

BCW61A,B,C,D

CASE 318-02/03, STYLE 6
SOT-23 (TO-236AA/AB)

GENERAL PURPOSE TRANSISTOR

PNP SILICON

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	32	Vdc
Collector-Base Voltage	V_{CBO}	32	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current — Continuous	I_C	100	mA _{dc}

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Total Device Dissipation, $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	350 2.8	mW mW/ $^\circ\text{C}$
Storage Temperature	T_{stg}	150	$^\circ\text{C}$
*Thermal Resistance Junction to Ambient	$R_{\theta JA}$	357	$^\circ\text{C/W}$

*Package mounted on 99.5% alumina 10 x 8 x 0.6 mm.

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = 2.0 \text{ mA}_{dc}$, $I_B = 0$)	$V_{(BR)CEO}$	32	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 1.0 \text{ mA}_{dc}$, $I_C = 0$)	$V_{(BR)EBO}$	5.0	—	Vdc
Collector Cutoff Current ($V_{CE} = 32 \text{ Vdc}$) ($V_{CE} = 32 \text{ Vdc}$, $T_A = 150^\circ\text{C}$)	I_{CES}	— —	20 20	nA _{dc} μA_{dc}

ON CHARACTERISTICS

DC Current Gain ($I_C = 10 \text{ mA}_{dc}$, $V_{CE} = 5.0 \text{ Vdc}$)	BCW61A BCW61B BCW61C BCW61D	h_{FE}	— 20 40 100	— — — —	—
($I_C = 2.0 \text{ mA}_{dc}$, $V_{CE} = 5.0 \text{ Vdc}$)	BCW61A BCW61B BCW61C BCW61D		120 140 250 380	220 310 460 630	
($I_C = 50 \text{ mA}_{dc}$, $V_{CE} = 1.0 \text{ Vdc}$)	BCW61A BCW61B BCW61C BCW61D		60 80 100 100	— — — —	
($I_C = 2.0 \text{ mA}_{dc}$, $V_{CE} = 5.0 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	BCW61A BCW61B BCW61C BCW61D		125 175 250 350	250 350 500 700	
Collector-Emitter Saturation Voltage ($I_C = 50 \text{ mA}_{dc}$, $I_B = 1.25 \text{ mA}_{dc}$) ($I_C = 10 \text{ mA}_{dc}$, $I_B = 0.25 \text{ mA}_{dc}$)		$V_{CE(sat)}$	— —	0.55 0.25	Vdc
Base-Emitter Saturation Voltage ($I_C = 50 \text{ mA}_{dc}$, $I_B = 1.25 \text{ mA}_{dc}$) ($I_C = 10 \text{ mA}_{dc}$, $I_B = 0.25 \text{ mA}_{dc}$)		$V_{BE(sat)}$	0.68 0.6	1.05 0.85	Vdc
Base-Emitter On Voltage ($I_C = 2.0 \text{ mA}_{dc}$, $V_{CE} = 5.0 \text{ Vdc}$)		$V_{BE(on)}$	0.6	0.75	Vdc

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ELECTRICAL CHARACTERISTICS (continued) ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
SMALL SIGNAL CHARACTERISTICS				
Output Capacitance ($V_{CE} = 10\text{ Vdc}$, $I_C = 0$, $f = 1.0\text{ MHz}$)	C_{obo}	—	6.0	pF
Noise Figure ($I_C = 0.2\text{ mAdc}$, $V_{CE} = 5.0\text{ Vdc}$, $R_S = 2.0\text{ k}\Omega$, $f = 1.0\text{ kHz}$, $BW = 200\text{ Hz}$)	NF	—	6.0	dB
SWITCHING CHARACTERISTICS				
Turn-On Time ($I_C = 10\text{ mAdc}$, $I_{B1} = 1.0\text{ mAdc}$)	t_{on}	—	150	ns
Turn-Off Time ($I_{B2} = 1.0\text{ mAdc}$, $V_{BB} = 3.6\text{ Vdc}$, $R_1 = R_2 = 5.0\text{ k}\Omega$, $R_L = 990\ \Omega$)	t_{off}	—	800	ns

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