



bestirpower

BCW120D40D2

Silicon Carbide Schottky Diode

1200V, 40A

Description

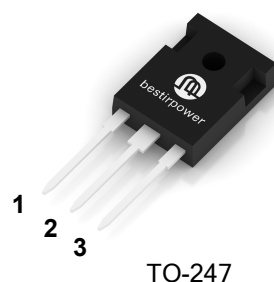
BCW120D40D2 utilizes bestirpower's advanced silicon carbide diode technology. This technology combines the benefits of excellent low forward voltage and robustness. Consequently, the family is suitable for application requiring high power efficiency

Applications

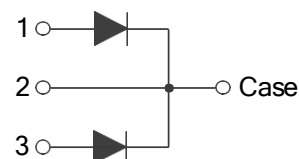
- Solar inverter, UPS
- EV charging station
- Power Factor Correction
- No reverse recovery current
- Low forward voltage
- 175°C Max junction temperature
- High surge current capability
- Switching behavior independent of temperature
- Pb-Free, Halogen Free and RoHS compliant

Features (Per Leg/Device)

V_{RRM}	I_F	T_C	Q_C
1200 V	20 / 40 A	146 °C	121 nC



TO-247



Absolute Maximum Ratings (Per Leg / Device, Per Leg unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	$T_C = 25^\circ\text{C}$	1200	V
I_F	Forward Current	$T_C = 25^\circ\text{C}$	52 / 104	A
		$T_C = 135^\circ\text{C}$	25 / 50	A
		$T_C = 146^\circ\text{C}$	20 / 40	A
$I_{F,SM}$	Non-Repetitive Forward Surge Current	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	135	A
		$T_C = 110^\circ\text{C}, t_p = 10 \text{ ms}$	115	A
$I_{F,Max}$	Non-Repetitive Peak Forward Current	$T_C = 25^\circ\text{C}, t_p = 10 \mu\text{s}$	1180	A
		$T_C = 150^\circ\text{C}, t_p = 10 \mu\text{s}$	980	A
I^2dt value	$\int I^2 dt$	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	91	A^2s
		$T_C = 150^\circ\text{C}, t_p = 10 \text{ ms}$	66	A^2s
P_{tot}	Power Dissipation	$T_C = 25^\circ\text{C}$	217	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.(Per Leg / Per Device)	0.69 / 0.35	$^\circ\text{C}/\text{W}$

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_F	Forward Voltage	$I_F = 20\text{ A}, T_C = 25^\circ\text{C}$		1.39	1.70	V
		$I_F = 20\text{ A}, T_C = 175^\circ\text{C}$		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	$V_R = 800\text{ V}, T_C = 25^\circ\text{C}$		121		nC
C	Total Capacitance	$V_R = 1\text{ V}, f = 100\text{ kHz}$		1357		pF
		$V_R = 800\text{ V}, f = 100\text{ kHz}$		85		
E_C	Capacitance Stored Energy	$V_R = 800\text{ V}, T_C = 25^\circ\text{C}$		34		μJ

Typical Performance Characteristics (Per Leg)

Figure 1. Power Derating

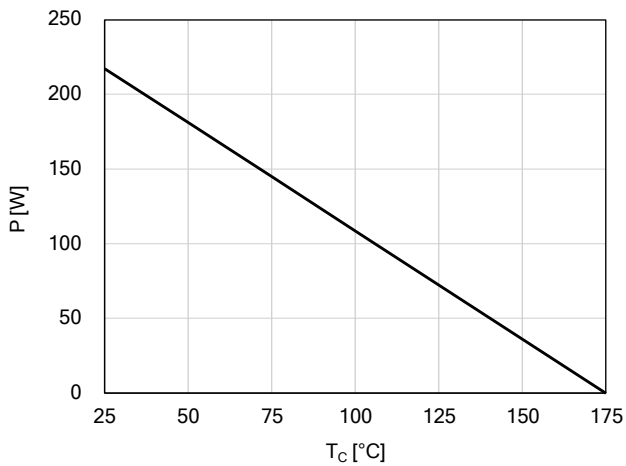


Figure 2. Current Derating

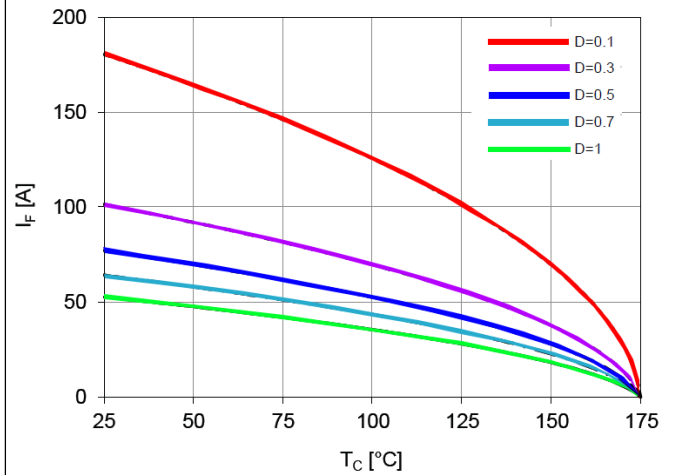


Figure 3. Forward Characteristics

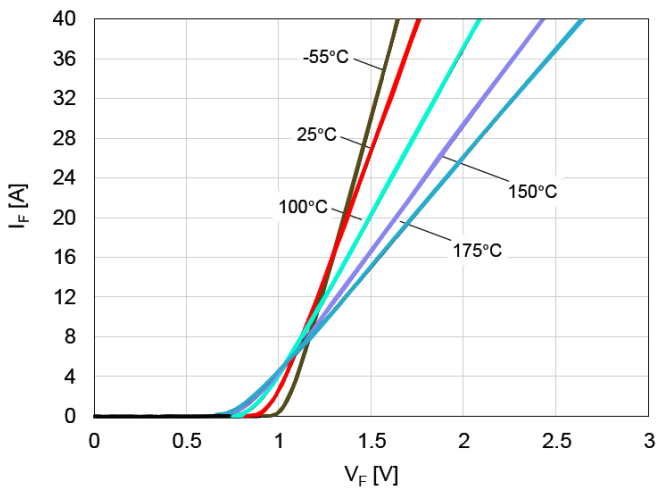


Figure 4. Reverse Characteristics

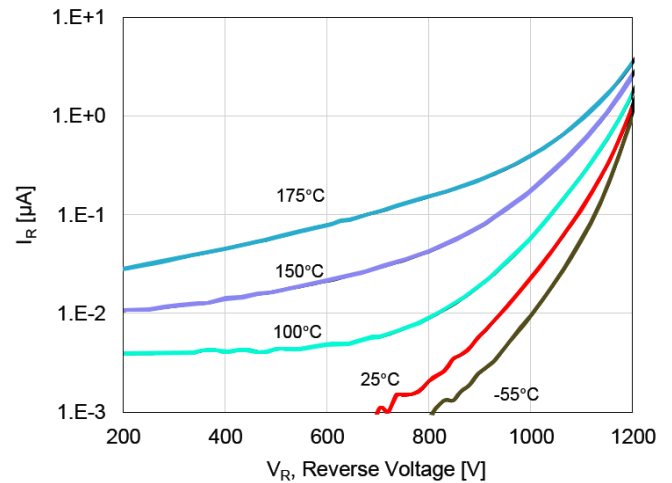


Figure 5. Capacitive Charge Characteristics

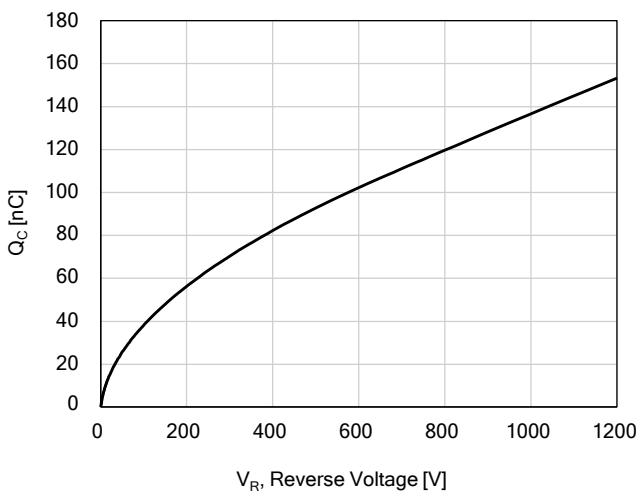
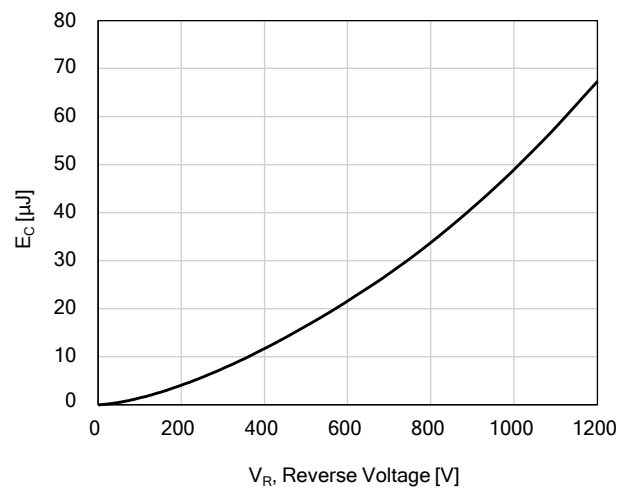


Figure 6. Capacitance Stored Energy



Typical Performance Characteristics (Per Leg)

Figure 7. Capacitance Characteristics

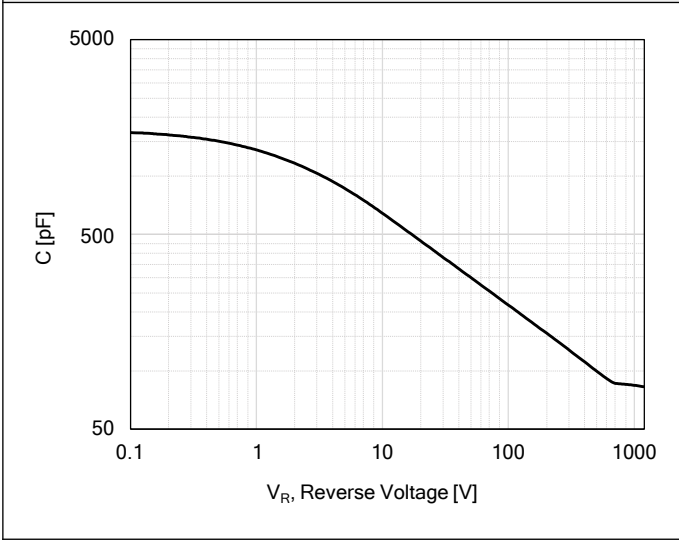
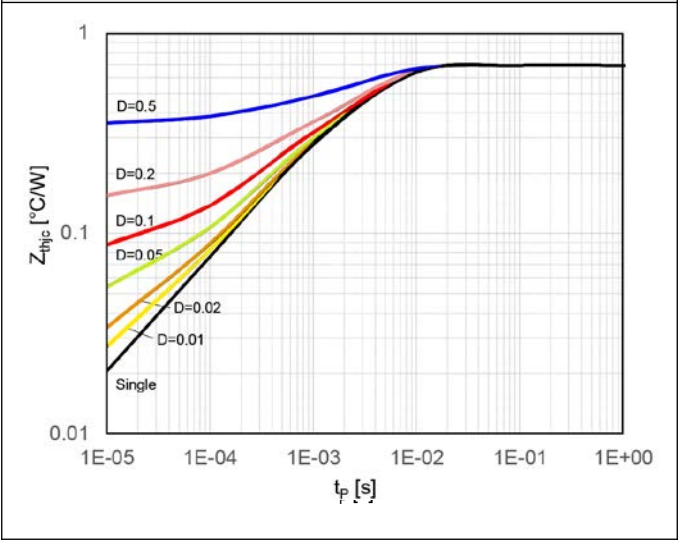
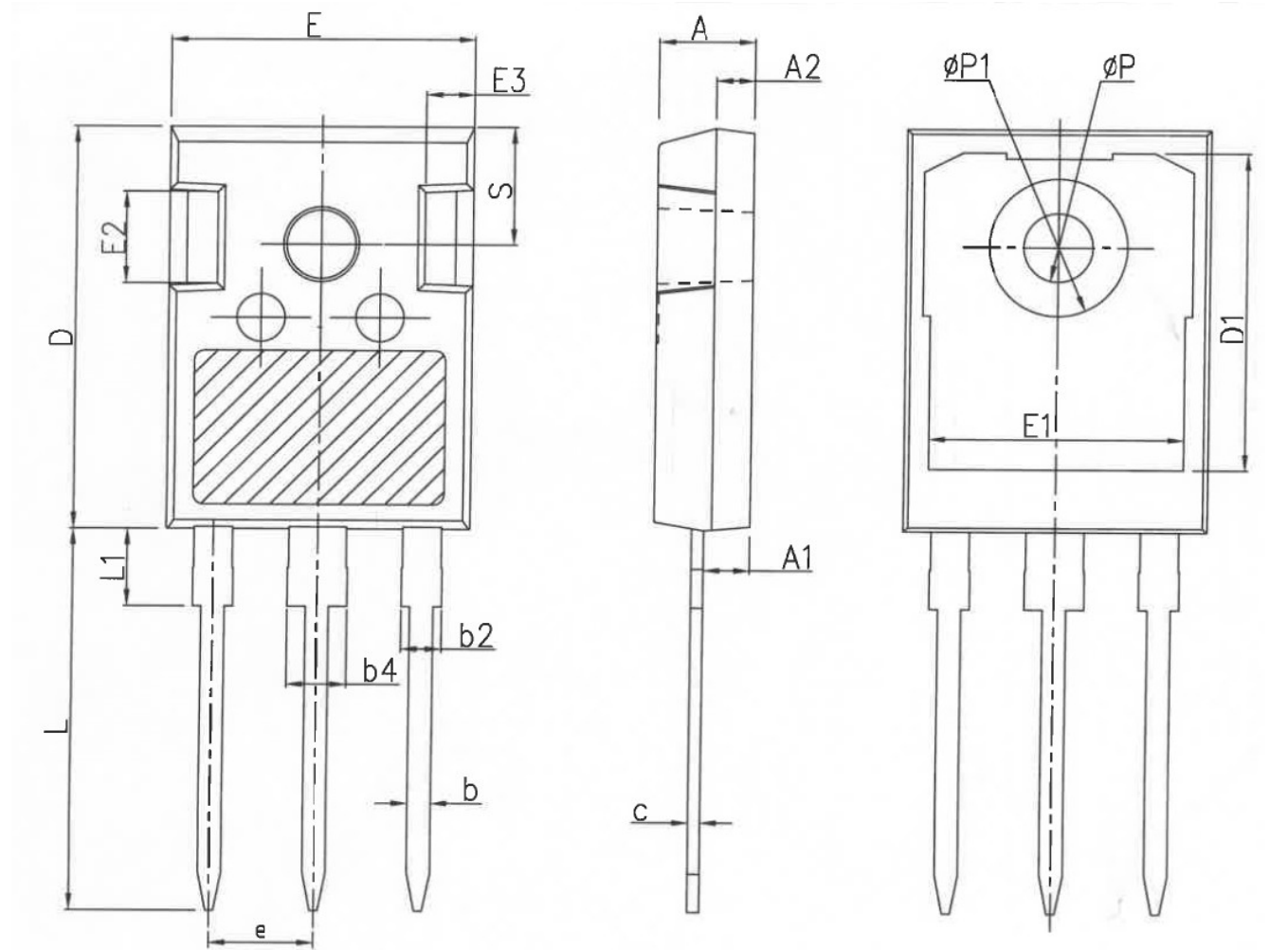


Figure 8. Transient Thermal Response Curve



Package Outlines
TO247-3



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
b4	2.91	3.01	3.21
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	5.44BSC		
L	19.62	19.92	20.22
L1	-	-	4.30
ΦP	3.40	3.60	3.80
ΦP1	-	-	7.30
S	6.15BSC		

* Dimensions in millimeters

Package Marking and Ordering Information

Part Number	Top Marking	Package	Packing Method	Quantity
BCW120D40D2	BCW120D40D2	TO247-3	Tube	30 units

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