

T-27-09

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CE0}	45	Vdc
Collector-Base Voltage	V_{CB0}	50	Vdc
Emitter-Base Voltage	V_{EB0}	5.0	Vdc
Collector Current — Continuous	I_C	100	mA dc

THERMAL CHARACTERISTICS

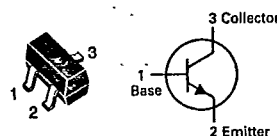
Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board,* $T_A = 25^\circ\text{C}$	P_D	225	mW
Derate above 25°C		1.8	mW/ $^\circ\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Total Device Dissipation Alumina Substrate,** $T_A = 25^\circ\text{C}$	P_D	300	mW
Derate above 25°C		2.4	mW/ $^\circ\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

*FR-5 = 1.0 x 0.75 x 0.062 in.

**Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

DEVICE MARKING

BCW71L = K1; BCW72L = AH

BCW71L
BCW72LCASE 318-03, STYLE 6
SOT-23 (TO-236AB)GENERAL PURPOSE
TRANSISTORS

NPN SILICON

Refer to MPS3904 for graphs.

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = 2.0 \text{ mA dc}$, $V_{EB} = 0$)	$V_{(BR)CEO}$	45	—	—	Vdc
Collector-Emitter Breakdown Voltage ($I_C = 2.0 \text{ mA dc}$, $V_{EB} = 0$)	$V_{(BR)CES}$	45	—	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 10 \mu\text{A dc}$, $I_E = 0$)	$V_{(BR)CBO}$	50	—	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10 \mu\text{A dc}$, $I_C = 0$)	$V_{(BR)EBO}$	5.0	—	—	Vdc
Collector Cutoff Current ($V_{CB} = 20 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = 20 \text{ Vdc}$, $I_E = 0$, $T_A = 100^\circ\text{C}$)	I_{CBO}	—	—	100 10	nA dc $\mu\text{A dc}$

ON CHARACTERISTICS

DC Current Gain ($I_C = 2.0 \text{ mA dc}$, $V_{CE} = 5.0 \text{ Vdc}$)	h_{FE}	110 200	—	220 450	—
Collector-Emitter Saturation Voltage ($I_C = 10 \text{ mA dc}$, $I_B = 0.5 \text{ mA dc}$) ($I_C = 50 \text{ mA dc}$, $I_B = 2.5 \text{ mA dc}$)	$V_{CE(sat)}$	— —	— 0.21	0.25 —	Vdc
Base-Emitter Saturation Voltage ($I_C = 50 \text{ mA dc}$, $I_B = 2.5 \text{ mA dc}$)	$V_{BE(sat)}$	—	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

SMALL SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product ($I_C = 10 \text{ mA dc}$, $V_{CE} = 5.0 \text{ Vdc}$, $f = 35 \text{ MHz}$)	f_T	—	300	—	MHz
Output Capacitance ($I_E = 0$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)	C_{obo}	—	—	4.0	pF
Input Capacitance ($I_C = 0$, $V_{EB} = 0.5 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)	C_{ibo}	—	9.0	—	pF
Noise Figure ($I_C = 0.2 \text{ mA dc}$, $V_{CE} = 5.0 \text{ Vdc}$, $R_S = 2.0 \text{ k}\Omega$, $f = 1.0 \text{ kHz}$, $BW = 200 \text{ Hz}$)	NF	—	—	10	dB