SOT23 NPN SILICON PLANAR SMALL SIGNAL TRANSISTORS

BCW60

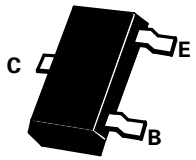
ISSUE 2 – AUGUST 1995

PARTMARKING DETAILS

BCW60A – AA	BCW60AR – CR
BCW60B – AB	BCW60BR – DR
BCW60C – AC	BCW60CR – AR
BCW60D – AD	BCW60DR – BR

COMPLEMENTARY TYPE

BCW61



SOT23

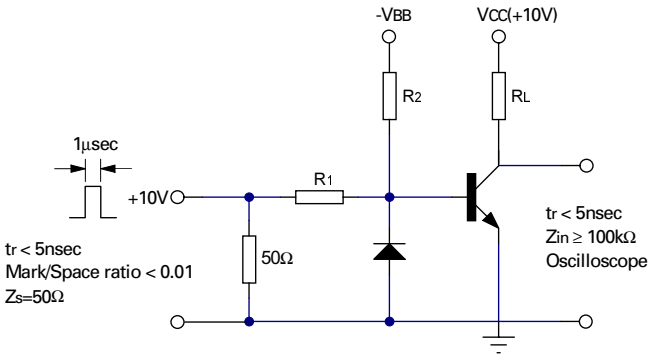
ABSOLUTE MAXIMUM RATINGS.

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°C	P_{TOT}	330	mW
Operating and Storage Temperature Range	tj:tstg	-55 to +150	°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	kΩ
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	µS

SWITCHING CIRCUIT



BCW60

ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	32			V	I_C=2mA
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	I_{EBO}=1μA
Collector-Emitter Cut-off Current	I_{CES}			20 20	nA μA	V_{CES}=32V V_{CES}=32V ,T_{amb}=150°C
Emitter-Base Cut-Off Current	I_{EBO}			20	nA	V_{EBO}=4V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		0.12 0.20	0.35 0.55	V V	I_C=10mA, I_B = 0.25mA I_C= 50mA, I_B =1.25mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	0.60 0.70	0.70 0.83	0.85 1.05	V V	I_C=10mA, I_B=0.25mA I_C =50mA, I_B=1.25mA
Base - Emitter Voltage	V_{BE}	0.55	0.52 0.65 0.78	0.75	V V V	I_C=10μA, V_{CE}=5V I_C=2mA, V_{CE}=5V I_C=50mA, V_{CE}=1V
Static BCW60A Forward Current Transfer BCW60B Ratio	h_{FE}	120 50	78 170	220		I_C=10μA, V_{CE}=5V I_C=2mA, V_{CE}=5V I_C=50mA, V_{CE}=1V
		20 180 70	145 250	310		I_C=10μA, V_{CE}=5V I_C=2mA, V_{CE}=5V I_C=50mA, V_{CE}=1V
BCW60C		40 250 90	220 350	460		I_C=10μA, V_{CE}=5V I_C=2mA, V_{CE}=5V I_C=50mA, V_{CE}=1V
BCW60D		100 380 100	300 500	630		I_C=10μA, V_{CE}=5V I_C=2mA, V_{CE}=5V I_C=50mA, V_{CE}=1V
Transition Frequency	f_T	125	250		MHz	I_C =10mA, V_{CE} =5V f = 100MHz
Emitter-Base Capacitance	C_{ebo}		8		pF	V_{EBO}=0.5V, f =1MHz
Collector-Base Capacitance	C_{cbo}			4.5	pF	V_{CBO}=10V, f =1MHz
Noise Figure	N		2	6	dB	I_C= 0.2mA, V_{CE} = 5V R_G =2KΩ, f=1KH Δf=200Hz
Switching times: Delay Time Rise Time Turn-on Time Storage Time Fall Time Turn-Off Time	 t_d t_r t_{on} t_s t_f t_{off}		 35 50 85 400 80 480	 150 800	 ns ns ns ns ns ns	I_C:I_{B1}:- I_{B2}=10:1:1mA R_1=5KΩ, R_2=5KΩ V_{BB}=3.6V, R_L=990Ω

*Measured under pulsed conditions. Pulse width=300μs. Duty cycle
Spice parameter data is available upon request for this device