



# CPH5871

MOSFET : N-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

## General-Purpose Switching Device Applications

### Features

- Composite type with a N-channel silicon MOSFET and a schottky barrier diode contained in one package facilitating high-density mounting
- Halogen free compliance
- [MOSFET] • Ultrahigh-speed switching
- [SBD] • Short reverse recovery time
- Protection diode in
- 1.8V drive
- Low forward voltage

### Specifications

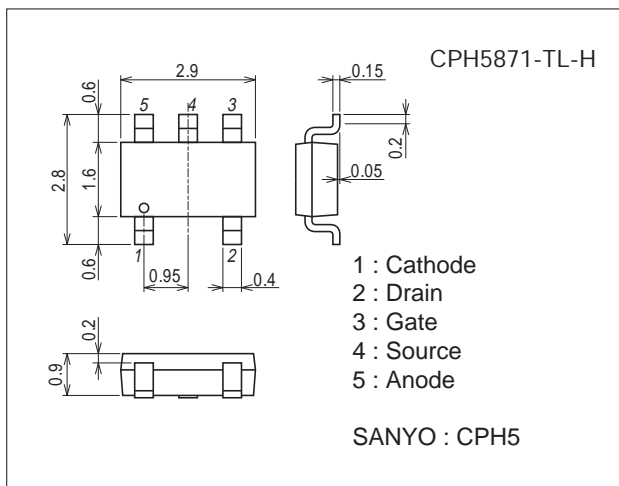
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
[MOSFET]				
Drain-to-Source Voltage	V <sub>DSS</sub>		30	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±12	V
Drain Current (DC)	I <sub>D</sub>		3.5	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	14	A
Allowable Power Dissipation	P <sub>D</sub>	When mounted on ceramic substrate (600mm <sup>2</sup> ×0.8mm) 1unit	0.9	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +125	°C
[SBD]				
Repetitive Peak Reverse Voltage	V <sub>RRM</sub>		30	V
Nonrepetitive Peak Reverse Surge Voltage	V <sub>RSM</sub>		35	V
Average Output Current	I <sub>O</sub>		1	A
Surge Forward Current	I <sub>FSM</sub>	50Hz sine wave, 1 cycle	10	A
Junction Temperature	T <sub>j</sub>		-55 to +125	°C
Storage Temperature	T <sub>stg</sub>		-55 to +125	°C

### Package Dimensions

unit : mm (typ)

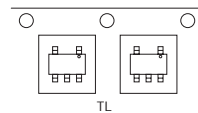
7017A-005



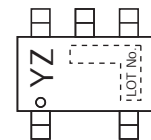
### Product & Package Information

- Package : CPH5
- JEITA, JEDEC : SC-74A, SOT-25
- Minimum Packing Quantity : 3,000 pcs./reel

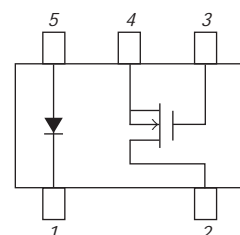
### Packing Type : TL



### Marking



### Electrical Connection

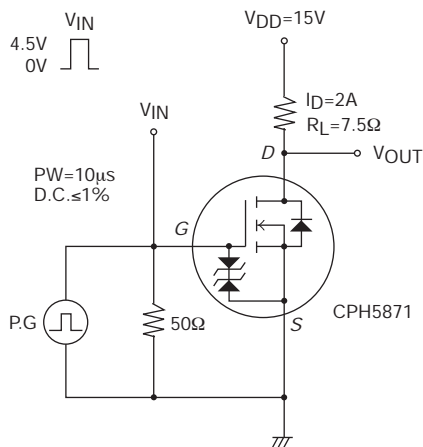


# CPH5871

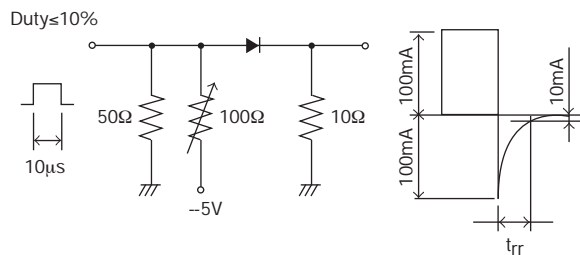
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
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	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	0.4		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=2A$	2.0	3.4		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=2A, V_{GS}=4.5V$		40	52	$m\Omega$
	$R_{DS(on)2}$	$I_D=1A, V_{GS}=2.5V$		53	74	$m\Omega$
	$R_{DS(on)3}$	$I_D=0.5A, V_{GS}=1.8V$		82	132	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=10V, f=1MHz$		430		pF
Output Capacitance	$C_{oss}$			59		pF
Reverse Transfer Capacitance	$C_{rss}$			38		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		10		ns
Rise Time	$t_r$			41		ns
Turn-OFF Delay Time	$t_{d(off)}$			36		ns
Fall Time	$t_f$			37		ns
Total Gate Charge	$Q_g$			4.7		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=15V, V_{GS}=4.5V, I_D=3.5A$		0.8		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$			1.1		nC
Diode Forward Voltage	$V_{SD}$	$I_S=3.5A, V_{GS}=0V$		0.8	1.2	V
[SBD]						
Reverse Voltage	$V_R$	$I_R=0.5mA$	30			V
Forward Voltage	$V_{F1}$	$I_F=0.7A$		0.45	0.5	V
	$V_{F2}$	$I_F=1A$		0.48	0.53	V
Reverse Current	$I_R$	$V_R=16V$			15	$\mu A$
Interterminal Capacitance	$C$	$V_R=10V, f=1MHz, 1 \text{ cycle}$		27		pF
Reverse Recovery Time	$t_{rr}$	$I_F=I_R=100mA$ , See specified Test Circuit.			10	ns

### Switching Time Test Circuit (MOSFET)

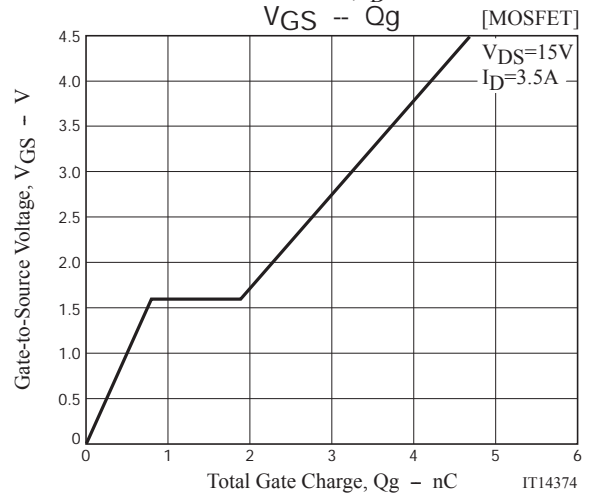
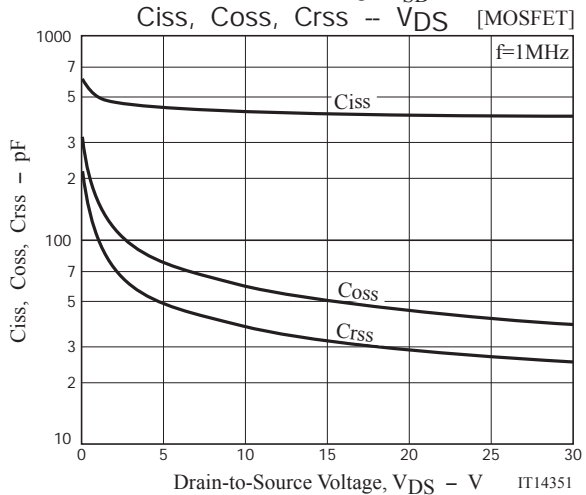
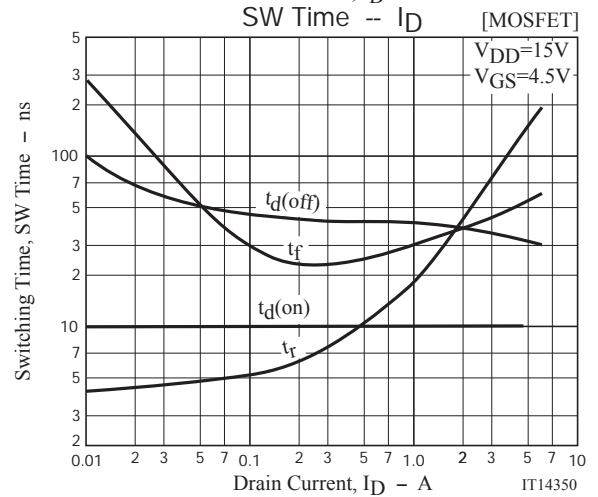
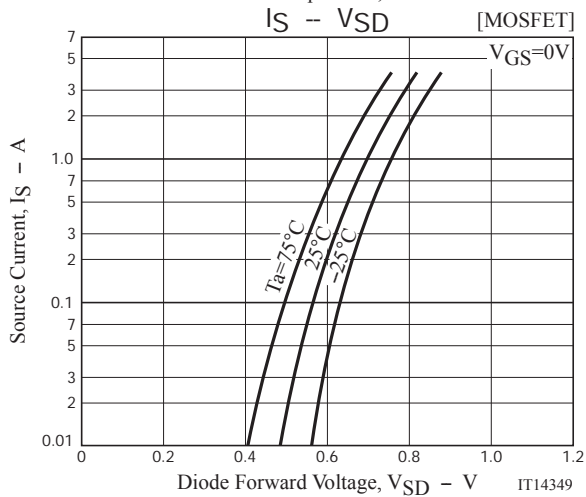
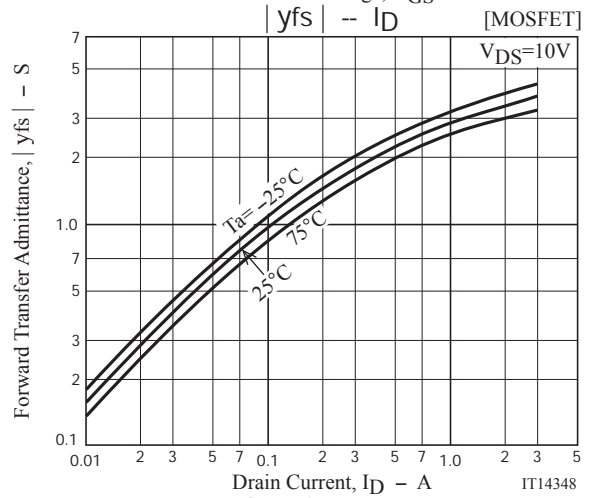
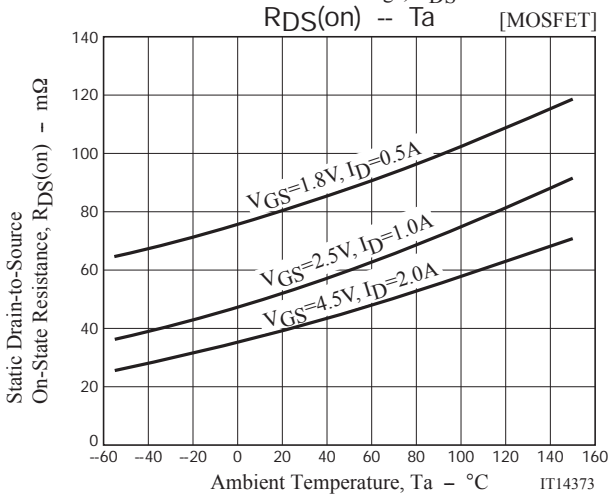
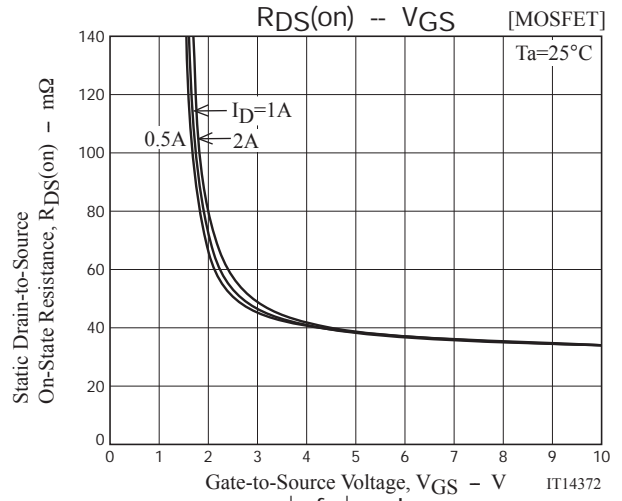
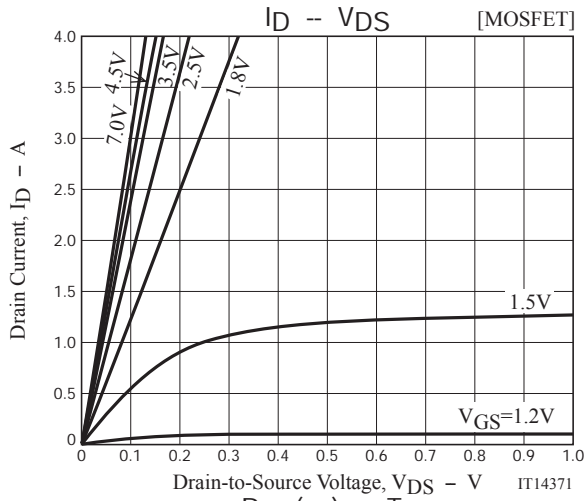


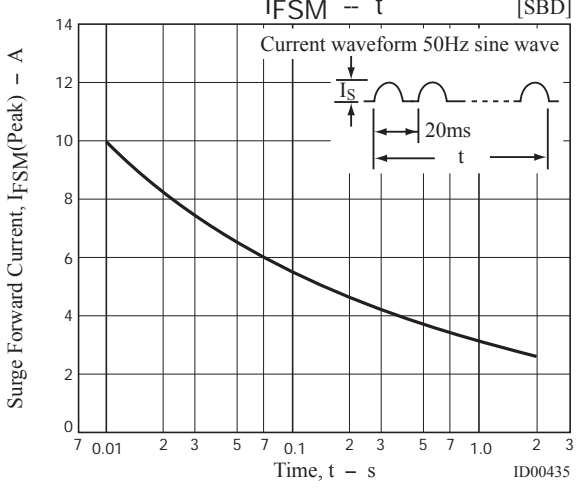
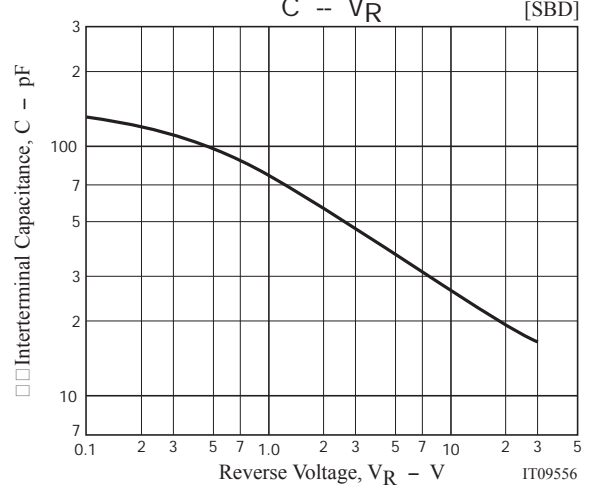
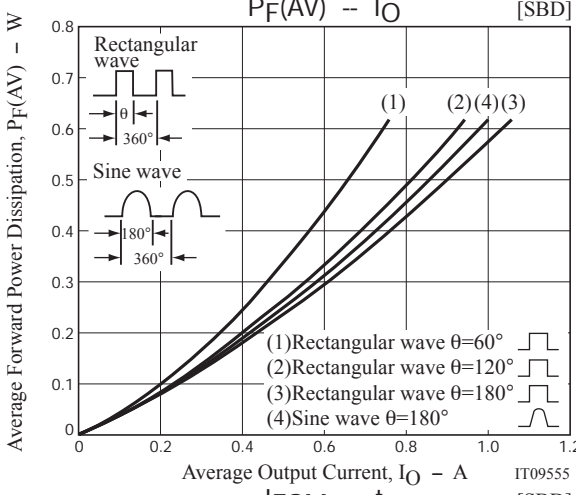
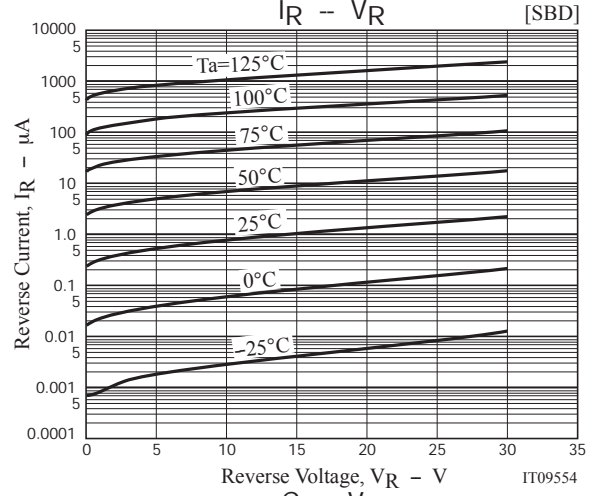
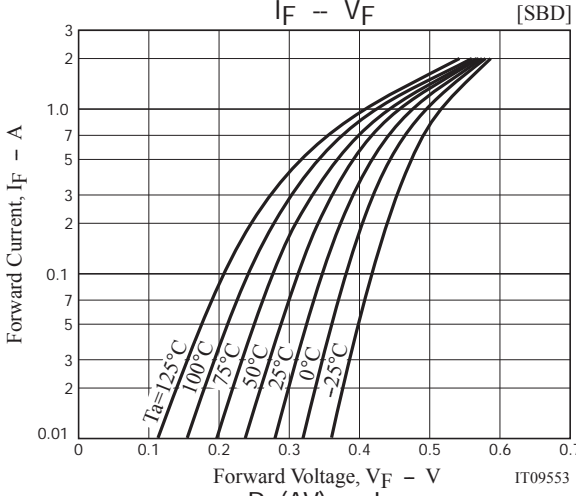
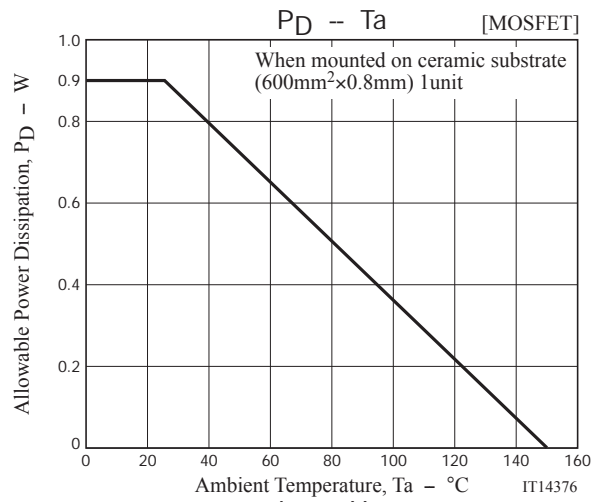
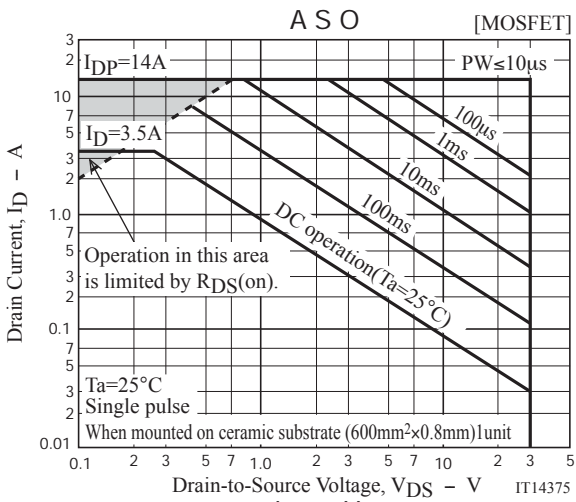
### $t_{rr}$ Test Circuit (SBD)



### Ordering Information

Device	Package	Shipping	memo
CPH5871-TL-H	CPH5	3,000pcs./reel	Pb Free and Halogen Free





Embossed Taping Specification

CPH5871-TL-H

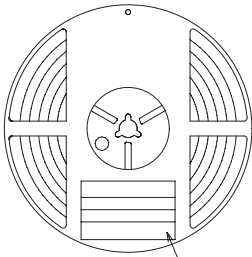
1. Packing Format

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)
CPH5	CPH6	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)

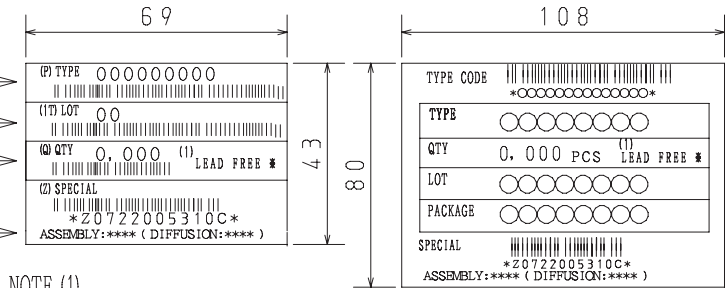
Outer box label  
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

Packing method



Reel label

Type No.  
LOT No.  
Quantity  
Origin



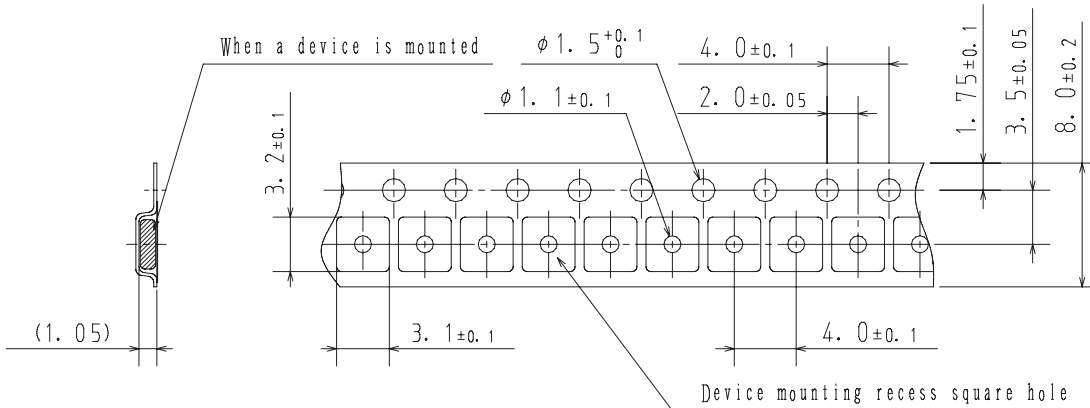
NOTE (1)

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

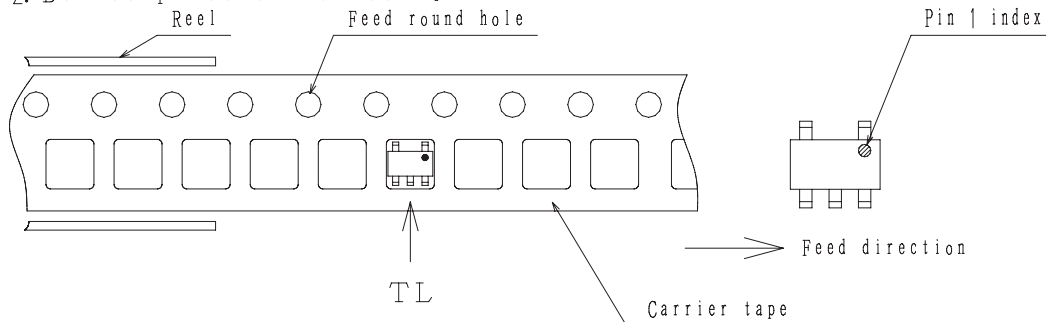
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



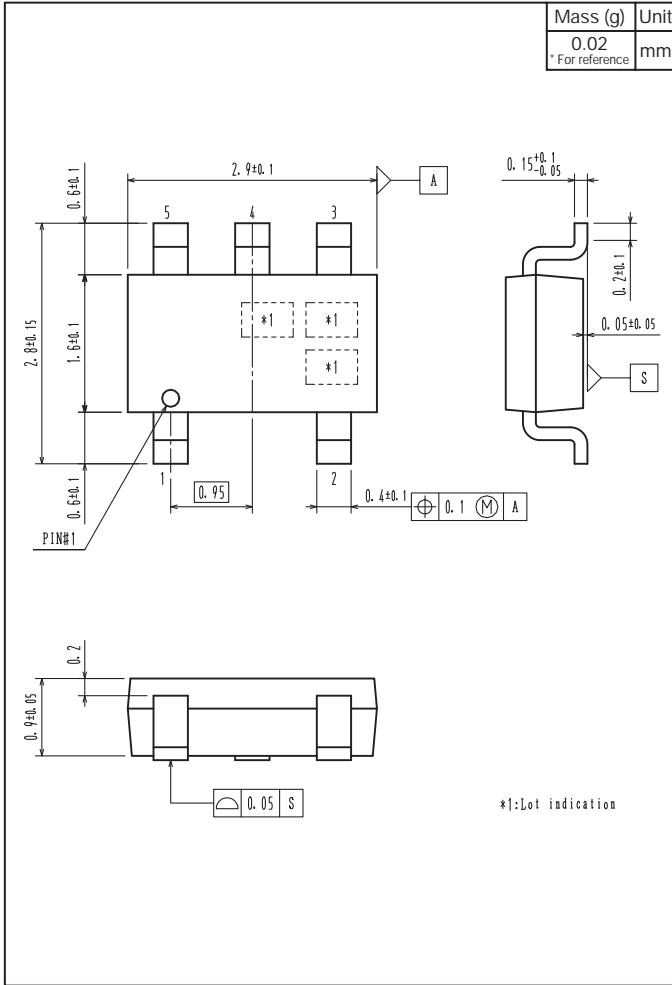
2-2. Device placement direction



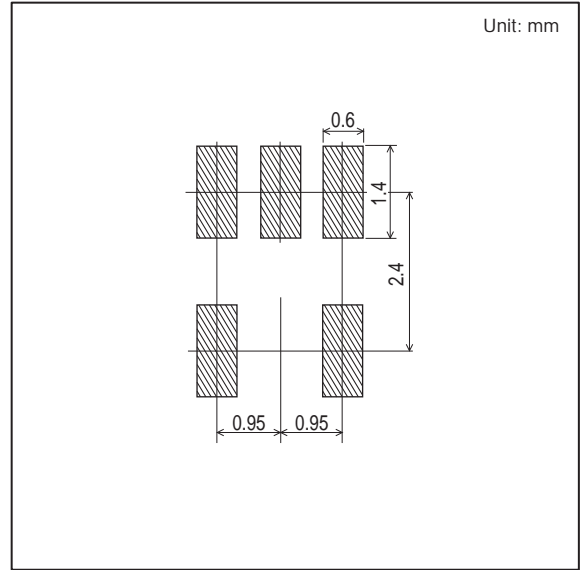
Those with pin 1 index on the feed hole side.....TL

# CPH5871

## Outline Drawing CPH5871-TL-H



## Land Pattern Example



Note on usage : Since the CPH5871 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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