



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## CPH3116 / CPH3216 — PNP / NPN Epitaxial Planar Silicon Transistor DC / DC Converter Applications

### Applications

- Relay drivers, lamp drivers, motor drivers, flash

### Features

- Adoption of MBIT processes
- Large current capacity
- Low collector-to-emitter saturation voltage
- High-speed switching
- Ultrasmall package facilitates miniaturization in end products (mounting height : 0.9mm)
- High allowable power dissipation

### Specifications ( ) : CPH3116

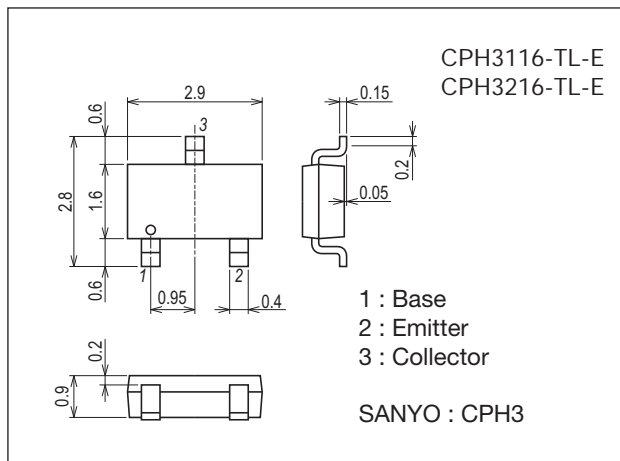
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	VCBO		(-50)80	V
Collector-to-Emitter Voltage	VCES		(-50)80	V
Emitter-to-Base Voltage	VCEO		(-50)	V
Emitter-to-Base Voltage	VEBO		(-5)	V
Collector Current	IC		(-1.0)	A
Collector Current (Pulse)	ICP		(-3)	A
Base Current	IB		(-200)	mA
Collector Dissipation	PC	When mounted on ceramic substrate (600mm <sup>2</sup> ×0.8mm)	0.9	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

### Package Dimensions

unit : mm (typ)

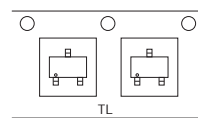
7015A-003



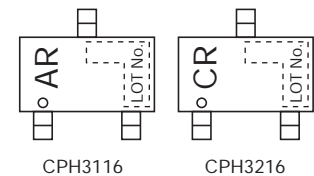
### Product & Package Information

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

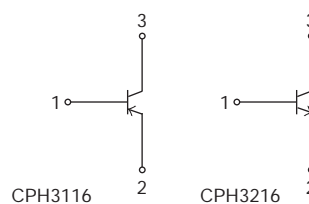
### Packing Type: TL



### Marking



### Electrical Connection



SANYO Semiconductor Co., Ltd.

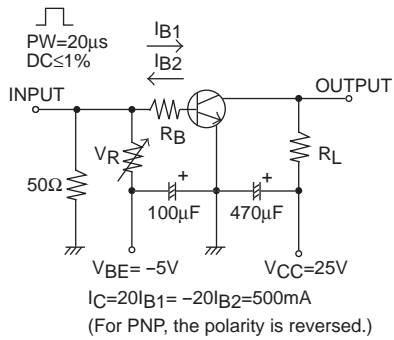
<http://www.sanyosemi.com/en/network/>

# CPH3116 / CPH3216

## Electrical Characteristics at Ta=25°C

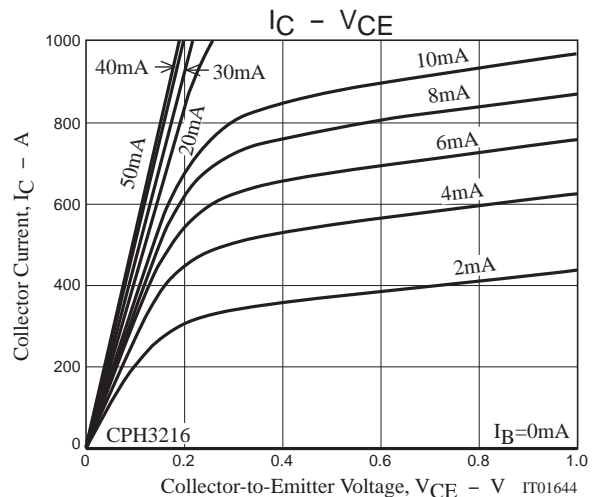
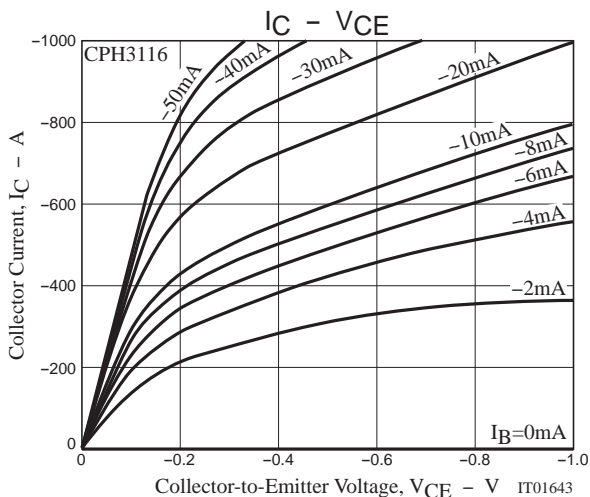
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = (-)40V, I_E = 0A$			(-)0.1	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4V, I_C = 0A$			(-)0.1	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE} = (-)2V, I_C = (-)100mA$	200		560	
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)10V, I_C = (-)300mA$		420		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = (-)10V, f = 1MHz$		(9)6		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C = (-)500mA, I_B = (-)10mA$		(-280)130	(-430)190	mV
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)2}$	$I_C = (-)300mA, I_B = (-)6mA$		(-145)90	(-220)135	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)500mA, I_B = (-)10mA$		(-)0.81	(-)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)10\mu A, I_E = 0A$	(-50)80			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C = (-)100\mu A, R_{BE} = 0\Omega$	(-50)80			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = \infty$	(-)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)10\mu A, I_C = 0A$	(-)5			V
Turn-On Time	$t_{on}$	See specified Test Circuit.		35		ns
Storage Time	$t_{stg}$			(170)330		ns
Fall Time	$t_f$			(30)40		ns

## Switching Time Test Circuit

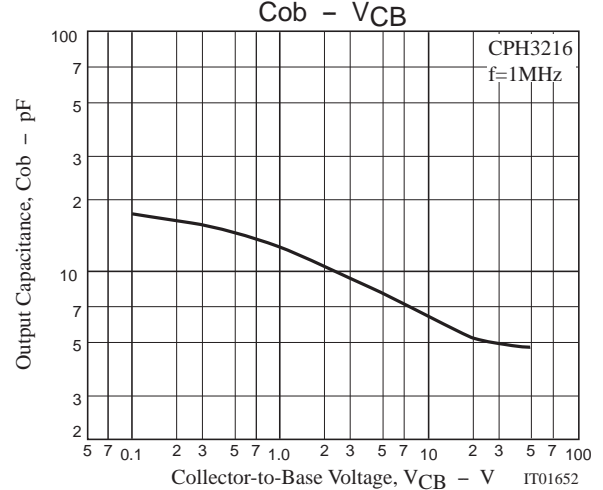
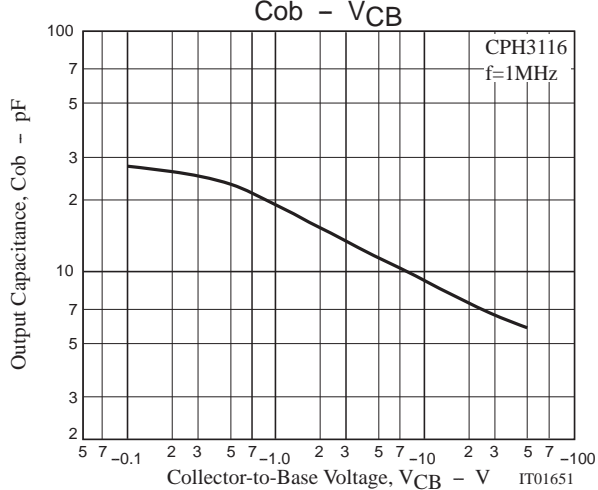
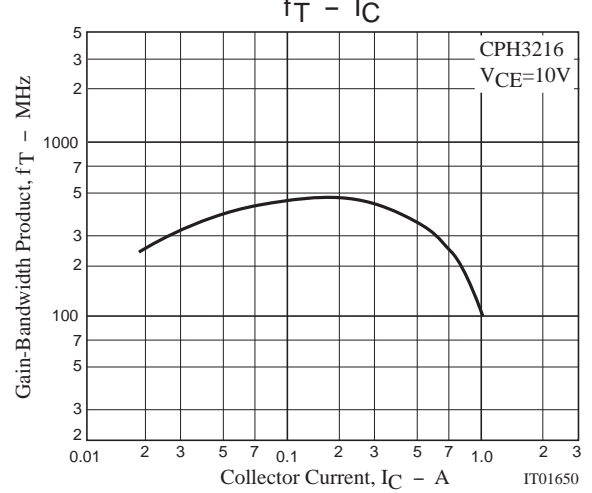
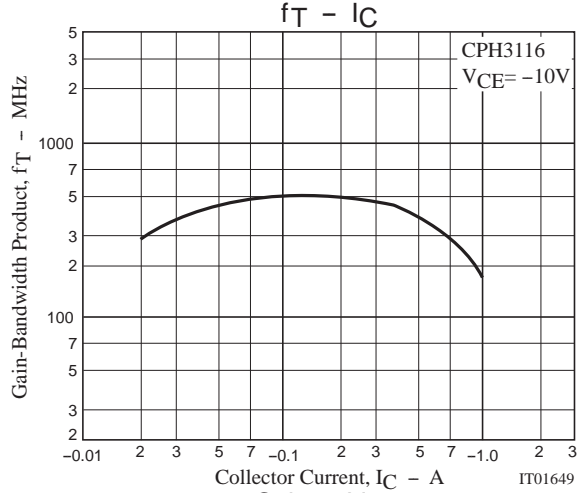
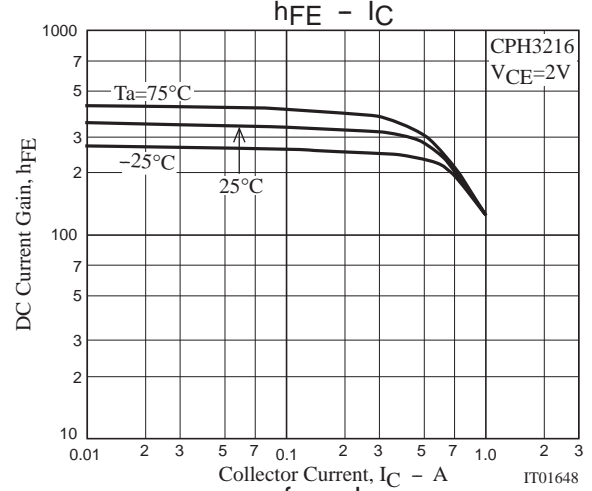
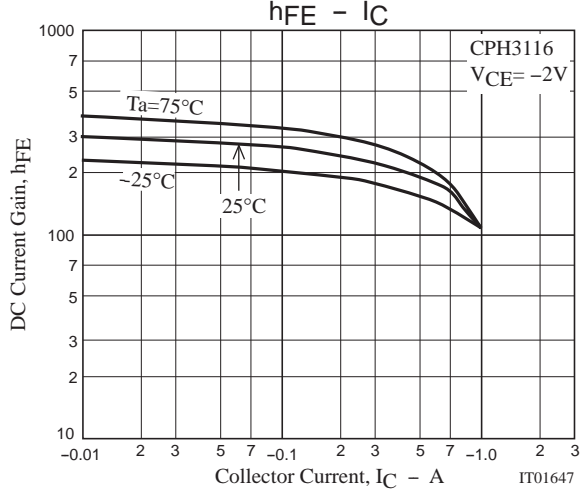
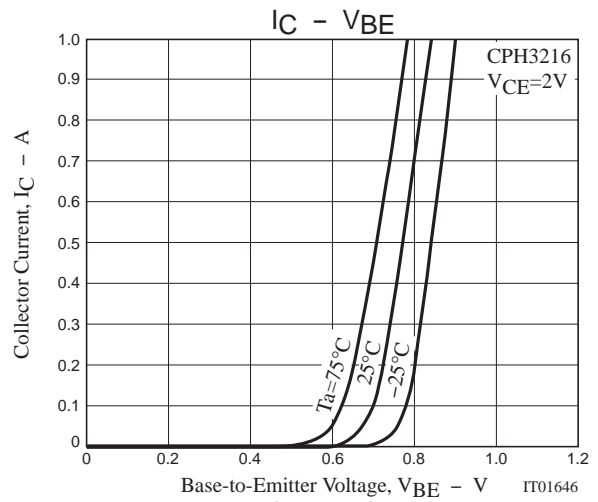
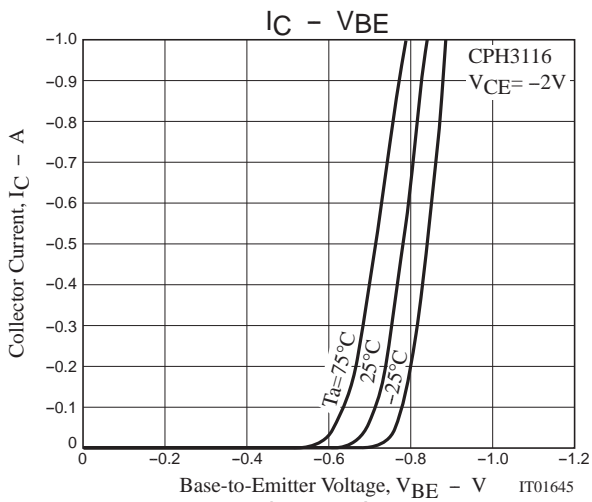


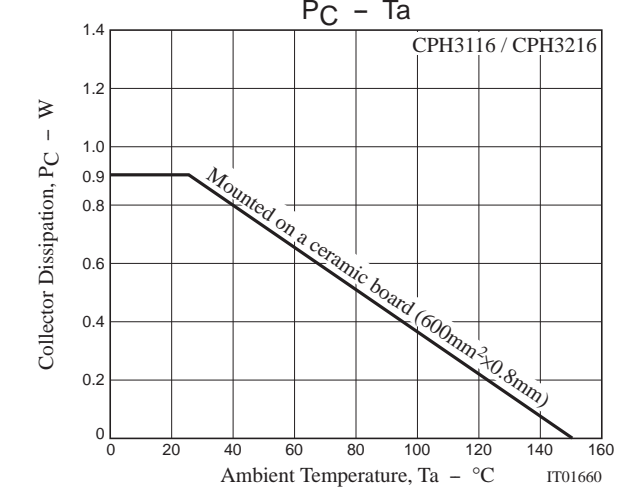
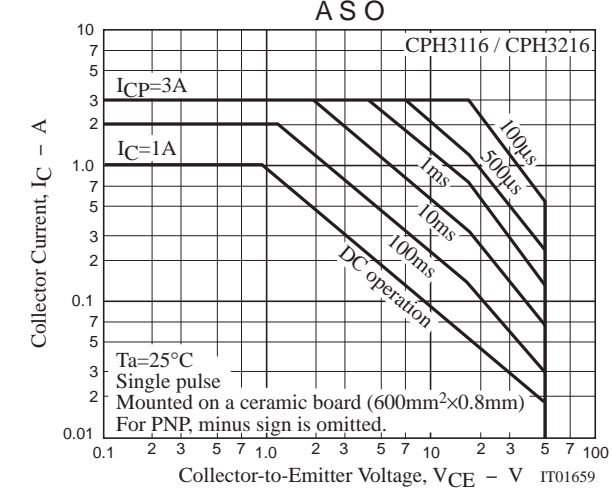
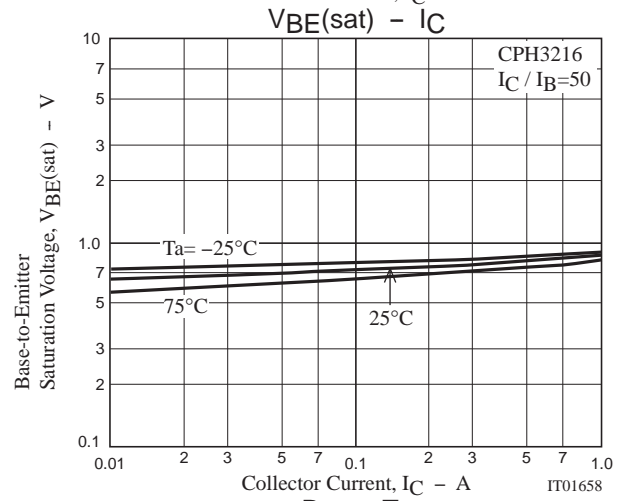
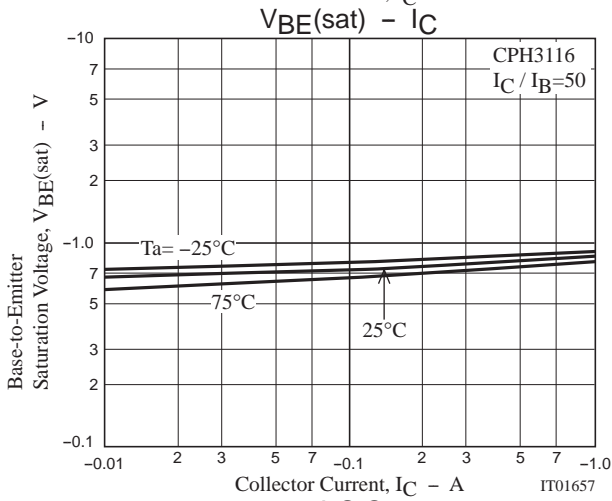
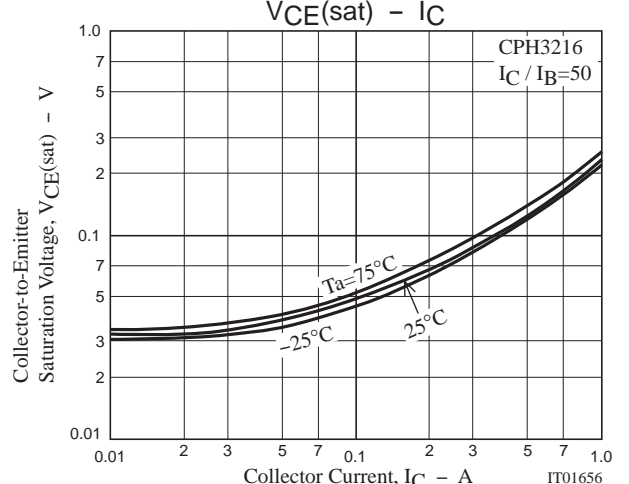
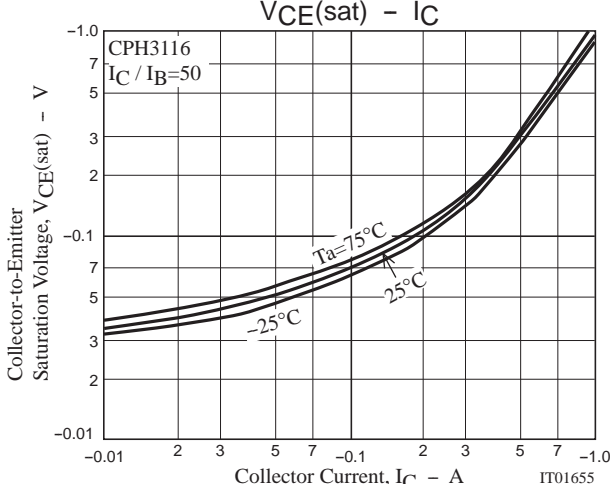
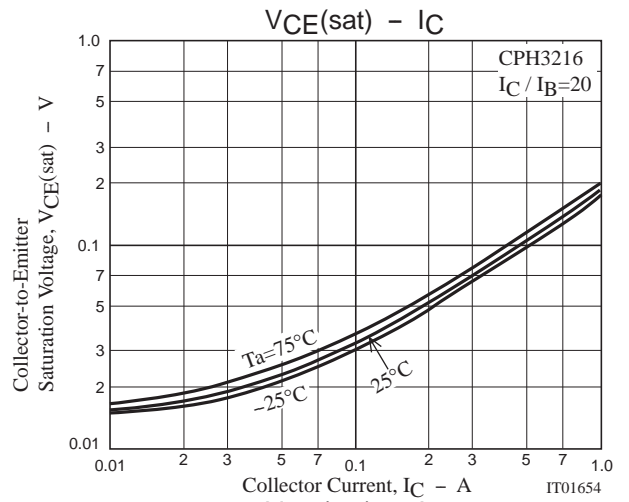
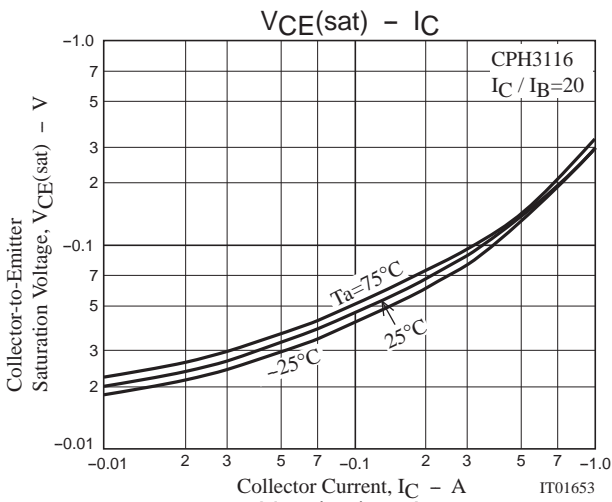
## Ordering Information

Device	Package	Shipping	memo
CPH3116-TL-E	CPH3	3,000pcs./reel	Pb Free
CPH3216-TL-E	CPH3	3,000pcs./reel	Pb Free



CPH3116 / CPH3216





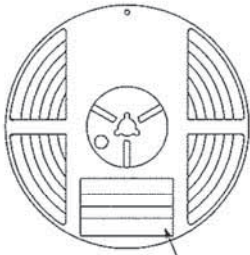
Embossed Taping Specification  
CPH3116-TL-E, CPH3216-TL-E

1. Packing Format

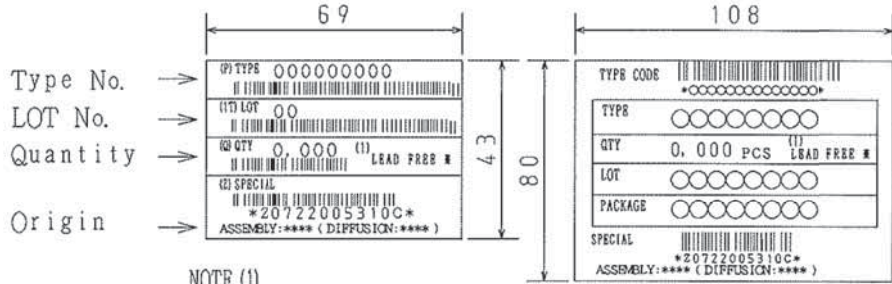
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
CPH3	CPH3	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

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



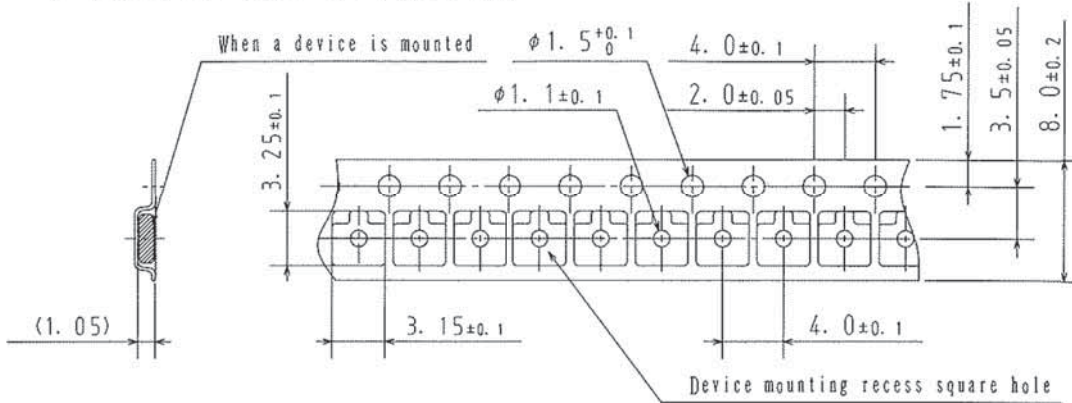
NOTE (1)

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

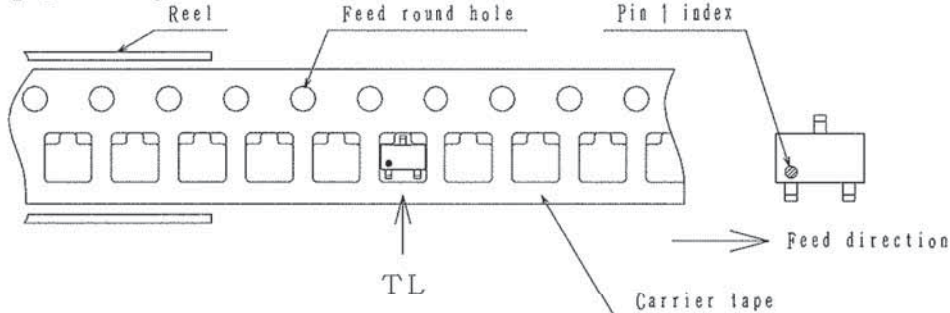
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



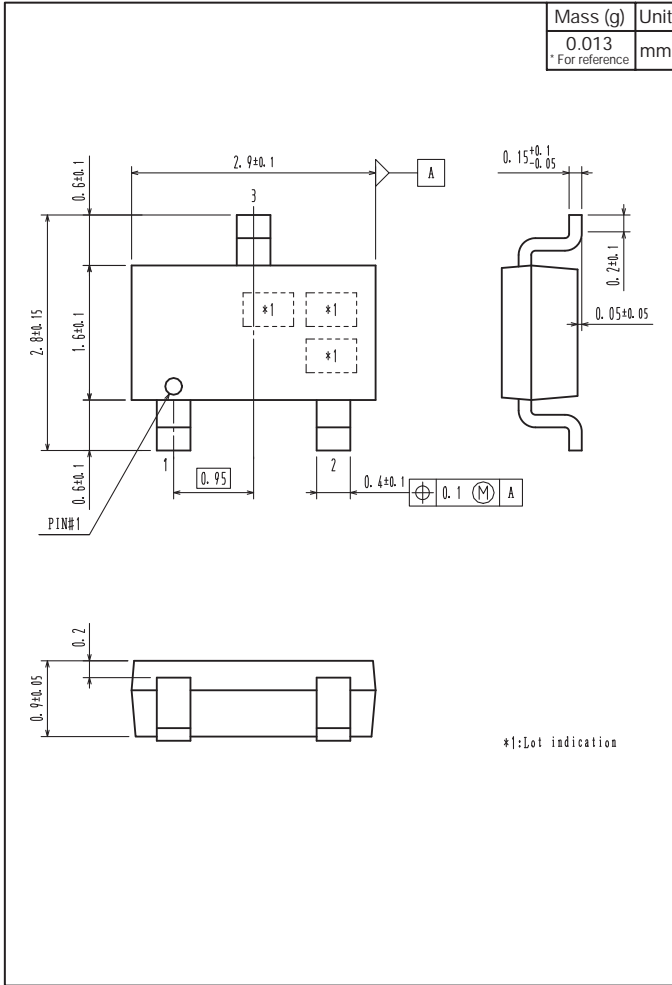
2-2. Device placement direction



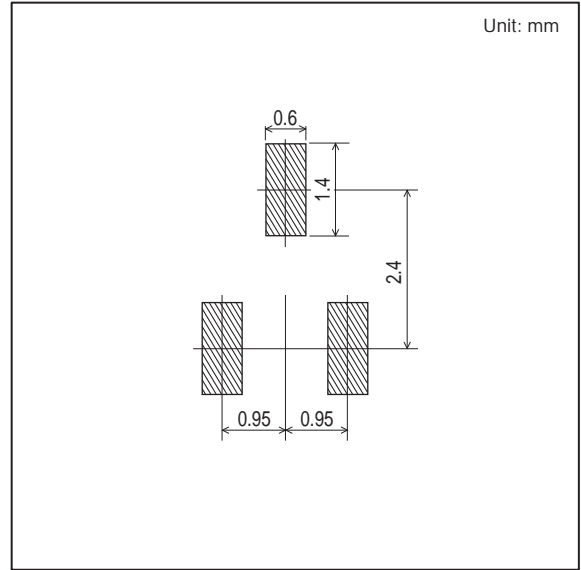
Those with one electrode terminal on the feed hole side.....TL

Outline Drawing

CPH3116-TL-E, CPH3216-TL-E



Land Pattern Example



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