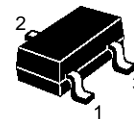


SMALL SIGNAL PNP TRANSISTORS

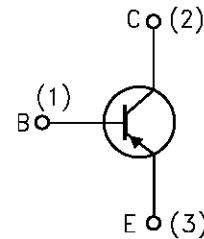
Type	Marking
BC857A	3E
BC857B	3F
BC858A	3J
BC858B	3K

- SILICON EPITAXIAL PLANAR PNP TRANSISTORS
- MINIATURE PLASTIC PACKAGE FOR APPLICATION IN SURFACE MOUNTING CIRCUITS
- VERY LOW NOISE AF AMPLIFIER
- NPN COMPLEMENTS FOR BC857 IS BC847



SOT-23

INTERNAL SCHEMATIC DIAGRAM



SC08810

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BC857	BC858	
V_{CES}	Collector-Emitter Voltage ($V_{BE} = 0$)	-50	-30	V
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	-50	-30	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	-45	-30	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	-5		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 $T_c = 25\text{ }^\circ\text{C}$	300		mW
T_{stg}	Storage Temperature	-65 to 150		$^\circ\text{C}$
T_j	Max. Operating Junction Temperature	150		$^\circ\text{C}$

BC857/BC858

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 ($V_{BE} = 0$)	$I_C = -10\ \mu\text{A}$ for BC857 for BC858	-50 -30			V V
$V_{(BR)CBO}^*$	Collector-Base Breakdown Voltage ($I_E = 0$)	$I_C = -10\ \mu\text{A}$ for BC857 for BC858	-50 -30			V V
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ($I_B = 0$)	$I_C = -2\ \text{mA}$ for BC857 for BC858	-45 -30			V V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_C = 0$)	$I_C = -10\ \mu\text{A}$ for BC857 for BC858	-6 -5			V 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 -0.25	-0.3 -0.65	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	$I_C = -2\ \text{mA}$ $V_{CE} = -5\ \text{V}$ $I_C = -10\ \text{mA}$ $V_{CE} = -5\ \text{V}$	-0.6	-0.66 -0.72	-0.75 -0.82	V V
h_{FE}	DC Current Gain	$I_C = -10\ \mu\text{A}$ $V_{CE} = -5\ \text{V}$ for group A for group B $I_C = -2\ \text{mA}$ $V_{CE} = -5\ \text{V}$ for group A for group B		90 150 180 290	220 450	
f_T	Transition Frequency	$I_C = -10\ \text{mA}$ $V_{CE} = -5\ \text{V}$ $f = 100\text{MHz}$		150		MHz
C_{CB}	Collector Base Capacitance	$I_E = 0$ $V_{CB} = -10\ \text{V}$ $f = 1\ \text{MHz}$			6	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 1.2	10 4	dB dB

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

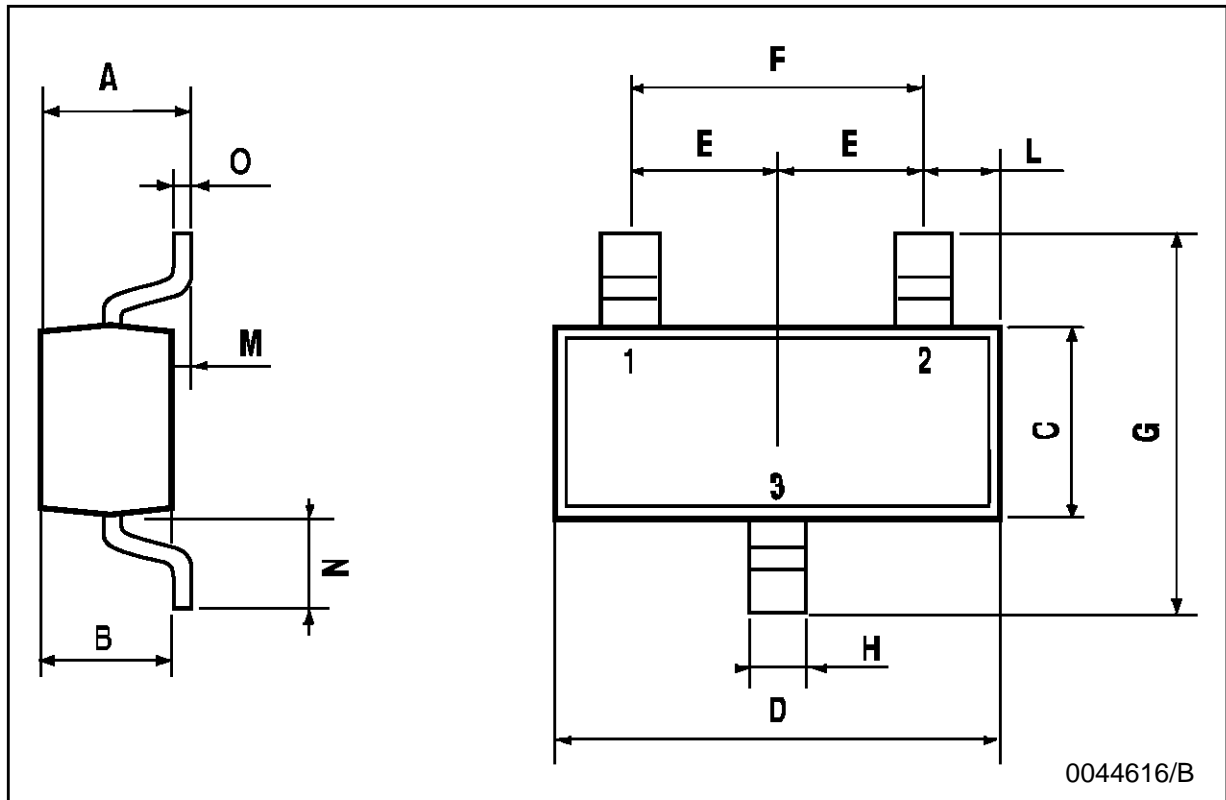
ELECTRICAL CHARACTERISTICS (Continued)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
h_{ie}	Input Impedance	$V_{CE} = -5\text{ V}$ $I_C = -2\text{ mA}$ $f = 1\text{ KHz}$ for group A for group B	1.6 3.2	2.7 4.5	4.5 8.5	$K\Omega$ $K\Omega$
h_{re}	Reverse Voltage Ratio	$V_{CE} = -5\text{ V}$ $I_C = -2\text{ mA}$ $f = 1\text{ KHz}$ for group A for group B		1.5 2		10^{-4} 10^{-4}
h_{fe}	Small Signal Current Gain	$V_{CE} = -5\text{ V}$ $I_C = -2\text{ mA}$ $f = 1\text{ KHz}$ for group A for group B		220 330		
h_{oe}	Output Admittance	$V_{CE} = -5\text{ V}$ $I_C = -2\text{ mA}$ $f = 1\text{ KHz}$ for group A for group B		18 30	30 60	μs 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



0044616/B

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