



# 2SA2012

## Bipolar Transistor -30V, -5A, Low VCE(sat) PNP Single PCP

ON Semiconductor®

<http://onsemi.com>

### Applications

- Relay drivers, lamp drivers, motor drivers, flash

### Features

- Adoption of MBIT processes
- Low collector to emitter saturation voltage
- Ultrasmall-sized package permitting applied sets to be made small and slim
- High allowable power dissipation
- Large current capacity

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector to Base Voltage	VCBO		-30	V
Collector to Emitter Voltage	VCEO		-30	V
Emitter to Base Voltage	VEBO		-5	V
Collector Current	IC		-5	A
Collector Current (Pulse)	ICP		-8	A

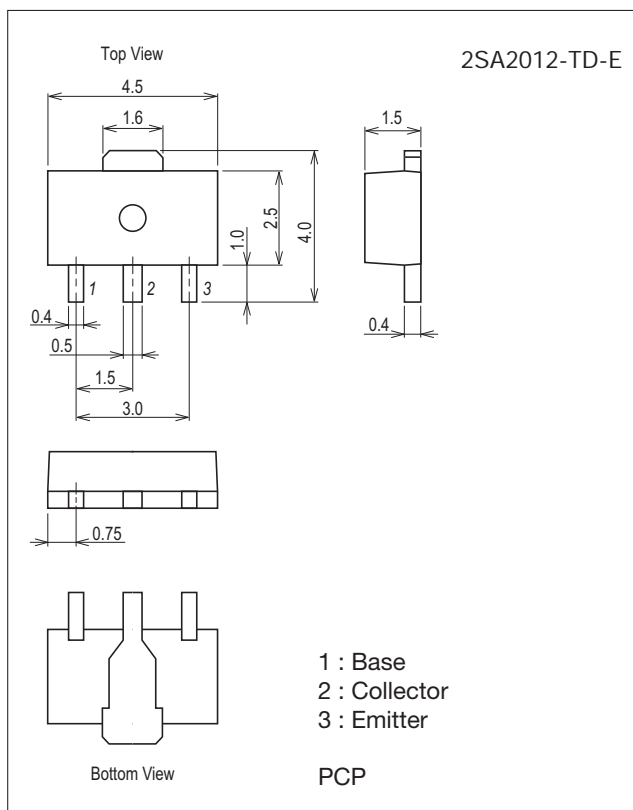
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Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### Package Dimensions

unit : mm (typ)

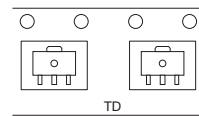
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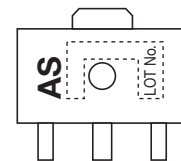
### Product & Package Information

- Package : PCP
- JEITA, JEDEC : SC-62, SOT-89, TO-243
- Minimum Packing Quantity : 1,000 pcs./reel

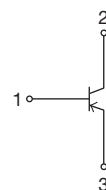
### Packing Type: TD



### Marking



### Electrical Connection



## 2SA2012

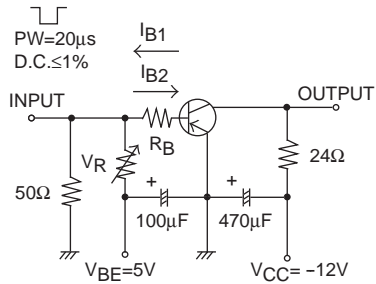
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Parameter	Symbol	Conditions	Ratings	Unit
Base Current	$I_B$		-600	mA
Collector Dissipation	$P_C$	When mounted on ceramic substrate (250mm <sup>2</sup> ×0.8mm)	1.3	W
		$T_C=25^\circ\text{C}$	3.5	W
Junction Temperature	$T_j$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

### Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=-30\text{V}, I_E=0\text{A}$			-0.1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=-4\text{V}, I_C=0\text{A}$			-0.1	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE}=-2\text{V}, I_C=-500\text{mA}$	200		560	
Gain-Bandwidth Product	$f_T$	$V_{CE}=-10\text{V}, I_C=-500\text{mA}$		350		MHz
Output Capacitance	$C_{ob}$	$V_{CB}(-)10\text{V}, f=1\text{MHz}$		30		pF
Collector to Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=-1.5\text{A}, I_B=-30\text{mA}$		-140	-210	mV
	$V_{CE(sat)2}$	$I_C=-2.5\text{A}, I_B=-125\text{mA}$		-170	-260	mV
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-1.5\text{A}, I_B=-30\text{mA}$		-0.83	-1.2	V
Collector to Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-10\mu\text{A}, I_E=0\text{A}$	-30			V
Collector to Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1\text{mA}, R_{BE}=\infty$	-30			V
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-10\mu\text{A}, I_C=0\text{A}$	-5			V
Turn-ON Time	$t_{on}$			50		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		270		ns
Fall Time	$t_f$			25		ns

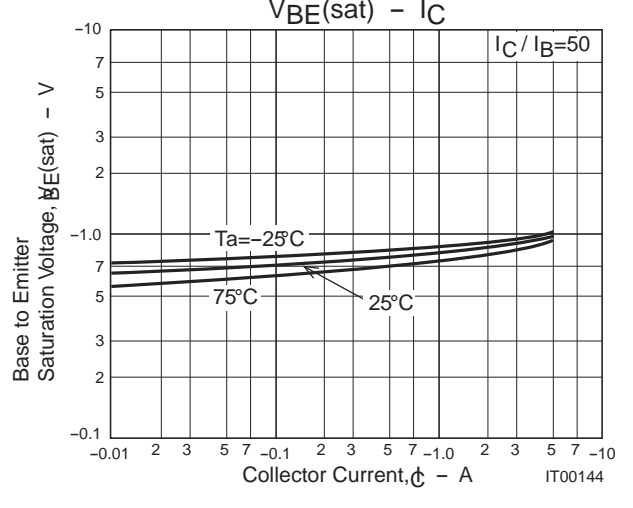
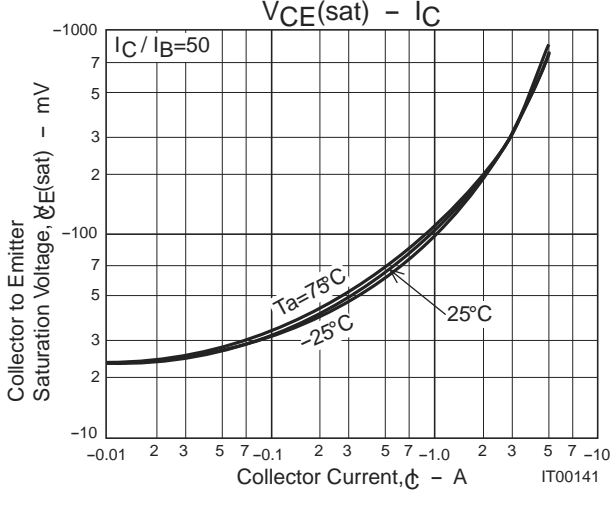
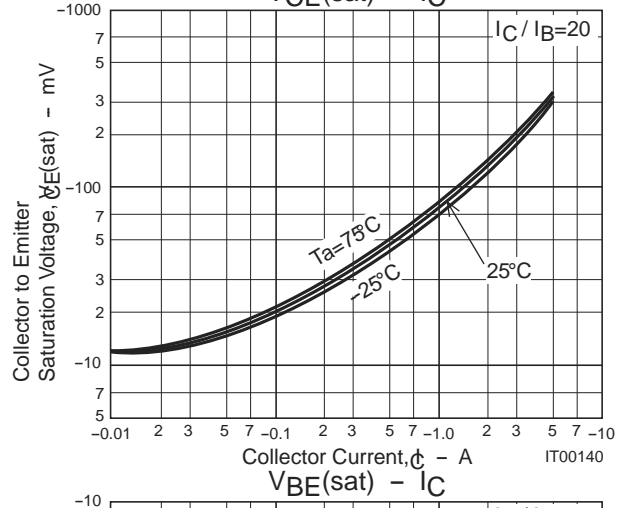
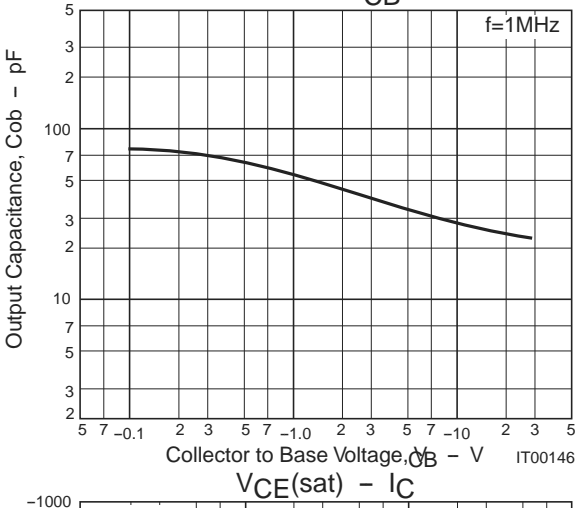
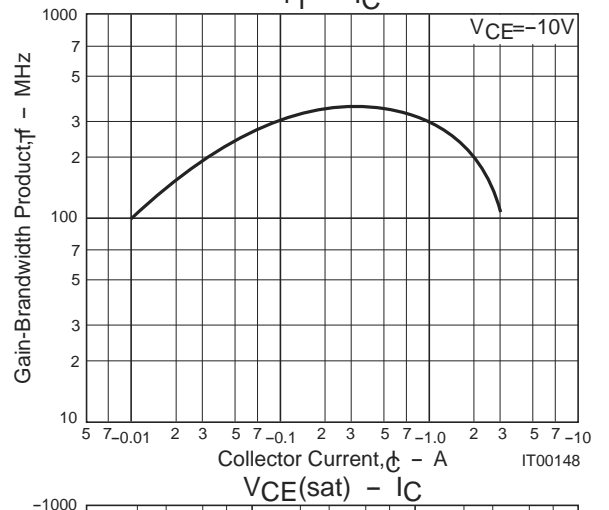
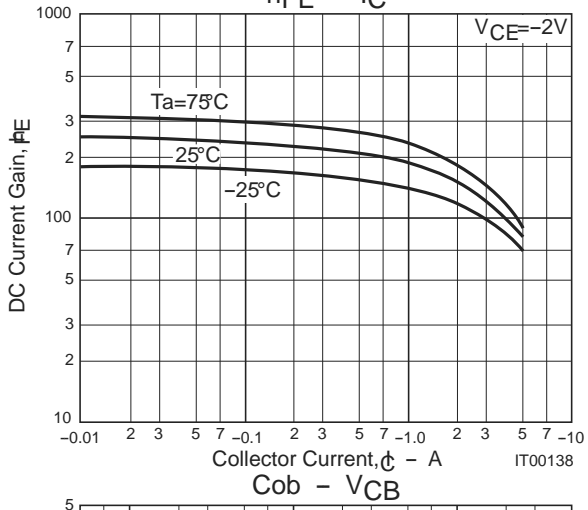
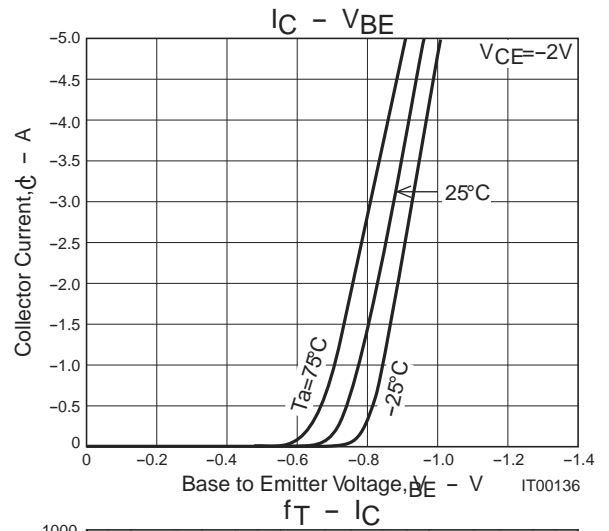
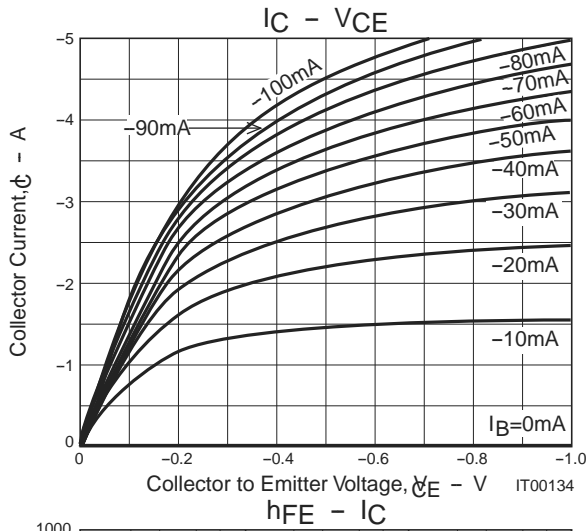
### Switching Time Test Circuit

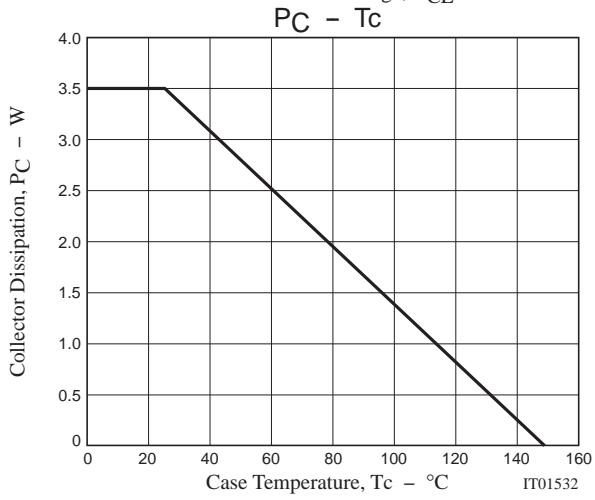
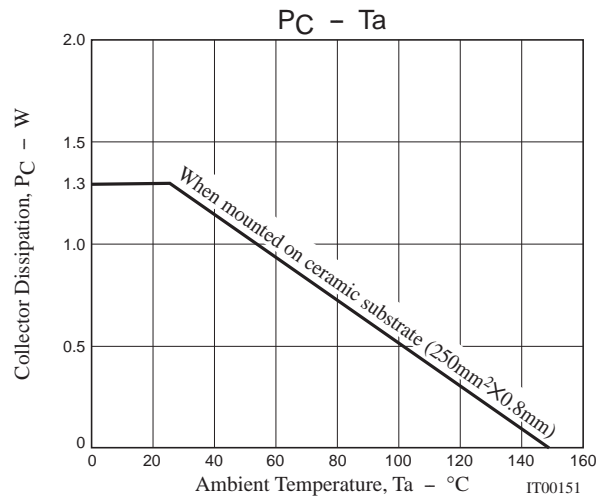
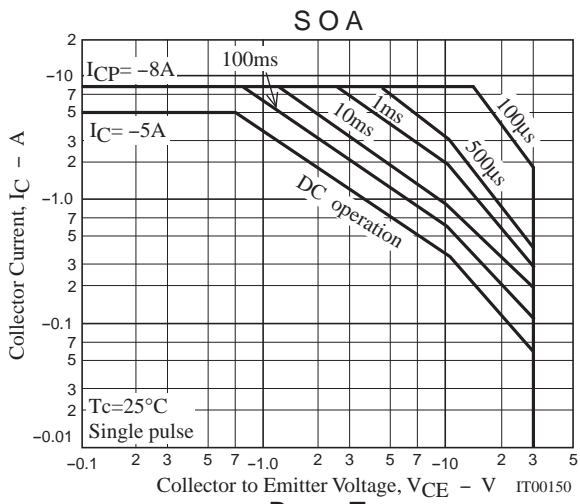


$$I_C=20I_{B1} = -20I_{B2} = -500\text{mA}$$

### Ordering Information

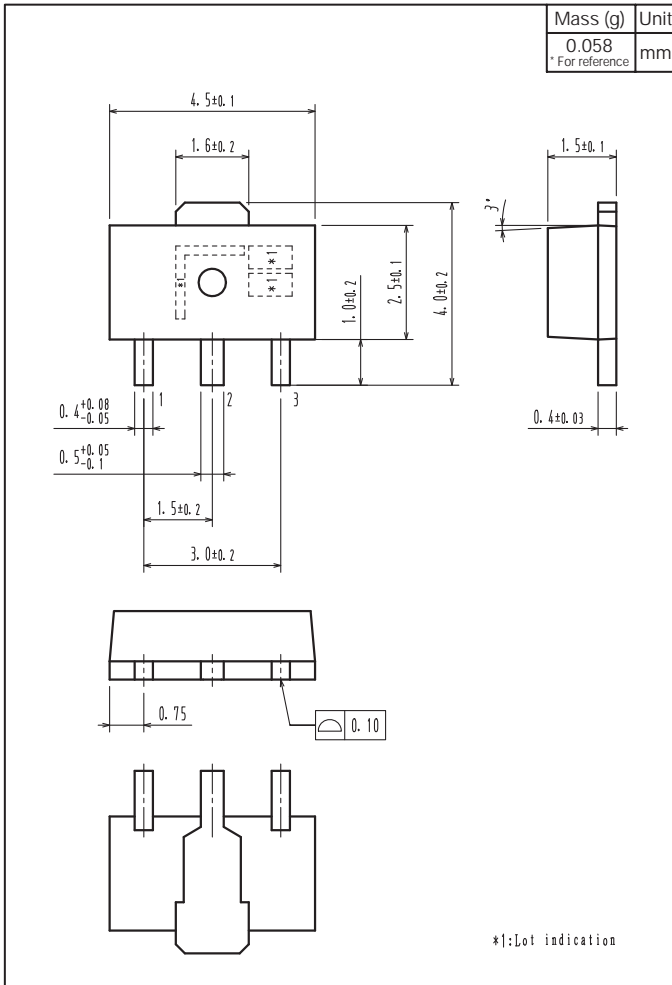
Device	Package	Shipping	memo
2SA2012-TD-E	PCP	1,000pcs./reel	Pb Free



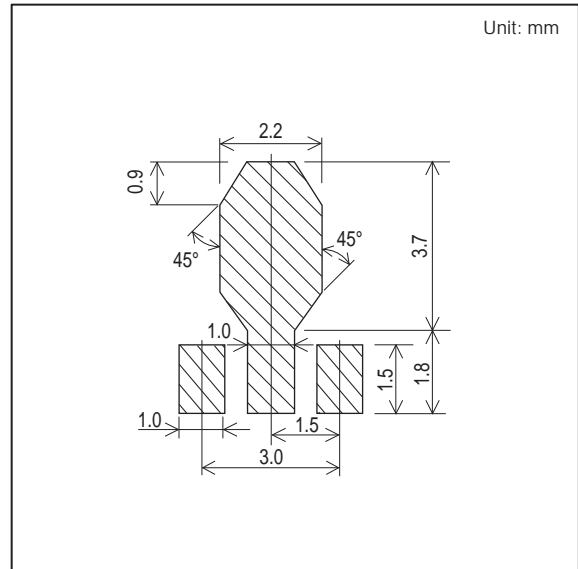


Outline Drawing

2SA2012-TD-E



Land Pattern Example



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