BCW66H

45V NPN SMALL SIGNAL TRANSISTOR IN SOT23

Features

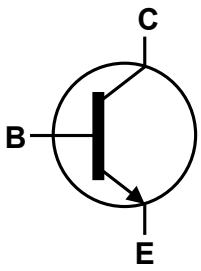
- BV_{CEO} > 45V
- I_C = 800mA High Continuous Collector Current
- Low Saturation Voltage $V_{CE(sat)}$ < 300mV @ 100mA
- Complementary PNP Type: BCW68H
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP capable (Note 4)**

Mechanical Data

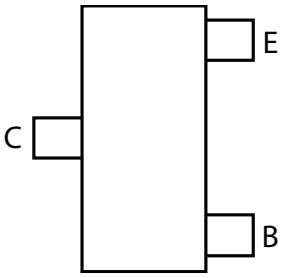
- Case: SOT23
- Case Material: molded plastic, "Green" molding compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight 0.008 grams (approximate)

SOT23

Top View



Device Symbol



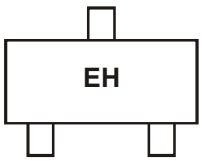
Top View
Pin-Out

Ordering Information (Notes 4 & 5)

Part Number	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
BCW66HTA	AEC-Q101	EH	7	8	3,000
BCW66HQTA	Automotive	EH	7	8	3,000

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



EH = Product Type Marking Code

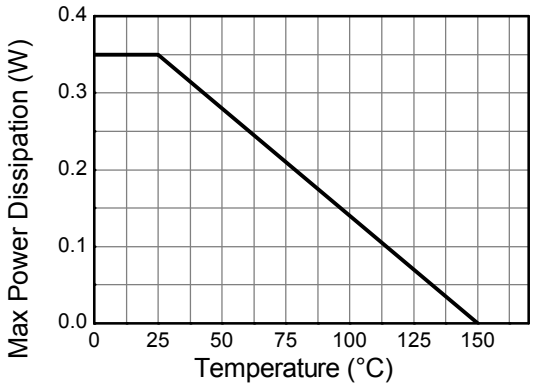
Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	75	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	800	mA
Peak Pulse Current	I_{CM}	1000	mA
Base Current	I_B	100	mA

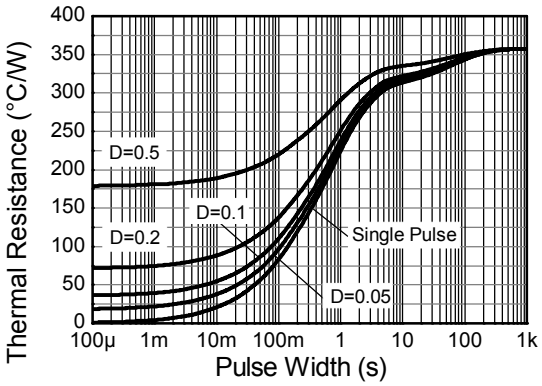
Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 6)	P_D	310	mW
	(Note 7)		350	
Thermal Resistance, Junction to Ambient	(Note 6)	$R_{\theta JA}$	403	°C/W
	(Note 7)		357	
Thermal Resistance, Junction to Leads	(Note 8)	$R_{\theta JL}$	350	°C/W
Operating and Storage Temperature Range		T_J,T_{STG}	-55 to +150	°C

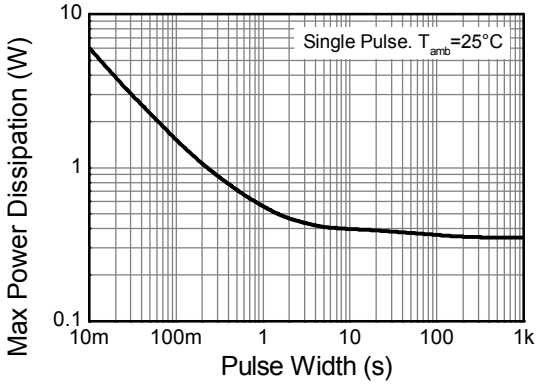
Notes:
6. For a device mounted on minimum recommended pad layout 1oz weight copper that is on a single-sided FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
7. Same as Note 6, except the device is mounted on 15mm X 15mm 1oz copper.
8. Thermal resistance from junction to solder-point (at the end of the leads).



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

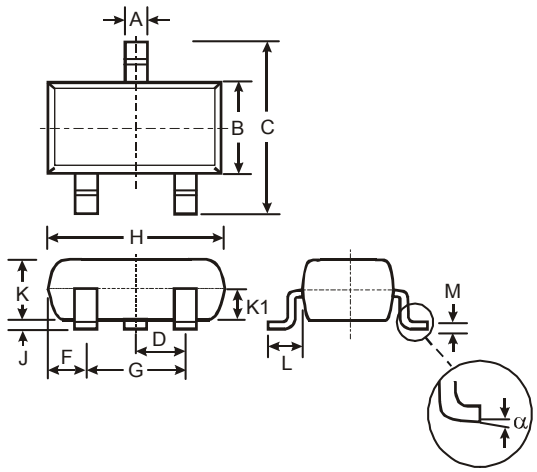
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CES}	75	—	—	V	I_C = 10μA
Collector-Emitter Breakdown Voltage (base open) (Note 9)	BV_{CEO}	45	—	—	V	I_{CEO} = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	7	—	—	V	I_{EBO} = 10μA
Collector-Emitter Cut-Off Current	I_{CES}	— —	<1 —	20 20	nA μA	V_{CES} = 45V V_{CES} = 45V, T_A = +150°C
Emitter-Base Cut-Off Current	I_{EBO}	—	<1	20	nA	V_{EBO} = 5.6V
ON CHARACTERISTICS (Note 9)						
Static Forward Current Transfer Ratio	h_{FE}	80 180 250 100	— — 350 —	— — 630 —	—	I_C = 100μA, V_{CE} = 10V I_C = 10mA, V_{CE} = 1V I_C = 100mA, V_{CE} = 1V I_C = 500mA, V_{CE} = 2V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	— —	— —	0.3 0.7	mV	I_C = 100mA, I_B = 10mA I_C = 500mA, I_B = 50mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	2	V	I_C = 500mA, I_B = 50mA
SMALL SIGNAL CHARACTERISTICS (Note 9)						
Transition Frequency	f_T	100	—	—	MHz	I_C = 20mA, V_{CE} = 10V, f = 100MHz
Output Capacitance	C_{obo}	—	8	12	pF	V_{CB} = 10V, f = 1MHz
Input Capacitance	C_{ibo}	—	—	80	pF	V_{CB} = -0.5V, f = 1MHz
Noise Figure	N	—	2	10	dB	I_C = 0.2mA. V_{CE} = 5V, R_G = 1KΩ
Turn-On Time	t_{on}	—	—	100	ns	I_C = 150mA. I_{B1} = -I_{B2} = 15mA R_L = 150Ω
Turn-Off Time	t_{off}	—	—	400	ns	

Notes: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%

Package Outline Dimensions

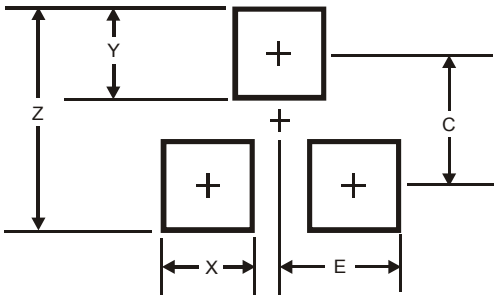
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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