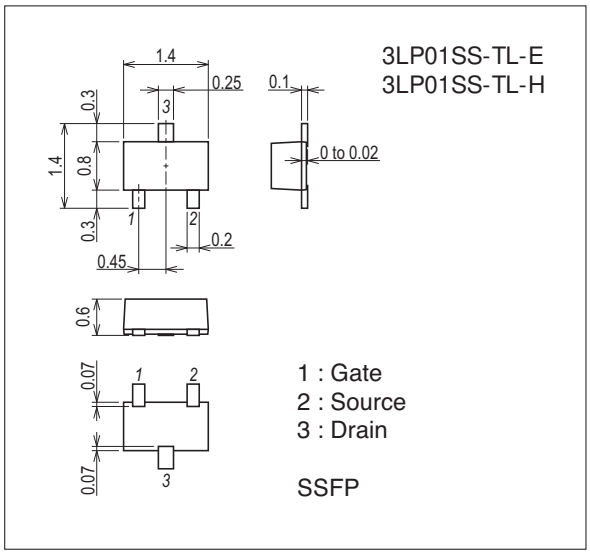
This product is designed to "ESD immunity < 200V*", so please take care when handling.

* Machine Model

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

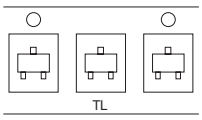
unit : mm (typ)
7029A-003



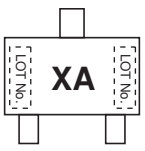
Product & Package Information

- Package : SSFP
- JEITA, JEDEC : SC-81
- Minimum Packing Quantity : 8,000 pcs./reel

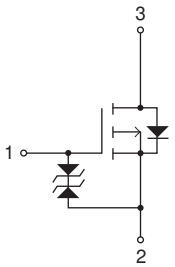
Packing Type: TL



Marking



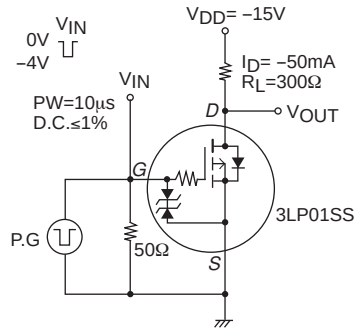
Electrical Connection



Electrical Characteristics at Ta=25°C

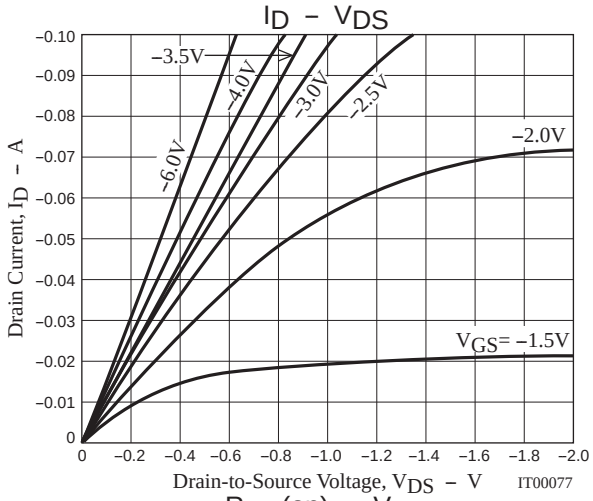
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D= −1mA, V_{GS}=0V	−30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}= −30V, V_{GS}=0V			−1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}= −10V, I_D= −100μA	−0.4		−1.4	V
Forward Transfer Admittance	| yfs |	V_{DS}= −10V, I_D= −50mA	80	110		mS
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D= −50mA, V_{GS}= −4V		8	10.4	Ω
	R_{DS}(on)2	I_D= −30mA, V_{GS}= −2.5V		11	15.4	Ω
	R_{DS}(on)3	I_D= −1mA, V_{GS}= −1.5V		27	54	Ω
Input Capacitance	Ciss	V_{DS}= −10V, f=1MHz		7.5		pF
Output Capacitance	Coss			5.7		pF
Reverse Transfer Capacitance	Crss			1.8		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		24		ns
Rise Time	t_r			55		ns
Turn-OFF Delay Time	t_d(off)			120		ns
Fall Time	t_f			130		ns
Total Gate Charge	Qg	V_{DS}= −10V, V_{GS}= −10V, I_D= −100mA		1.43		nC
Gate-to-Source Charge	Qgs			0.18		nC
Gate-to-Drain “Miller” Charge	Qgd			0.25		nC
Diode Forward Voltage	V_{SD}	I_S= −100mA, V_{GS}=0V		−0.83	−1.2	V

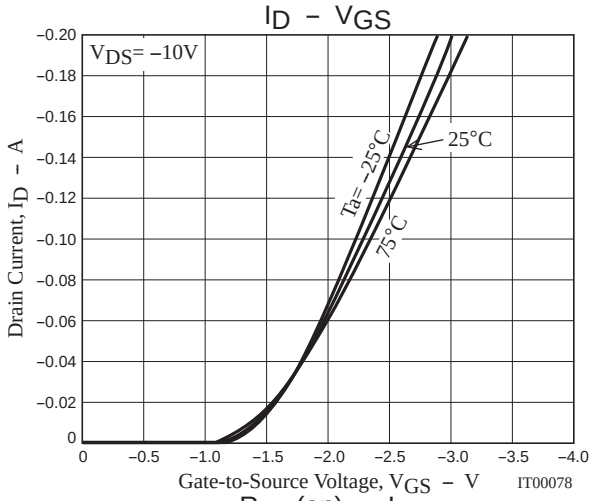
Switching Time Test Circuit

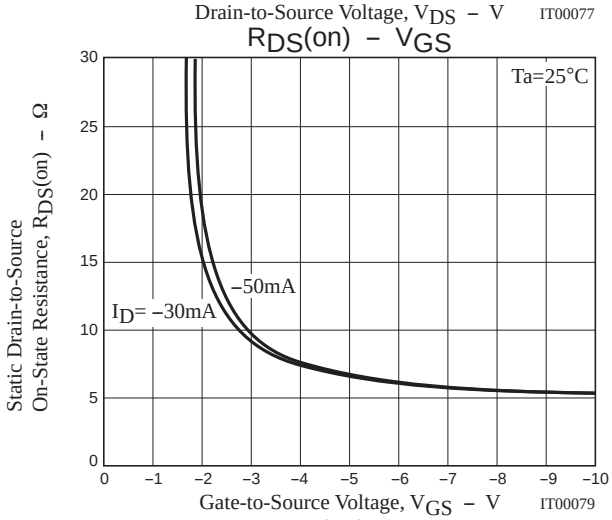


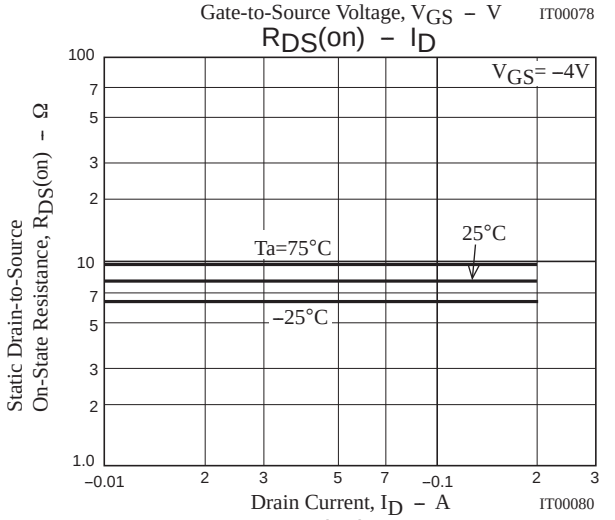
Ordering Information

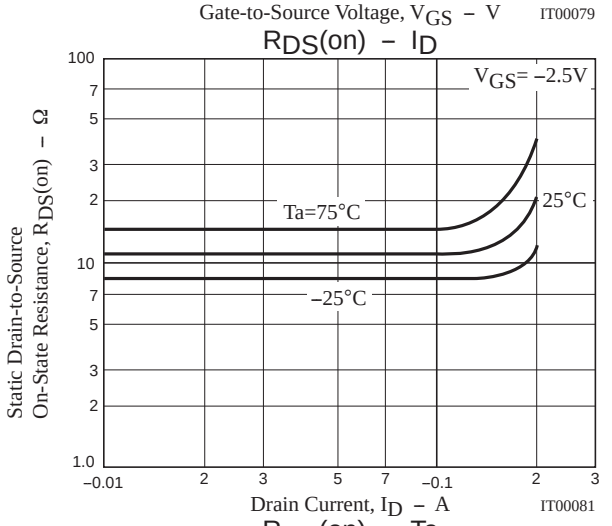
Device	Package	Shipping	memo
3LP01SS-TL-E	SSFP	8,000pcs./reel	Pb Free
3LP01SS-TL-H	SSFP	8,000pcs./reel	Pb Free and Halogen Free

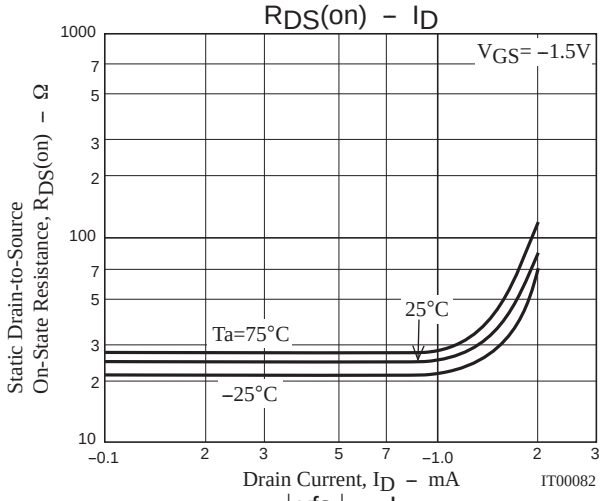

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT00077
–3.5V
–4.0V
–3.0V
–2.5V
–6.0V
–2.0V
VGS= –1.5V

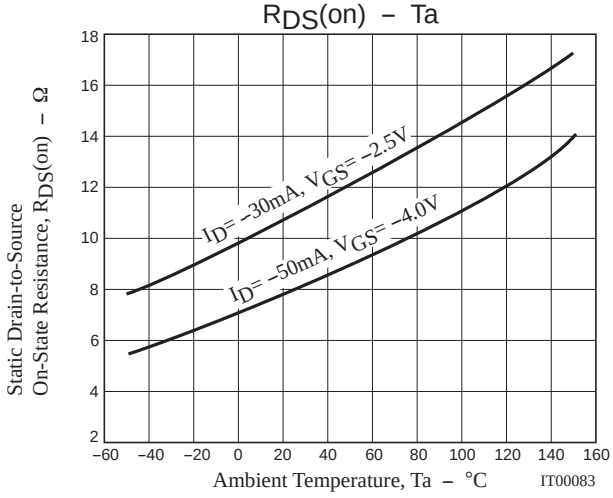

ID – VGS
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT00078
VDS= –10V
25°C
Ta= –25°C
75°C

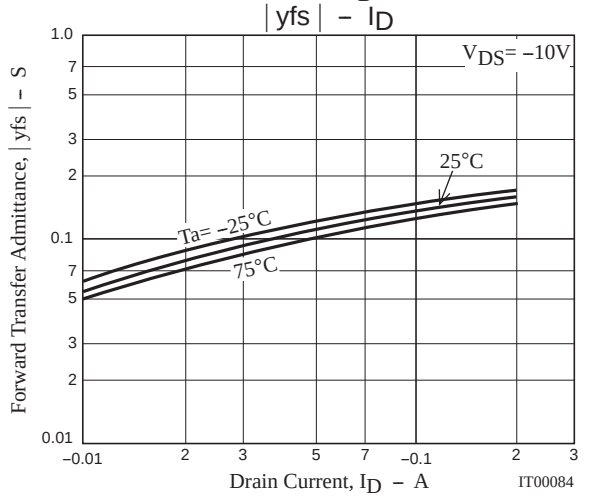

RDS(on) – VGS
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Gate-to-Source Voltage, VGS – V
IT00079
Ta=25°C
–50mA
ID= –30mA

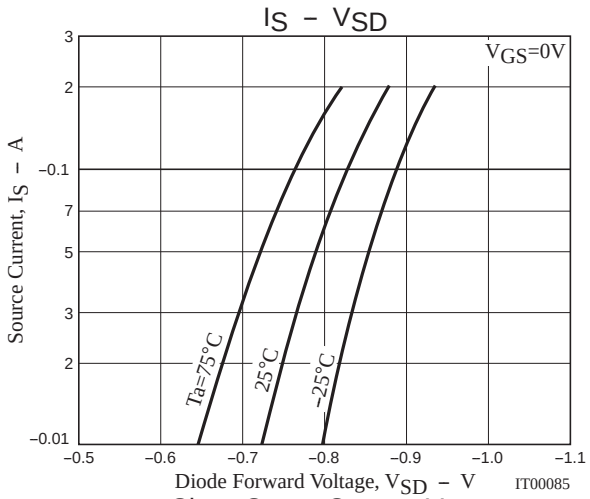

RDS(on) – ID
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00080
VGS= –4V
Ta=75°C
25°C
–25°C

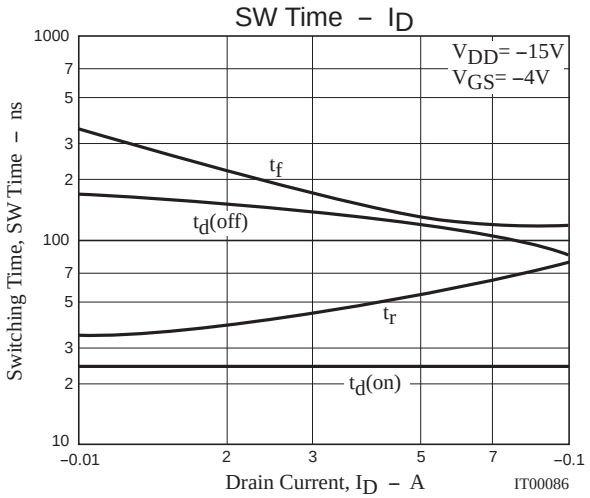

RDS(on) – ID
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00081
VGS= –2.5V
Ta=75°C
25°C
–25°C

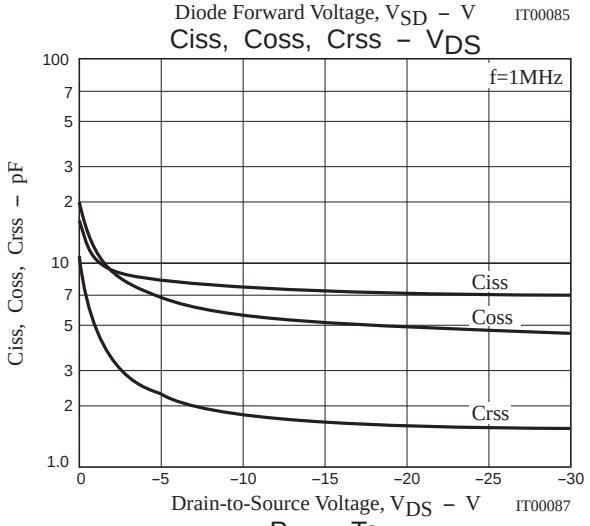

RDS(on) – ID
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – mA
IT00082
VGS= –1.5V
25°C
Ta=75°C
–25°C

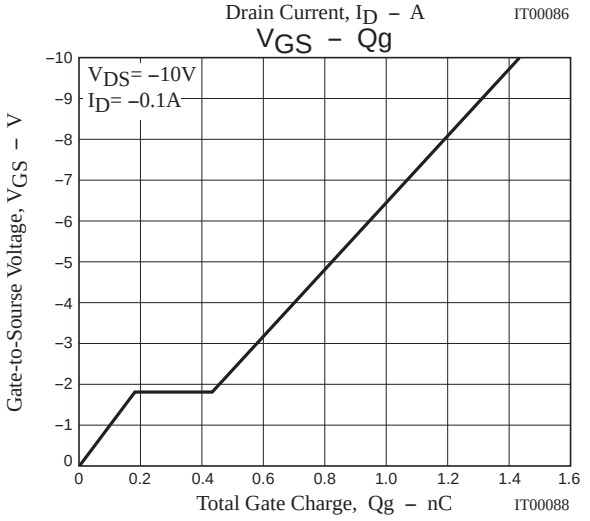

RDS(on) – Ta
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
IT00083
ID= –30mA, VGS= –2.5V
ID= –50mA, VGS= –4.0V

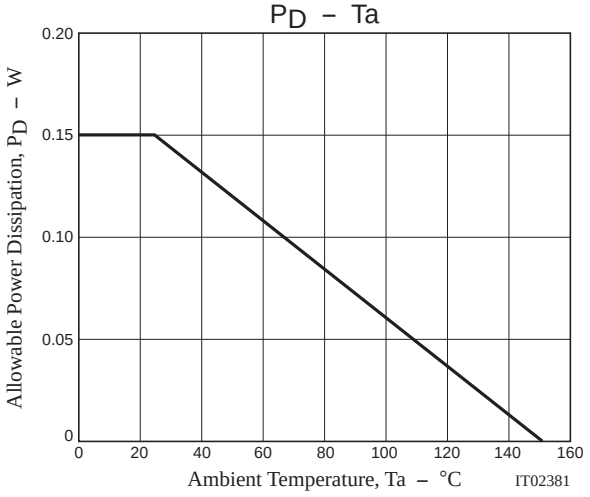

| yfs | – ID
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT00084
VDS= –10V
25°C
Ta= –25°C
75°C


IS – VSD
VGS=0V
Source Current, IS – A
Ta=75°C
25°C
–25°C
Diode Forward Voltage, VSD – V
IT00085


SW Time – ID
VDD= –15V
VGS= –4V
Switching Time, SW Time – ns
tf
td(off)
tr
td(on)
Drain Current, ID – A
IT00086


Ciss, Coss, Crss – VDS
f=1MHz
Ciss, Coss, Crss – pF
Ciss
Coss
Crss
Drain-to-Source Voltage, VDS – V
IT00087


VGS – Qg
VDS= –10V
ID= –0.1A
Gate-to-Sourse Voltage, VGS – V
Total Gate Charge, Qg – nC
IT00088


PD – Ta
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT02381

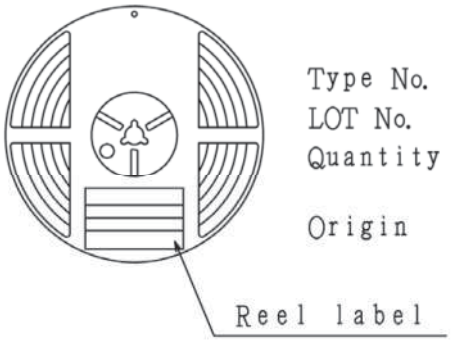
Embossed Taping Specification

3LP01SS-TL-E, 3LP01SS-TL-H

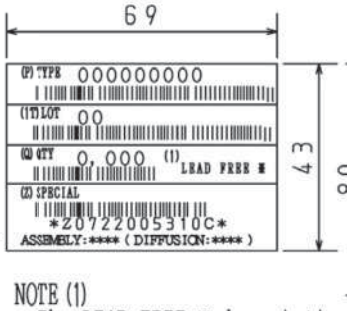
1. Packing Format

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)
SSFP	SSFP	8,000	40,000	240,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Packing method

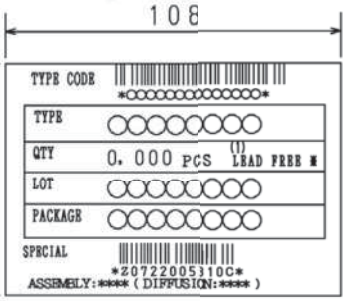


Reel label, Inner box label (unit:mm)



Outer box label

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

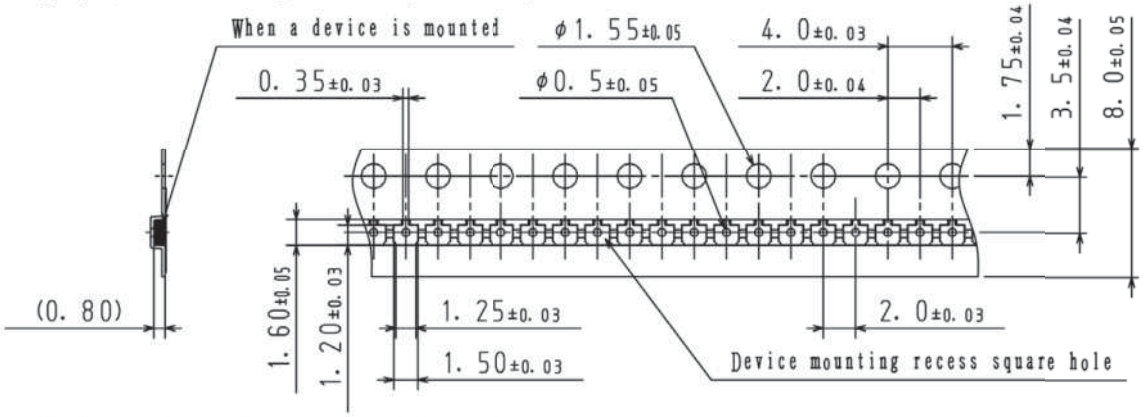


NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

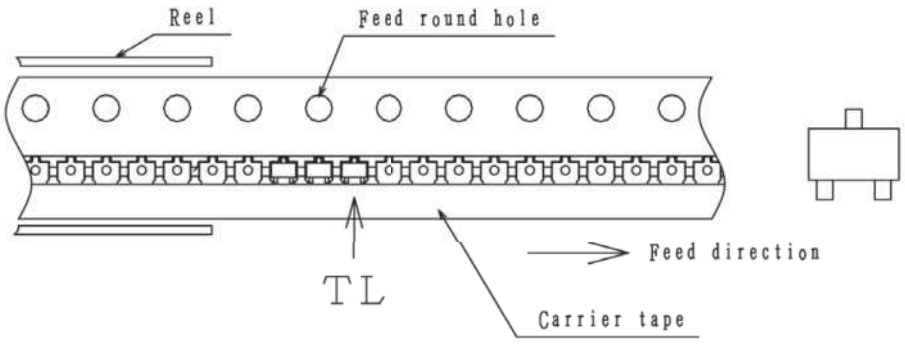
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



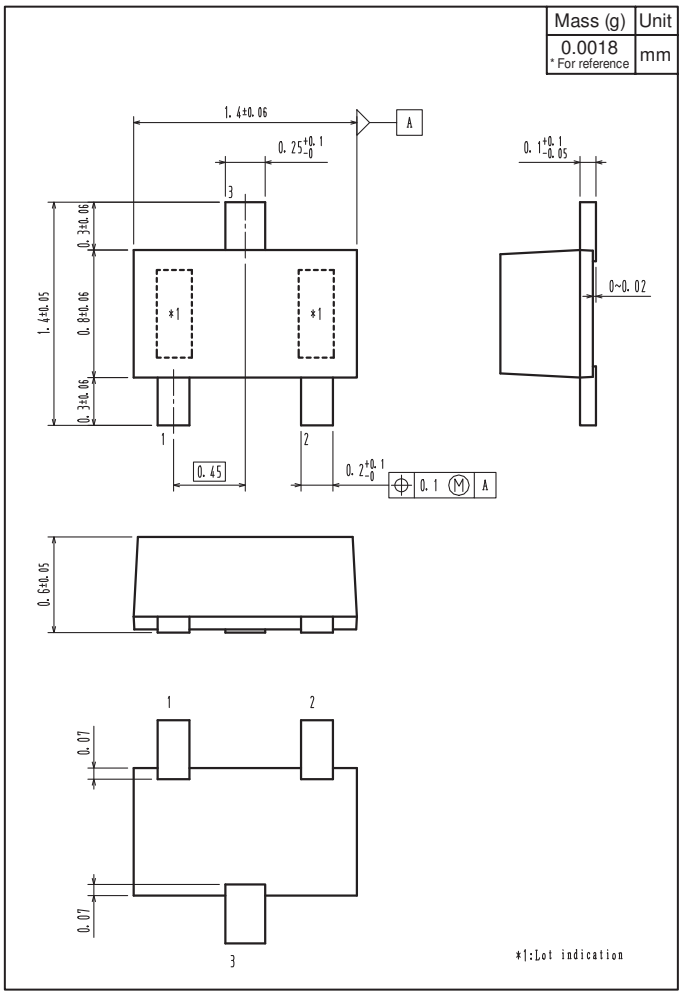
2-2. Device placement direction



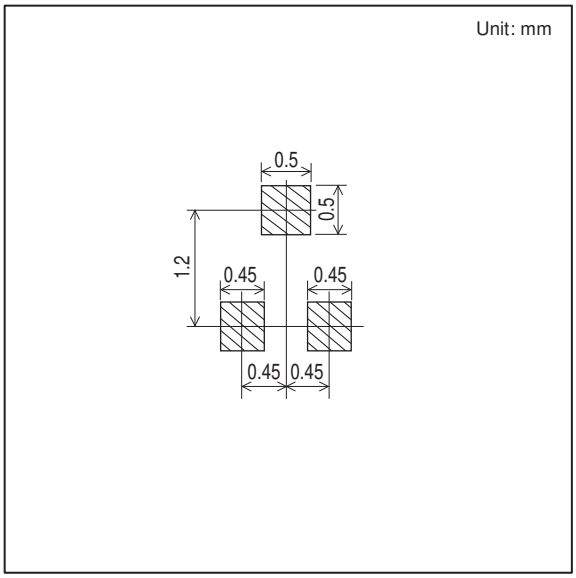
Those with pin 1 index on the feed hole side……TL

Outline Drawing

3LP01SS-TL-E, 3LP01SS-TL-H



Land Pattern Example



Note on usage : Since the 3LP01SS is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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