DFD200HF17I3A1

1700V/200A Half Bridge SiC Diode Module

Description

The DFD200HF17I3A1 is a Half Bridge SiC Schottky Diode Power Module. It integrates high performance SiC Schottky Diode chips designed for the applications such as Rectifier Application and Battery chargers.

Features

- SiC Schottky Diode
- V_{DC}: 1700V
- 175°C maximum junction temperature
- Low thermal resistance with Si_3N_4 AMB
- Fast, temperature-independent switching
- Reduced temperature dependence of V_F

Applications

- Rectifier
- Battery chargers

Circuit diagram

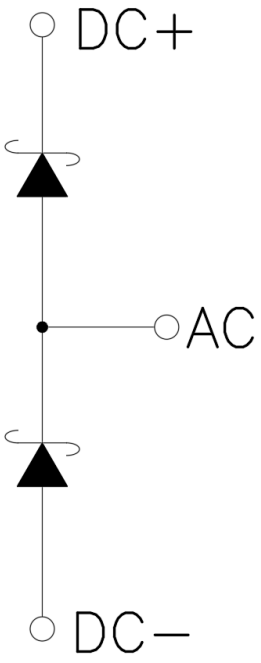


Figure 1. Out drawing & circuit diagram for DFD200HF17I3A1

Module

Parameter	Condition	Value	Unit
Isolation Voltage	RMS, f =50Hz, t =1min	4.0	KV
Material of module baseplate	-	Cu	-
Creepage distance	terminal to heatsink terminal to terminal	14.5 10	mm
Clearance	terminal to heatsink terminal to terminal	12.5 10	mm
CTI	-	>400	-
Module lead resistance, terminals – chip	T_C =25°C	0.3	mΩ
Mounting torque for module mounting	M5, M6	3 to 6	Nm
Weight	-	250	g

Maximum Ratings (T_j =25°C unless otherwise specified)

Symbol	Parameter	Condition	Ratings	Unit
V_{RRM}	Repetitive peak reverse Voltage	T_j =25°C	1700	V
V_{RSM}	Repetitive peak Surge Voltage	T_j =25°C	1700	V
I_F	Forward Current	T_f =85°C	200	A
I_{FSM}	Pulse Forward Current	Less than 1ms, Note1	400	A
T_j	junction temperature	-	-40 to 175	°C
T_{stg}	Storage temperature	-	-40 to 125	°C

Note1: Pulse width limited by maximum junction temperature

Electrical characteristics (T_j =25°C unless otherwise specified, chip)

Symbol	Item	Condition		Value			Unit
				Min.	Typ.	Max	
V_{DC}	DC blocking Voltage	T_j =25°C		1700	-	-	V
V_F	Diode forward Voltage	I_F =200A	T_j =25°C	-	1.80	2.2	V
			T_j =125°C	-	2.70	-	
			T_j =175°C	-	3.45	-	
I_R	Reverse Current	V_R =1700V	T_j =25°C	-	12	900	μA
			T_j =125°C	-	72	-	
			T_j =175°C	-	300	-	
Q_C	Total capacitive charge	V_R =1700V	T_j =25°C	-	1212	-	nC
C	Total capacitance	V_R =1700V	f =1MHz		474		pF
$R_{th(j-c)}$	SiC SBD Thermal Resistance	Junction to Case		-	0.108	-	K/W
$R_{th(c-f)}$	Contact thermal Resistance	With thermal conductive grease, Note1		-	0.020	-	K/W

Note1: Assumes Thermal Conductivity of grease is 2.8W/m・K and thickness is 50um.

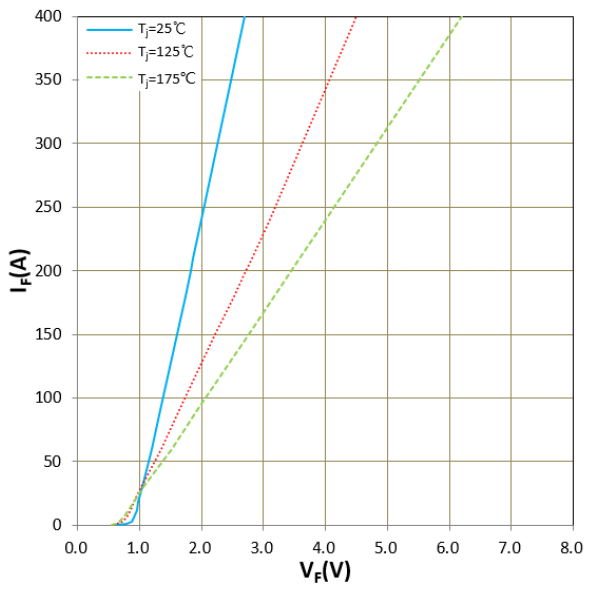


Figure 2. I_F vs V_F

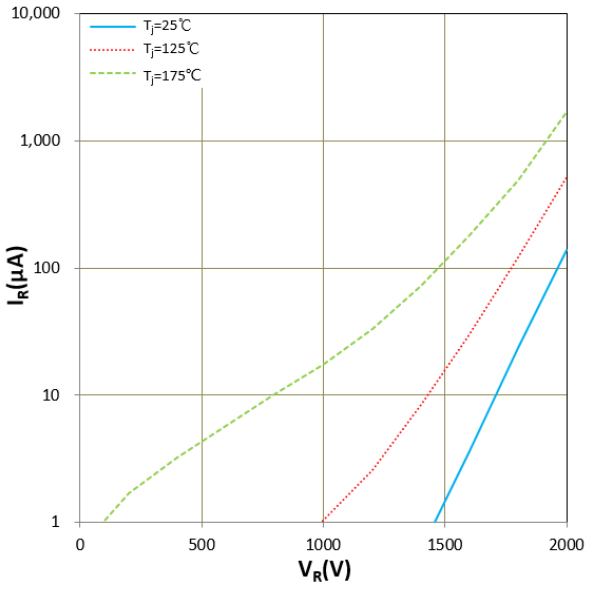


Figure 3. I_R vs V_R

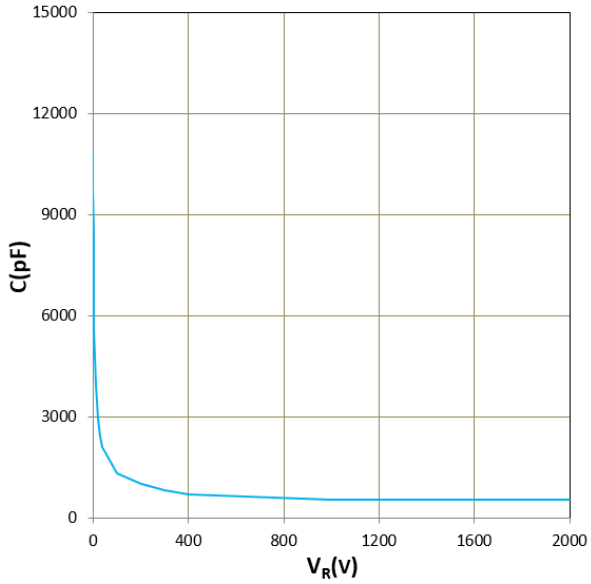


Figure 4. C vs V_R
T_j =25°C

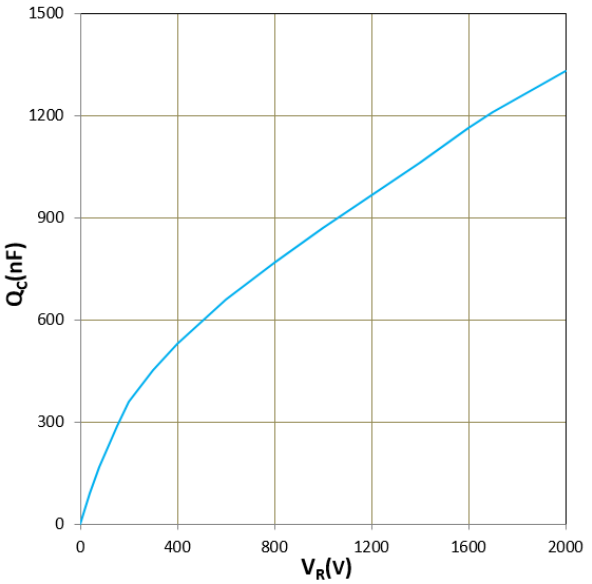
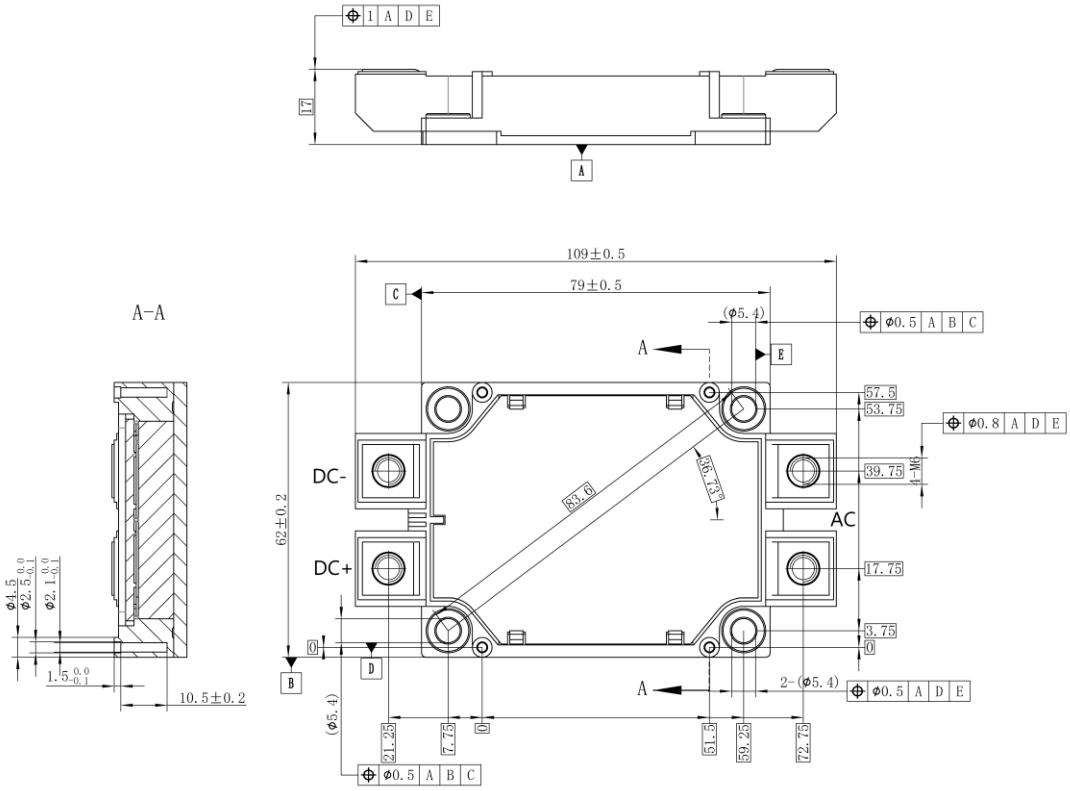


Figure 5. Q_C vs V_R
T_j =25°C

Package dimensions



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