



# BCF65S06D4

## Silicon Carbide Schottky Diode

650V, 6A

### Description

BCF65S06D4 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 frequency
- Low heat dissipation requirements
- Reduce size and cost of the system
- High-reliability

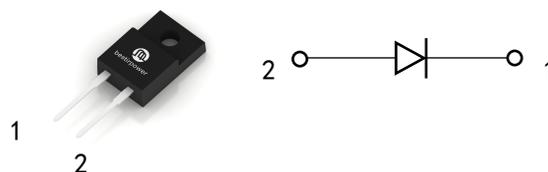
### Applications

- Switch mode power supply
- Solar inverter
- Data Center
- Uninterruptible power supply

### Features

$V_{RRM}$	$I_F$	$T_C$	$Q_C$
650 V	6 A	150°C	17nC

- Negligible reverse recovery
- High-speed switching
- Positive Temperature Coefficient
- Temperature-Independent Switching
- RoHS compliant



### 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	$T_C = 25^\circ\text{C}$	14.6	A
		$T_C = 135^\circ\text{C}$	7.5	A
		$T_C = 150^\circ\text{C}$	6	A
$I_{F,SM}$	Non-Repetitive Forward Surge Current	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	105	A
		$T_C = 110^\circ\text{C}, t_p = 10 \text{ ms}$	78	A
$I_{F,RM}$	Repetitive Peak Forward Surge Current	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	95	A
$I^2dt$ value	$\int I^2 dt$	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	55	$\text{A}^2\text{s}$
		$T_C = 110^\circ\text{C}, t_p = 10 \text{ ms}$	30	$\text{A}^2\text{s}$
$P_{tot}$	Power Dissipation	$T_C = 25^\circ\text{C}$	45	W
		$T_C = 110^\circ\text{C}$	19.5	W
		$T_C = 150^\circ\text{C}$	7.5	W
$T_J, T_{STG}$	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$	

## Thermal Characteristics

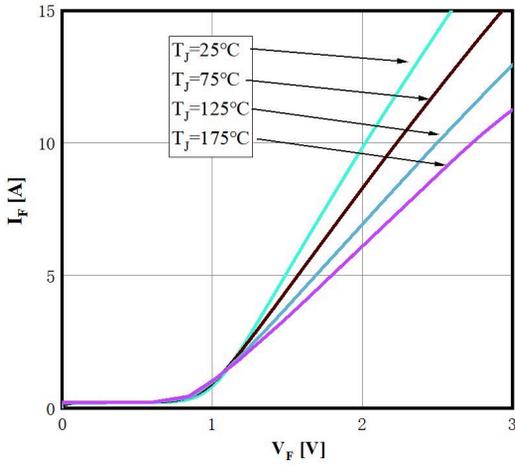
Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Typ.	3.33	$^{\circ}C/W$

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

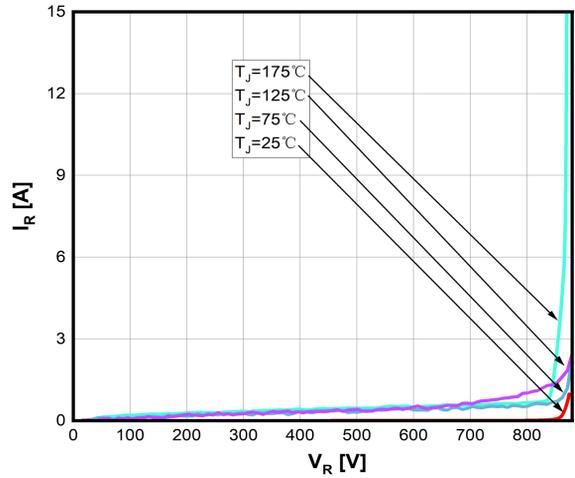
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_{DC}$	DC blocking voltage		650			V
$V_F$	Forward Voltage	$I_F=6A, T_J=25^{\circ}C$	-	1.6	1.80	V
		$I_F=6A, T_J=175^{\circ}C$	-	2		
$I_R$	Reverse Current	$V_R = 650 V, T_J = 25^{\circ}C$	-	0.02	20	$\mu A$
		$V_R = 650 V, T_J = 175^{\circ}C$	-	40	200	
$Q_C$	Total Capacitive Charge	$V_R = 400 V, T_J = 25^{\circ}C$	-	17	-	nC
C	Total Capacitance	$V_R = 0 V, f = 1MHz$	-	235	-	pF
		$V_R = 200 V, f = 1MHz$	-	30	-	
		$V_R = 400 V, f = 1MHz$	-	29	-	
$E_C$	Capacitance Stored Energy	$V_R = 400 V, T_C = 25^{\circ}C$	-	3.7	-	$\mu J$

## Typical Performance Characteristics

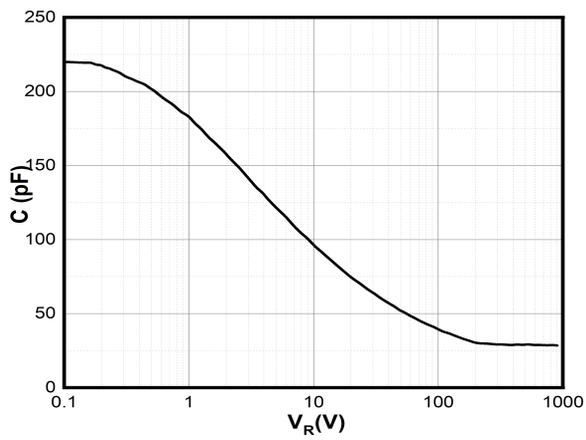
**Figure 1. Forward Characteristics**



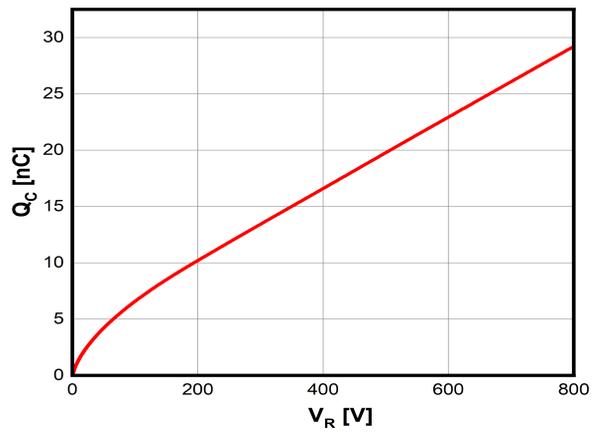
**Figure 2. Reverse Characteristics**



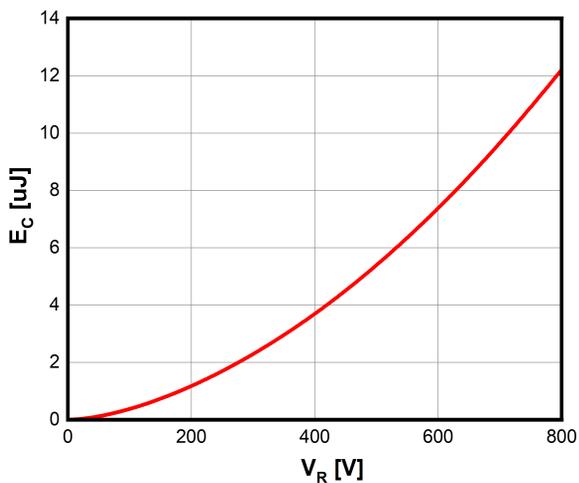
**Figure 3. Capacitance vs. Reverse Voltage**



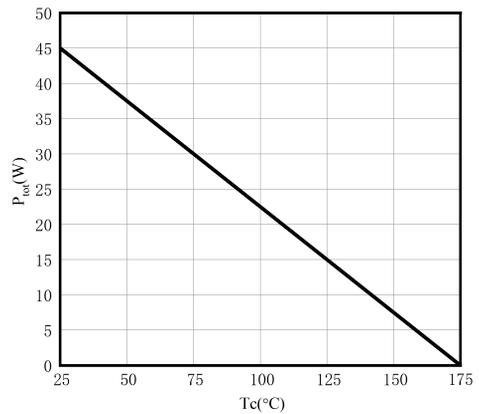
**Figure 4. Capacitance Charge vs. Reverse Voltage**



**Figure 5. Capacitance Stored Energy**



**Figure 6. Power Derating**



### Typical Performance Characteristics

Figure 7. Current Derating

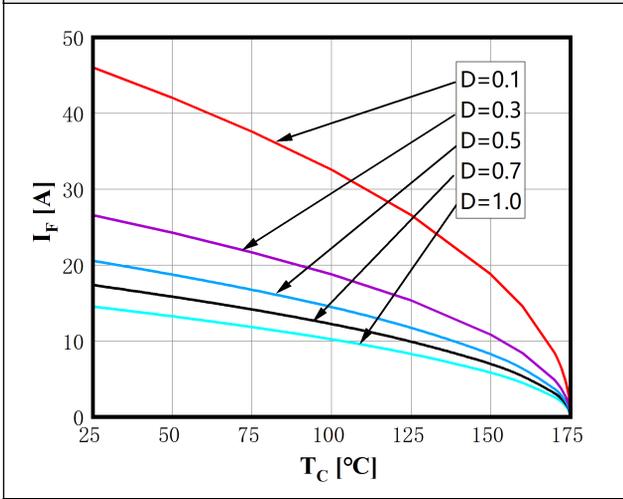
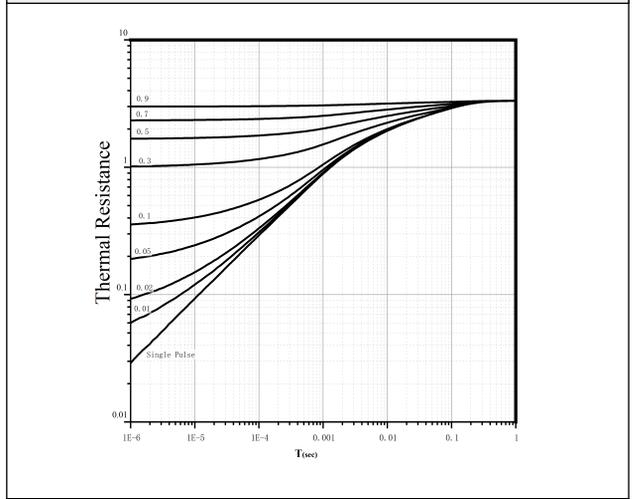
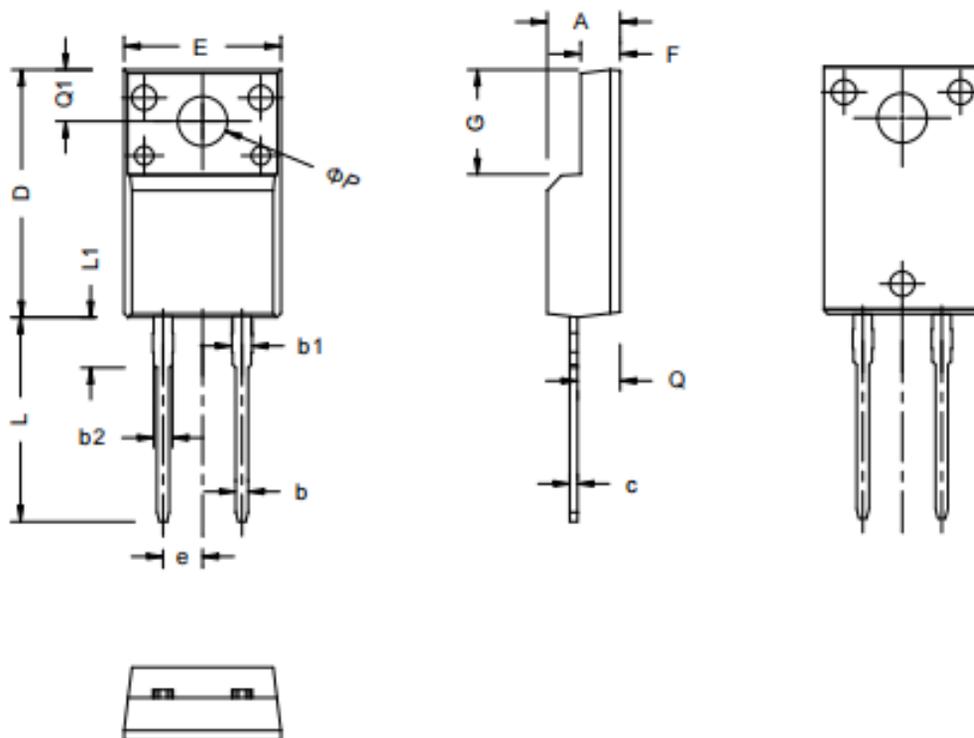


Figure 8. Transient Thermal Impedance

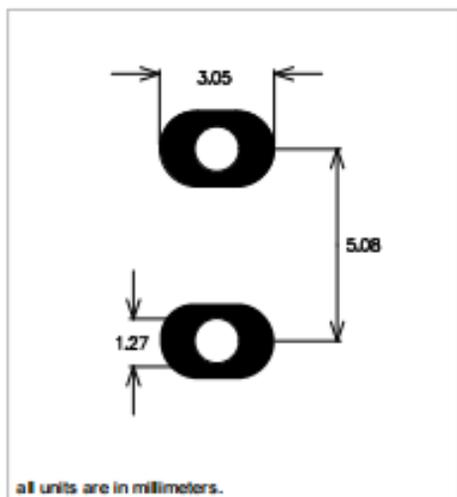


Package Outlines

# TO220F-2



**Recommended Solder Pad Layout**



SYMBOL	mm		
	MIN	NOM	MAX
A	4.50	4.70	4.80
b	0.70	0.80	0.91
b1	1.20	1.30	1.47
b2	1.10	1.20	1.30
c	0.45	0.50	0.63
D	15.80	15.87	15.97
e	2.44	2.54	2.64
E	10.00	10.10	10.30
F	2.44	2.54	2.64
G	6.50	6.70	6.90
L	12.90	13.10	13.30
L1	3.13	3.23	3.33
Q	2.65	2.75	2.85
Q1	3.20	3.30	3.40
φ P	3.08	3.18	3.28

## Package Marking and Ordering Information

Part Number	Top Marking	Package	Packing Method	Quantity
BCF65S06D4	BCF65S06D4	TO220F-2	Tube	50 units

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