



**BC847B**  
**BC847C**

## SMALL SIGNAL NPN TRANSISTORS

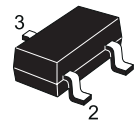
PRELIMINARY DATA

Type	Marking
BC847B	1F
BC847C	1G

- SILICON EPITAXIAL PLANAR NPN TRANSISTORS
- MINIATURE SOT-23 PLASTIC PACKAGE FOR SURFACE MOUNTING CIRCUITS
- TAPE AND REEL PACKING
- BC847B - THE PNP COMPLEMENTARY TYPE IS BC857B

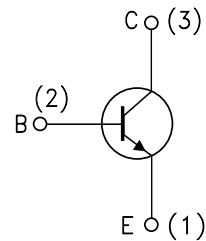
### APPLICATIONS

- WELL SUITABLE FOR PORTABLE EQUIPMENT
- SMALL LOAD SWITCH TRANSISTORS WITH HIGH GAIN AND LOW SATURATION VOLTAGE



SOT-23

### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	50	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	45	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	6	V
$I_C$	Collector Current	100	mA
$I_{CM}$	Collector Peak Current	200	mA
$P_{tot}$	Total Dissipation at $T_C = 25\text{ }^\circ\text{C}$	250	mW
$T_{stg}$	Storage Temperature	-65 to 150	$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature	150	$^\circ\text{C}$

## BC847B / BC847C

### THERMAL DATA

R <sub>thj-amb</sub> •	Thermal Resistance Junction-Ambient	Max	500	°C/W
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• Device mounted on a PCB area of 1 cm<sup>2</sup>.

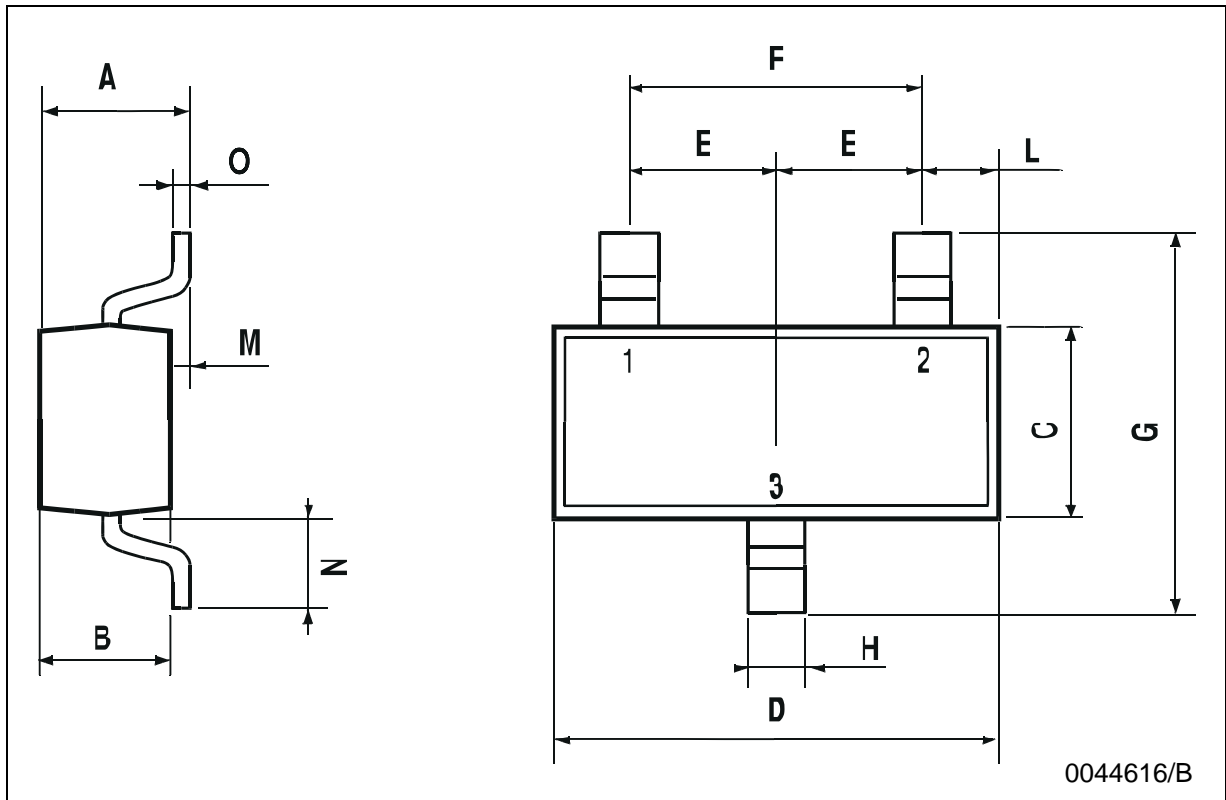
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CB0</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	V <sub>CB</sub> = 30 V V <sub>CB</sub> = 30 V      T <sub>C</sub> = 150 °C			15 5	nA μA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			100	nA
V <sub>(BR)CBO</sub>	Collector-Base Breakdown Voltage (I <sub>E</sub> = 0)	I <sub>C</sub> = 10 μA	50			V
V <sub>(BR)CEO*</sub>	Collector-Emitter Breakdown Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 2 mA	45			V
V <sub>(BR)EBO</sub>	Emitter-Base Breakdown Voltage (I <sub>C</sub> = 0)	I <sub>E</sub> = 10 μA	6			V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 10 mA      I <sub>B</sub> = 0.5 mA I <sub>C</sub> = 100 mA      I <sub>B</sub> = 5 mA		0.09 0.2	0.25 0.6	V V
V <sub>BE(sat)*</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 10 mA      I <sub>B</sub> = 0.5 mA I <sub>C</sub> = 100 mA      I <sub>B</sub> = 5 mA		0.7 0.9		V V
V <sub>BE(on)*</sub>	Base-Emitter On Voltage	I <sub>C</sub> = 2 mA      V <sub>CE</sub> = 5 V I <sub>C</sub> = 10 mA      V <sub>CE</sub> = 5 V	0.58	0.66	0.7 0.77	V V
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = 10 μA      V <sub>CE</sub> = 5 V for <b>BC847B</b> for <b>BC847C</b> I <sub>C</sub> = 2 mA      V <sub>CE</sub> = 5 V for <b>BC847B</b> for <b>BC847C</b>		150 270 200 420	450 800	
f <sub>T</sub>	Transition Frequency	I <sub>C</sub> = 10 mA    V <sub>CE</sub> = 5 V    f = 100MHz	100			MHz
C <sub>CB0</sub>	Collector-Base Capacitance	I <sub>E</sub> = 0      V <sub>CB</sub> = 10 V    f = 1 MHz		2.5		pF
NF	Noise Figure	V <sub>CE</sub> = 5 V    I <sub>C</sub> = 0.2 mA    f = 1KHz Δf = 200 Hz    R <sub>G</sub> = 2 KΩ		2	10	dB

\* Pulsed: Pulse duration = 300 μs, duty cycle ≤ 2 %

**SOT-23 MECHANICAL DATA**

DIM.	mm			mils		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	0.85		1.1	33.4		43.3
B	0.65		0.95	25.6		37.4
C	1.20		1.4	47.2		55.1
D	2.80		3	110.2		118
E	0.95		1.05	37.4		41.3
F	1.9		2.05	74.8		80.7
G	2.1		2.5	82.6		98.4
H	0.38		0.48	14.9		18.8
L	0.3		0.6	11.8		23.6
M	0		0.1	0		3.9
N	0.3		0.65	11.8		25.6
O	0.09		0.17	3.5		6.7



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