



bestirpower

BCW65D30D3

Silicon Carbide Schottky Diode

650 V, 30 A

Description

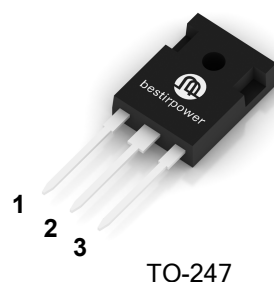
BCW65D30D3 utilizes bestirpower's advanced silicon carbide diode technology. This technology combines the benefits of excellent low forward voltage and robustness. Consequently, the family is suitable for application requiring high power efficiency

Applications

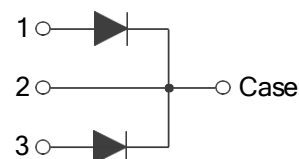
- Solar inverter, UPS
- EV charging station
- Power Factor Correction
- No reverse recovery current
- Low forward voltage
- 175°C Max junction temperature
- High surge current capability
- Switching behavior independent of temperature
- Pb-Free, Halogen Free and RoHS compliant

Features (Per Leg/Device)

V_{RRM}	I_F	T_C	Q_C
650 V	30 A	135 °C	40 nC



TO-247



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

Symbol	Parameter		Value	Unit	Note
V_{RRM}	Repetitive Peak Reverse Voltage	$T_C = 25^\circ\text{C}$	650	V	
I_F	Forward Current	$T_C = 25^\circ\text{C}$	74	A	Fig.7
		$T_C = 125^\circ\text{C}$	36	A	
		$T_C = 135^\circ\text{C}$	30	A	
I_{FRM}	Repetitive Peak Forward Surge Current	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	135	A	
I_{FSM}	Non-Repetitive Peak Forward Surge Current	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	111	A	
		$T_C = 110^\circ\text{C}, t_p = 10 \text{ ms}$	120	A	
$I_{F,Max}$	Non-Repetitive Peak Forward Current	$T_C = 25^\circ\text{C}, t_p = 10 \mu\text{s}$	120	A	
P_{tot}	Power Dissipation	$T_C = 25^\circ\text{C}$	217	W	Fig.6
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,	0.94	$^\circ\text{C}/\text{W}$
T_{sold}	Soldering temperature, wave soldering only allowed at leads	260	$^\circ\text{C}$

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit	Note
V_F	Forward Voltage	$I_F = 15\text{ A}, T_J = 25^\circ\text{C}$	-	1.5	1.8	V	Fig.1
		$I_F = 15\text{ A}, T_J = 175^\circ\text{C}$	-	2	2.4		
I_R	Reverse Current	$V_R = 650\text{ V}, T_J = 25^\circ\text{C}$	-	2	10	μA	Fig.2
		$V_R = 650\text{ V}, T_J = 175^\circ\text{C}$	-	30	20		
Q_C	Total Capacitive Charge	$V_R = 400\text{ V}, T_J = 25^\circ\text{C}$ $Q_C = \int 0VRC(V)dV$	-	121	-	nC	Fig.4
C	Total Capacitance	$V_R = 0\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	-	860	-	pF	Fig.3
		$V_R = 200\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$					
		$V_R = 400\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$					
E_C	Capacitance Stored Energy	$V_R = 400\text{ V}$	-	8.2	-	μJ	Fig.5

Typical Performance Characteristics (Per Leg)

Figure 1. Forward Characteristics

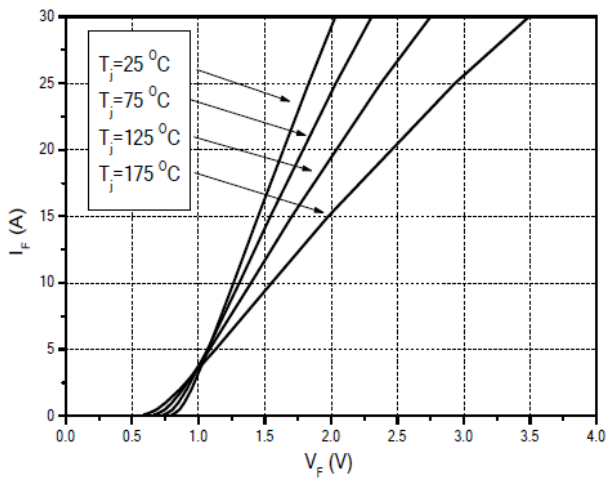


Figure 2. Reverse Characteristics

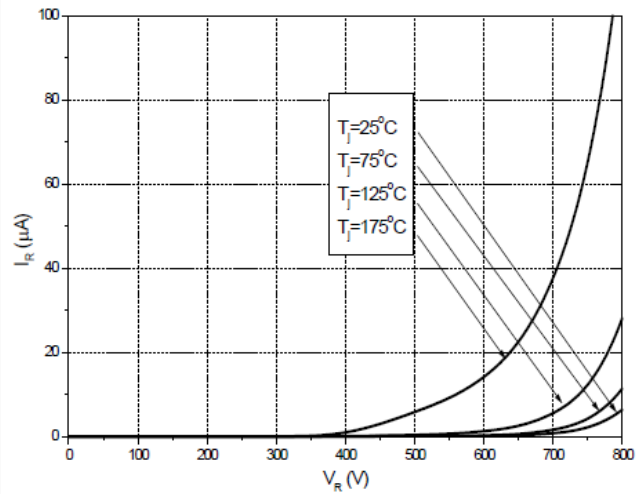


Figure 3. Capacitance vs. Reverse Voltage

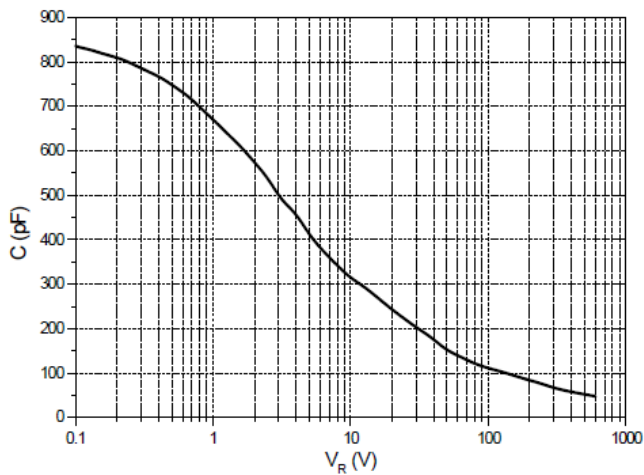


Figure 4. Total Capacitance Charge vs. Reverse Voltage

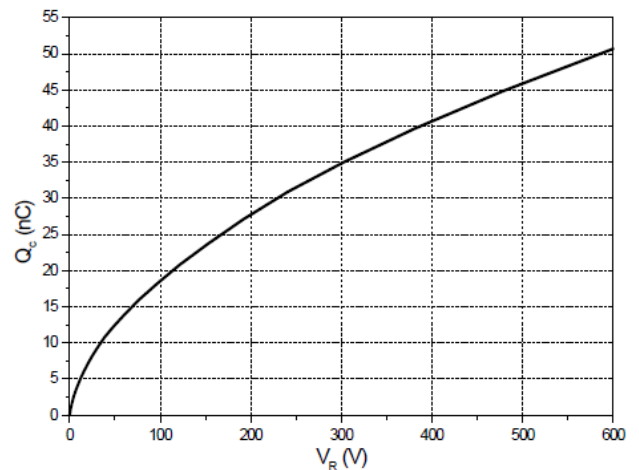


Figure 5. Capacitance Stored Energy

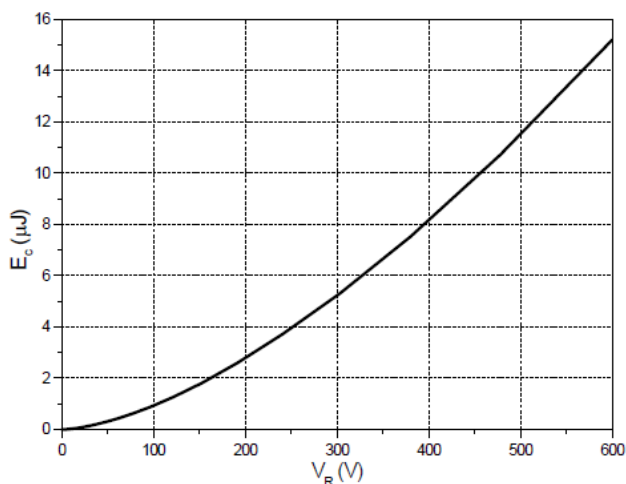
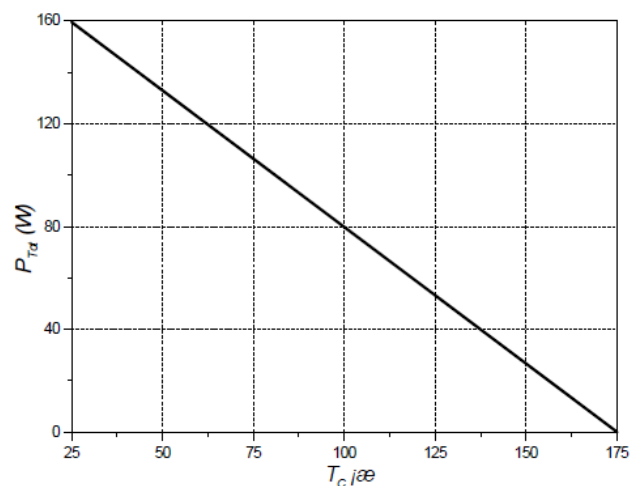


Figure 6. Power Derating



Typical Performance Characteristics (Per Leg)

Figure 7. Current Derating

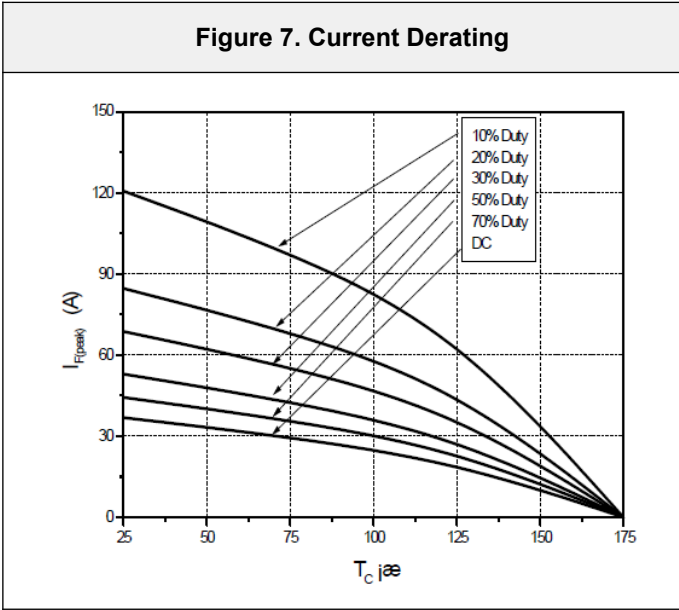
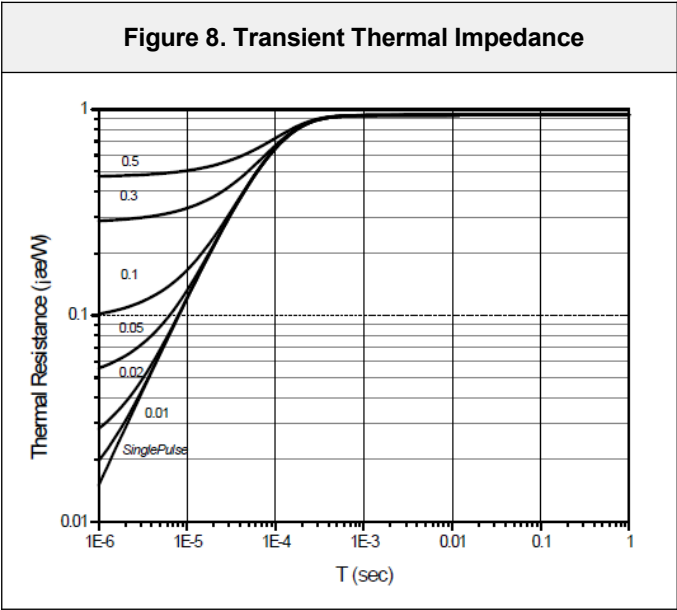
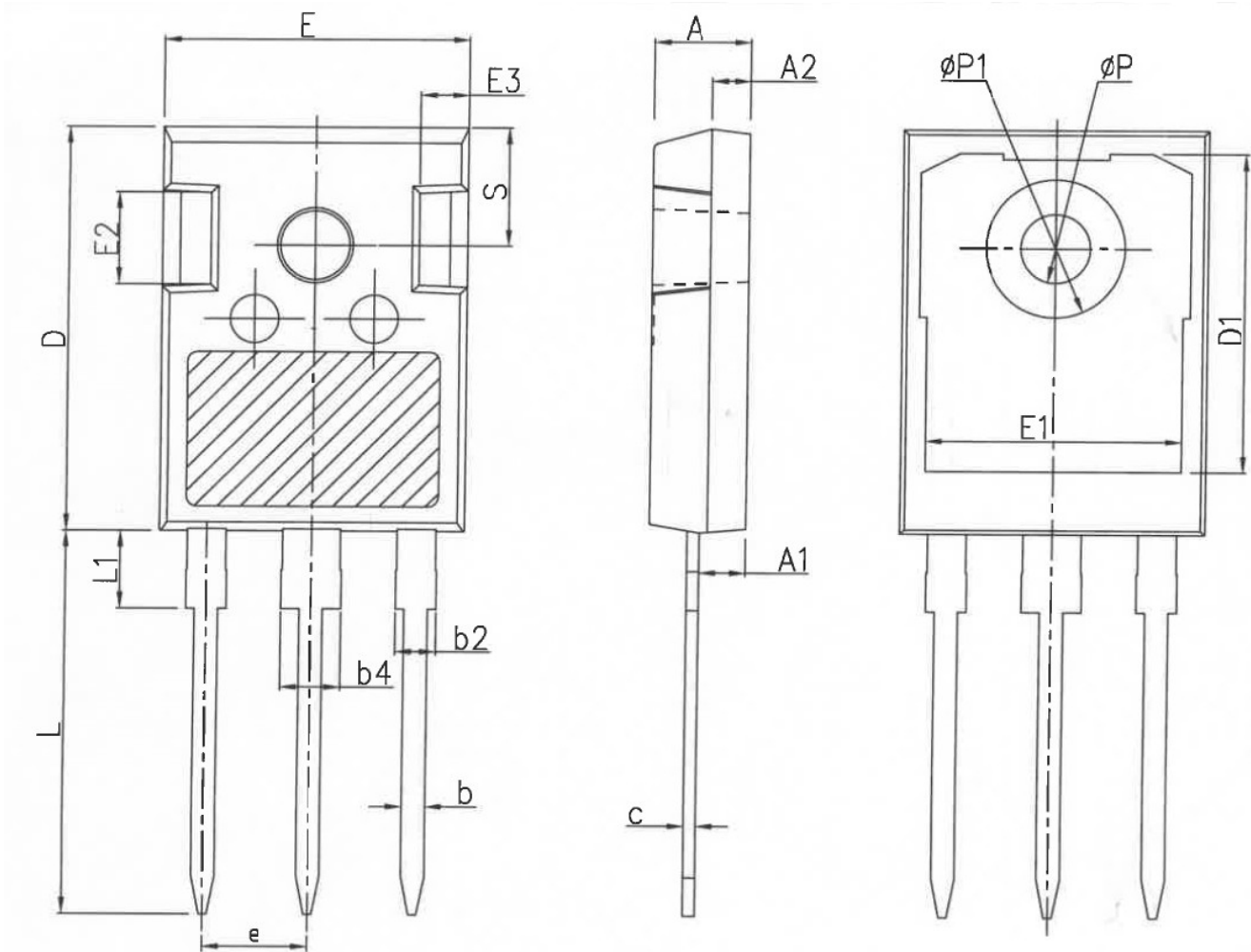


Figure 8. Transient Thermal Impedance



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
$\Phi P1$	-	-	7.30
S	6.15BSC		

* Dimensions in millimeters

Package Marking and Ordering Information

Part Number	Top Marking	Package	Packing Method	Quantity
BCW65D30D3	BCW65D30D3	TO247-3	Tube	30 units

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