



BCA120S40D2

Silicon Carbide Schottky Diode

1200V, 40A

Description

BCA120S40D2 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

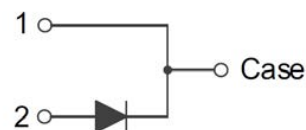
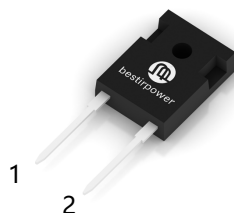
Applications

- Solar inverter, UPS
- EV charging station
- Power Factor Correction

Features

V_{RRM}	I_F	T_C	Q_C
1200 V	40 A	150 °C	241 nC

- No reverse recovery current
- Low forward voltage
- 175°C Max junction temperature
- High surge current capability
- Switching behavior independent of temperature
- Halogen Free and RoHS compliant



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

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage		1200	V
I_F	Forward Current	$T_C = 25^\circ\text{C}$	115	A
		$T_C = 135^\circ\text{C}$	50	A
		$T_C = 150^\circ\text{C}$	40	A
$I_{F,SM}$	Non-Repetitive Forward Surge Current	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	345	A
		$T_C = 110^\circ\text{C}, t_p = 10 \text{ ms}$	200	A
$I_{F,Max}$	Non-Repetitive Peak Forward Current	$T_C = 25^\circ\text{C}, t_p = 10 \mu\text{s}$	1570	A
		$T_C = 150^\circ\text{C}, t_p = 10 \mu\text{s}$	1335	A
I^2dt value	$\int I^2 dt$	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	253	A^2s
		$T_C = 150^\circ\text{C}, t_p = 10 \text{ ms}$	182	A^2s
P_{tot}	Power Dissipation	$T_C = 25^\circ\text{C}$	556	W
T_J, T_{STG}	Operating Junction and Storage Temperature		-55 to +175	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Max.	0.27	$^\circ\text{C}/\text{W}$

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_F	Forward Voltage	$I_F = 40\text{ A}, T_C = 25^\circ\text{C}$		1.39	1.70	V
		$I_F = 40\text{ A}, T_C = 175^\circ\text{C}$		1.8	-	
I_R	Reverse Current	$V_R = 1200\text{ V}, T_C = 25^\circ\text{C}$		10	100	μA
		$V_R = 1200\text{ V}, T_C = 175^\circ\text{C}$		-	300	
Q_C	Total Capacitive Charge	$V_R = 800\text{ V}, T_C = 25^\circ\text{C}$		241		nC
C	Total Capacitance	$V_R = 1\text{ V}, f = 100\text{ kHz}$		2638		pF
		$V_R = 800\text{ V}, f = 100\text{ kHz}$		165		
E_C	Capacitance Stored Energy	$V_R = 800\text{ V}, T_C = 25^\circ\text{C}$		69		μJ

Typical Performance Characteristics

Figure 1. Power Derating

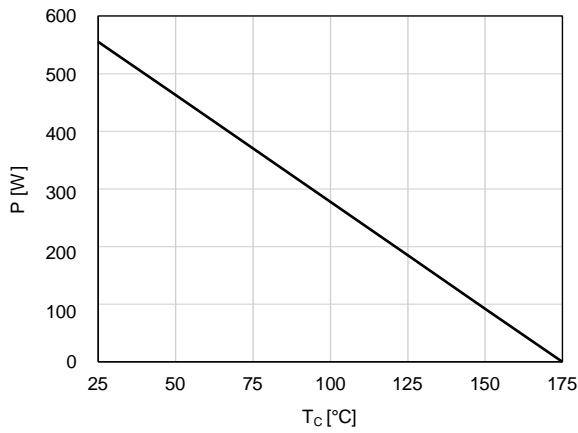


Figure 2. Current Derating

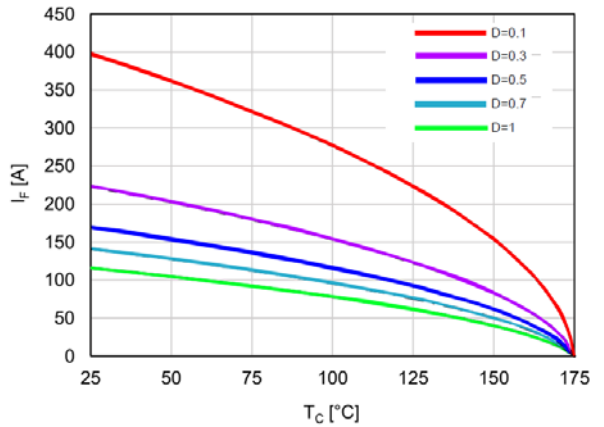


Figure 3. Forward Characteristics

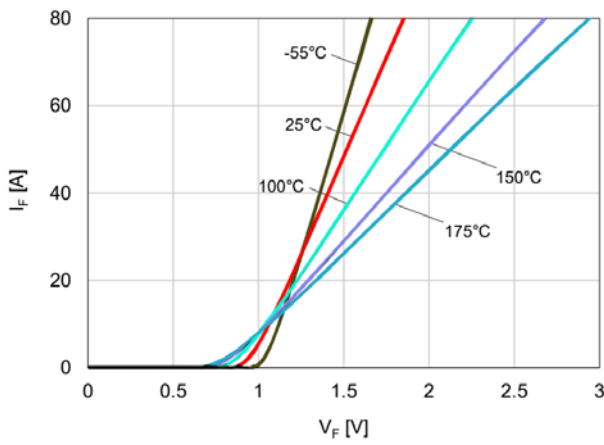


Figure 4. Reverse Characteristics

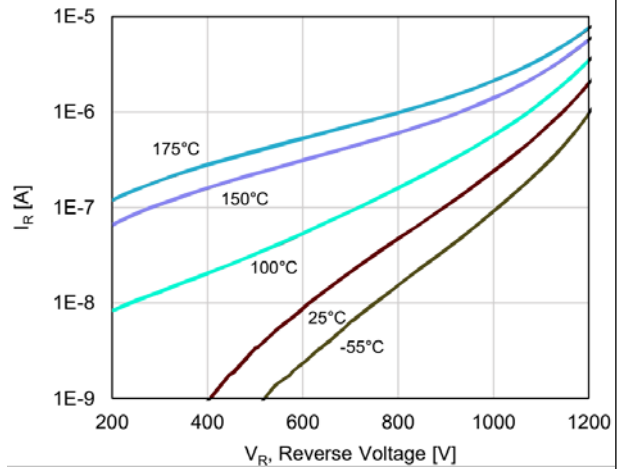


Figure 5. Capacitive Charge Characteristics

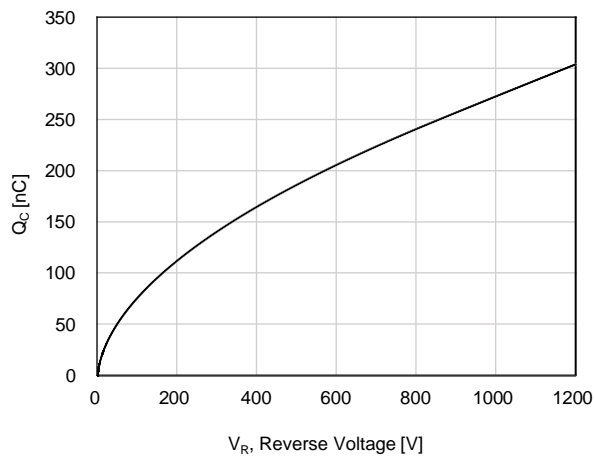
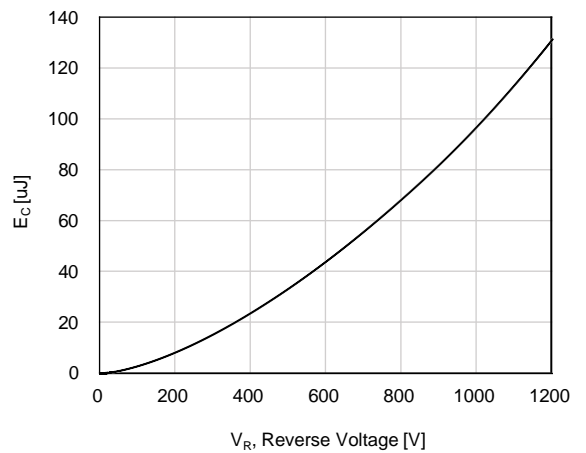


Figure 6. Capacitance Stored Energy



Typical Performance Characteristics

Figure 7. Capacitance Characteristics

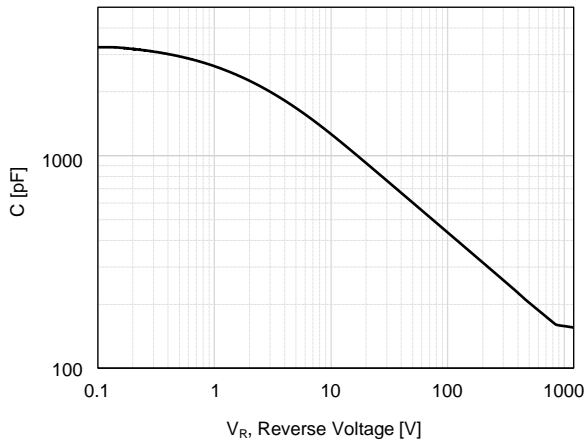
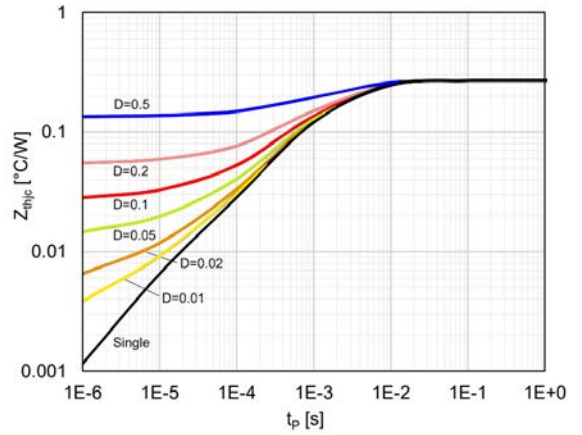
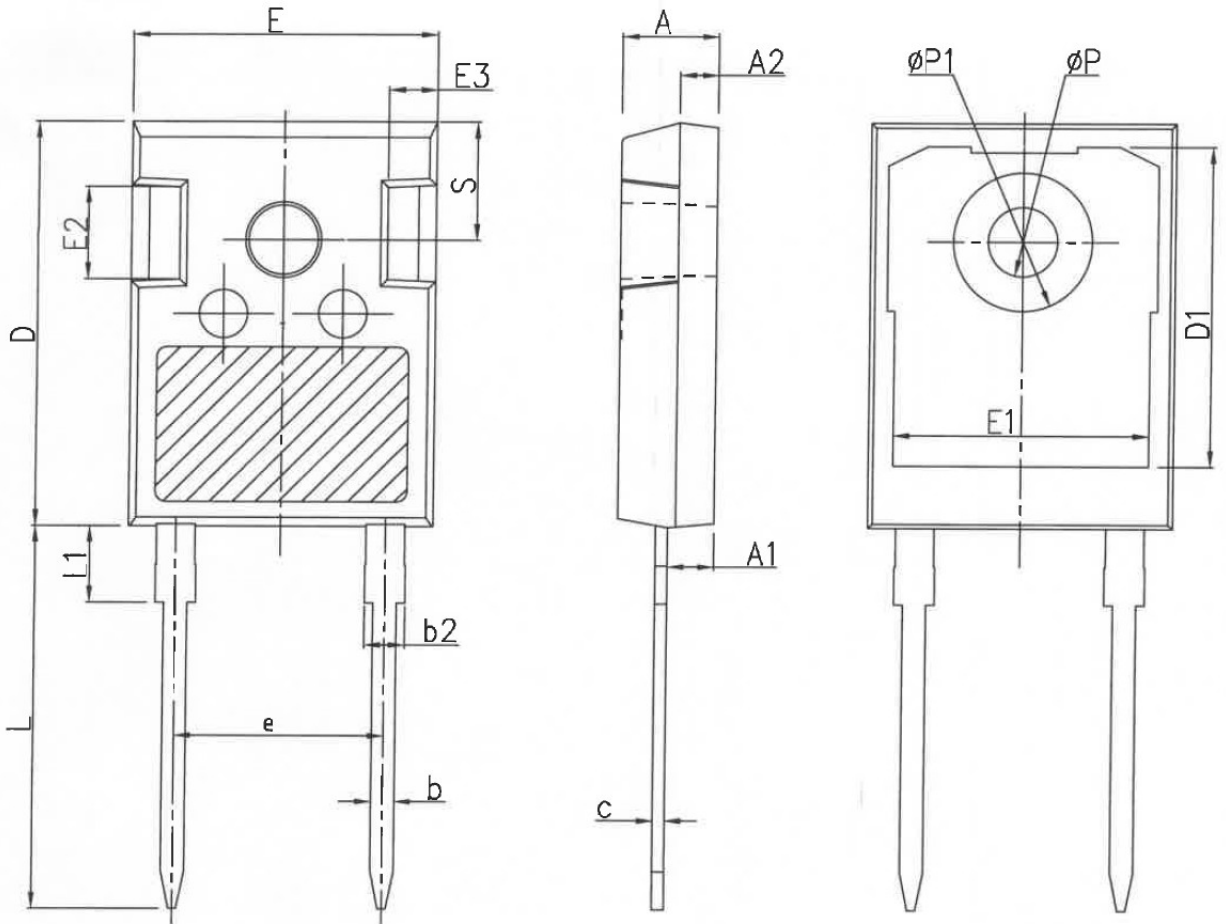


Figure 8. Transient Thermal Response Curve



Package Outlines

TO247-2



COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.59
A2	1.85	2.00	2.15
b	1.11	1.21	1.36
b2	1.91	2.01	2.21
c	0.51	0.61	0.75
D	20.70	21.00	21.30
D1	16.25	16.55	16.85
E	15.50	15.80	16.10
E1	13.00	13.30	13.60
E2	4.80	5.00	5.20
E3	2.30	2.50	2.70
e	10.88BSC		
L	19.62	19.92	20.22
L1	-	-	4.30
ΦP	3.40	3.60	3.80
$\Phi P1$	-	-	7.30
S	6.15BSC		

* Dimensions in millimeters

Package Marking and Ordering Information

Part Number	Top Marking	Package	Packing Method	Quantity
BCA120S40D2	BCA120S40D2	TO247-2	Tube	30 units

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