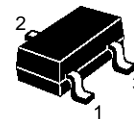


## SMALL SIGNAL PNP TRANSISTORS

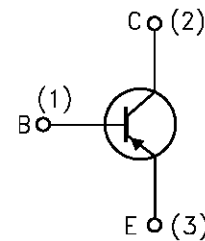
Type	Marking
BC857A	3E
BC857B	3F
BC858A	3J
BC858B	3K

- 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 $\mu\text{A}$
$V_{(BR)CES}^*$	Collector-Emitter Breakdown Voltage ( $V_{BE} = 0$ )	$I_C = -10\ \mu\text{A}$ for <b>BC857</b> for <b>BC858</b>	-50 -30			V V
$V_{(BR)CBO}^*$	Collector-Base Breakdown Voltage ( $I_E = 0$ )	$I_C = -10\ \mu\text{A}$ for <b>BC857</b> for <b>BC858</b>	-50 -30			V V
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ( $I_B = 0$ )	$I_C = -2\ \text{mA}$ for <b>BC857</b> for <b>BC858</b>	-45 -30			V V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ( $I_C = 0$ )	$I_C = -10\ \mu\text{A}$ for <b>BC857</b> for <b>BC858</b>	-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 <b>group A</b> for <b>group B</b> $I_C = -2\ \text{mA}$ $V_{CE} = -5\ \text{V}$ for <b>group A</b> for <b>group B</b>		90 150 110 200		
$f_T$	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  $\mu\text{s}$ , duty cycle  $\leq 2\%$

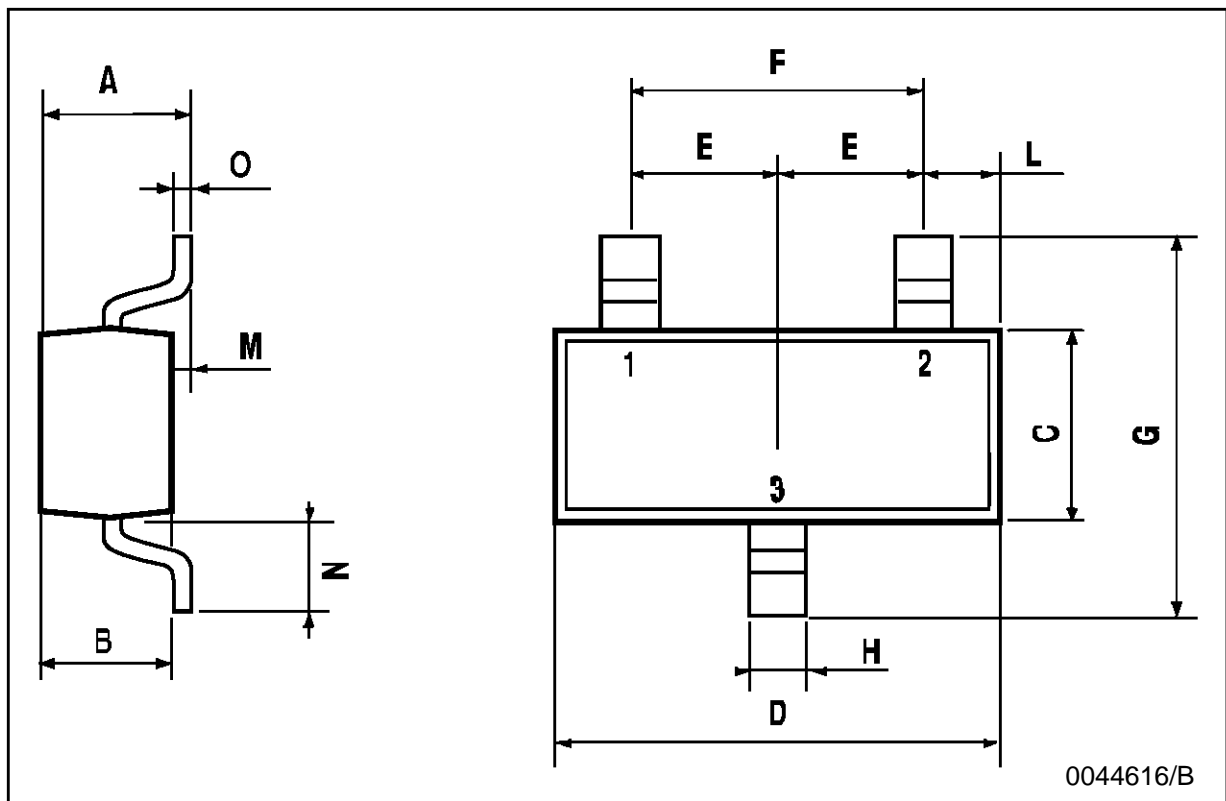
## ELECTRICAL CHARACTERISTICS (Continued)

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 <b>group A</b> for <b>group B</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 <b>group A</b> for <b>group B</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 <b>group A</b> for <b>group B</b>		220 330		
$h_{oe}$	Output Admittance	$V_{CE} = -5\text{ V}$ $I_C = -2\text{ mA}$ $f = 1\text{ KHz}$ for <b>group A</b> for <b>group B</b>		18 30	30 60	$\mu\text{s}$ $\mu\text{s}$

\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , 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



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