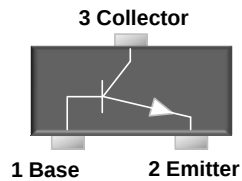


Small Signal Diode



Features

- ✧ Low reverse current high reliability
- ✧ Surface device type mounting
- ✧ Moisture sensitivity level 1
- ✧ Matte Tin(Sn) lead finish with Nickel(Ni) underplate
- ✧ Pb free version and RoHS compliant
- ✧ Green compound (Halogen free) with suffix "G" on packing code and prefix "G" on date code

Mechanical Data

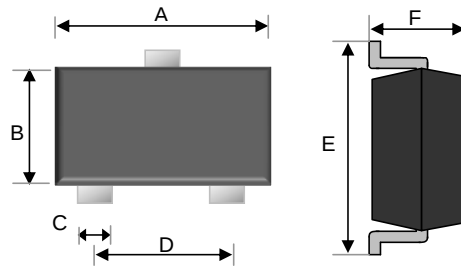
- ✧ Case : SOT-323 small outline plastic package
- ✧ Terminal: Matte tin plated, lead free., solderable per MIL-STD-202, Method 208 guaranteed
- ✧ High temperature soldering guaranteed: 260°C/10s
- ✧ Weight : 0.005gram (approximately)

Ordering Information

Package	Part No.	Packing
SOT-323	BC846AW RF/RFG	3K / 7" Reel
SOT-323	BC846BW RF/RFG	3K / 7" Reel
SOT-323	BC846CW RF/RFG	3K / 7" Reel
SOT-323	BC847AW RF/RFG	3K / 7" Reel
SOT-323	BC847BW RF/RFG	3K / 7" Reel
SOT-323	BC847CW RF/RFG	3K / 7" Reel
SOT-323	BC848AW RF/RFG	3K / 7" Reel
SOT-323	BC848BW RF/RFG	3K / 7" Reel
SOT-323	BC848CW RF/RFG	3K / 7" Reel
SOT-323	BC849AW RF/RFG	3K / 7" Reel
SOT-323	BC849BW RF/RFG	3K / 7" Reel
SOT-323	BC849CW RF/RFG	3K / 7" Reel
SOT-323	BC850AW RF/RFG	3K / 7" Reel
SOT-323	BC850BW RF/RFG	3K / 7" Reel
SOT-323	BC850CW RF/RFG	3K / 7" Reel

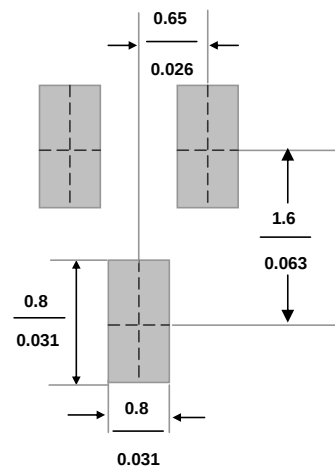
BC846AW/BW/CW-50AW/BW/CW NPN Transistor

SOT-323



Dimensions	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.90	2.10	0.075	0.083
B	1.15	1.35	0.045	0.053
C	0.25	0.35	0.010	0.014
D	1.20	1.40	0.047	0.055
E	2.00	2.20	0.079	0.087
F	0.80	1.00	0.031	0.039

Suggested PAD Layout



Small Signal Diode
Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Maximum Ratings

Type Number	Symbol	Value	Units
Power Dissipation	P_D	200	mW
Collector-Base Voltage BC846AW/BW/CW BC847AW/BW/CW BC848AW/BW/CW BC849AW/BW/CW BC850AW/BW/CW	V_{CBO}	80 50 30 30 50	V
Collector-Emitter Voltage BC846AW/BW/CW BC847AW/BW/CW BC848AW/BW/CW BC849AW/BW/CW BC850AW/BW/CW	V_{CEO}	65 45 30 30 45	V
Emitter-Base Voltage BC846AW/BW/CW BC847AW/BW/CW BC848AW/BW/CW BC849AW/BW/CW BC850AW/BW/CW	V_{EBO}	6 6 5 5 5	V
Collector Current	I_C	0.1	A
Peak Collector Current	I_{CM}	0.2	A
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to + 150	°C

Electrical Characteristics

Type Number	Symbol	Min	Max	Units
Collector-Base Breakdown Voltage at $I_C = 10 \mu A$ BC846AW/BW/CW BC847AW/BW/CW BC848AW/BW/CW BC849AW/BW/CW BC850AW/BW/CW	V_{CBO}	80 50 30 30 50	- - - - -	V
Collector-Emitter Breakdown Voltage at $I_C = 10 \text{ mA}$ BC846AW/BW/CW BC847AW/BW/CW BC848AW/BW/CW BC849AW/BW/CW BC850AW/BW/CW	V_{CEO}	65 45 30 30 45	- - - - -	V
Emitter-Base Breakdown Voltage at $I_E = 1 \mu A$ BC846AW/BW/CW BC847AW/BW/CW BC848AW/BW/CW BC849AW/BW/CW BC850AW/BW/CW	V_{EBO}	6 6 5 5 5	- - - - -	V
Collector Cut-off Current at $V_{CB} = 30 \text{ V}$	I_{CBO}	-	15	nA
Emitter Cut-off Current at $V_{EB} = 5 \text{ V}$	I_{EBO}	-	100	nA
DC Current Gain at $V_{CE} = 5 \text{ V}, I_C = 2 \text{ mA}$ BC846AW~BC850AW BC846BW~BC850BW BC846CW~BC850CW	h_{FE}	110 200 420	220 450 800	- - -
Collector-Emitter saturation voltage at $I_C = 10 \text{ mA}, I_B = 0.5 \text{ mA}$ $I_C = 100 \text{ mA}, I_B = 5 \text{ mA}$	$V_{CE(sat)}$	- -	0.25 0.6	V
Transition frequency $V_{CE} = 5 \text{ V}, I_C = 10 \text{ mA}, f = 100 \text{ MHz}$	f_T	100	-	MHz
Base Emitter Voltage at $V_{CE} = 5 \text{ V}, I_C = 2 \text{ mA}$ $V_{CE} = 5 \text{ V}, I_C = 10 \text{ mA}$	V_{BE}	0.58 -	0.7 0.77	V
Collector Output Capacitance at $V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$	C_{ob}	-	4.5	pF

Small Signal Diode

Rating and Characteristic Curves

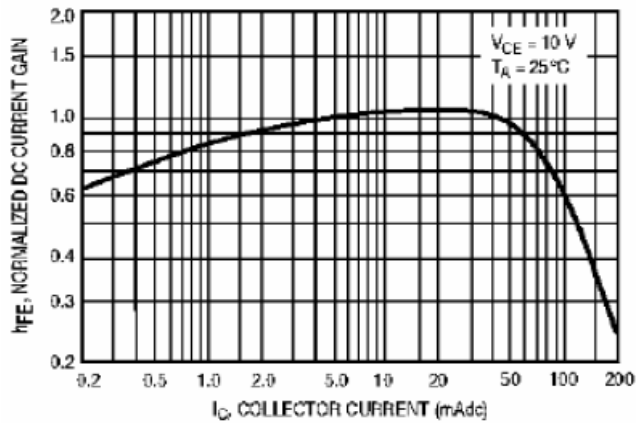


Figure 1. Normalized DC Current Gain

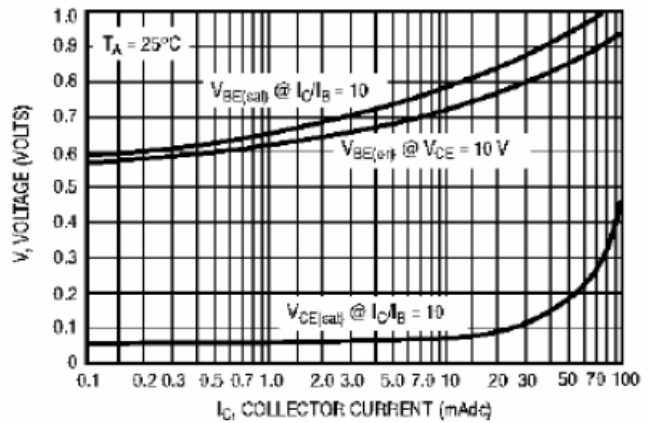


Figure 2. "Saturation" and "On" Voltages

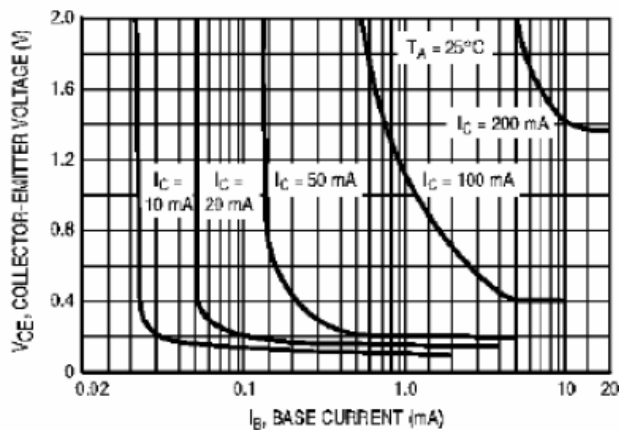


Figure 3. Collector Saturation Region

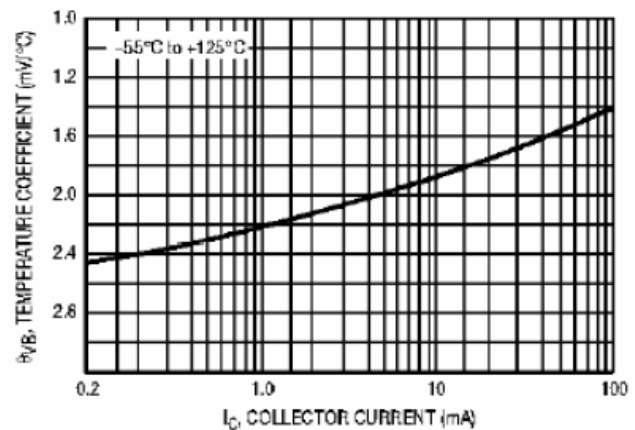


Figure 4. Base-Emitter Temperature Coefficient

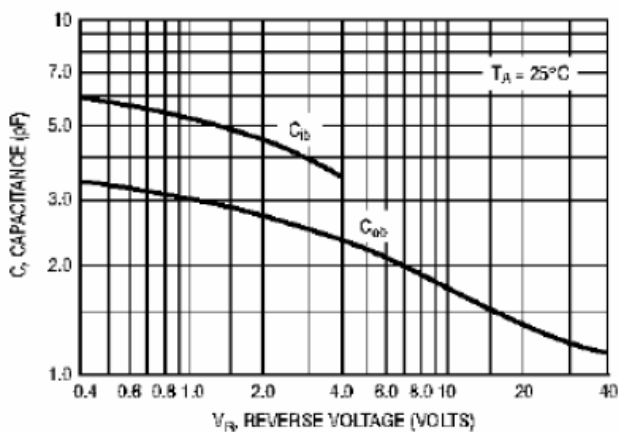


Figure 5. Capacitances

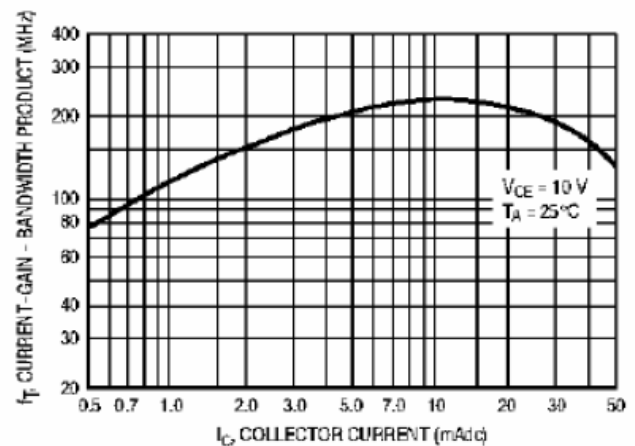


Figure 6. Current-Gain - Bandwidth Product

Small Signal Diode

Rating and Characteristic Curves

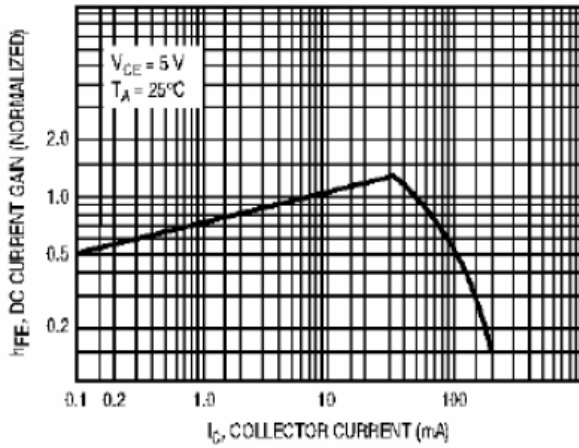


Figure 7. DC Current Gain

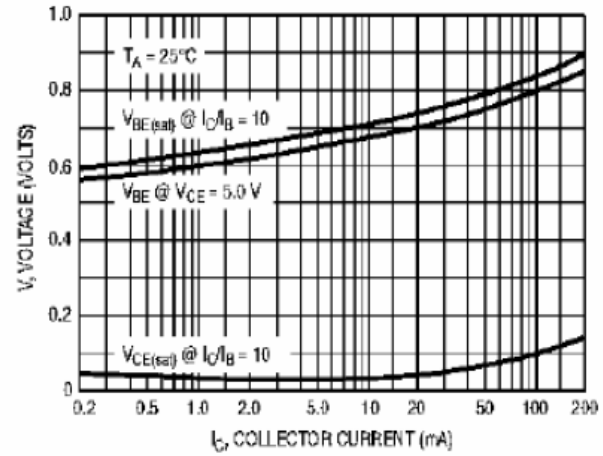


Figure 8. "On" Voltage

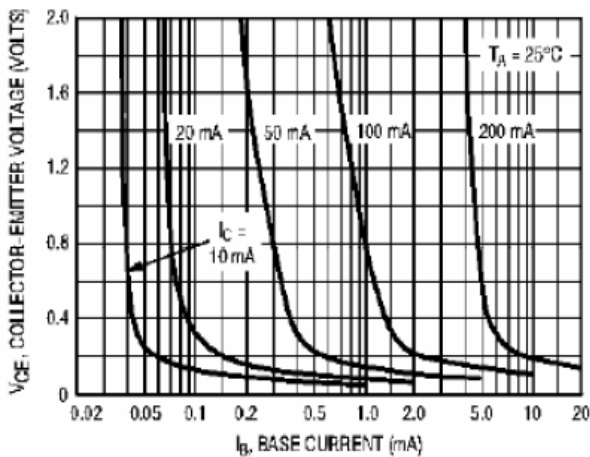


Figure 9. Collector Saturation Region

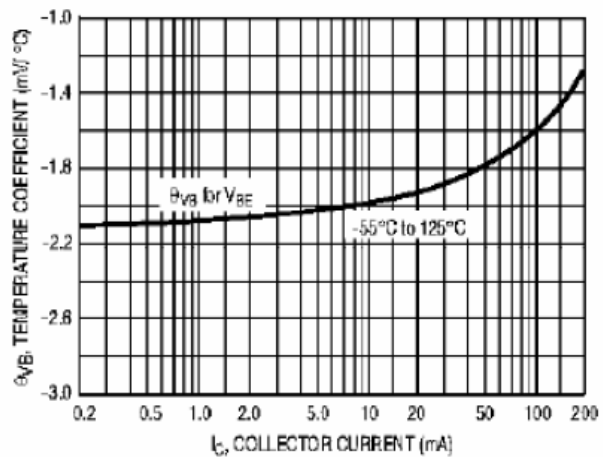


Figure 10. Base-Emitter Temperature Coefficient

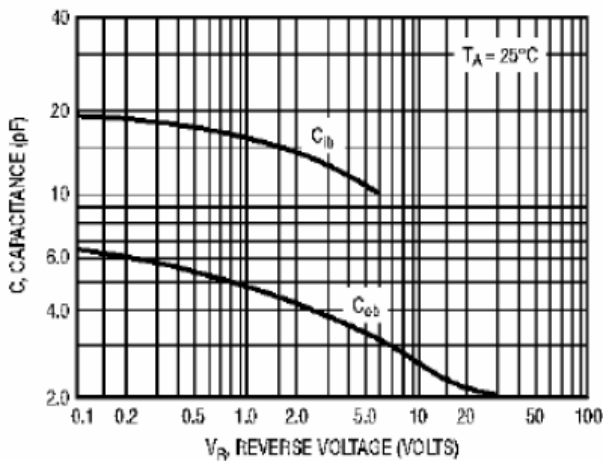


Figure 11. Capacitance

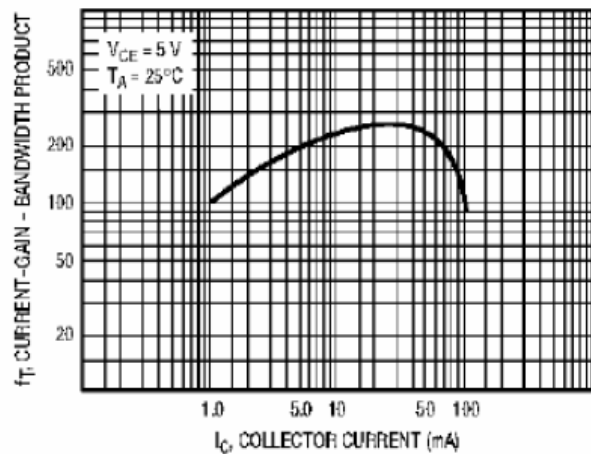
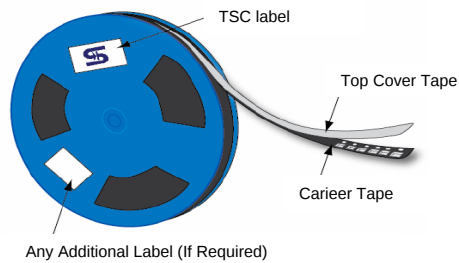
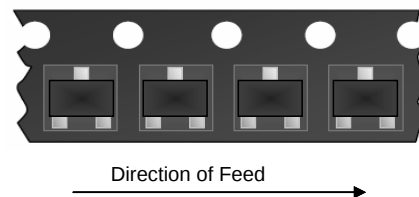
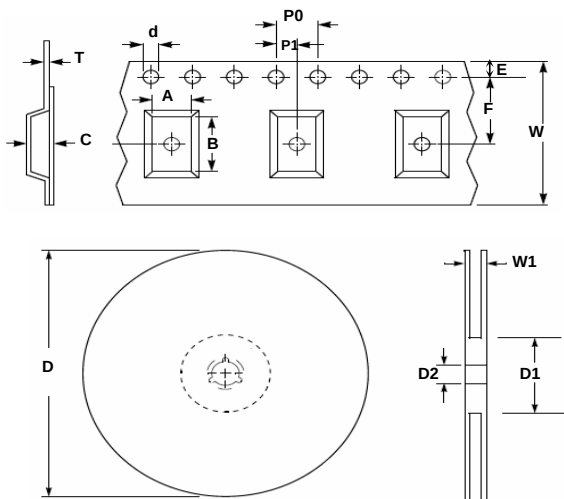


Figure 12. Current-Gain - Bandwidth Product

Small Signal Diode
Tape & Reel specification


Item	Symbol	Dimension(mm)
Carrier width	A	3.15 ± 0.10
Carrier length	B	2.77 ± 0.10
Carrier depth	C	1.22 ± 0.10
Sprocket hole	d	1.50 ± 0.10
Reel outside diameter	D	178 ± 1
Reel inner diameter	D1	55 Min
Feed hole width	D2	13.0 ± 0.20
Sprocket hole position	E	1.75 ± 0.10
Punch hole position	F	3.50 ± 0.05
Sprocket hole pitch	P0	4.00 ± 0.10
Embossment center	P1	2.00 ± 0.05
Overall tape thickness	T	0.229 ± 0.013
Tape width	W	8.10 ± 0.20
Reel width	W1	12.30 ± 0.20



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