





SOT-23 Formed SMD Package

BCW67, A, B, C BCW68, F, G, H

GENERAL PURPOSE TRANSISTOR

P-N-P transistor

Marking $BCW67A = DA$ $BCW67B = DB$	PACKAGE OUTL ALL DIMENSI	
BCW67C = DC BCW68F = DF BCW68G = DG BCW68H = DH	3.0 2.8 0.48	-7 <u>0.14</u>
Pin configuration 1 = BASE 2 = EMITTER 3 = COLLECTOR	2.6 2.4 1.02 0.89 0.60 0.40 1.80	0.70 0.50 1.4 1.2 (.004) R0.05 (.002) 0.02 1.15 0.90

ABSOLUTE MAXIMUM RATINGS		BCW 67	series	68 series		
Collector–base voltage (open emitter)	$-V_{CBO}$	max.	45	6	\overline{V}	
Collector–emitter voltage (open base)	$-V_{CEO}$	max.	32	4.	5 V	
Emitter–base voltage (open collector)	$-V_{EBO}$	max.	5		V	
Collector current (d.c.)	$-I_C$	max.	800		mA	
Total power dissipation at $T_{amb} = 25$ °C	P_{tot}	max	225		mW	
D.C. current gain						
$I_C = 10 \ mA; \ V_{CE} = 1 \ V$						
BCW67A, 68F	h_{FE}	min.	7	'5		
BCW67B, 68G	h_{FE}	min.	12	20		
BCW67C, 68H	h_{FE}	min.	18	80		
$I_C = 100 \ mA; \ V_{CE} = 1 \ V$						
BCW67A, 68F	her	min.	10	00		
DC WO/A, 00F	h_{FE}	max.	23	50		
DCIM67D 69C	1	min.	1	60		
BCW67B, 68G	h_{FE}	max.	40	00		

BCW67C, 68H	h_{FE}	min. max.		250 630		
$I_C = 300 \ mA; \ V_{CE} = 1 \ V$						
BCW67A, 68F	h_{FE}	min.		35		
BCW67B, 68G	h_{FE}	min.		60		
BCW67C, 68H	h_{FE}	min.		100		
BC7707C, 0011	"FE	111111.		100		
RATINGS (at $T_A = 25$ °C unless otherwise Limiting values	specified)					
Collector–base voltage (open emitter)	$-V_{CBO}$	max.	45		60	V
Collector–emitter voltage (open base)	$-V_{CEO}$	max.	32		45	V
Emitter–base voltage (open collector)	$-V_{EBO}$	max.		5		V
Collector current (d.c.)	$-I_C$	max.		800		mA
Total power dissipation at $T_{amb} = 25^{\circ}C$	P_{tot}	max		225		mW
Storage temperature	T_{stg}		-55	5 to +	-150	° C
THERMAL CHARACTERISTICS $T_{j} = P (R_{th} _{j-t} + R_{th} _{s-a}) + T_{amb}$ Thermal resistance						
from junction to ambient	R_{th} $j-a$	556	556	556		°C/mW
CHARACTERISTICS (at $T_A = 25^{\circ}\text{C}$ unless Collector–emitter breakdown voltage	otherwise		d) 5 <mark>7 serie</mark>	s	68 seri	ies
		Derie				
9	V(RR)CEO	min.	32			\overline{V}
$I_C = 10 \ mA; I_B = 0$	V _(BR) CEO	min. min.	32 45		45	
$I_C = 10 \text{ mA}; I_B = 0$ $I_C = 10 \text{ mA}; V_{EB} = 0$	$V_{(BR)CEO}$ $V_{(BR)CES}$	min. min.	32 45			V V
$I_C = 10 \ mA; I_B = 0$ $I_C = 10 \ mA; V_{EB} = 0$ Emitter-base breakdown voltage	V _(BR) CES	min.		5	45	
$I_C = 10 \ mA; \ I_B = 0$ $I_C = 10 \ mA; \ V_{EB} = 0$ $Emitter-base \ breakdown \ voltage$ $I_E = 10 \ mA; \ I_C = 0$	(,				45	V
$I_C = 10 \ mA; I_B = 0$ $I_C = 10 \ mA; V_{EB} = 0$ Emitter-base breakdown voltage	V _(BR) CES	min.			45	V
$I_C = 10 \ mA; I_B = 0$ $I_C = 10 \ mA; V_{EB} = 0$ $Emitter-base \ breakdown \ voltage$ $I_E = 10 \ mA; I_C = 0$ $Collector \ cut-off \ current$	$V_{(BR)CES}$ $V_{(BR)EBO}$	min.	45		45 60	V V
$I_C = 10 \ mA; I_B = 0$ $I_C = 10 \ mA; V_{EB} = 0$ Emitter-base breakdown voltage $I_E = 10 \ mA; I_C = 0$ $Collector \ cut$ -off current $V_{CE} = 32 \ V; I_E = 0 \ V$	$V_{(BR)CES}$ $V_{(BR)EBO}$ I_{CES}	min. min. max.	45		45 60	V V nA
$I_C = 10 \ mA; I_B = 0$ $I_C = 10 \ mA; V_{EB} = 0$ Emitter-base breakdown voltage $I_E = 10 \ mA; I_C = 0$ $Collector \ cut$ -off current $V_{CE} = 32 \ V; I_E = 0 \ V$ $V_{CE} = 45 \ V; I_E = 0 \ V$	V(BR)CES V(BR)EBO ICES ICES	min. min. max. max.	45 20 -		45 60 - 20	V V nA nA
$I_C = 10 \text{ mA}; I_B = 0$ $I_C = 10 \text{ mA}; V_{EB} = 0$ $Emitter$ -base breakdown voltage $I_E = 10 \text{ mA}; I_C = 0$ $Collector \ cut$ -off current $V_{CE} = 32 \ V; I_E = 0 \ V$ $V_{CE} = 45 \ V; I_E = 0 \ V; T_A = 150 ^{\circ}C$ $V_{CE} = 45 \ V; I_E = 0 \ V; T_A = 150 ^{\circ}C$ $Emitter \ cut$ -off current	V(BR)CES V(BR)EBO ICES ICES ICES	min. min. max. max. max.	20 - 10		45 60 - 20 -	V V nA nA mA
$I_C = 10 \text{ mA}; I_B = 0$ $I_C = 10 \text{ mA}; V_{EB} = 0$ $Emitter$ -base breakdown voltage $I_E = 10 \text{ mA}; I_C = 0$ Collector cut-off current $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}; I_A = 150^{\circ}\text{C}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}; I_A = 150^{\circ}\text{C}$ $V_{CE} = 45 \text{ V}; I_C = 0 \text{ V}; I_A = 150^{\circ}\text{C}$ Emitter cut-off current $V_{EB} = 4 \text{ V}; I_C = 0$	V(BR)CES V(BR)EBO ICES ICES ICES	min. min. max. max. max.	20 - 10		45 60 - 20 -	V V nA nA mA
$I_C = 10 \text{ mA}; I_B = 0$ $I_C = 10 \text{ mA}; V_{EB} = 0$ $Emitter$ -base breakdown voltage $I_E = 10 \text{ mA}; I_C = 0$ Collector cut-off current $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ Emitter cut-off current $V_{EB} = 4 \text{ V}; I_C = 0$ Output capacitance at $f = 1 \text{ MHz}$	V(BR)CES V(BR)EBO ICES ICES ICES ICES ICES ICES	min. max. max. max. max. max.	20 - 10	5	45 60 - 20 -	V N N N N N N N N N N N N N
$I_C = 10 \text{ mA}; I_B = 0$ $I_C = 10 \text{ mA}; V_{EB} = 0$ $Emitter$ -base breakdown voltage $I_E = 10 \text{ mA}; I_C = 0$ Collector cut-off current $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ Emitter cut-off current $V_{EB} = 4 \text{ V}; I_C = 0$ Output capacitance at $f = 1 \text{ MHz}$ $I_E = 0; V_{CB} = 10 \text{ V}$	V(BR)CES V(BR)EBO ICES ICES ICES ICES	min. min. max. max. max. max.	20 - 10	5	45 60 - 20 -	V V nA nA mA mA
$I_C = 10 \text{ mA}; I_B = 0$ $I_C = 10 \text{ mA}; V_{EB} = 0$ $Emitter$ -base breakdown voltage $I_E = 10 \text{ mA}; I_C = 0$ Collector cut-off current $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ Emitter cut-off current $V_{EB} = 4 \text{ V}; I_C = 0$ Output capacitance at $f = 1 \text{ MHz}$ $I_E = 0; V_{CB} = 10 \text{ V}$ Input capacitance at $f = 1 \text{ MHz}$	V(BR)CES V(BR)EBO ICES ICES ICES ICES ICES CCS	min. max. max. max. max. max.	20 - 10	20	45 60 - 20 -	V NA NA MA MA MA MA PF
$I_C = 10 \text{ mA}; I_B = 0$ $I_C = 10 \text{ mA}; V_{EB} = 0$ $Emitter$ —base breakdown voltage $I_E = 10 \text{ mA}; I_C = 0$ Collector cut—off current $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}; V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ $V_{CE} = 45 \text{ V}; I_C = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ Emitter cut—off current $V_{EB} = 4 \text{ V}; I_C = 0$ Output capacitance at $f = 1 \text{ MHz}$ $I_E = 0; V_{CB} = 10 \text{ V}$ Input capacitance at $f = 1 \text{ MHz}$ $I_C = 0; V_{EB} = 0.5 \text{ V}$	V(BR)CES V(BR)EBO ICES ICES ICES ICES ICES ICES	min. max. max. max. max. max.	20 - 10	5	45 60 - 20 -	V N N N N N N N N N N N N N
$I_C = 10 \ mA; I_B = 0$ $I_C = 10 \ mA; V_{EB} = 0$ $Emitter$ —base breakdown voltage $I_E = 10 \ mA; I_C = 0$ Collector cut—off current $V_{CE} = 32 \ V; I_E = 0 \ V$ $V_{CE} = 45 \ V; I_E = 0 \ V; T_A = 150 \ C$ $V_{CE} = 45 \ V; I_E = 0 \ V; T_A = 150 \ C$ Emitter cut—off current $V_{EB} = 4 \ V; I_C = 0$ Output capacitance at $f = 1 \ MHz$ $I_E = 0; V_{CB} = 10 \ V$ Input capacitance at $f = 1 \ MHz$ $I_C = 0; V_{EB} = 0.5 \ V$ Saturation voltages	V(BR)CES V(BR)EBO ICES ICES ICES ICES ICES CES CEBO CC	min. max. max. max. max. max.	20 - 10	20 18 105	45 60 - 20 -	V N N N N N N N N N N N N N
$I_C = 10 \text{ mA}; I_B = 0$ $I_C = 10 \text{ mA}; V_{EB} = 0$ $Emitter$ -base breakdown voltage $I_E = 10 \text{ mA}; I_C = 0$ Collector cut-off current $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ Emitter cut-off current $V_{EB} = 4 \text{ V}; I_C = 0$ Output capacitance at $f = 1 \text{ MHz}$ $I_E = 0; V_{CB} = 10 \text{ V}$ Input capacitance at $f = 1 \text{ MHz}$ $I_C = 0; V_{EB} = 0.5 \text{ V}$ Saturation voltages $I_C = 300 \text{ mA}; I_B = 30 \text{ mA}$	V(BR)CES V(BR)EBO ICES ICES ICES ICES ICES IEBO Cc VCEsat	min. max. max. max. max. max. max. max.	20 - 10	20 18 105 1.5	45 60 - 20 -	V N N N N N N N N N N N N N
$I_C = 10 \text{ mA}; I_B = 0$ $I_C = 10 \text{ mA}; V_{EB} = 0$ $Emitter$ -base breakdown voltage $I_E = 10 \text{ mA}; I_C = 0$ Collector cut-off current $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ Emitter cut-off current $V_{EB} = 4 \text{ V}; I_C = 0$ Output capacitance at $f = 1 \text{ MHz}$ $I_E = 0; V_{CB} = 10 \text{ V}$ Input capacitance at $f = 1 \text{ MHz}$ $I_C = 0; V_{EB} = 0.5 \text{ V}$ Saturation voltages $I_C = 300 \text{ mA}; I_B = 30 \text{ mA}$ $I_C = 500 \text{ mA}; I_B = 50 \text{ mA}$	V(BR)CES V(BR)EBO ICES ICES ICES ICES ICES CES CEBO CC	min. max. max. max. max. max. max.	20 - 10	20 18 105	45 60 - 20 -	V N N N N N N N N N N N N N
$I_C = 10 \text{ mA}; I_B = 0$ $I_C = 10 \text{ mA}; V_{EB} = 0$ $Emitter$ -base breakdown voltage $I_E = 10 \text{ mA}; I_C = 0$ Collector cut-off current $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ Emitter cut-off current $V_{EB} = 4 \text{ V}; I_C = 0$ Output capacitance at $f = 1 \text{ MHz}$ $I_E = 0; V_{CB} = 10 \text{ V}$ Input capacitance at $f = 1 \text{ MHz}$ $I_C = 0; V_{EB} = 0.5 \text{ V}$ Saturation voltages $I_C = 300 \text{ mA}; I_B = 30 \text{ mA}$ $I_C = 500 \text{ mA}; I_B = 50 \text{ mA}$ Noise figure at $R_S = 1 \text{ kW}$	V(BR)CES V(BR)EBO ICES ICES ICES ICES ICES IEBO Cc VCEsat	min. max. max. max. max. max. max. max.	20 - 10	20 18 105 1.5	45 60 - 20 -	V N N N N N N N N N N N N N
$I_C = 10 \text{ mA}; I_B = 0$ $I_C = 10 \text{ mA}; V_{EB} = 0$ $Emitter$ -base breakdown voltage $I_E = 10 \text{ mA}; I_C = 0$ Collector cut-off current $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ Emitter cut-off current $V_{EB} = 4 \text{ V}; I_C = 0$ Output capacitance at $f = 1 \text{ MHz}$ $I_E = 0; V_{CB} = 10 \text{ V}$ Input capacitance at $f = 1 \text{ MHz}$ $I_C = 0; V_{EB} = 0.5 \text{ V}$ Saturation voltages $I_C = 300 \text{ mA}; I_B = 30 \text{ mA}$ $I_C = 500 \text{ mA}; I_B = 50 \text{ mA}$ Noise figure at $R_S = 1 \text{ kW}$ $I_C = 0.2 \text{ mA}; V_{CE} = 5 \text{ V}$	V(BR)CES V(BR)EBO ICES ICES ICES ICES ICES VCES IEBO Cc Ce VCEsat -VBEsat	min. min. max. max. max. max. max. max.	20 - 10	20 18 105 1.5 2	45 60 - 20 -	V NA NA NA MA MA MA PF V V
$I_C = 10 \text{ mA}; I_B = 0$ $I_C = 10 \text{ mA}; V_{EB} = 0$ $Emitter$ -base breakdown voltage $I_E = 10 \text{ mA}; I_C = 0$ Collector cut-off current $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ Emitter cut-off current $V_{EB} = 4 \text{ V}; I_C = 0$ Output capacitance at $f = 1 \text{ MHz}$ $I_E = 0; V_{CB} = 10 \text{ V}$ Input capacitance at $f = 1 \text{ MHz}$ $I_C = 0; V_{EB} = 0.5 \text{ V}$ Saturation voltages $I_C = 300 \text{ mA}; I_B = 30 \text{ mA}$ $I_C = 500 \text{ mA}; I_B = 50 \text{ mA}$ Noise figure at $R_S = 1 \text{ kW}$ $I_C = 0.2 \text{ mA}; V_{CE} = 5 \text{ V}$ $f = 1 \text{ KHz}, BW = 200 \text{ Hz}$	V(BR)CES V(BR)EBO ICES ICES ICES ICES ICES IEBO Cc VCEsat	min. max. max. max. max. max. max. max.	20 - 10	20 18 105 1.5	45 60 - 20 -	V N N N N N N N N N N N N N
$I_C = 10 \text{ mA}; I_B = 0$ $I_C = 10 \text{ mA}; V_{EB} = 0$ $Emitter$ -base breakdown voltage $I_E = 10 \text{ mA}; I_C = 0$ Collector cut-off current $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}$ $V_{CE} = 32 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ $V_{CE} = 45 \text{ V}; I_E = 0 \text{ V}; T_A = 150^{\circ}\text{C}$ Emitter cut-off current $V_{EB} = 4 \text{ V}; I_C = 0$ Output capacitance at $f = 1 \text{ MHz}$ $I_E = 0; V_{CB} = 10 \text{ V}$ Input capacitance at $f = 1 \text{ MHz}$ $I_C = 0; V_{EB} = 0.5 \text{ V}$ Saturation voltages $I_C = 300 \text{ mA}; I_B = 30 \text{ mA}$ $I_C = 500 \text{ mA}; I_B = 50 \text{ mA}$ Noise figure at $R_S = 1 \text{ kW}$ $I_C = 0.2 \text{ mA}; V_{CE} = 5 \text{ V}$	V(BR)CES V(BR)EBO ICES ICES ICES ICES ICES VCES IEBO Cc Ce VCEsat -VBEsat	min. min. max. max. max. max. max. max.	20 - 10	20 18 105 1.5 2	45 60 - 20 -	V NA NA NA MA MA MA PF V V

Notes

Disclaimer

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CDIL is a registered Trademark of
Continental Device India Limited
C-120 Naraina Industrial Area, New Delhi 110 028, India.
Telephone + 91-11-579 6150 Fax + 91-11-579 9569, 579 5290
e-mail sales@cdil.com www.cdil.com