

300mW, NPN 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
- Compliant RoHS
- Halogen-free

APPLICATIONS

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

MECHANICAL DATA

- Case: SOT-23
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Weight: 8mg (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
V_{CB0}	50	V
V_{CE0}	45	V
V_{EB0}	5	V
I_C	500	mA
h_{FE}	250-600	



PACKAGE: SOT-23	PIN CONFIGURATION	CIRCUIT DIAGRAM

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)				
PARAMETER		SYMBOL	VALUE	UNIT
Power dissipation		P_D	300	mW
Collector-base voltage, emitter open	$I_C = 10\ \mu\text{A}, I_E = 0$	V_{CB0}	50	V
Collector-emitter voltage, base open	$I_C = 10\ \text{mA}, I_B = 0$	V_{CE0}	45	V
Emitter-base voltage, collector open	$I_E = 1\ \mu\text{A}, I_C = 0$	V_{EB0}	5	V
Collector current, dc		I_C	500	mA
Junction temperature		T_J	-55 to +150	$^\circ\text{C}$
Storage temperature		T_{STG}	-55 to +150	$^\circ\text{C}$

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	CONDITIONS		SYMBOL	MIN	TYP	MAX UNIT
Collector cutoff current, emitter open	$V_{CB} = 45\text{ V}, I_E = 0$		I_{CBO}	-	-	0.1 μA
Emitter cutoff current, collector open	$V_{EB} = 4\text{ V}, I_C = 0$		I_{EBO}	-	-	0.1 μA
DC current gain	$V_{CE} = 1\text{ V}, I_C = 100\text{ mA}$	BC817-16	h_{FE}	100	-	250
		BC817-25		160	-	400
		BC817-40		250	-	600
Collector-emitter saturation voltage	$I_C = 500\text{ mA}, I_B = 50\text{ mA}$		$V_{CE(sat)}$	-	-	0.7 V
Base-emitter saturation voltage	$I_C = 500\text{ mA}, I_B = 50\text{ mA}$		$V_{BE(sat)}$	-	-	1.2 V
Transition frequency	$V_{CE} = 5\text{ V}, I_C = 10\text{ mA}, f = 100\text{ MHz}$		f_T	100	-	- MHz

ORDERING INFORMATION			
ORDERING CODE	PACKAGE	PACKING	DEVICE MARKING
BC817-16 RFG	SOT-23	3K / 7" Reel	6A
BC817-25 RFG	SOT-23	3K / 7" Reel	6B
BC817-40 RFG	SOT-23	3K / 7" Reel	6C

CHARACTERISTICS CURVES

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

Fig.1 Typical Pulsed Current Gain VS. Collector Current

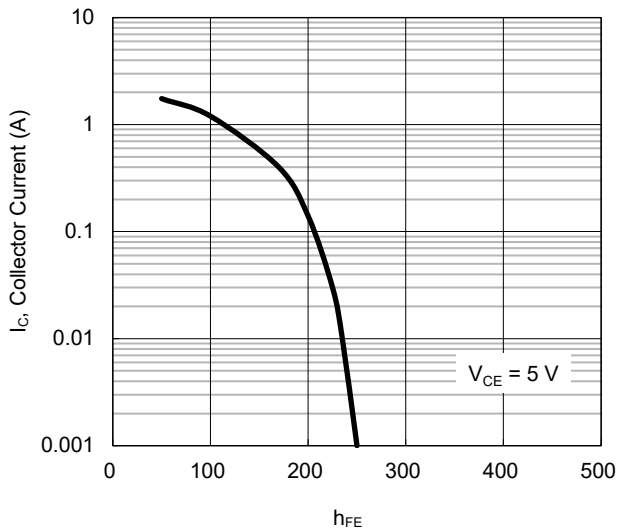


Fig. 2 Collector-Emitter Saturation Voltage VS. Collector Current

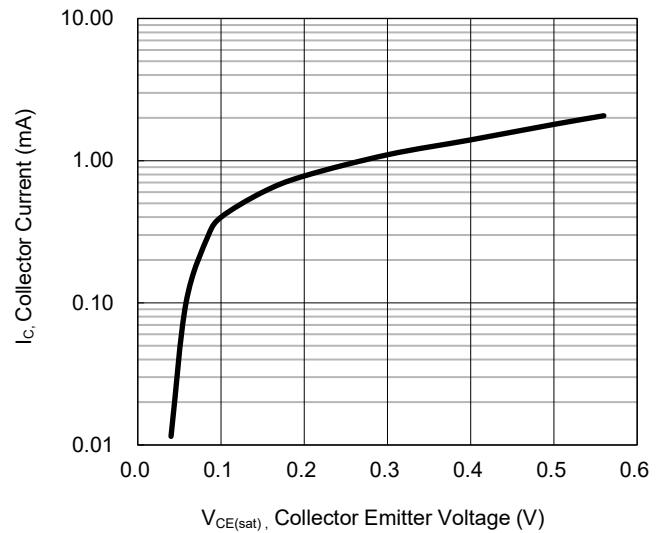


Fig.3 Base-Emitter Saturation Voltage VS. Collector Current

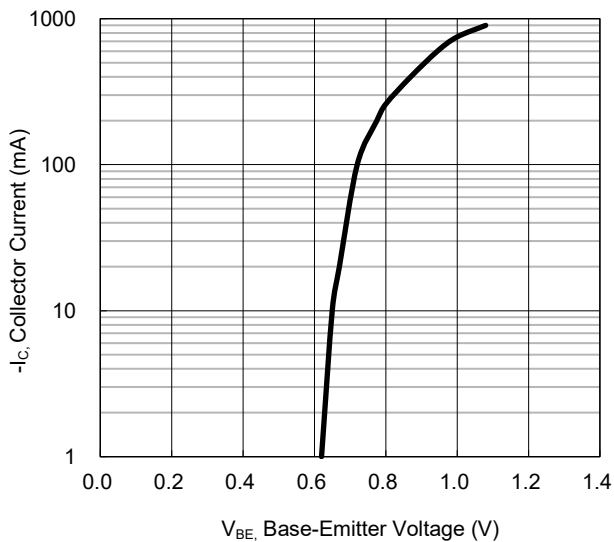
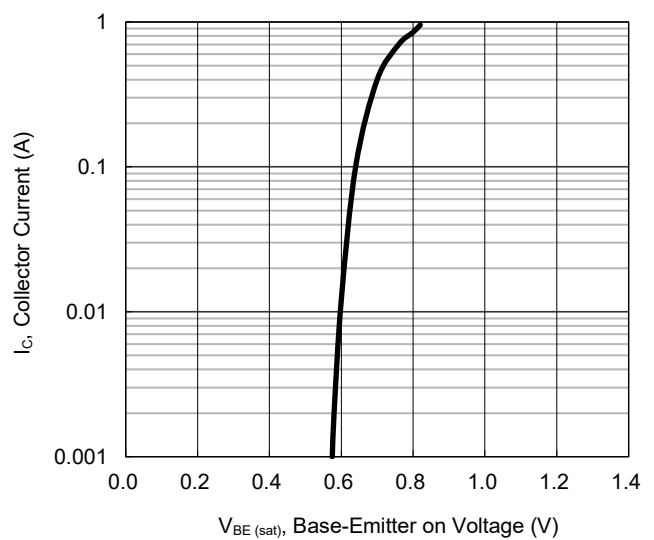


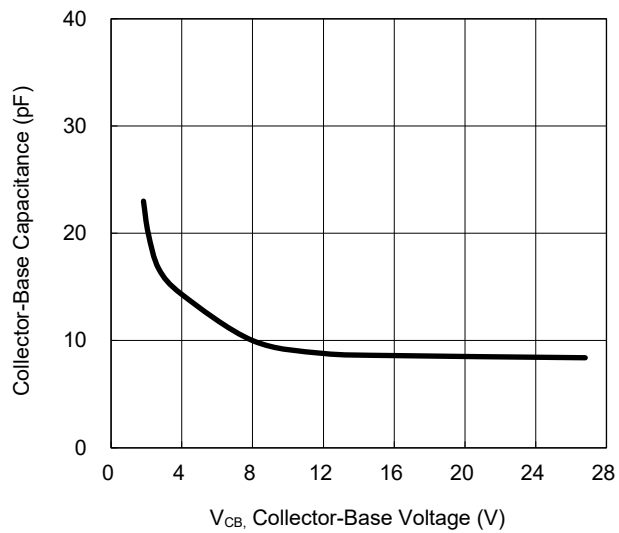
Fig.4 Base-Emitter On Voltage VS. Collector Current



CHARACTERISTICS CURVES

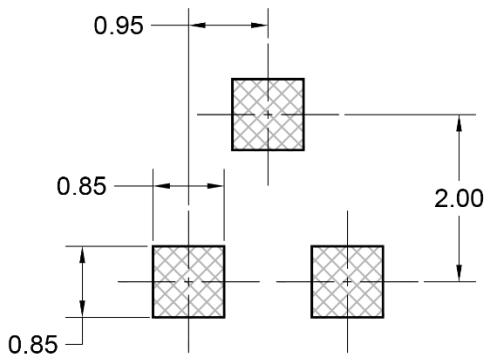
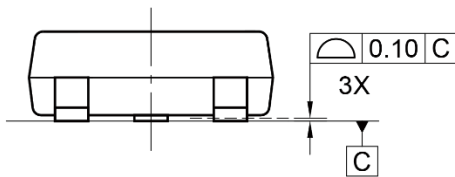
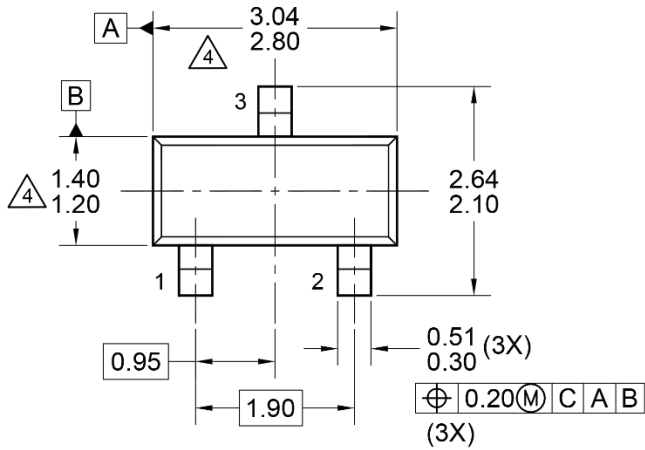
($T_A = 25^\circ\text{C}$ unless otherwise noted)

**Fig.5 Collector-Base Capacitance VS.
Collector-Base Voltage**

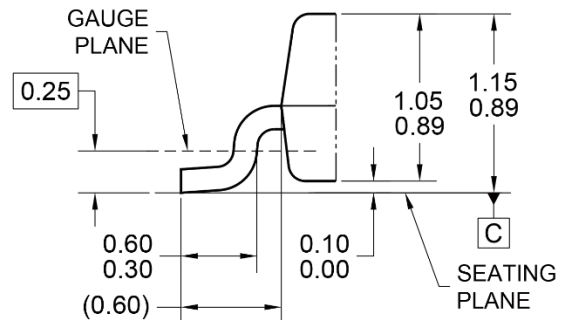
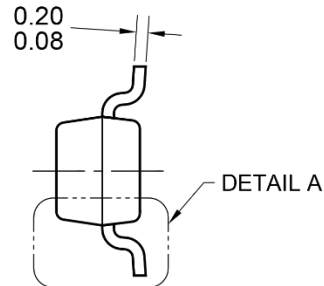


PACKAGE OUTLINE DIMENSIONS

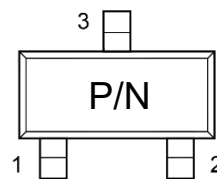
SOT-23



SUGGESTED PAD LAYOUT



DETAIL A, ROTATED -90°
(SCALE 2:1)



MARKING DIAGRAM

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
3. PACKAGE OUTLINE REFERENCE: JEDEC TO-236, ISSUE H, VARIATION AA.
4. MOLDED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
5. DWG NO. REF: HQ2SD07-SOT23JEDEC-104 REV B.

P/N = Device marking

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