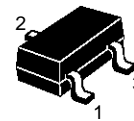


SMALL SIGNAL PNP TRANSISTORS

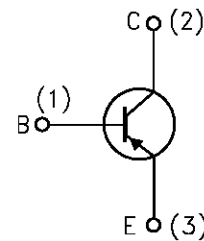
Type	Marking
BCW61A	BA
BCW61B	BB
BCW61C	BC
BCX71G	BG
BCX71H	BH
BCX71J	BJ

- SILICON EPITAXIAL PLANAR PNP TRANSISTORS
- MINIATURE PLASTIC PACKAGE FOR APPLICATION IN SURFACE MOUNTING CIRCUITS
- LOW LEVEL AF AMPLIFICATION AND SWITCHING
- NPN COMPLEMENTS ARE RESPECTIVELY BCW60 AND BCX70



SOT-23

INTERNAL SCHEMATIC DIAGRAM



SC08810

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BCW61	BCX71	
V_{CES}	Collector-Emitter Voltage ($V_{BE} = 0$)	-32	-45	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	-32	-45	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	-5		V
I_C	Collector Current	-0.2		A
I_B	Base Current	-0.05		A
P_{tot}	Total Dissipation at $T_C = 25^\circ\text{C}$	310		mW
T_{stg}	Storage Temperature	-65 to 150		$^\circ\text{C}$
T_j	Max. Operating Junction Temperature	150		$^\circ\text{C}$

BCW61/BCX71

THERMAL DATA

$R_{thj-amb}$	Thermal Resistance Junction-Ambient	Max	450	$^{\circ}\text{C}/\text{W}$
R_{thj-SR}	Thermal Resistance Junction-Substrate	Max	320	$^{\circ}\text{C}/\text{W}$

• Mounted on a ceramic substrate area = 0.7 mm x 2.5 cm²

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current ($V_{BE} = 0$)	$V_{CE} = \text{Rated } V_{CES}$ $V_{CE} = \text{Rated } V_{CES}$ $T_{amb} = 150\text{ }^{\circ}\text{C}$			-20 -20	nA μA
I_{EBO}	Collector Cut-off Current ($I_E = 0$)	$V_{EB} = -4\text{ V}$			-20	nA
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ($I_B = 0$)	$I_C = -2\text{ mA}$ for BCW61 for BCX71	-32 -45			V V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_C = 0$)	$I_C = -1\text{ }\mu\text{A}$	-5			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = -10\text{ mA}$ $I_B = -0.25\text{ mA}$ $I_C = -50\text{ mA}$ $I_B = -1.25\text{ mA}$			-0.25 -0.55	V V
$V_{BE(sat)}^*$	Collector-Base Saturation Voltage	$I_C = -10\text{ mA}$ $I_B = -0.25\text{ mA}$ $I_C = -50\text{ mA}$ $I_B = -1.25\text{ mA}$			-0.85 -1.05	V V
$V_{BE(on)}$	Collector-Base On Voltage	$I_C = -2\text{ mA}$ $V_{CE} = -5\text{ V}$	-0.6		-0.75	V
h_{FE}^*	DC Current Gain	$I_C = -0.01\text{ mA}$ $V_{CE} = -5\text{ V}$ for group A, G for group B, H for group C, J $I_C = -2\text{ mA}$ $V_{CE} = -5\text{ V}$ for group A, G for group B, H for group C, J $I_C = -50\text{ mA}$ $V_{CE} = -1\text{ V}$ for group A, G for group B, H for group C, J	30 40	140 200 270	220 310 460	
f_T	Transition Frequency	$I_C = -10\text{ mA}$ $V_{CE} = -5\text{ V}$ $f = 100\text{ MHz}$		180		MHz
C_{CB}	Collector Base Capacitance	$I_E = 0$ $V_{CB} = -10\text{ V}$ $f = 1\text{ MHz}$			6	pF
C_{EB}	Emitter Base Capacitance	$I_E = 0$ $V_{EB} = -0.5\text{ V}$ $f = 1\text{ MHz}$		11		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	6	dB
h_{ie}	Input Impedance	$V_{CE} = -5\text{ V}$ $I_C = -2\text{ mA}$ $f = 1\text{ KHz}$ for group A, G for group B, H for group C, J	1.6 2.5 3.2	2.7 3.6 4.5	4.5 6 8.5	$\text{K}\Omega$ $\text{K}\Omega$ $\text{K}\Omega$
h_{re}	Reverse Voltage Ratio	$V_{CE} = -5\text{ V}$ $I_C = -2\text{ mA}$ $f = 1\text{ KHz}$ for group A, G for group B, H for group C, J		1.5 2 2		10^{-4} 10^{-4} 10^{-4}

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

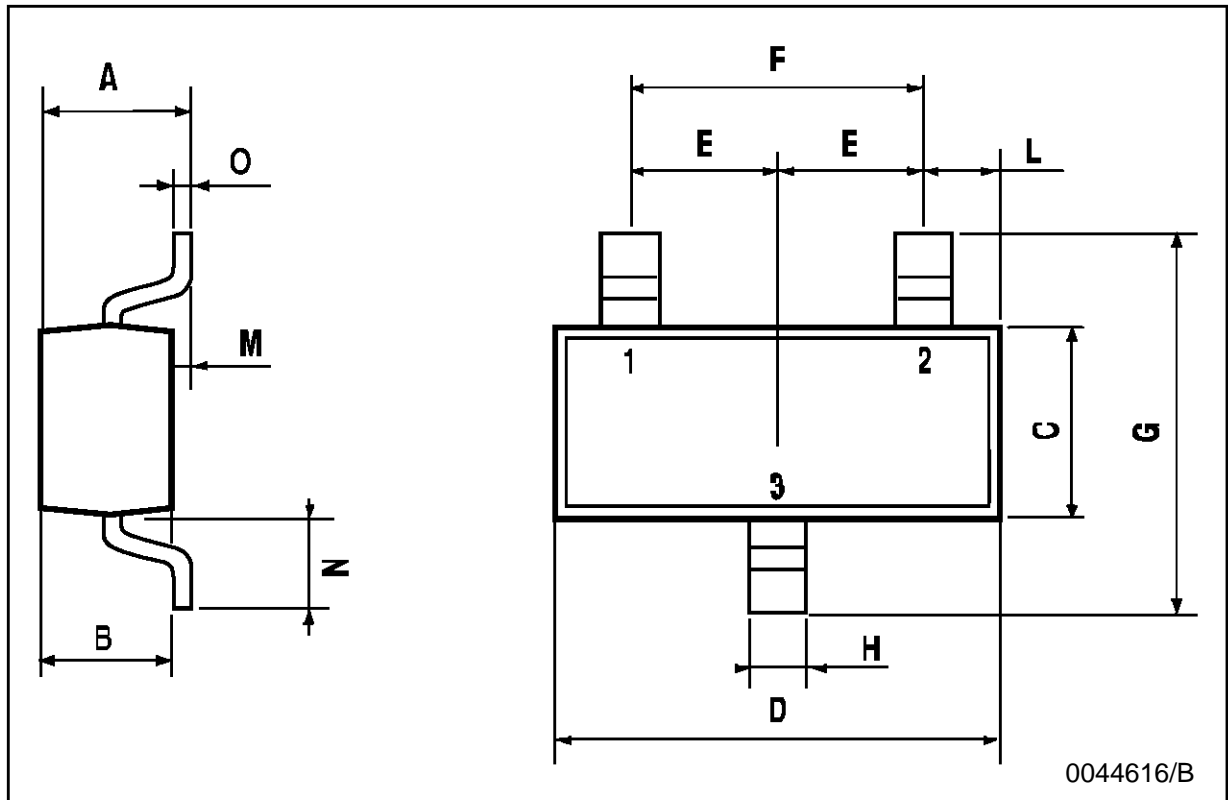
ELECTRICAL CHARACTERISTICS (Continued)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
h_{fe}	Small Signal Current Gain	$V_{CE} = -5\text{ V}$ $I_C = -2\text{ mA}$ $f = 1\text{ KHz}$ for group A, G for group B, H for group C, J		200 260 330		
h_{oe}	Output Admittance	$V_{CE} = -5\text{ V}$ $I_C = -2\text{ mA}$ $f = 1\text{ KHz}$ for group A, G for group B, H for group C, J		18 24 30	30 50 60	μs μs μs
t_d	Delay Time	$I_C = -10\text{ mA}$ $I_{B1} = I_{B2} = -1\text{ mA}$ $V_{BB} = -3.6\text{ V}$ $R_1 = R_2 = 5\text{ K}\Omega$ $R_L = 990\ \Omega$		35		ns
t_r	Rise Time			50		ns
t_{on}	Switching On Time			85	150	ns
t_s	Storage Time			400		ns
t_f	Fall Time			80		ns
t_{off}	Switching Off Time			480	800	ns

* 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



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