

# BC847BFN3

## NPN General Purpose Transistors

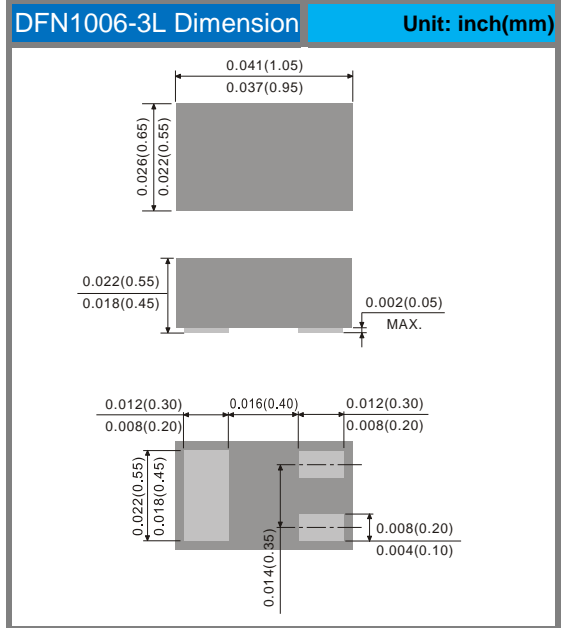
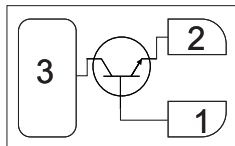
<b>VOLTAGE</b>	<b>45 Volt</b>	<b>POWER</b>	<b>250 mWatt</b>
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### FEATURES

- General purpose amplifier applications
- NPN epitaxial silicon, planar design
- Collector current IC = 100mA
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### MECHANICAL DATA

- Case : DFN1006-3L, Plastic
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0007 grams



### ABSOLUTE RATINGS

Parameter	Symbol	Value	Units
Collector - Emitter Voltage	V <sub>CEO</sub>	45	V
Collector - Base Voltage	V <sub>CBO</sub>	50	V
Emitter - Base Voltage	V <sub>EBO</sub>	6.0	V
Collector Current - Continuous	I <sub>C</sub>	100	mA

### THERMAL CHARACTERISTICS

Parameter	Symbol	Value	Units
Max Power Dissipation (Note 1)	P <sub>TOT</sub>	250	mW
Thermal Resistance , Junction to Ambient	R <sub>θJA</sub>	500	°C/W
Junction Temperature	T <sub>J</sub>	-55 to +150	°C
Storage Temperature	T <sub>STG</sub>	-55 to +150	°C

Note 1: Transistor mounted on 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

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## ELECTRICAL CHARACTERISTICS CURVE

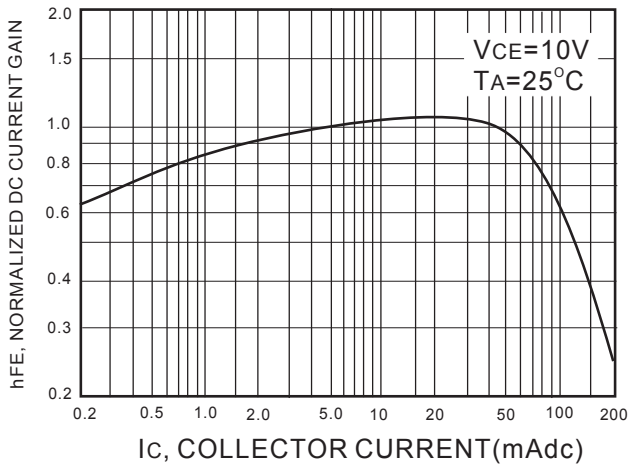


Figure 1. Normalized DC Current Gain

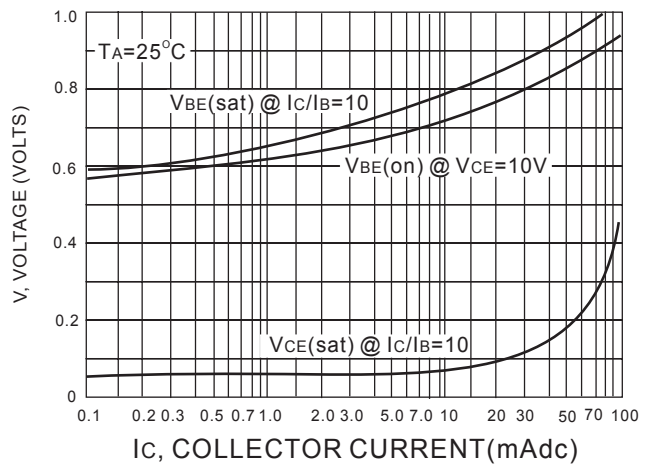


Figure 2. "Saturation" and "On" Voltages

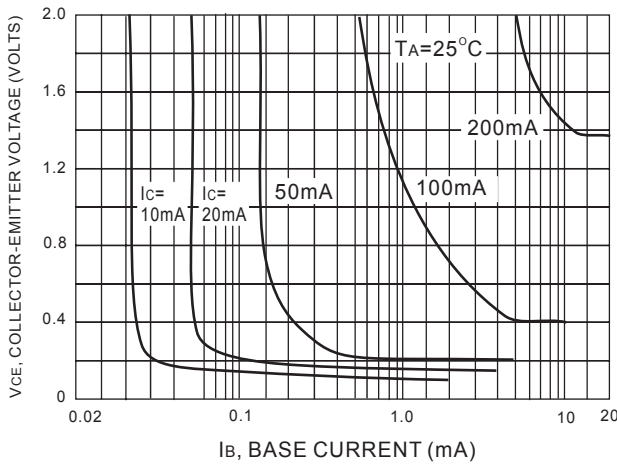


Figure 3. Collector Saturation Region

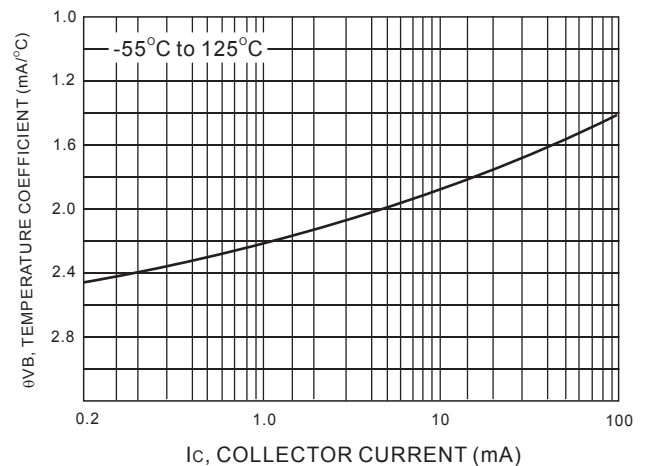


Figure 4. Base-Emitter Temperature Coefficient

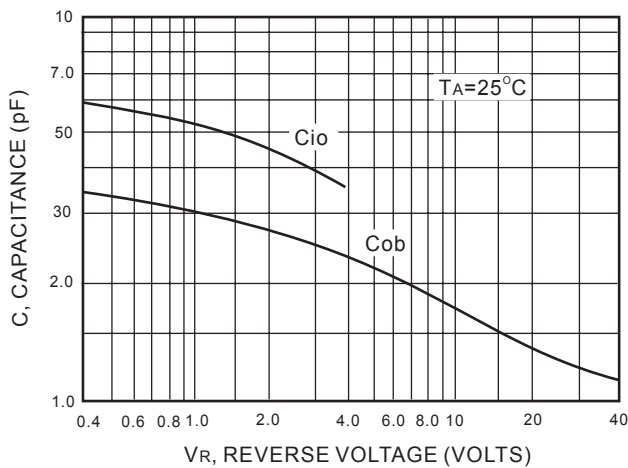


Figure 5. Capacitance

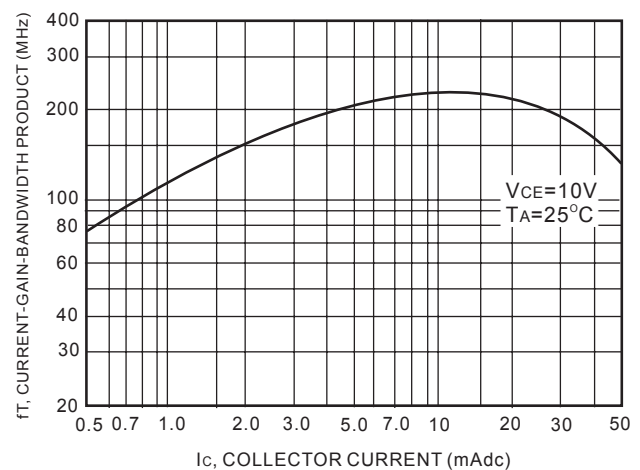


Figure 6. Current-Gain-Bandwidth Product

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## ELECTRICAL CHARACTERISTICS CURVE

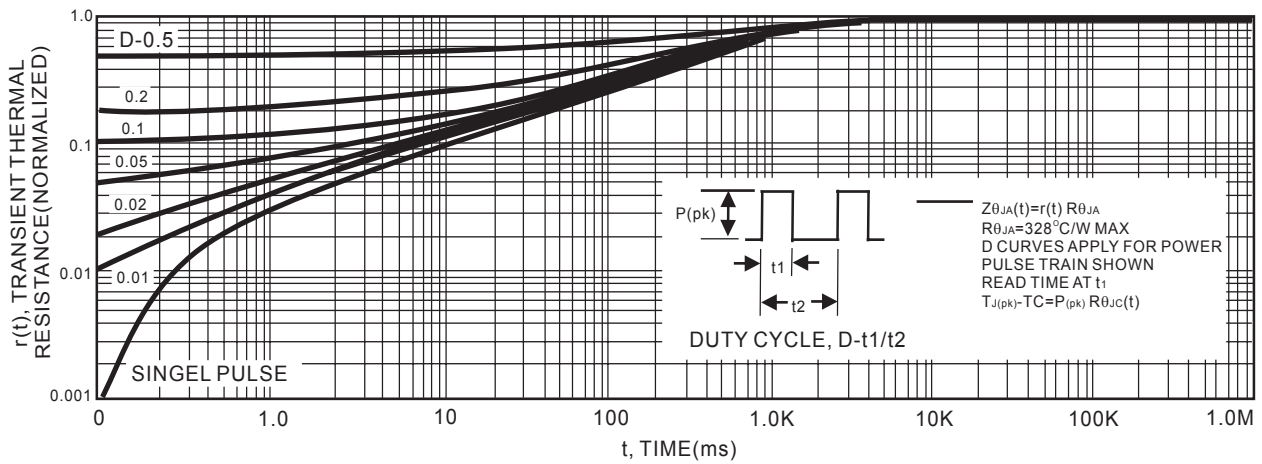


Figure 7. Thermal Response

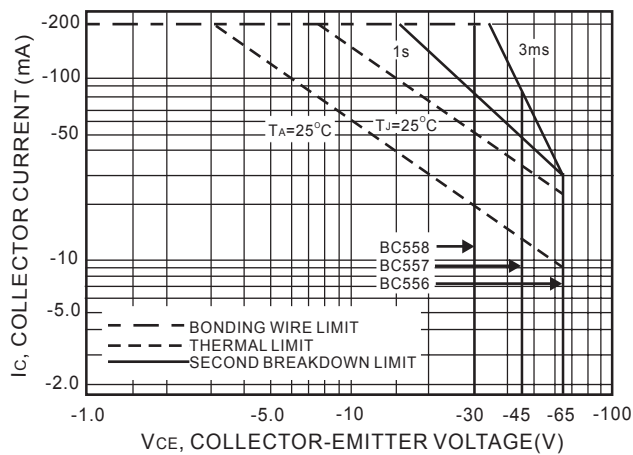


Figure 8. Active Region Safe Operating Area

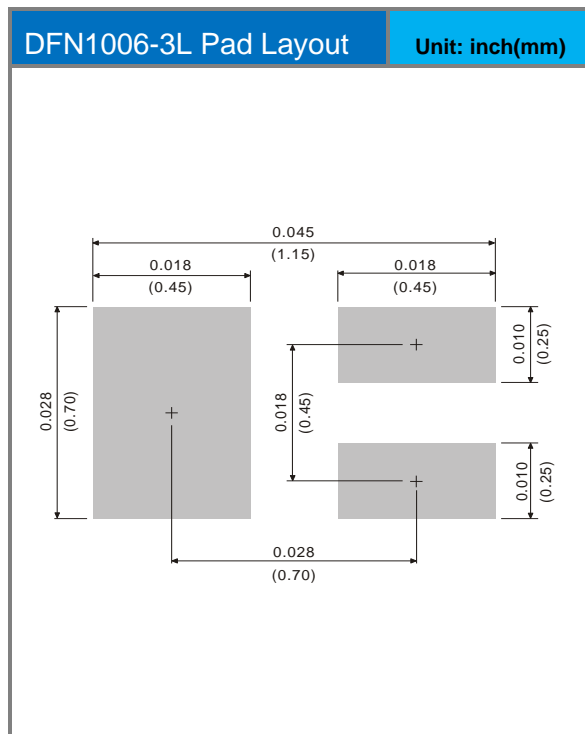
The safe operating area curves indicate  $I_c$ - $V_{ce}$  limits of the transistor that must be observed for reliable operation. Collector load lines for specific circuits must fall below the limits indicated by the applicable curve. The data of Figure 26 is based upon  $T_j(pk)=150^\circ C$ ;  $T_c$  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.

# BC847BFN3

## Product and Packing Information

Part No.	Package Type	Packing Type	Marking
BC847BFN3	DFN1006-3L	10K pcs / 7" reel	AE

## Mounting Pad Layout



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