



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## CPH3105 / CPH3205 — PNP / NPN Epitaxial Planar Silicon Transistors High-Current Switching Applications

### Applications

- DC-DC converters, relay drivers, lamp drivers, motor drivers, flash

### Features

- Adoption of FBIT, 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 ( ) : CPH3105

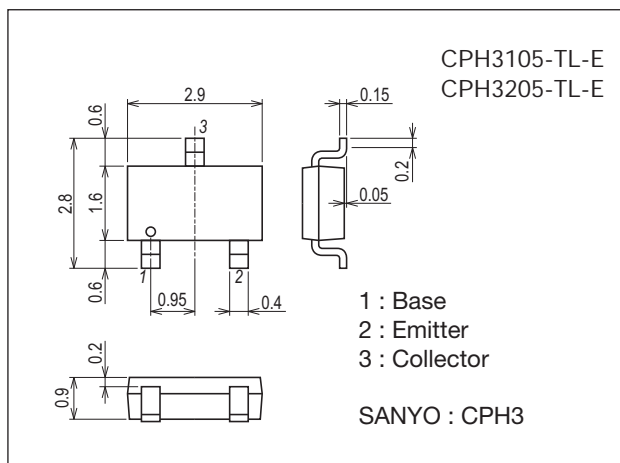
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	VCBO		(-50)100	V
Collector-to-Emitter Voltage	VCES		(-50)100	V
Collector-to-Emitter Voltage	VCEO		(-50)	V
Emitter-to-Base Voltage	VEBO		(-6)	V
Collector Current	IC		(-3)	A
Collector Current (Pulse)	ICP		(-6)	A
Base Current	IB		(-600)	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)

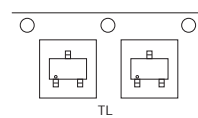
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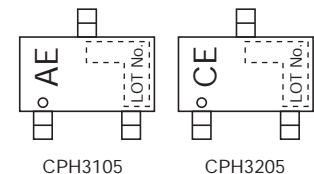
### Product & Package Information

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

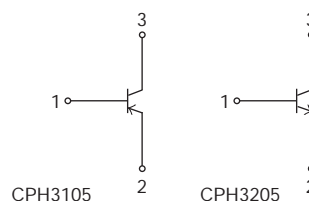
### Packing Type: TL



### Marking



### Electrical Connection



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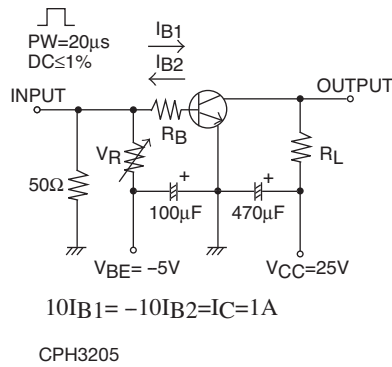
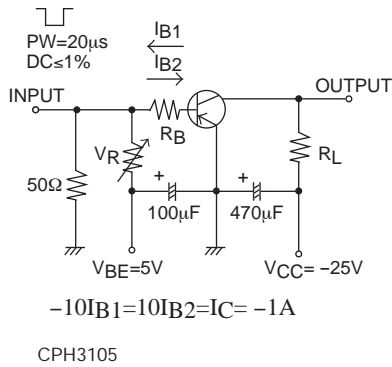
<http://semicon.sanyo.com/en/network>

# CPH3105 / CPH3205

## Electrical Characteristics at Ta=25°C

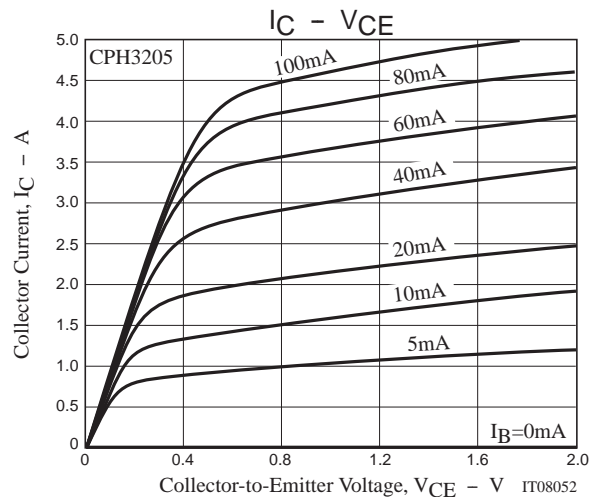
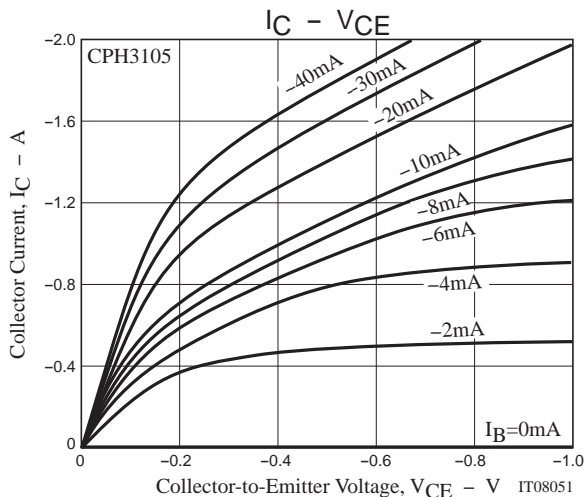
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=(-)40V, I_E=0A$			(-) $1$	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)4V, I_C=0A$			(-) $1$	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE}=(-)2V, I_C=(-)100mA$	200		560	
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10V, I_C=(-)500mA$		(360)380		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10V, f=1MHz$		(24)13		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=(-)1A, I_B=(-)50mA$		(-100)80	(-200)120	mV
	$V_{CE(sat)2}$	$I_C=(-)2A, I_B=(-)100mA$		(-185)140	(-500)210	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)2A, I_B=(-)100mA$		(-) $0.88$	(-) $1.2$	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0A$	(-) $50$	100		V
Collector-to-Base Breakdown Voltage	$V_{(BR)CES}$	$I_C=(-)100\mu A, R_{BE}=0\Omega$	(-) $50$	100		V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-) $50$			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0A$	(-) $6$			V
Turn-On Time	$t_{on}$	See specified Test Circuit.		(30)35		ns
Storage Time	$t_{stg}$			(230)300		ns
Fall Time	$t_f$			(15)22		ns

## Switching Time Test Circuit

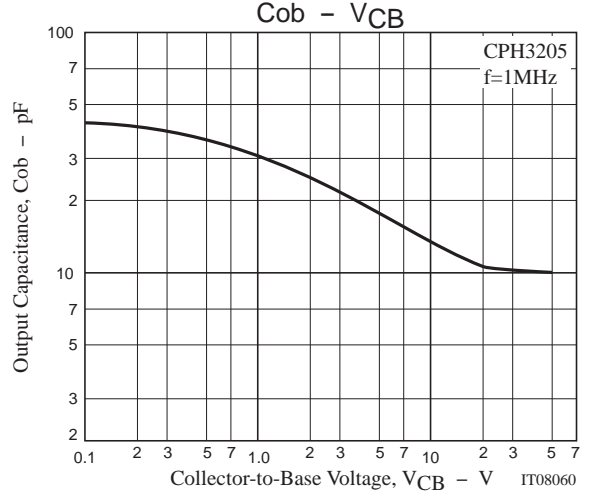
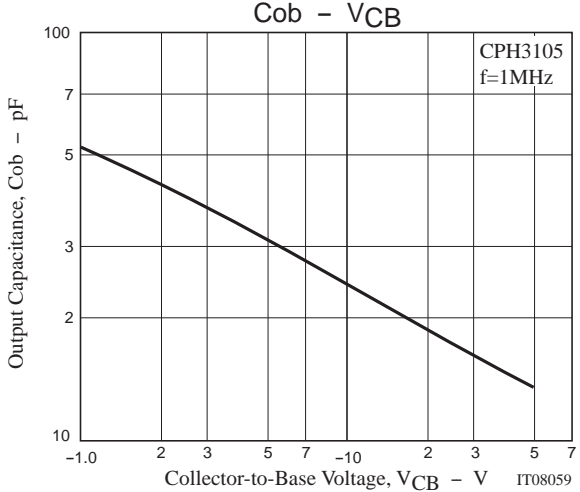
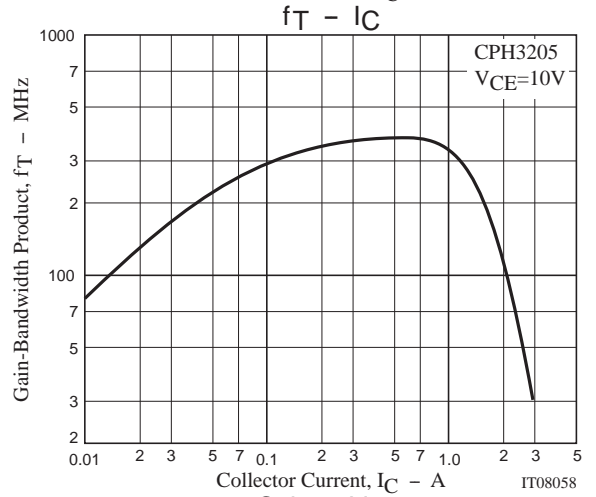
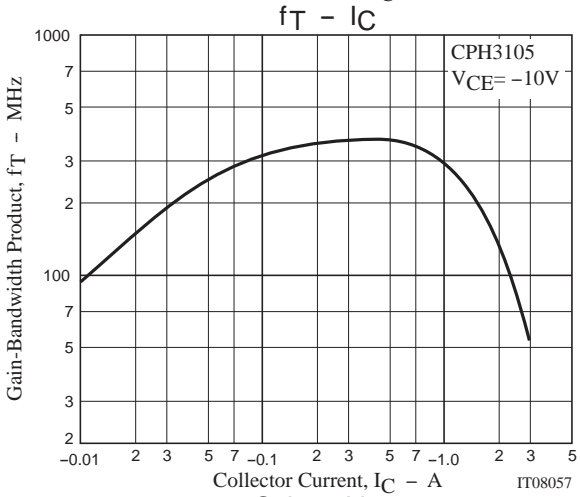
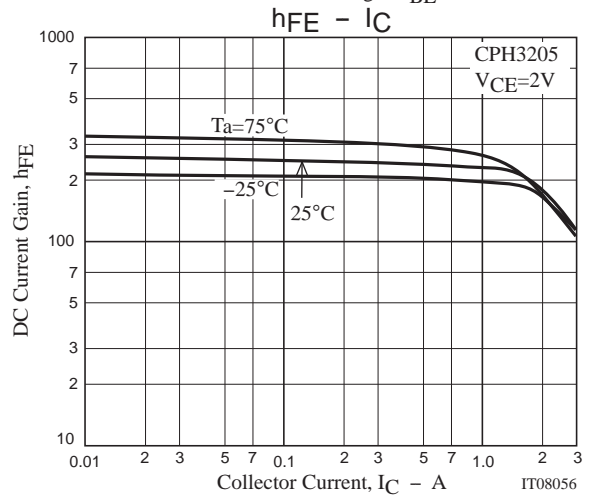
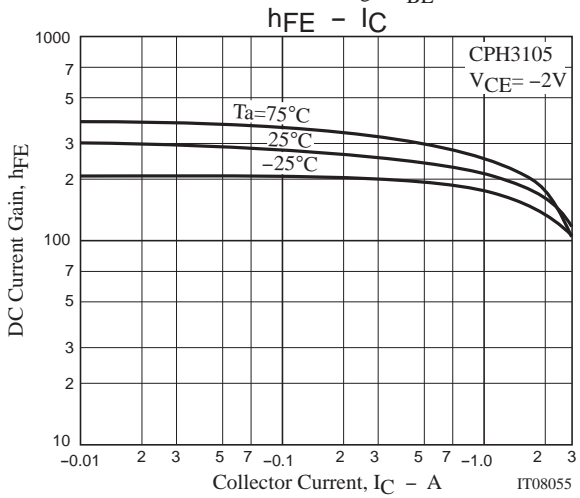
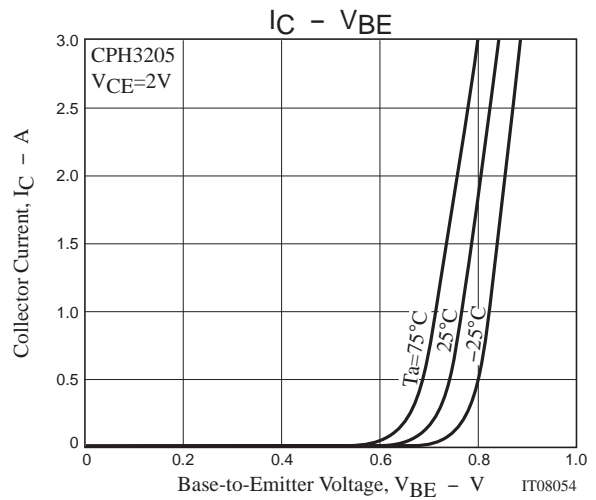
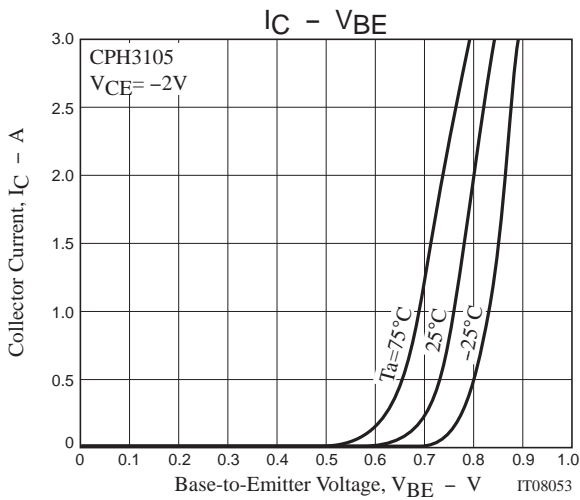


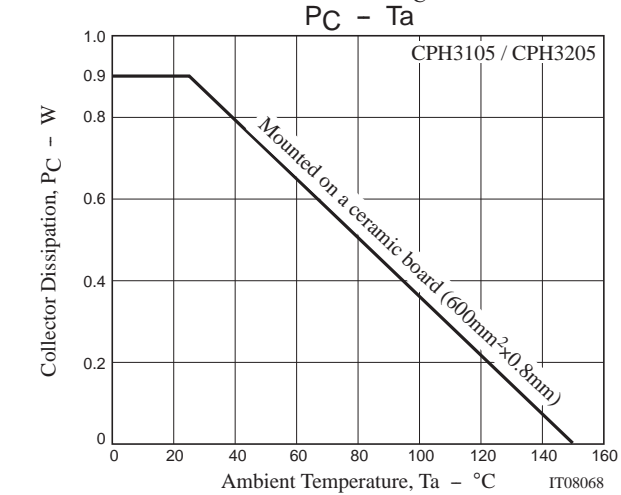
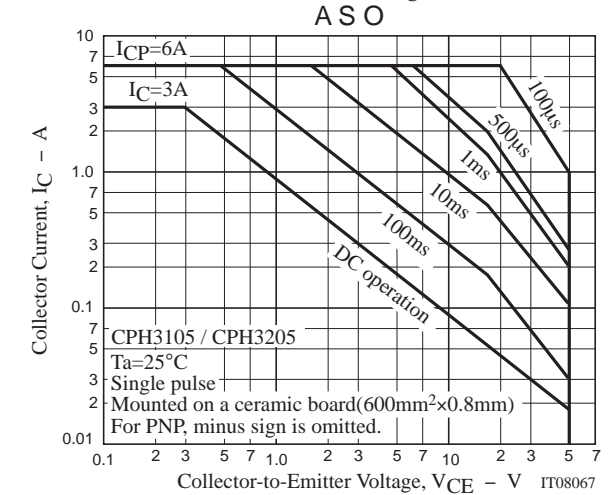
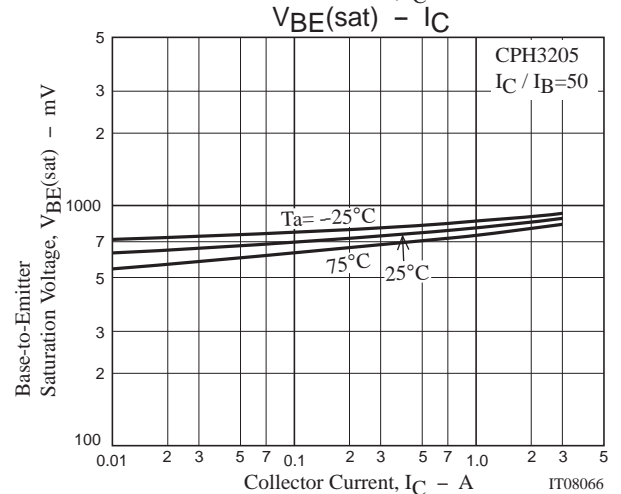
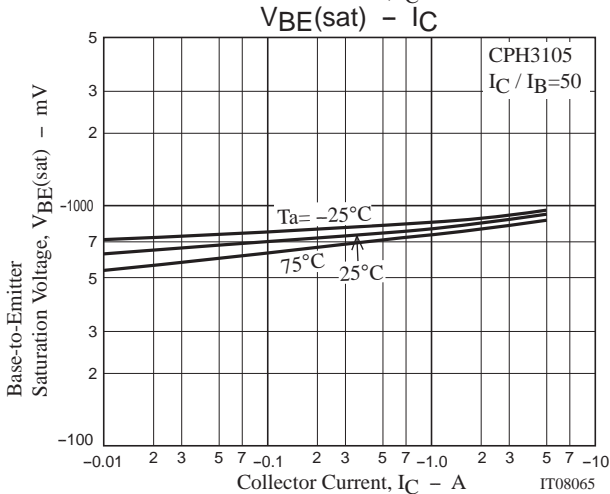
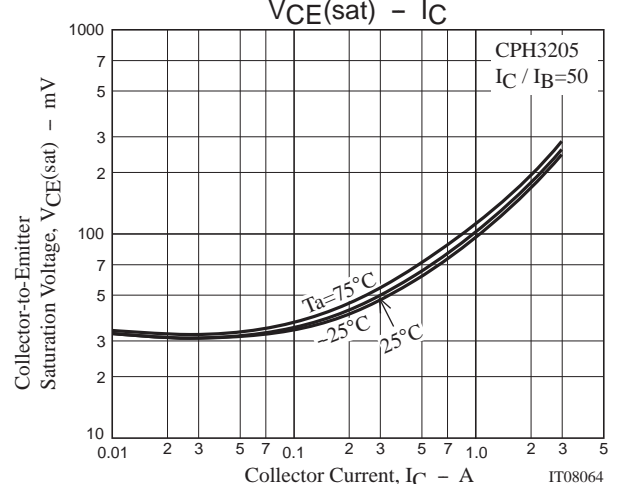
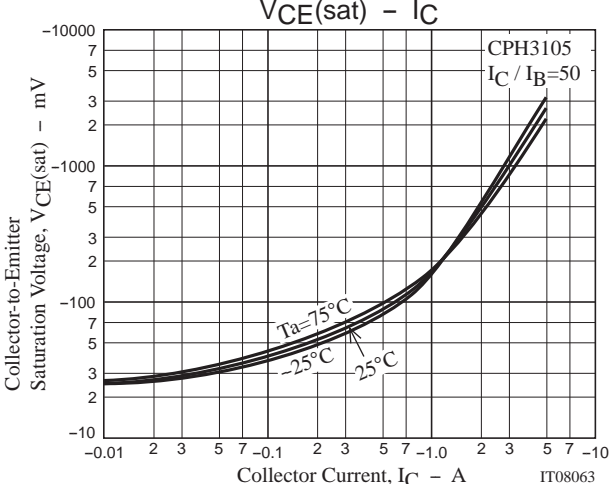
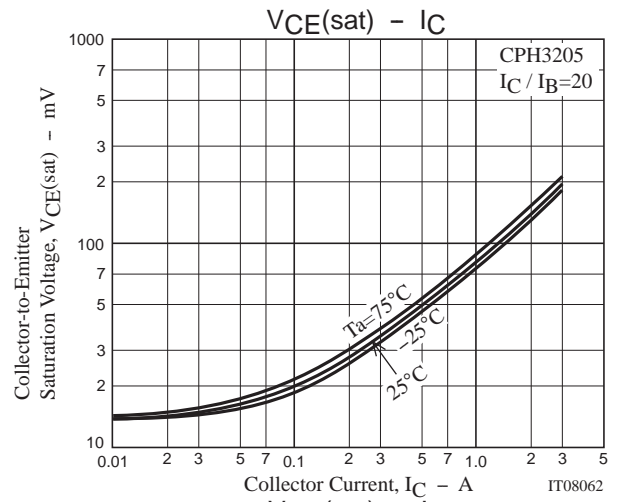
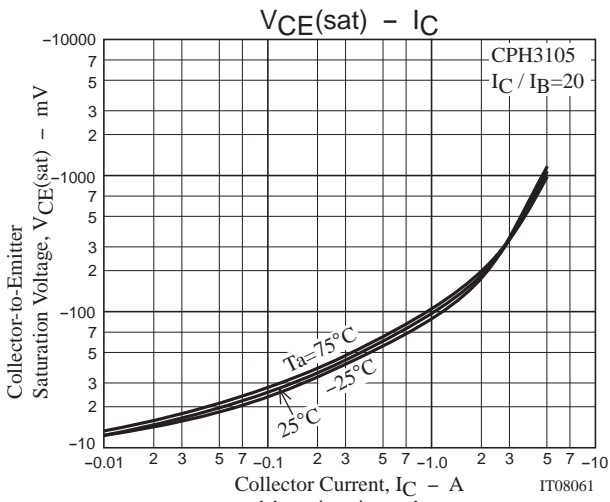
## Ordering Information

Device	Package	Shipping	memo
CPH3105-TL-E	CPH3	3,000pcs./reel	Pb Free
CPH3205-TL-E	CPH3	3,000pcs./reel	Pb Free



CPH3105 / CPH3205



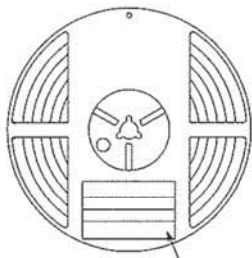


Embossed Taping Specification  
CPH3105-TL-E, CPH3205-TL-E

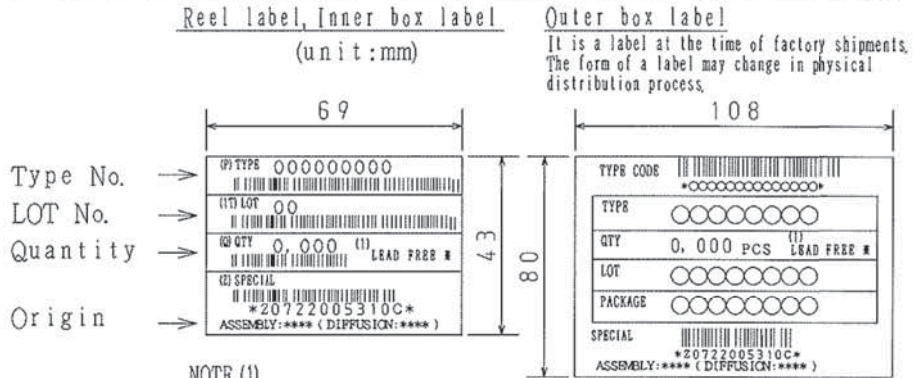
1. Packing Format

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

Packing method



Reel label



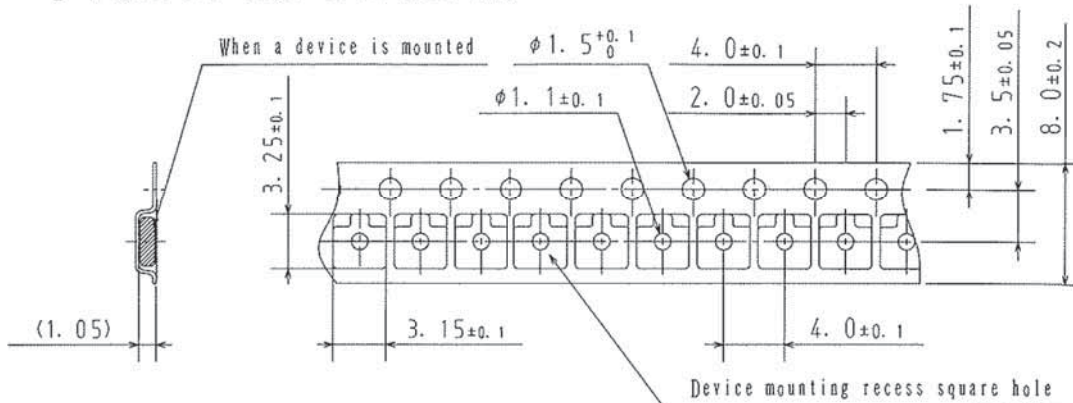
NOTE (1)

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

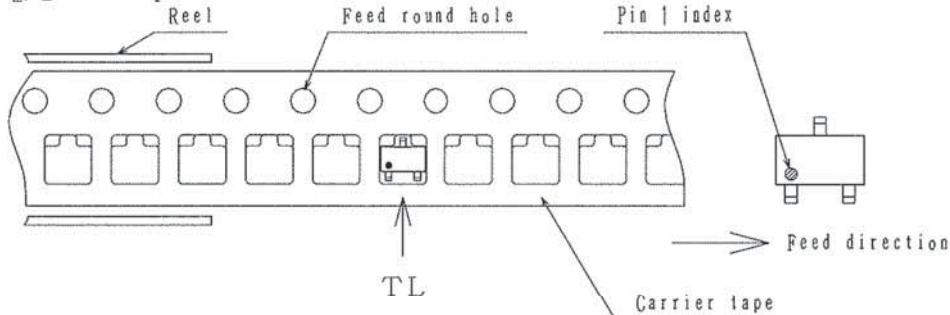
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



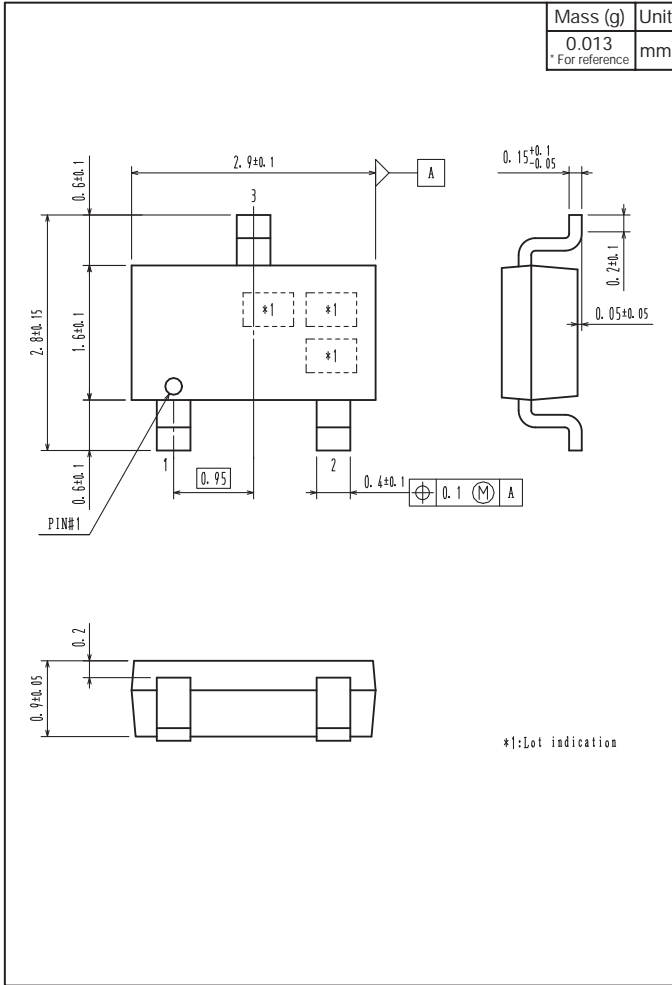
2-2. Device placement direction



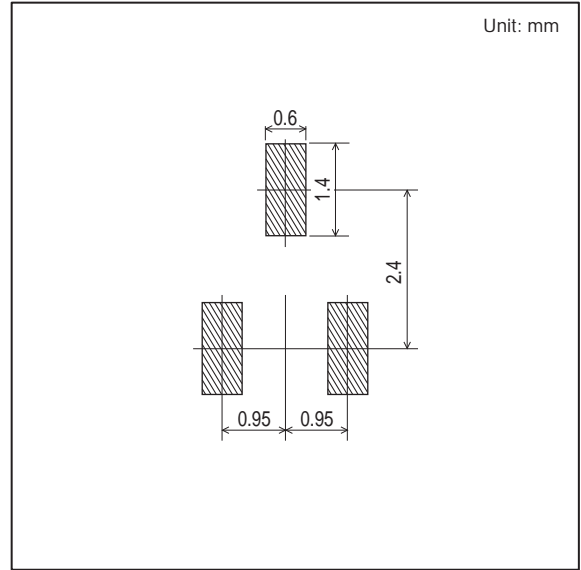
Those with one electrode terminal on the feed hole side.....TL

Outline Drawing

CPH3105-TL-E, CPH3205-TL-E



Land Pattern Example



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