BCW65ALT1G, BCW65CLT1G

General Purpose Transistor

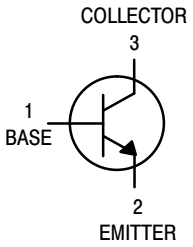
NPN Silicon

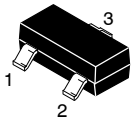
ON Semiconductor®

http://onsemi.com

Features

- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant





SOT−23
CASE 318
STYLE 6

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector − Emitter Voltage	V_{CEO}	32	Vdc
Collector − Base Voltage	V_{CBO}	60	Vdc
Emitter − Base Voltage	V_{EBO}	5.0	Vdc
Collector Current − Continuous	I_C	800	mAdc

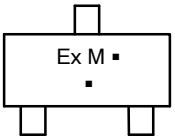
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR−5 Board (Note 1), T_A = 25°C Derate above 25°C	P_D	225 1.8	mW mW/°C
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate, (Note 2) T_A = 25°C Derate above 25°C	P_D	300 2.4	mW mW/°C
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage Temperature	T_J, T_{stg}	−55 to +150	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR−5 = 1.0 × 0.75 × 0.062 in.
2. Alumina = 0.4 × 0.3 × 0.024 in 99.5% alumina.

MARKING DIAGRAMS



Ex = Device Code
x = A or C
M = Date Code*
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*Date Code orientation and/or overbar may vary depending upon manufacturing location.

ORDERING INFORMATION

Device	Package	Shipping†
BCW65ALT1G	SOT−23 (Pb−Free)	3000/Tape & Reel
BCW65CLT1G	SOT−23 (Pb−Free)	3000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

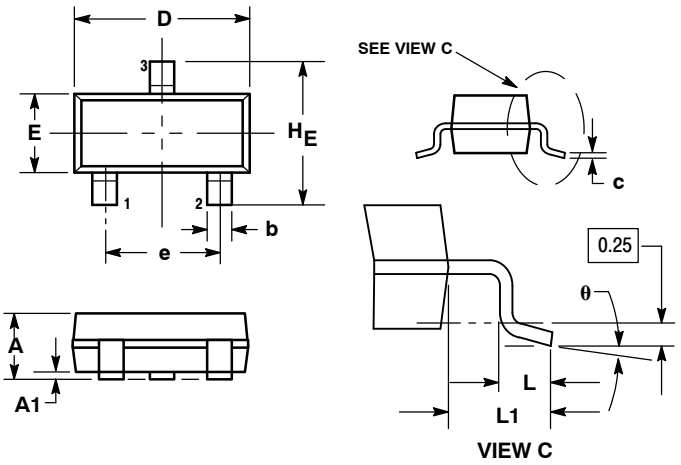
Publication Order Number:
BCW65ALT1/D

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector – Emitter Breakdown Voltage (I_C = 10 mAdc, I_B = 0)		$V_{(BR)CEO}$	32	–	–	Vdc
Collector – Emitter Breakdown Voltage (I_C = 10 μAdc, V_{EB} = 0)		$V_{(BR)CES}$	60	–	–	Vdc
Emitter – Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)		$V_{(BR)EBO}$	5.0	–	–	Vdc
Collector Cutoff Current		I_{CES}				
(V_{CE} = 32 Vdc, I_E = 0)			–	–	20	nAdc
(V_{CE} = 32 Vdc, I_E = 0, T_A = 150°C)			–	–	20	μAdc
Emitter Cutoff Current (V_{EB} = 4.0 Vdc, I_C = 0)		I_{EBO}	–	–	20	nAdc
ON CHARACTERISTICS						
DC Current Gain	BCW65ALT1	h_{FE}				–
(I_C = 100 μAdc, V_{CE} = 10 Vdc)			35	–	–	
(I_C = 10 mAdc, V_{CE} = 1.0 Vdc)			75	–	–	
(I_C = 100 mAdc, V_{CE} = 1.0 Vdc)			100	–	250	
(I_C = 500 mAdc, V_{CE} = 2.0 Vdc)			35	–	–	
DC Current Gain	BCW65CLT1	h_{FE}				–
(I_C = 100 μAdc, V_{CE} = 10 Vdc)			80	–	–	
(I_C = 10 mAdc, V_{CE} = 1.0 Vdc)			180	–	–	
(I_C = 100 mAdc, V_{CE} = 1.0 Vdc)			250	–	630	
(I_C = 500 mAdc, V_{CE} = 2.0 Vdc)			100	–	–	
Collector – Emitter Saturation Voltage		$V_{CE(sat)}$				Vdc
(I_C = 500 mAdc, I_B = 50 mAdc)			–	0.7	–	
(I_C = 100 mAdc, I_B = 10 mAdc)			–	0.3	–	
Base – Emitter Saturation Voltage (I_C = 500 mAdc, I_B = 50 mAdc)		$V_{BE(sat)}$	–	–	2.0	Vdc
SMALL–SIGNAL CHARACTERISTICS						
Current – Gain — Bandwidth Product (I_C = 20 mAdc, V_{CE} = 10 Vdc, f = 100 MHz)		f_T	100	–	–	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)		C_{obo}	–	–	12	pF
Input Capacitance (V_{EB} = 0.5 Vdc, I_C = 0, f = 1.0 MHz)		C_{ibo}	–	–	80	pF
Noise Figure (V_{CE} = 5.0 Vdc, I_C = 0.2 mAdc, R_S = 1.0 kΩ, f = 1.0 kHz, BW = 200 Hz)		NF	–	–	10	dB
SWITCHING CHARACTERISTICS						
Turn–On Time (I_{B1} = I_{B2} = 15 mAdc)		t_{on}	–	–	100	ns
Turn–Off Time (I_C = 150 mAdc, R_L = 150 Ω)		t_{off}	–	–	400	ns

PACKAGE DIMENSIONS

SOT−23 (TO−236)
CASE 318−08
ISSUE AN

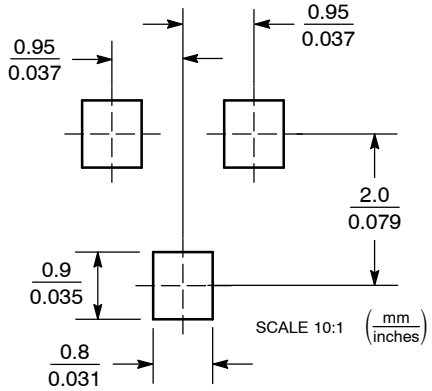


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318−01 THRU −07 AND −09 OBSOLETE, NEW STANDARD 318−08.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.040	0.044
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.37	0.44	0.50	0.015	0.018	0.020
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.081
L	0.10	0.20	0.30	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
H_E	2.10	2.40	2.64	0.083	0.094	0.104

STYLE 6:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

SOLDERING FOOTPRINT*



*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
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