



DESCRIPTION

The BC846_BC847_BC848 are Dual NPN general purpose transistors, available in SC-88 package.

- Low Current: 100mA (max)
- Low Voltage: 65V (max)
- Complementary PNP Type:
BC856_BC857_BC858

Application: General-purpose switching and amplification.

MECHANICAL DATA

Case : SC-88

Terminals: Finish-Matte Tin Plated Leads,

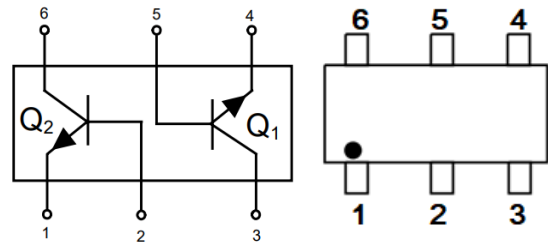
Solderable per MIL-STD-202, Method 208

Polarity: NPN

ORDERING INFORMATION

Package Type	Part Number
SC-88	BC846ADW
	BC846BDW
	BC847BDW
	BC848BDW
	BC847CDW
	BC848CDW
Note	SPQ: 3,000pcs/Reel
AiT provides all RoHS Compliant Products	

PIN DESCRIPTION



Pin #	Description	
1,4	Emitter	TR1;TR2
2,5	Base	TR1;TR2
6,3	Collector	TR1;TR2



ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise specified.

Parameter	Symbol	BC846	BC847	BC848	Unit
Collector-Emitter Voltage	V _{CEO}	65	45	30	V
Collector-Base Voltage	V _{CBO}	80	50	30	V
Emitter-Base Voltage	V _{EBO}	6.0	6.0	5.0	V
Collector Current-Continuous	I _C	100	100	100	mAdc

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Total Device Dissipation	P _D	380	mW
Per Device		250	mW
FR-5 Board, * T _A = 25°C			
Derate above 25°C		3.0	mW/°C
Thermal Resistance, Junction to Ambient	R _{θJA}	328	°C/W
Junction and Storage Temperature	T _J , T _{stg}	-55 to +150	°C

*FR-5 = 1.0×0.75×0.062 in



ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted

Parameter		Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Collector-Emitter Breakdown Voltage (I _C = 10 mA)	BC846 Series	V _{(BR)CEO}	65	-	-	V
	BC847 Series		45	-	-	
	BC848 Series		30	-	-	
Collector-Emitter Breakdown Voltage (I _C = 10 μA, V _{EB} = 0)	BC846 Series	V _{(BR)CES}	80	-	-	V
	BC847 Series		50	-	-	
	BC848 Series		30	-	-	
Collector-Base Breakdown Voltage (I _C = 10 μA)	BC846 Series	V _{(BR)CBO}	80	-	-	V
	BC847 Series		50	-	-	
	BC848 Series		30	-	-	
Emitter-Base Breakdown Voltage (I _E = 1.0 μA)	BC846 Series	V _{(BR)EBO}	6.0	-	-	V
	BC847 Series		6.0	-	-	
	BC848 Series		5.0	-	-	
Collector Cutoff Current (V _{CB} = 30 V) (V _{CB} = 30 V, T _A = 150°C)		I _{CBO}	-	-	15	nA
			-	-	5.0	μA
ON CHARACTERISTICS						
DC Current Gain (I _C = 2.0 mA, V _{CE} = 5.0 V)	BC846A	h _{FE}	110	180	220	-
	BC846B, BC847B, BC848B		200	290	450	
	BC847C, BC848C		420	520	800	
Collector-Emitter Saturation Voltage (I _C =10 mA, I _B = 0.5 mA) (I _C = 100 mA, I _B = 5.0 mA)		V _{CE(sat)}	-	-	0.25	V
			-	-	0.6	
Base-Emitter Saturation Voltage (I _C = 10 mA, I _B = 0.5 mA) (I _C = 100 mA, I _B = 5.0 mA)		V _{BE(sat)}	-	0.7	-	V
			-	0.9	-	
Base-Emitter Voltage (I _C = 2.0 mA, V _{CE} = 5.0 V) (I _C = 10 mA, V _{CE} = 5.0 V)		V _{BE(on)}	580	660	700	mV
			-	-	770	
SMALL-SIGNAL CHARACTERISTICS						
Current-Gain — Bandwidth Product (I _C = 10 mA, V _{CE} = 5.0 Vdc, f = 100 MHz)		f _T	100	-	-	MHz
Output Capacitance (V _{CB} = 10 V, f = 1.0 MHz)		C _{obo}	-	-	4.5	pF
Noise Figure (I _C = 0.2 mA, V _{CE} = 5.0 Vdc, R _S = 2.0 k Ω, f = 1.0 kHz, BW = 200 Hz)	BC846A, BC846B	NF	-	-	10	dB
	BC847B, BC848B		-	-	10	
	BC847C, BC848C		-	-	4.0	



TYPICAL CHARACTERISTICS

Fig 1. Normalized DC Current Gain

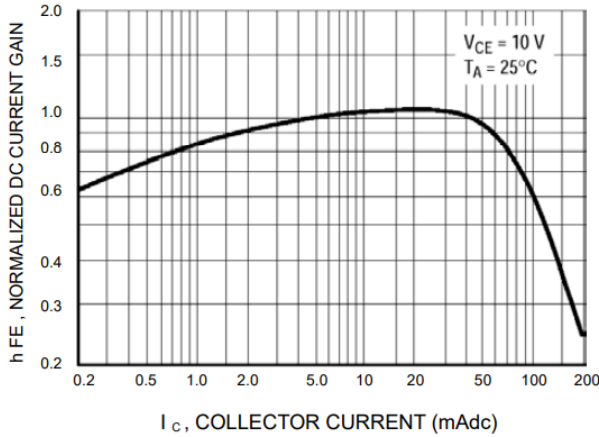


Fig 2. "Saturation" and "On" Voltages

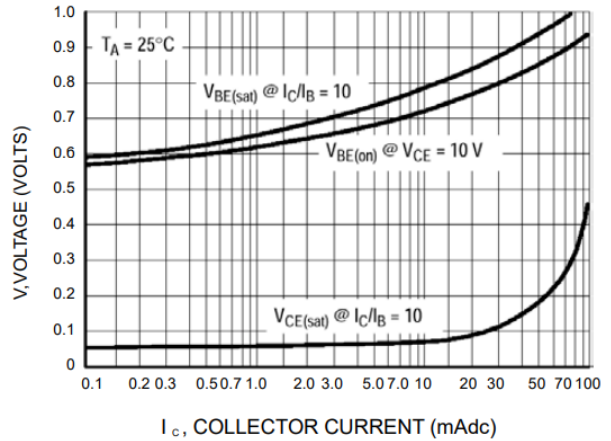


Fig 3. Collector Saturation Region

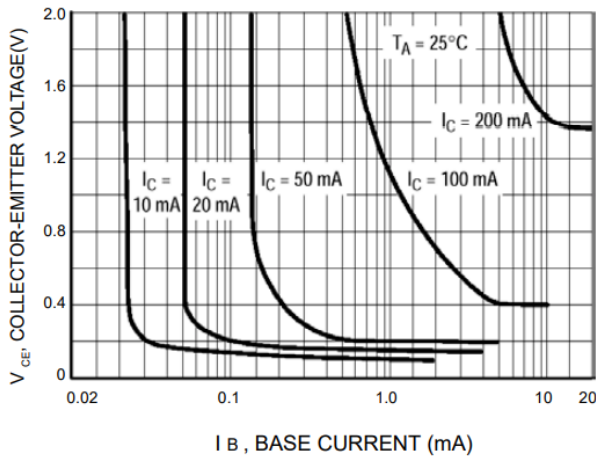


Fig 4. Base-Emitter Temperature Coefficient

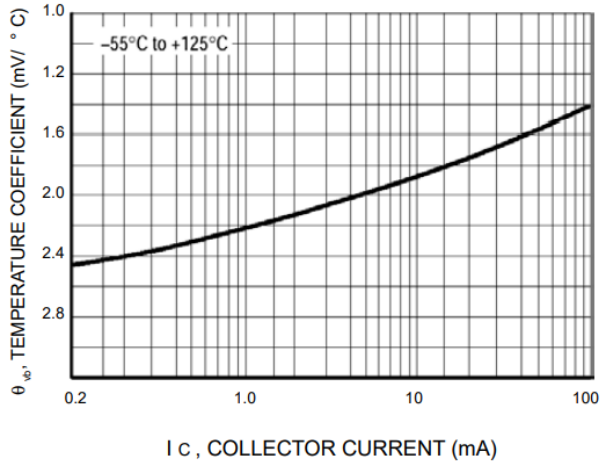


Fig 5. Capacitances

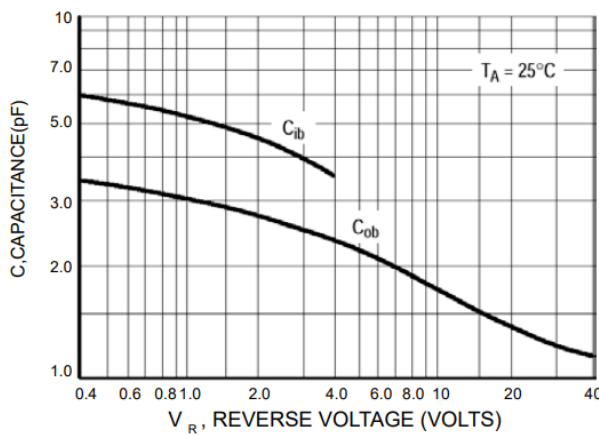


Fig 6. Current-Gain – Bandwidth Product

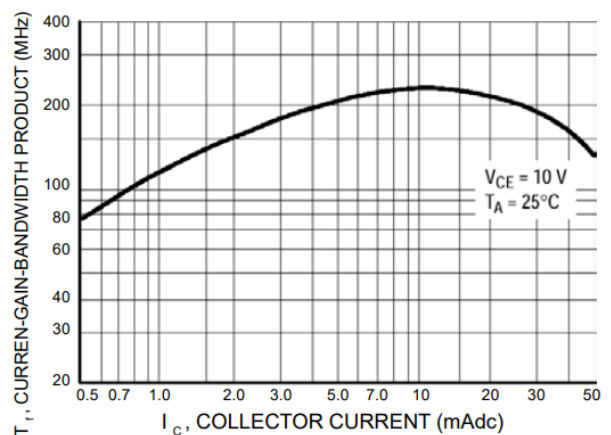




Fig 7. DC Current Gain

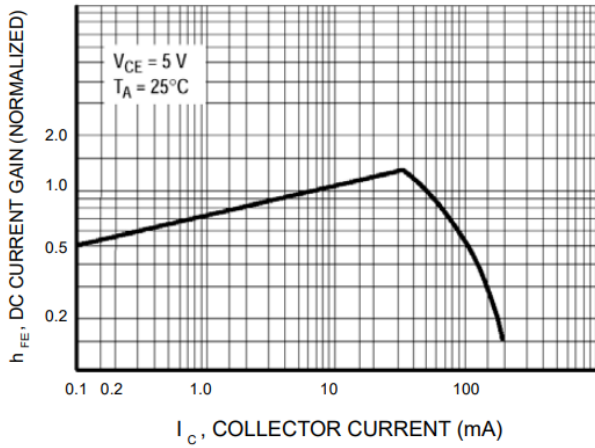


Fig 8. "On" Voltage

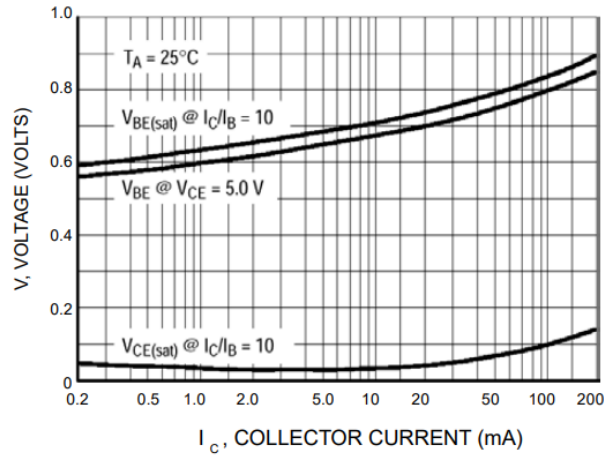


Fig 9. Collector Saturation Region

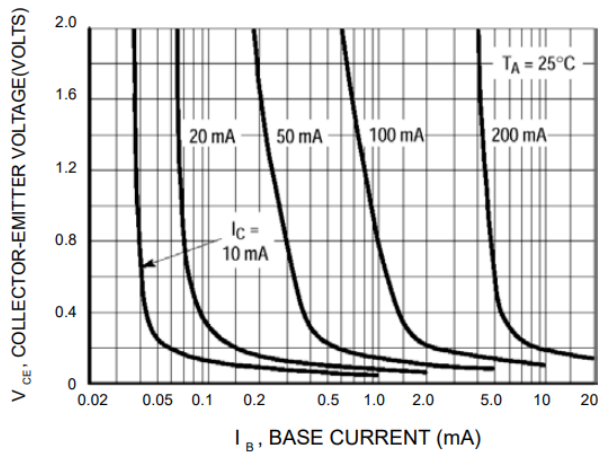


Fig 10. Base-Emitter Temperature Coefficient

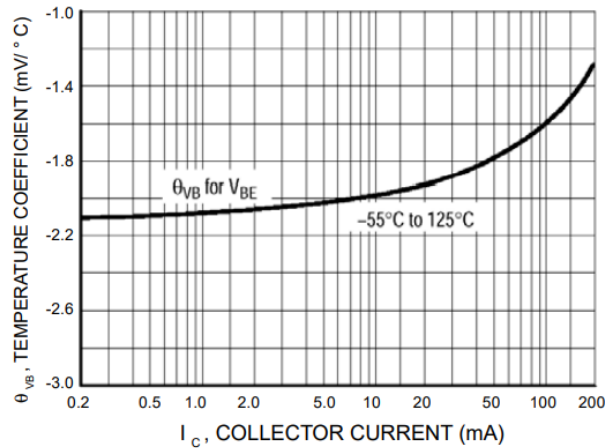




Fig 11. Thermal Response

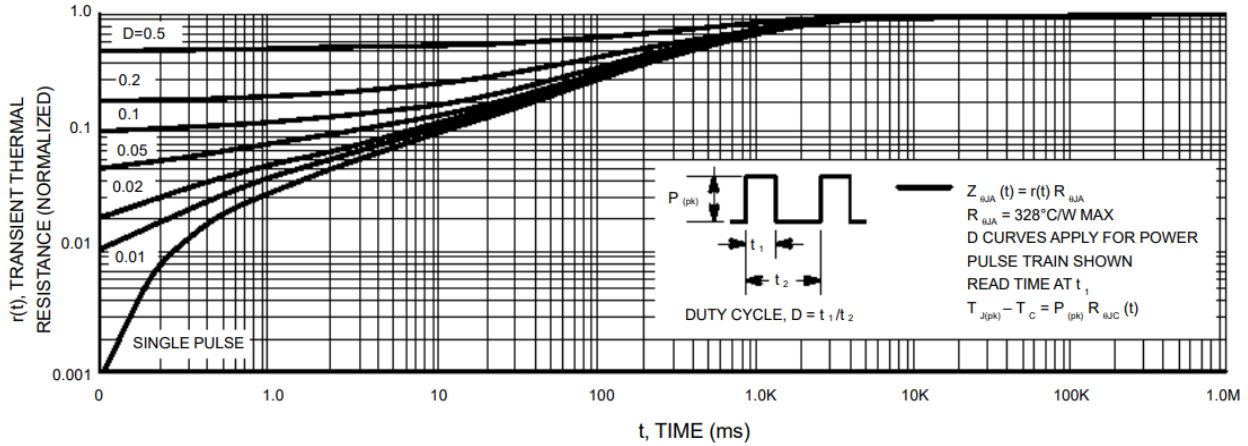
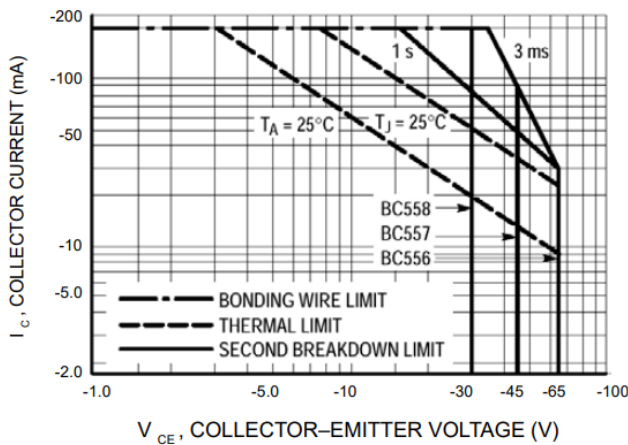


Fig 12. Active Region Safe Operating Area



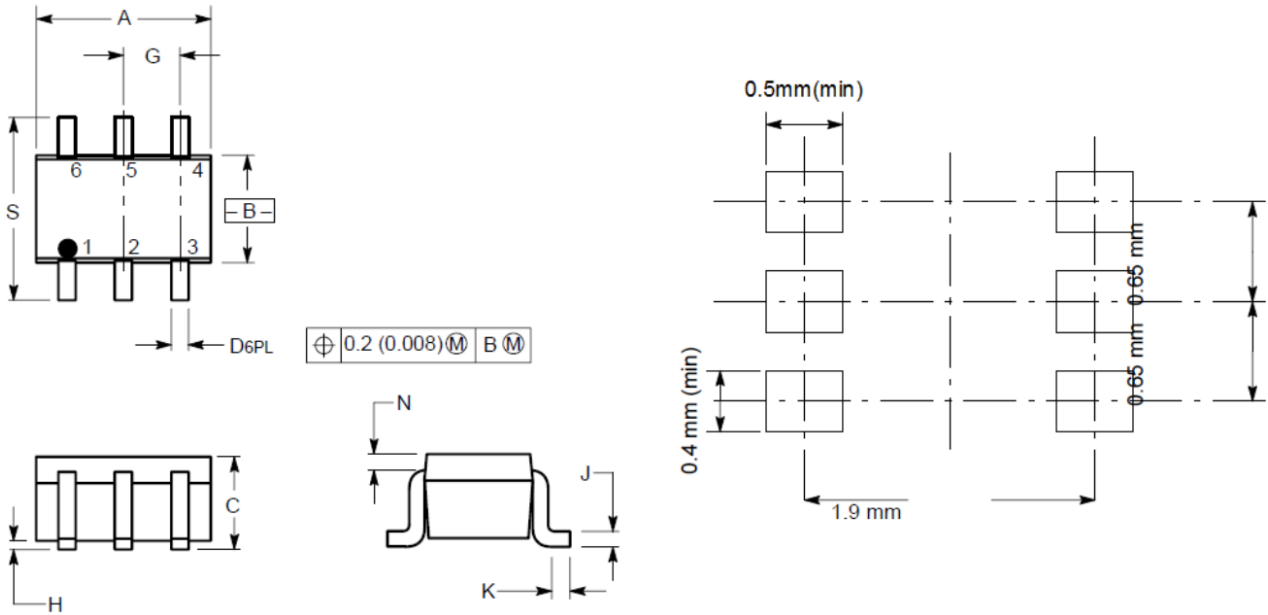
The safe operating area curves indicate I_C - V_{CE} limits of the transistor that must be observed for reliable operation. Collector load lines for specific circuits must fall below the limits indicated by the applicable curve.

The data of Fig 12. 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 $T_{J(pk)} < 150^\circ\text{C}$. $T_{J(pk)}$ may be calculated from the data in Figure 12. 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.



PACKAGE INFORMATION

Dimension in SC-88 (Unit: mm)



Symbol	Min	Max
A	1.800	2.200
B	1.150	1.350
C	0.800	1.100
D	0.100	0.300
G	0.65 BSC	
H	-	0.100
J	0.100	0.250
K	0.100	0.300
N	0.200 REF	
S	2.000	2.200



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