



SANYO Semiconductors

## DATA SHEET

An ON Semiconductor Company

P-Channel Silicon MOSFET

# 5HP01M — 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	$V_{DS}$		-50	V
Gate-to-Source Voltage	$V_{GS}$		±20	V
Drain Current (DC)	$I_D$		-0.07	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu s$ , duty cycle $\leq 1\%$	-0.28	A
Allowable Power Dissipation	$P_D$		0.15	W
Channel Temperature	$T_{ch}$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

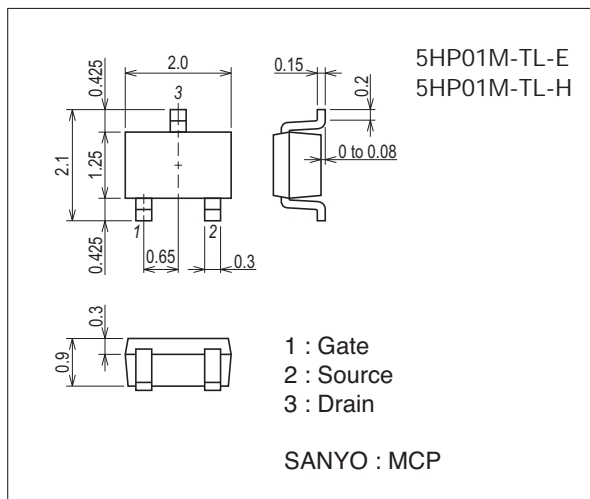
This product is designed to "ESD immunity &lt; 200V\*\*", so please take care when handling.

\* Machine Model

## Package Dimensions

unit : mm (typ)

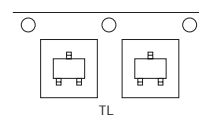
7023A-010



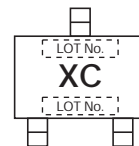
## Product & Package Information

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

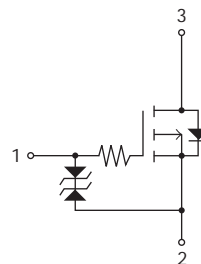
## Packing Type: TL



## Marking



## Electrical Connection



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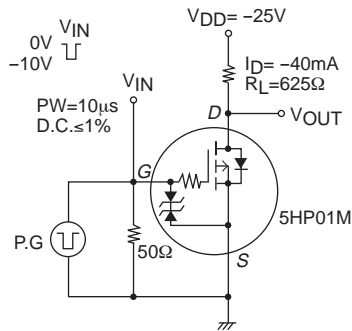
<http://semicon.sanyo.com/en/network>

# 5HP01M

## Electrical Characteristics at Ta=25°C

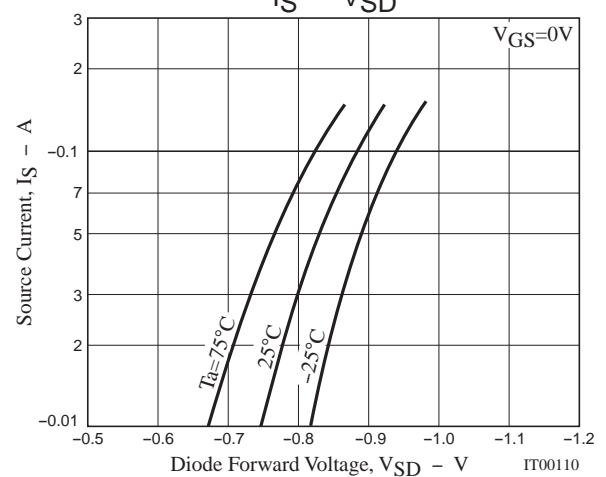
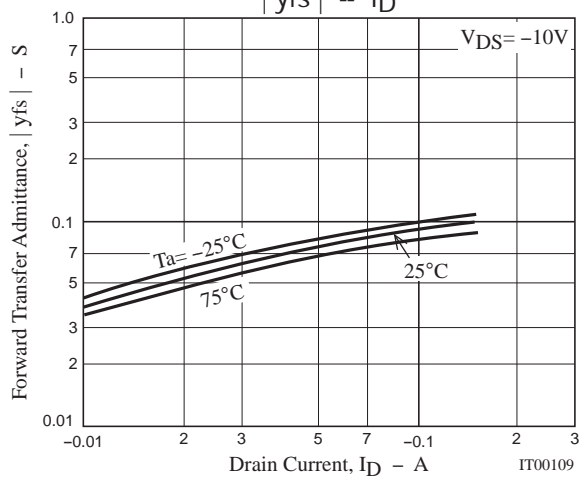
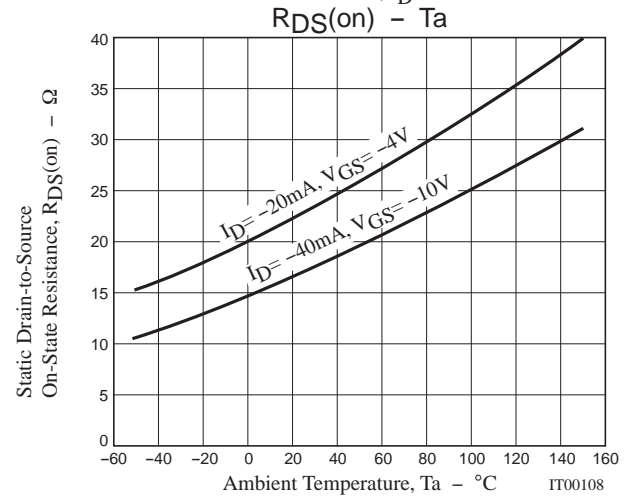
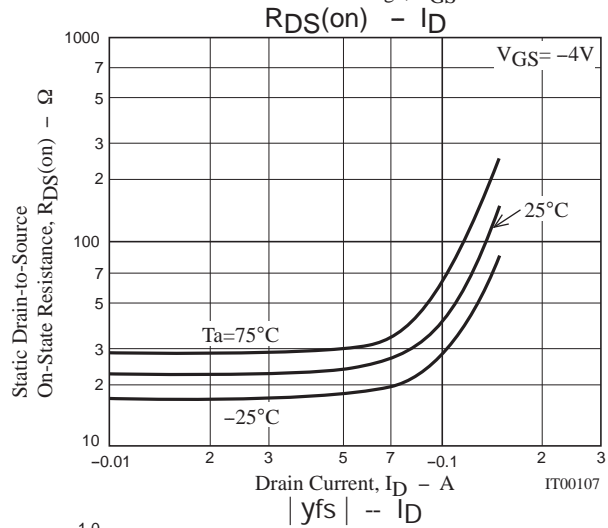
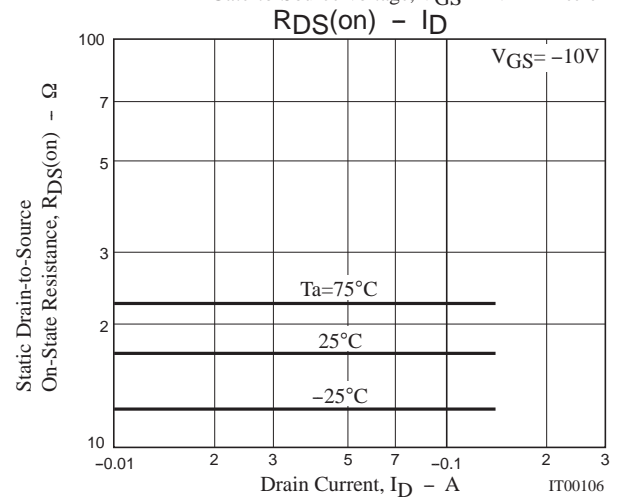
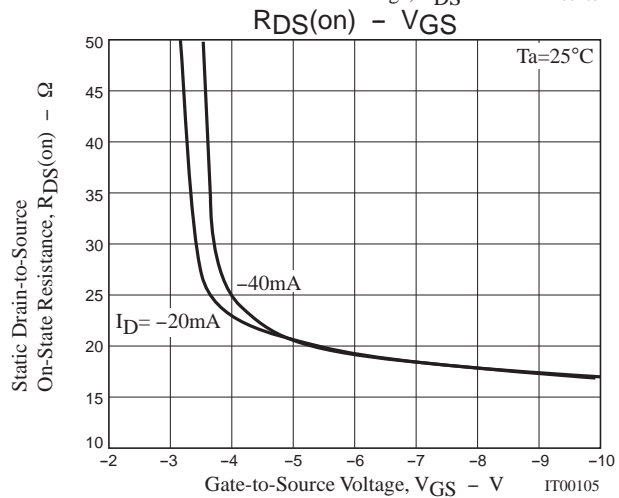
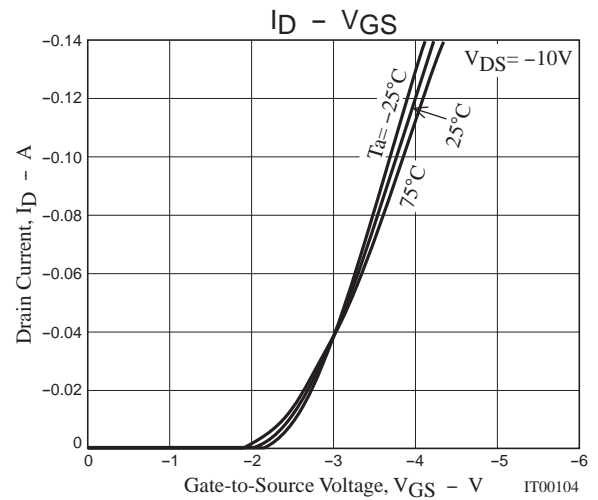
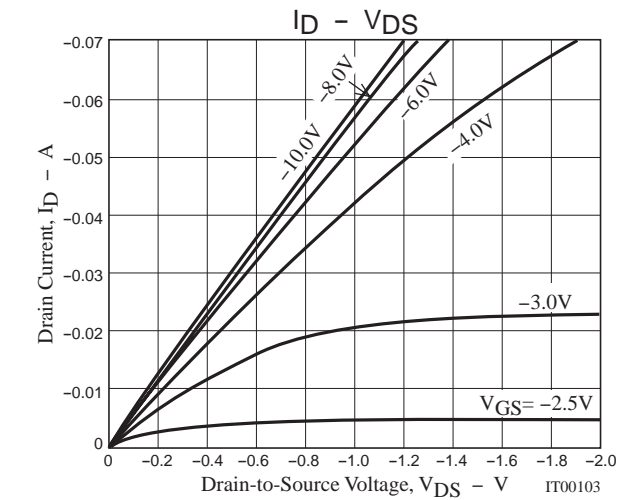
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -1\text{mA}$ , $V_{GS}=0\text{V}$	-50			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -50\text{V}$ , $V_{GS}=0\text{V}$			-1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = -10\text{V}$ , $I_D = -100\mu\text{A}$	-1		-2.5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -10\text{V}$ , $I_D = -40\text{mA}$	50	70		mS
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -40\text{mA}$ , $V_{GS} = -10\text{V}$		17	22	$\Omega$
	$R_{DS(on)2}$	$I_D = -20\text{mA}$ , $V_{GS} = -4\text{V}$		23	32	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = -10\text{V}$ , $f=1\text{MHz}$		6.2		pF
Output Capacitance	$C_{oss}$			4.0		pF
Reverse Transfer Capacitance	$C_{rss}$			1.3		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		13		ns
Rise Time	$t_r$			10		ns
Turn-OFF Delay Time	$t_{d(off)}$			100		ns
Fall Time	$t_f$			150		ns
Total Gate Charge	$Q_g$	$V_{DS} = -10\text{V}$ , $V_{GS} = -10\text{V}$ , $I_D = -70\text{mA}$		1.32		nC
Gate-to-Source Charge	$Q_{gs}$			0.17		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$			0.34		nC
Diode Forward Voltage	$V_{SD}$	$I_S = -70\text{mA}$ , $V_{GS}=0\text{V}$		-0.85	-1.2	V

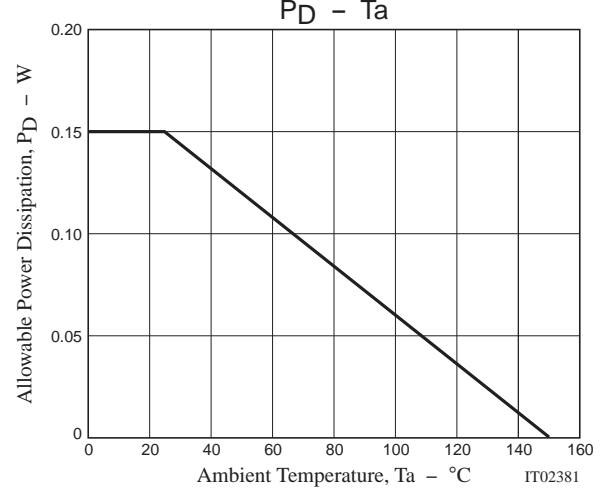
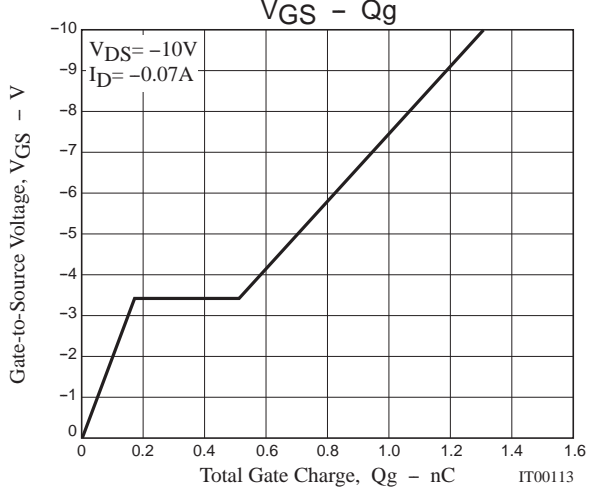
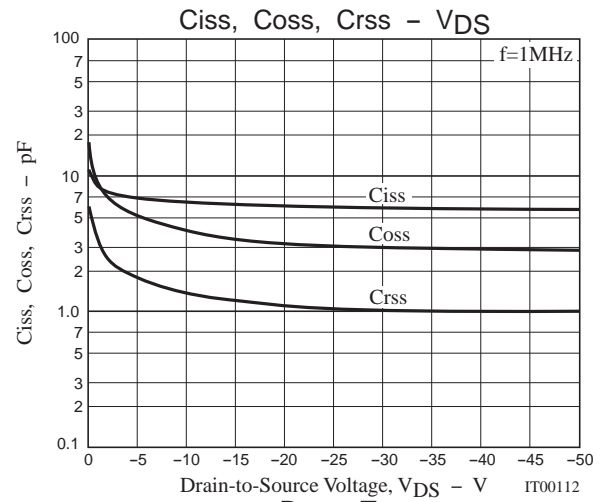
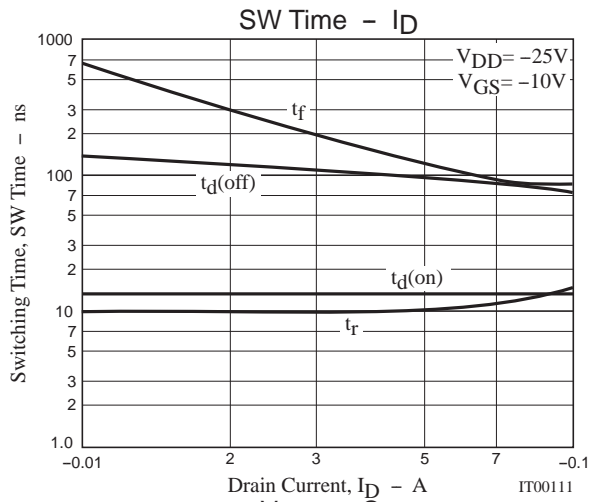
## Switching Time Test Circuit



## Ordering Information

Device	Package	Shipping	memo
5HP01M-TL-E	MCP	3,000pcs./reel	Pb Free
5HP01M-TL-H	MCP	3,000pcs./reel	Pb Free and Halogen Free





## Embossed Taping Specification

5HP01M-TL-E, 5HP01M-TL-H

### 1. Packing Format

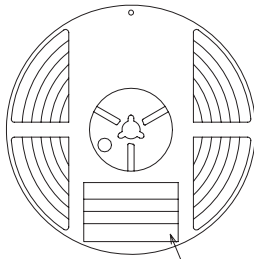
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
MCP	MCP	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Reel label, Inner box label  
(unit:mm)

Outer box label

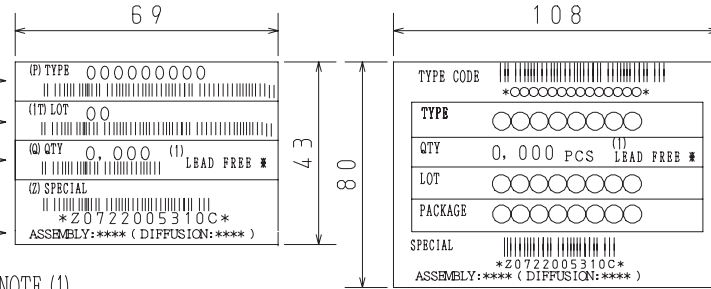
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

#### Packing method



Reel label

Type No.  
LOT No.  
Quantity  
Origin



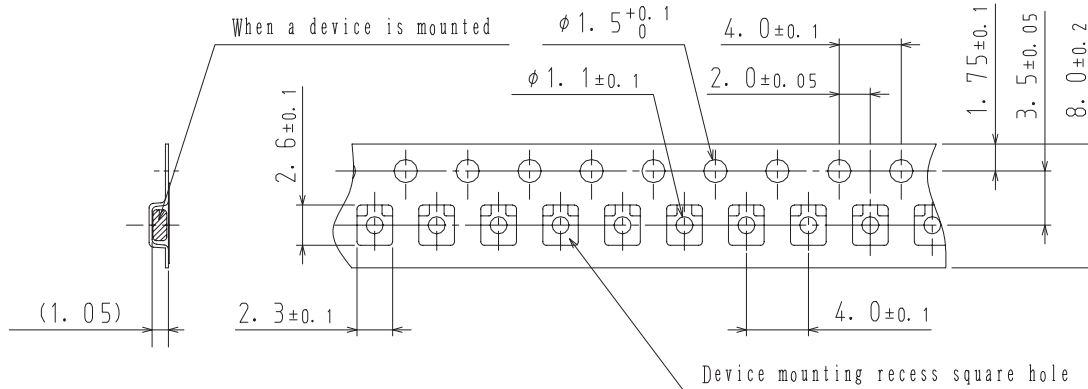
NOTE (1)

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

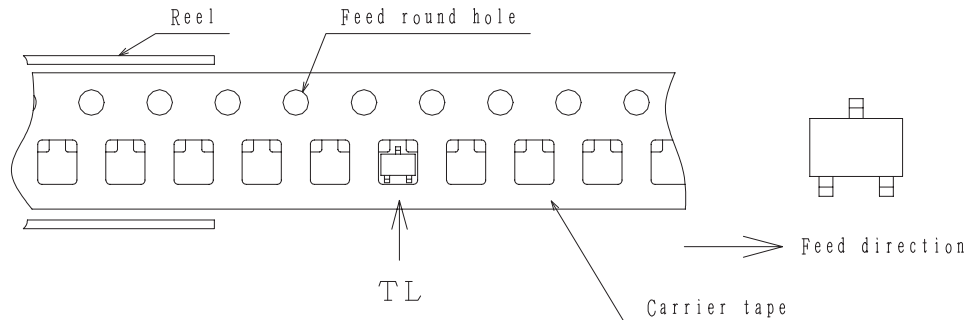
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

### 2. Taping configuration

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



#### 2-2. Device placement direction

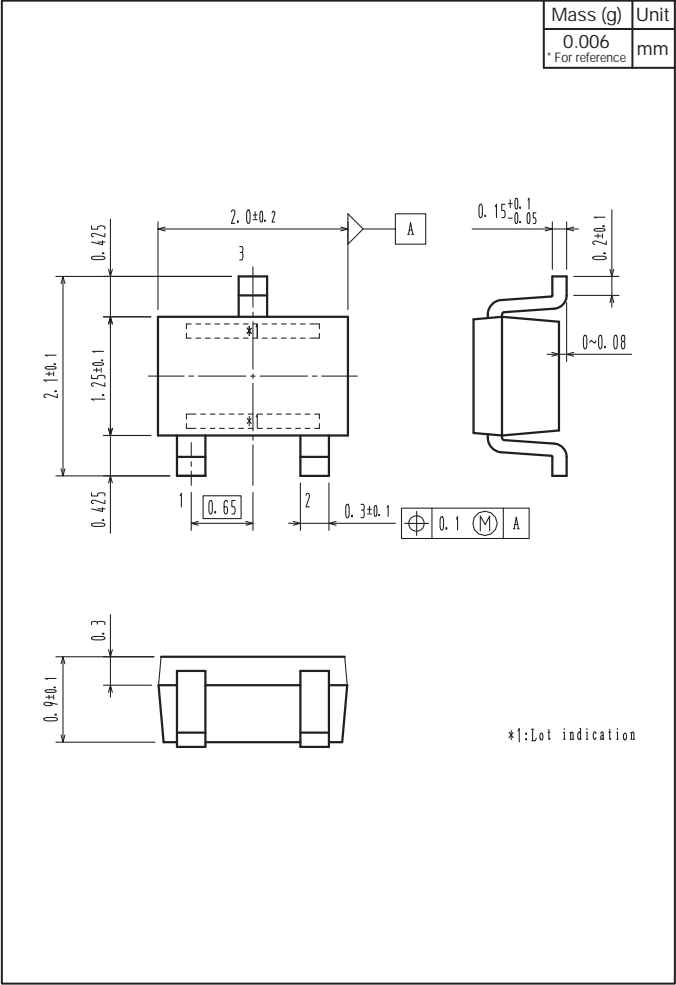


Those with oen electrode terminal on the feed hole side.....TL

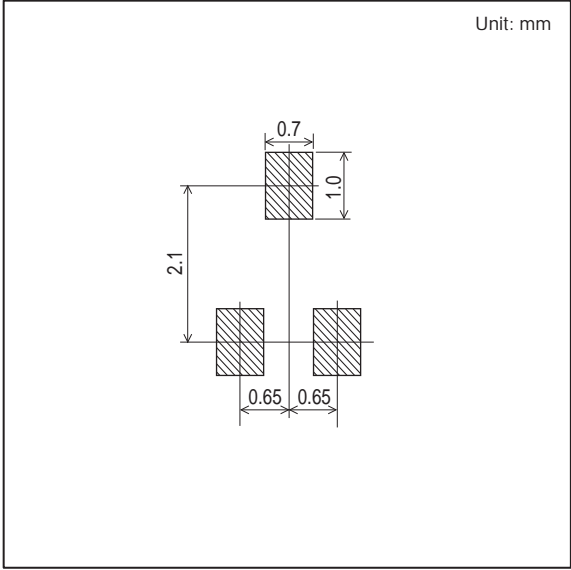
5HP01M

Outline Drawing

5HP01M-TL-E, 5HP01M-TL-H



Land Pattern Example



Note on usage : Since the 5HP01M is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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