Ordering number : EN6136B

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

5HN01M — General-Purpose Switching Device Applications

Features

- Low ON-resistance
- Ultrahigh-speed switching
- 4V drive

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		50	V
Gate-to-Source Voltage	V_{GSS}		±20	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

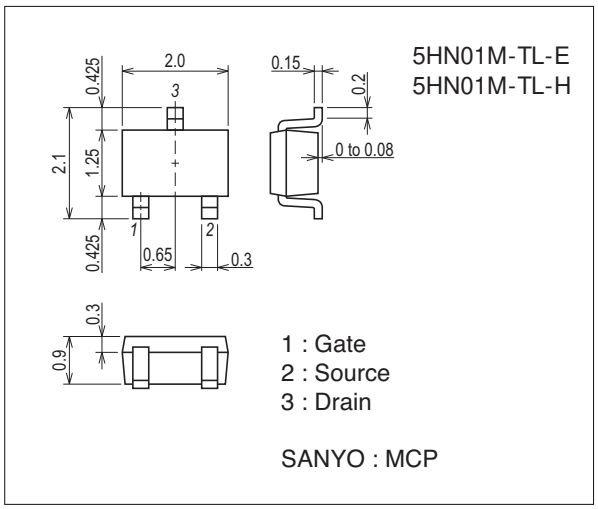
This product is designed to "ESD immunity < 200V*", so please take care when handling.

* Machine Model

Package Dimensions

unit : mm (typ)

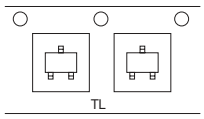
7023A-010



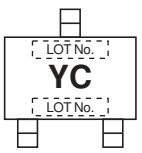
Product & Package Information

- Package : MCP
- JEITA, JEDEC : SC-70, SOT-323
- Minimum Packing Quantity : 3,000 pcs./reel

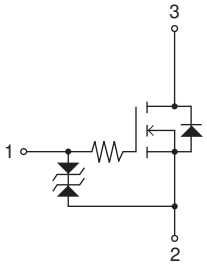
Packing Type: TL



Marking



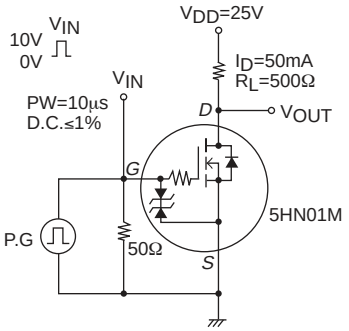
Electrical Connection



Electrical Characteristics at Ta=25°C

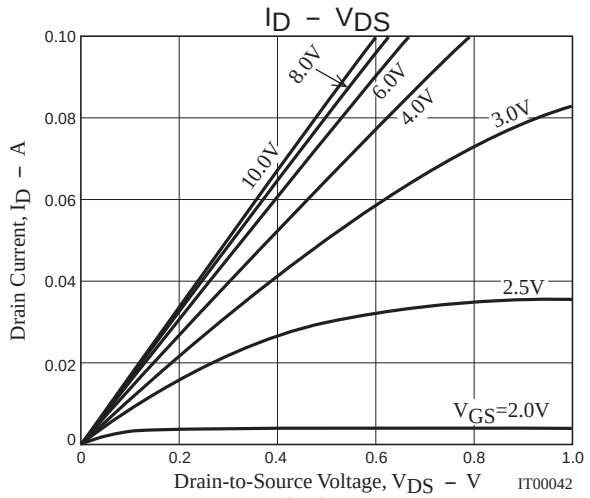
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	50			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=50V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=10V, I_D=100μA	1		2.4	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=50mA	85	120		mS
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=50mA, V_{GS}=10V		5.8	7.5	Ω
	R_{DS}(on)2	I_D=30mA, V_{GS}=4V		7.5	10.5	Ω
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		6.2		pF
Output Capacitance	Coss			4.4		pF
Reverse Transfer Capacitance	Crss			1.5		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		10		ns
Rise Time	t_r			11		ns
Turn-OFF Delay Time	t_d(off)			105		ns
Fall Time	t_f			75		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_D=100mA		1.40		nC
Gate-to-Source Charge	Qgs			0.21		nC
Gate-to-Drain “Miller” Charge	Qgd			0.34		nC
Diode Forward Voltage	V_{SD}	I_S=100mA, V_{GS}=0V		0.85	1.2	V

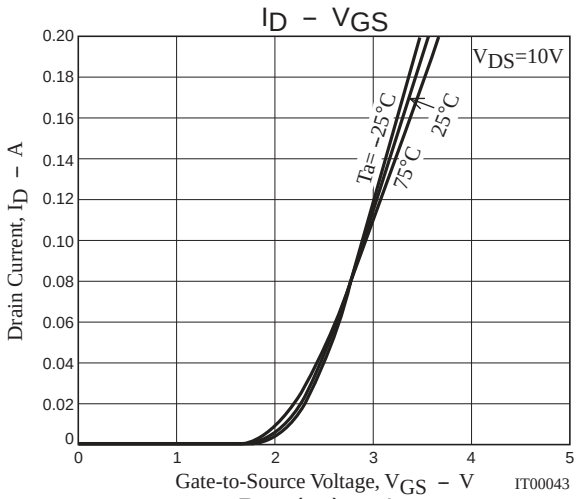
Switching Time Test Circuit

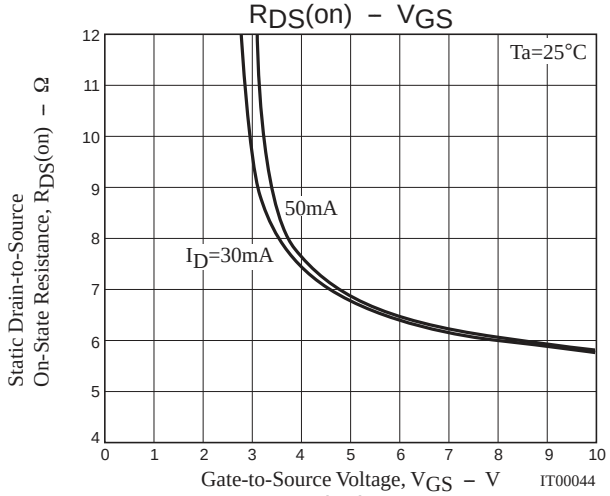


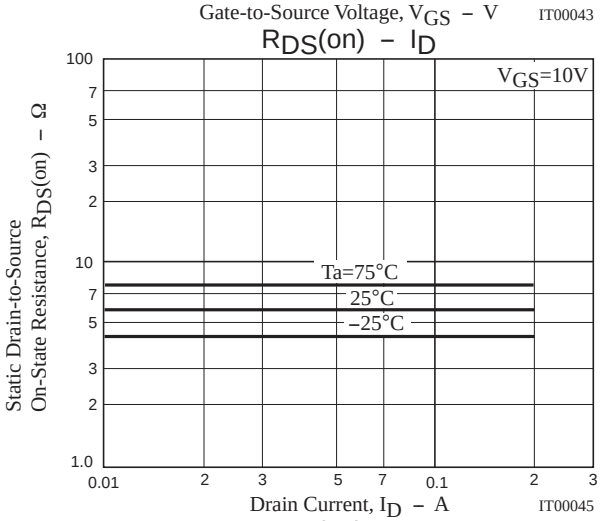
Ordering Information

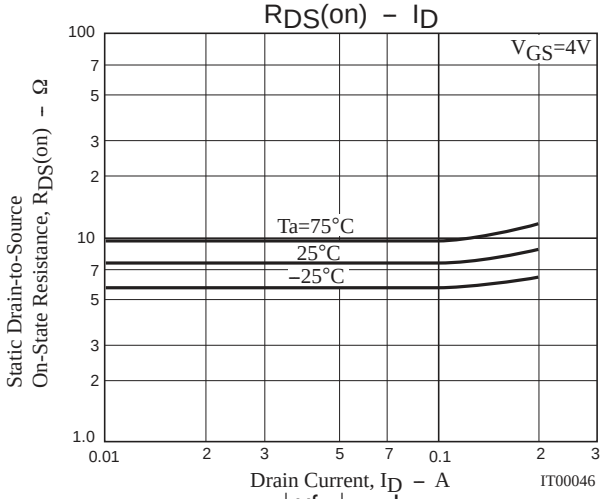
Device	Package	Shipping	memo
5HN01M-TL-E	MCP	3,000pcs./reel	Pb Free
5HN01M-TL-H	MCP	3,000pcs./reel	Pb Free and Halogen Free

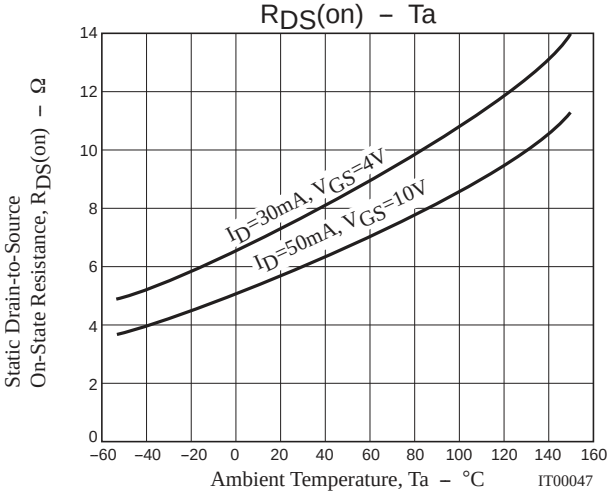

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT00042
8.0V
6.0V
4.0V
3.0V
10.0V
2.5V
VGS=2.0V

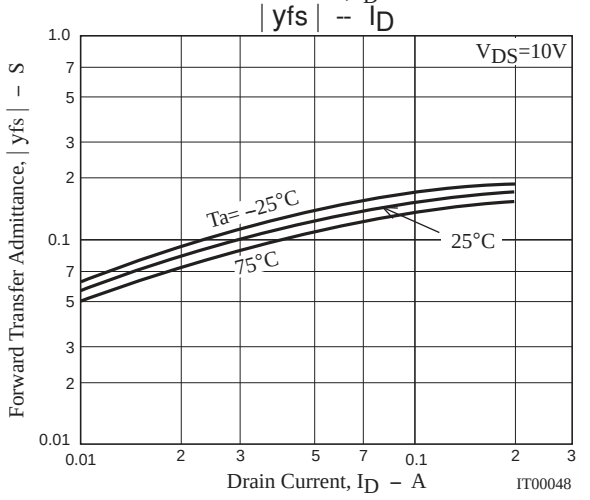

ID – VGS
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT00043
VDS=10V
Ta= –25°C
25°C
75°C

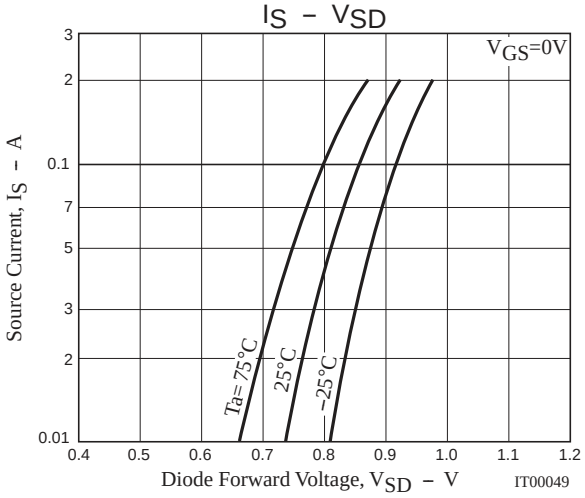

RDS(on) – VGS
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Gate-to-Source Voltage, VGS – V
IT00044
Ta=25°C
50mA
ID=30mA

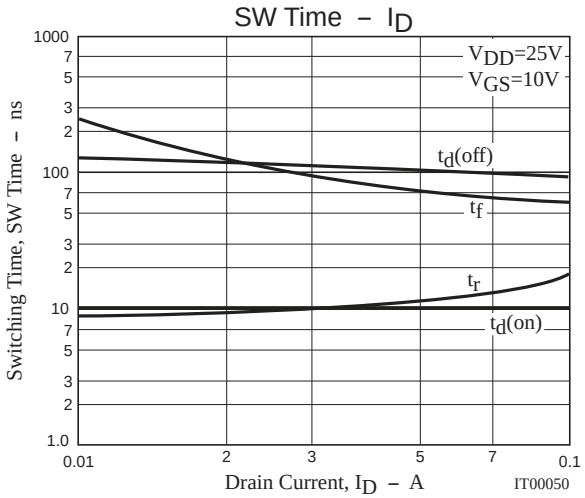

RDS(on) – ID
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00045
VGS=10V
Ta=75°C
25°C
–25°C

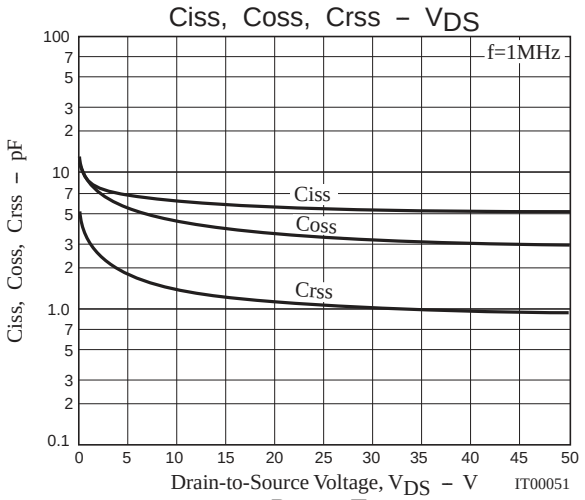

RDS(on) – ID
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00046
VGS=4V
Ta=75°C
25°C
–25°C

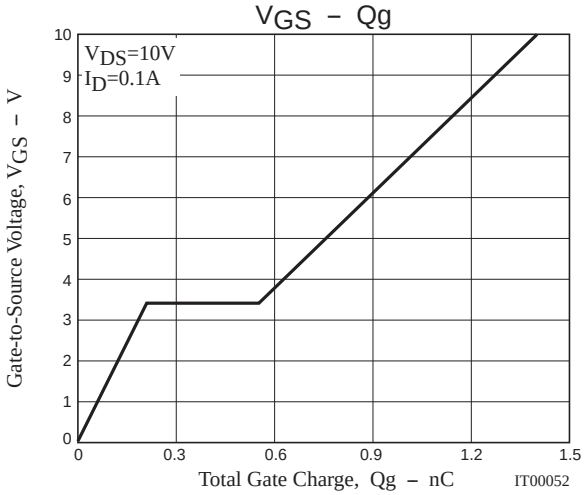

RDS(on) – Ta
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
IT00047
ID=30mA, VGS=4V
ID=50mA, VGS=10V

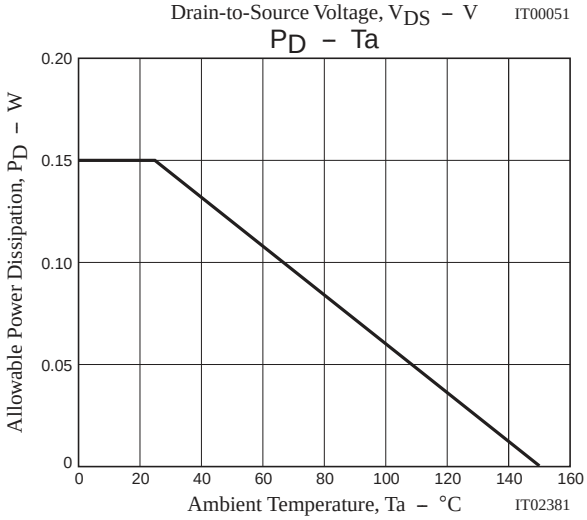

| yfs | -- ID
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT00048
VDS=10V
Ta= –25°C
25°C
75°C


IS – VSD
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT00049
VGS=0V
Ta= 75°C
25°C
–25°C


SW Time – ID
VDD=25V
VGS=10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT00050


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT00051


VGS – Qg
VDS=10V
ID=0.1A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT00052


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

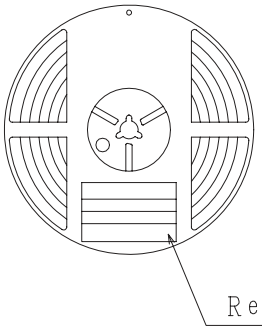
Embossed Taping Specification

5HN01M-TL-E, 5HN01M-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)
MCP	MCP	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

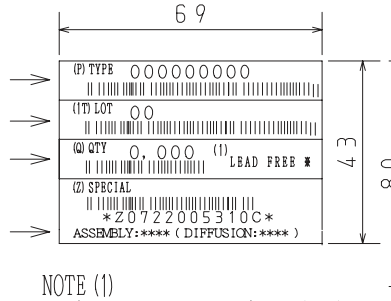
Packing method



Reel label

Reel label, Inner box label

(unit:mm)



Type No.

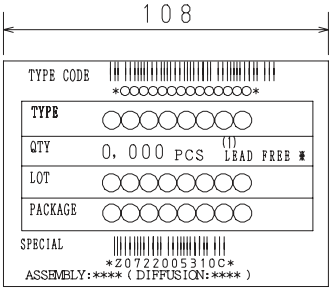
LOT No.

Quantity

Origin

Outer box label

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



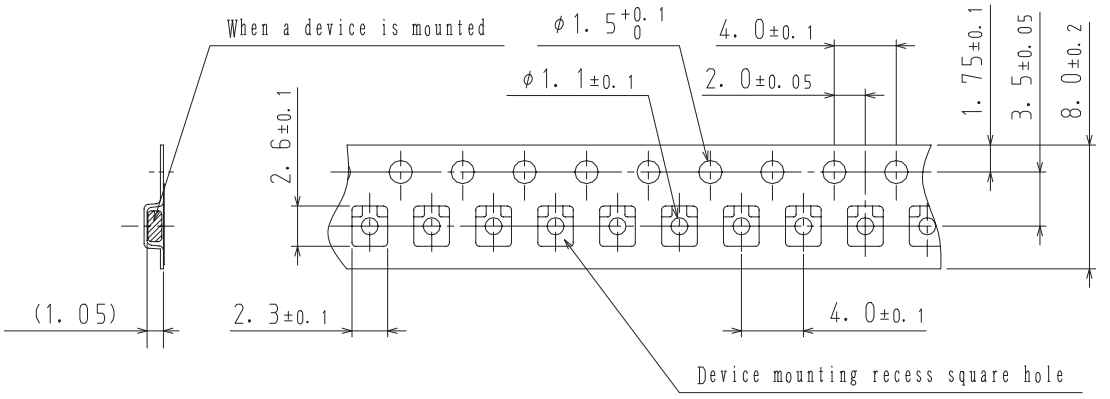
NOTE (1)

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

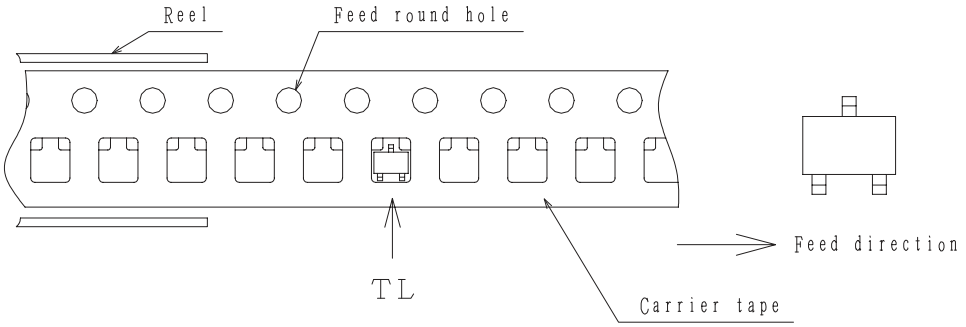
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



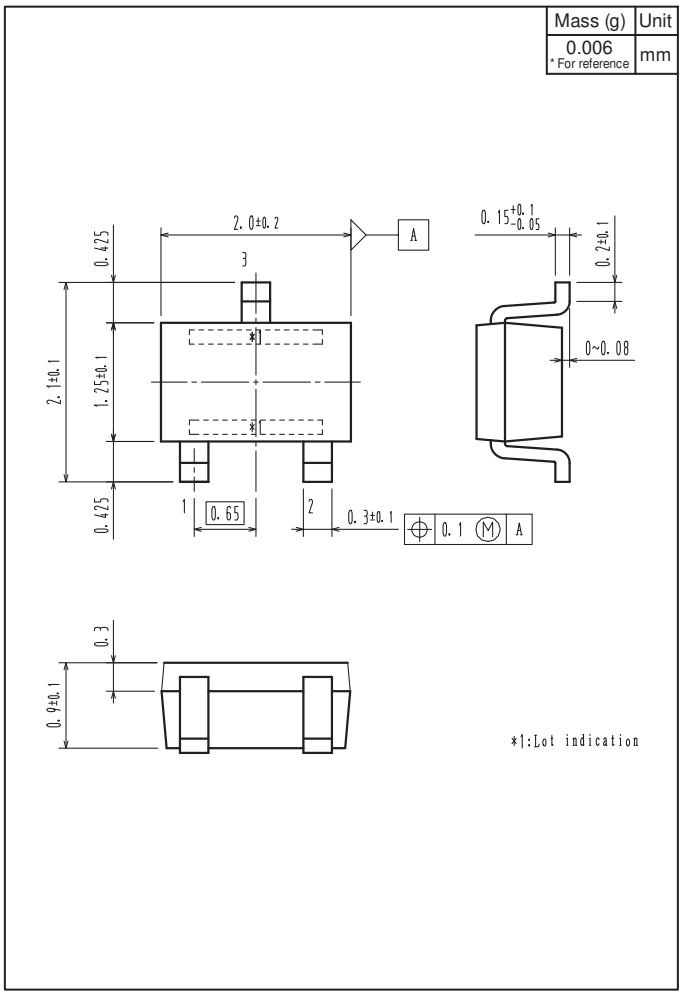
2-2. Device placement direction



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

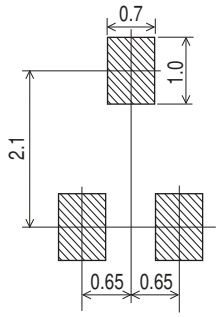
Outline Drawing

5HN01M-TL-E, 5HN01M-TL-H



Land Pattern Example

Unit: mm



Note on usage : Since the 5HN01M is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of July, 2012. Specifications and information herein are subject to change without notice.