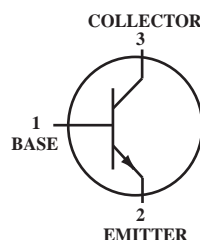


General Purpose Transistor NPN Silicon

 Lead(Pb)-Free



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

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CE0}	45	Vdc
Collector-Base Voltage	V_{CB0}	50	Vdc
Emitter-Base Voltage	V_{EB0}	6.0	Vdc
Collector Current-Continuous	I_C	100	mAdc

Thermal Characteristics

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (1) $T_A=25^{\circ}\text{C}$ Derate above 25°C	P_D	150 2.4	mW mW/ $^{\circ}\text{C}$
Thermal Resistance, Junction to Ambient ⁽¹⁾	$R_{\theta JA}$	833	$^{\circ}\text{C/W}$
Junction and Storage, Temperature Range	T_J, T_{stg}	-55 to +150	$^{\circ}\text{C}$

Device Marking

BC847A=1E; BC847B=1F; BC847C=1G

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

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

Characteristics	Symbol	Min	Typ	Max	Unit
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Off Characteristics

Collector-Emitter Breakdown Voltage (IC= 10mA)	V(BR)CEO	45	-	-	V
Collector-Emitter Breakdown Voltage (IC=10 uA ,VEB=0)	V(BR)CES	50	-	-	V
Collector-Base Breakdown Voltage (IC=10 uA)	V(BR)CBO	50	-	-	V
Emitter-Base Breakdown Voltage (IE=1.0 uA)	V(BR)EBO	6.0	-	-	V
Collector Cutoff Current (VCB=30V) (VCB=30V,TA=150 °C)	ICBO	-	-	15 5.0	nA mA

On Characteristics

DC Current Gain (IC= 10uA, VCE=5.0V)	BC847A	hFE	-	90	-	-
	BC847B		-	150	-	-
	BC847C		-	270	-	-
(IC= 2.0mA, VCE=5.0V)	BC847A	110	180	220		
	BC847B	200	290	450		
	BC847C	420	520	800		
Collector-Emitter Saturation Voltage (IC= 10mA, IB=0.5mA) (IC= 100mA, IB=5.0mA)	VCE(sat)	-	-	0.25	V	
		-	-	0.6		
Base-Emitter Saturation Voltage (IC= 10mA, IB=0.5mA) (IC= 100mA, IB=5.0mA)	VBE(sat)	-	0.7	-	V	
		-	0.9	-		
Base-Emitter On Voltage (IC= 2.0mA, VCE=5.0V) (IC= 10mA, VCE=5.0V)	VBE(on)	580	660	700	V	
		-	-	770		

Small-signal Characteristics

Current-Gain-Bandwidth Product (IC= 10mA, VCE= 5.0Vdc, f=100MHz)	fT	100	-	-	MHz
Output Capacitance (VCB= 10V, f=1.0MHz)	Cobo	-	-	4.5	pF
Noise Figure (IC= 0.2mA, VCE= 5.0Vdc, Rs=2.0 kΩ, f=1.0 kHz, BW=200Hz)	NF	-	-	10	dB

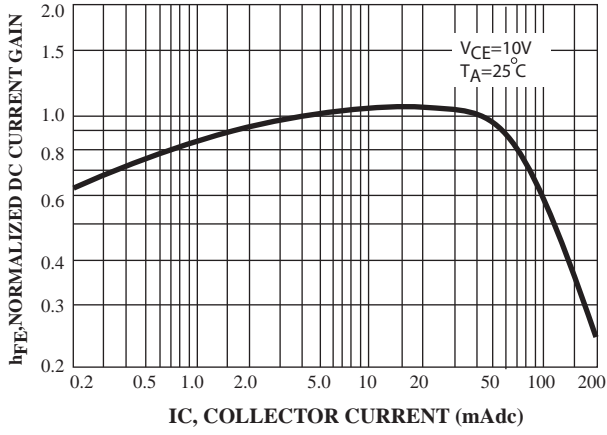


FIG.1 Normalized DC Current Gain

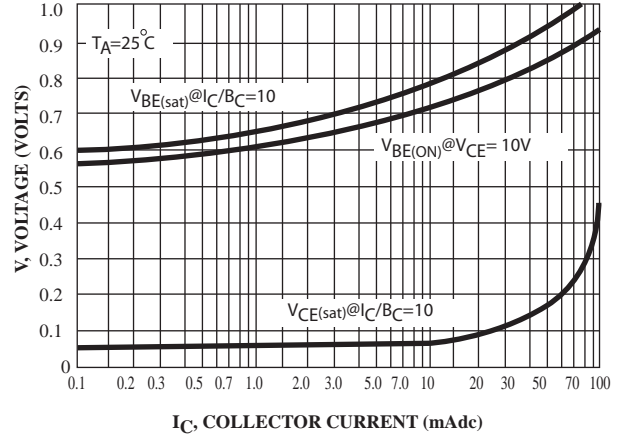


FIG.2 "Saturation" And "On" Voltage

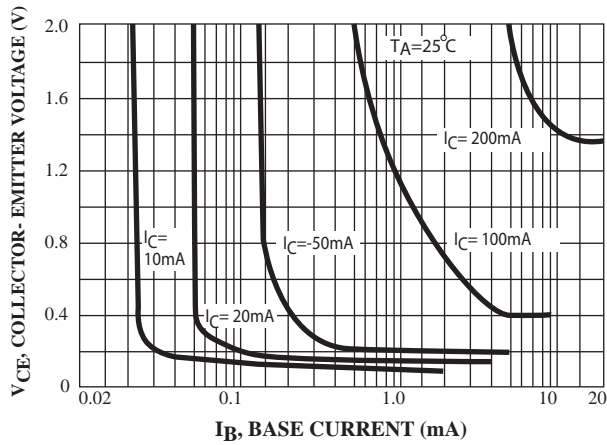


FIG.3 Collector Saturation Region

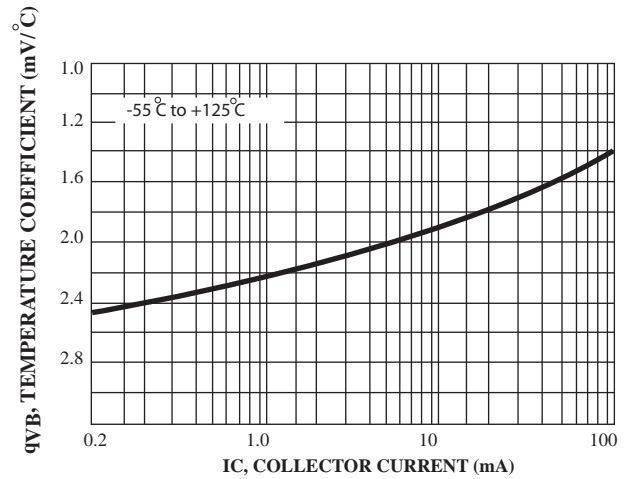


FIG.4 Base-Emitter Temperature Coefficient

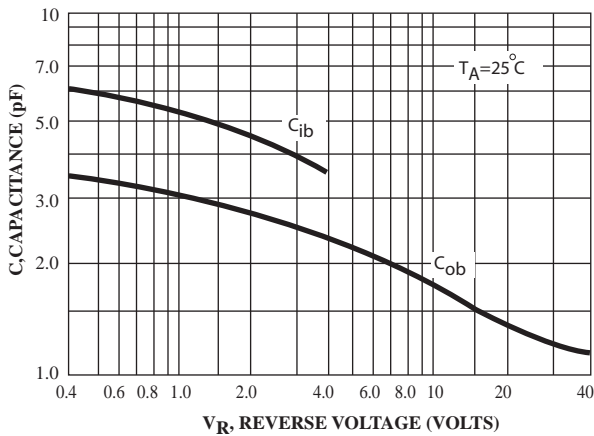


FIG.5 Capacitances

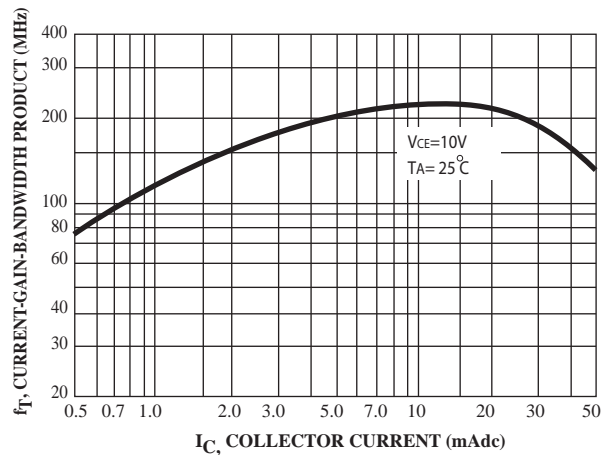
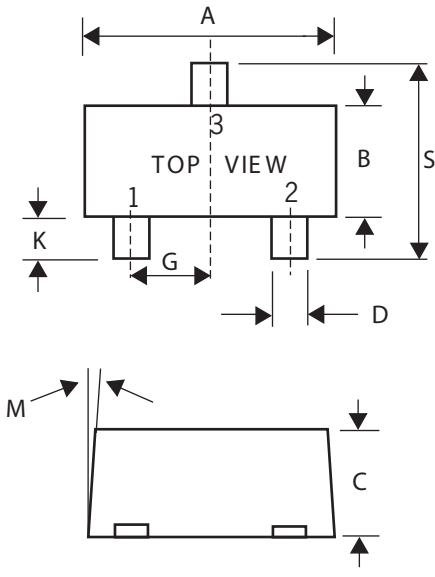


FIG.6 Current-Gain- Bandwidth Product

SC-89 Outline Demensions

Unit:mm



SC-89			
Dim	Min	Nom	Max
A	1.50	1.60	1.70
B	0.75	0.85	0.95
C	0.60	0.70	0.80
D	0.23	0.28	0.33
G	0.50BSC		
J	0.10	0.15	0.20
K	0.30	0.40	0.50
M	---	---	10°
N	---	---	10°
S	1.50	1.60	1.70