45V PNP MEDIUM POWER TRANSISTOR IN SOT23

Features

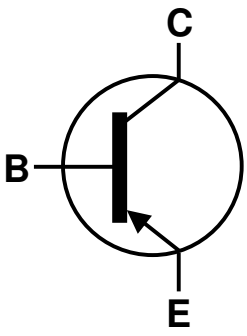
- BV_{CEO} > -45V
- I_C = -800mA High Continuous Collector Current
- Low Saturation Voltage $V_{CE(sat)}$ < -300mV @ 100mA
- Complementary NPN Type: BCW66H
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications 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 or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

Mechanical Data

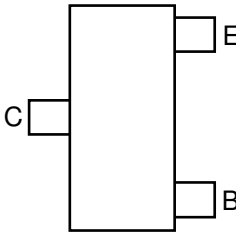
- Package: SOT23
- Package Material: Molded Plastic, "Green" Molding Compound UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.008 grams (Approximate)

SOT23

Top View



Device Symbol



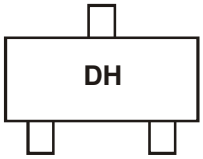
Top View
Pin Configuration

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_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CES}	-60	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 5)	P_D	310	mW
	(Note 6)		350	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	403	°C/W
	(Note 6)		357	
Thermal Resistance, Junction to Leads	(Note 7)	$R_{\theta JL}$	350	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-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

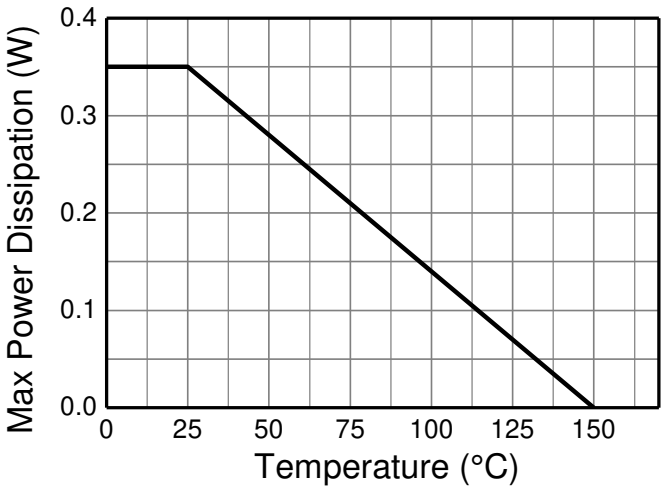


Figure 1. Derating Curve

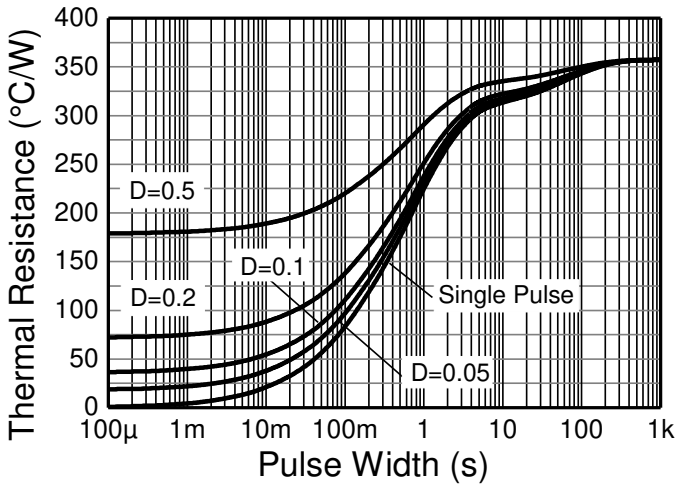


Figure 2. Transient Thermal Impedance

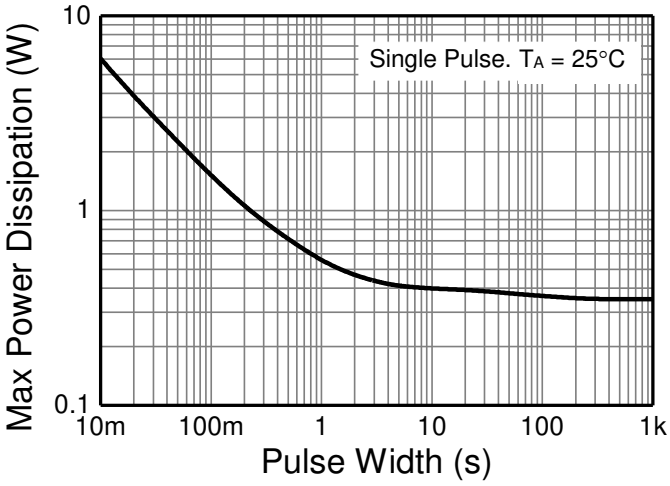


Figure 3. Pulse Power Dissipation

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

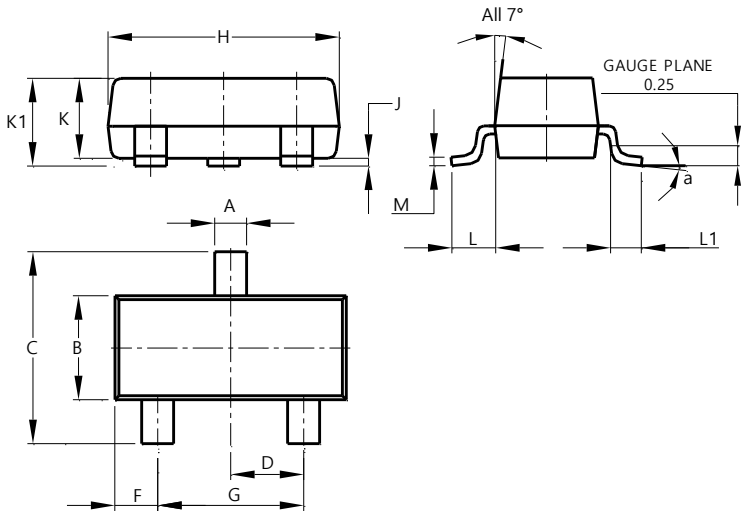
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CES}	-60	—	—	V	I_C = -10µA
Collector-Emitter Breakdown Voltage (Base Open) (Note 9)	BV_{CEO}	-45	—	—	V	I_{CEO} = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	—	—	V	I_{EBO} = -10µA
Collector-Emitter Cut-Off Current	I_{CES}	— —	< 1 —	-20 -10	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}	180 250 100	— 350 —	— 630 —	—	I_C = -10mA, V_{CE} = -1V I_C = -100mA, V_{CE} = -1V I_C = -500mA, V_{CE} = -2V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	— —	— -700	-300 —	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}	—	12	18	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, f = 1kHz, Δf = 200Hz
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	

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

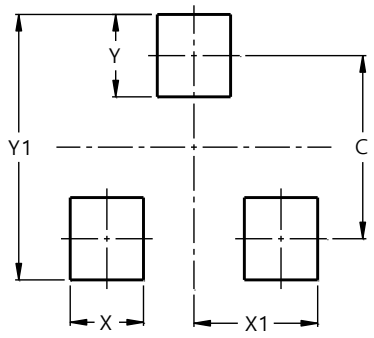


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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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