



BC847BS

NPN GENERAL PURPOSE DUAL TRANSIS-

VOLTAGE	45 Volts	POWER	150 mWatts
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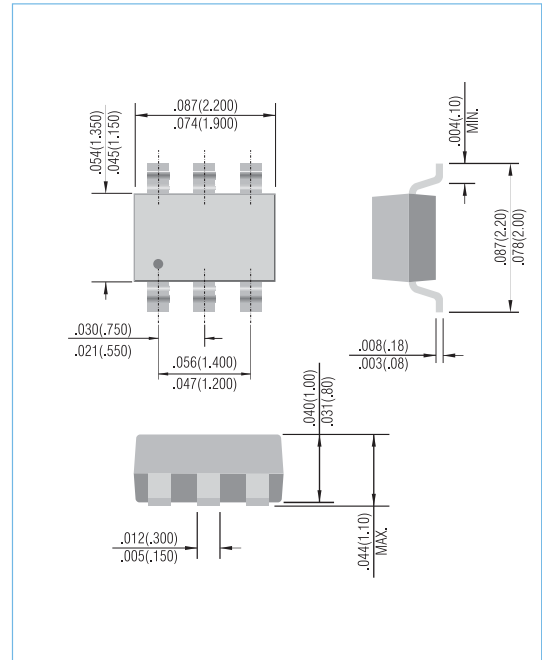
SOT-363	Unit: inch (mm)
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FEATURES

- General purpose amplifier applications
- PNP epitaxial silicon, planar design
- In compliance with EU RoHS 2002/95/EC directives

MECHANICAL DATA

- Case: SOT-363, Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.008 gram
- Marking : 47S



ABSOLUTE MAXIMUM RATINGS

PARAMETER	Symbol	Value	Units
Collector - Emitter Voltage	V_{CE0}	45	V
Collector - Base Voltage	V_{CB0}	50	V
Emitter - Base Voltage	V_{EB0}	6.0	V
Collector Current - Continuous	I_C	100	mA

THERMAL CHARACTERISTICS

PARAMETER	Symbol	Value	Units
Total Device Dissipation Per Device FR-5 Board (Note 1) $T_A=25^{\circ}C$ Derate above 25°C	P_D	300 150 3.0	mW mW/°C
Thermal Resistance , Junction to Ambient	$R_{\theta JA}$	328	°C/W
Junction Temperature	T_J	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C

Note 1: FR-4 board 70 x 60 x 1mm.



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ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

PARAMETER	Symbol	Test Condition	MIN.	TYP.	MAX.	Unit
OFF CHARACTERISTICS						
Collector - Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=10\text{mA}$	45	-	-	V
Collector - Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=10\mu\text{A}, V_{EB}=0$	50	-	-	V
Collector - Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}$	50	-	-	V
Emitter - Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}$	6.0	-	-	V
Collector Cutoff Current	I_{CBO}	$V_{CB}=30\text{V}, V_{CB}=30\text{V}, T_A=150^{\circ}\text{C}$	-	-	15 5.0	nA uA
ON CHARACTERISTICS						
DC Current Gain	h_{FE}	$I_C=2.0\text{mA}, V_{CE}=5\text{V}$	200	-	450	-
Collector - Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=10\text{mA}, I_B=0.5\text{mA}$ $I_C=100\text{mA}, I_B=5.0\text{mA}$	-	-	0.25 0.6	V
Base - Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=10\text{mA}, I_B=0.5\text{mA}$ $I_C=100\text{mA}, I_B=5.0\text{mA}$	0.6 0.8	-	0.9 1.0	V
Base - Emitter Voltage	$V_{BE(ON)}$	$I_C=2\text{mA}, V_{CE}=5.0\text{V}$ $I_C=10\text{mA}, V_{CE}=5.0\text{V}$	580 -	660 -	700 770	mV
SMALL-SIGNAL CHARACTERISTICS						
Current-Gain-Bandwidth Product	f_T	$I_C=10\text{mA}, V_{CE}=5.0\text{Vdc}, f=100\text{MHz}$	100	-	-	MHz
Output Capacitance	C_{obo}	$V_{CB}=10\text{V}, f=1.0\text{MHz}$	-	-	4.5	pF
Noise Figure	NF	$I_C=0.2\text{mA}, V_{CE}=5.0\text{Vdc}, R_S=2.0\text{k}\Omega, f=1.0\text{kHz}, BW=200\text{Hz}$	-	-	10	dB

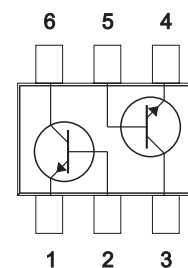


Fig.54



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ELECTRICAL CHARACTERISTICS CURVE

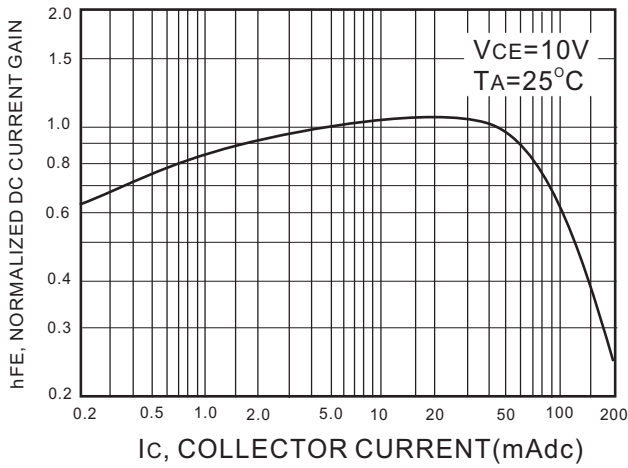


Figure 1. Normalized DC Current Gain

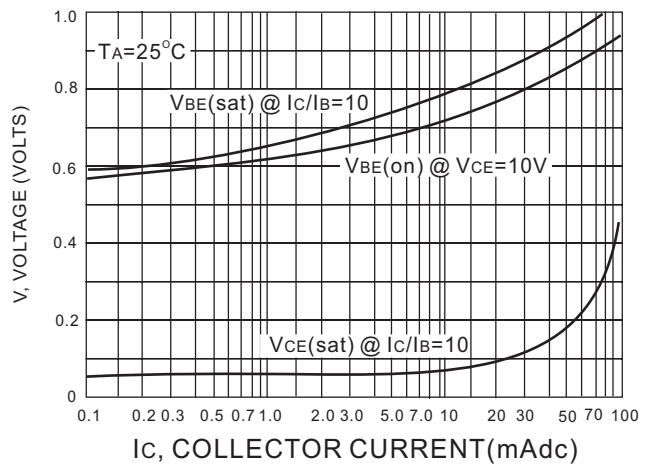


Figure 2. "Saturation" and "On" Voltages

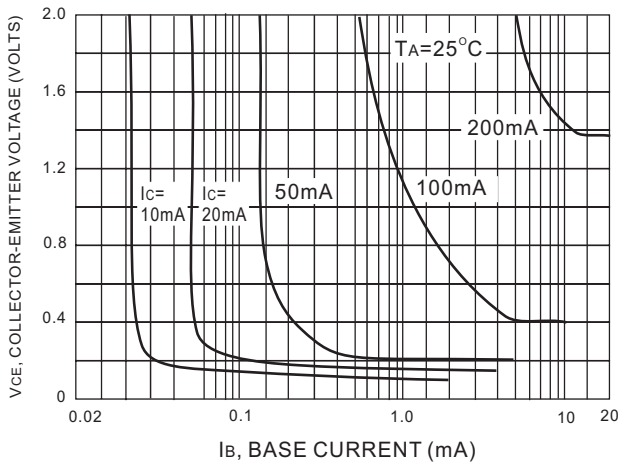


Figure 3. Collector Saturation Region

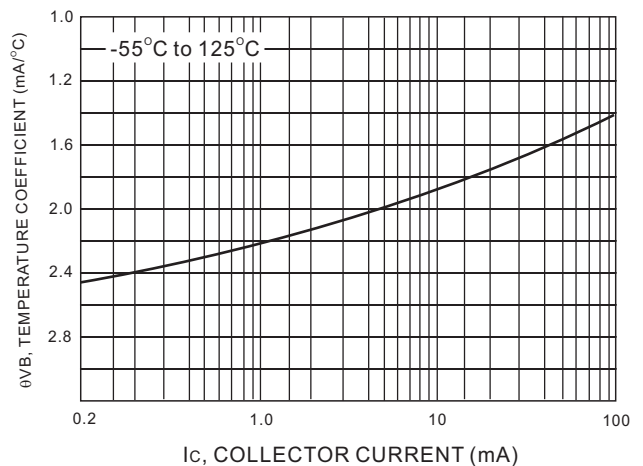


Figure 4. Base-Emitter Temperature Coefficient

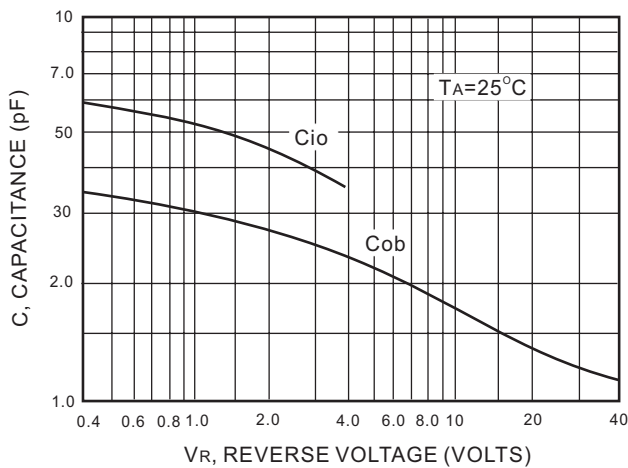


Figure 5. Capacitance

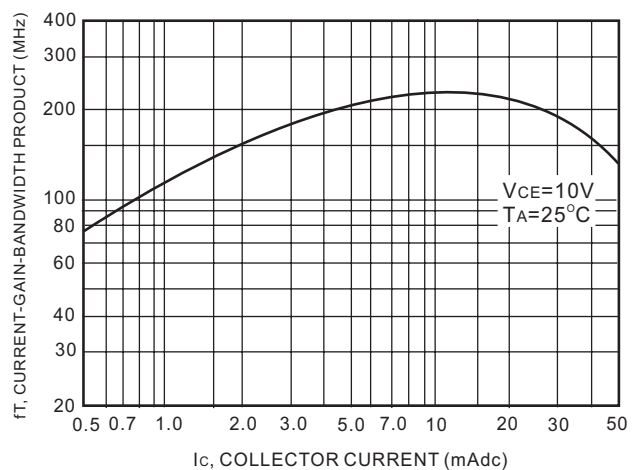


Figure 6. Current-Gain-Bandwidth Product



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ELECTRICAL CHARACTERISTICS CURVE

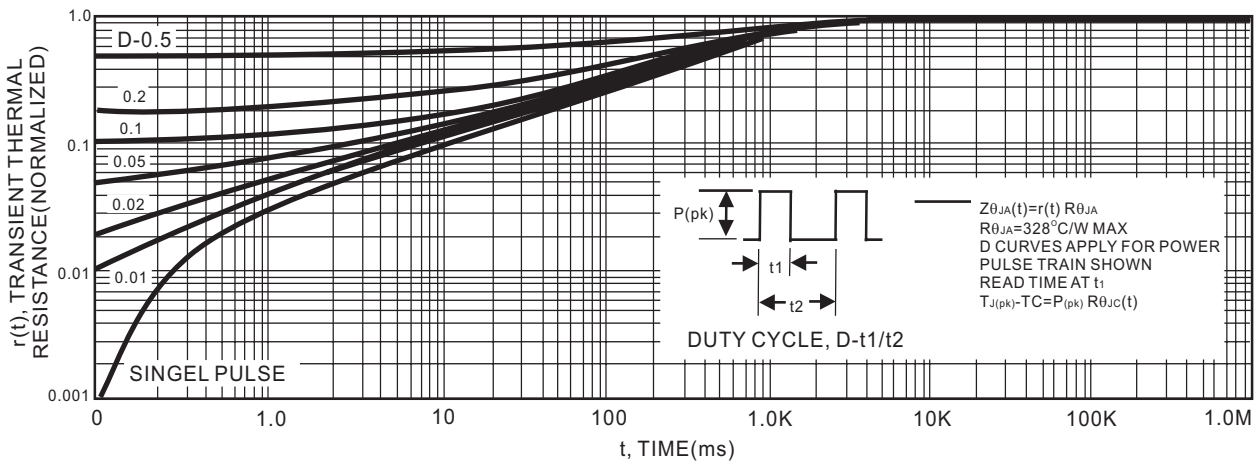


Figure 7. Thermal Response

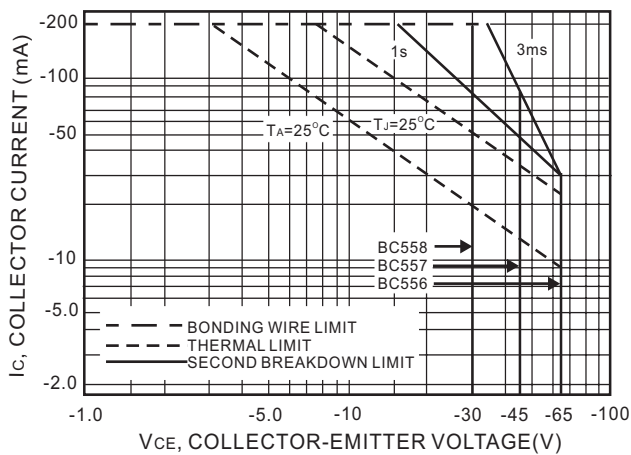


Figure 8. Active Region Safe Operating Area

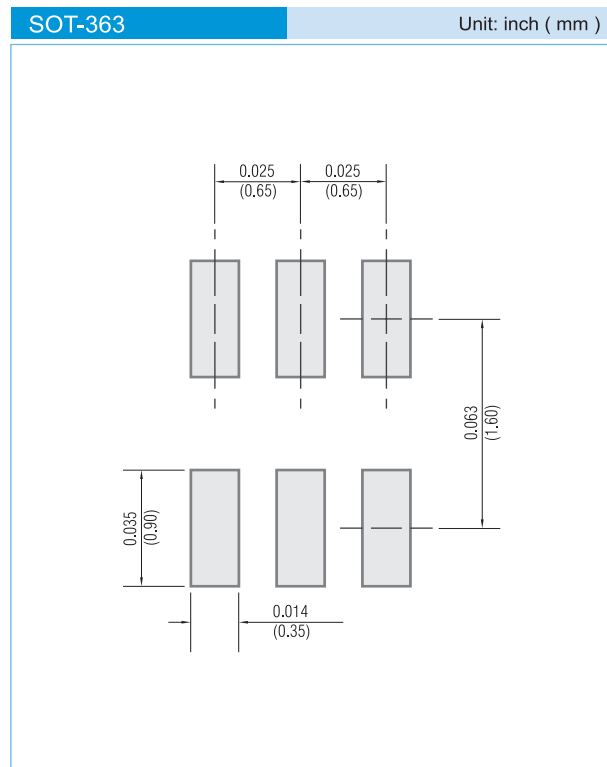
The safe operating area curves indicate I_c - V_{ce} limits of the transistor that must be observed for reliable operation. Collector load lines for specific circuits must fall below the limits indicated by the applicable curve.

The data of Figure 26 is based upon $T_j(pk)=150^\circ C$; T_c or T_a is variable depending upon conditions. Pulse curves are valid for duty cycles to 10% provided $T_j(pk) < 150^\circ C$. $T_j(pk)$ may be calculated from the data in Figure 25. 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 break-down.



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MOUNTING PAD LAYOUT



ORDER INFORMATION

- Packing information
 - T/R - 10K per 13" plastic Reel
 - T/R - 3K per 7" plastic Reel

LEGAL STATEMENT

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