

### Description

The DFS20HF12EYQ1 is a Half Bridge SiC MOSFET Power Module. It integrates high performance SiC MOSFET chips designed for the applications such as Solar Inverter, UPS, Fuel cell-DC/DC converter, Energy storage Systems.



### Features

- Blocking voltage:1200V
- 20mΩ  $R_{ds(on)}$ @ $T_j = 25^{\circ}C$
- 37.25mΩ  $R_{ds(on)}$ @ $T_j = 175^{\circ}C$
- Low Switching Losses
- 175°C maximum junction temperature
- Si<sub>3</sub>N<sub>4</sub> DBC
- Thermistor inside

### Applications

- Solar inverter Systems
- Fuel cell-DC/DC converter
- Uninterruptible Power Supplier
- Energy Storage Systems

### Circuit diagram

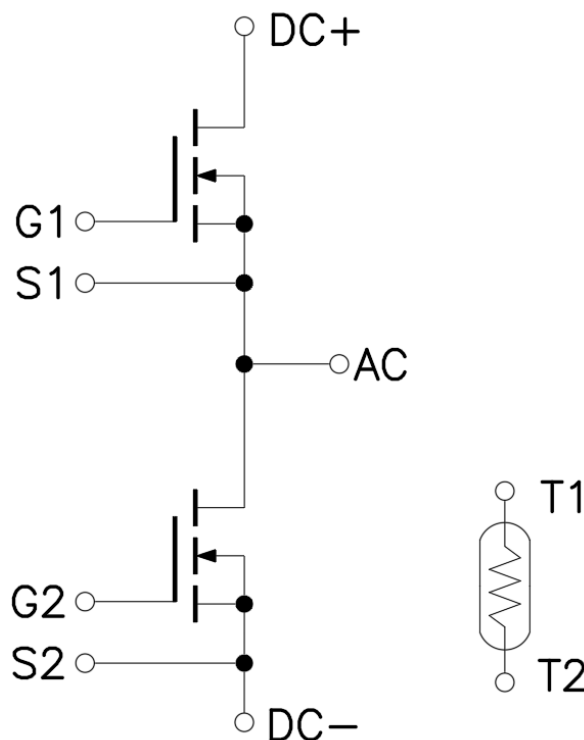


Figure 1. Out drawing & circuit diagram for DFS20HF12EYQ1

## Pin Configuration and Marking Information

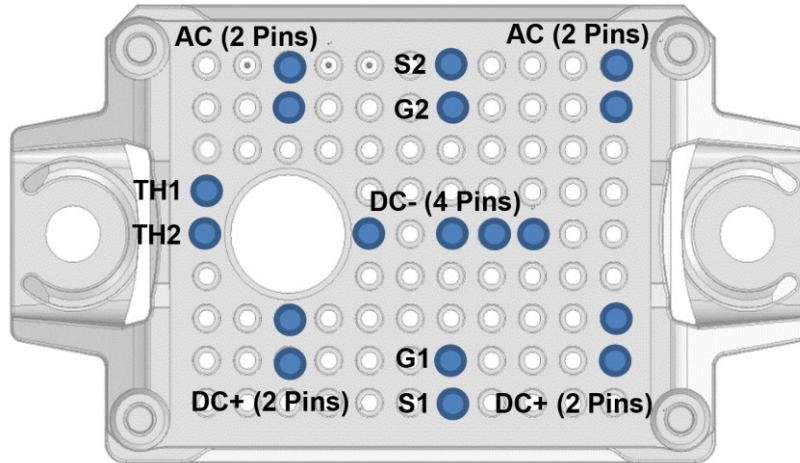


Figure 2. Pin configuration

Symbol	Description
AC	Output terminal of half bridge
S2	Low side source signal terminal
G2	Low side gate signal terminal
DC+	DC+ Bus connection
DC-	DC- Bus connection
S1	High side source signal terminal
G1	High side gate signal terminal
TH1	Thermistor connection 1
TH2	Thermistor connection 2

## Module

Parameter	Conditions	Value	Unit
Isolation Voltage	RMS, f = 50Hz, t = 1min	3.4	kV
Clearance	Terminal to Terminal	5	mm
	Terminal to Heatsink	10	mm
Creepage distance	Terminal to Terminal	6.3	mm
	Terminal to Heatsink	12.7	mm
Comparative Tracking Index	-	400	-
Weight	-	24	g

### Maximum Ratings (T<sub>j</sub>=25°C unless otherwise specified)

Symbol	Parameter	Conditions	Ratings	Unit
V <sub>DSS</sub>	Drain-Source Voltage	G-S Short	1200	V
V <sub>GSS</sub>	Gate-Source Voltage(+)	D-S Short	20	V
V <sub>GSS</sub>	Gate-Source Voltage(-)	D-S Short	-5	V
V <sub>GSSSurge</sub>	G-S Voltage(t <sub>surge</sub> <300nsec)	D-S Short, Note1	-10 to 25	V
I <sub>DS</sub>	DC Continuous Drain Current	T <sub>f</sub> =80°C, Note2	85	A
I <sub>DS</sub>	DC Continuous Drain Current	T <sub>f</sub> =60°C, Note2	95	A
I <sub>SD</sub>	Source (Body Diode) Current	T <sub>f</sub> =80°C, with ON signal	85	A
I <sub>SD</sub>	Source (Body Diode) Current	T <sub>f</sub> =60°C, with ON signal	95	A
I <sub>DP</sub>	Drain Pulse Current, Peak	Less than 1ms, Note3	200	A
T <sub>j</sub>	junction temperature	-	-40 to 175	°C
T <sub>stg</sub>	Storage temperature	-	-40 to 125	°C

Note1: Recommended Operating Value, 20V/-5V;18V/-5V;15V/-4V

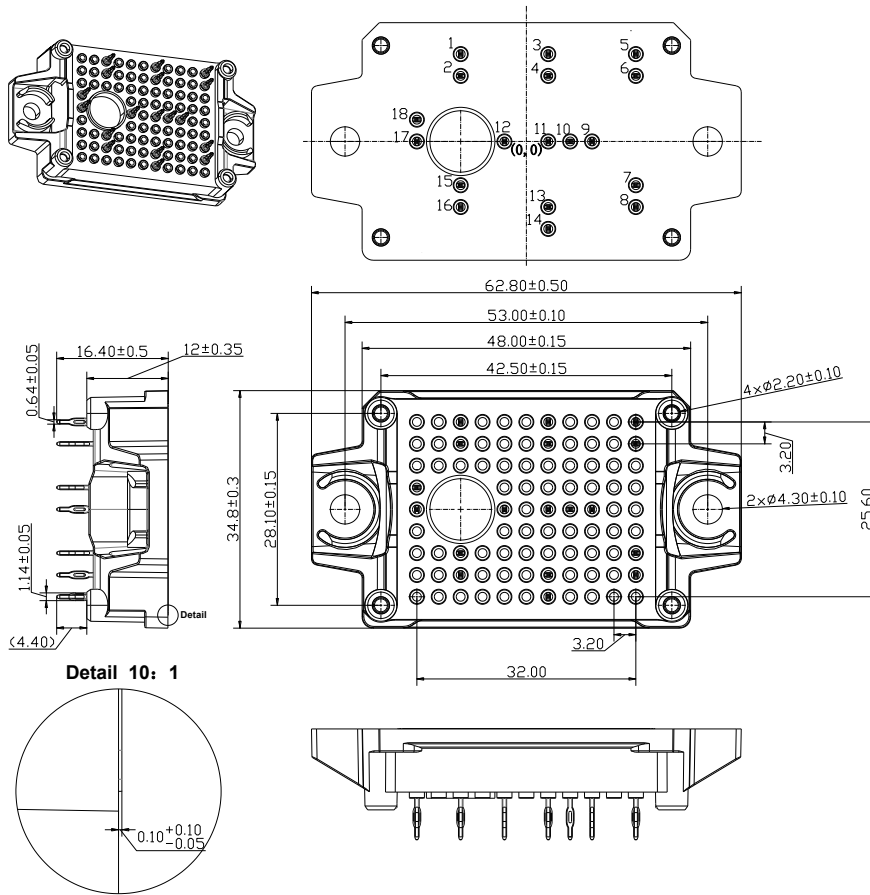
Note2: Case temperature(T<sub>c</sub>) is defined on the surface of AMB substrate bottom just under the chips

Note3: Pulse width limited by maximum junction temperature

### NTC characteristics

Symbol	Parameter	Condition	Value			Unit
			Min.	Typ.	Max.	
R <sub>25</sub>	Resistance	T <sub>c</sub> =25°C	-	5	-	kΩ
ΔR/R	Deviation of R100	T <sub>c</sub> =100°C, R <sub>100</sub> =493Ω	5	-	5	%
P <sub>25</sub>	Power dissipation	T <sub>c</sub> =25°C	-	-	20	mW
B <sub>25/50</sub>	B-value	R <sub>2</sub> =R <sub>25</sub> exp [B <sub>25/50</sub> (1/T <sub>2</sub> - 1/(298,15 K))]	-	3375	-	K
B <sub>25/80</sub>	B-value	R <sub>2</sub> =R <sub>25</sub> exp [B <sub>25/80</sub> (1/T <sub>2</sub> - 1/(298,15 K))]	-	3411	-	K
B <sub>25/100</sub>	B-value	R <sub>2</sub> =R <sub>25</sub> exp [B <sub>25/100</sub> (1/T <sub>2</sub> - 1/(298,15 K))]	-	3433	-	K

## Package dimensions



Pin Table		
Pin	X	Y
1	-9.6	12.8
2	-9.6	9.6
3	3.2	12.8
4	3.2	9.6
5	16	12.8
6	16	9.6
7	16	-6.4
8	16	-9.6
9	9.6	0
10	6.4	0
11	3.2	0
12	-3.2	0
13	3.2	-9.6
14	3.2	-12.8
15	-9.6	-6.4
16	-9.6	-9.6
17	-16	0
18	-16	3.2

### Editing record

Version	Content	Data
A	First edition	2022.02.10

### IMPORTANT NOTICE

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