

# CPH3145/CPH3245

## Low VCE (sat) Bipolar Transistor (PNP)NPN, (-)50V, (-)2A



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### Features

- Adoption of MBIT Process
- 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

### Typical Applications

- Relay Drivers
- Lamp Drivers
- Motor Drivers
- Flash

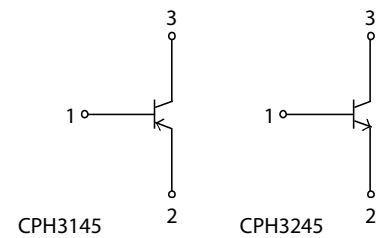
### SPECIFICATIONS ( ) : CPH3145

**ABSOLUTE MAXIMUM RATING** at Ta = 25°C (Note 1)

Parameter	Symbol	Value	Unit
Collector to Base Voltage	VCBO	(-50)80	V
Collector to Emitter Voltage	VCES	(-50)80	V
Collector to Emitter Voltage	VCEO	(-)50	V
Emitter to Base Voltage	VEBO	(-)6	V
Collector Current	IC	(-)2	A
Collector Current (Pulse)	ICP	(-)4	A
Base Current	IB	(-)400	mA
Collector Dissipation When mounted on ceramic substrate (600mm <sup>2</sup> × 0.8mm)	PC	0.9	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55 to +150	°C

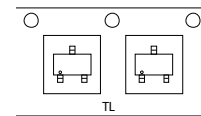
Note 1 : Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### ELECTRICAL CONNECTION

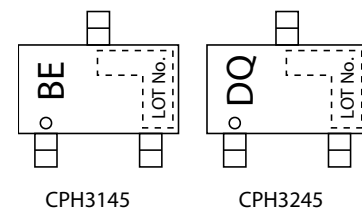


1 : Base  
2 : Emitter  
3 : Collector

### PACKING TYPE : TL



### MARKING



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### ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

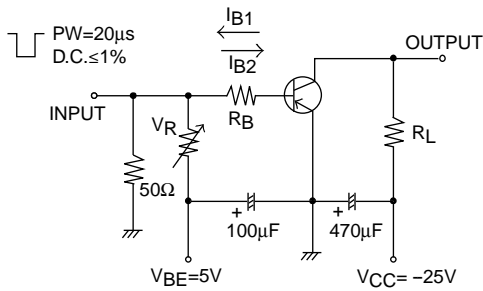
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## ELECTRICAL CHARACTERISTICS at Ta = 25°C (Note 2)

Parameter	Symbol	Conditions	Value			Unit	
			min	typ	max		
Collector Cutoff Current	ICBO	V <sub>CB</sub> =(-)40V, I <sub>E</sub> =0A			(-1)	μA	
Emitter Cutoff Current	IEBO	V <sub>EB</sub> =(-)4V, I <sub>C</sub> =0A			(-1)	μA	
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =(-)2V, I <sub>C</sub> =(-)100mA	200		560		
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =(-)10V, I <sub>C</sub> =(-)300mA		420		MHz	
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =(-)10V, f=1MHz		(16)8		pF	
Collector to Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =(-)1A, I <sub>B</sub> =(-)50mA		(-165)130	(-330)260	mV	
Base to Emitter Saturation Voltage	V <sub>BE(sat)</sub>			(-0.9)	(-1.2)		V
Collector to Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =(-)10μA, I <sub>E</sub> =0A	(-50)80			V	
Collector to Emitter Breakdown Voltage	V <sub>(BR)CES</sub>	I <sub>C</sub> =(-)100μA, R <sub>BE</sub> =0Ω	(-50)80			V	
Collector to Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =(-)1mA, R <sub>BE</sub> =∞	(-50)			V	
Emitter to Base Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =(-)10μA, I <sub>C</sub> =0A	(-6)			V	
Turn-ON Time	t <sub>on</sub>	See specified Test Circuit		(35)35		ns	
Storage Time	t <sub>stg</sub>			(200)330			ns
Fall Time	t <sub>f</sub>			(24)40			ns

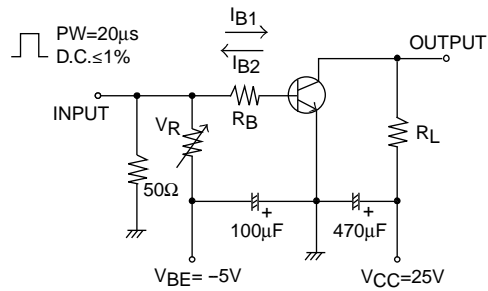
Note 2 : Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

### Switching Time Test Circuit



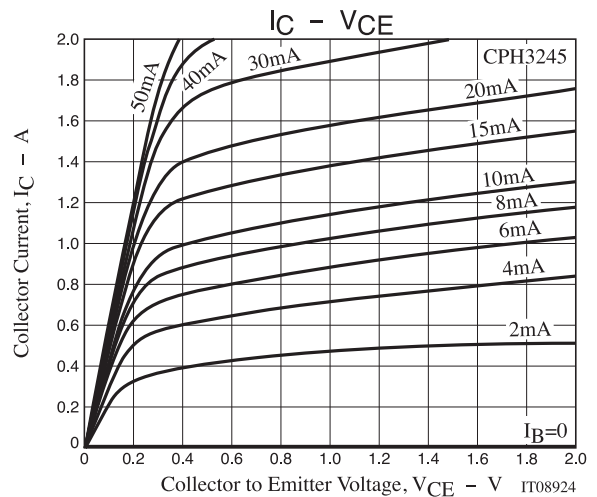
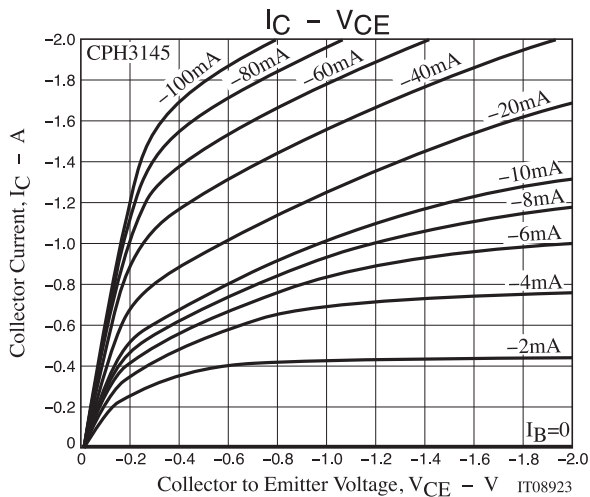
$$I_C = -10I_{B1} = 10I_{B2} = -0.7A$$

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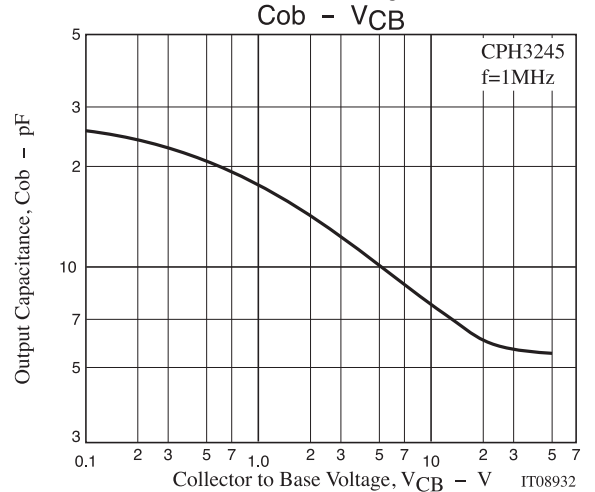
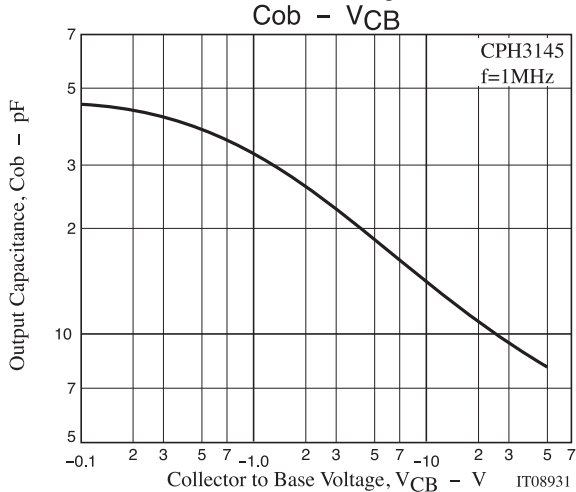
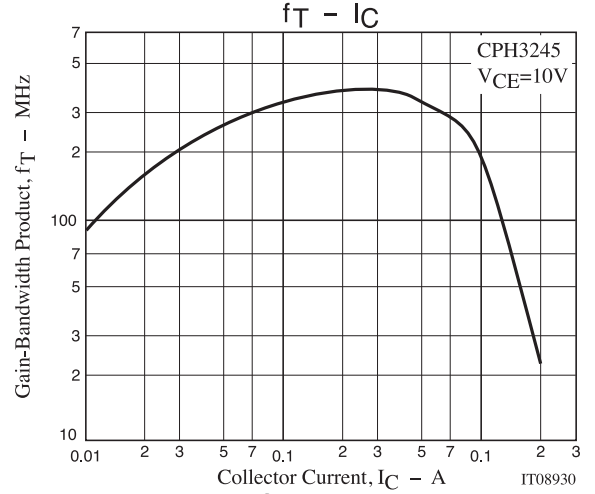
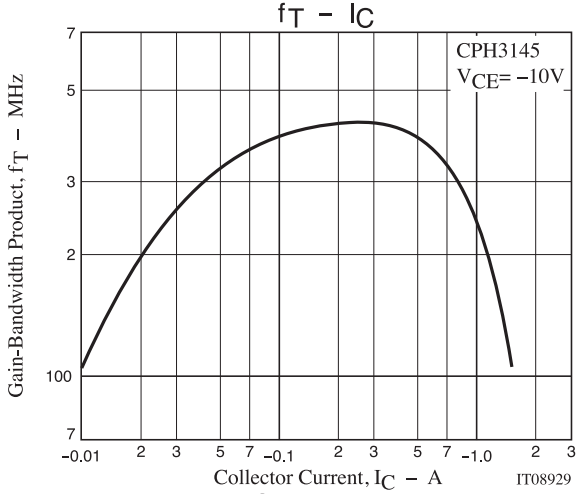
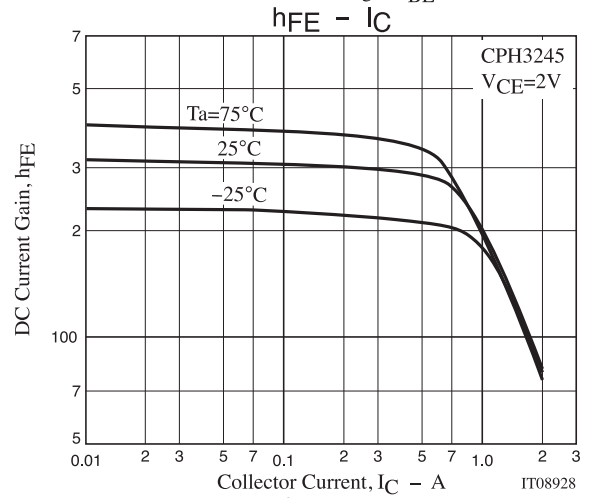
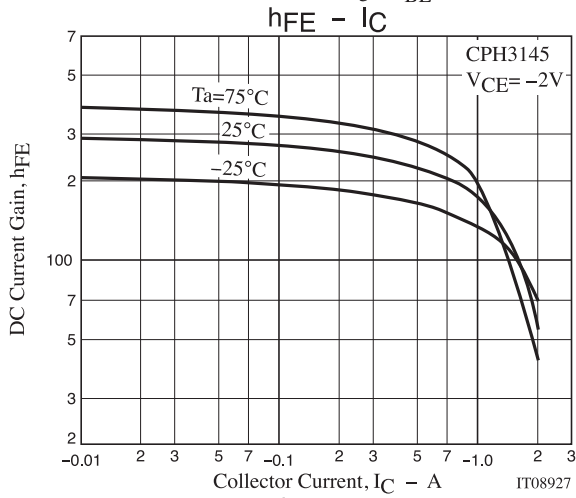
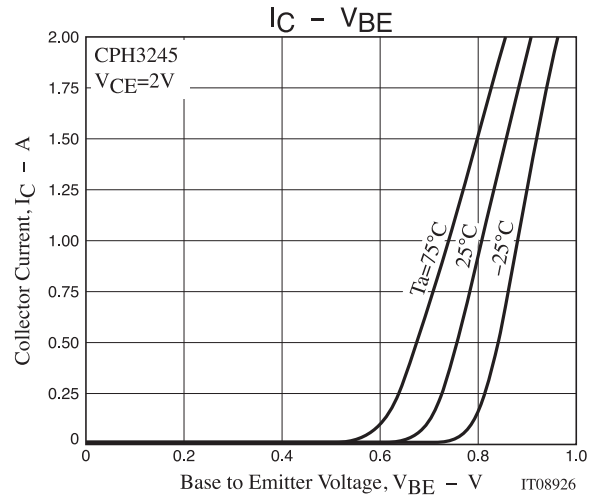
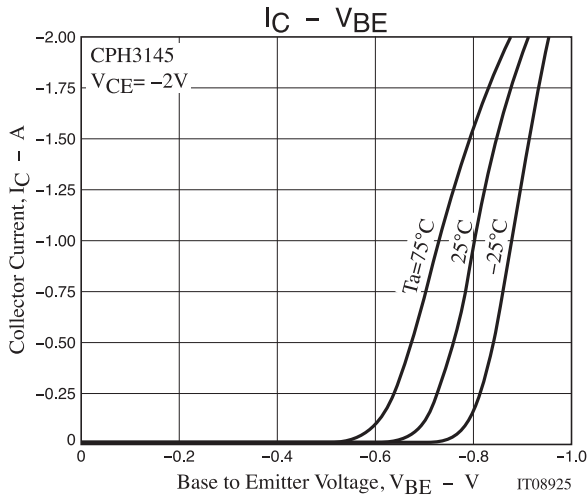


$$I_C = 10I_{B1} = -10I_{B2} = 0.7A$$

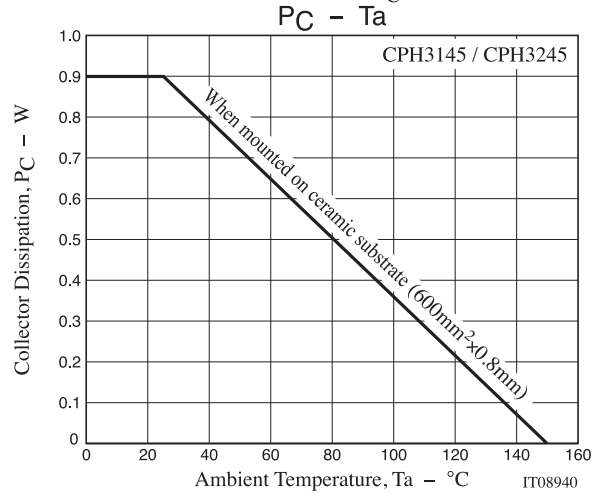
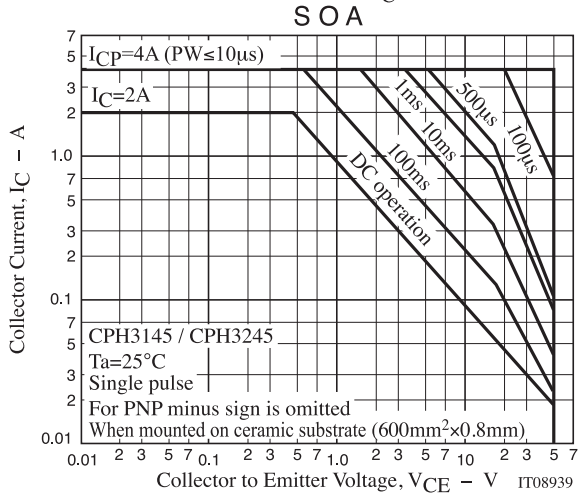
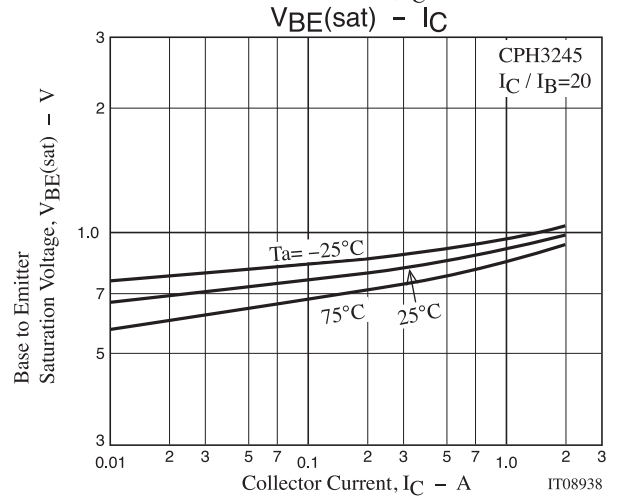
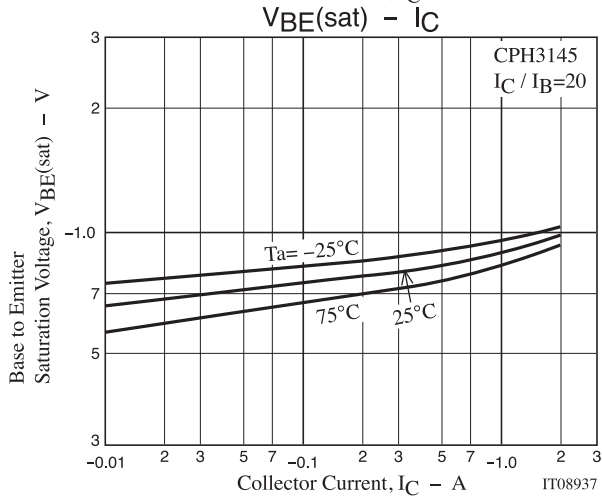
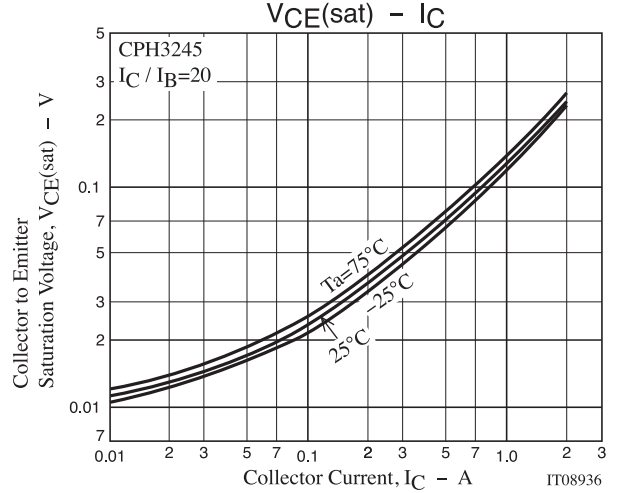
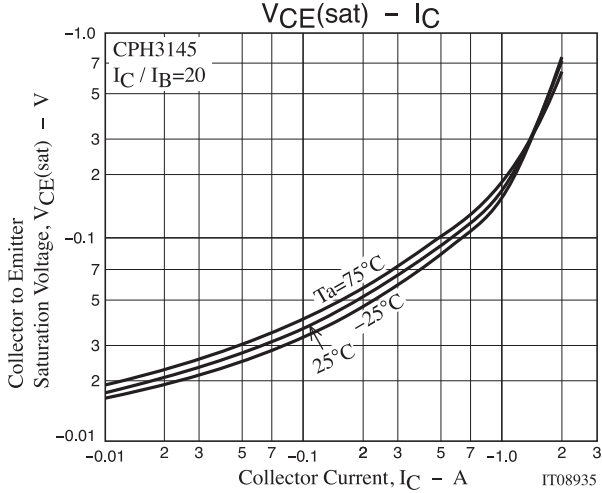
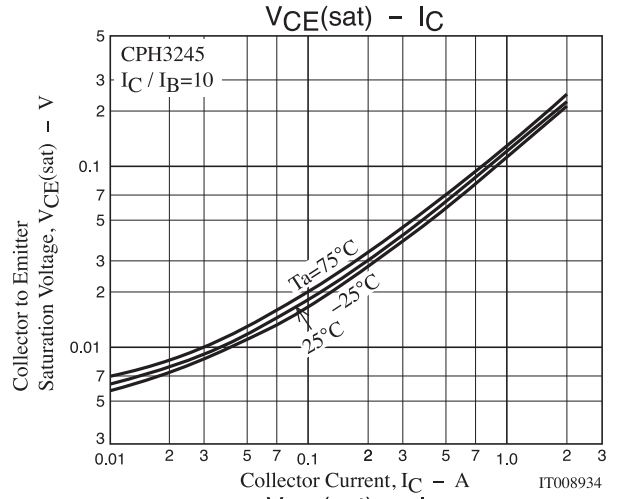
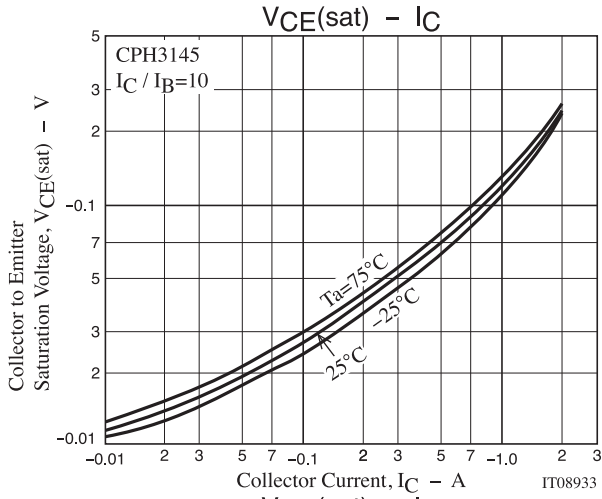
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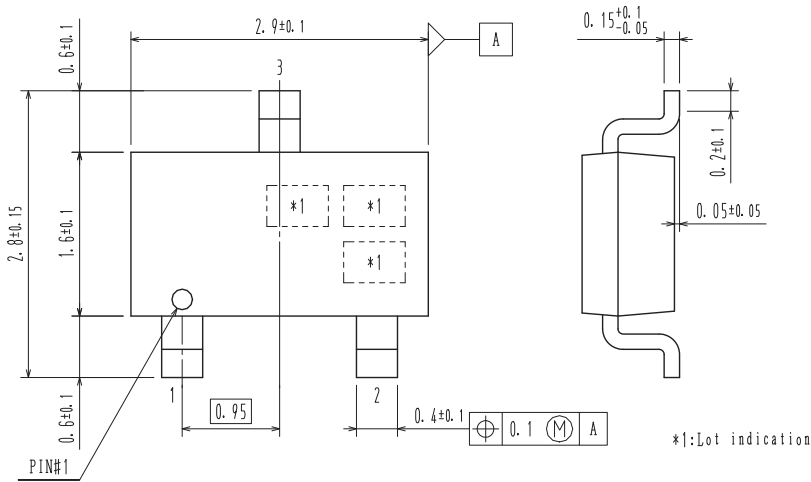


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## PACKAGE DIMENSIONS

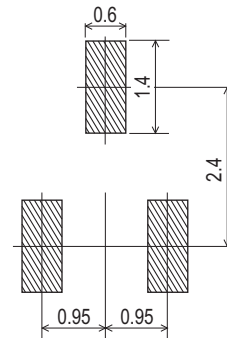
unit : mm

CPH3  
CASE 318BA  
ISSUE 0



- 1 : Base
- 2 : Emitter
- 3 : Collector

## Recommended Soldering Footprint



## ORDERING INFORMATION

Device	Marking	Package	Shipping (Qty / Packing)
CPH3145-TL-E	BE	CPH3 SC-59, SOT-23, TO-236 (Pb-Free)	3,000 / Tape & Reel
CPH3245-TL-E	DQ		

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D. [http://www.onsemi.com/pub\\_link/Collateral/BRD8011-D.PDF](http://www.onsemi.com/pub_link/Collateral/BRD8011-D.PDF)

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