

## 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


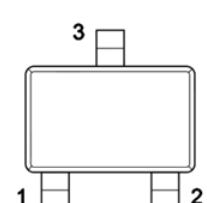
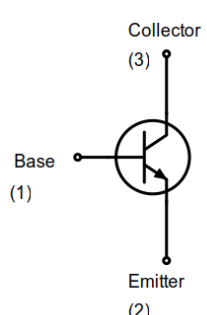
### APPLICATIONS

- General switching and amplification

### MECHANICAL DATA

- Case: SOT-323
- 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: 5.00mg (approximately)



PACKAGE: SOT-323	PIN CONFIGURATION	CIRCUIT DIAGRAM
		

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise noted)

PARAMETER		SYMBOL	VALUE	UNIT
Power dissipation <sup>(1)</sup>		P <sub>D</sub>	200	mW
Collector-base voltage	BC846BWH	V <sub>CBO</sub>	80	V
	BC847BWH, BC847CWH		50	
Collector-emitter voltage	BC846BWH	V <sub>CEO</sub>	65	V
	BC847BWH, BC847CWH		45	
Emitter-base voltage		V <sub>EBO</sub>	6	V
Collector current		I <sub>C</sub>	100	mA
Junction temperature		T <sub>J</sub>	-55 to +150	°C
Storage temperature		T <sub>STG</sub>	-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 <sup>(1)</sup>	$R_{\theta JA}$	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	$I_C = 10\mu A, I_E = 0A$	BC846BWH	$V_{(BR)CBO}$	80	-	-	V
		BC847BWH, BC847CWH		50	-	-	
Collector-emitter breakdown voltage	$I_C = 10mA, I_B = 0A$	BC846BWH	$V_{(BR)CEO}$	65	-	-	V
		BC847BWH, BC847CWH		45	-	-	
Emitter-base breakdown voltage	$I_E = 1\mu A, I_C = 0A$		$V_{(BR)EBO}$	6	-	-	V
Collector-base cut-off current	$V_{CB} = 30V, I_E = 0A$		$I_{CBO}$	-	-	15	nA
Emitter-base cut-off current	$V_{EB} = 5V, I_C = 0A$		$I_{EBO}$	-	-	0.1	$\mu A$
DC current gain	$V_{CE} = 5V, I_C = 2mA$	BC846BWH, BC847BWH	$h_{FE}$	200	-	450	-
		BC847CWH		420	-	800	
Collector-emitter saturation voltage	$I_C = 10mA, I_B = 0.5mA$		$V_{CE(sat)}$	-	-	0.25	V
	$I_C = 100mA, I_B = 5mA$			-	-	0.60	
Base-emitter saturation voltage	$I_C = 10mA, I_B = 0.5mA$		$V_{BE(sat)}$	-	0.7	-	V
	$I_C = 100mA, I_B = 5mA$			-	0.9	-	
Base-emitter voltage	$V_{CE} = 5V, I_C = 2mA$		$V_{BE}$	580	660	700	mV
	$V_{CE} = 5V, I_C = 10mA$			-	-	770	
Transition frequency	$V_{CE} = 5V, I_C = 10mA, f = 100MHz$		$f_T$	100	-	-	MHz
Output capacitance	$V_{CB} = 10V, I_E = 0A, f = 1MHz$		$C_{obo}$	-	-	4.5	pF

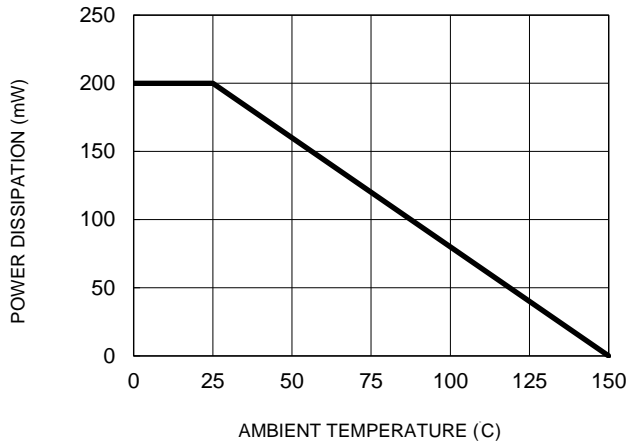
**ORDERING AND MARKING INFORMATION**

ORDERING CODE	PACKAGE	PACKING	DEVICE MARKING
BC846BWH RFG	SOT-323	3,000 / 7" Tape & Reel	<u>1</u> B
BC847BWH RFG	SOT-323	3,000 / 7" Tape & Reel	<u>1</u> F
BC847CWH RFG	SOT-323	3,000 / 7" Tape & Reel	<u>1</u> G

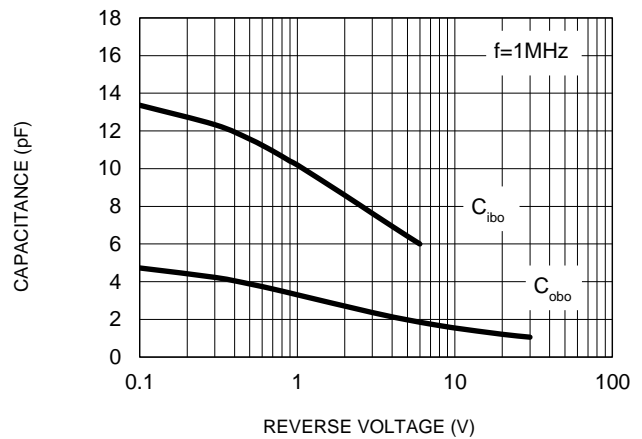
## CHARACTERISTICS CURVES

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

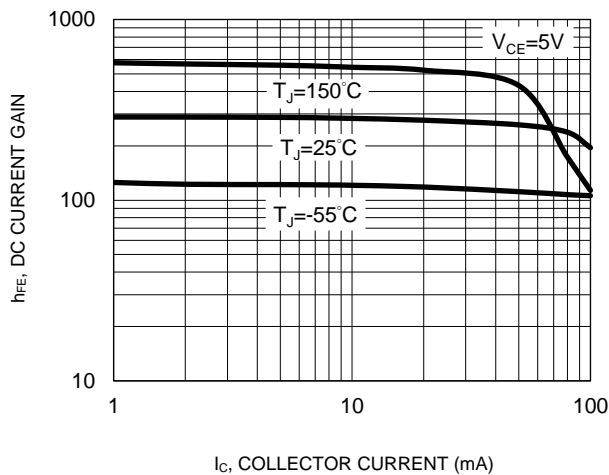
**Fig.1 Power Dissipation Curve**



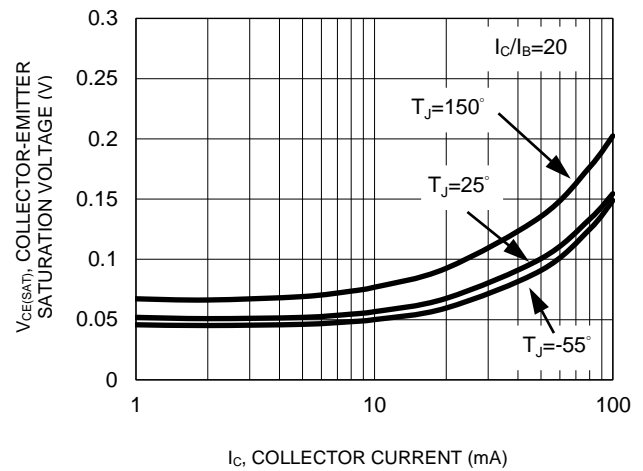
**Fig.2 Typical Capacitance Characteristics**



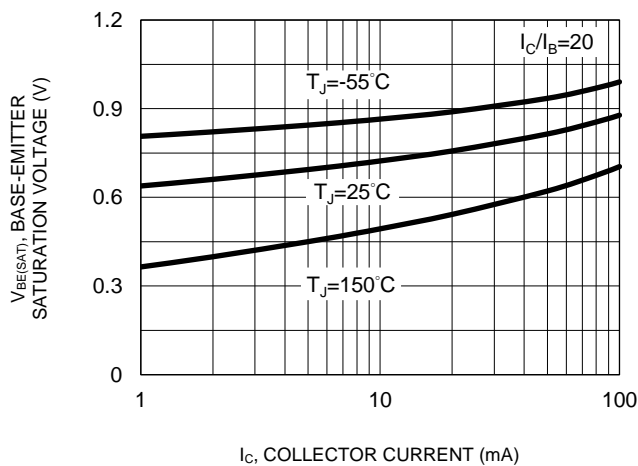
**Fig.3 DC Current Gain vs. Collector Current**



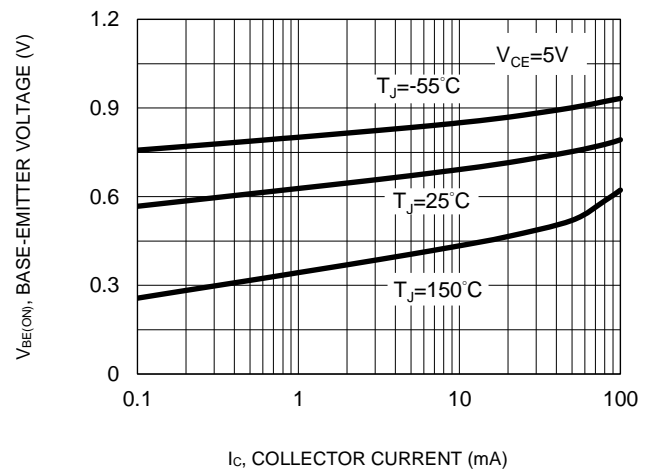
**Fig.4 Collector-Emitter Saturation Voltage vs. Collector Current**



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

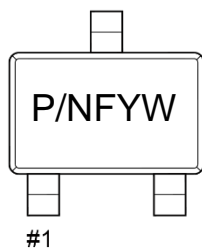
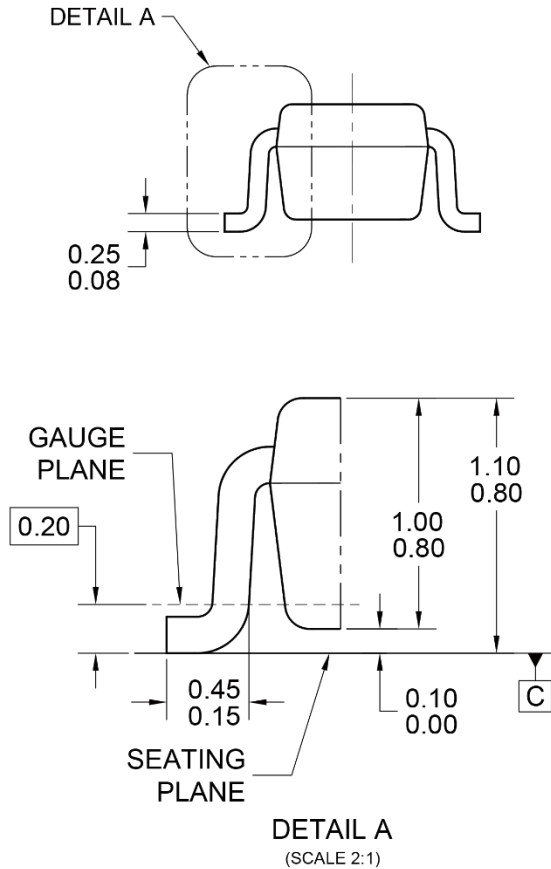
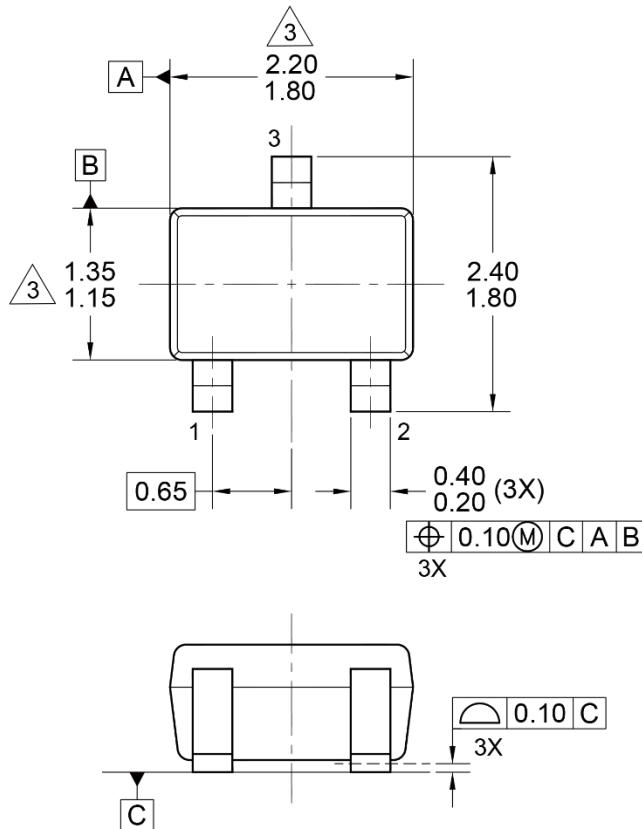


**Fig.6 Base-Emitter Voltage vs. Collector Current**



**PACKAGE OUTLINE DIMENSIONS**

**SOT-323**

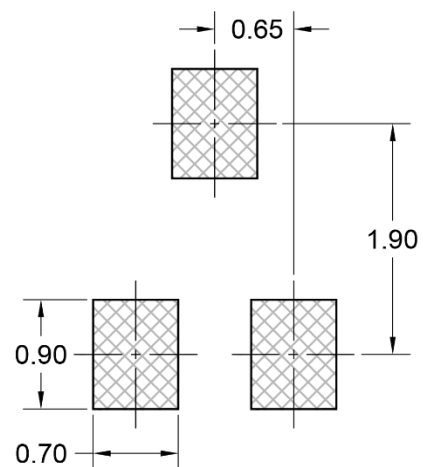


**MARKING DIAGRAM**

P/N = Device marking    Y = Year code  
F = Factory 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: JEITA ED-7500A, EIAJ SC-70.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
5. DWG NO. REF: HQ2SD07-SOT323-098 REV D.



**SUGGESTED PAD LAYOUT**

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