

BCB120S10D2

Silicon Carbide Schottky Diode

1200V, 10A

Description

BCB120S10D2 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

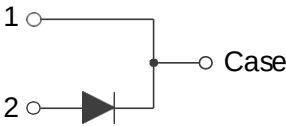
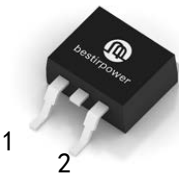
Applications

- Switch mode power supply
- Solar inverter
- Data Center
- Uninterruptible power supply

Features

V_{RRM}	I_F	$T_{J,max}$	Q_C
1200 V	10 A	175 °C	52 nC

- Negligible reverse recovery
- High-speed switching
- Positive Temperature Coefficient
- Temperature-Independent Switching
- RoHS compliant



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

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage		1200	V
I_F	Forward Current	$T_C = 25^{\circ}\text{C}$	35	A
		$T_C = 135^{\circ}\text{C}$	17	A
		$T_C = 158^{\circ}\text{C}$	10	A
$I_{F,SM}$	Non-Repetitive Forward Surge Current	$T_C = 25^{\circ}\text{C}, t_p = 10\text{ ms}$	117	A
		$T_C = 110^{\circ}\text{C}, t_p = 10\text{ ms}$	76	A
$I_{F,RM}$	Repetitive Peak Forward Surge Current	$T_C = 25^{\circ}\text{C}, t_p = 10\text{ ms}$	50	A
I^2dt value	$\int I^2 dt$	$T_C = 25^{\circ}\text{C}, t_p = 10\text{ ms}$	17	A ² s
		$T_C = 110^{\circ}\text{C}, t_p = 10\text{ ms}$	10	A ² s
P_{tot}	Power Dissipation	$T_C = 25^{\circ}\text{C}$	191	W
		$T_C = 110^{\circ}\text{C}$	83	W
		$T_C = 150^{\circ}\text{C}$	32	W
T_J, T_{STG}	Operating Junction and Storage Temperature		-55 to +175	°C

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Typ.	0.787	$^{\circ}C/W$

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DC}	DC blocking voltage		1200	-	-	V
V_F	Forward Voltage	$I_F=5A$	-	1.20	-	V
		$I_F=10A, T_C=25^{\circ}C$	-	1.43	1.70	
		$I_F=10A, T_C=175^{\circ}C$	-	2.0	-	
I_R	Reverse Current	$V_R = 1200\text{ V}, T_C = 25^{\circ}C$	-	2.0	60	μA
		$V_R = 1200\text{ V}, T_C = 175^{\circ}C$	-	4.0	-	
Q_C	Total Capacitive Charge	$V_R = 800\text{ V}, T_C = 25^{\circ}C$	-	52	-	nC
C	Total Capacitance	$V_R = 1\text{ V}, f = 1\text{ MHz}$	-	546	-	pF
		$V_R = 400\text{ V}, f = 1\text{ MHz}$	-	47	-	
		$V_R = 800\text{ V}, f = 1\text{ MHz}$	-	41	-	
E_C	Capacitance Stored Energy	$V_R = 800\text{ V}, T_C = 25^{\circ}C$	-	15.86	-	μJ

Typical Performance Characteristics

Figure 1. Forward Characteristics

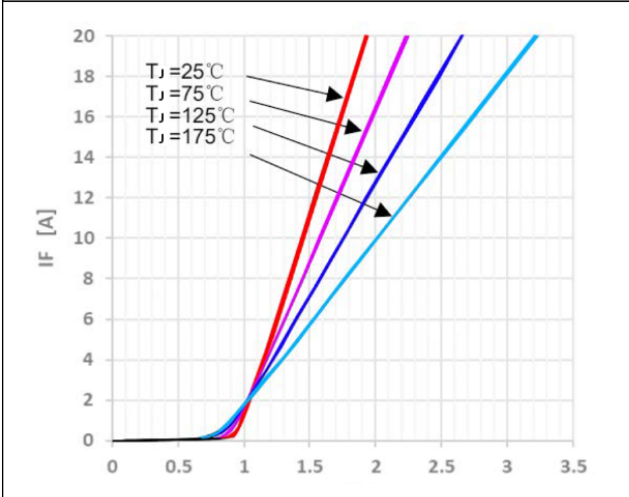


Figure 2. Reverse Characteristics

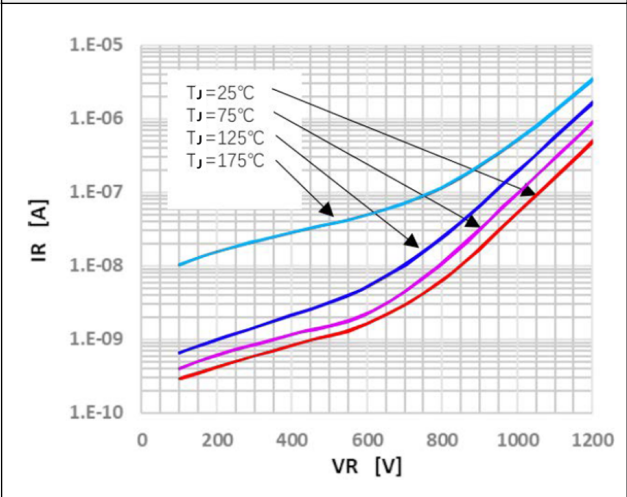


Figure 3. Peak Forward Current Derating

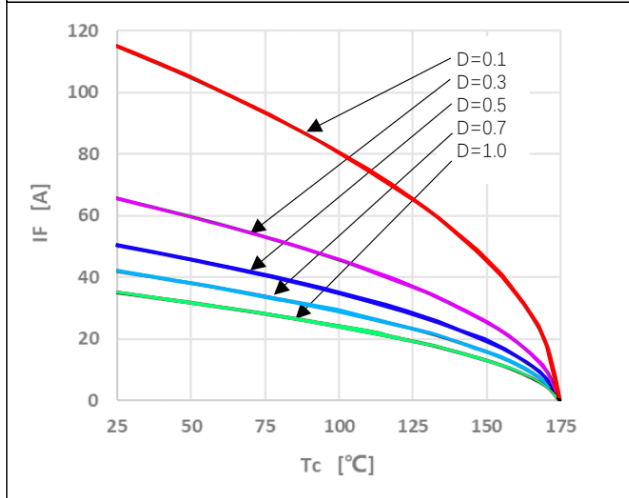


Figure 4. Power Dissipation

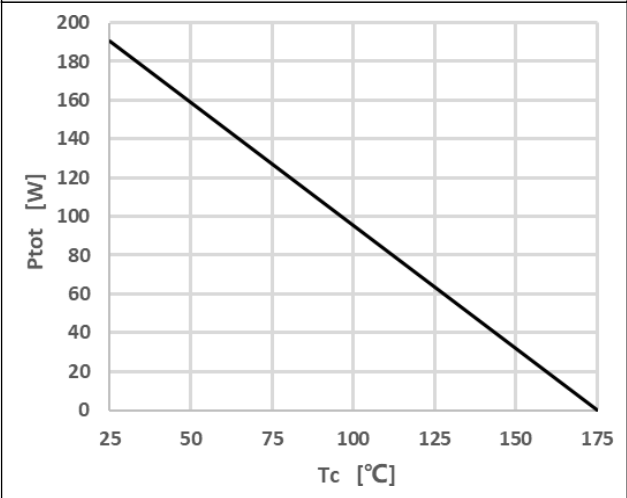


Figure 5. Capacitance vs. Reverse Voltage

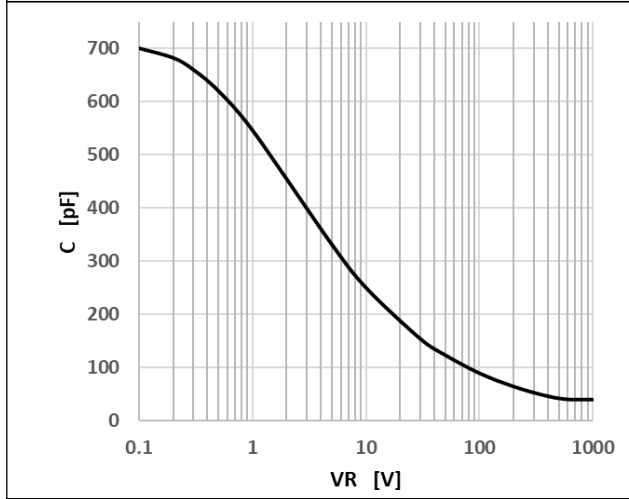
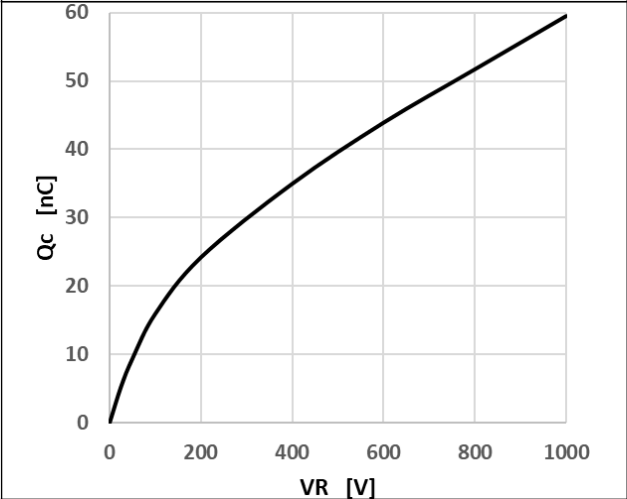


Figure 6. Capacitance Charge vs. Reverse Voltage



Typical Performance Characteristics

Figure 7. Capacitance Stored Energy

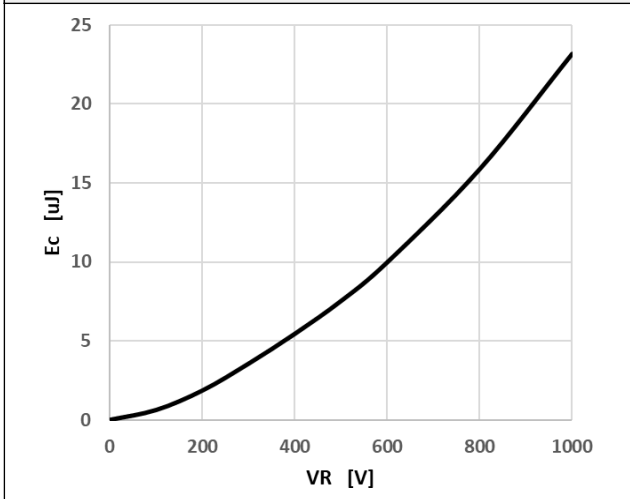
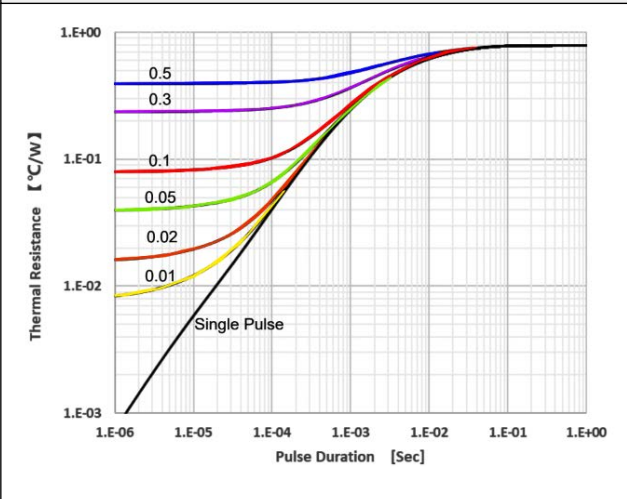
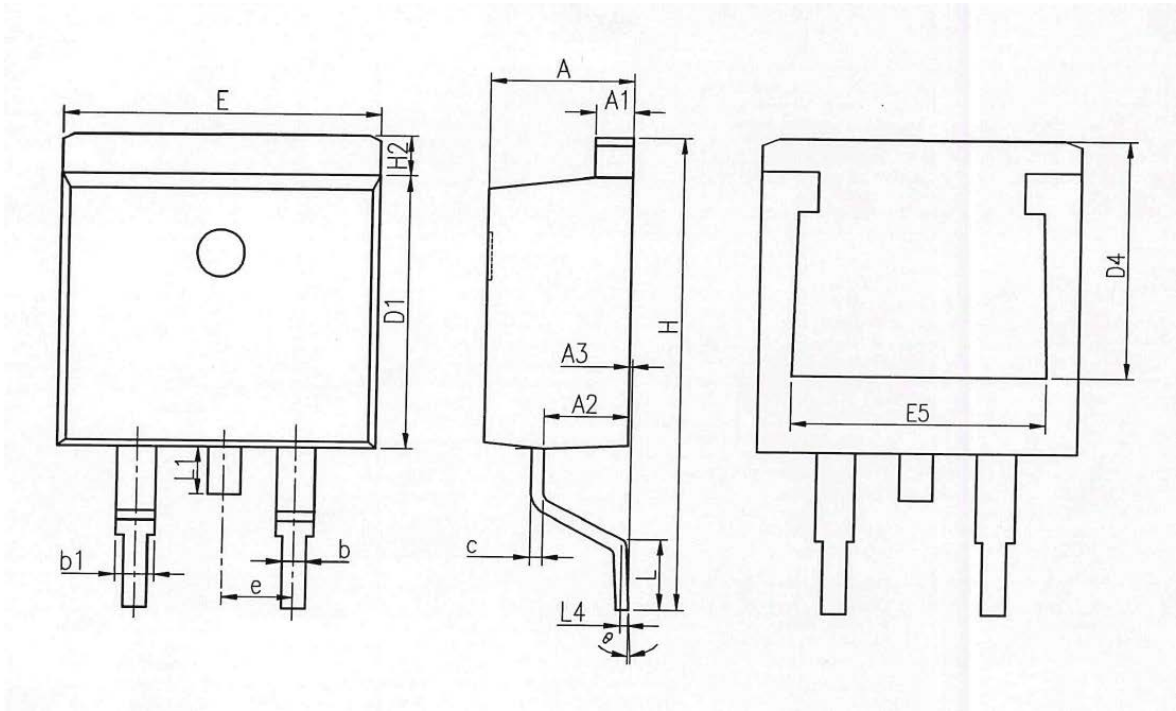


Figure 8. Transient Thermal Impedance



Package Outlines

D²PAK



COMMON DIMENSIONS

SYMBOL	MM		
	MIN	NOM	MAX
A	4.37	4.57	4.77
A1	1.22	1.27	1.42
A2	2.49	2.69	2.89
A3	0.00	0.13	0.25
b	0.70	0.81	0.96
b1	1.17	1.27	1.47
c	0.30	0.38	0.53
D1	8.50	8.70	8.90
D4	6.60	-	-
E	9.86	10.16	10.36
E5	7.06	-	-
e	2.54 BSC		
H	14.70	15.10	15.50
H2	1.07	1.27	1.47
L	2.00	2.30	2.60
L1	1.40	1.55	1.70
L4	0.25 BSC		
θ	0°	5°	9°

* Dimensions in millimeters

Package Marking and Ordering Information

Part Number	Top Marking	Package	Packing Method	Quantity
BCB120S10D2	BCB120S10D2	D ² pak	Tape&Reel	800 units

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