



# CPH3115/CPH3215

## Bipolar Transistor

(-30V, (-)1.5A, Low VCE(sat), (PNP)NPN Single CPH3

ON Semiconductor®

<http://onsemi.com>

### Applications

- Relay drivers, lamp drivers, motor drivers, and strobes

### 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
- Halogen free compliance

### Specifications ( ) : CPH3115

#### Absolute Maximum Ratings at Ta=25°C

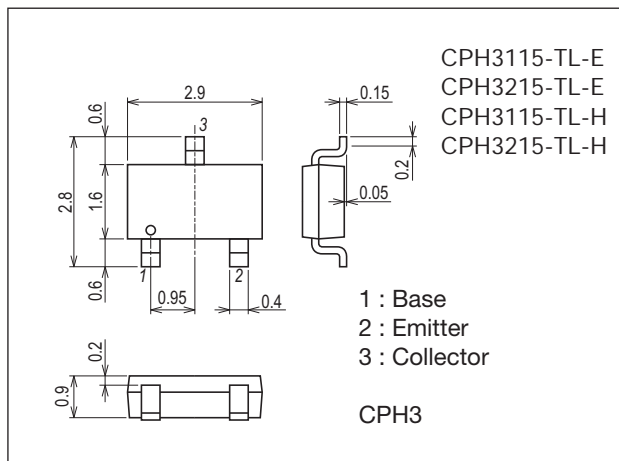
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	VCBO		(-30)40	V
Collector-to-Emitter Voltage	VCEO		(-30)	V
Emitter-to-Base Voltage	VEBO		(-5)	V
Collector Current	IC		(-1.5)	A
Collector Current (Pulse)	ICP		(-3)	A
Base Current	IB		(-300)	mA
Collector Dissipation	PC	When mounted on ceramic substrate (600mm <sup>2</sup> ×0.8mm)	0.9	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### Package Dimensions

unit : mm (typ)

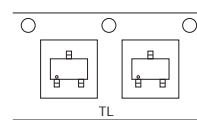
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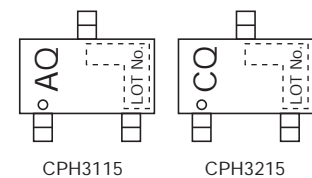
### Product & Package Information

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

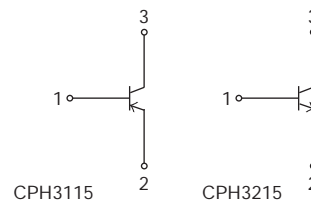
### Packing Type: TL



### Marking



### Electrical Connection

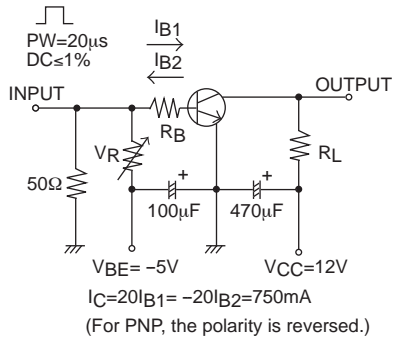


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## Electrical Characteristics at Ta=25°C

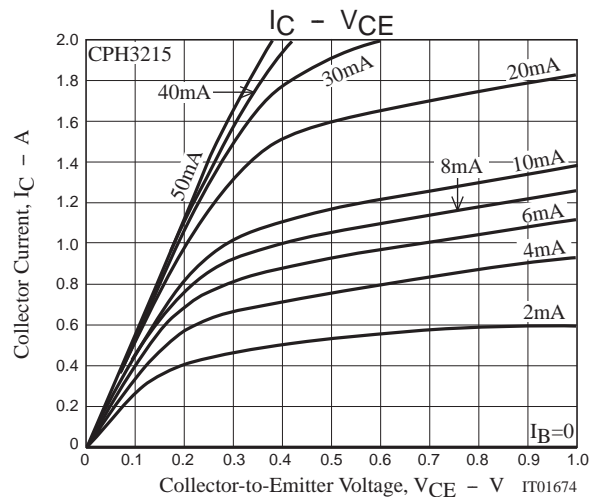
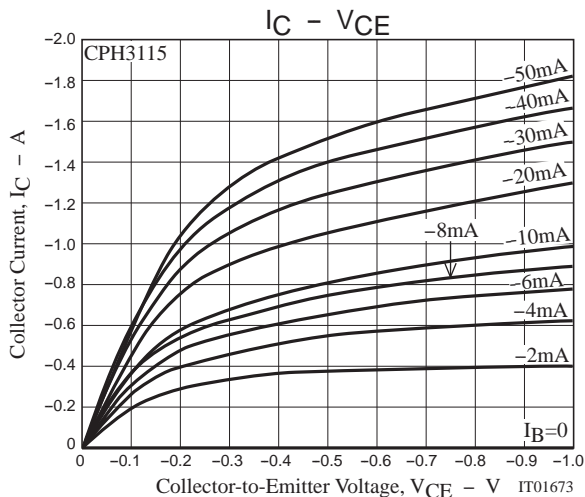
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=(-)30V, I_E=0A$			(-)0.1	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)4V, I_C=0A$			(-)0.1	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE}=(-)2V, I_C=(-)100mA$	200		560	
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10V, I_C=(-)300mA$		(450)500		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10V, f=1MHz$		(9)8		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)750mA, I_B=(-)15mA$		(-250)150	(-375)225	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)750mA, I_B=(-)15mA$		(-)0.85	(-)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0A$	(-30)40			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)30			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	$t_{stg}$			(115)205		ns
Fall Time	$t_f$			30		ns

## Switching Time Test Circuit

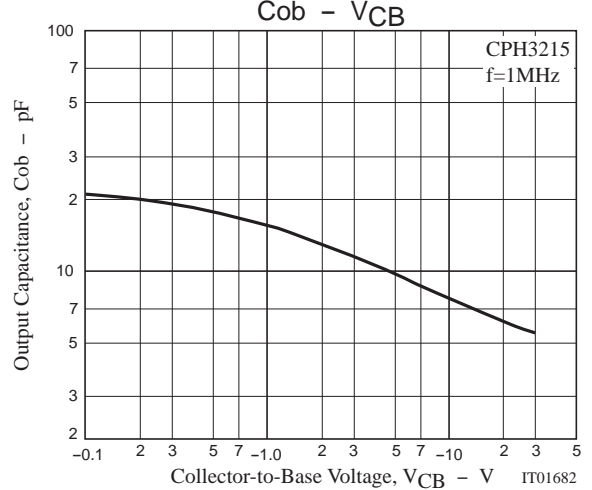
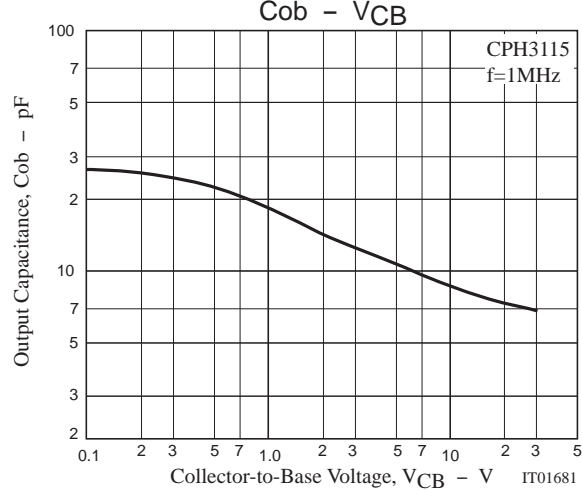
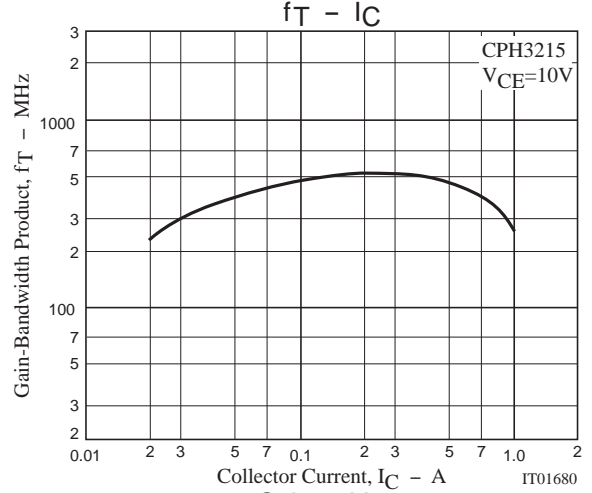
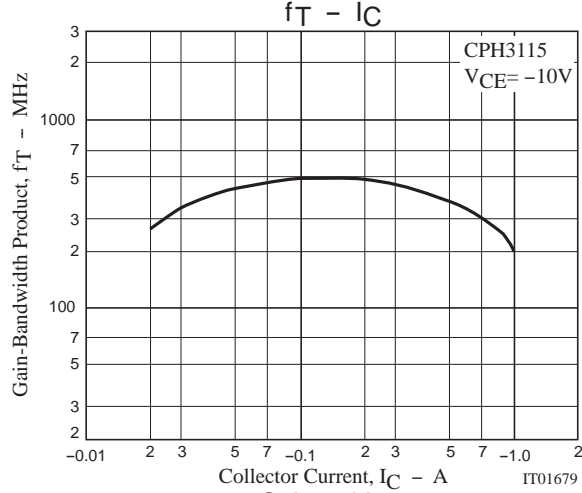
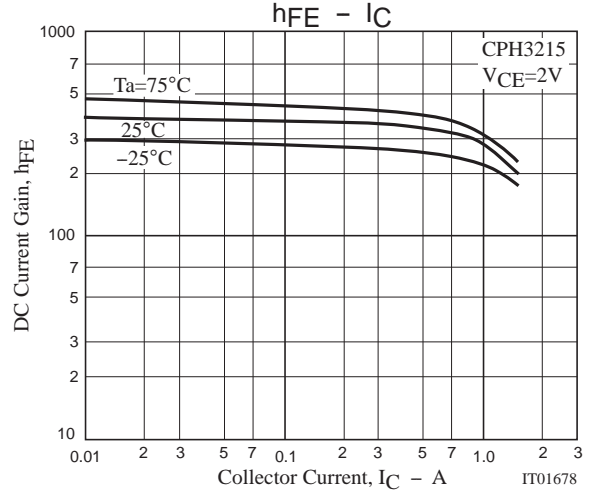
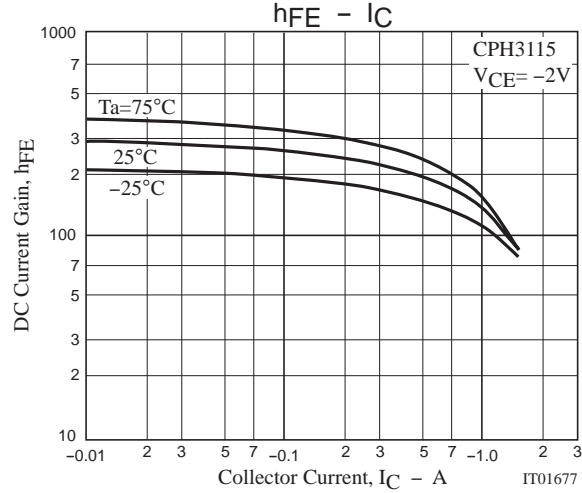
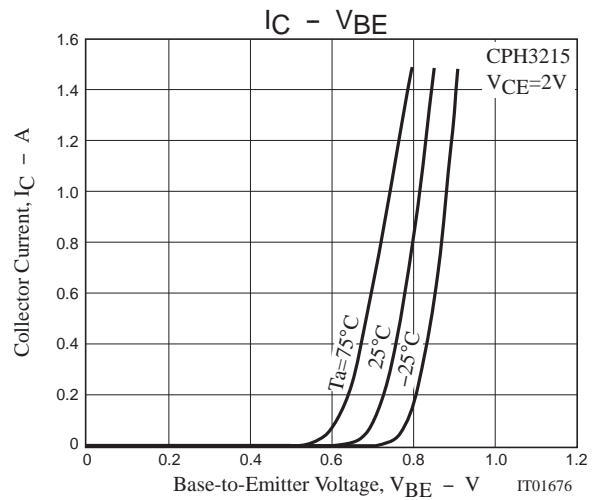
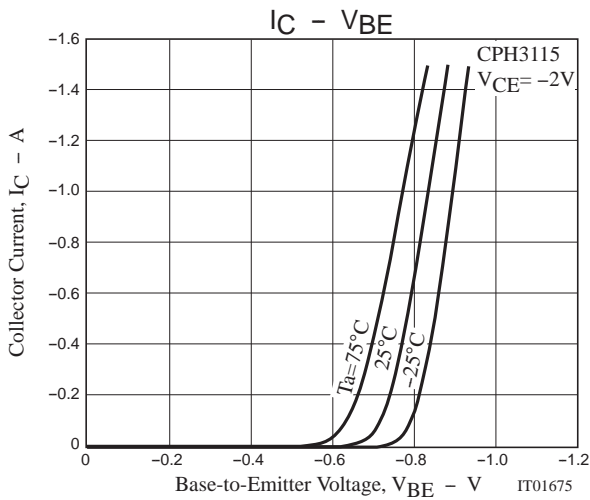


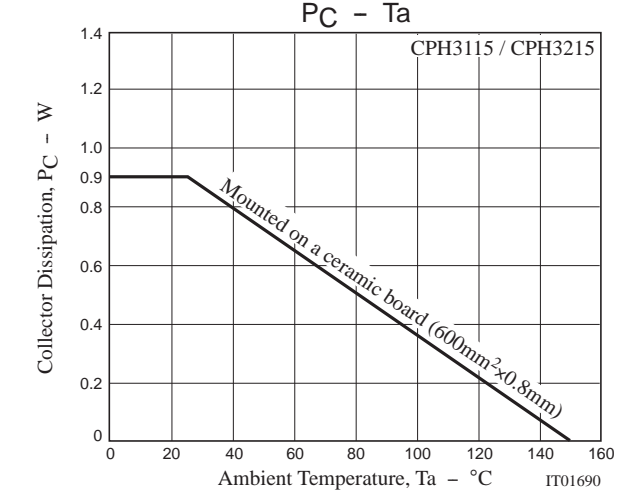
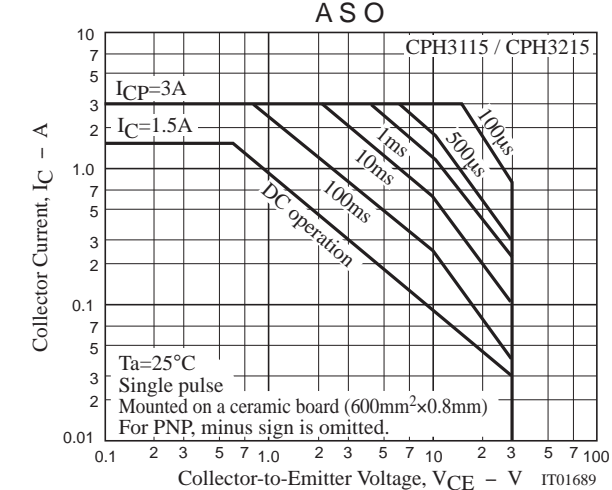
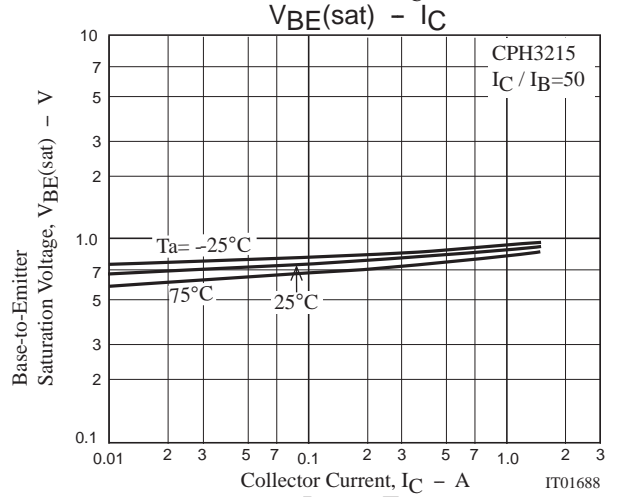
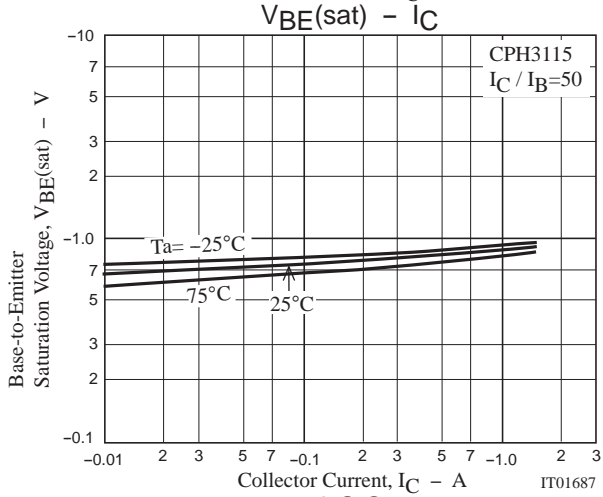
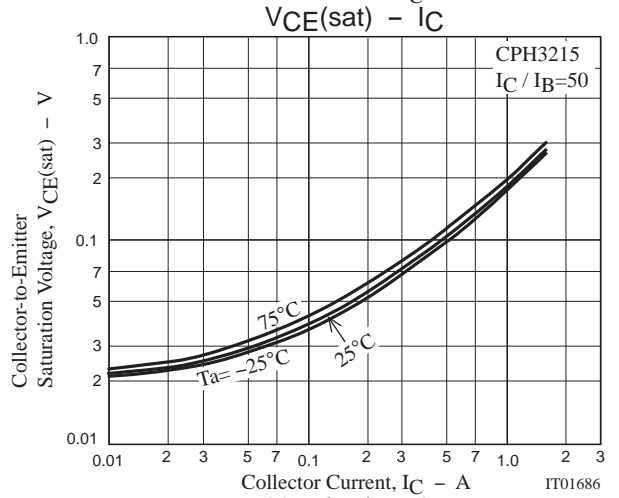
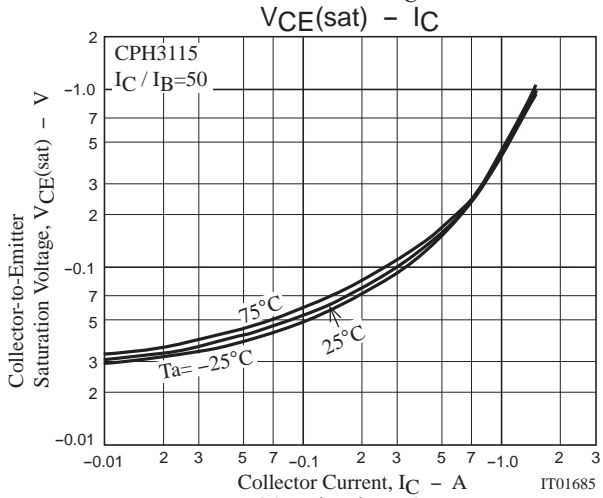
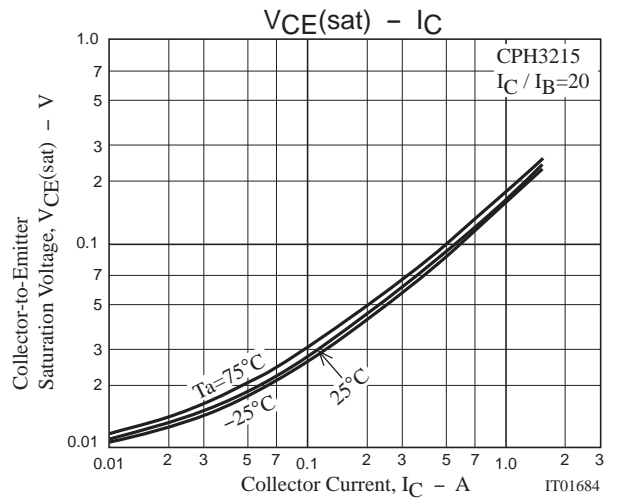
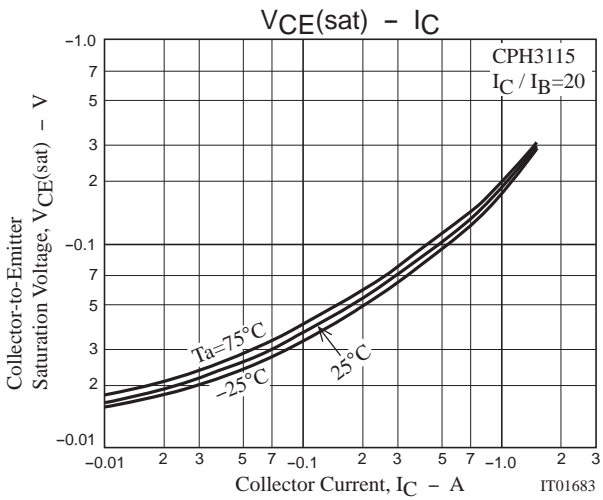
## Ordering Information

Device	Package	Shipping	memo
CPH3115-TL-E	CPH3	3,000pcs./reel	Pb Free
CPH3215-TL-E	CPH3	3,000pcs./reel	Pb Free
CPH3115-TL-H	CPH3	3,000pcs./reel	Pb Free and Halogen Free
CPH3215-TL-H	CPH3	3,000pcs./reel	Pb Free and Halogen Free



CPH3115 / CPH3215





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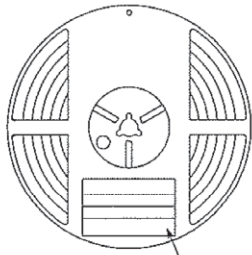
## Embossed Taping Specification

CPH3115-TL-E, CPH3215-TL-E, CPH3115-TL-H, CPH3215-TL-H

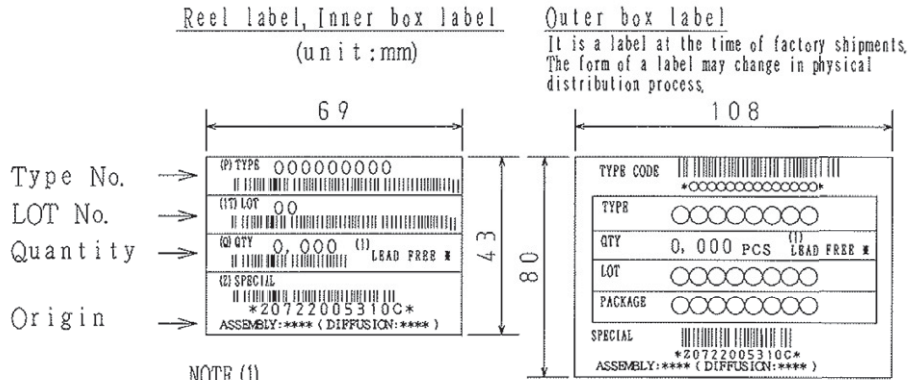
### 1. Packing Format

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

#### Packing method



Reel label



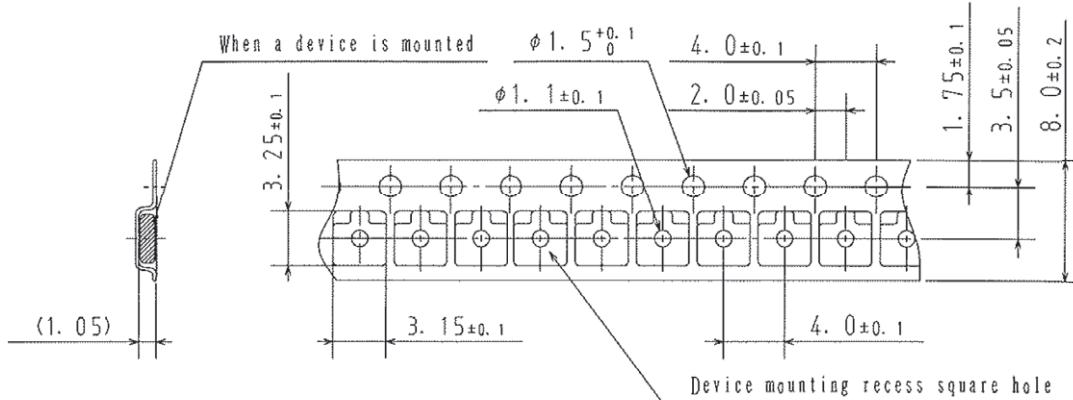
**NOTE (1)**

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

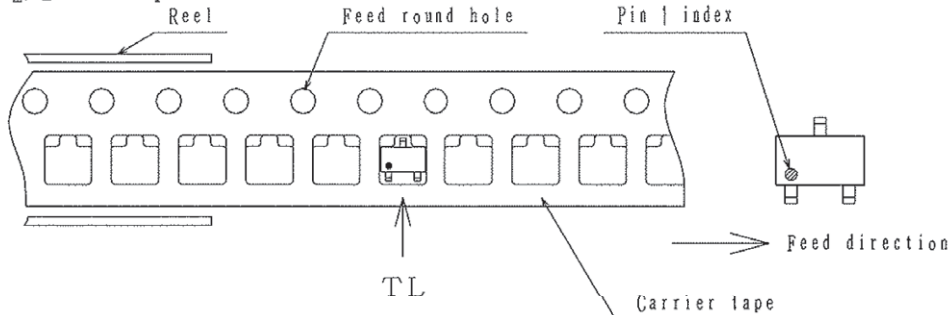
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

### 2. Taping configuration

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



#### 2-2. Device placement direction



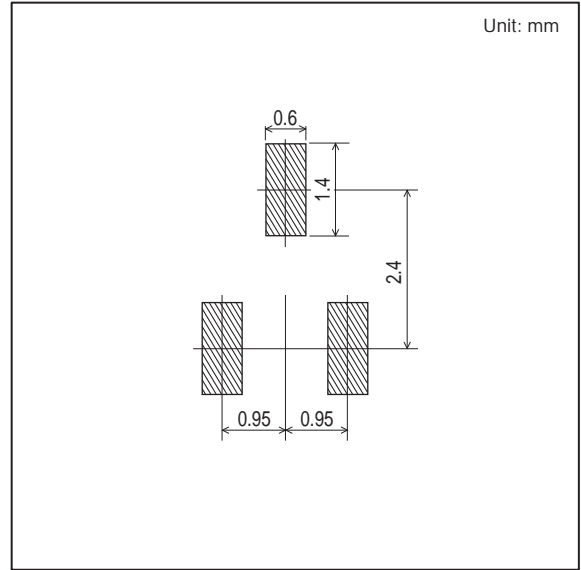
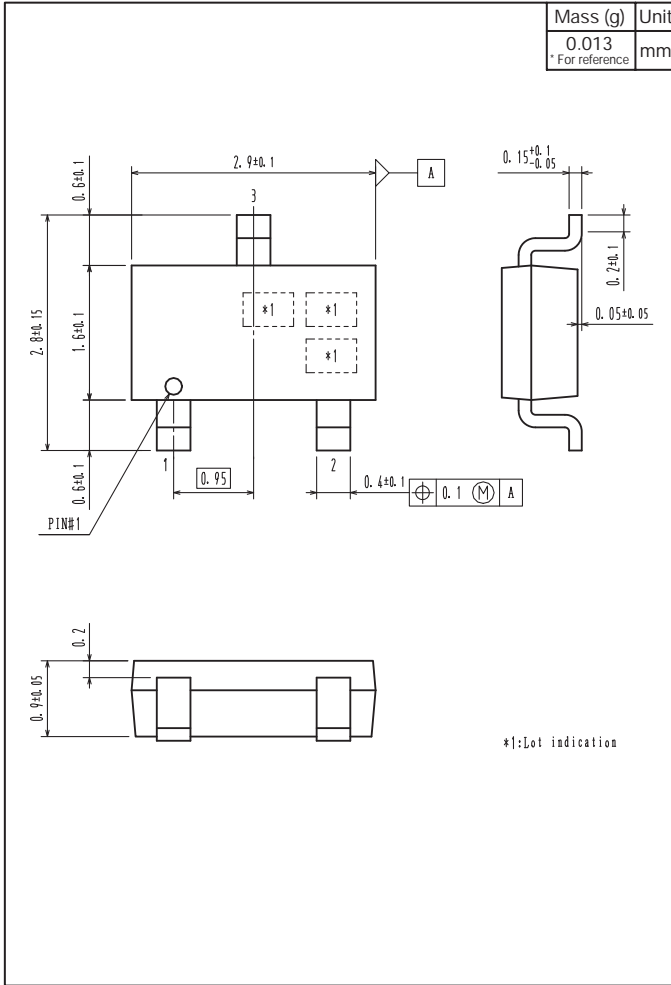
Those with one electrode terminal on the feed hole side.....TL

# CPH3115 / CPH3215

## Outline Drawing

## Land Pattern Example

CPH3115-TL-E, CPH3215-TL-E, CPH3115-TL-H, CPH3215-TL-H



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