

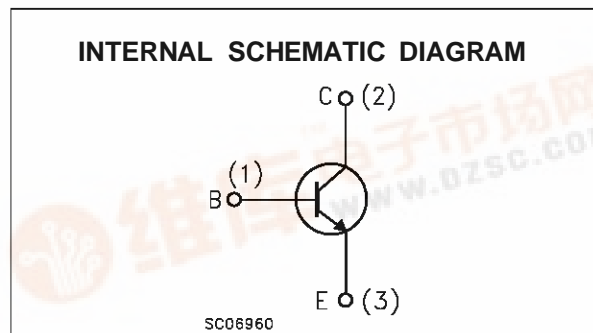


BC847

SMALL SIGNAL NPN TRANSISTORS

Type	Marking
BC847B	1F

- SILICON EPITAXIAL PLANAR NPN TRANSISTORS
- MINIATURE PLASTIC PACKAGE FOR APPLICATION IN SURFACE MOUNTING CIRCUITS
- LOW LEVEL GENERAL PURPOSE
- PNP COMPLEMENT IS BC857



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage ($V_{BE} = 0$)	50	V
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	0.1	A
I_{CM}	Collector Peak Current	0.2	A
I_{BM}	Base Peak Current	0.2	A
I_{EM}	Emitter Peak Current	0.2	A
P_{tot}	Total Dissipation at $T_c = 25^\circ\text{C}$	300	mW
T_{stg}	Storage Temperature	-65 to 150	$^\circ\text{C}$
T_j	Max. Operating Junction Temperature	150	$^\circ\text{C}$



BC847

THERMAL DATA

$R_{thj-amb}$ •	Thermal Resistance Junction-Ambient	Max	420	$^{\circ}\text{C}/\text{W}$
R_{thj-SR} •	Thermal Resistance Junction-Substrate	Max	330	$^{\circ}\text{C}/\text{W}$

• Mounted on a ceramic substrate area = 10 x 8 x 0.6 mm

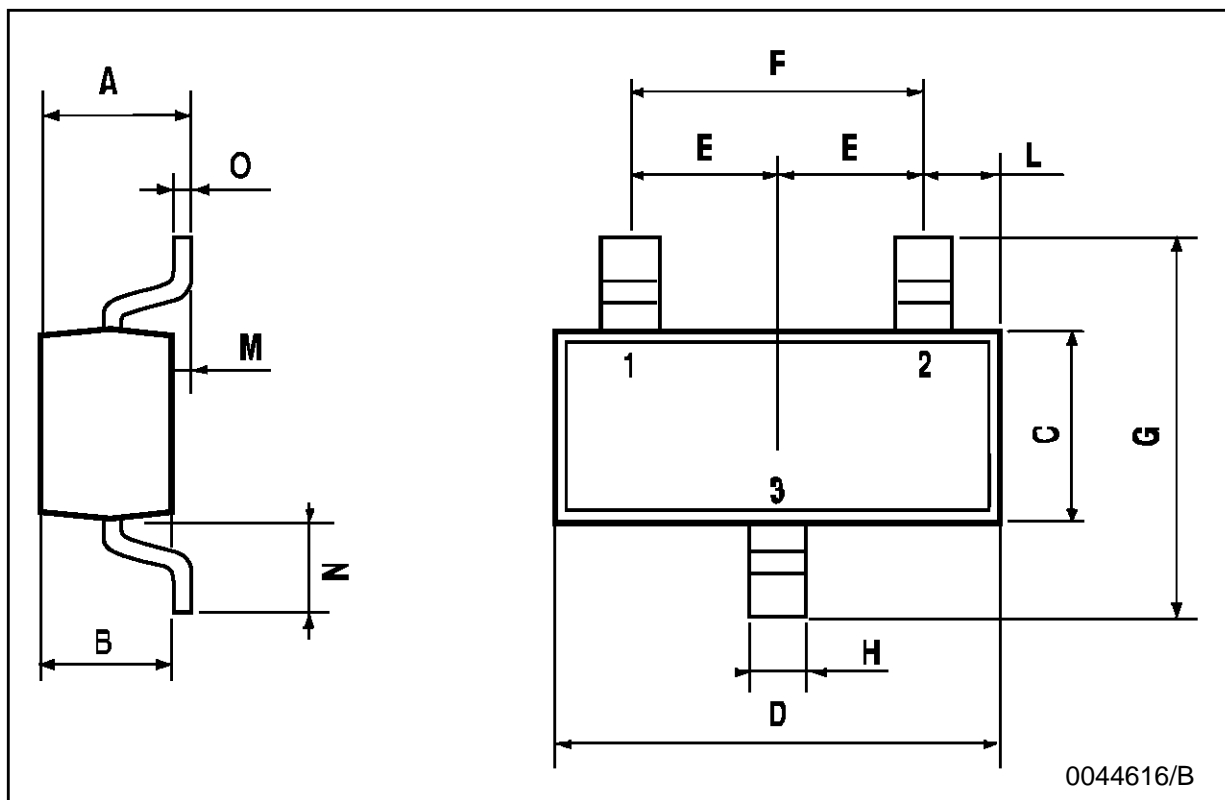
ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	$V_{CE} = 30\text{ V}$ $V_{CE} = 30\text{ V}$ $T_{amb} = 150^{\circ}\text{C}$			15 5	nA μA
$V_{(BR)CES}^*$	Collector-Emitter Breakdown Voltage ($V_{BE} = 0$)	$I_C = 10\ \mu\text{A}$	50			V
$V_{(BR)CBO}^*$	Collector-Base Breakdown Voltage ($I_E = 0$)	$I_C = 10\ \mu\text{A}$	50			V
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ($I_B = 0$)	$I_C = 2\ \text{mA}$	45			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_C = 0$)	$I_C = 10\ \mu\text{A}$	6			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 10\ \text{mA}$ $I_B = 0.5\ \text{mA}$ $I_C = 100\ \text{mA}$ $I_B = 5\ \text{mA}$		0.09 0.2	0.25 0.6	V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 10\ \text{mA}$ $I_B = 0.5\ \text{mA}$ $I_C = 100\ \text{mA}$ $I_B = 5\ \text{mA}$		0.75 0.9		V V
$V_{BE(on)}^*$	Base-Emitter On Voltage	$I_C = 2\ \text{mA}$ $V_{CE} = 5\ \text{V}$ $I_C = 10\ \text{mA}$ $V_{CE} = 5\ \text{V}$	0.58	0.63 0.7	0.7 0.77	V V
h_{FE}^*	DC Current Gain	$I_C = 10\ \mu\text{A}$ $V_{CE} = 5\ \text{V}$ $I_C = 2\ \text{mA}$ $V_{CE} = 5\ \text{V}$	200	150 290	450	
f_T	Transition Frequency	$I_C = 10\ \text{mA}$ $V_{CE} = 5\ \text{V}$ $f = 100\text{MHz}$		300		MHz
C_{CB}	Collector Base Capacitance	$I_E = 0$ $V_{CB} = 10\ \text{V}$ $f = 1\ \text{MHz}$			4.5	pF
C_{EB}	Collector Emitter Capacitance	$I_C = 0$ $V_{EB} = 0.5\ \text{V}$ $f = 1\ \text{MHz}$		9		pF
NF	Noise Figure	$V_{CE} = 5\ \text{V}$ $I_C = 0.2\ \text{mA}$ $f = 1\text{KHz}$ $\Delta f = 200\ \text{Hz}$ $R_G = 2\ \text{K}\Omega$		2	10	dB
h_{ie}^*	Input Impedance	$V_{CE} = 5\ \text{V}$ $I_C = 2\ \text{mA}$ $f = 1\text{KHz}$	3.2	4.5	8.5	$\text{K}\Omega$
h_{re}^*	Reverse Voltage Ratio	$V_{CE} = 5\ \text{V}$ $I_C = 2\ \text{mA}$ $f = 1\text{KHz}$		2		10^{-4}
h_{fe}^*	Small Signal Current Gain	$V_{CE} = 5\ \text{V}$ $I_C = 2\ \text{mA}$ $f = 1\text{KHz}$		330		
h_{oe}^*	Output Admittance	$V_{CE} = 5\ \text{V}$ $I_C = 2\ \text{mA}$ $f = 1\text{KHz}$		30	60	μs

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

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



Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1997 SGS-THOMSON Microelectronics - Printed in Italy - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES
Australia - Brazil - Canada - China - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands -
Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A