

BCD120S05D3

Silicon Carbide Schottky Diode

1200V, 5A

Description

BCD120S05D3 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

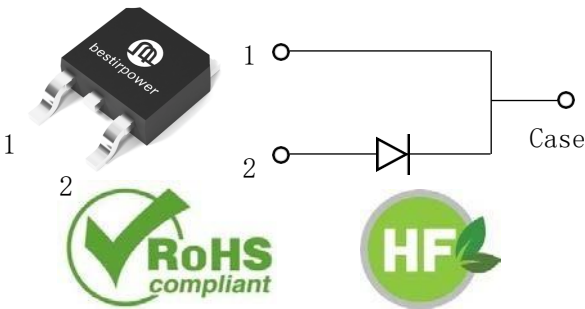
Applications

- Power factor correction(PFC)
- Solar inverter
- Uninterruptible power supply
- Motor drives
- Photo-voltaic inverter
- Electric car and charger

Features

V_{RRM}	I_F	$T_{J,max}$	Q_C
1200 V	5 A	175 °C	27nC

- Positive temperature coefficient
- Temperature-independent switching
- Maximum working temperature at 175 °C
- Unipolar devices and zero reverse recovery current
- Zero forward recovery current
- Essentially no switching losses
- Reduction of heat sink requirements
- High-frequency operation
- Reduction of EMI



Absolute Maximum Ratings (T_C = 25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V
I_F	Forward Current	$T_C = 25^{\circ}C$	14.8 A
		$T_C = 135^{\circ}C$	7 A
		$T_C = 153^{\circ}C$	5 A
$I_{F,SM}$	Non-Repetitive Forward Surge Current	$T_C = 25^{\circ}C, t_p = 10\text{ ms}$	40 A
		$T_C = 110^{\circ}C, t_p = 10\text{ ms}$	34 A
I^2dt value	$\int I^2 dt$	$T_C = 25^{\circ}C, t_p = 10\text{ ms}$	12.5 A ² s
P_{tot}	Power Dissipation	$T_C = 25^{\circ}C$	71 W
		$T_C = 110^{\circ}C$	31 W
T_J, T_{STG}	Operating Junction and Storage Temperature	-55 to +175	°C

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta C}$	Thermal Resistance, Junction to Case, Typ.	2.1	$^{\circ}\text{C}/\text{W}$

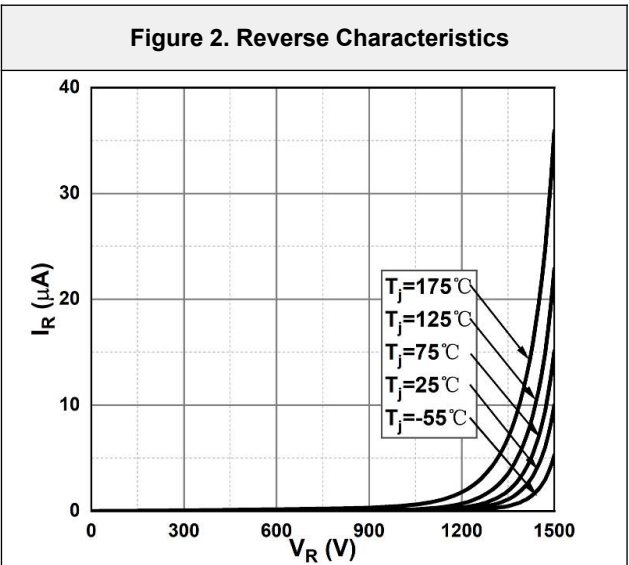
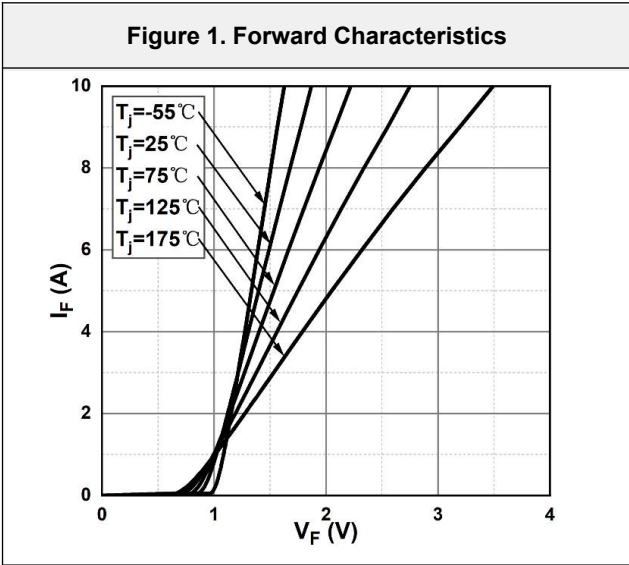
Electrical Characteristics ($T_C = 25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DC}	DC blocking voltage		1200	-	-	V
V_F	Forward Voltage	$I_F = 5\text{A}$, $T_C = 25^{\circ}\text{C}$	-	1.37	1.8	V
		$I_F = 5\text{A}$, $T_C = 175^{\circ}\text{C}$	-	1.8	-	
I_R	Reverse Current	$V_R = 1200\text{V}$, $T_C = 25^{\circ}\text{C}$	-	0.5	16	μA
		$V_R = 1200\text{V}$, $T_C = 175^{\circ}\text{C}$	-	8	-	
Q_C	Total Capacitive Charge	$V_R = 800\text{V}$, $T_j = 25^{\circ}\text{C}$, $Q_C = \int_0 V_{RC}(V) dV$	-	27	-	nC
C	Total capacitance	$V_R = 0\text{V}$, $f = 1\text{MHz}$	-	377	-	pF
		$V_R = 400\text{V}$, $f = 1\text{MHz}$	-	25	-	
		$V_R = 800\text{V}$, $f = 1\text{MHz}$	-	19	-	
E_C	Capacitance Stored Energy	$V_R = 800\text{V}$	-	6.8	-	μJ

Package Marking and Ordering Information

Part Number	Top Marking	Package	Packing Method	Reel Size	Tape Width	Quantity
BCD120S05D3	BCD120S05D3	D-Pak	Tape & Reel	330 mm	16 mm	2500 units

Typical Performance Characteristics



Typical Performance Characteristics

Figure 3. Capacitance vs. Reverse Voltage

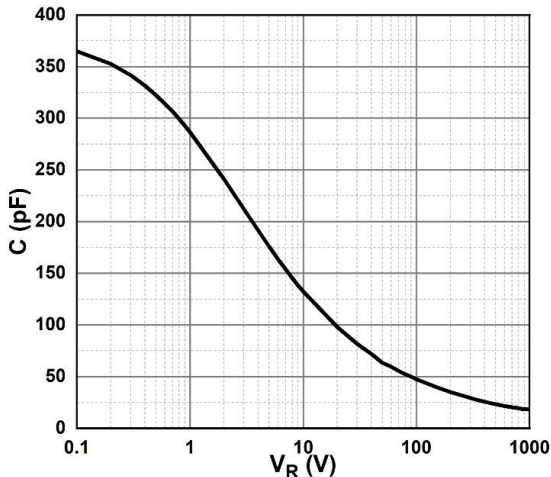


Figure 4. Total Capacitance Charge vs. Reverse Voltage

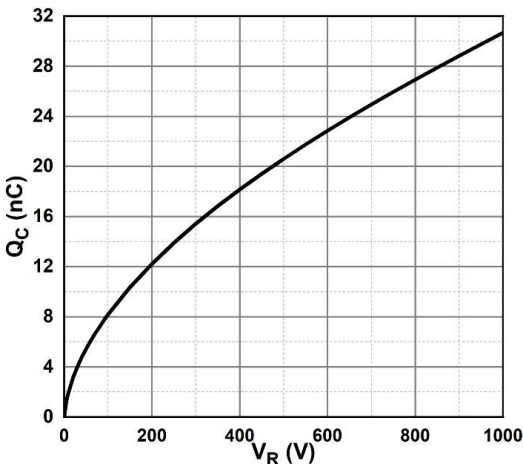


Figure 5. Capacitance Stored Energy

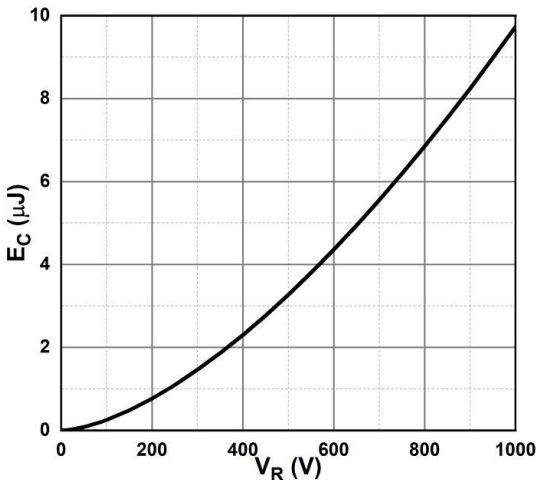


Figure 6. Power Derating

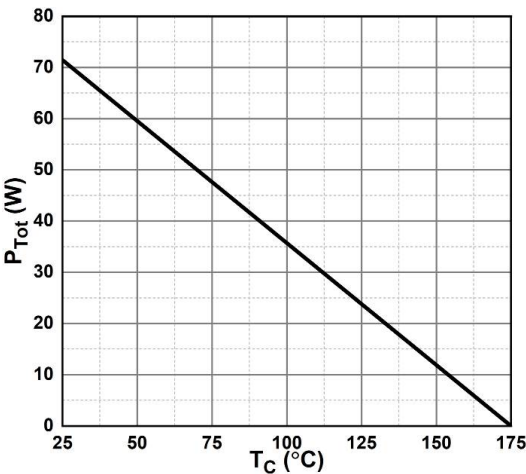


Figure 7. Current Derating

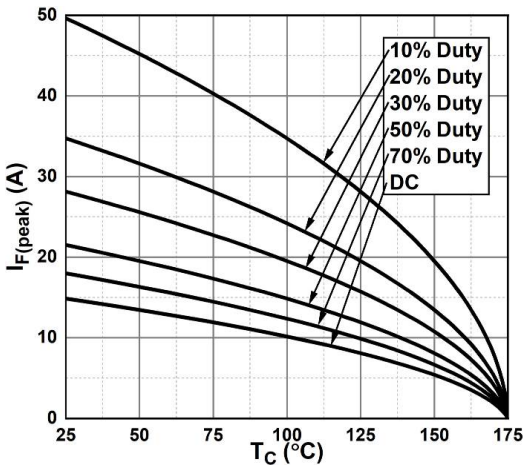
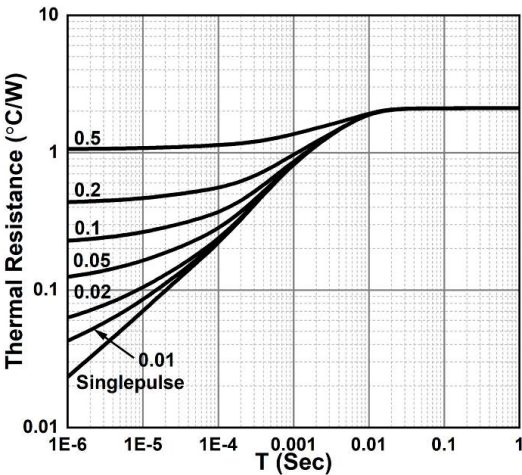
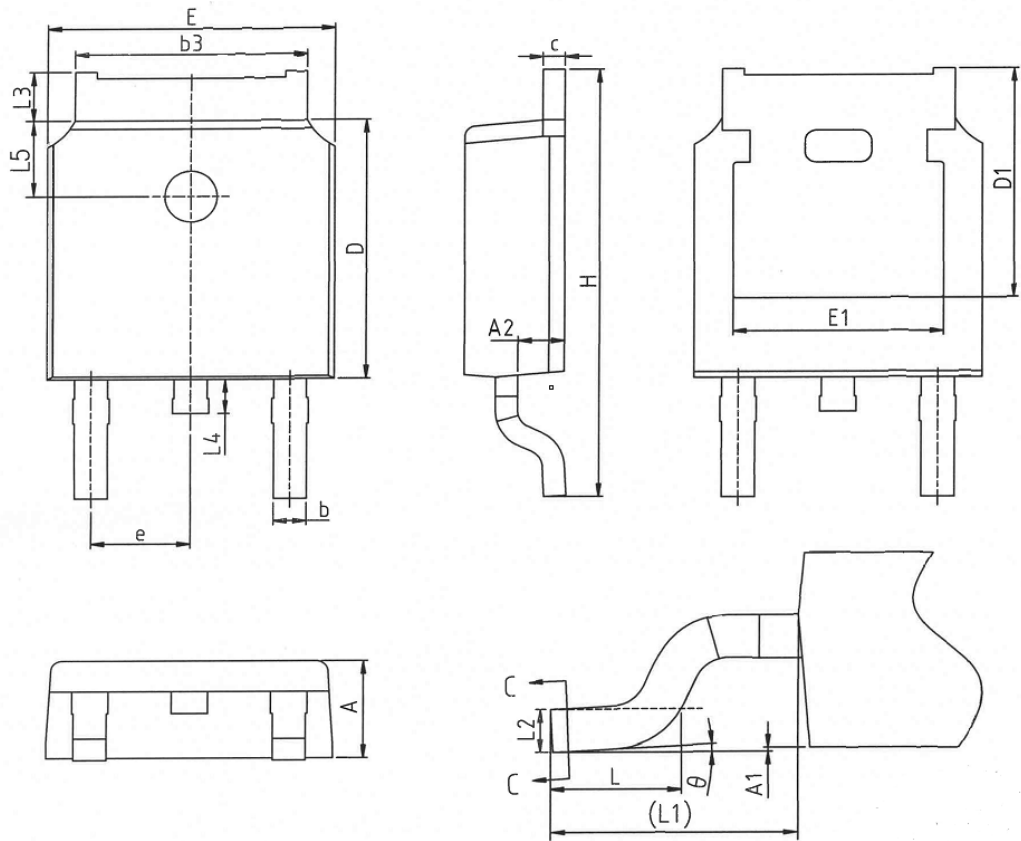


Figure 8. Transient Thermal Impedance



Package Outlines

D - pak



COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	2.20	2.30	2.38
A1	0.00	-	0.12
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b3	5.20	5.33	5.46
c	0.43	0.53	0.61
D	5.98	6.10	6.22
D1	5.30REF		
E	6.40	6.60	6.73
E1	4.63	-	-
e	2.286BSC		
H	9.40	10.10	10.50
L	1.38	1.50	1.75
L1	2.90REF		
L2	0.51BSC		
L3	0.88	-	1.28
L4	0.50	-	1.00
L5	1.65	1.80	1.95
θ	0°	-	8°

* Dimensions in millimeters

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