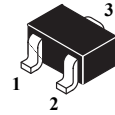
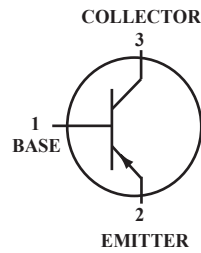


General Purpose Transistor

PNP Silicon

 Lead(Pb)-Free



SOT-323(SC-70)

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

Rating	Symbol	Value	Unit
Collector-Emitter Voltage BC856 BC857 BC858	V_{CEO}	-65 -45 -30	V
Collector-Base Voltage BC856 BC857 BC858	V_{CBO}	-80 -50 -30	V
Emitter-Base Voltage BC856 BC857 BC858	V_{EBO}	-5.0 -5.0 -5.0	V
Collector Current-Continuous	I_C	100	mA
Total Device Dissipation FR-5 Board ⁽¹⁾ $T_A=25^\circ\text{C}$	P_D	150	mW
Thermal Resistance, Junction to Ambient ⁽¹⁾	$R_{\theta JA}$	833	$^\circ\text{C}/\text{W}$
Junction Temperature Range	T_J	-55 to +150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

Device Marking

BC856AW=3A; BC856BW=3B; BC857AW=3E; BC857BW=3F; BC858AW=3J; BC858BW=3K; BC858CW=3L

1. FR-5 = 1.0 x 0.75 x 0.062 in.

Electrical Characteristics (T_A=25°C Unless Otherwise noted)

Characteristics	Symbol	Min	Typ	Max	Unit
Off Characteristics					
Collector-Emitter Breakdown Voltage I _C =-10mA	BC856 Series BC857 Series BC858 Series V _{(BR)CEO}	-65 -45 -30	- - -	- - -	V
Collector-Emitter Breakdown Voltage I _C =-10μA, V _{EB} =0	BC856 Series BC857 Series BC858 Series V _{(BR)CES}	-80 -50 -30	- - -	- - -	V
Collector-Base Breakdown Voltage I _C =-10μA	BC856 Series BC857 Series BC858 Series V _{(BR)CBO}	-80 -50 -30	- - -	- - -	V
Emitter-Base Breakdown Voltage I _E =-1.0μA	BC856 Series BC857 Series BC858 Series V _{(BR)EBO}	-5.0 -5.0 -5.0	- - -	- - -	V
Collector Cutoff Current V _{CB} =-30V V _{CB} =-30V, T _A =150°C	I _{CBO}	- -	- -	-15 -4.0	nA μA

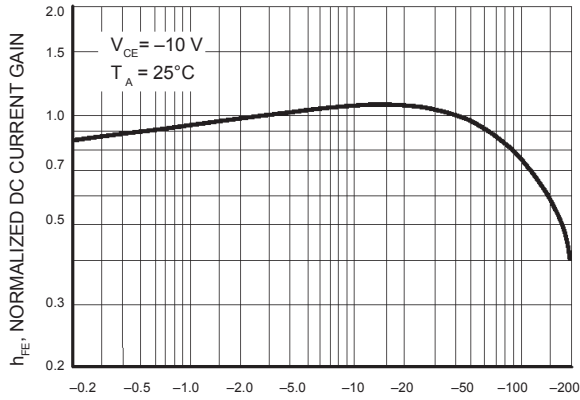
On Characteristics

DC Current Gain I _C =-10μA, V _{CE} =-5.0V I _C =-2.0mA, V _{CE} =-5.0V)	BC856A,BC857A,BC858A BC856B,BC857B,BC858B BC858C BC856A,BC857A,BC858A BC856B,BC857B,BC858B BC858C	h _{FE}	- - - 125 220 420	90 150 270 180 290 520	- - - 250 450 800	-
Collector-Emitter Saturation Voltage I _C =-10mA, I _B =-0.5mA I _C =-100mA, I _B =-5.0mA	V _{CE(sat)}	- -	- -	-0.3 -0.65	V	
Base-Emitter Saturation Voltage I _C =-10mA, I _B =-0.5mA I _C =-100mA, I _B =-5.0mA	V _{BE(sat)}	- -	-0.7 -0.9	- -	V	
Base-Emitter On Voltage I _C =-2.0mA, V _{CE} =-5.0V I _C =-10mA, V _{CE} =-5.0V	V _{BE(on)}	-0.6 -	- -	-0.75 -0.82	V	

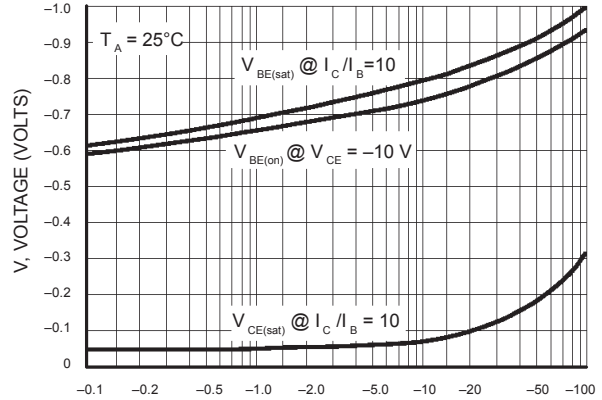
Small-signal Characteristics

Current-Gain-Band width Product I _C =-10mA, V _{CE} =-5.0V, f=100MHz	f _T	100	-	-	MHz
Output Capacitance V _{CB} =-10V, f=1.0MHz	C _{ob}	-	-	4.5	pF
Noise Figure I _C =-0.2mA, V _{CE} =-5.0V, R _s =2.0kΩ, f=1.0kHz, BW=200Hz	NF	-	-	10	dB

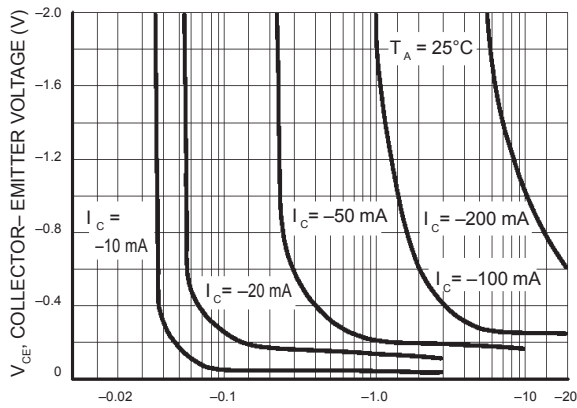
BC857 / BC858



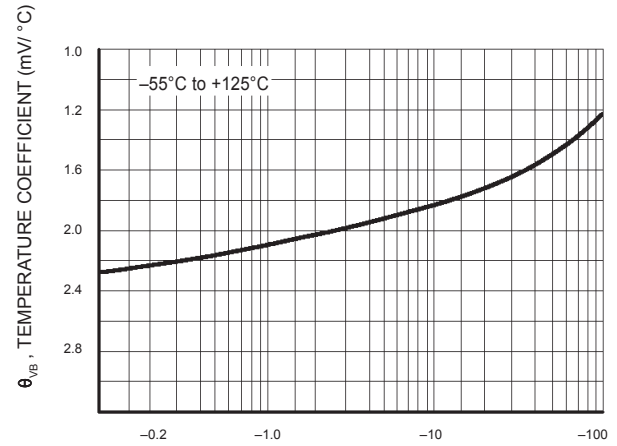
I_C , COLLECTOR CURRENT (mAdc)
Figure 1. Normalized DC Current Gain



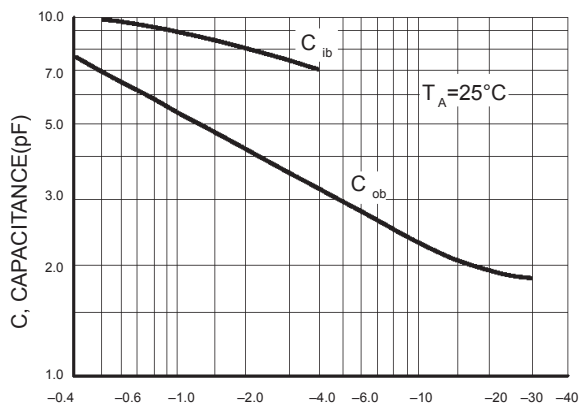
I_C , COLLECTOR CURRENT (mAdc)
Figure 2. "Saturation" and "On" Voltages



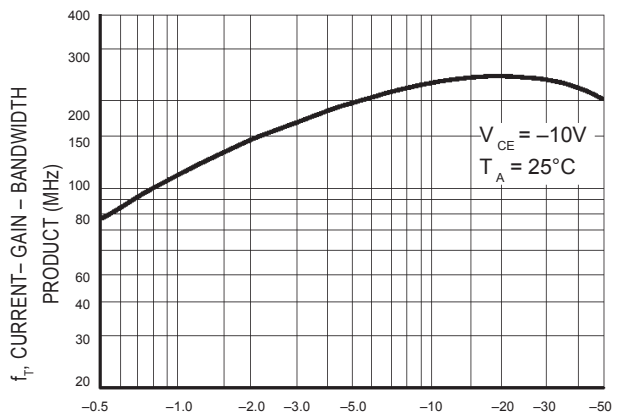
I_B , BASE CURRENT (mA)
Figure 3. Collector Saturation Region



I_C , COLLECTOR CURRENT (mA)
Figure 4. Base-Emitter Temperature Coefficient



V_R , REVERSE VOLTAGE (VOLTS)
Figure 5. Capacitances



I_C , COLLECTOR CURRENT (mAdc)
Figure 6. Current-Gain - Bandwidth Product

BC856

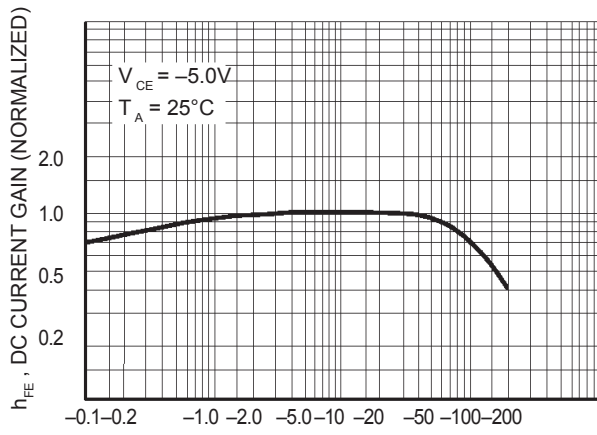


Figure 7. DC Current Gain

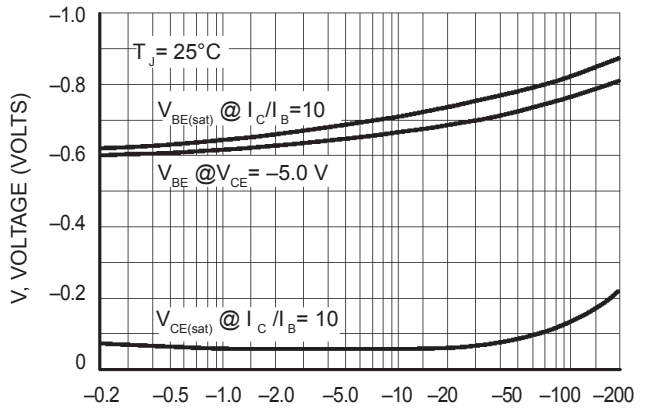


Figure 8. "On" Voltage

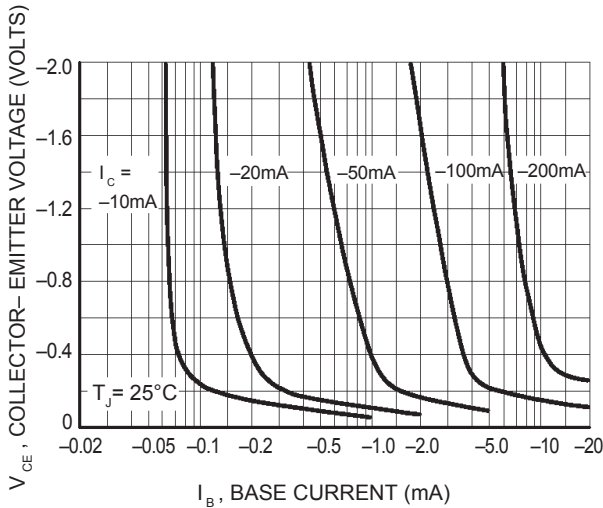


Figure 9. Collector Saturation Region

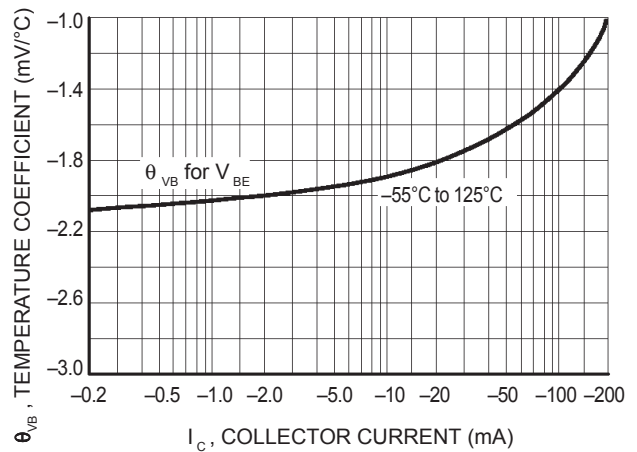


Figure 10. Base-Emitter Temperature Coefficient

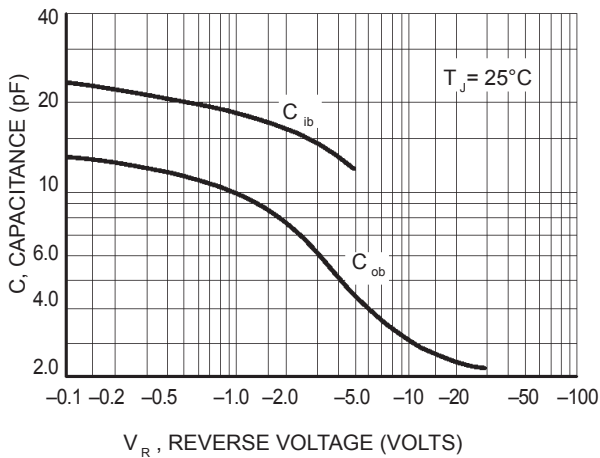


Figure 11. Capacitance

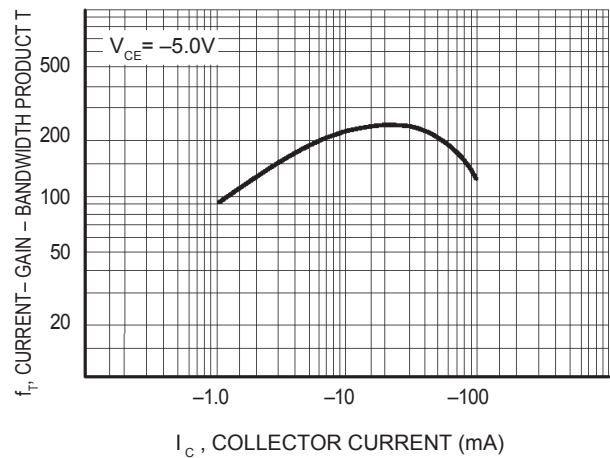


Figure 12. Current-Gain - Bandwidth Product

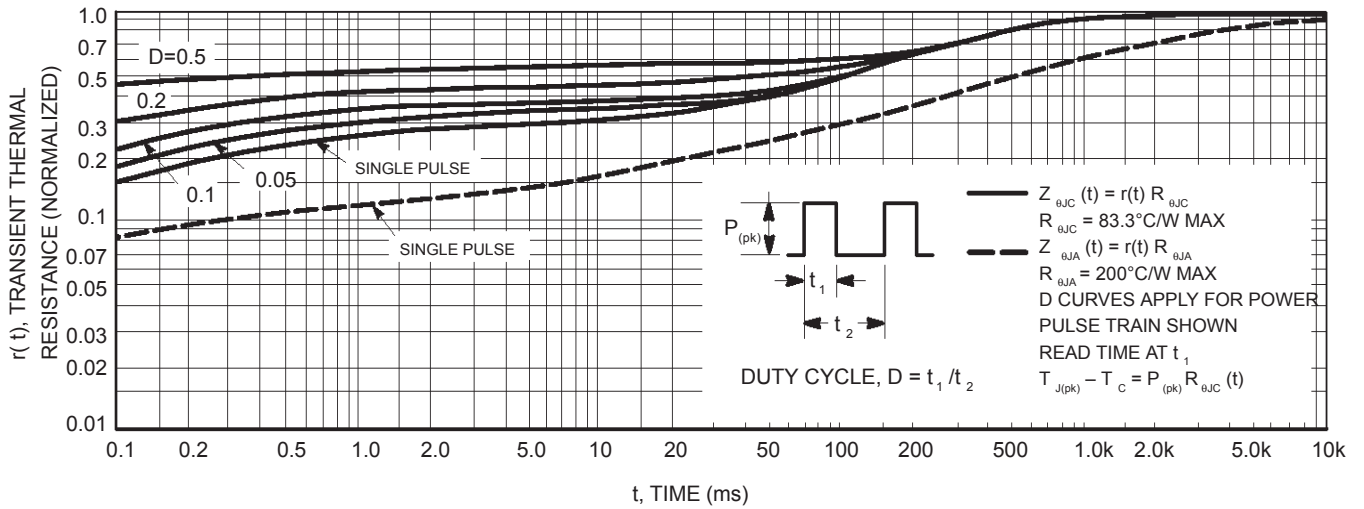


Figure 13. Thermal Response

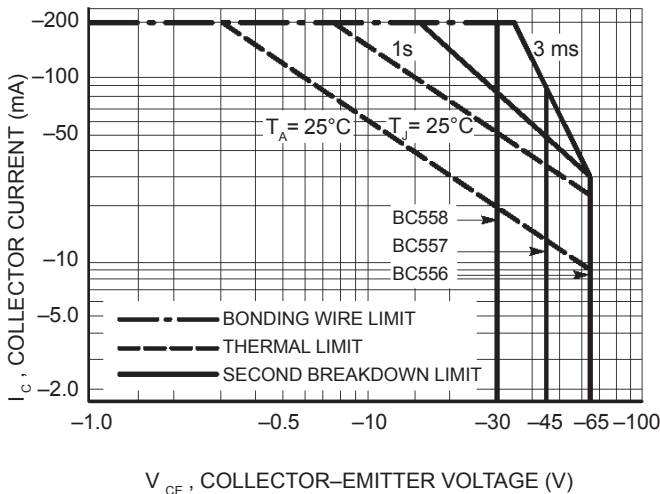


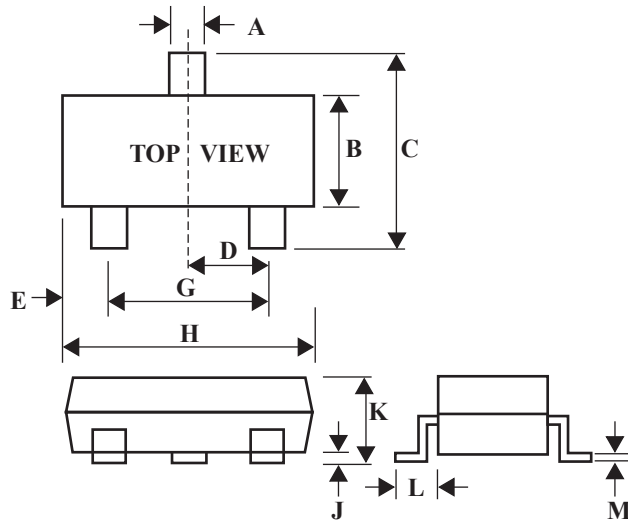
Figure 14. Active Region Safe Operating Area

The safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation. Collector load lines for specific circuits must fall below the limits indicated by the applicable curve.

The data of Figure 14 is based upon $T_{J(pk)} = 150^\circ\text{C}$; T_C or T_A is variable depending upon conditions. Pulse curves are valid for duty cycles to 10% provided $T_{J(pk)} \leq 150^\circ\text{C}$. $T_{J(pk)}$ may be calculated from the data in Figure 13. At high case or ambient temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by the secondary breakdown.

SOT-323 Outline Demensions

Unit:mm



SOT-323		
Dim	Min	Max
A	0.30	0.40
B	1.15	1.35
C	2.00	2.40
D	-	0.65
E	0.30	0.40
G	1.20	1.40
H	1.80	2.20
J	0.00	0.10
K	0.80	1.00
L	0.42	0.53
M	0.10	0.25