



# BCH65S30D3

## Silicon Carbide Schottky Diode

650V, 30A

### Description

BCH65S30D3 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

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

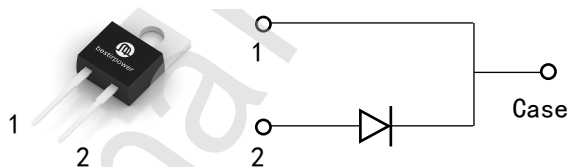
### Applications

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

### Features

$V_{RRM}$	$I_F$	$T_C$	$Q_C$
650 V	30 A	142°C	85 nC

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



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

Symbol	Parameter	Value	Unit
$V_{RRM}$	Repetitive Peak Reverse Voltage	650	V
$I_F$	Forward Current	$T_C = 25^\circ\text{C}$	72 A
		$T_C = 135^\circ\text{C}$	34 A
		$T_C = 142^\circ\text{C}$	30 A
$I_{F,SM}$	Non-Repetitive Forward Surge Current	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	216 A
		$T_C = 110^\circ\text{C}, t_p = 10 \text{ ms}$	187 A
$I_{F,RM}$	Repetitive Peak Forward Surge Current	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	186 A
$I^2dt$ value	$\int I^2 dt$	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	233 A <sup>2</sup> s
		$T_C = 110^\circ\text{C}, t_p = 10 \text{ ms}$	174 A <sup>2</sup> s
$P_{tot}$	Power Dissipation	$T_C = 25^\circ\text{C}$	254 W
		$T_C = 110^\circ\text{C}$	110 W
		$T_C = 150^\circ\text{C}$	42 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.	0.59	°C/W

## Electrical Characteristics (T<sub>C</sub> = 25°C unless otherwise noted)

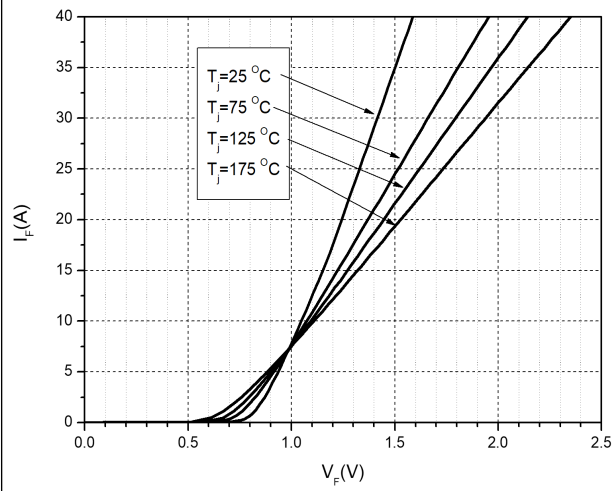
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V <sub>DC</sub>	DC blocking voltage	I <sub>R</sub> =100μA	650	-	-	V
V <sub>F</sub>	Forward Voltage	I <sub>F</sub> =30A, T <sub>J</sub> =25°C	-	1.45	1.8	V
		I <sub>F</sub> =30A, T <sub>J</sub> =175°C	-	1.95	-	
I <sub>R</sub>	Reverse Current	V <sub>R</sub> = 650 V, T <sub>J</sub> = 25°C	-	2	20	μA
		V <sub>R</sub> = 650 V, T <sub>J</sub> = 175°C	-	40	200	
Q <sub>C</sub>	Total Capacitive Charge	V <sub>R</sub> = 400 V, T <sub>J</sub> = 25°C	-	85	-	nC
C	Total Capacitance	V <sub>R</sub> = 0V, f=1MHz	-	2050	-	pF
		V <sub>R</sub> = 200V, f=1MHz	-	162	-	
		V <sub>R</sub> = 400V, f=1MHz	-	137	-	
E <sub>C</sub>	Capacitance Stored Energy	V <sub>R</sub> = 400V	-	21	-	μJ

## Package Marking and Ordering Information

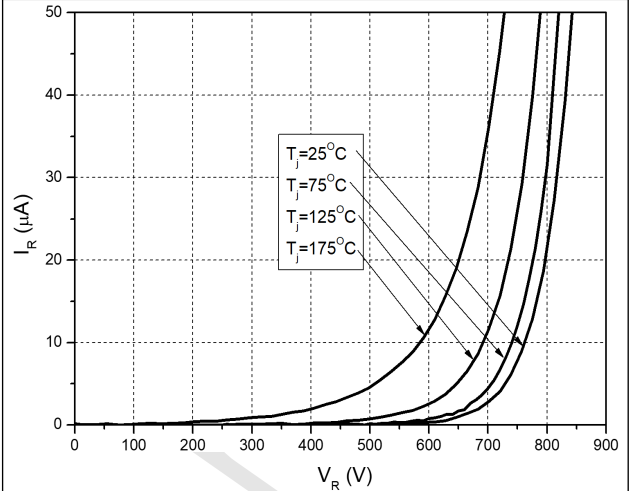
Part Number	Top Marking	Package	Packing Method	Quantity
BCH65S30D3	BCH65S30D3	TO220-2	Tube	50 units

### Typical Performance Characteristics

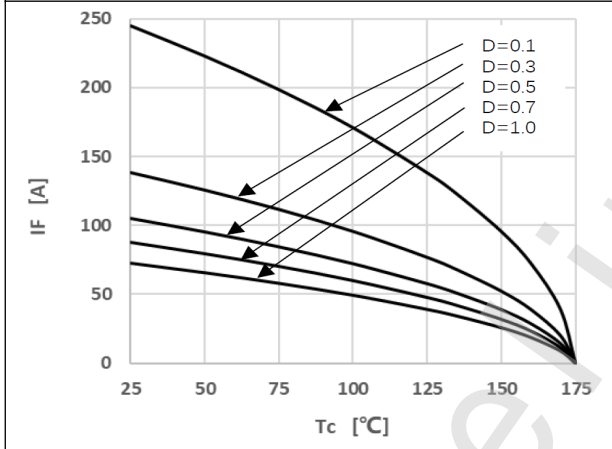
**Figure 1. Forward Characteristics**



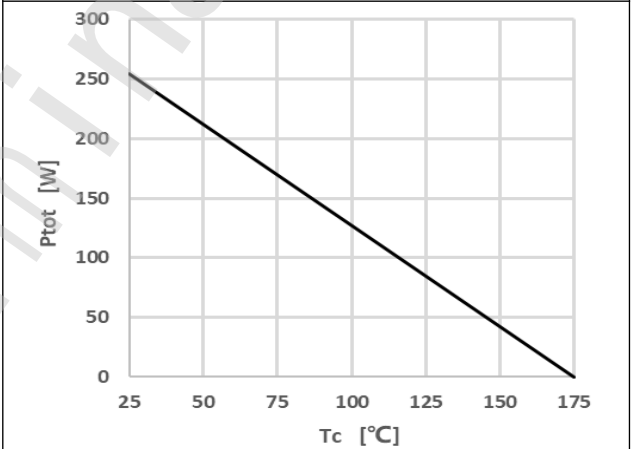
**Figure 2. Reverse Characteristics**



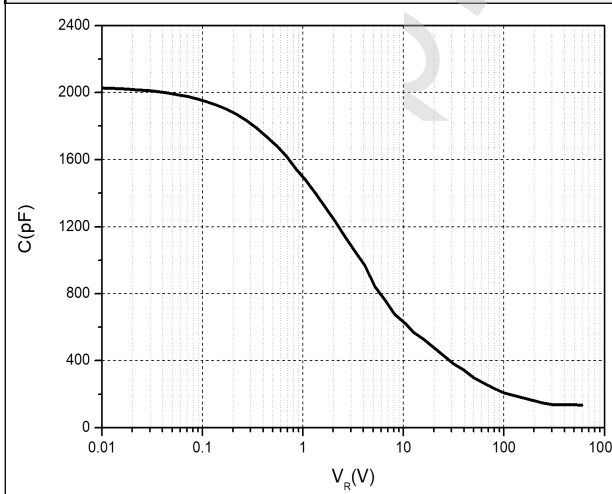
**Figure 3. Peak Forward Current Derating**



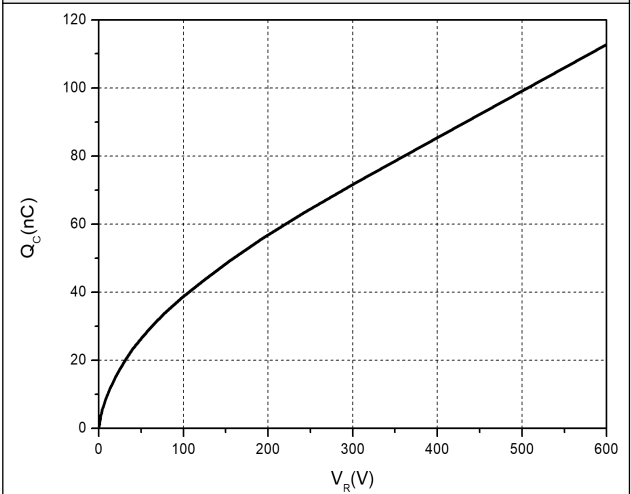
**Figure 4. Power Dissipation**



**Figure 5. Capacitance vs. Reverse Voltage**

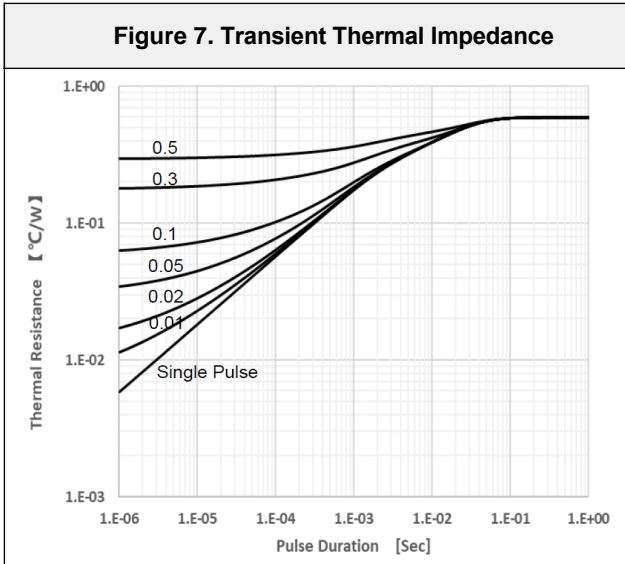


**Figure 6. Capacitance Charge vs. Reverse Voltage**



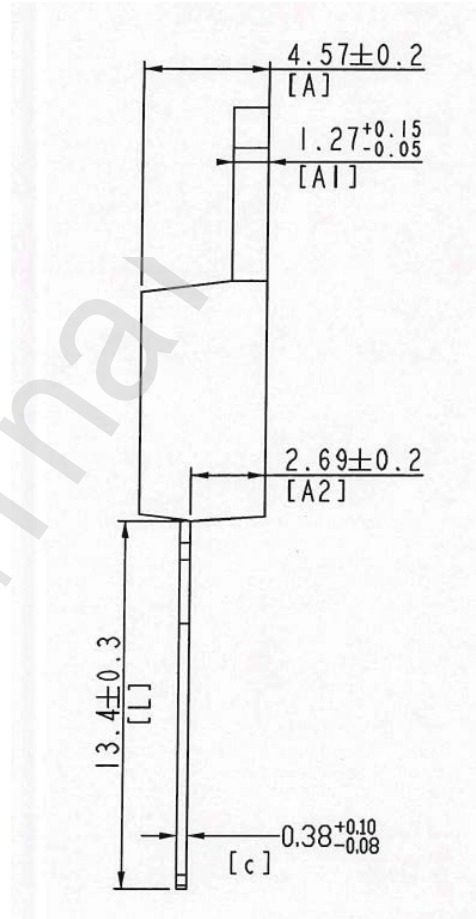
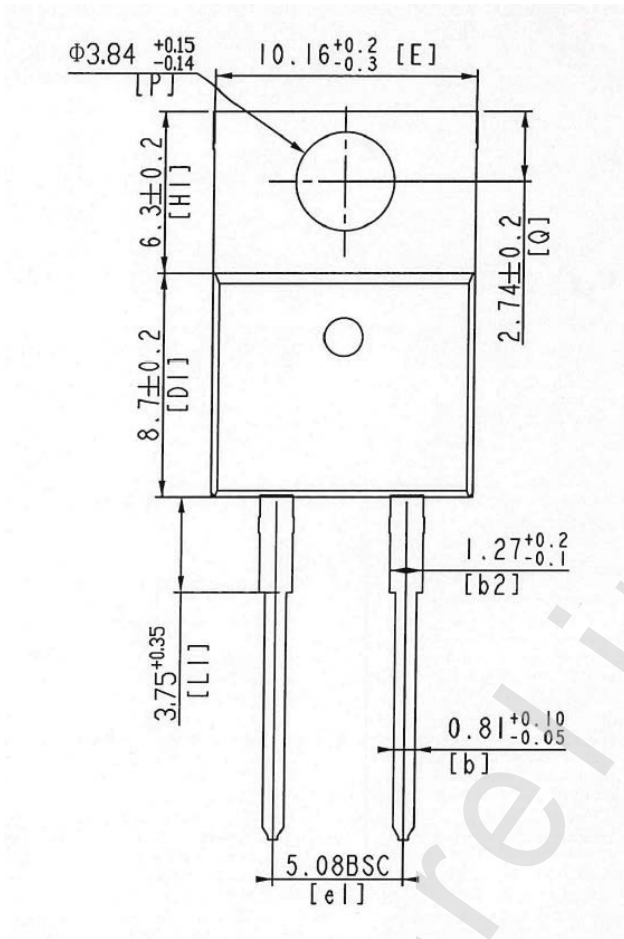
## Typical Performance Characteristics

Figure 7. Transient Thermal Impedance



preliminary

## Package Outlines TO220-2



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