



CPH3144

Bipolar Transistor -30V, -2A, Low $V_{CE(sat)}$, PNP Single CPH3

ON Semiconductor®

<http://onsemi.com>

Applications

- Relay drivers, lamp drivers, motor drivers, flash

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

Specifications

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

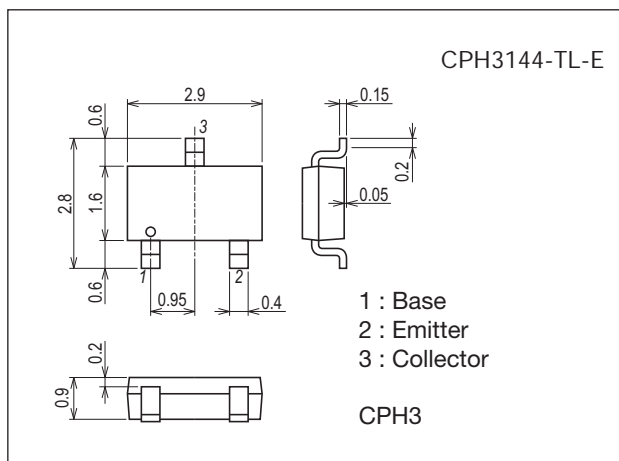
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		-30	V
Collector-to-Emitter Voltage	V_{CEO}		-30	V
Emitter-to-Base Voltage	V_{EBO}		-5	V
Collector Current	I_C		-2	A
Collector Current (Pulse)	I_{CP}		-5	A
Base Current	I_B		-400	mA
Collector Dissipation	P_C	When mounted on ceramic substrate (600mm ² ×0.8mm)	0.9	W
Junction Temperature	T_j		150	°C
Storage Temperature	T_{stg}		-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)

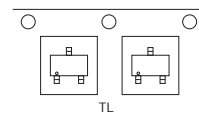
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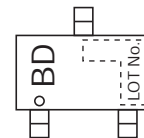
Product & Package Information

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

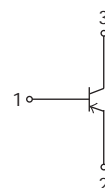
Packing Type: TL



Marking



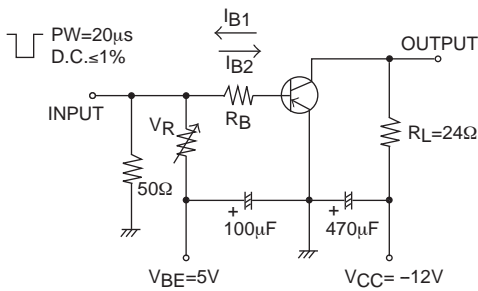
Electrical Connection



Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	V _{CB} = -30V, I _E = 0A			-0.1	μA
Emitter Cutoff Current	I _{EBO}	V _{EB} = -4V, I _C = 0A			-0.1	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		440		MHz
Output Capacitance	C _{ob}	V _{CB} = -10V, f = 1MHz		17		pF
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}	I _C = -1.5A, I _B = -75mA		-170	-260	mV
Base-to-Emitter Saturation Voltage	V _{BE(sat)}	I _C = -1.5A, I _B = -75mA		-0.94	-1.2	V
Collector-to-Base Breakdown Voltage	V _{(BR)CBO}	I _C = -10μA, I _E = 0A	-30			V
Collector-to-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C = -1mA, R _{BE} = ∞	-30			V
Emitter-to-Base Breakdown Voltage	V _{(BR)EBO}	I _E = -10μA, I _C = 0A	-5			V
Turn-ON Time	t _{on}	See specified Test Circuit.		45		ns
Storage Time	t _{stg}			200		ns
Fall Time	t _f			23		ns

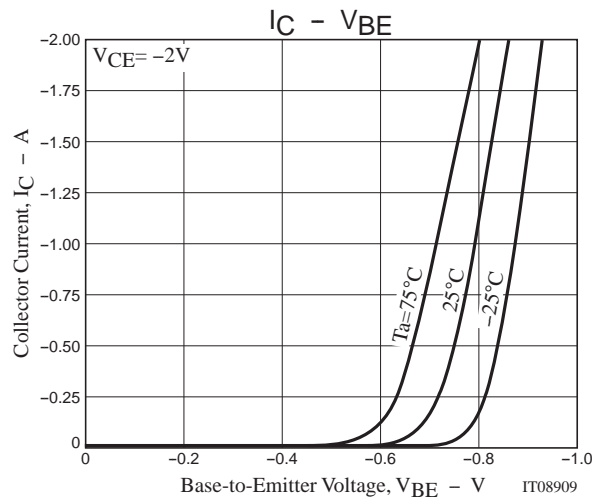
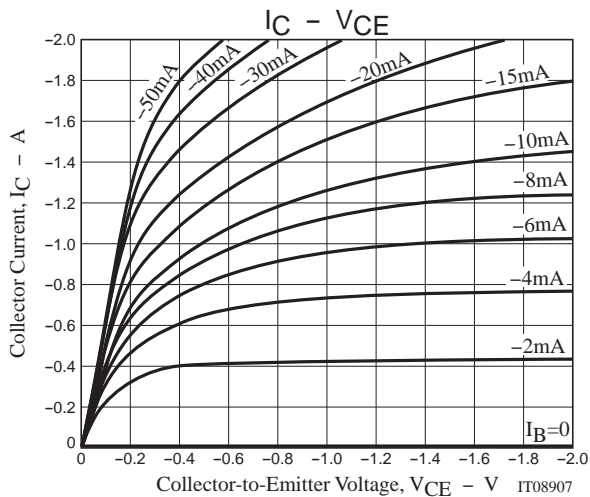
Switching Time Test Circuit

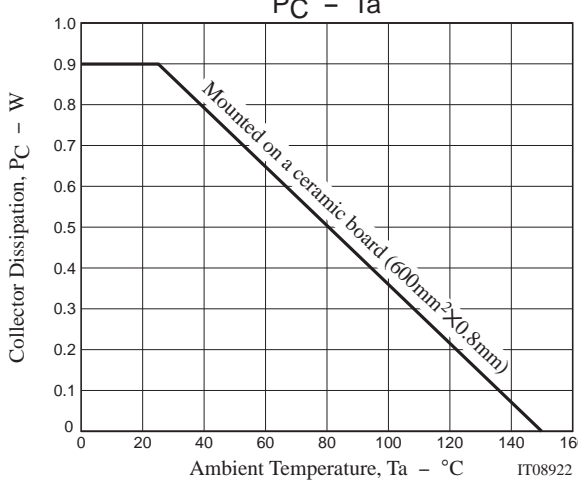
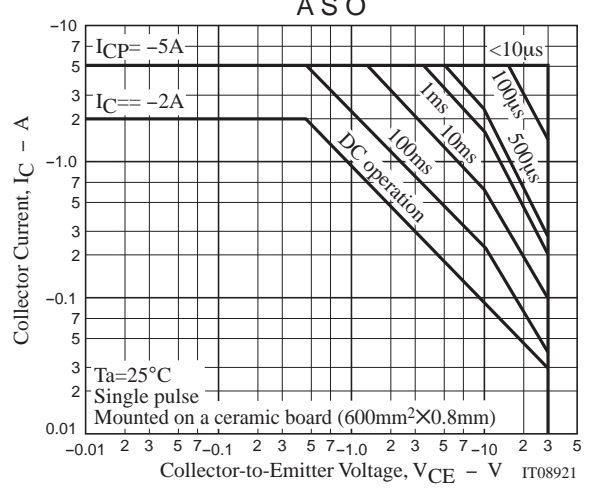
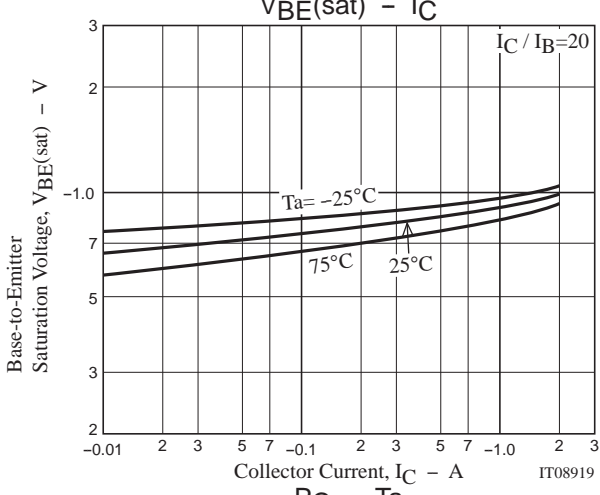
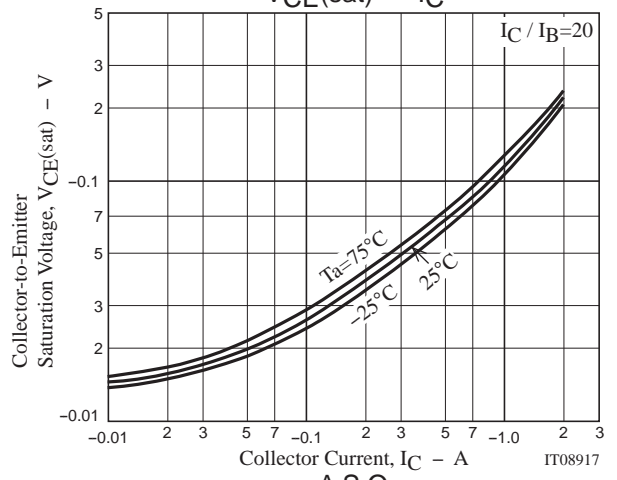
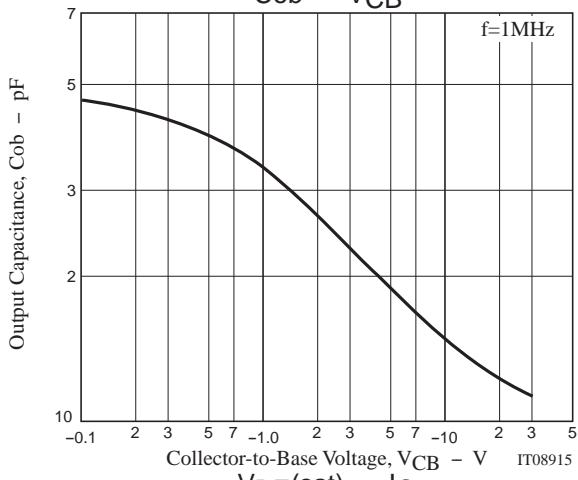
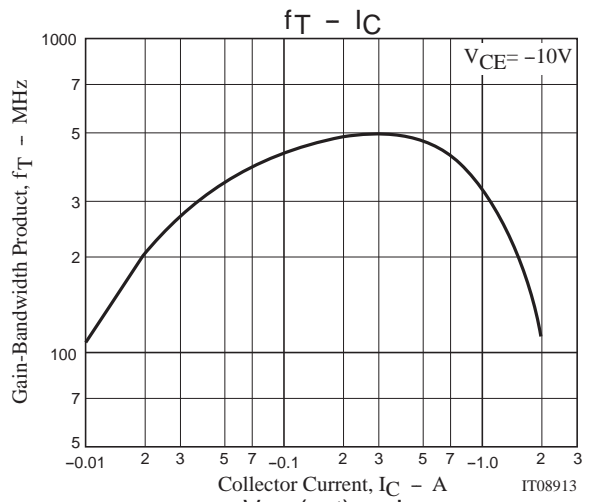
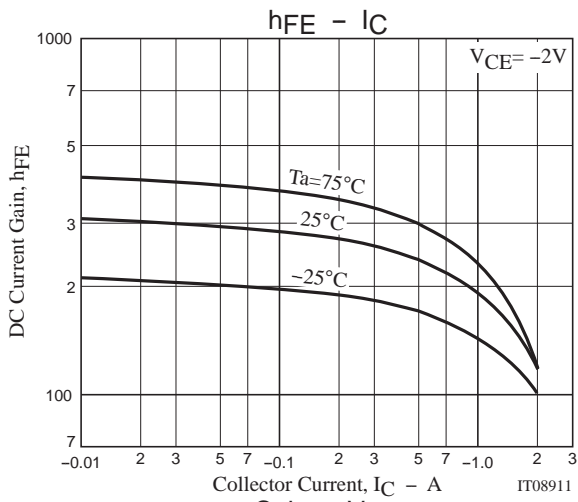


$I_C = 20I_{B1} = -20I_{B2} = -500mA$

Ordering Information

Device	Package	Shipping	memo
CPH3144-TL-E	CPH3	3,000pcs./reel	Pb Free





Embossed Taping Specification

CPH3144-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

Reel label, Inner box label
(unit:mm)

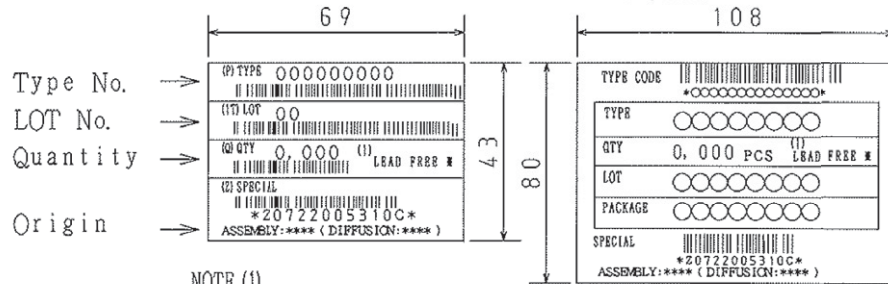
Outer box label

It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.

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)

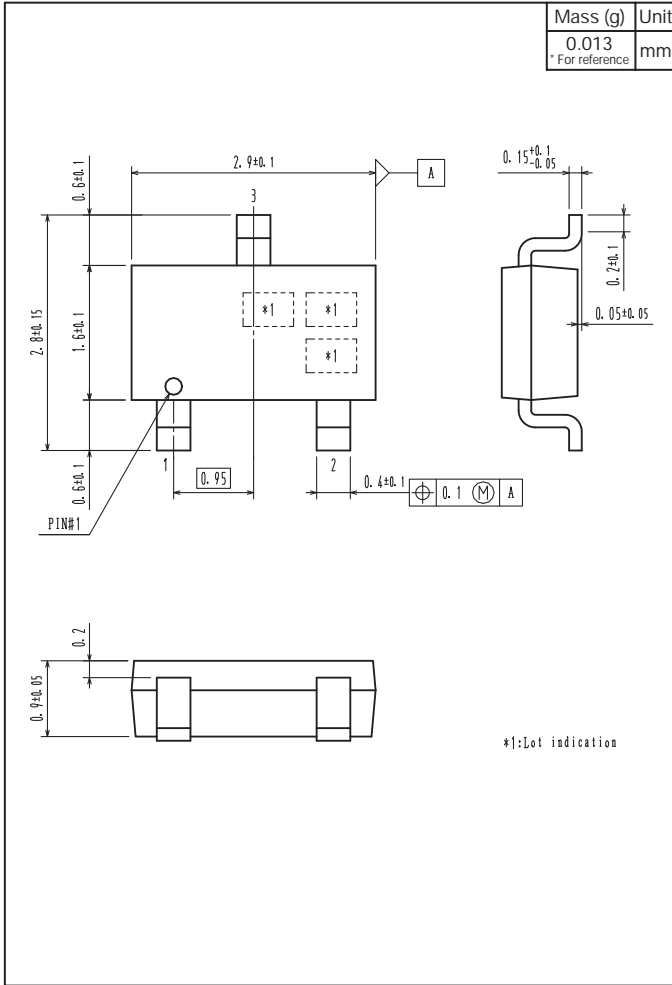


2-2. Device placement direction

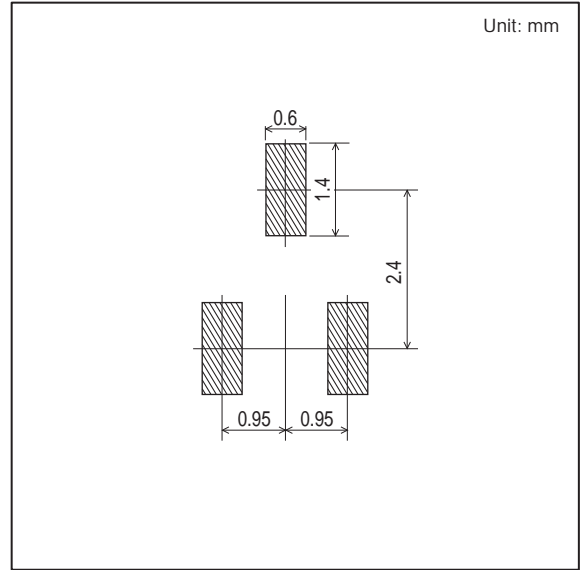


Those with one electrode terminal on the feed hole side.....TL

Outline Drawing
CPH3144-TL-E



Land Pattern Example



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