BCA65S40D3

Silicon Carbide Schottky Diode

650V, 40A

Description

BCA65S30D3 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

Features

V_{RRM}	I_F	T_C	Q_C
650 V	40 A	140℃	99 nC

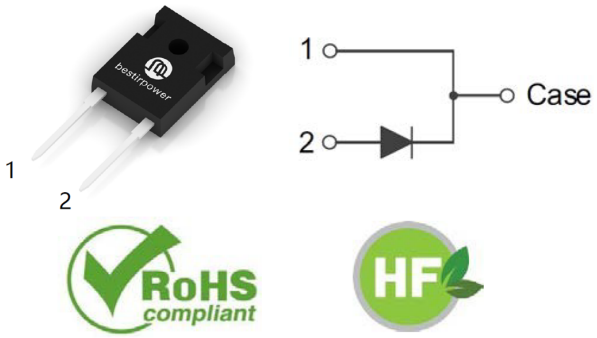
- High surge current capability
- No reverse recovery
- Positive temperature coefficient
- Benchmark switching behavior
- RoHS compliant / Halogen-free

Benefits

- High-speed switching
- Low heat dissipation requirements
- Reduce size and cost of the system
- High-reliability
- System efficiency improvement

Applications

- Free Wheeling Diodes in Inverter stages
- Power factor correction
- Data Center
- Switch mode power supply



Absolute Maximum Ratings (T_C = 25℃ unless otherwise noted)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive Peak Reverse VoltageSurge Peak Reverse Voltage		650	V
V_{RSM}	Surge Peak Reverse Voltage	T_C = 25℃	650	V
I_F	Forward CurrentDC Blocking Voltage	T_C = 25℃	121	A
		T_C = 140℃	40	A
$I_{F,SM}$	Non-Repetitive Forward Surge Current	T_C = 25℃, t_p = 10 ms	230	A
V_{DC}	DC Blocking Voltage	T_C = 25℃	650	V
T_J,T_{STG}	Operating Junction and Storage Temperature		-55 to +175	℃
P_{tot}	Power Dissipation	T_C = 25℃	290	W
		T_C = 110℃	125.5	W

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Typ.	0.52	℃/W

Electrical Characteristics (T_C = 25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DC}	DC blocking voltage	-	650	-	-	V
V_F	Forward Voltage	I_F=40A，T_J=25℃	-	1.46	1.8	V
		I_F=40A，T_J=175℃	-	1.8	2.2	
I_R	Reverse Current	V_R = 650 V, T_J = 25℃	-	1	100	μA
		V_R = 650 V, T_J= 175℃	-	6	400	
Q_C	Total Capacitive Charge	V_R = 400 V, T_J = 25℃	-	99	-	nC
C	Total Capacitance	V_R = 0V， f =1MHz,TJ = 25℃	-	2040	-	pF
		V_R = 200V，f=1MHz,TJ = 25℃	-	188	-	
		V_R = 400V，f=1MHz,TJ = 25℃	-	158	-	
E_C	Capacitance Stored Energy	V_R = 400V	-	15	-	μJ

Typical Performance Characteristics

Figure 1. Forward Characteristics

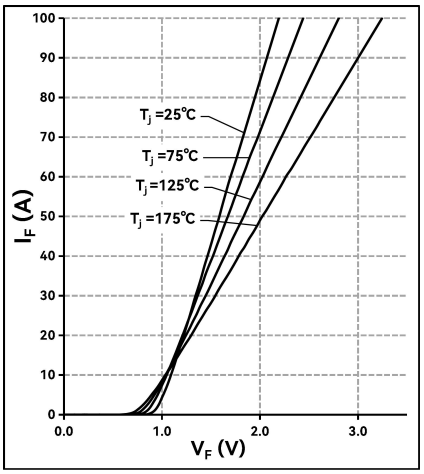


Figure 2. Reverse Characteristics

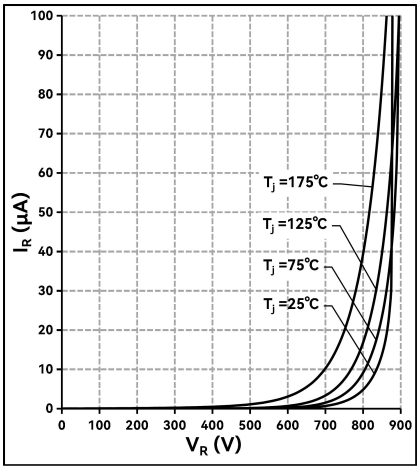


Figure 3. Peak Forward Current Derating

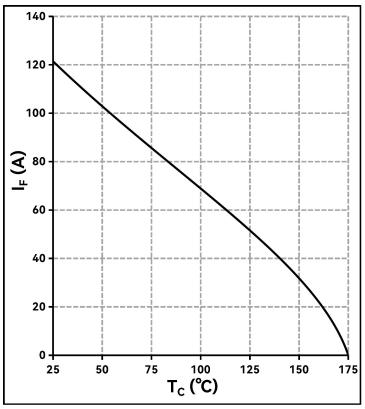


Figure 4. Power Dissipation

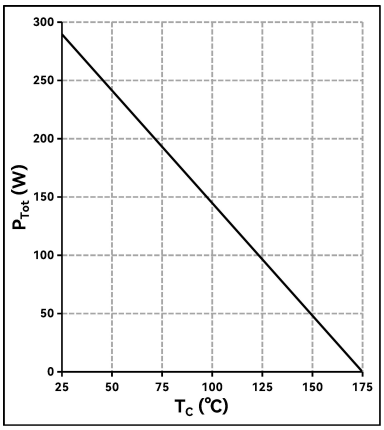


Figure 5. Total Capacitive Charge vs Reverse Voltage

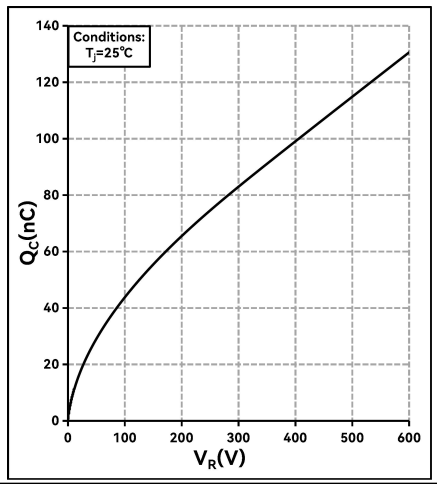
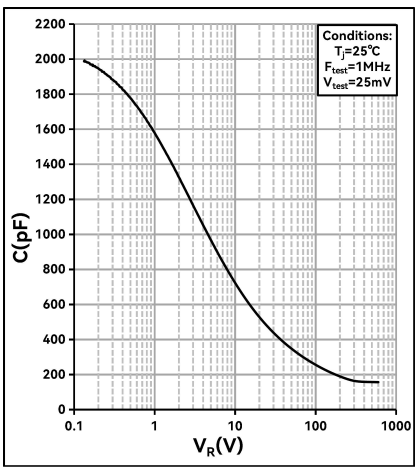


Figure 6. Capacitance Charge vs. Reverse Voltage



Typical Performance Characteristics

Figure 7. Typical Capacitance Stored Energy

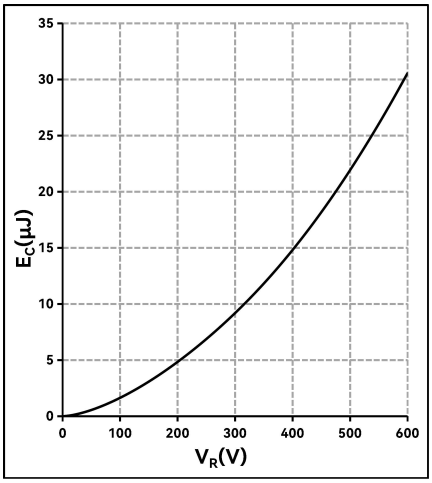
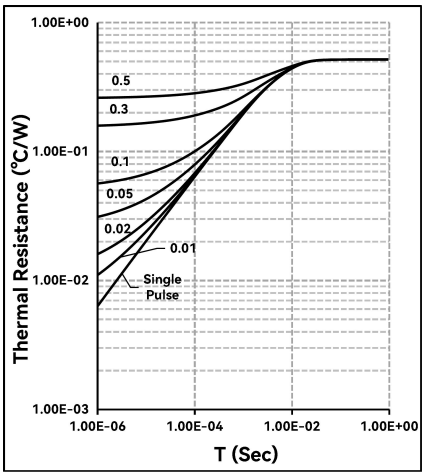
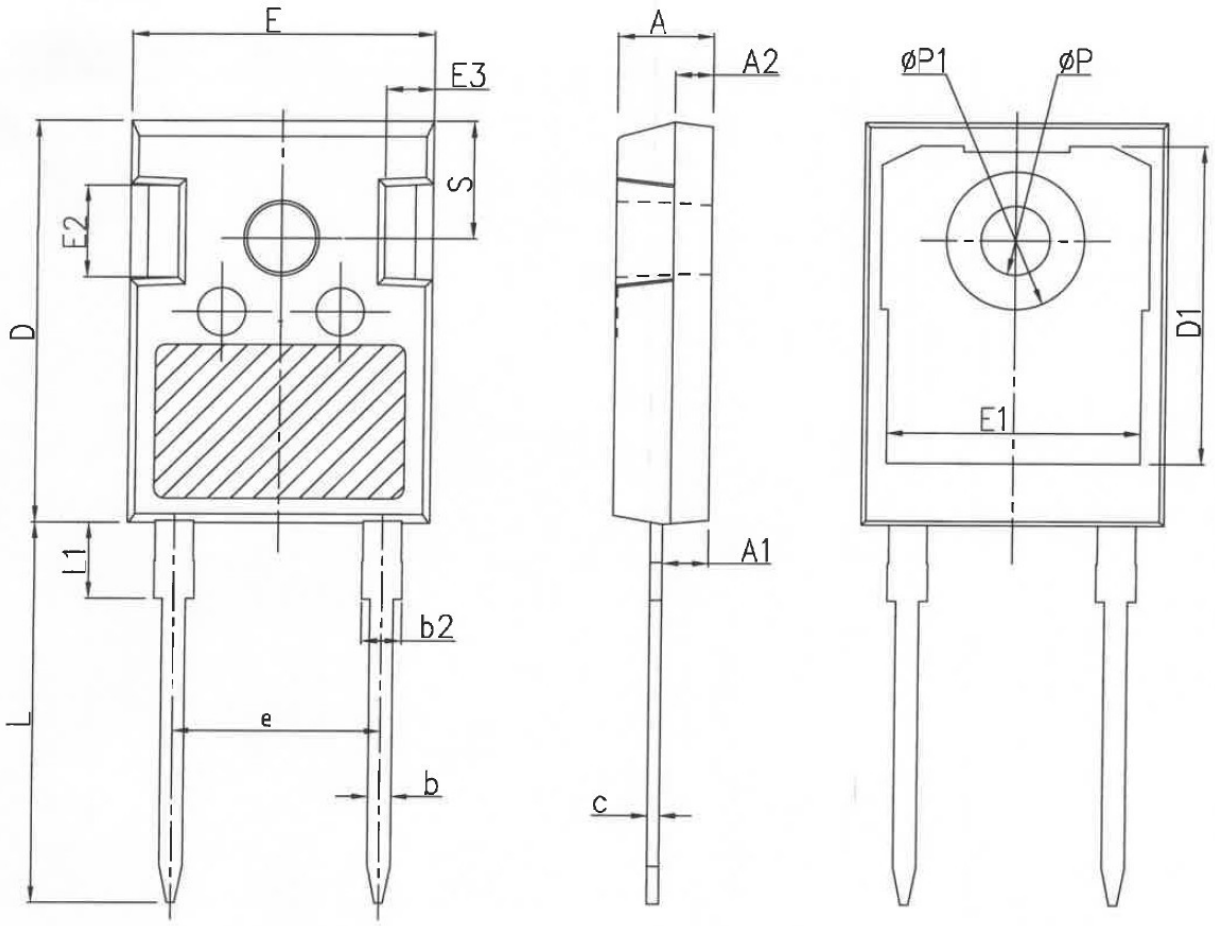


Figure 8. Transient Thermal Impedance



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
ΦP1	–	–	7.30
S	6.15BSC		

* Dimensions in millimeters

Package Marking and Ordering Information

Part Number	Top Marking	Package	Packing Method	Quantity
BCA65S40D3	BCA65S40D3	TO247-2	Tube	30units

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