

200mW, NPN Small Signal Transistor

FEATURES

- AEC-Q101 qualified
- General-purpose transistors
- Ideal for automated placement
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

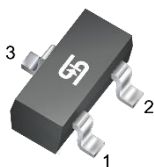
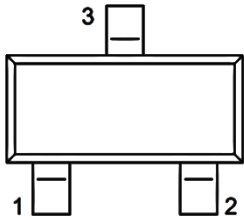
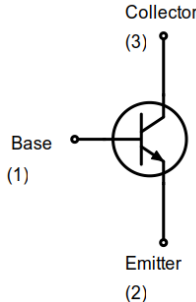
APPLICATIONS

- 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	200	mW
Collector-base voltage	BC846BH	V _{CBO}	80	V
	BC847BH, BC847CH		50	
Collector-emitter voltage	BC846BH	V _{CEO}	65	V
	BC847BH, BC847CH		45	
Emitter-base voltage		V _{EBO}	6	V
Collector current		I _C	100	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⁾	$R_{\theta JA}$	625	°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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS		SYMBOL	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$I_C = 10\mu\text{A}$, $I_E = 0\text{A}$	BC846BH	$V_{(BR)CBO}$	80	-	-	V
		BC847BH, BC847CH		50	-	-	
Collector-emitter breakdown voltage	$I_C = 10\text{mA}$, $I_B = 0\text{A}$	BC846BH	$V_{(BR)CEO}$	65	-	-	V
		BC847BH, BC847CH		45	-	-	
Emitter-base breakdown voltage	$I_E = 10\mu\text{A}$, $I_C = 0\text{A}$		$V_{(BR)EBO}$	6	-	-	V
Collector-base cut-off current	$V_{CB} = 70\text{V}$, $I_E = 0\text{A}$	BC846BH	I_{CBO}	-	-	0.1	μA
	$V_{CB} = 50\text{V}$, $I_E = 0\text{A}$	BC847BH, BC847CH					
Emitter-base cut-off current	$V_{EB} = 5\text{V}$, $I_C = 0\text{A}$		I_{EBO}	-	-	0.1	μA
DC current gain	$V_{CE} = 5\text{V}$, $I_C = 2\text{mA}$	BC846BH, BC847BH	h_{FE}	200	-	450	-
		BC847CH		420	-	800	
Collector-emitter saturation voltage	$I_C = 100\text{mA}$, $I_B = 5\text{mA}$		$V_{CE(sat)}$	-	-	0.5	V
Base-emitter saturation voltage	$I_C = 100\text{mA}$, $I_B = 5\text{mA}$		$V_{BE(sat)}$	-	-	1.1	V
Base-emitter voltage	$V_{CE} = 5\text{V}$, $I_C = 2\text{mA}$		V_{BE}	580	660	700	mV
	$V_{CE} = 5\text{V}$, $I_C = 10\text{mA}$			-	-	770	
Transition frequency	$V_{CE} = 5\text{V}$, $I_C = 10\text{mA}$, $f = 100\text{MHz}$		f_T	100	-	-	MHz
Output capacitance	$V_{CB} = 10\text{V}$, $I_E = 0\text{A}$, $f = 1\text{MHz}$		C_{obo}	-	-	4.5	pF

ORDERING AND MARKING INFORMATION

ORDERING CODE	PACKAGE	PACKING	DEVICE MARKING
BC846BH RFG	SOT-23	3,000 / 7" Tape & Reel	<u>1</u> B
BC847BH RFG	SOT-23	3,000 / 7" Tape & Reel	<u>1</u> F
BC847CH RFG	SOT-23	3,000 / 7" Tape & Reel	<u>1</u> G

CHARACTERISTICS CURVES

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

Fig.1 Power Dissipation Curve

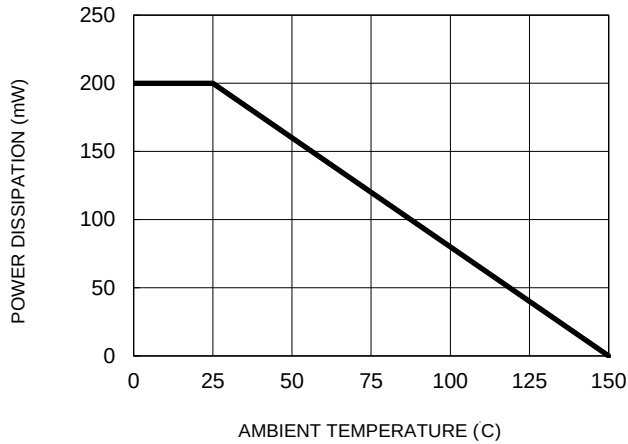


Fig.2 Typical Capacitance Characteristics

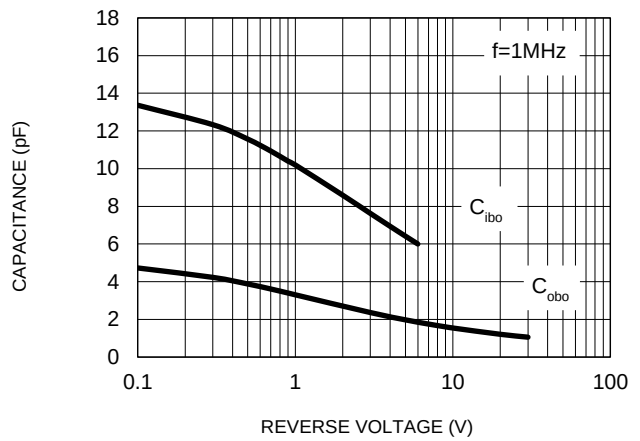


Fig.3 DC Current Gain vs. Collector Current

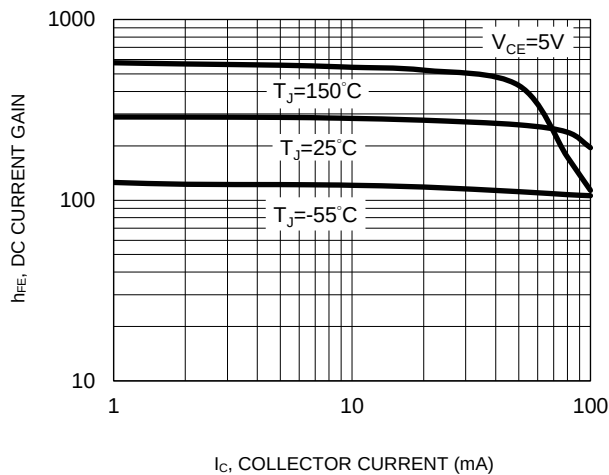


Fig.4 Collector-Emitter Saturation Voltage vs. Collector Current

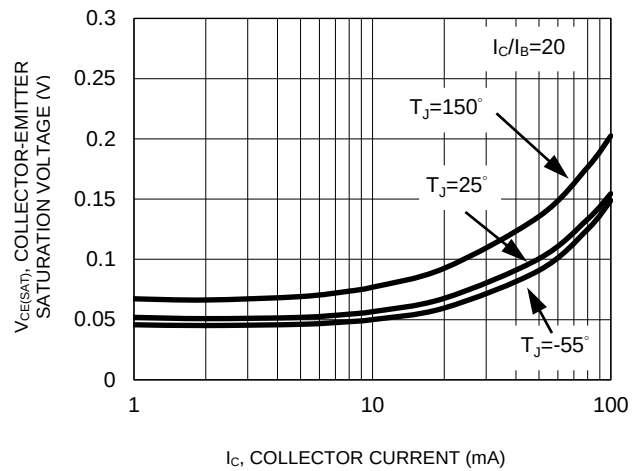


Fig.5 Base-Emitter Saturation Voltage vs. Collector Current

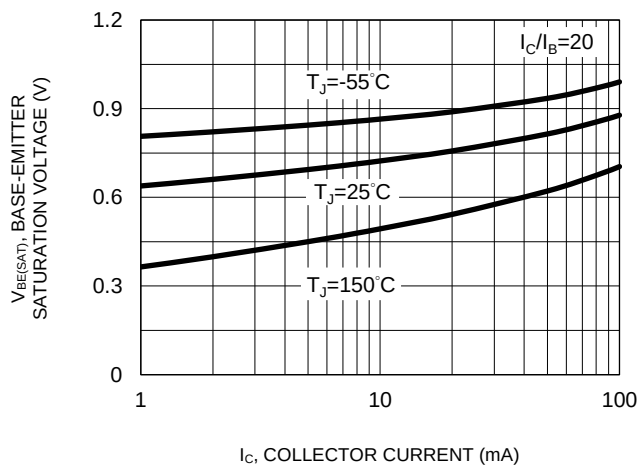
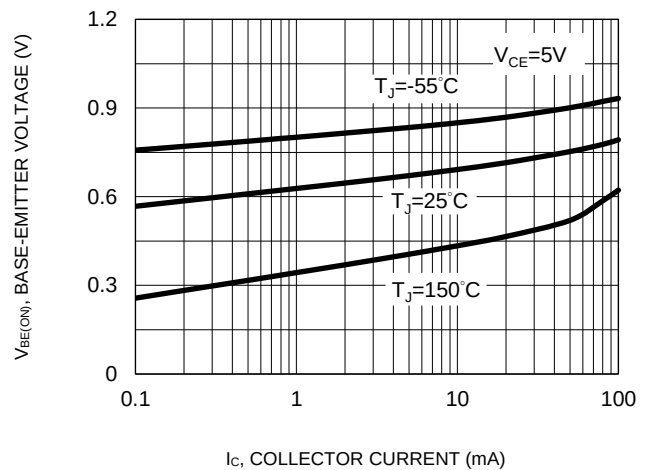
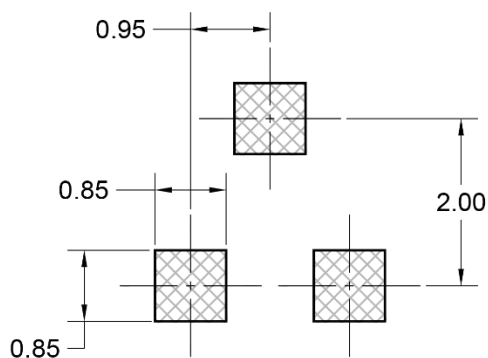
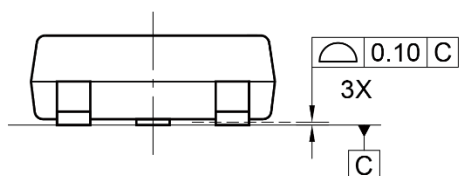
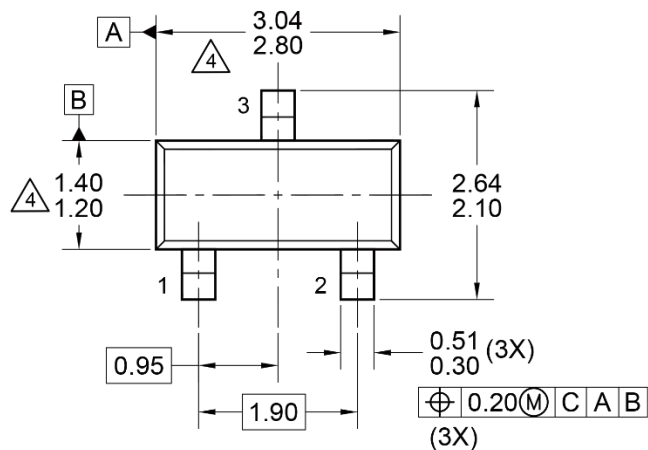


Fig.6 Base-Emitter Voltage vs. Collector Current

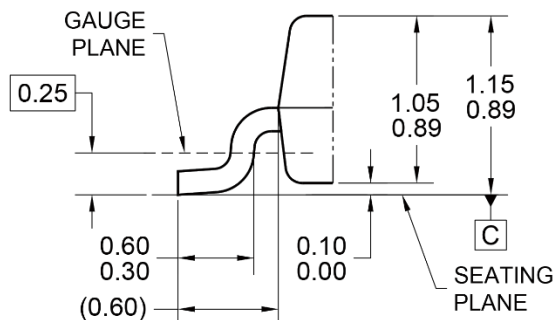
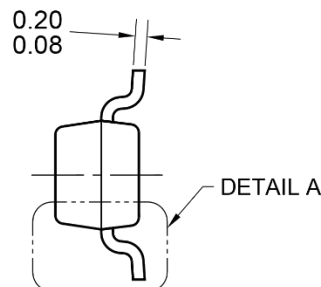


PACKAGE OUTLINE DIMENSIONS

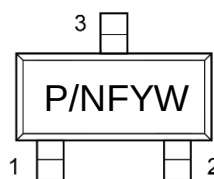
SOT-23



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
F = Factory code
Y = Year code
W = Bi-Week code (A~Z)

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