Ordering number : EN6306B

2SA2012

Bipolar Transistor
−30V, −5A, Low V_{CE}(sat) PNP Single PCP

ON Semiconductor®
http://onsemi.com

Applicaitons
- Relay drivers, lamp drivers, motor drivers, flash

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

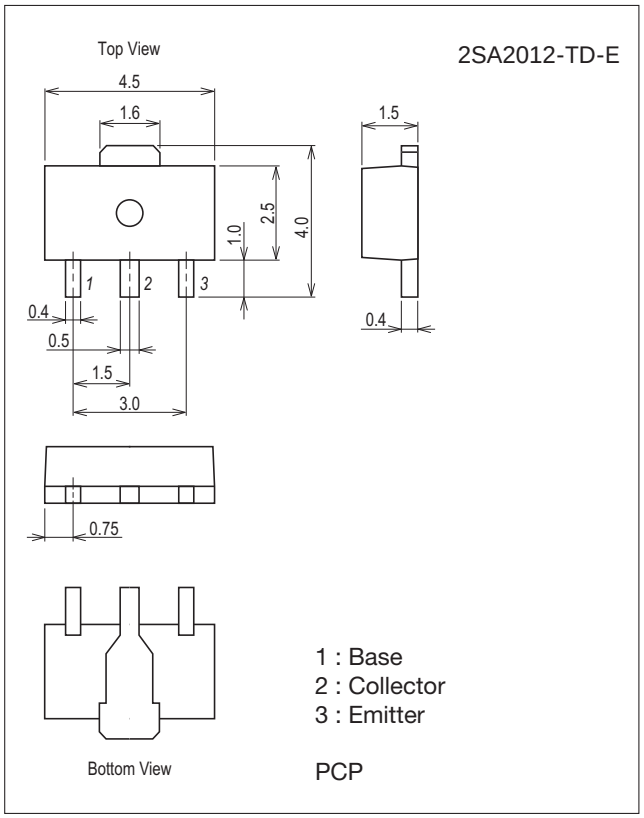
Specifications
Absolute Maximum Ratings at Ta=25°C

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		−5	A
Collector Current (Pulse)	I_{CP}		−8	A

Continued on next page.

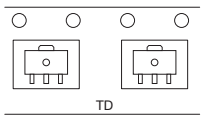
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions
unit : mm (typ)
7007B-004

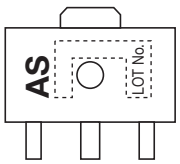


Product & Package Information
- Package : PCP
- JEITA, JEDEC : SC-62, SOT-89, TO-243
- Minimum Packing Quantity : 1,000 pcs./reel

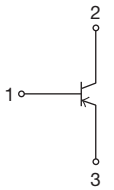
Packing Type: TD



Marking



Electrical Connection



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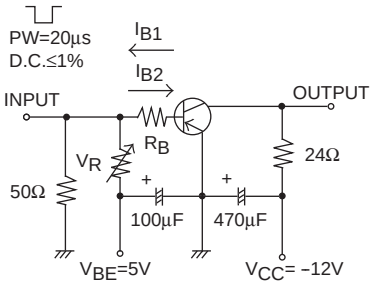
Parameter	Symbol	Conditions	Ratings	Unit
Base Current	I_B		−600	mA
Collector Dissipation	P_C	When mounted on ceramic substrate (250mm^2×0.8mm)	1.3	W
		Tc=25°C	3.5	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	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=−500mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=−10V, I_C=−500mA		350		MHz
Output Capacitance	Cob	V_{CB}=(−)10V, f=1MHz		30		pF
Collector to Emitter Saturation Voltage	V_{CE}(sat)1	I_C=−1.5A, I_B=−30mA		−140	−210	mV
	V_{CE}(sat)2	I_C=−2.5A, I_B=−125mA		−170	−260	mV
Base to Emitter Saturation Voltage	V_{BE}(sat)	I_C=−1.5A, I_B=−30mA		−0.83	−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.		50		ns
Storage Time	t_{stg}			270		ns
Fall Time	t_f			25		ns

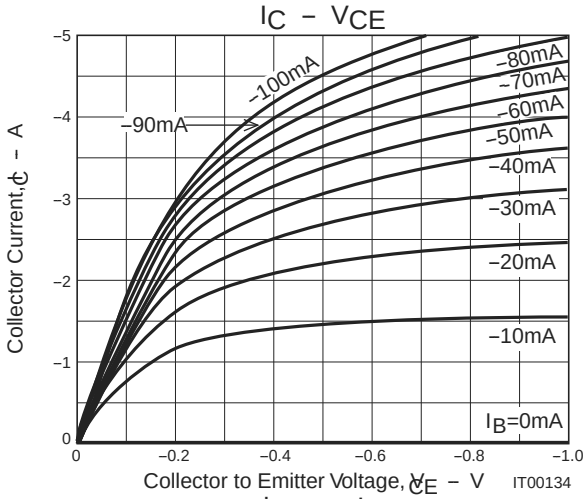
Switching Time Test Circuit

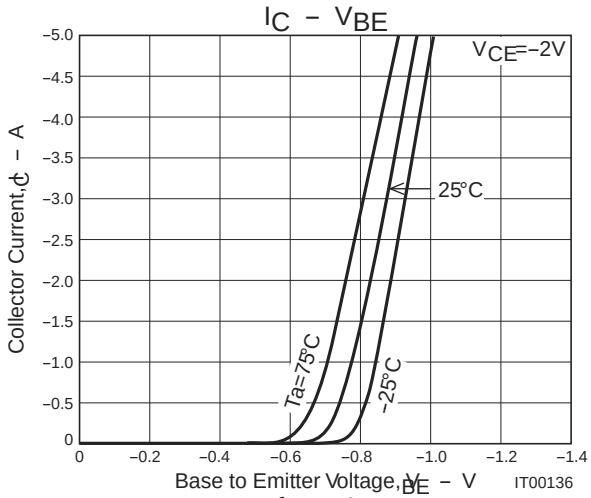


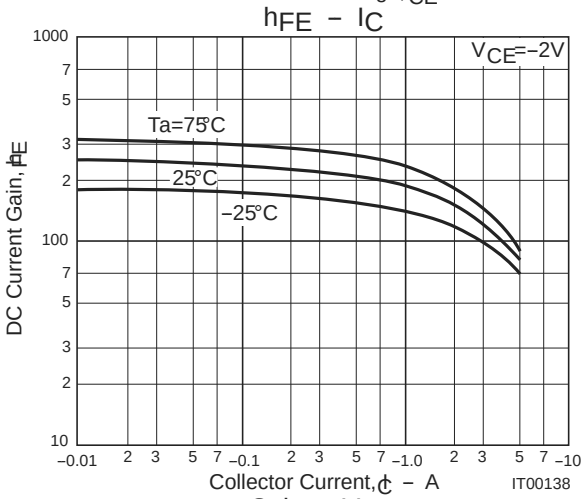
I_C=20I_{B1}= −20I_{B2}= −500mA

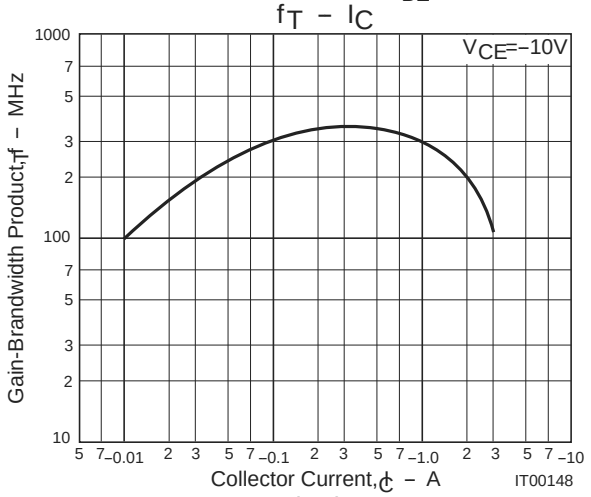
Ordering Information

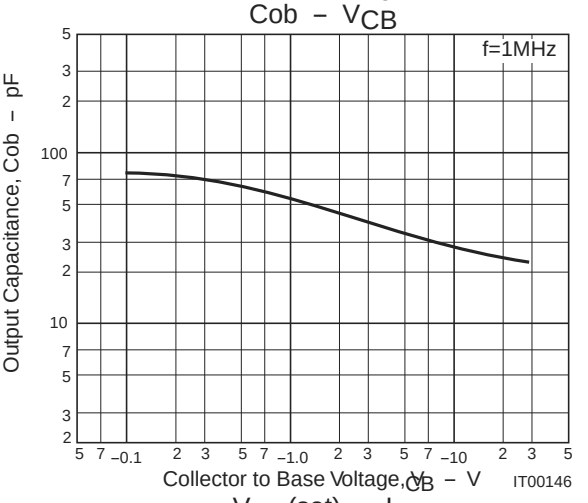
Device	Package	Shipping	memo
2SA2012-TD-E	PCP	1,000pcs./reel	Pb Free

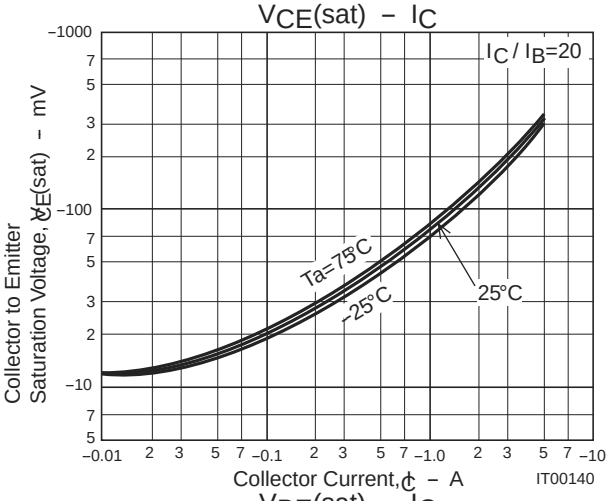

IC – VCE
Collector Current, IC – A
Collector to Emitter Voltage, VCE – V
IT00134
–100mA
–90mA
–80mA
–70mA
–60mA
–50mA
–40mA
–30mA
–20mA
–10mA
IB=0mA

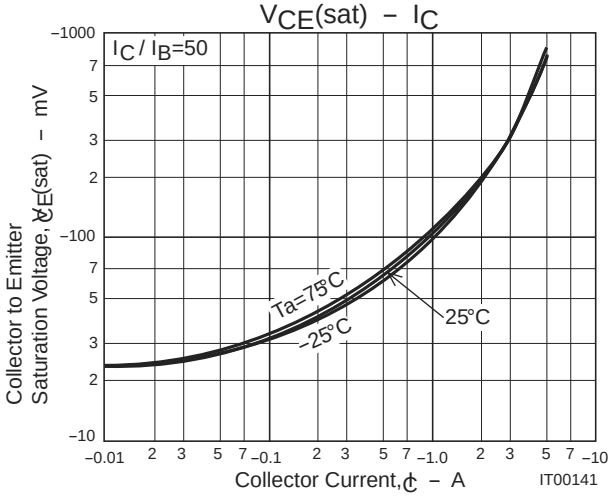

IC – VBE
Collector Current, IC – A
Base to Emitter Voltage, VBE – V
IT00136
VCE=–2V
25°C
Ta=75°C
–25°C

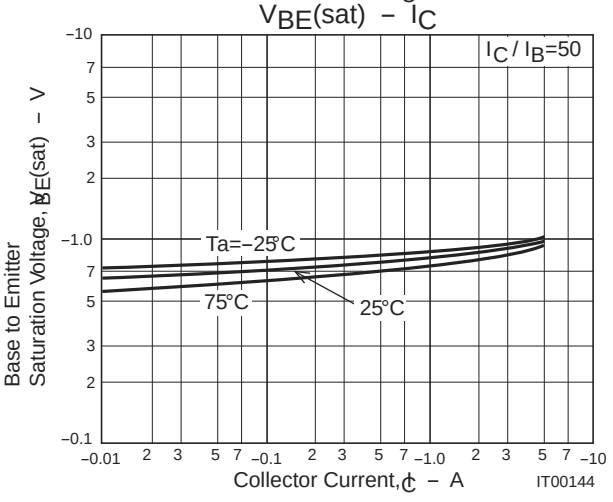

hFE – IC
DC Current Gain, hFE
Collector Current, IC – A
IT00138
VCE=–2V
Ta=75°C
25°C
–25°C

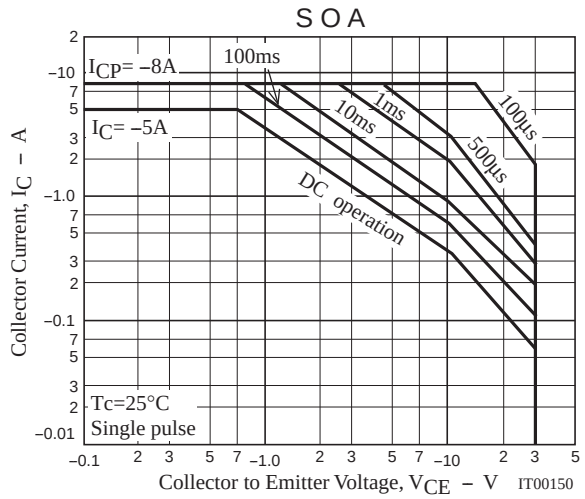

fT – IC
Gain-Brandwidth Product, fT – MHz
Collector Current, IC – A
IT00148
VCE=–10V

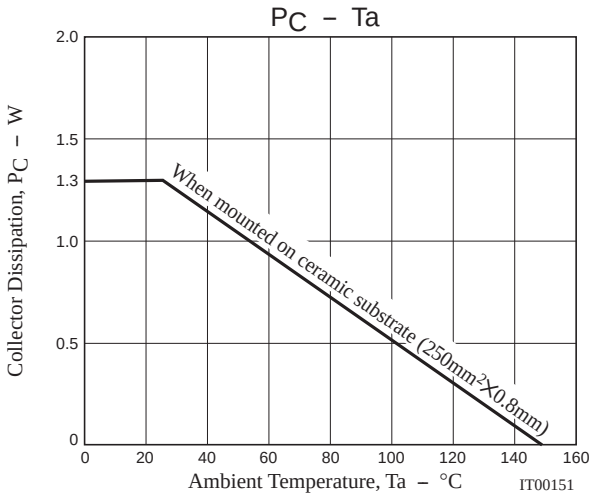

Cob – VCB
Output Capacitance, Cob – pF
Collector to Base Voltage, VCB – V
IT00146
f=1MHz

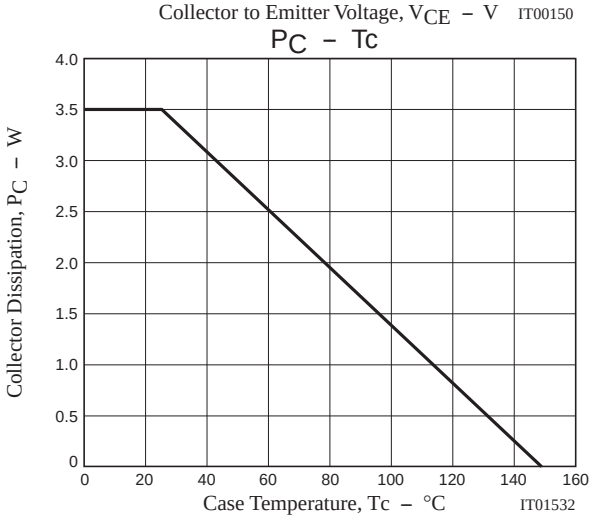

VCE(sat) – IC
Collector to Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT00140
IC / IB=20
Ta=75°C
25°C
–25°C


VCE(sat) – IC
Collector to Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT00141
IC / IB=50
Ta=75°C
25°C
–25°C


VBE(sat) – IC
Base to Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT00144
IC / IB=50
Ta=–25°C
75°C
25°C

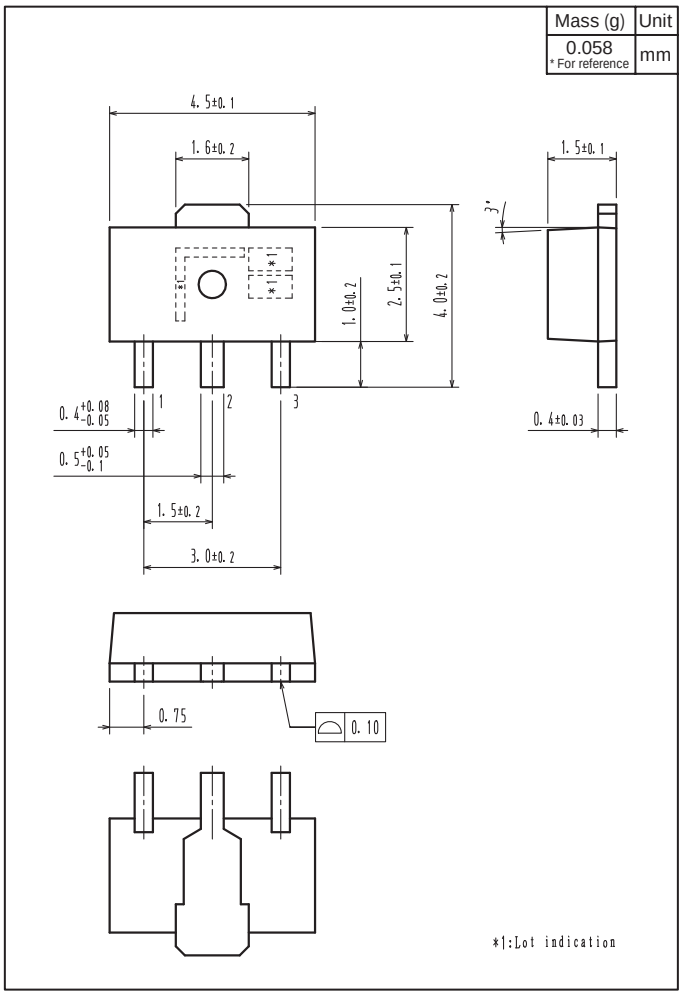

S O A
ICP= −8A
100ms
IC= −5A
10ms
1ms
100µs
500µs
DC operation
Tc=25°C
Single pulse
Collector Current, IC – A
Collector to Emitter Voltage, VCE – V
IT00150


PC – Ta
When mounted on ceramic substrate (250mm2×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT00151


PC – Tc
Collector Dissipation, PC – W
Case Temperature, Tc – °C
IT01532

Outline Drawing

2SA2012-TD-E



Land Pattern Example