300mW, NPN Small Signal Transistor

FEATURES

- AEC-Q101 qualified
- High current
- Low power loss, high efficiency
- Ideal for automated placement
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

KEY PARAMETERS

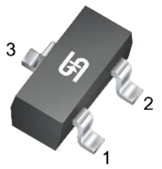
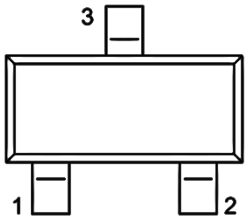
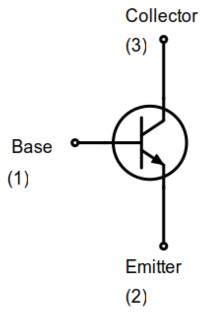
PARAMETER	VALUE	UNIT
V_{CBO}	50	V
V_{CEO}	45	V
V_{EBO}	5	V
I_C	500	mA
h_{FE}	400-600	
Configuration	Single die	

APPLICATIONS

- General switching and amplification

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 2 whisker test
- Weight: 8.00mg (approximately)

PACKAGE: SOT-23	PIN CONFIGURATION	CIRCUIT DIAGRAM
 	 	

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Power dissipation(1)	P_D	300	mW
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	500	mA
Junction temperature	T_J	-55 to +150	°C
Storage temperature	T_{STG}	-55 to +150	°C

Note:

1. Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint

THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-ambient thermal resistance(1)	$R_{\Theta JA}$	417	°C/W

Thermal Performance Note:

1. Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)

PARAMETER	CONDITIONS		SYMBOL	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$I_C = 10\mu A$, $I_E = 0A$		$V_{(BR)CBO}$	50	-	-	V
Collector-emitter breakdown voltage	$I_C = 10mA$, $I_B = 0A$		$V_{(BR)CEO}$	45	-	-	V
Emitter-base breakdown voltage	$I_E = 1\mu A$, $I_C = 0A$		$V_{(BR)EBO}$	5	-	-	V
Collector-base cut-off current	$V_{CB} = 45V$, $I_E = 0A$		I_{CBO}	-	-	0.1	µA
Emitter-base cut-off current	$V_{EB} = 4V$, $I_C = 0A$		I_{EBO}	-	-	0.1	µA
DC current gain	$V_{CE} = 1V$, $I_C = 100mA$	BC817-25H	h_{FE}	160	-	400	-
		BC817-40H		250	-	600	
	$V_{CE} = 1V$, $I_C = 500mA$			40	-	-	
Collector-emitter saturation voltage	$I_C = 500mA$, $I_B = 50mA$		$V_{CE(sat)}$	-	-	0.7	V
Base-emitter saturation voltage	$I_C = 500mA$, $I_B = 50mA$		$V_{BE(sat)}$	-	-	1.2	V
Base-emitter voltage	$V_{CE} = 1V$, $I_C = 500mA$		V_{BE}	-	-	1.2	V
Transition frequency	$V_{CE} = 5V$, $I_C = 10mA$, f = 100MHz		f_T	100	-	-	MHz
Output capacitance	$V_{CB} = 10V$, $I_E = 0A$, f = 1MHz		C_{obo}	-	5	-	pF

ORDERING AND MARKING INFORMATION

ORDERING CODE	PACKAGE	PACKING	DEVICE MARKING
BC817-25H RFG	SOT-23	3,000 / 7" Tape & Reel	6B
BC817-40H RFG	SOT-23	3,000 / 7" Tape & Reel	6C

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Power Dissipation Curve

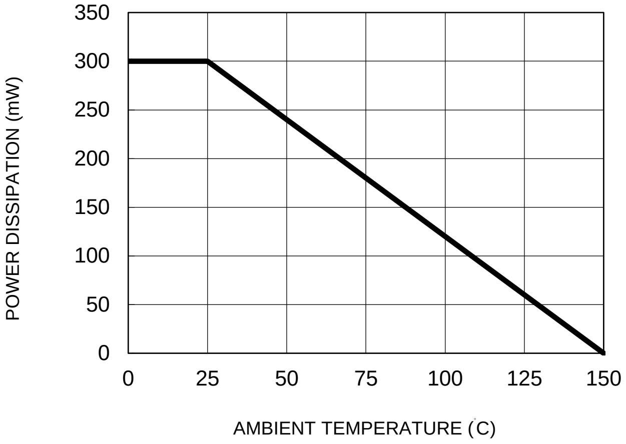


Fig.2 Typical Capacitance Characteristics

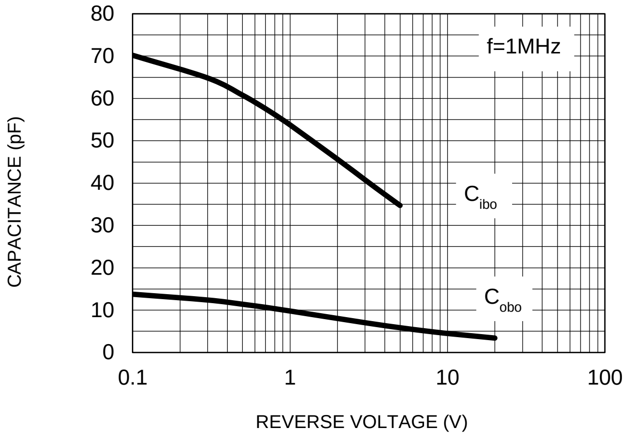


Fig.3 DC Current Gain vs. Collector Current

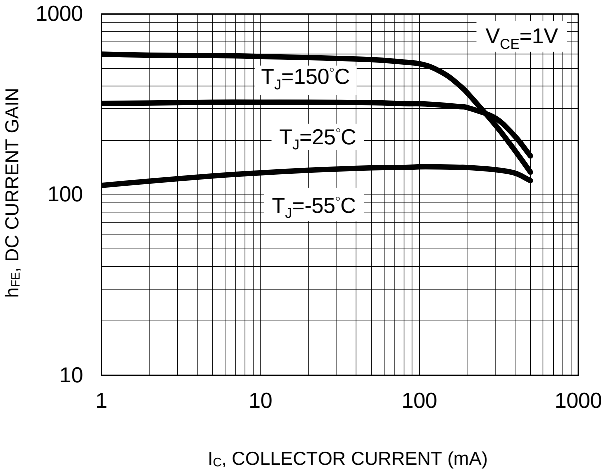


Fig.4 Collector-Emitter Saturation Voltage vs. Collector Current

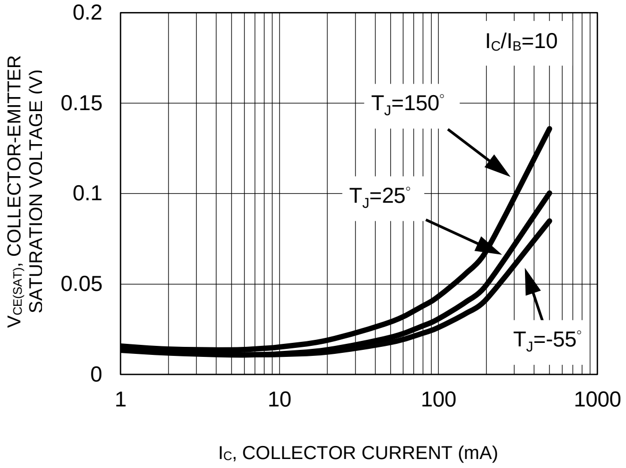


Fig.5 Base-Emitter Saturation Voltage vs. Collector Current

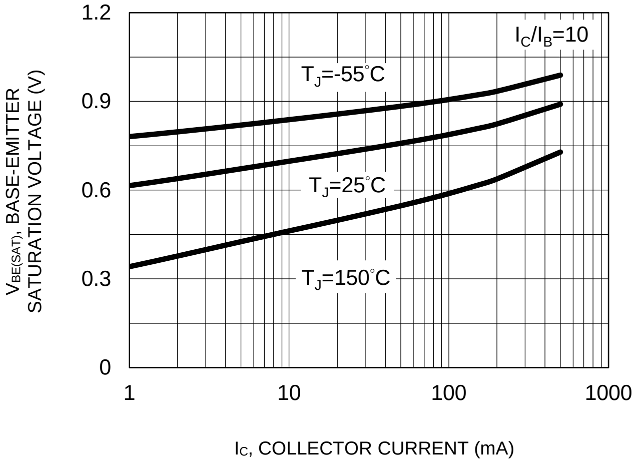
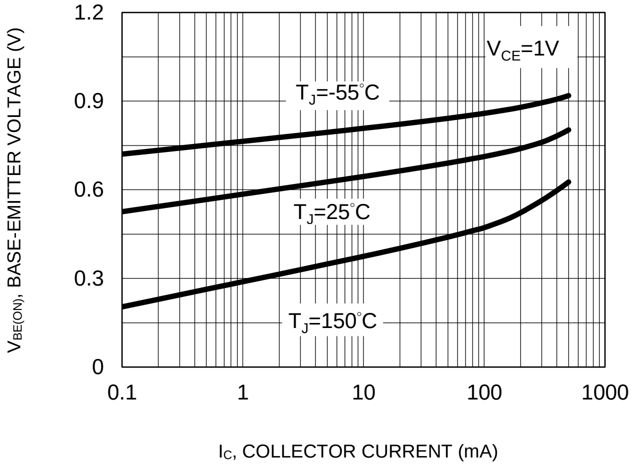
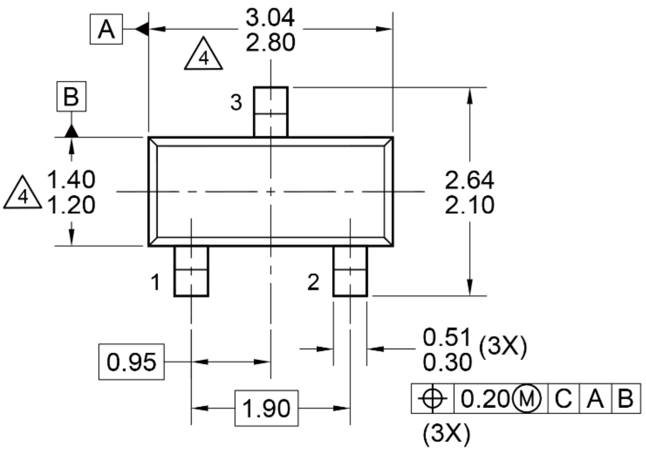


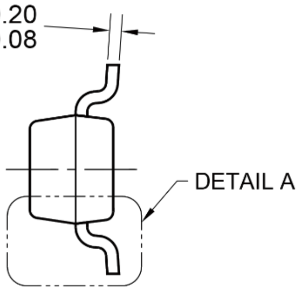
Fig.6 Base-Emitter Voltage vs. Collector Current

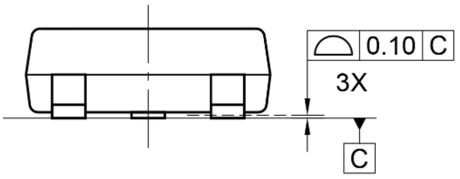


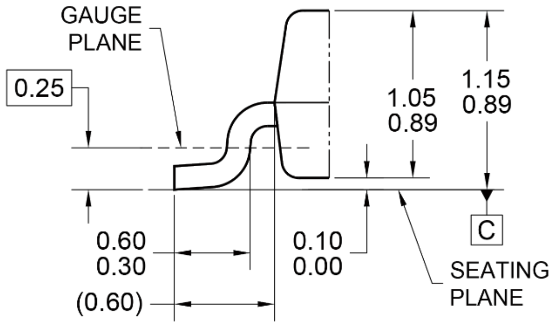
PACKAGE OUTLINE DIMENSIONS

SOT-23

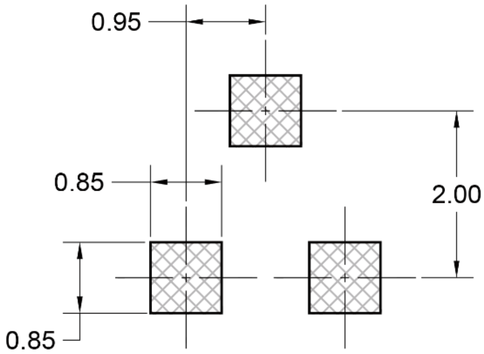




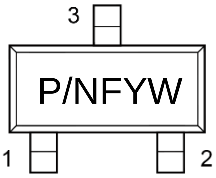




DETAIL A, ROTATED -90°
(SCALE 2:1)



SUGGESTED PAD LAYOUT



MARKING DIAGRAM

P/N = Device marking
F = Factory code
Y = Year code
W = Bi-Week code (A~Z)

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.

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