

CPH3145/CPH3245

Low $V_{CE(sat)}$ Bipolar Transistor (PNP)NPN, $(-)$ 50V, $(-)$ 2A

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 $T_a = 25^{\circ}\text{C}$ (Note 1)

Parameter	Symbol	Value	Unit
Collector to Base Voltage	V_{CBO}	$(-50)80$	V
Collector to Emitter Voltage	V_{CES}	$(-50)80$	V
Collector to Emitter Voltage	V_{CEO}	(-50)	V
Emitter to Base Voltage	V_{EBO}	(-6)	V
Collector Current	I_C	(-2)	A
Collector Current (Pulse)	I_{CP}	(-4)	A
Base Current	I_B	(-400)	mA
Collector Dissipation When mounted on ceramic substrate ($600\text{mm}^2 \times 0.8\text{mm}$)	P_C	0.9	W
Junction Temperature	T_j	150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-55 to $+150$	$^{\circ}\text{C}$

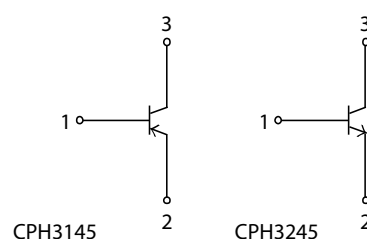
Note 1 : Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



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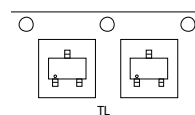
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ELECTRICAL CONNECTION

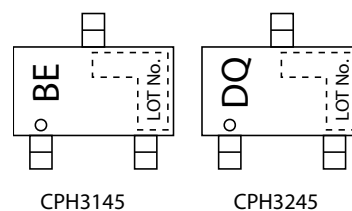


1 : Base
2 : Emitter
3 : Collector

PACKING TYPE : TL



MARKING



CPH3145

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ORDERING INFORMATION

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

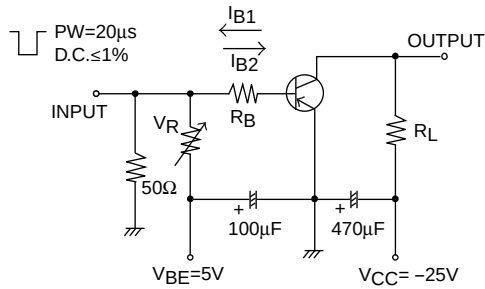
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ELECTRICAL CHARACTERISTICS at Ta = 25°C (Note 2)

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=(-)40V, I_E=0A$			$(-)1$	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4V, I_C=0A$			$(-)1$	μA
DC Current Gain	h_{FE}	$V_{CE}=(-)2V, I_C=(-)100mA$	200		560	
Gain-Bandwidth Product	f_T	$V_{CE}=(-)10V, I_C=(-)300mA$		420		MHz
Output Capacitance	C_{ob}	$V_{CB}=(-)10V, f=1MHz$		(16)8		pF
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)1A, I_B=(-)50mA$		$(-165)130$	$(-330)260$	mV
Base to Emitter Saturation Voltage	$V_{BE(sat)}$			$(-)0.9$	$(-)1.2$	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	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0A$	$(-)6$			V
Turn-ON Time	t_{on}	See specified Test Circuit		(35)35		ns
Storage Time	t_{stg}			(200)330		ns
Fall Time	t_f			(24)40		ns

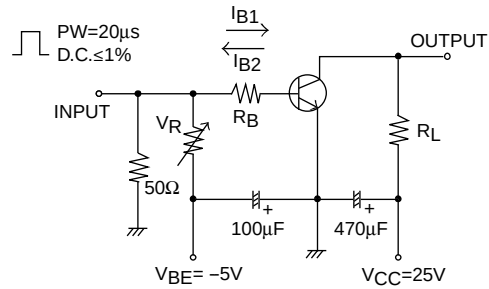
Note 2 : Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted.
Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Switching Time Test Circuit



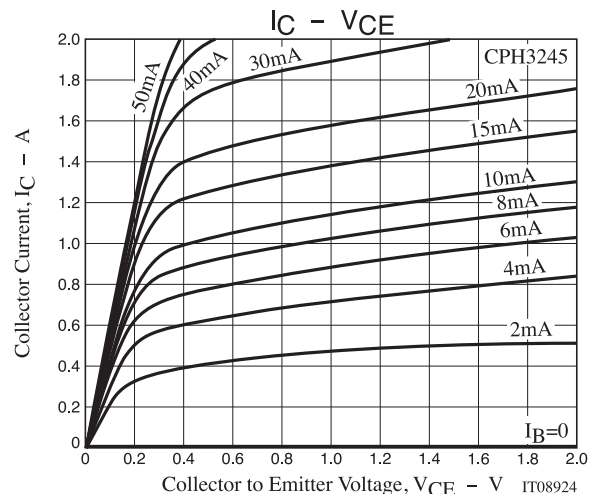
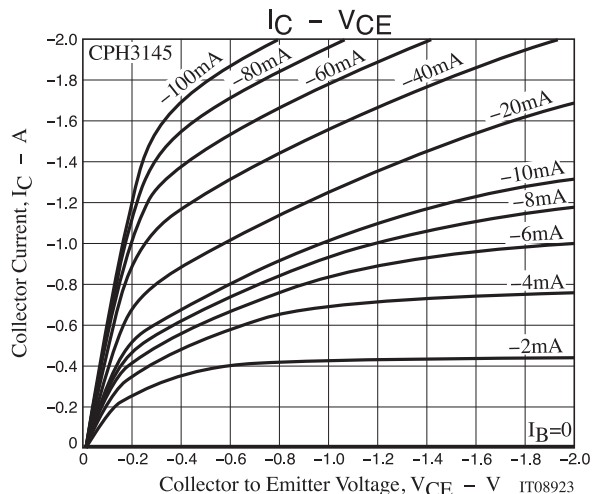
$$I_C = -10I_{B1} = 10I_{B2} = -0.7A$$

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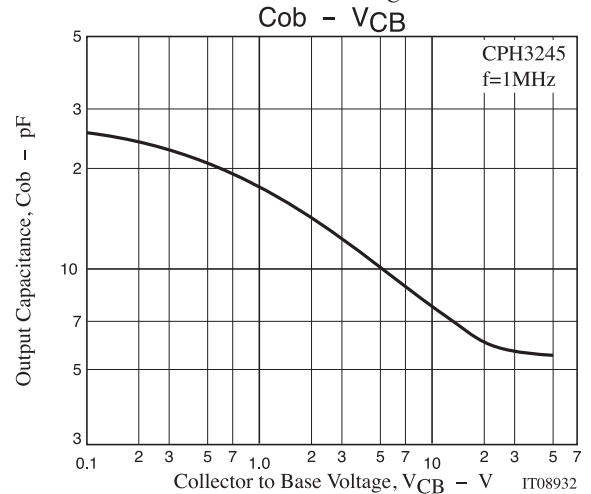
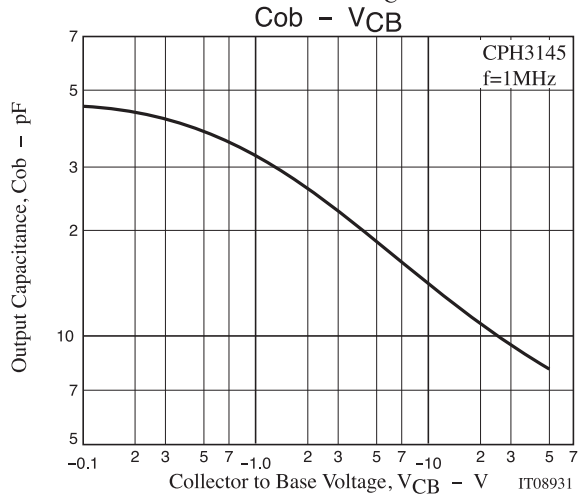
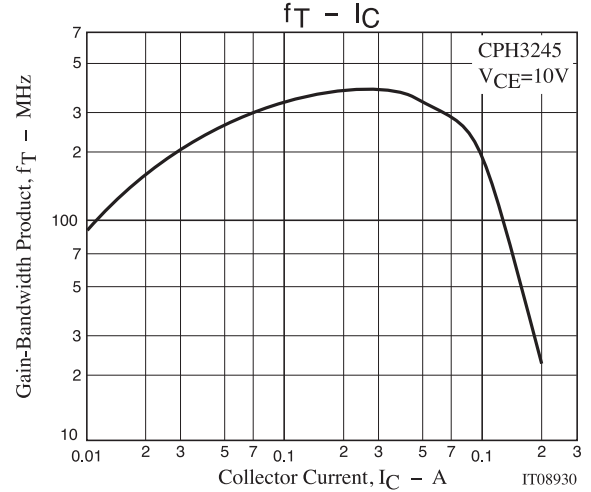
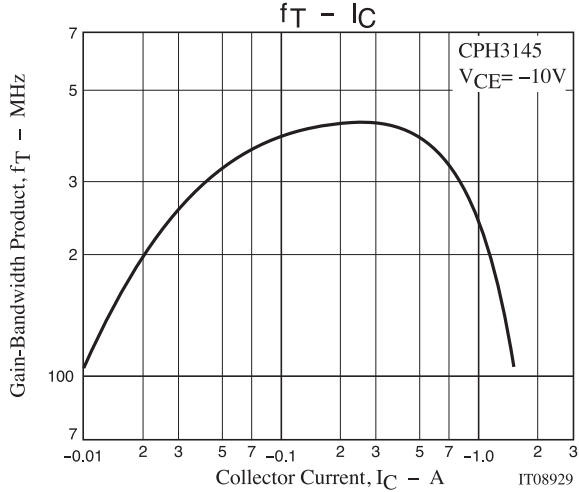
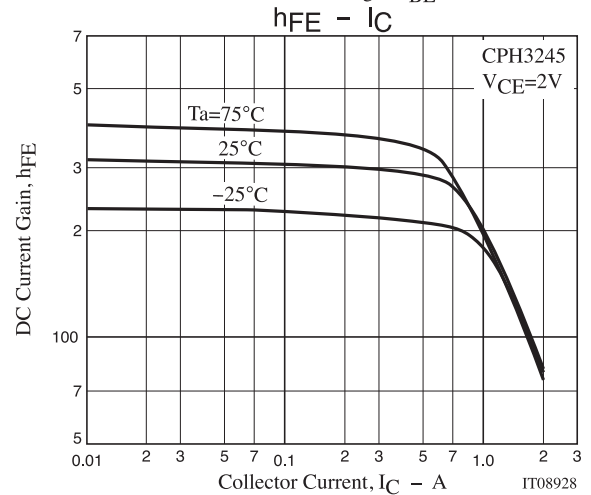
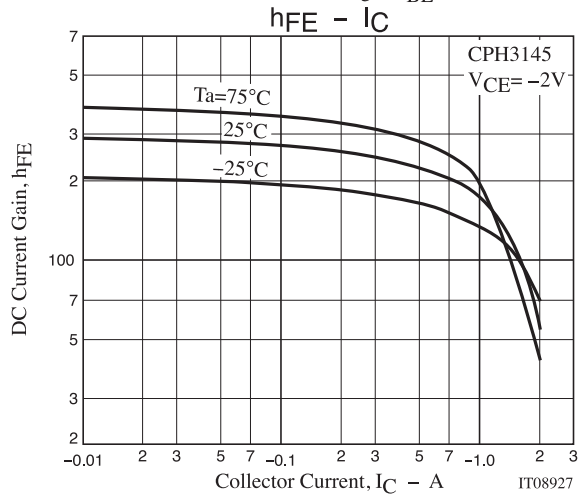
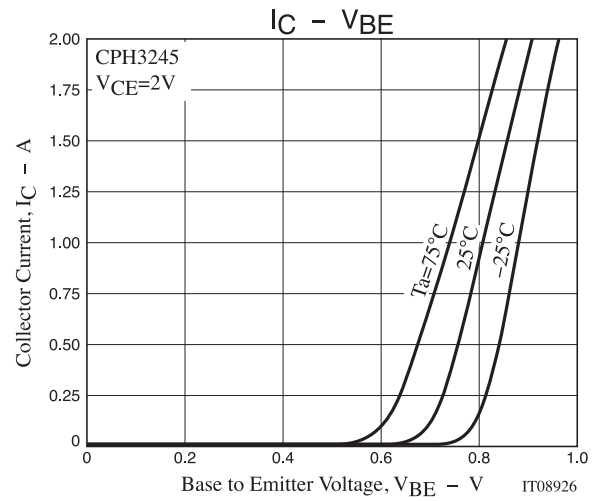
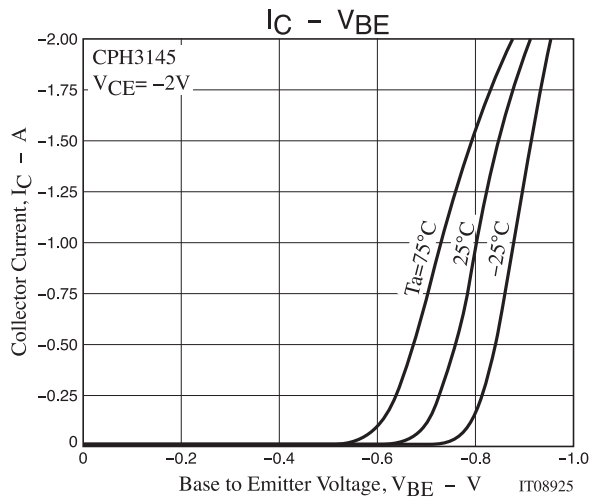


$$I_C = 10I_{B1} = -10I_{B2} = 0.7A$$

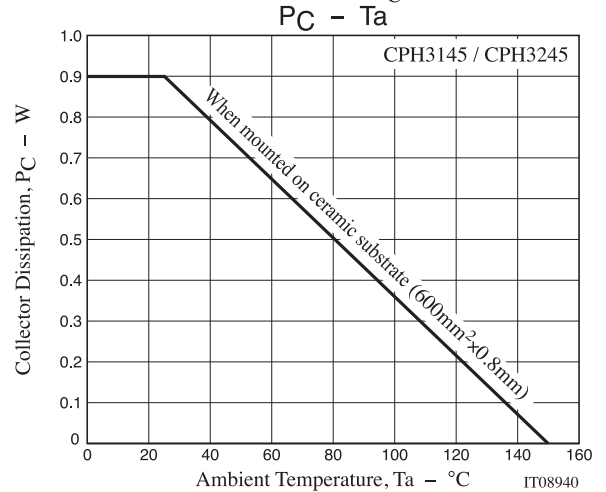
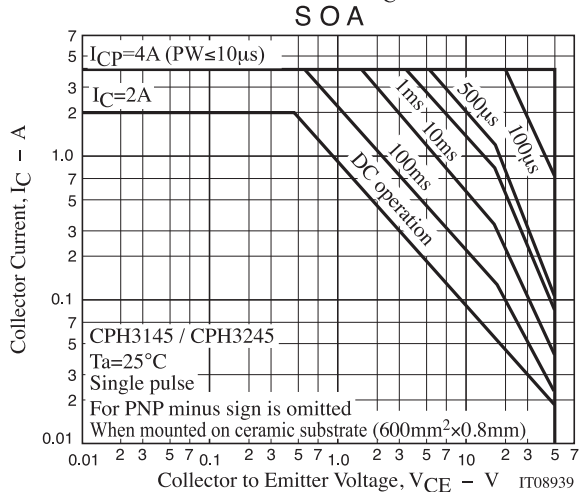
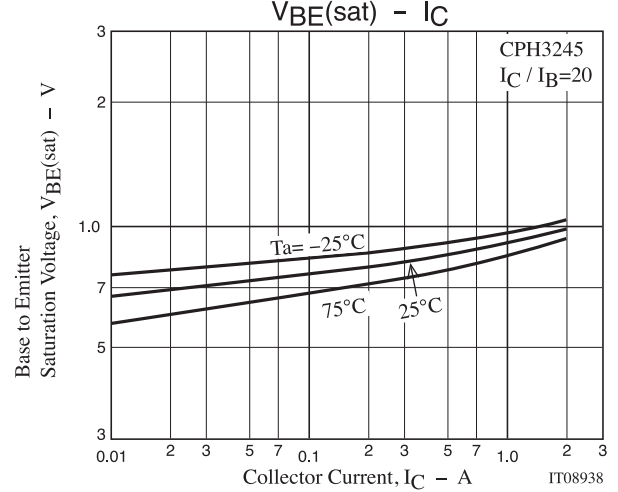
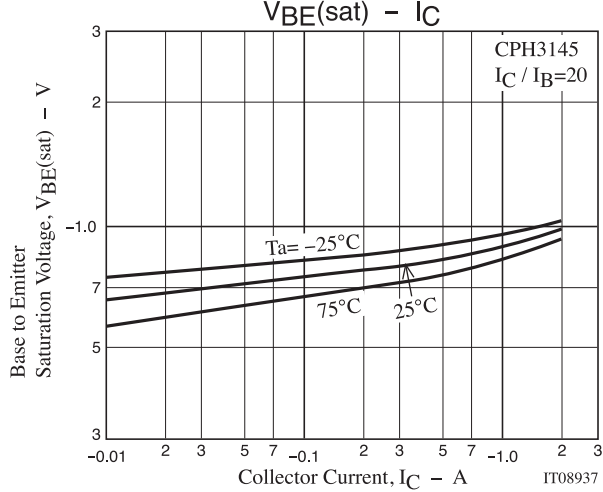
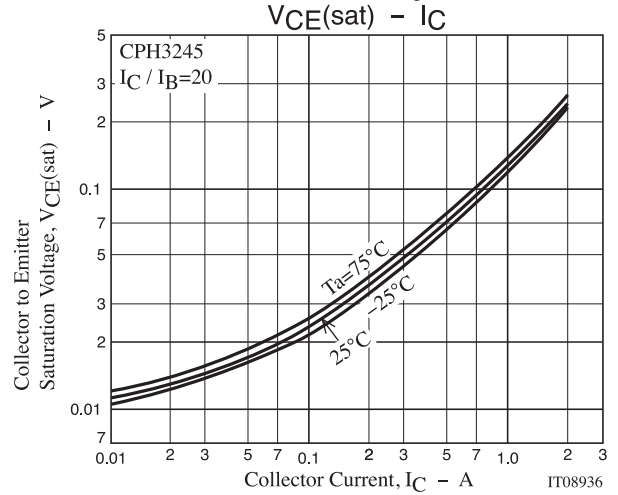
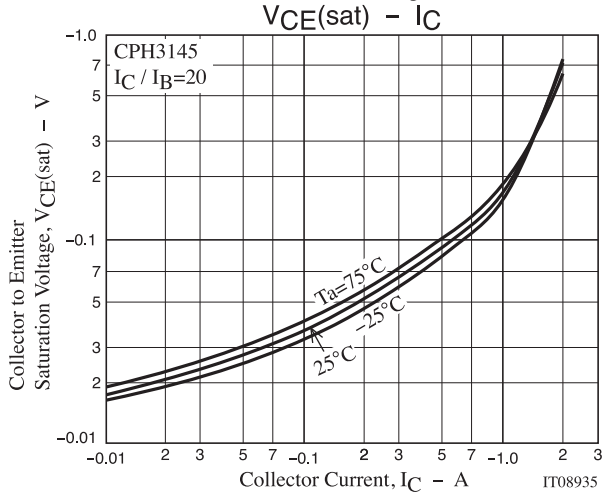
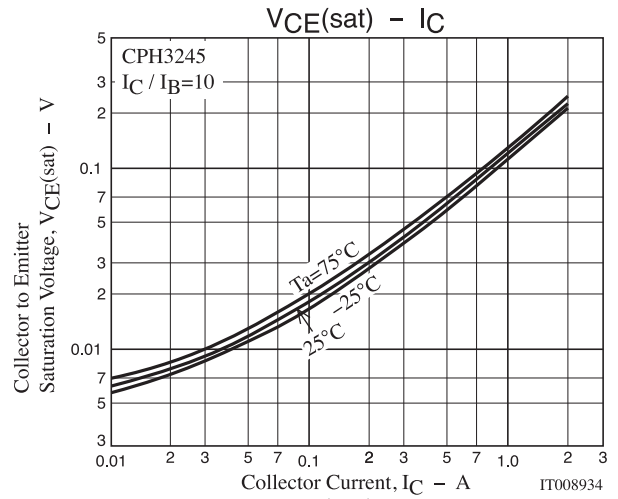
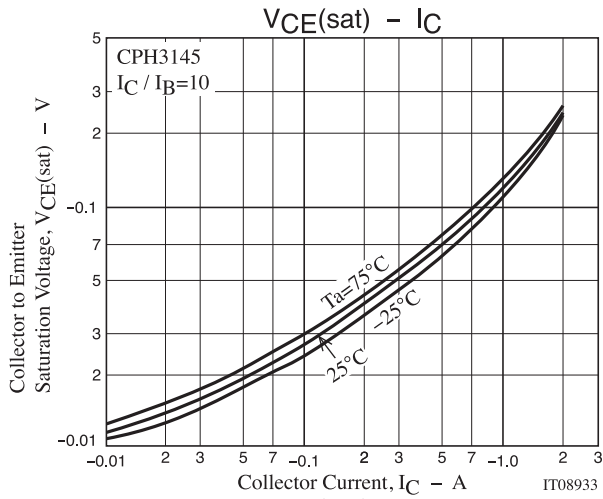
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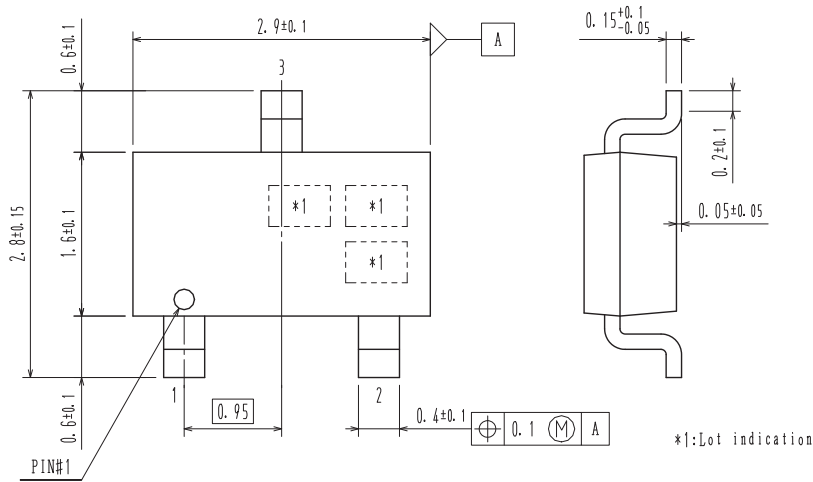


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PACKAGE DIMENSIONS

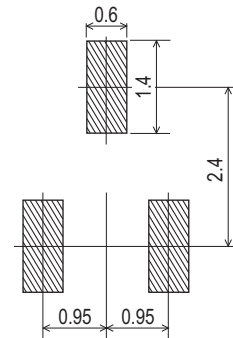
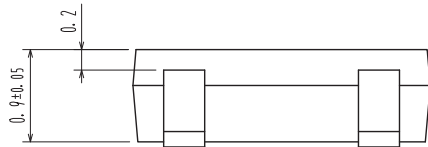
unit : mm

CPH3
CASE 318BA
ISSUE 0



Recommended Soldering Footprint

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



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

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