



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

CPH3123 / CPH3223 — High-Current Switching Applications

PNP / NPN Epitaxial Planar Silicon Transistors

Applications

- DC-DC converters, 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 () : CPH3123

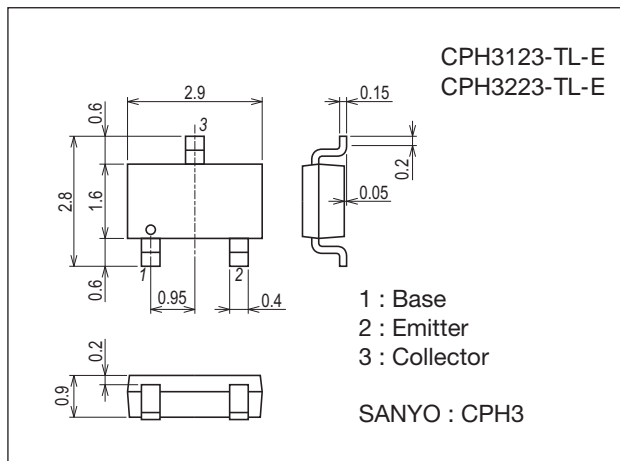
Absolute Maximum Ratings at Ta=25°C

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 ² x0.8mm)	0.9	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Package Dimensions

unit : mm (typ)

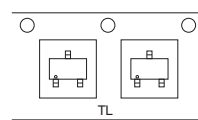
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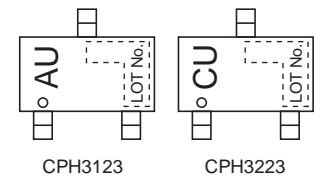
Product & Package Information

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

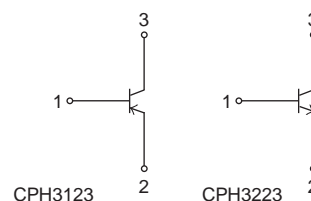
Packing Type: TL



Marking



Electrical Connection



SANYO Semiconductor Co., Ltd.

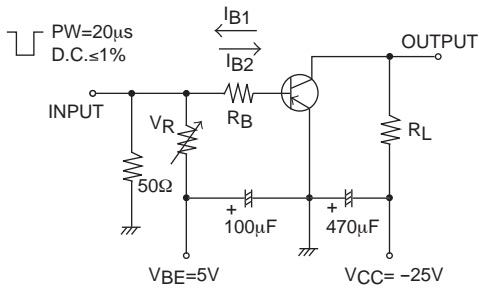
<http://semicon.sanyo.com/en/network>

CPH3123 / CPH3223

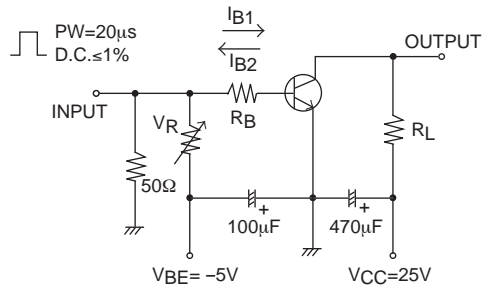
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	V _{CB} =(-)40V, I _E =0A			(-)1	μA
Emitter Cutoff Current	IEBO	V _{EB} =(-)4V, I _C =0A			(-)1	μA
DC Current Gain	h _{FE}	V _{CE} =(-)2V, I _C =(-)100mA	200		560	
Gain-Bandwidth Product	f _T	V _{CE} =(-)10V, I _C =(-)500mA		(390)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		(-115)90	(-230)130	mV
	V _{CE(sat)2}	I _C =(-)2A, I _B =(-)100mA		(-240)160	(-650)240	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 =(-)10μA, I _E =0A	(-50)100			V
Collector-to-Base Breakdown Voltage	V _{(BR)CES}	I _C =(-)100μA, R _{BE} =0Ω	(-50)100			V
Collector-to-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C =(-)1mA, R _{BE} =∞	(-)50			V
Emitter-to-Base Breakdown Voltage	V _{(BR)EBO}	I _E =(-)10μA, 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			(18)25		ns

Switching Time Test Circuit



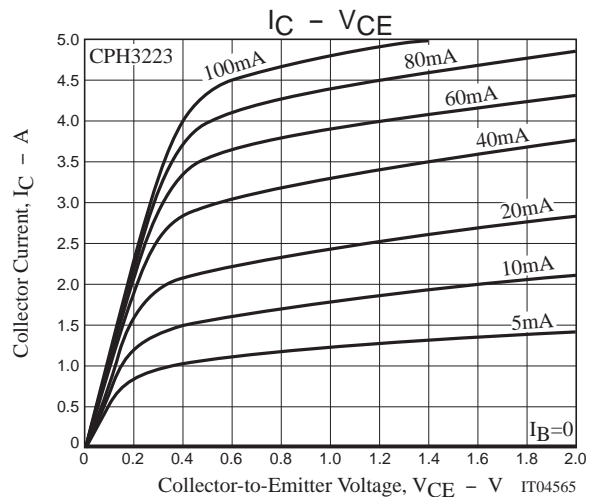
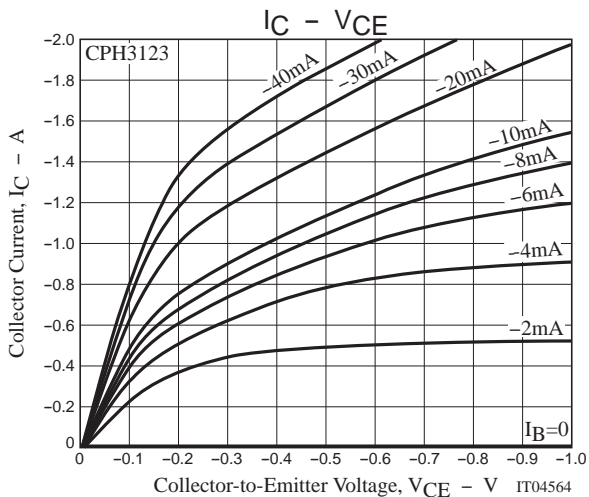
IC = -10IB1 = 10IB2 = -1A
CPH3123



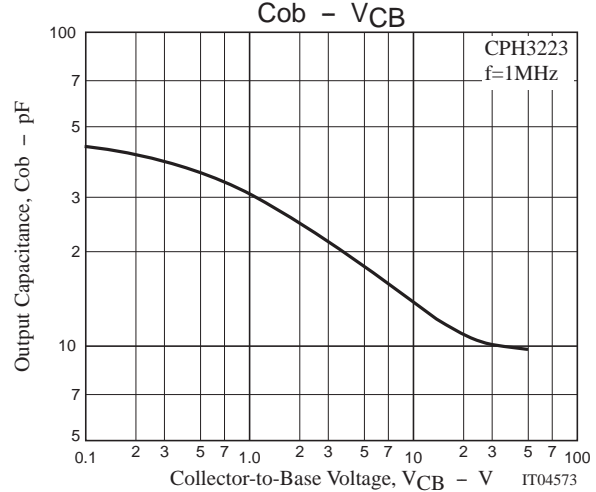
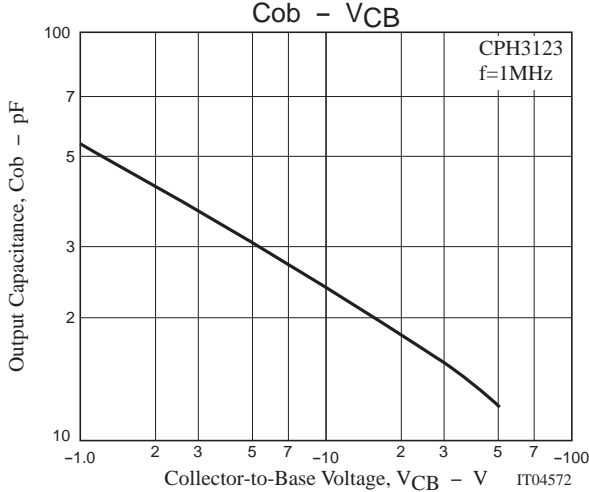
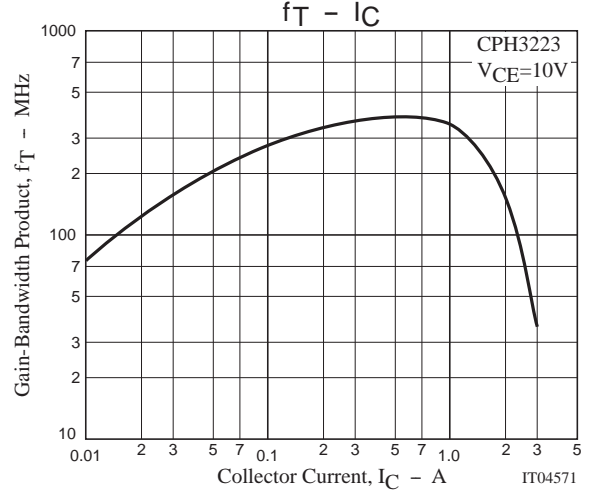
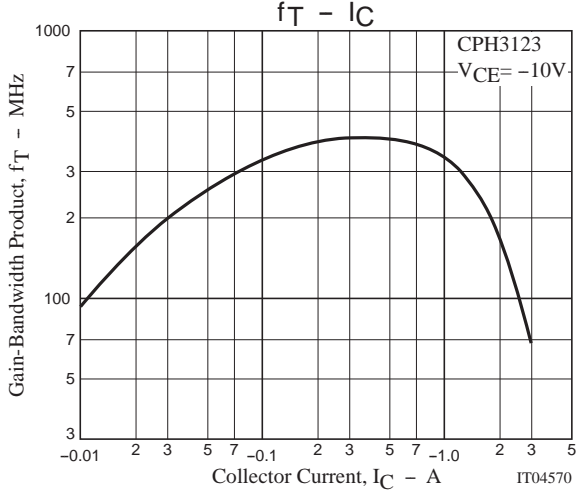
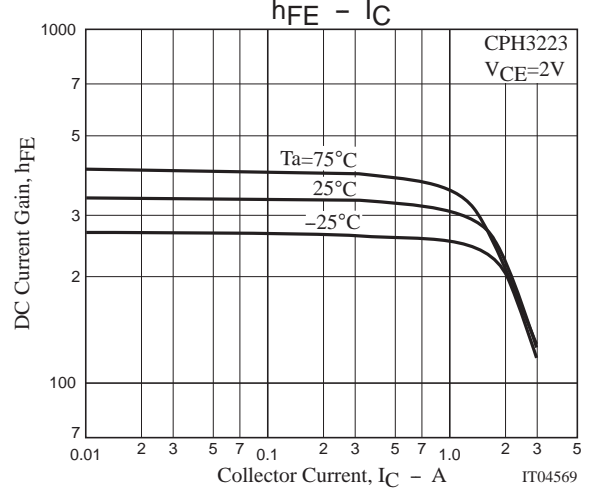
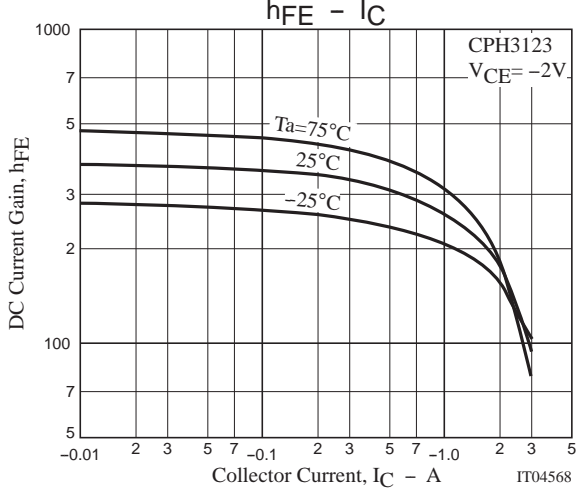
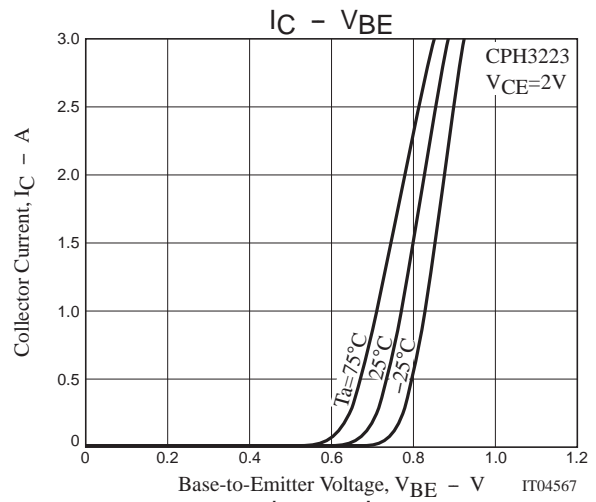
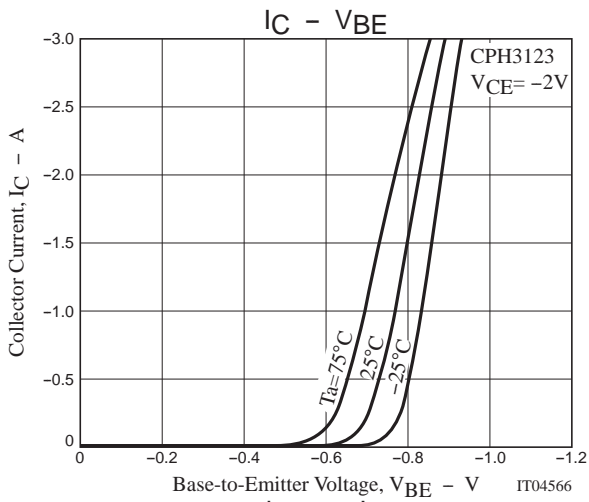
IC = 10IB1 = -10IB2 = 1A
CPH3223

Ordering Information

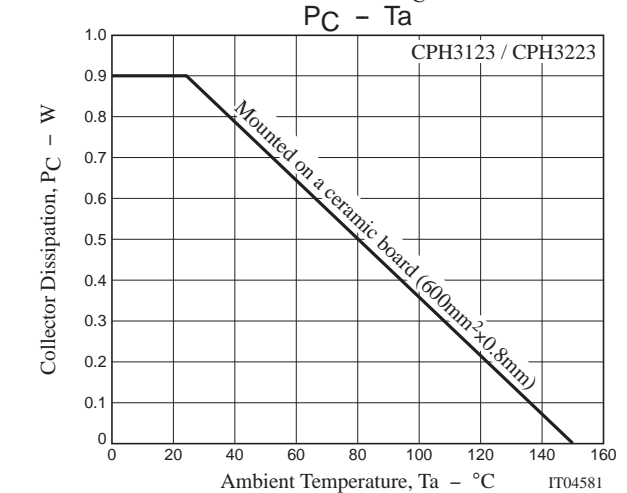
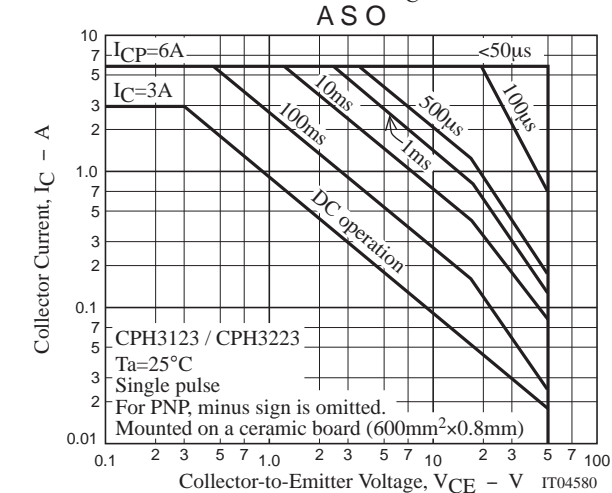
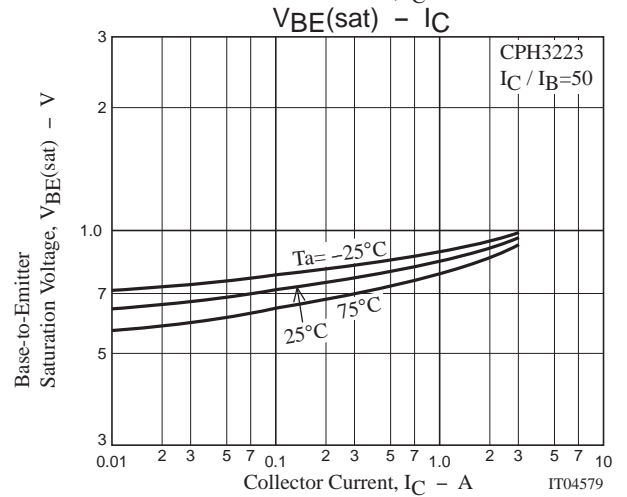
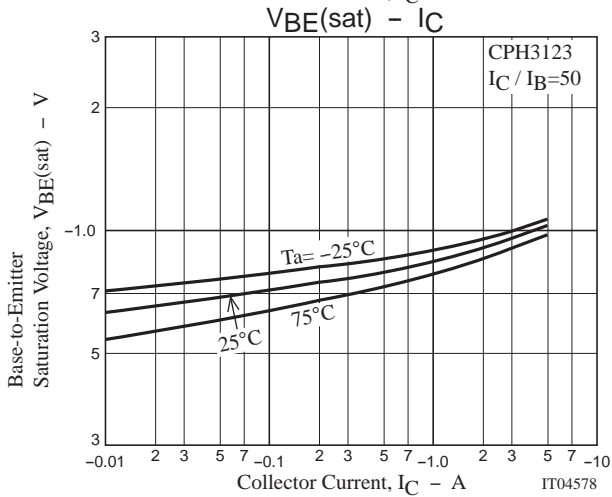
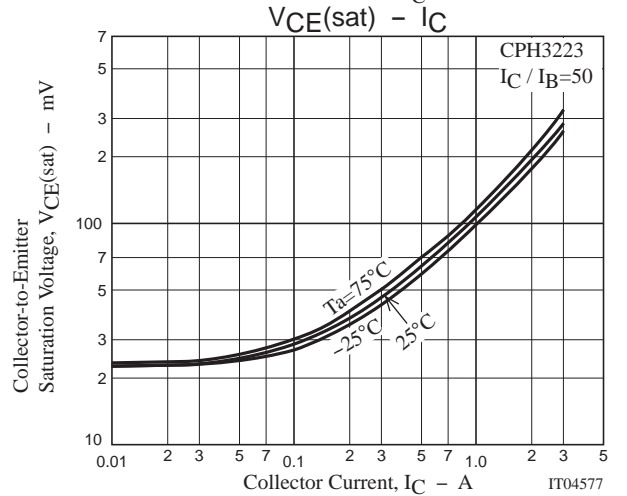
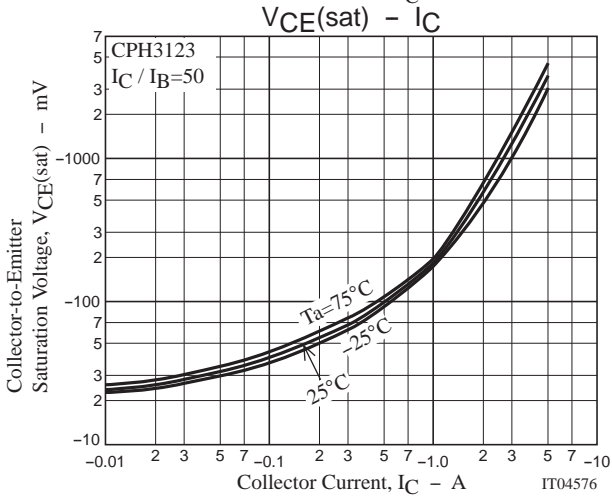
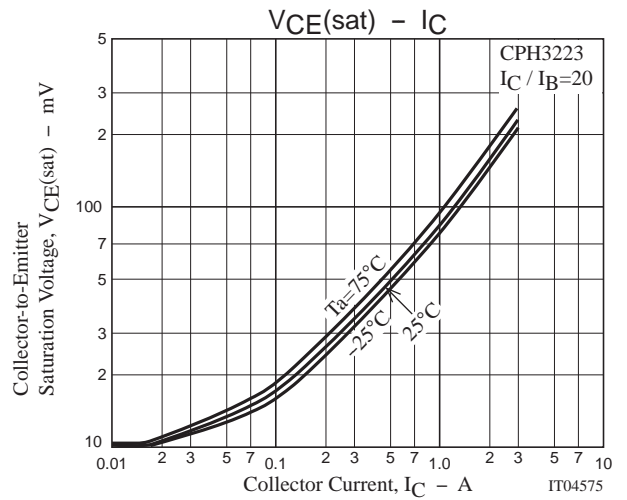
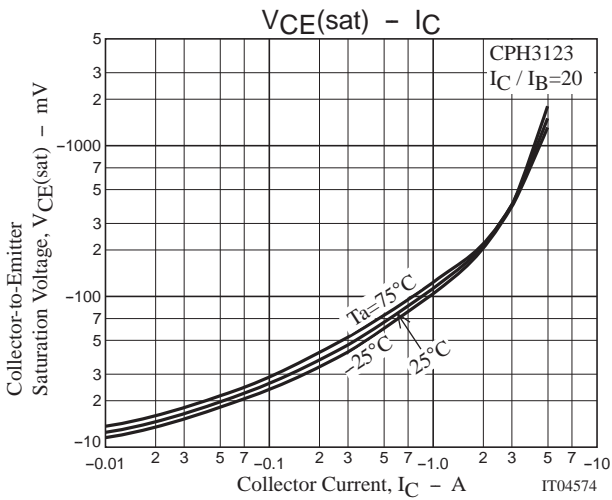
Device	Package	Shipping	memo
CPH3123-TL-E	CPH3	3,000pcs./reel	Pb Free
CPH3223-TL-E	CPH3	3,000pcs./reel	Pb Free



CPH3123 / CPH3223



CPH3123 / CPH3223



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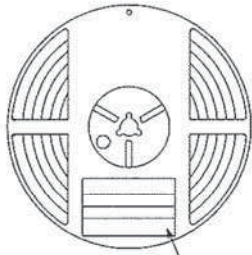
Embossed Taping Specification

CPH3123-TL-E, CPH3223-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

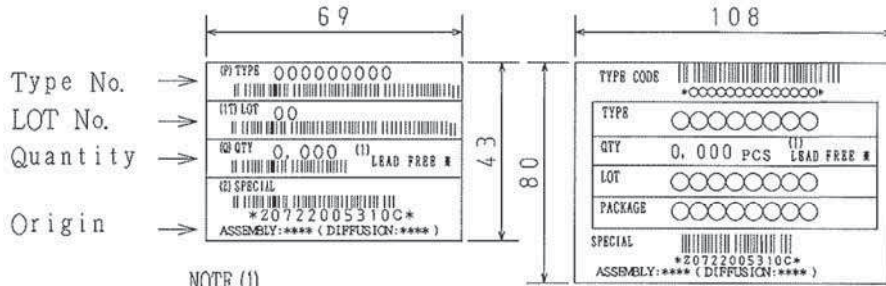


Reel label

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.



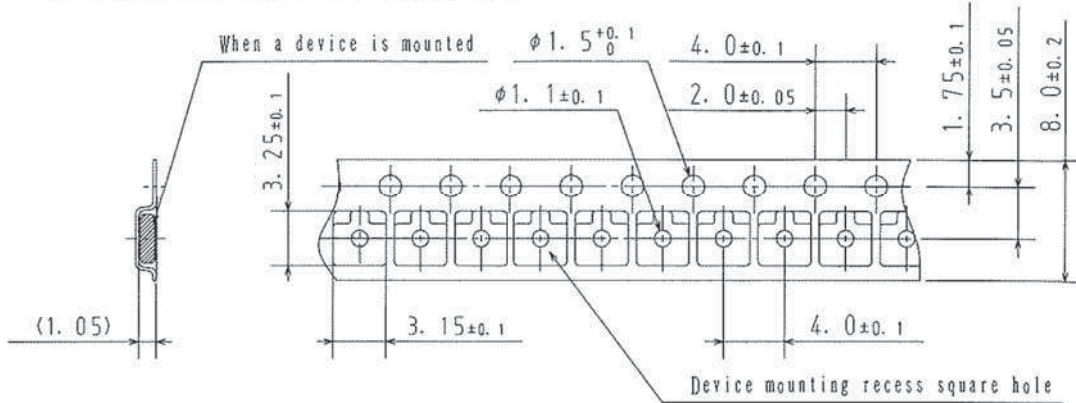
NOTE (1)

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

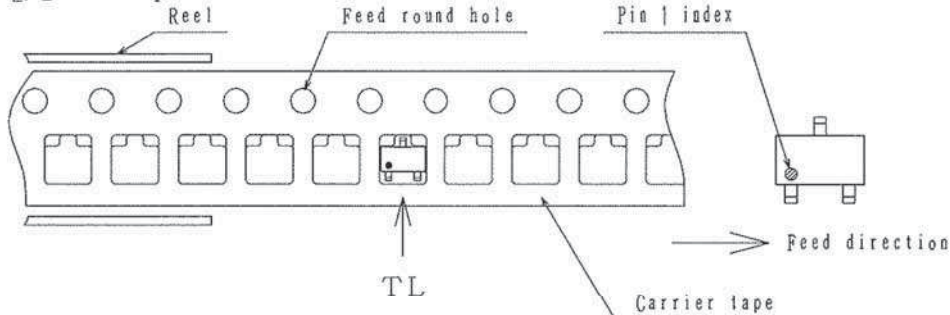
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



2-2. Device placement direction

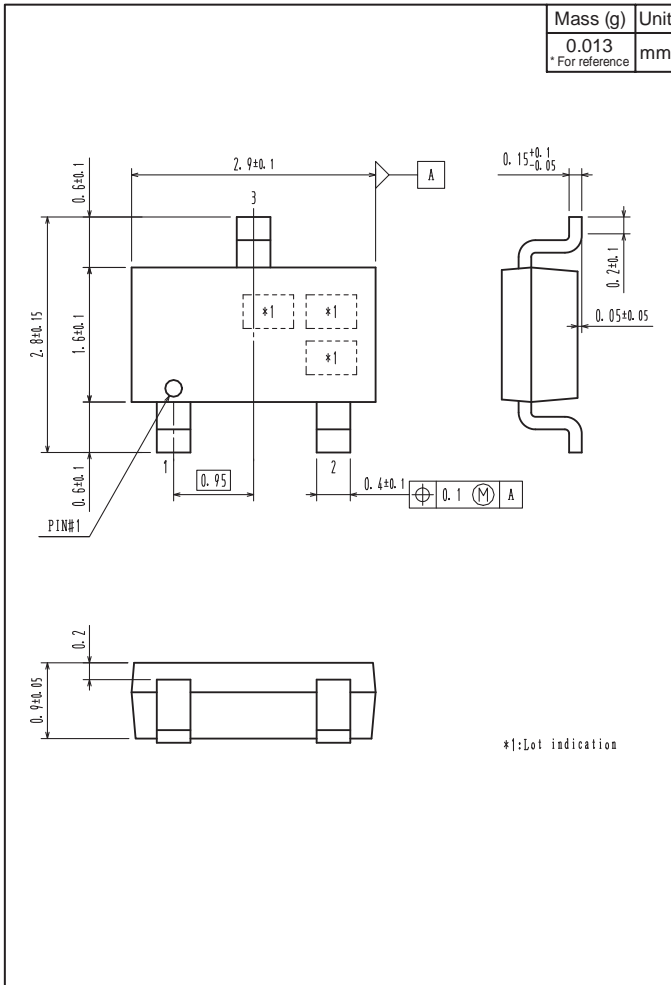


Those with one electrode terminal on the feed hole side.....TL

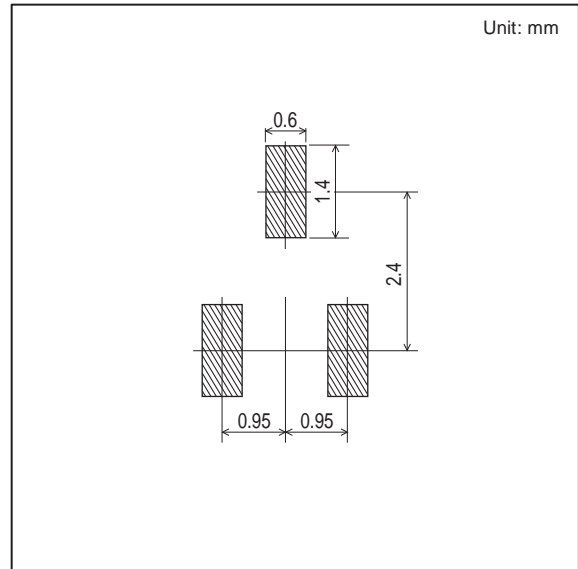
CPH3123 / CPH3223

Outline Drawing

CPH3123-TL-E, CPH3223-TL-E



Land Pattern Example



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