


## Features

- $BV_{CEO} > 45V$
- $I_C = 800mA$  High Continuous Collector Current
- Low Saturation Voltage  $V_{CE(sat)} < 300mV @ 100mA$
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The BCW66HQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

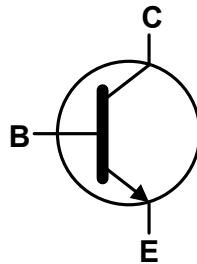
<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

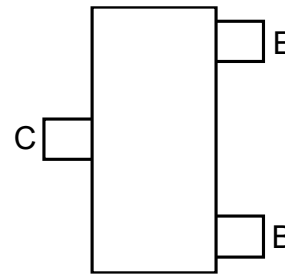
- Package: SOT23
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 
- Weight 0.008 grams (Approximate)



Top View



Device Symbol



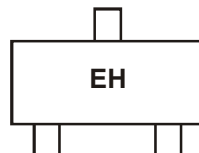
Top View  
Pinout

## Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
BCW66HQTA	SOT23	EH	7	8	3,000	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



EH = Product Type Marking Code

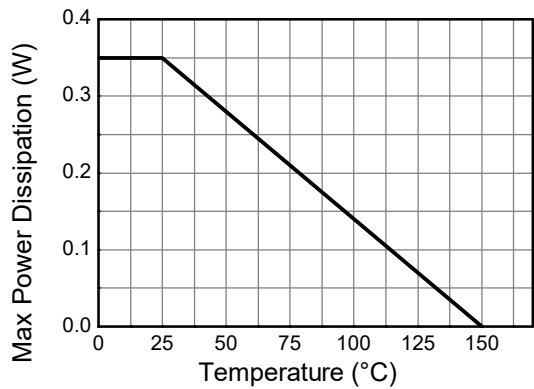
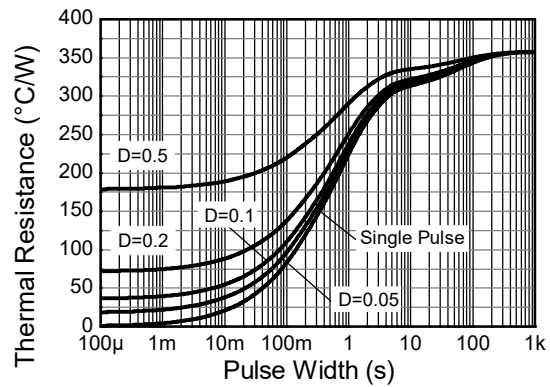
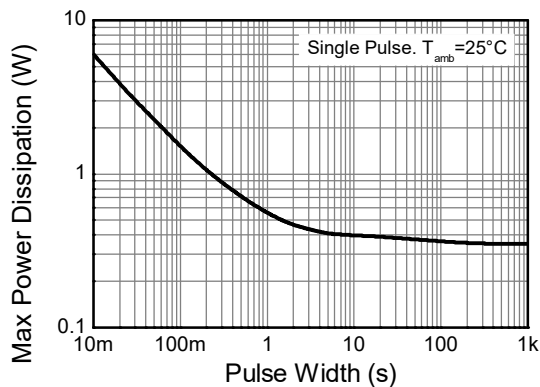
**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	75	V
Collector-Emitter Voltage	V <sub>CE0</sub>	45	V
Emitter-Base Voltage	V <sub>EB0</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>	310	mW
		350	
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	403	°C/W
		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

Notes: 5. 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.  
 6. Same as Note 5, except the device is mounted on 15mm × 15mm 1oz copper.  
 7. Thermal resistance from junction to solder-point (at the end of the leads).


**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.)

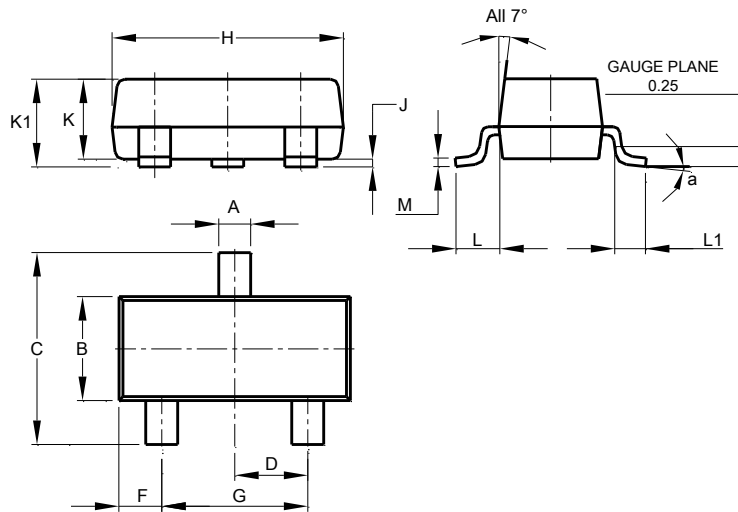
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	BV <sub>CES</sub>	75	—	—	V	I <sub>C</sub> = 10μA
Collector-Emitter Breakdown Voltage (base open) (Note 8)	BV <sub>CEO</sub>	45	—	—	V	I <sub>CEO</sub> = 10mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	7	—	—	V	I <sub>EBO</sub> = 10μA
Collector-Emitter Cutoff Current	I <sub>CES</sub>	—	< 1	20	nA	V <sub>CES</sub> = 45V
		—	—	20	μA	V <sub>CES</sub> = 45V, T <sub>A</sub> = +150°C
Emitter-Base Cutoff Current	I <sub>EBO</sub>	—	< 1	20	nA	V <sub>EBO</sub> = 5.6V
<b>ON CHARACTERISTICS (Note 8)</b>						
Static Forward Current Transfer Ratio	h <sub>FE</sub>	80 180 250 100	— — 350 —	— — 630 —	—	I <sub>C</sub> = 100μA, V <sub>CE</sub> = 10V 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>	— —	— —	0.3 0.7	V	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 8)</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>	—	8	12	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
Turn-On Time	t <sub>on</sub>	—	—	100	ns	I <sub>C</sub> = 150mA
Turn-Off Time	t <sub>off</sub>	—	—	400	ns	I <sub>B1</sub> = -I <sub>B2</sub> = 15mA R <sub>L</sub> = 150Ω

Note: 8. 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

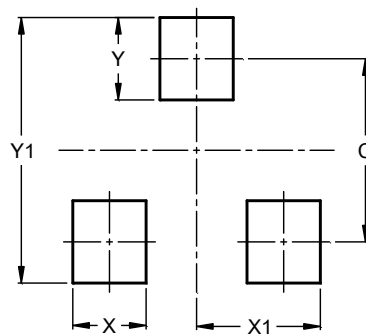


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

## 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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