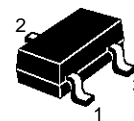


## SMALL SIGNAL PNP TRANSISTORS

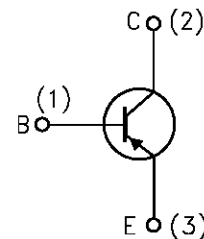
Type	Marking
BCW69	H1
BCW70	H2

- SILICON EPITAXIAL PLANAR PNP TRANSISTORS
- MINIATURE PLASTIC PACKAGE FOR APPLICATION IN SURFACE MOUNTING CIRCUITS
- LOW LEVEL AUDIO AMPLIFICATION AND SWITCHING



**SOT-23**

### INTERNAL SCHEMATIC DIAGRAM



SC08810

### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CES}$	Collector-Emitter Voltage ( $V_{BE} = 0$ )	-50	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	-45	V
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	-50	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
$P_{tot}$	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	$^\circ\text{C}$

## BCW69/BCW70

### THERMAL DATA

$R_{thj-amb}$	Thermal Resistance Junction-Ambient	Max	420	$^{\circ}\text{C}/\text{W}$
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• Mounted on a ceramic substrate area = 10 x 8 x 0.6 mm

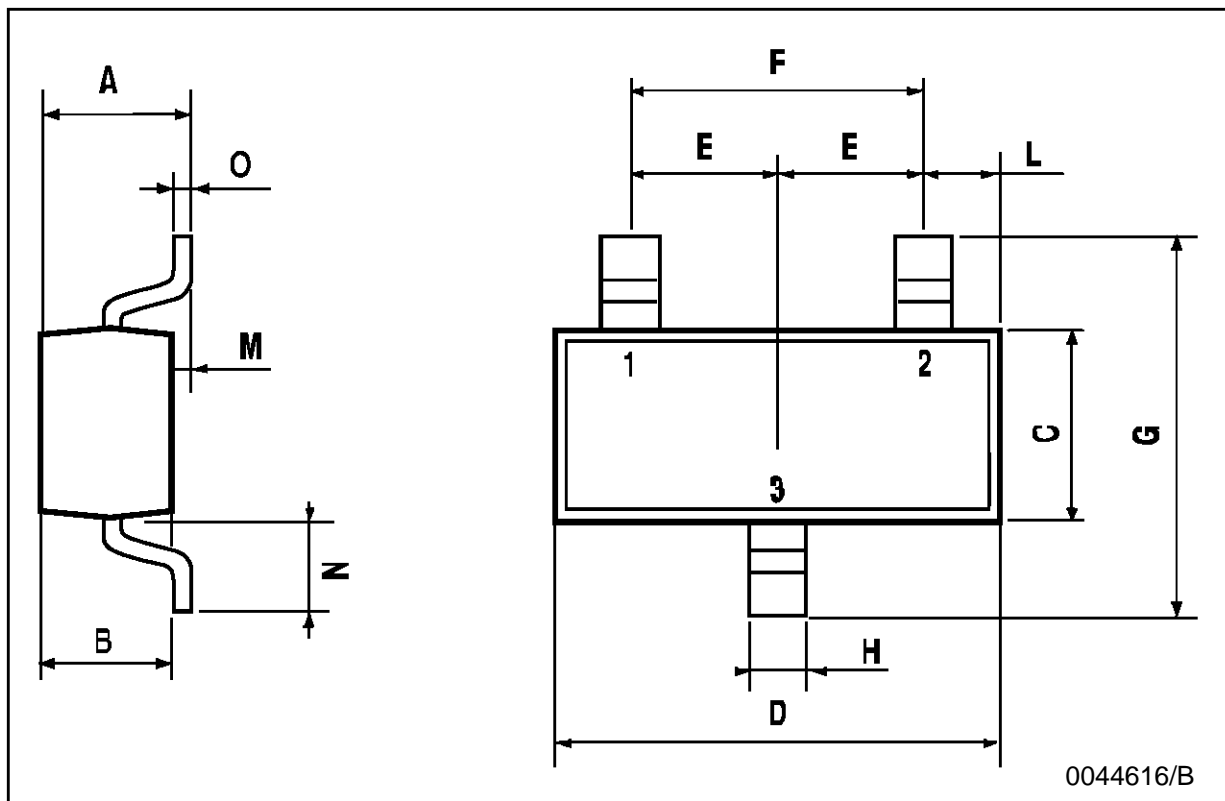
### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cut-off Current ( $I_E = 0$ )	$V_{CB} = -20\text{ V}$ $V_{CB} = -20\text{ V}$ $T_j = 100^{\circ}\text{C}$			-100 -10	nA $\mu\text{A}$
$V_{(BR)CES}^*$	Collector-Emitter Breakdown Voltage ( $V_{BE} = 0$ )	$I_C = -10\ \mu\text{A}$	-50			V
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ( $I_B = 0$ )	$I_C = -2\ \text{mA}$	-45			V
$V_{(BR)CBO}^*$	Collector-Base Breakdown Voltage ( $I_E = 0$ )	$I_C = -10\ \mu\text{A}$	-50			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ( $I_C = 0$ )	$I_E = -10\ \mu\text{A}$	-5			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = -10\ \text{mA}$ $I_B = -0.5\ \text{mA}$ $I_C = -50\ \text{mA}$ $I_B = -2.5\ \text{mA}$		-0.18	-0.3	V V
$V_{BE(sat)}^*$	Collector-Base Saturation Voltage	$I_C = -10\ \text{mA}$ $I_B = -0.5\ \text{mA}$ $I_C = -50\ \text{mA}$ $I_B = -2.5\ \text{mA}$		-0.72 -0.81		V V
$V_{BE(on)}^*$	Base-Emitter On Voltage	$I_C = -2\ \text{mA}$ $V_{CE} = -5\ \text{V}$	-0.6		-0.75	V
$h_{FE}^*$	DC Current Gain	for <b>BCW69</b> $I_C = -10\ \mu\text{A}$ $V_{CE} = -5\ \text{V}$ $I_C = -2\ \text{mA}$ $V_{CE} = -5\ \text{V}$ for <b>BCW70</b> $I_C = -10\ \mu\text{A}$ $V_{CE} = -5\ \text{V}$ $I_C = -2\ \text{mA}$ $V_{CE} = -5\ \text{V}$	120 215	90 150	260 500	
$f_T$	Transition Frequency	$I_C = -10\ \text{mA}$ $V_{CE} = -5\ \text{V}$ $f = 100\ \text{MHz}$		150		MHz
$C_{CB}$	Collector Base Capacitance	$I_E = 0$ $V_{CB} = -10\ \text{V}$ $f = 1\ \text{MHz}$			7	dB
NF	Noise Figure	$I_C = -0.2\ \text{mA}$ $V_{CE} = -5\ \text{V}$ $f = 1\ \text{KHz}$ $\Delta f = 200\ \text{Hz}$ $R_g = 2\ \text{K}\Omega$			10	dB

\* 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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