



ON Semiconductor®

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# CPH3121

## Bipolar Transistor -12V, -3A, Low VCE(sat) PNP Single CPH3

### Applications

- 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

#### Absolute Maximum Ratings at Ta=25°C

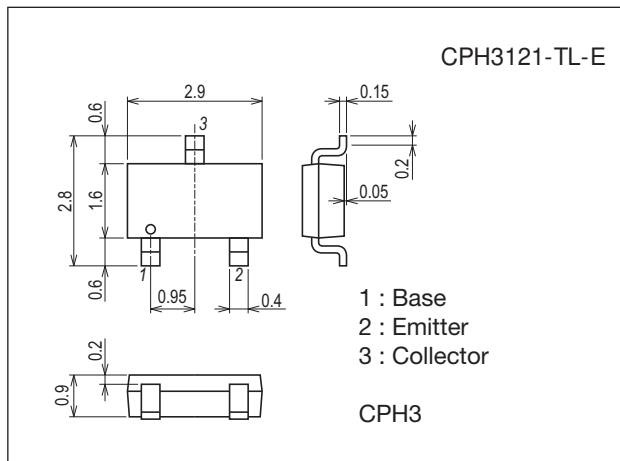
Parameter	Symbol	Conditions	Ratings	Unit
Collector to Base Voltage	V <sub>CB0</sub>		-15	V
Collector to Emitter Voltage	V <sub>CE0</sub>		-12	V
Emitter to Base Voltage	V <sub>EB0</sub>		-5	V
Collector Current	I <sub>C</sub>		-3	A
Collector Current (Pulse)	I <sub>CP</sub>		-5	A
Base Current	I <sub>B</sub>		-600	mA
Collector Dissipation	P <sub>C</sub>	When mounted on ceramic substrate (600mm <sup>2</sup> ×0.8mm)	0.9	W
Junction Temperature	T <sub>j</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-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)

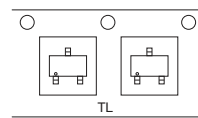
7015A-003



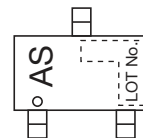
### Product & Package Information

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

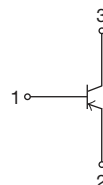
### Packing Type: TL



### Marking



### Electrical Connection

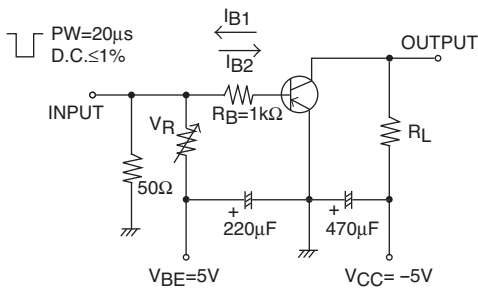


# CPH3121

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = -12V, I_E = 0A$			-0.1	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = -4V, I_C = 0A$			-0.1	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE} = -2V, I_C = -500mA$	200		560	
Gain-Bandwidth Product	$f_T$	$V_{CE} = -2V, I_C = -500mA$		380		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = -10V, f = 1MHz$		40		pF
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -1.5A, I_B = -30mA$		-110	-165	mV
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -1.5A, I_B = -30mA$		-0.85	-1.2	V
Collector to Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -10\mu A, I_E = 0A$	-15			V
Collector to Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -1mA, R_{BE} = \infty$	-12			V
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -10\mu A, I_C = 0A$	-5			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		30		ns
Storage Time	$t_{stg}$			90		ns
Fall Time	$t_f$			14		ns

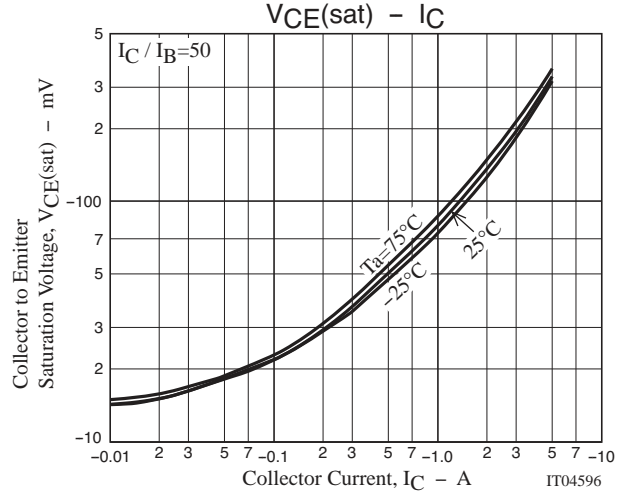
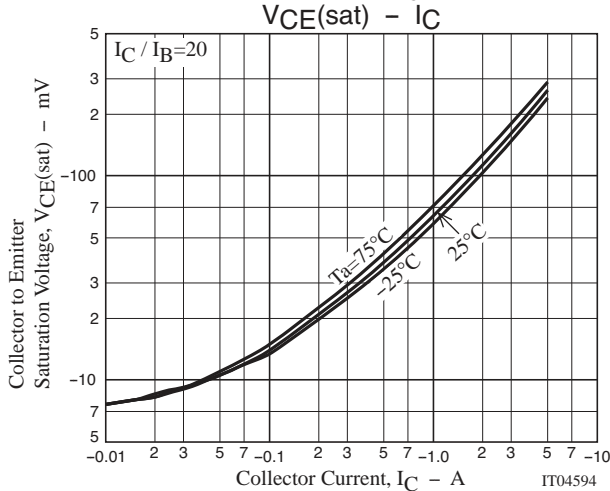
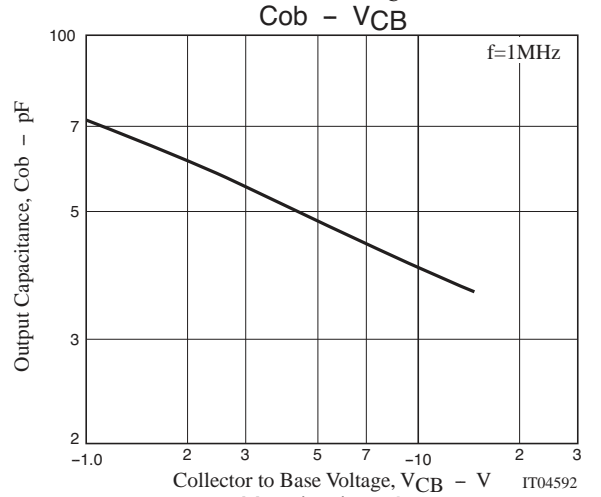
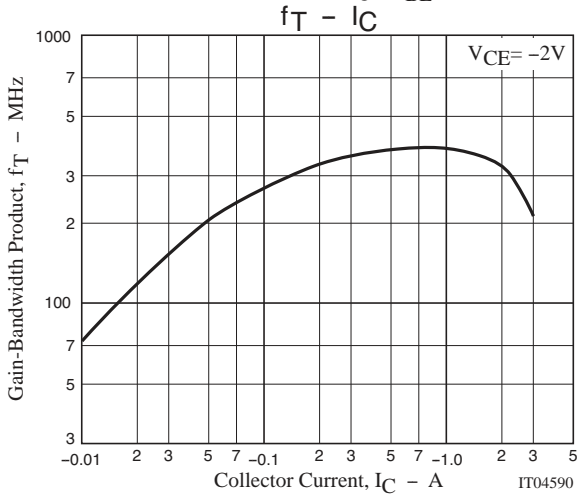
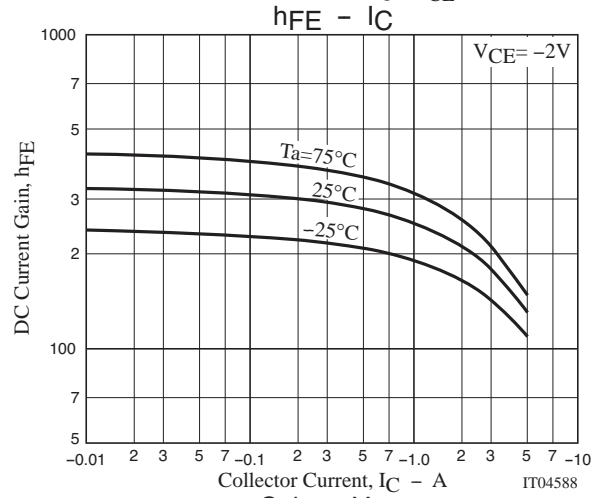
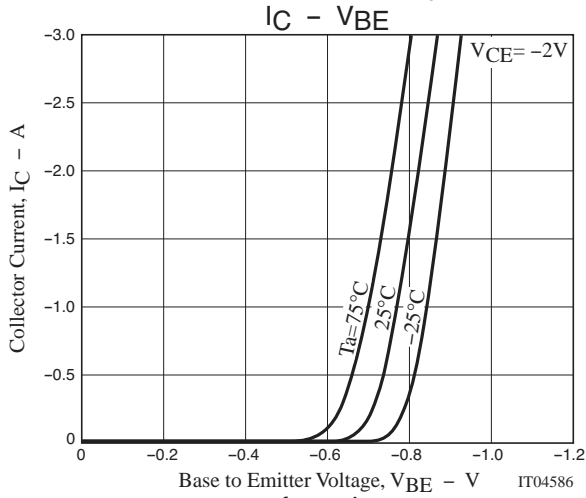
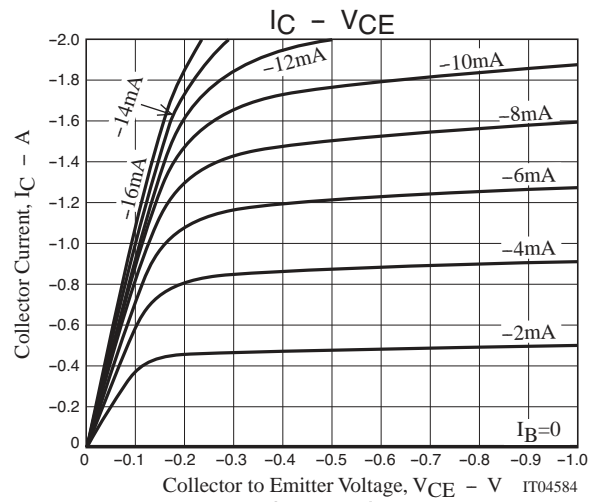
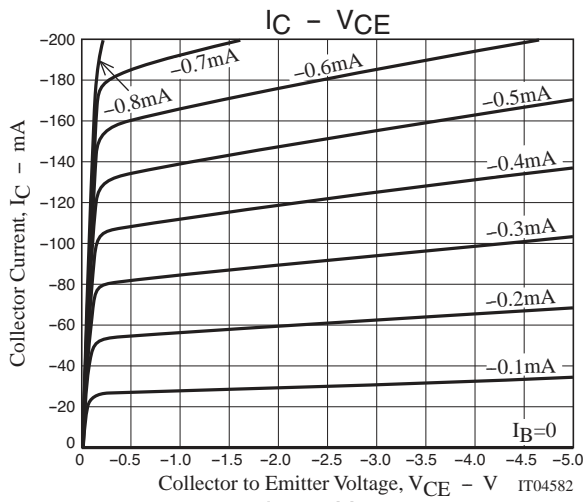
## Switching Time Test Circuit

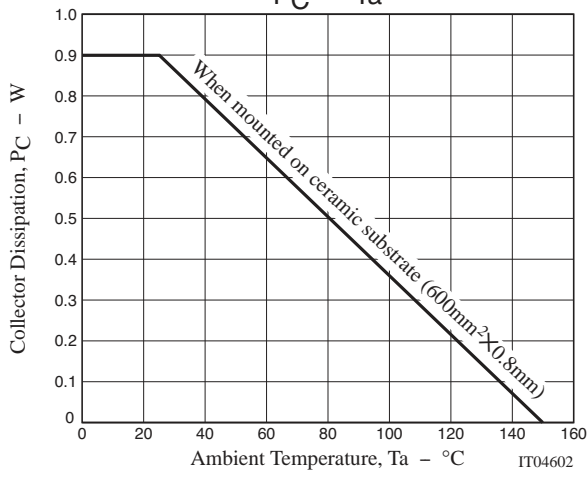
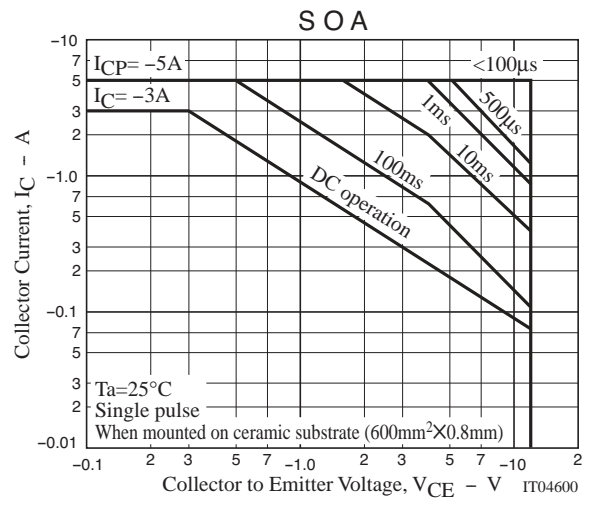
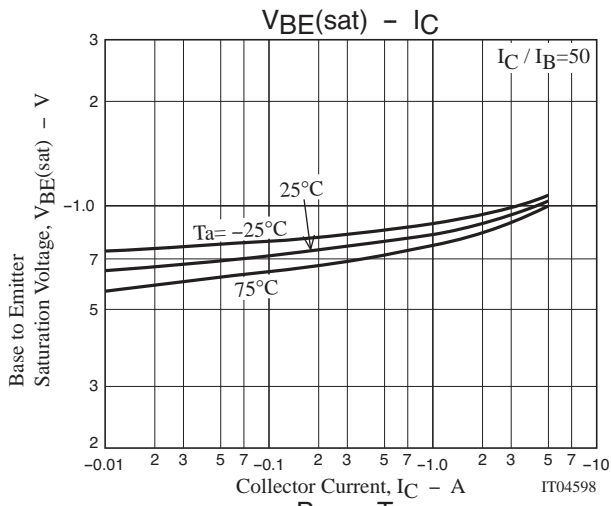


$$I_C = 20I_{B1} = -20I_{B2} = -1.5A$$

## Ordering Information

Device	Package	Shipping	memo
CPH3121-TL-E	CPH3	3,000pcs./reel	Pb Free

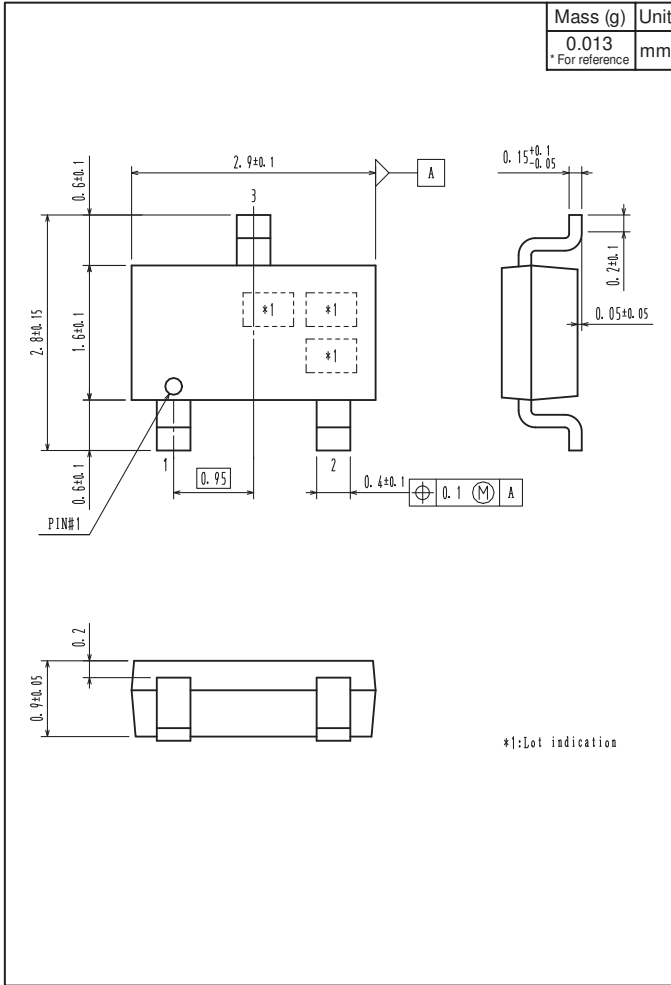




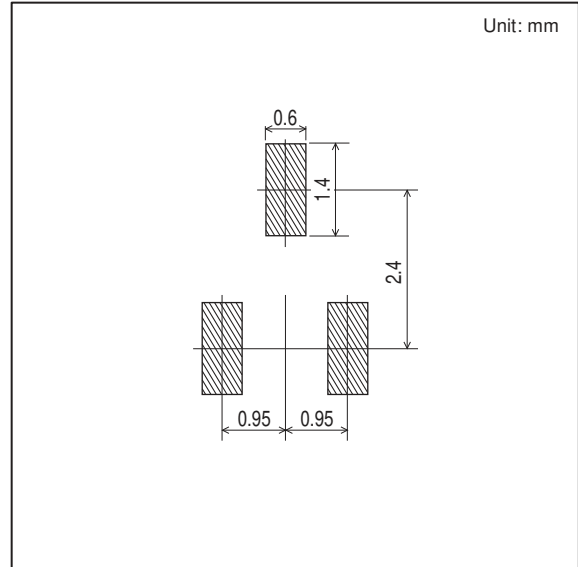
# CPH3121

## Outline Drawing

CPH3121-TL-E



## Land Pattern Example



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