DFS200X2CU12I3R1

1200V/200A dual Chopper SiC MOSFET Module

Description

The DFS200X2CU12I3R1 is a dual chopper SiC MOSFET Power Module. It integrates high performance SiC MOSFET chips designed for the applications such as Converter and Renewable energy.

Features

- 1200V/5.5mΩ
- Low thermal resistance with Si_3N_4 AMB
- 175°C maximum junction temperature
- Low Inductive Design
- Thermistor inside
- Copper base size: 79mm*62mm

Applications

- xEV Applications
- Converter
- Vehicle Fast Chargers
- Renewable energy

Circuit diagram

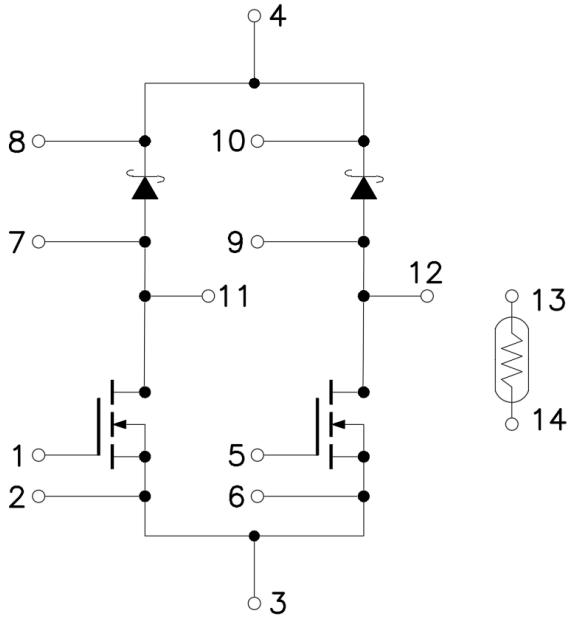

Figure 1. Out drawing & circuit diagram for DFS200X2CU12I3R1

Pin Configuration and Marking Information

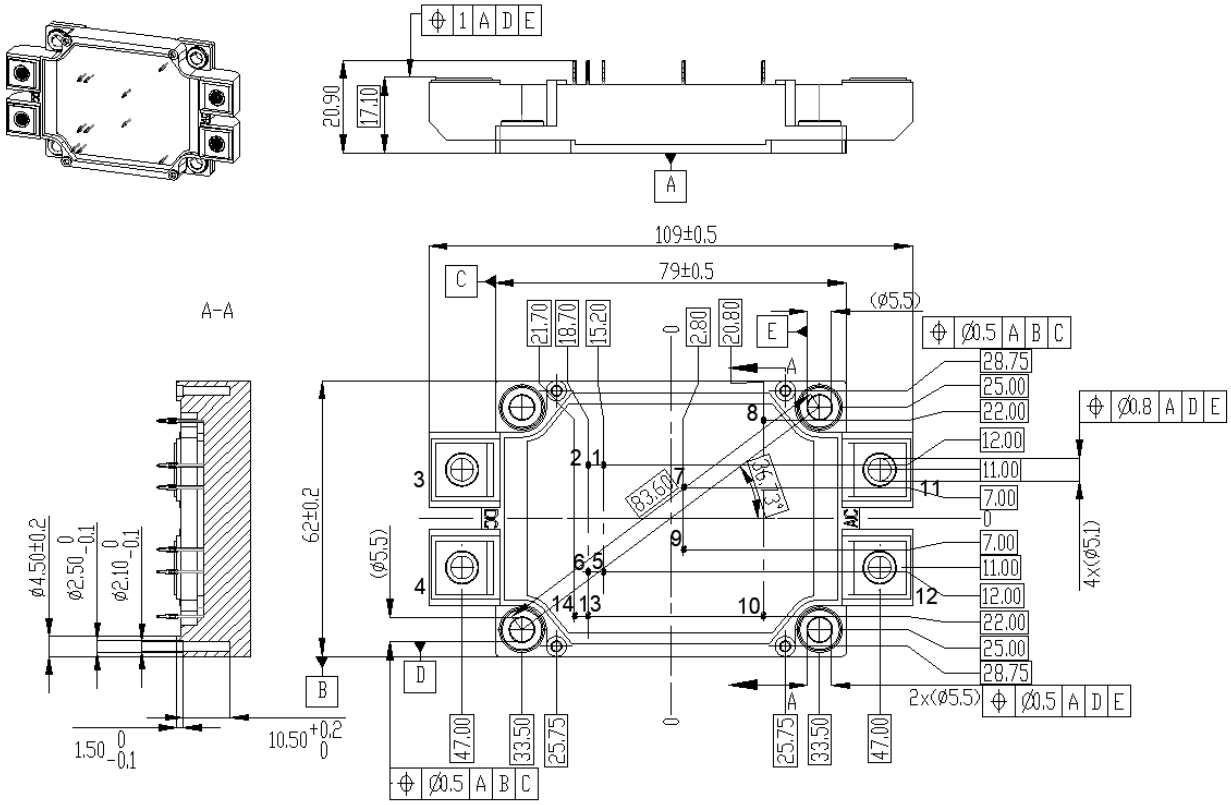

Figure 2. Pin configuration

Module

Parameter	Conditions	Value	Unit
Isolation Voltage	RMS, f =50Hz, t =1min	3.4	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	-	150	g

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

Symbol	Parameter	Conditions	Ratings	Unit
V_{DSS}	Drain-Source Voltage	G-S Short	1200	V
V_{RRM}	Repetitive Reverse Voltage	Clamp Diode	1200	V
V_{GSS}	Gate-Source Voltage (+)	D-S Short	21	V
V_{GSS}	Gate-Source Voltage (-)	D-S Short	-2	V
$V_{GSSSurge}$	G-S Voltage(t_{surge} <300nsec)	D-S Short, Note1	-6 to 23	V
I_{DS}	DC Continuous Drain Current	T_C =60°C , V_{GS} =18V	200	A
I_{DS}	DC Continuous Drain Current	T_C =100°C , V_{GS} =18V	160	A
I_{DSM}	Pulse Drain Current	T_C =100°C, Pulse width =1ms, V_{GS} =18V, Note2	400	A
I_F	Forward Current (Diode)	T_C =25°C	300	A
I_F	Forward Current (Diode)	T_C =100°C	200	A
I_{FRM}	Pulse Forward Current (Diode)	T_C =100°C, Pulse width =1ms, Note2	400	A
$P_{tot(MOS)}$	Total Power Dissipation (MOS)	T_C =25°C	680	W
$P_{tot(SBD)}$	Total Power Dissipation (SBD)	T_C =25°C	1070	W
T_{jmax}	Max Junction Temperature	-	175	°C
T_{jop}	Operating junction temperature	-	-40 to 150	°C
T_{stg}	Storage temperature	-	-40 to 125	°C

Note1: Recommended Operating Value, -0V/+18V

Note2: Pulse width limited by maximum junction temperature

PTC characteristics

Symbol	Parameter	Condition	Value			Unit
			Min.	Typ.	Max.	
T_{CMAX}	Temperature	Continuous operation	-40	-	175	°C
R	Resistance	T_C =0°C	999.7	1000	1000.3	Ω
		T_C =150°C	1576.5	1577.5	1578.5	Ω
T_{CR}	Temperature coefficient	-	-	0.385	-	%/K
T_{SH}	Self heating	T_C =0°C, I_m =0.1...0.3mA	-	0.4	-	K/mW

Note3: Calculate T =(R-R0)/T_{CR}/10

Example: When R =1385Ω, Then T =(R-R0)/T_{CR}/10 =(1385-1000)/0.385/10 =100°C

Editing record

Version	Content	Data
A	First edition	2022.02.09

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