

# SOT23 PNP SILICON PLANAR SMALL SIGNAL TRANSISTORS

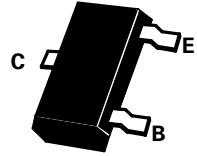
## BCW61

### ISSUE 2 – FEBRUARY 95

#### PARTMARKING DETAIL –

BCW61A	– BA	BCW61AR	– CA
BCW61B	– BB	BCW61BR	– CB
BCW61C	– BC	BCW61CR	– CC
BCW61D	– BD	BCW61DR	– CD

COMPLEMENTARY TYPE – BCW60

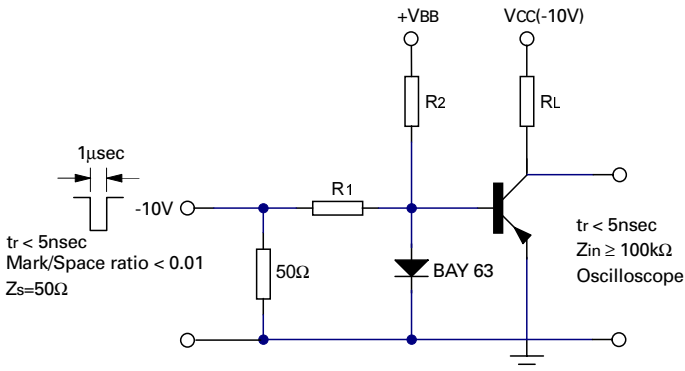


### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	-32	V
Collector-Emitter Voltage	$V_{CEO}$	-32	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Continuous Collector Current	$I_C$	-200	mA
Base Current	$I_B$	-50	mA
Power Dissipation at $T_{amb}=25^{\circ}C$	$P_{TOT}$	330	mW
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150	$^{\circ}C$

### FOUR TERMINAL NETWORK DATA ( $I_C=2mA$ , $V_{CE}=5V$ , $f=1kHz$ )

	$h_{FE}$ Group A			$h_{FE}$ Group B			$h_{FE}$ Group C			$h_{FE}$ Group D			
	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
$h_{11e}$	1.6	2.7	4.5	2.5	3.6	6.0	3.2	4.5	8.5	4.5	7.5	12	$k\Omega$
$h_{12e}$		1.5			2			2			3		$10^{-4}$
$h_{21e}$		200			260			330			520		
$h_{22e}$		18	30		24	50		30	60		50	100	$\mu S$



# BCW61

## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.	
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-32			V	$I_{CE0} = -2\text{mA}$	
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5			V	$I_{EBO} = -1\mu\text{A}$	
Collector-Emitter Cut-off Current	$I_{CES}$			-20 -20	nA $\mu\text{A}$	$V_{CES} = -32\text{V}$ $V_{CES} = -32\text{V}, T_{amb} = 150^{\circ}\text{C}$	
Emitter-Base Cut-Off Current	$I_{EBO}$			-20	nA	$V_{EBO} = -4\text{V}$	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-0.12 -0.25	-0.25 -0.55	V V	$I_C = -10\text{mA}, I_B = -0.25\text{mA}$ $I_C = -50\text{mA}, I_B = -1.25\text{mA}$	
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	-0.60 -0.68	-0.70 -0.80	-0.85 -1.05	V V	$I_C = -10\text{mA}, I_B = -0.25\text{mA}$ $I_C = -50\text{mA}, I_B = -1.25\text{mA}$	
Base - Emitter Voltage	$V_{BE}$	-0.6	-0.55 -0.65 -0.72	-0.75	V V V	$I_C = -10\mu\text{A}, V_{CE} = -5\text{V}$ $I_C = -2\text{mA}, V_{CE} = -5\text{V}$ $I_C = -50\text{mA}, V_{CE} = -1\text{V}$	
Static Forward Current Transfer Ratio	BCW61A	$h_{FE}$	120	140 170	220	$I_C = -10\mu\text{A}, V_{CE} = -5\text{V}$ $I_C = -2\text{mA}, V_{CE} = -5\text{V}$ $I_C = -50\text{mA}, V_{CE} = -1\text{V}$	
	BCW61B		30 180 80	200 250			310
	BCW61C		40 250 100	270 350			460
	BCW61D		100 380 110	340 500			630
Transition Frequency	$f_T$		180		MHz	$I_C = 10\text{mA}, V_{CE} = -5\text{V}$ $f = 100\text{MHz}$	
Emitter-Base Capacitance	$C_{ebo}$		11		pF	$V_{EBO} = -0.5\text{V}, f = 1\text{MHz}$	
Collector-Base Capacitance	$C_{cbo}$			6	pF	$V_{CBO} = -10\text{V}, f = 1\text{MHz}$	
Noise Figure	N		2	6	dB	$I_C = 0.2\text{mA}, V_{CE} = -5\text{V}$ $R_G = 2\text{K}\Omega, f = 1\text{KHz}$ $\Delta f = 200\text{Hz}$	
Switching times:							
Delay Time	$t_d$		35		ns	$-I_C : -I_{B1} : I_{B2} = 10:1:1\text{mA}$ $R_1 = R_2 = 5\text{K}\Omega$ $V_{BB} = -3.6\text{V}, R_L = 990\Omega$	
Rise Time	$t_r$		50		ns		
Turn-on Time	$t_{on}$		85	150	ns		
Storage Time	$t_s$		400		ns		
Fall Time	$t_f$		80		ns		
Turn-Off Time	$t_{off}$		480	800	ns		

\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  
 Spice parameter data is available upon request for this device