



# SANYO Semiconductors

## DATA SHEET

An ON Semiconductor Company

P-Channel Silicon MOSFET

# CPH3351 — General-Purpose Switching Device Applications

## Features

- ON-resistance  $R_{DS(on)}$ =190m $\Omega$ (typ.)
- 4V drive
- Halogen free compliance
- Protection diode in

## Specifications

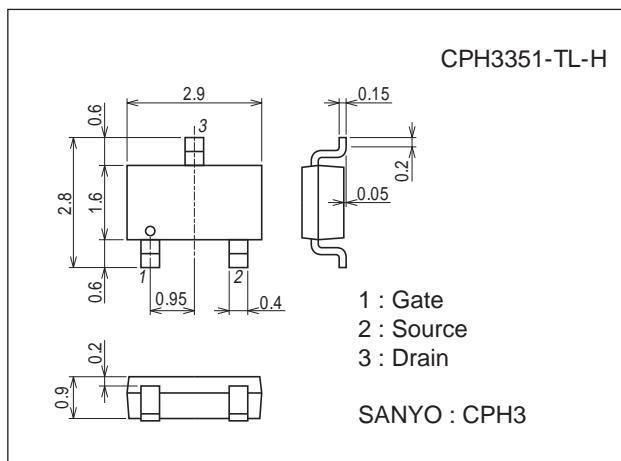
### Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		-60	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		-1.8	A
Drain Current (Pulse)	$I_{DP}$	$P_W \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	-7.2	A
Allowable Power Dissipation	$P_D$	When mounted on ceramic substrate (900mm $^2$ $\times$ 0.8mm)	1	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

## Package Dimensions

unit : mm (typ)

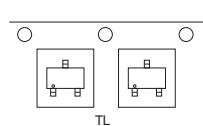
7015A-004



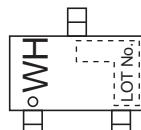
## Product & Package Information

- Package : CPH3
- JEITA, JEDEC : SC-59, TO-236, SOT-23
- Minimum Packing Quantity : 3,000 pcs./reel

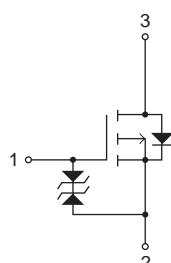
## Packing Type: TL



## Marking

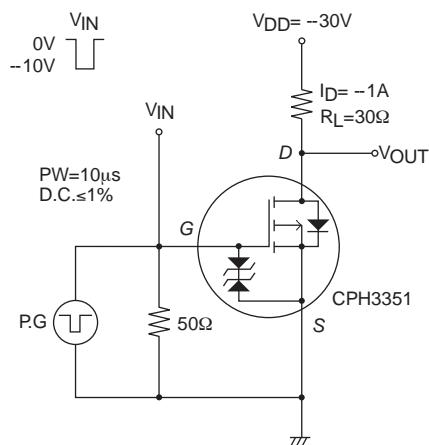


## Electrical Connection

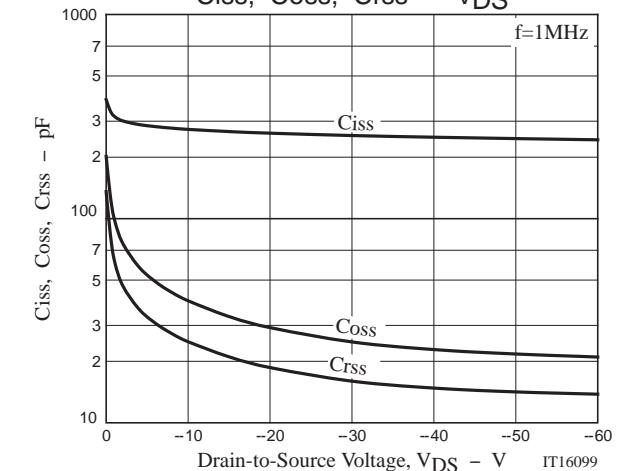
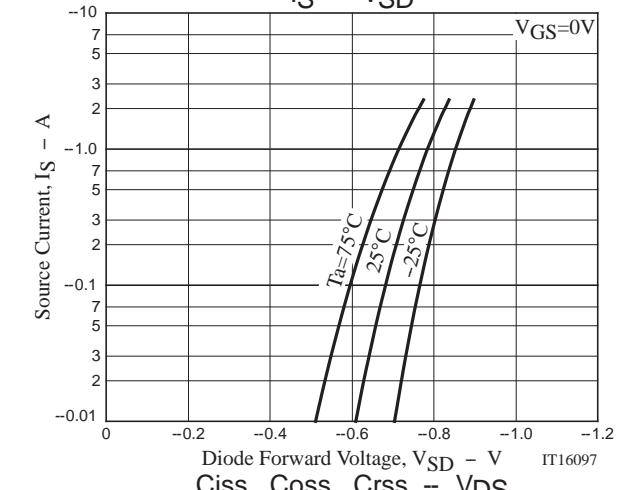
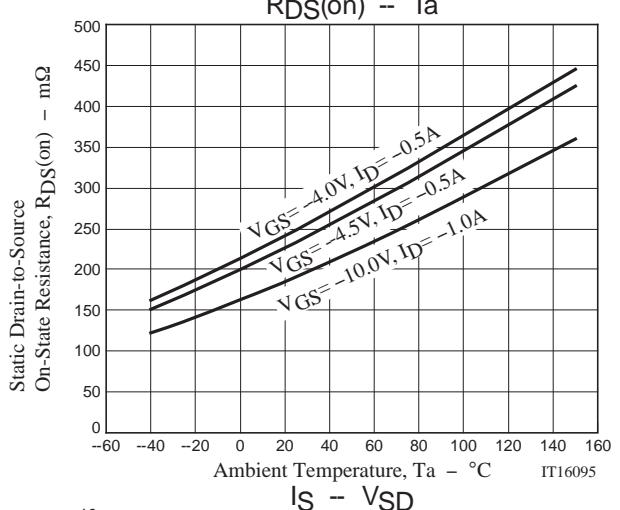
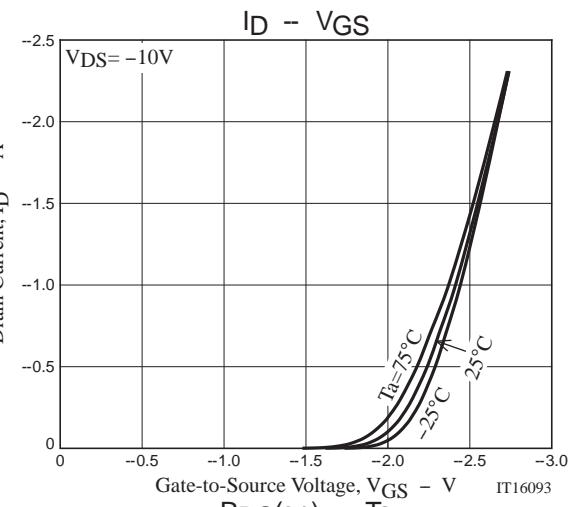
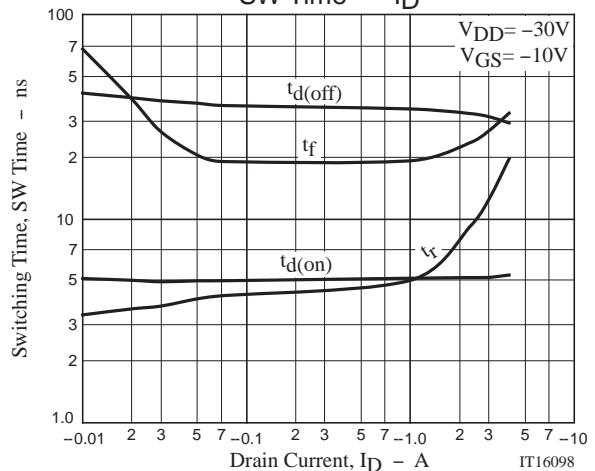
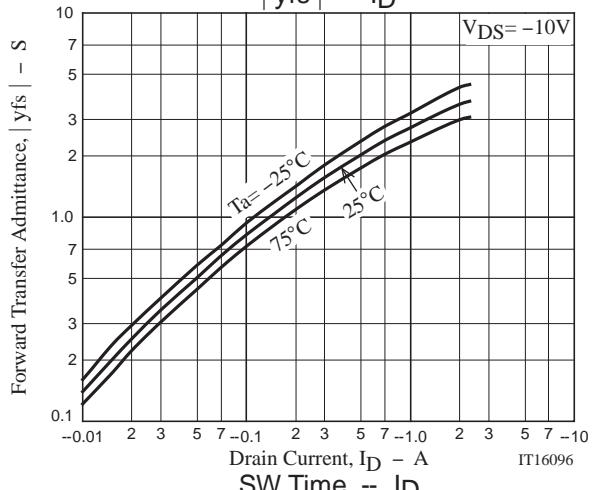
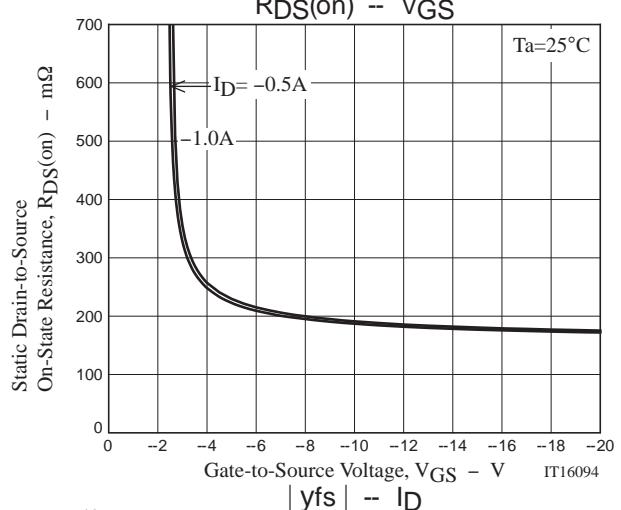
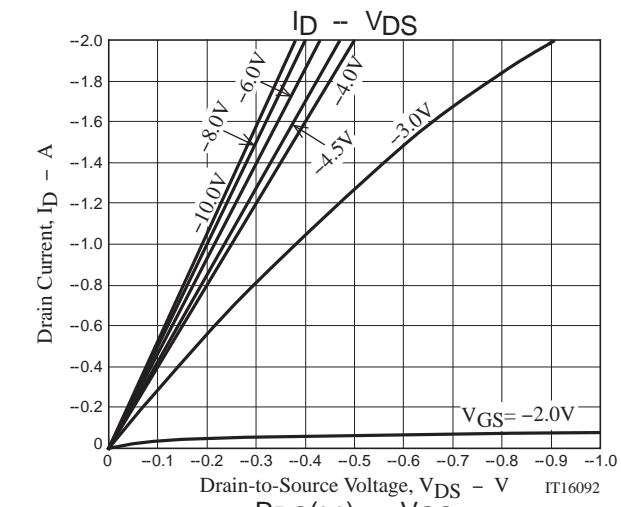


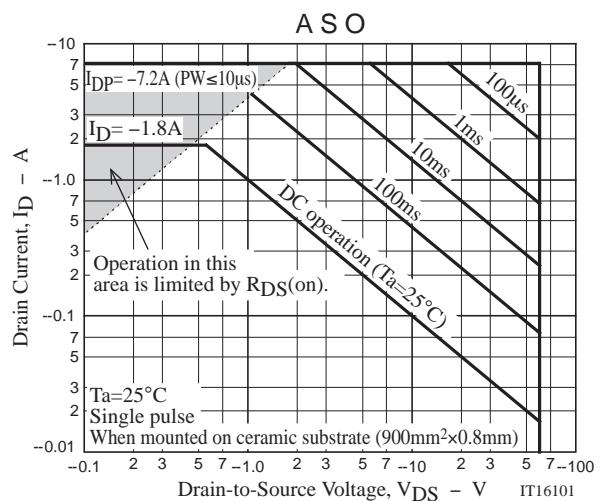
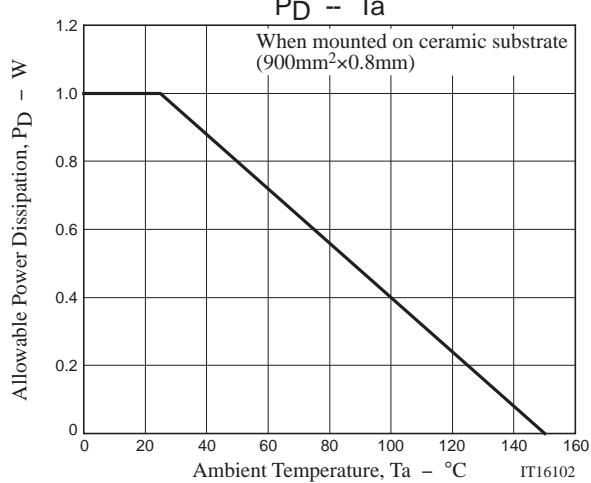
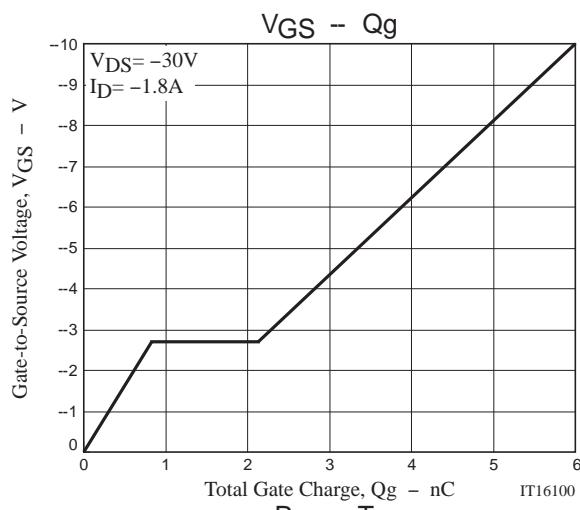
**Electrical Characteristics** at  $T_a=25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$I_D=-1\text{mA}, V_{GS}=0\text{V}$	-60			V
Zero-Gate Voltage Drain Current	$I_{\text{DSS}}$	$V_{DS}=-60\text{V}, V_{GS}=0\text{V}$			-1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{\text{GSS}}$	$V_{GS}=\pm 16\text{V}, V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(\text{off})}$	$V_{DS}=-10\text{V}, I_D=-1\text{mA}$	-1.2		-2.6	V
Forward Transfer Admittance	$ y_{\text{fs}} $	$V_{DS}=-10\text{V}, I_D=-1\text{A}$		2.7		S
Static Drain-to-Source On-State Resistance	$R_{DS(\text{on})1}$	$I_D=-1\text{A}, V_{GS}=-10\text{V}$		190	250	$\text{m}\Omega$
	$R_{DS(\text{on})2}$	$I_D=-0.5\text{A}, V_{GS}=-4.5\text{V}$		235	330	$\text{m}\Omega$
	$R_{DS(\text{on})3}$	$I_D=-0.5\text{A}, V_{GS}=-4\text{V}$		250	350	$\text{m}\Omega$
Input Capacitance	$C_{\text{iss}}$	$V_{DS}=-20\text{V}, f=1\text{MHz}$		262		$\text{pF}$
Output Capacitance	$C_{\text{oss}}$	$V_{DS}=-20\text{V}, f=1\text{MHz}$		29		$\text{pF}$
Reverse Transfer Capacitance	$C_{\text{rss}}$	$V_{DS}=-20\text{V}, f=1\text{MHz}$		19		$\text{pF}$
Turn-ON Delay Time	$t_{\text{d}(\text{on})}$	See specified Test Circuit.		5.1		ns
Rise Time	$t_r$	See specified Test Circuit.		5.4		ns
Turn-OFF Delay Time	$t_{\text{d}(\text{off})}$	See specified Test Circuit.		34		ns
Fall Time	$t_f$	See specified Test Circuit.		19		ns
Total Gate Charge	$Q_g$	$V_{DS}=-30\text{V}, V_{GS}=-10\text{V}, I_D=-1.8\text{A}$		6.0		nC
Gate-to-Source Charge	$Q_{\text{gs}}$	$V_{DS}=-30\text{V}, V_{GS}=-10\text{V}, I_D=-1.8\text{A}$		0.83		nC
Gate-to-Drain "Miller" Charge	$Q_{\text{gd}}$	$V_{DS}=-30\text{V}, V_{GS}=-10\text{V}, I_D=-1.8\text{A}$		1.3		nC
Diode Forward Voltage	$V_{\text{SD}}$	$I_S=-1.8\text{A}, V_{GS}=0\text{V}$		-0.82	-1.2	V

**Switching Time Test Circuit****Ordering Information**

Device	Package	Shipping	memo
CPH3351-TL-H	CPH3	3,000pcs./reel	Pb Free and Halogen Free



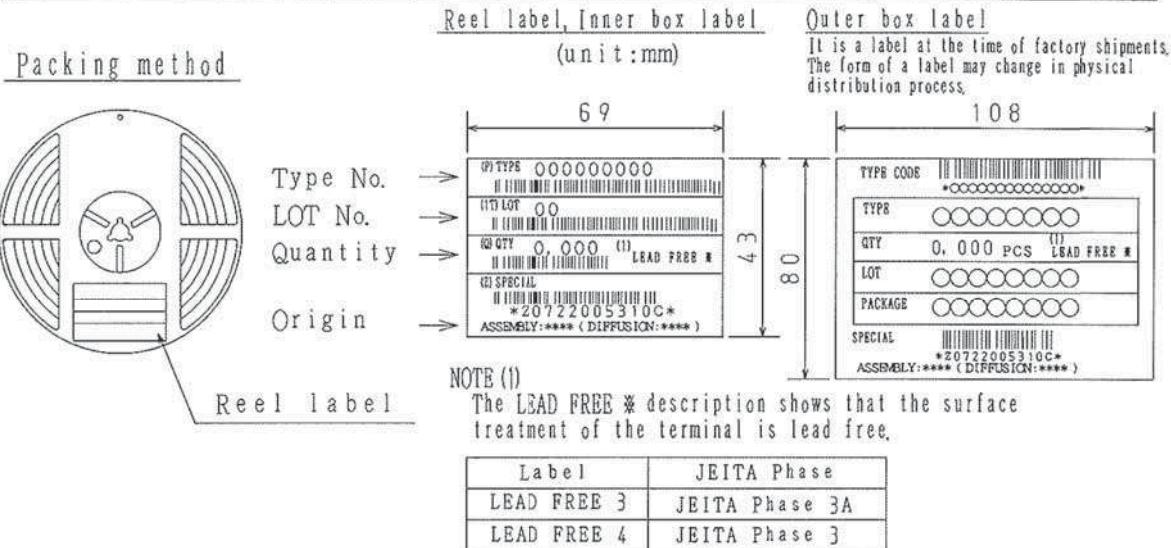


## Embossed Taping Specification

CPH3351-TL-H

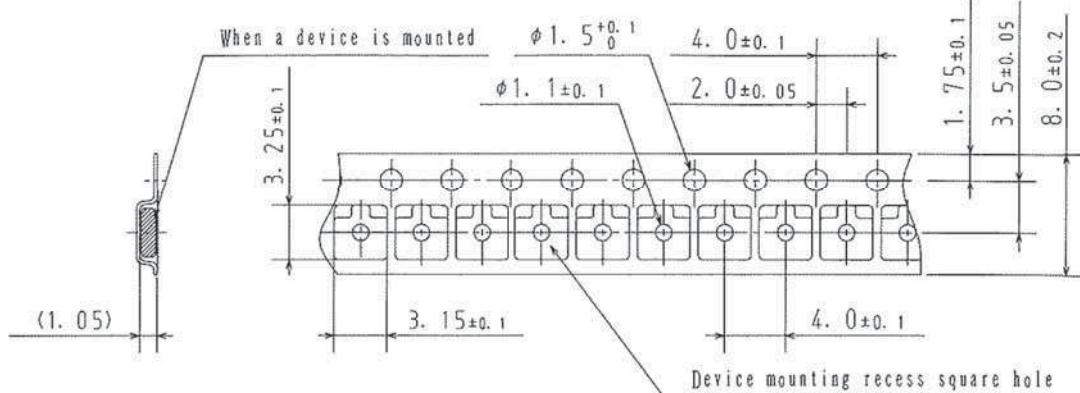
## 1. Packing Format

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)
CPH3	CPH3	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

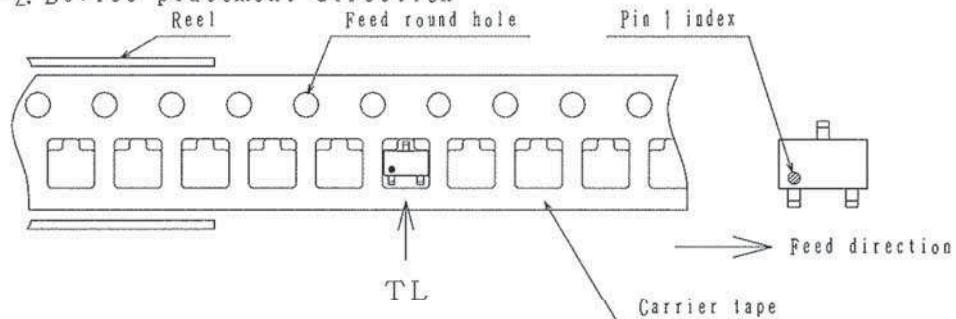


## 2. Taping configuration

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



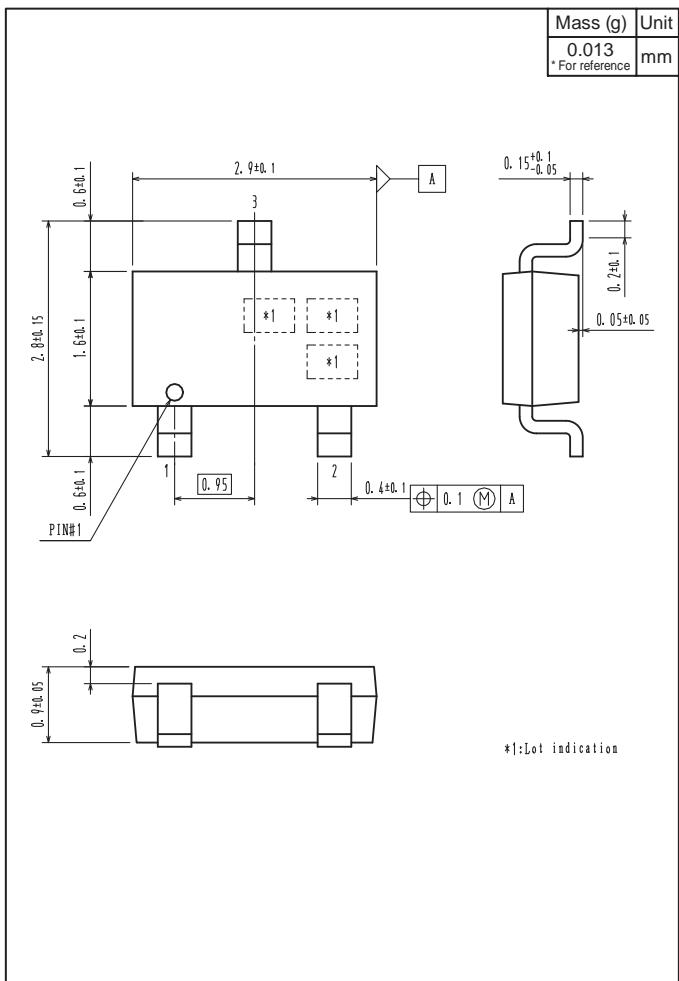
## 2-2. Device placement direction



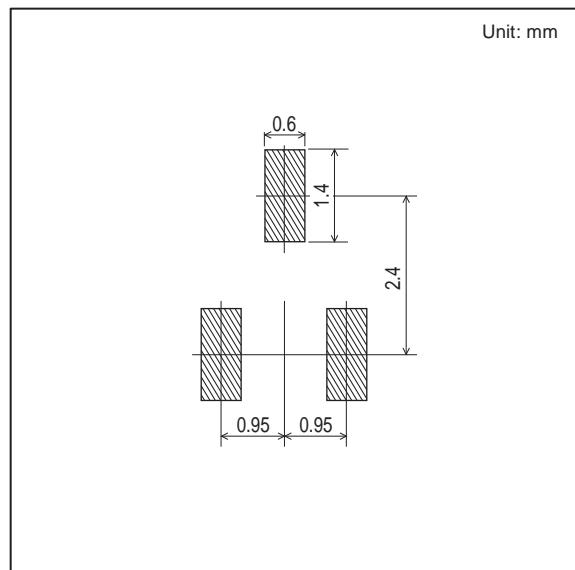
Those with one electrode terminal on the feed hole side.....TL

## Outline Drawing

CPH3351-TL-H



## Land Pattern Example



Note on usage : Since the CPH3351 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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