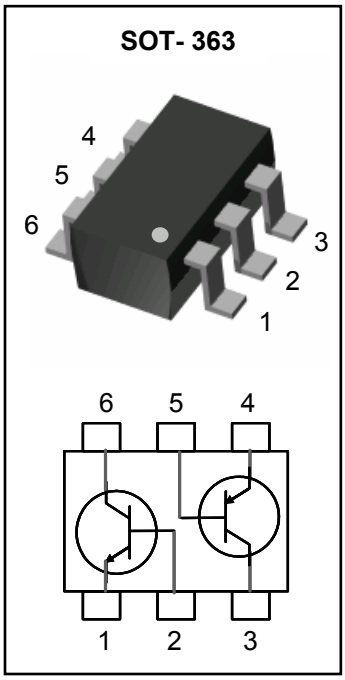
BC847BPN

DUAL SURFACE MOUNT NPN/PNP TRANSISTORS (COMPLIMENTARY)

This device contains two electrically-isolated complimentary pair (NPN and PNP) general-purpose transistors. This device is ideal for portable applications where board space is at a premium.



FEATURES

- **Electrically-Isolated Complimentary Transistor Pairs**
- **In compliance with EU RoHS 2002/95/EC directives**

APPLICATIONS

- **General Purpose Amplifier Applications**
- **Hand-Held Computers, PDAs**

Device Marking Code: 47P

MAXIMUM RATINGS - NPN

T_J = 25°C Unless otherwise noted

Rating	Symbol	Value	Units
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage Voltage	V_{EBO}	6.0	V
Collector Current	I_C	100	mA

MAXIMUM RATINGS - PNP

T_J = 25°C Unless otherwise noted

Rating	Symbol	Value	Units
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-45	V
Emitter-Base Voltage Voltage	V_{EBO}	-5.0	V
Collector Current	I_C	-100	mA

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 1)	P_D	200	mW
Operating Junction Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{stg}	-55 to +150	°C
Thermal Resistance, Junction to Ambient (Note 1)	R_{thja}	556	°C/W

Note 1. FR-4 board 70 x 60 x 1mm with minimum recommended pad layout

NPN ELECTRICAL CHARACTERISTICS (Note 2)

T_J = 25°C Unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 10mA	45	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C = 10uA, V_{EB} = 0	50	-	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 10uA	50	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 1.0uA	6.0	-	-	V
Collector Cutoff Current	I_{CBO}	V_{CB}= 30V, I_E= 0	-	-	15	nA
		T_J =150°C	-	-	5	uA
Emitter Cutoff Current	I_{EBO}	V_{EB}= 5V, I_C= 0	-	-	100	nA
DC Current Gain	h_{FE}	V_{CE}= 5V, I_C= 2.0mA	200	-	450	-
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C = 10mA, I_B = 0.5mA	-	-	0.1	V
		I_C = 100mA, I_B = 5mA	-	-	0.4	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	I_C = 10mA, I_B = 0.5mA	-	0.75	-	V
Base-Emitter Voltage	V_{BE}	V_{CE}= 5V, I_C= 2.0mA	0.58	-	0.7	V
Gain-Bandwidth Product	f_T	V_{CE}= 5V, I_C= 10mA f = 100MHz	100	-	-	MHz
Collector-Base Capacitance	C_{CBO}	V_{CB}= 10V, f =1.0MHz	-	-	1.5	pF
Emitter-Base Capacitance	C_{EBO}	V_{EB}= 0.5V, f =1.0MHz	-	7	-	pF

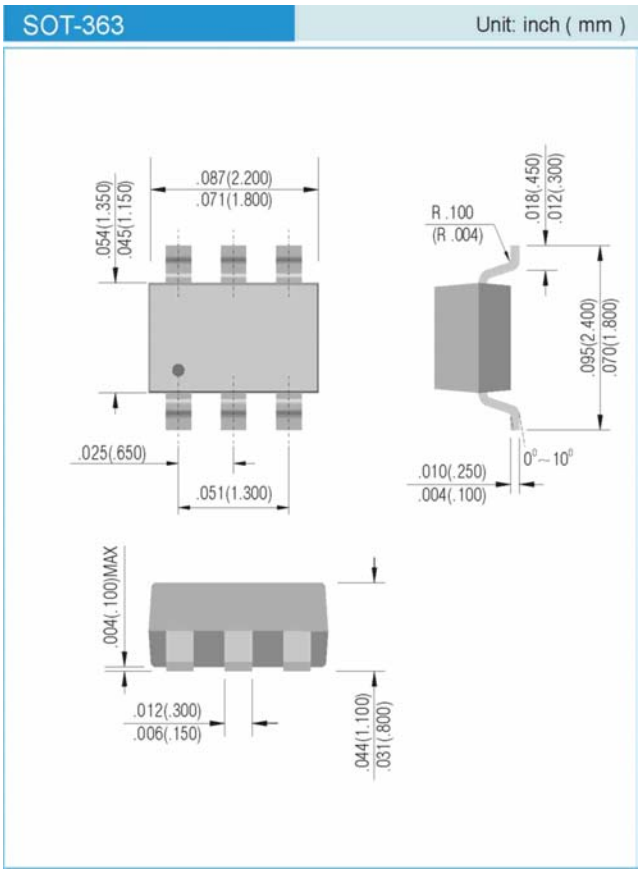
PNP ELECTRICAL CHARACTERISTICS (Note 2)

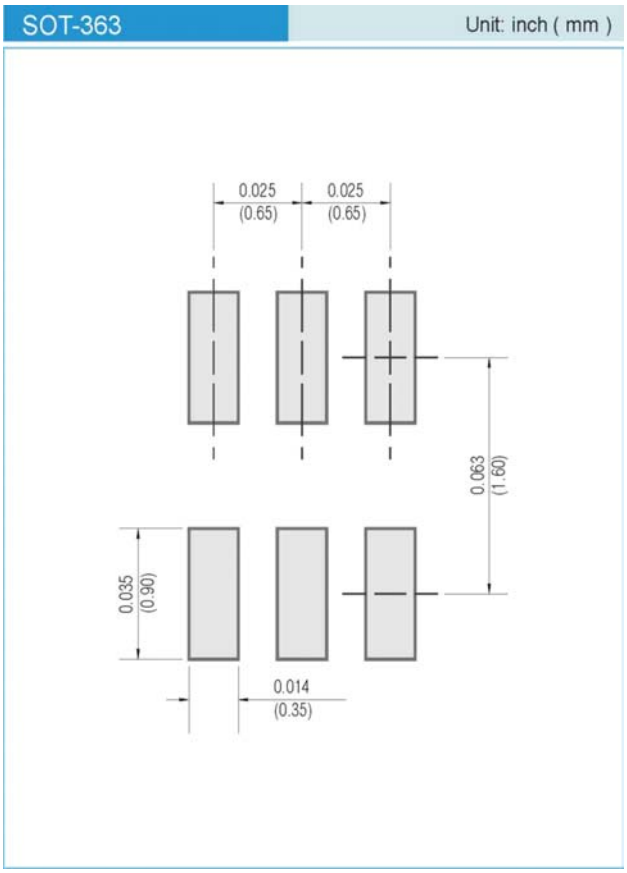
T = 25°C Unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = -10mA	-45	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C = -10uA, V_{EB} = 0	-50	-	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = -10uA	-50	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = -1.0uA	-5.0	-	-	V
Collector Cutoff Current	I_{CBO}	V_{CB}= -30V, I_E= 0	-	-	-15	nA
		T_J =150°C	-	-	-4.0	uA
Emitter Cutoff Current	I_{EBO}	V_{EB}= -5V, I_C= 0	-	-	-100	nA
DC Current Gain	h_{FE}	V_{CE}= -5V, I_C= -2.0mA	200	-	475	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C = -10mA, I_B = -0.5mA	-	-	-0.3	V
		I_C = -100mA, I_B = -5mA	-	-	-0.65	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	I_C = -10mA, I_B = -0.5mA	-	-0.7	-	V
Base-Emitter Voltage	V_{BE}	V_{CE}= -5V, I_C= -2.0mA	-0.6	-	-0.75	V
Gain-Bandwidth Product	f_T	V_{CE}= -5V, I_C= -10mA f = 100MHz	100	-	-	MHz
Collector-Base Capacitance	C_{CBO}	V_{CB}= -10V, f =1.0MHz	-	-	4.5	pF
Emitter-Base Capacitance	C_{EBO}	V_{EB}= -0.5V, f =1.0MHz	-	11	-	pF

Note 2. Short duration test pulse used to minimize self-heating

PACKAGE LAYOUT AND SUGGESTED PAD DIMENSIONS





ORDERING INFORMATION

BC847BPN T/R7 - 3,000 units per 7 inch reel

BC847BPN T/R13 -10,000 units per 13 inch reel