

## Features

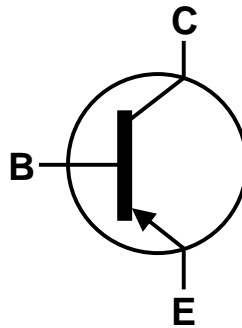
- $BV_{CEO} > -45V$
- $I_C = -800mA$  High Continuous Collector Current
- Low Saturation Voltage  $V_{CE(sat)} < -300mV @ 100mA$
- Complementary NPN Type: BCW66H
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](https://www.diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## Mechanical Data

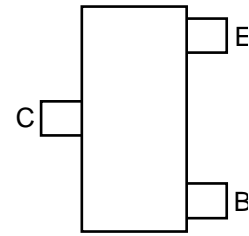
- Package: SOT23
- Package Material: Molded Plastic, "Green" Molding Compound  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.008 grams (Approximate)



Top View



Device Symbol



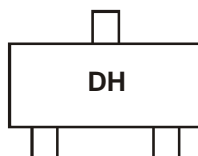
Top View  
Pin Configuration

## Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
BCW68HTA	SOT23	DH	7	8	3000	Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> 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. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



DH = Product Type Marking Code

### Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CES</sub>	-60	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-45	V
Emitter-Base Voltage	V <sub>EBO</sub>	-7	V
Continuous Collector Current	I <sub>C</sub>	-800	mA
Peak Pulse Current	I <sub>CM</sub>	-1000	mA
Base Current	I <sub>B</sub>	-100	mA

### Thermal Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

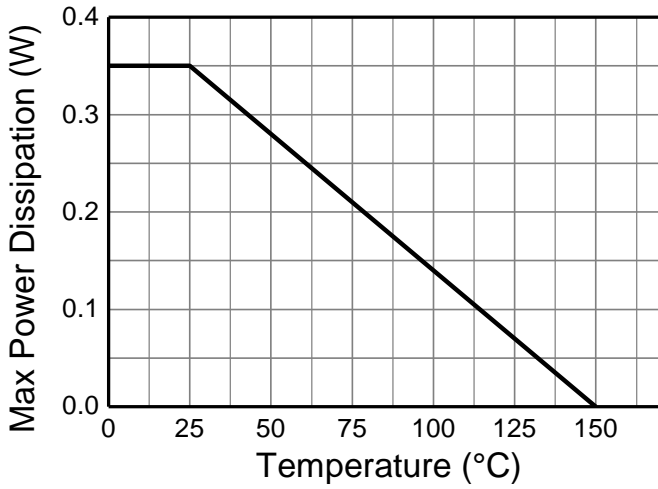
Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	(Note 5)	310
		(Note 6)	350
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	(Note 5)	403
		(Note 6)	357
Thermal Resistance, Junction to Leads	R <sub>θJL</sub>	350	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

### ESD Ratings (Note 8)

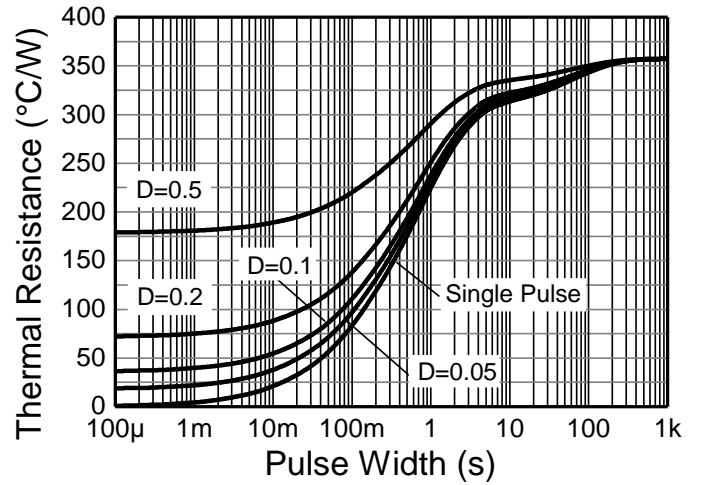
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge – Human Body Model	ESD HBM	4000	V	3A
Electrostatic Discharge – Charged Device Model	ESD CDM	1000	V	C3
Electrostatic Discharge – Machine Model	ESD MM	400	V	C

- Notes:
5. For the device mounted on minimum recommended pad layout FR4 PCB with high coverage of single sided 1oz copper in still air condition; the device is measured when operating in a steady-state condition.
  6. Same as Note 5, except the device is mounted on 15mm × 15mm FR4 PCB.
  7. Thermal resistance from junction to solder-point (at the end of the leads).
  8. Refer to JEDEC specification JS-001-2017, JS-002-2022 and JESD22-A115C.

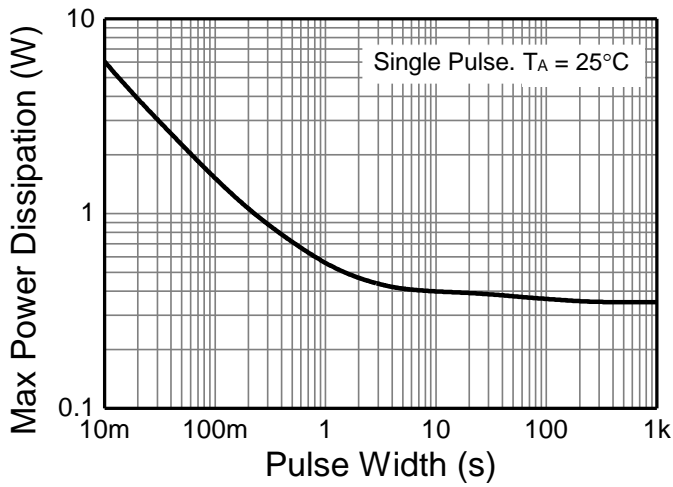
**Thermal Characteristics**



**Figure 1. Derating Curve**



**Figure 2. Transient Thermal Impedance**



**Figure 3. Pulse Power Dissipation**

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

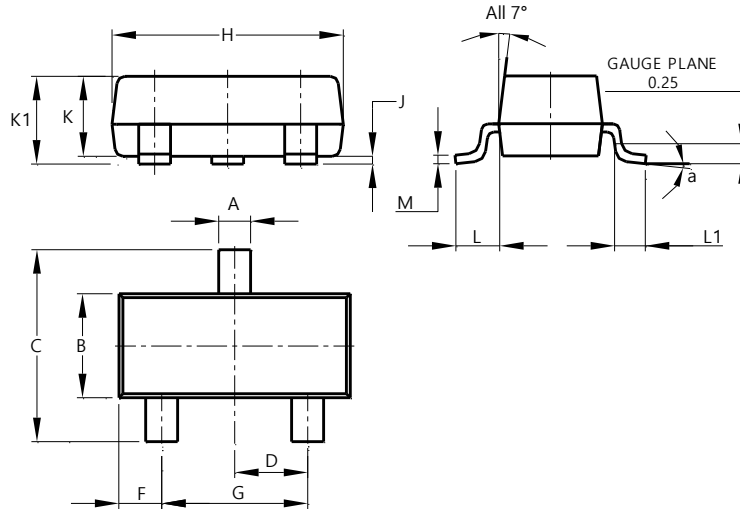
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	BV <sub>CES</sub>	-60	—	—	V	I <sub>C</sub> = -10μA
Collector-Emitter Breakdown Voltage (Base Open) (Note 9)	BV <sub>CEO</sub>	-45	—	—	V	I <sub>CEO</sub> = -10mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-7	—	—	V	I <sub>EBO</sub> = -10μA
Collector-Emitter Cut-Off Current	I <sub>CES</sub>	—	< 1	-20	nA	V <sub>CES</sub> = -45V
Emitter-Base Cut-Off Current	I <sub>EBO</sub>	—	< 1	-20	nA	V <sub>CES</sub> = -45V, T <sub>A</sub> = +150°C
Emitter-Base Cut-Off Current	I <sub>EBO</sub>	—	< 1	-20	nA	V <sub>EBO</sub> = -5.6V
<b>ON CHARACTERISTICS (Note 9)</b>						
Static Forward Current Transfer Ratio	h <sub>FE</sub>	180 250 100	— 350 —	— 630 —	—	I <sub>C</sub> = -10mA, V <sub>CE</sub> = -1V I <sub>C</sub> = -100mA, V <sub>CE</sub> = -1V I <sub>C</sub> = -500mA, V <sub>CE</sub> = -2V
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	—	—	-300	mV	I <sub>C</sub> = -100mA, I <sub>B</sub> = -10mA I <sub>C</sub> = -500mA, I <sub>B</sub> = -50mA
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	—	—	-2	V	I <sub>C</sub> = -500mA, I <sub>B</sub> = -50mA
<b>SMALL SIGNAL CHARACTERISTICS (Note 9)</b>						
Transition Frequency	f <sub>T</sub>	100	—	—	MHz	I <sub>C</sub> = -20mA, V <sub>CE</sub> = -10V, f = 100MHz
Output Capacitance	C <sub>obo</sub>	—	12	18	pF	V <sub>CB</sub> = -10V, f = 1MHz
Input Capacitance	C <sub>ibo</sub>	—	—	80	pF	V <sub>CB</sub> = -0.5V, f = 1MHz
Noise Figure	N	—	2	10	dB	I <sub>C</sub> = -0.2mA, V <sub>CE</sub> = -5V, R <sub>G</sub> = 1kΩ, f = 1kHz, Δf = 200Hz
Turn-On Time	t <sub>on</sub>	—	—	100	ns	I <sub>C</sub> = -150mA, I <sub>B1</sub> = -I <sub>B2</sub> = -15mA,
Turn-Off Time	t <sub>off</sub>	—	—	400	ns	R <sub>L</sub> = 150Ω

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

## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23

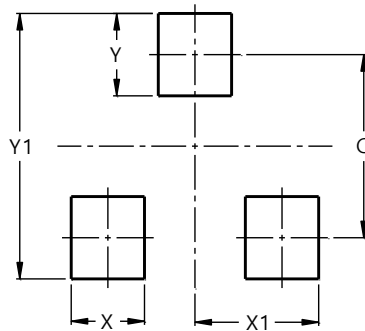


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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