

BCH120S20D3

Silicon Carbide Schottky Diode

1200V, 20A



Description

BCH120S20D3 utilizes Bestirpower's advanced silicon carbide diode technology. This technology combines the benefits of excellent low forward voltage and robustness. Consequently, the family is suitable for application requiring high power efficiency

Benefits

- Higher frequency
- Low heat dissipation requirements
- Reduce size and cost of the system
- High-reliability

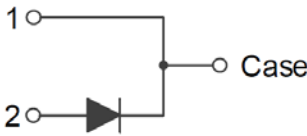
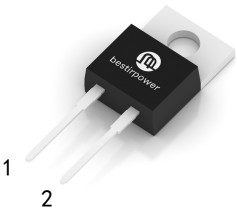
Applications

- Switch Mode Power Supplies (SMPS)
- Boost Diodes in PFC or DC/DC Stages
- Free Wheeling Diodes in Inverter Stages
- AC/DC Converters

Features

V_{RRM}	I_F	T_C	Q_c
1200 V	20 A	154 °C	97nC

- Zero Reverse Recovery Current
- Temperature-Independent Switching
- Extremely Fast Switching
- Positive Temperature Coefficient on VF
- Low Switching Losses
- Higher Efficiency



Absolute Maximum Ratings ($T_C = 25^{\circ}C$ unless otherwise noted)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage		1200	V
I_F	Forward Current	$T_C = 25^{\circ}C$	91	A
		$T_C = 135^{\circ}C$	31	A
		$T_C = 154^{\circ}C$	20	A
$I_{F,SM}$	Non-Repetitive Forward Surge Current	$T_C = 25^{\circ}C, t_p = 10\text{ ms}$	135	A
P_{tot}	Power Dissipation	$T_C = 25^{\circ}C$	243.5	W
		$T_C = 110^{\circ}C$	105.5	W
T_J, T_{STG}	Operating Junction and Storage Temperature		-55 to +175	$^{\circ}C$

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Typ.	0.62	$^{\circ}\text{C/W}$

Electrical Characteristics ($T_C = 25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DC}	DC blocking voltage		1200	-	-	V
V_F	Forward Voltage	$I_F=20\text{A}, T_J=25^{\circ}\text{C}$	-	1.4	1.8	V
		$I_F=20\text{A}, T_J=175^{\circ}\text{C}$	-	1.95	2.3	
I_R	Reverse Current	$V_R = 1200\text{ V}, T_J = 25^{\circ}\text{C}$	-	1	100	μA
		$V_R = 1200\text{ V}, T_J = 175^{\circ}\text{C}$	-	4	100	
Q_C	Total Capacitive Charge	$V_R = 800\text{ V}, f = 1\text{MHz}, T_J = 25^{\circ}\text{C}$	-	97	-	nC
C	Total Capacitance	$V_R = 0\text{ V}, f = 1\text{MHz}, T_J = 25^{\circ}\text{C}$	-	1310	-	pF
		$V_R = 400\text{ V}, f = 1\text{MHz}, T_J = 25^{\circ}\text{C}$	-	92	-	
		$V_R = 800\text{ V}, f = 1\text{MHz}, T_J = 25^{\circ}\text{C}$	-	68	-	
E_C	Capacitance Stored Energy	$V_R = 800\text{ V}$	-	28	-	μJ

Note: This is a majority carrier diode, so there is no reverse recovery charge.

Typical Performance Characteristics

Figure 1. Forward Characteristics

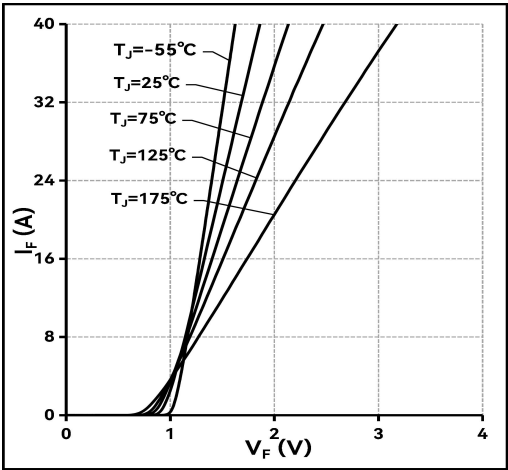


Figure 2. Reverse Characteristics

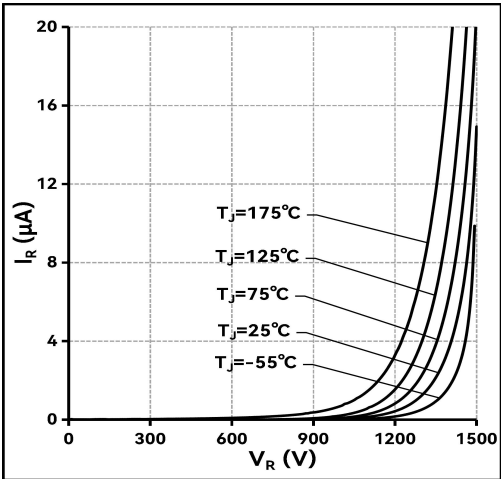


Figure 3. Current Derating

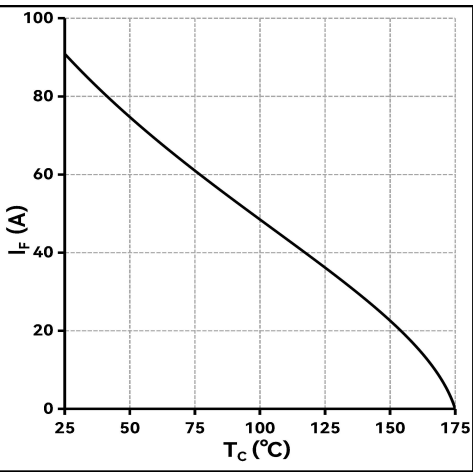


Figure 4. Power Dissipation

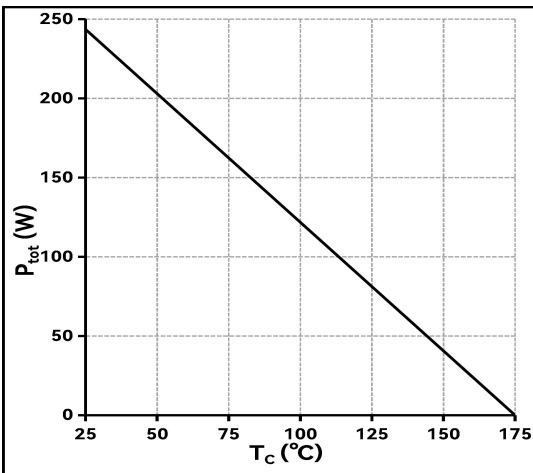


Figure 5. Total capacitive charge vs Reverse Voltage

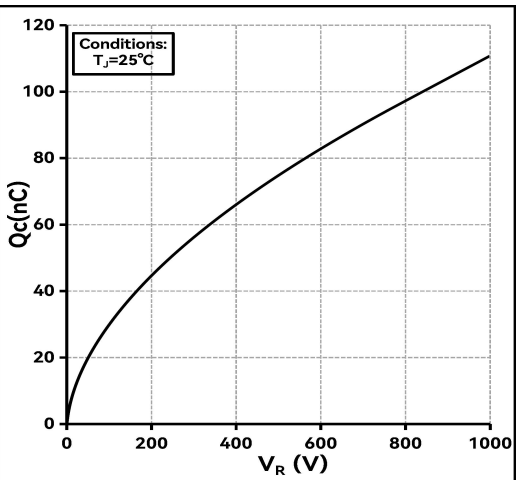
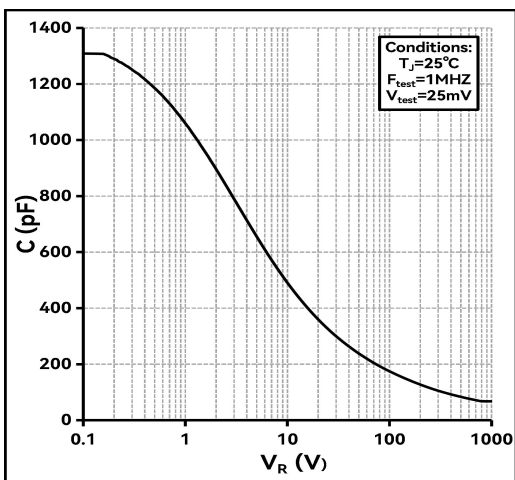


Figure 6. Total Capacitance vs Reverse Voltage



Typical Performance Characteristics

Figure 7. Typical Capacitance Stored Energy

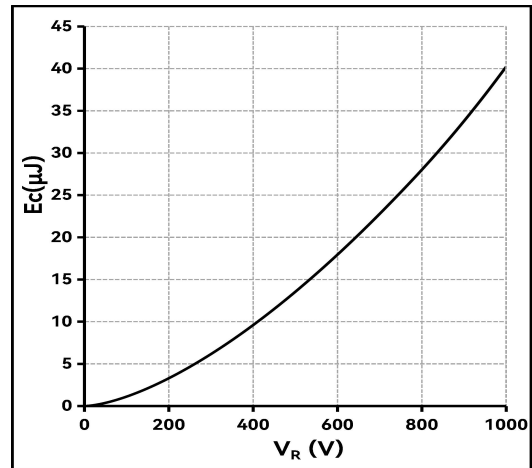
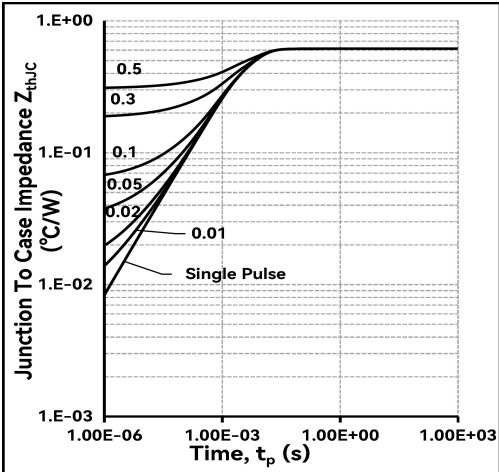
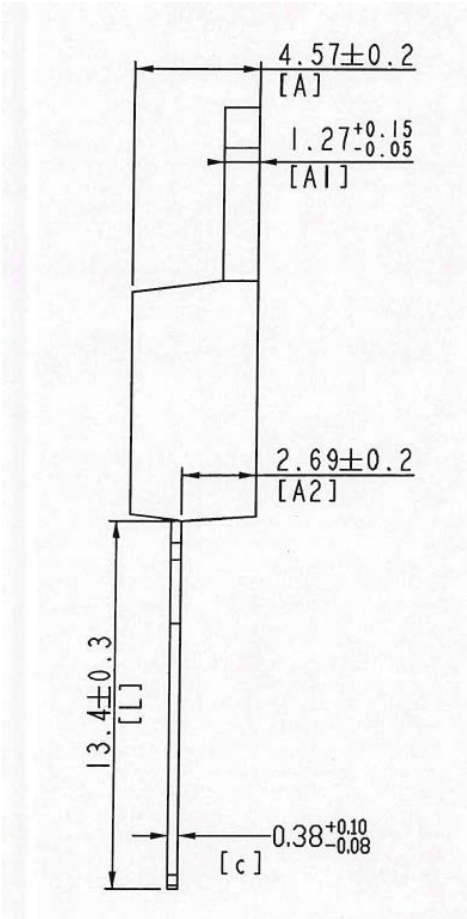
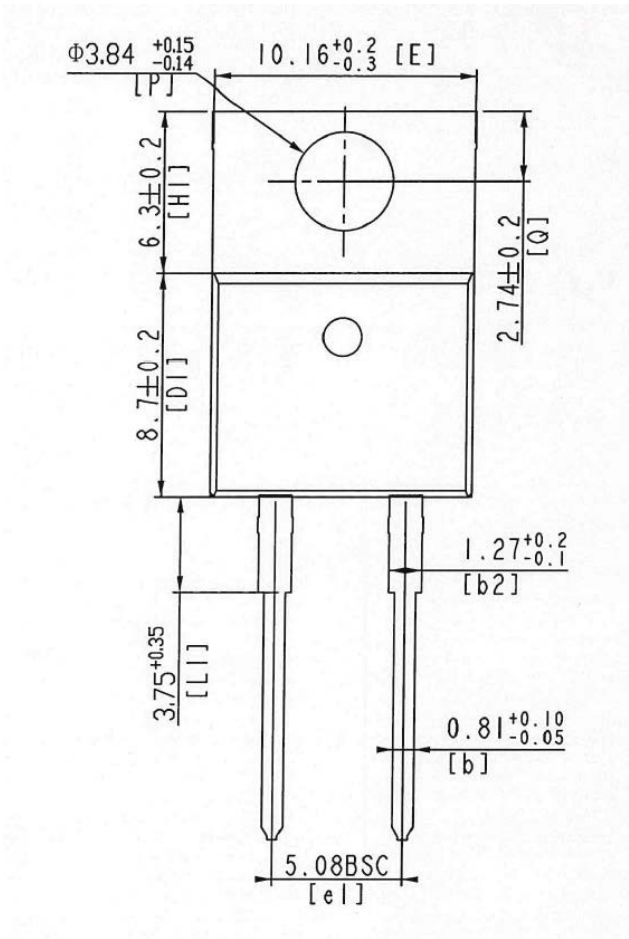


Figure 8: Transient Thermal Impedance



Package Outlines
TO220-2



Package Marking and Ordering Information

Part Number	Top Marking	Package	Packing Method	Quantity
BCH120S20D3	BCH120S20D3	TO220-2	Tube	50 units

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