

200mW, PNP Small Signal Transistor

FEATURES

- Low power loss, high efficiency
- Ideal for automated placement
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

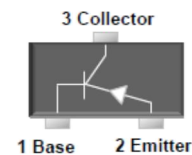
- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
V_{CBO}	-50	V
V_{CEO}	-45	V
V_{EBO}	-5	V
I_C	-0.5	A
h_{FE}	250-600	
Package	SOT-323	
Configuration	Single die	



MECHANICAL DATA

- Case: SOT-323
- Molding compound meets UL 94 V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Weight: 0.005 g (approximately)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)				
PARAMETER		SYMBOL	VALUE	UNIT
Marking code on the device	BC807-16W		5CR	
	BC807-25W		5CS	
	BC807-40W		5CT	
Collector-base voltage		V_{CBO}	-50	V
Collector-emitter voltage		V_{CEO}	-45	V
Emitter-base voltage		V_{EBO}	-5	V
Collector current		I_C	-0.5	A
Power dissipation		P_D	200	mW
Junction temperature		T_J	-55 to +150	$^\circ\text{C}$
Storage temperature		T_{STG}	-55 to +150	$^\circ\text{C}$

THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-ambient thermal resistance	$R_{\theta JA}$	625	$^{\circ}\text{C/W}$

ELECTRICAL SPECIFICATIONS ($T_A = 25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$I_C = 10 \mu\text{A}$	$V_{(BR)CBO}$	-50	-	-	V
Collector-emitter breakdown voltage	$I_C = 10 \text{mA}$	$V_{(BR)CEO}$	-45	-	-	V
Emitter-base breakdown voltage	$I_E = 10 \mu\text{A}$	$V_{(BR)EBO}$	-5	-	-	V
Collector cutoff current	$V_{CB} = 20 \text{V}$	I_{CBO}	-	-	-100	μA
Emitter cutoff current	$V_{EB} = 5 \text{V}$	I_{EBO}	-	-	-100	μA
DC current gain	$V_{CE} = 1 \text{V}$, $I_C = 100 \text{mA}$	BC807-16W	100	-	250	
		BC807-25W	160	-	400	
		BC807-40W	250	-	600	
	$V_{CE} = 1 \text{V}$, $I_C = 500 \text{mA}$	40	-	-		
Collector-emitter saturation voltage	$I_C = 500 \text{mA}$, $I_B = 50 \text{mA}$	$V_{CE(sat)}$	-	-	-0.7	V
Transition frequency	$V_{CE} = 5 \text{V}$, $I_C = 10 \text{mA}$, $f = 100\text{MHz}$	f_T	80	-	-	MHz

ORDERING INFORMATION

ORDERING CODE (Note1, 2)	PACKAGE	PACKING
BC807-xxW RF	SOT-323	3K / 7" Reel
BC807-xxW RFG	SOT-323	3K / 7" Reel
BC807-xxW-B0 RF	SOT-323	3K / 7" Reel
BC807-xxW-B0 RFG	SOT-323	3K / 7" Reel

Note:

- "xx" = Device Code "16", "25", "40"
- "G" = Green compound (Halogen free)

CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 Total Power Dissipation $P_{tot} = f(T_S)$

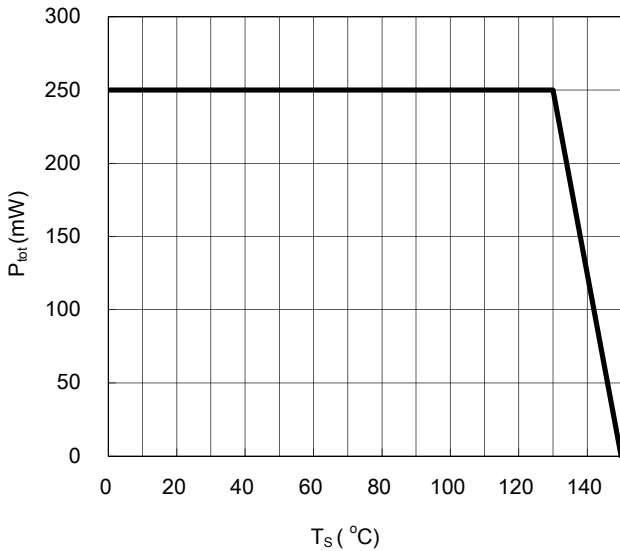


Fig.2 Permissible Pulse Load $R_{\theta JA} = f(tp)$

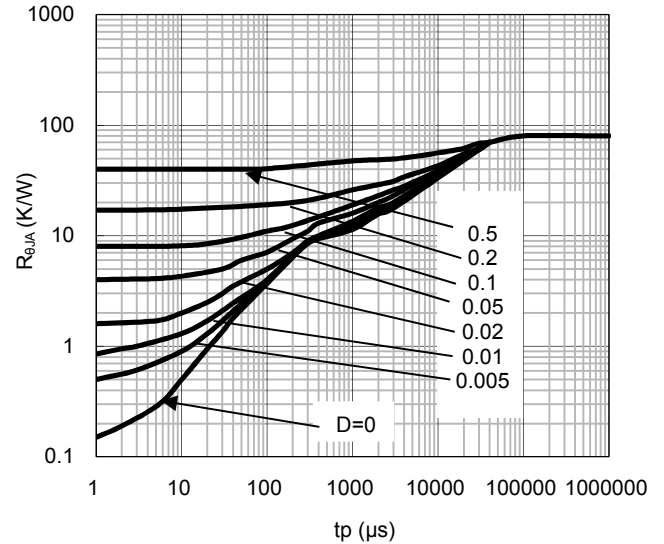


Fig.3 Permissible Pulse Load

$P_{totmax} / P_{totDC} = f(tp)$

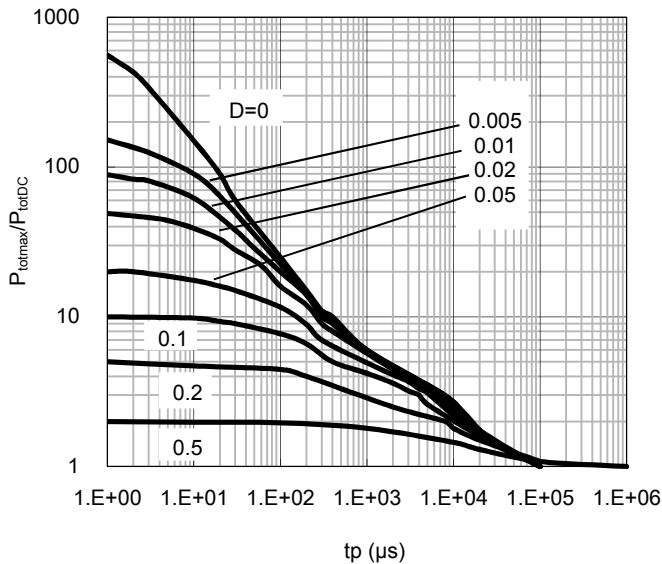
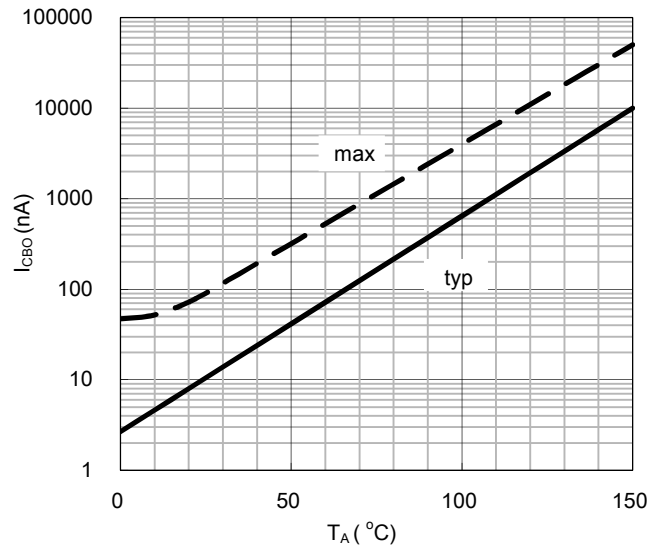


Fig.4 Collector Cutoff Current $I_{CBO} = f(T_A)$

$V_{CB} = 25\text{V}$



CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.5 DC Current Gain $h_{FE} = f(I_C)$

$V_{CE} = 1\text{V}$

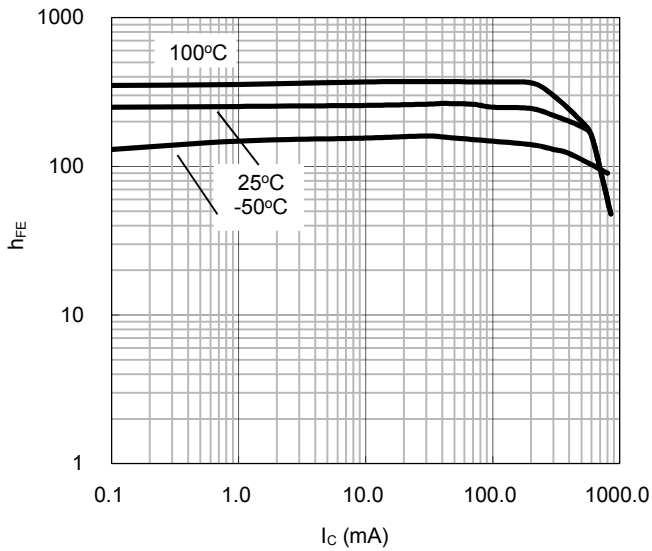


Fig.6 Transition Frequency $f_T = f(I_C)$

$V_{CE} = 5\text{V}$

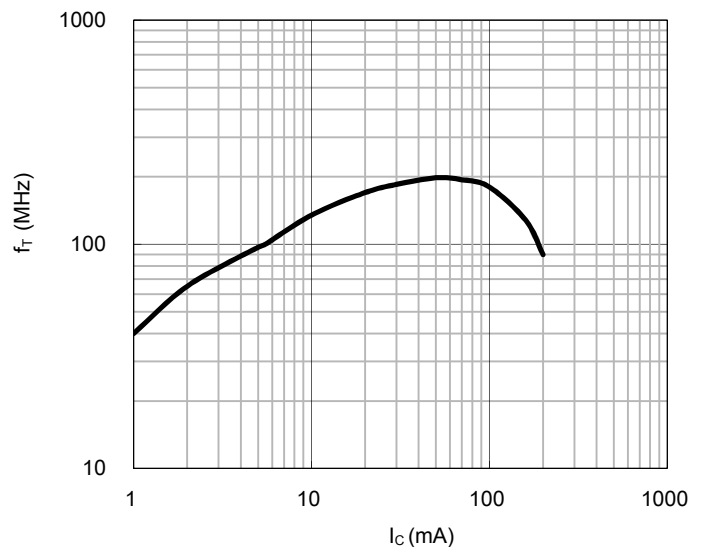


Fig.7 Base-Emitter Saturation Voltage

$I_C = f(V_{BEsat}), h_{FE} = 10$

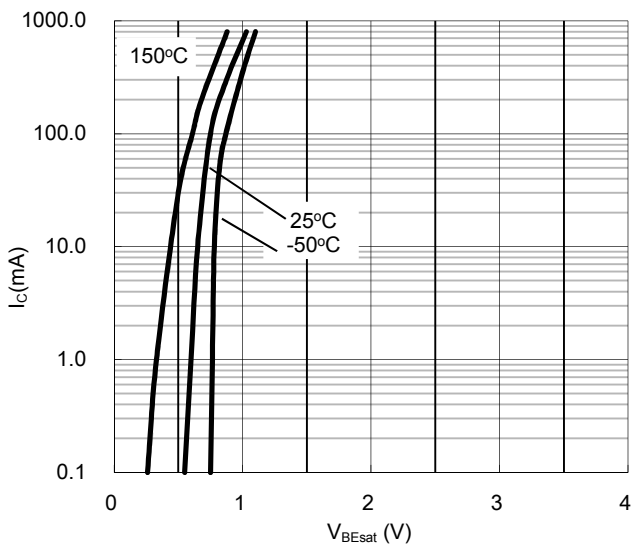
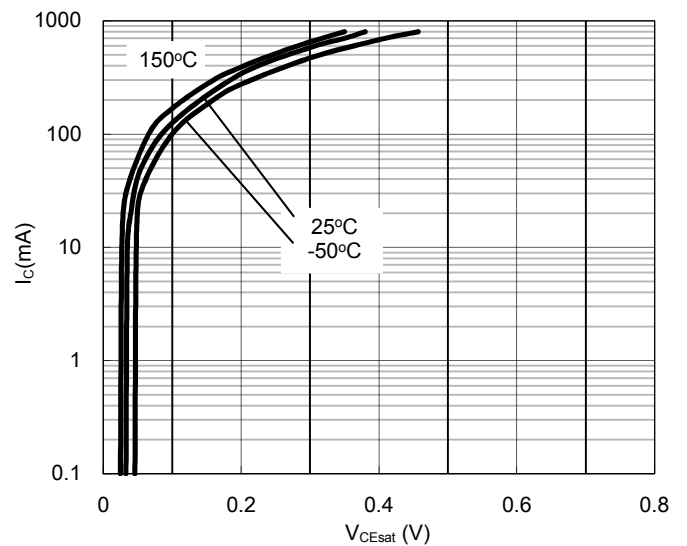


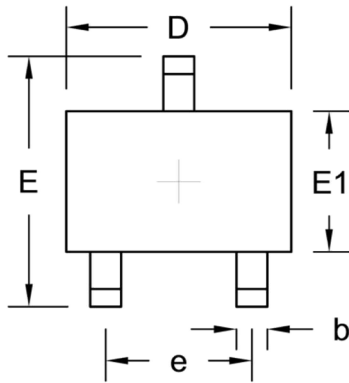
Fig.8 Collector-Emitter Saturation Voltage

$I_C = f(V_{CEsat}), h_{FE} = 10$

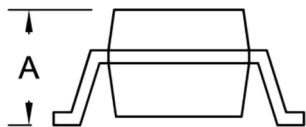


PACKAGE OUTLINE DIMENSION

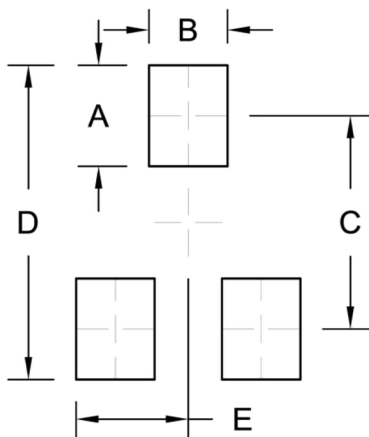
SOT-323



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	0.80	1.10	0.031	0.043
b	0.15	0.40	0.006	0.016
D	1.80	2.20	0.071	0.087
E	2.00	2.45	0.079	0.096
E1	1.15	1.35	0.045	0.053
e	1.20	1.40	0.047	0.055



SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	0.90	0.035
B	0.70	0.028
C	1.90	0.075
D	2.80	0.110
E	1.00	0.039

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