STARPOWER

SEMICONDUCTOR **FRED**

FD120DGS120D6S

1200V/60A 2 in one-package

General Description

STARPOWER Diode Power Module provides low Forward voltage as well as low reverse recovery loss. They are designed for the applications such as SMPS.

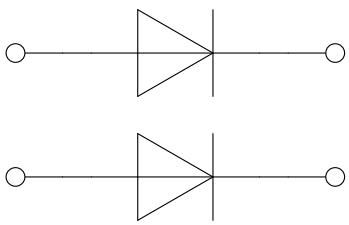
Features

- Fast soft diode
- Low forward voltage drop
- Small temperature coefficient
- Low reverse recovery losse
- High ruggedness
- Low inductance
- Isolated copper baseplate using DBC technology

Typical Applications

- SMPS
- PFC
- Welding machine

Equivalent Circuit Schematic



Absolute Maximum Ratings T_C=25°C unless otherwise noted

Diode

Symbol	Description	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V
I_F	Diode Continuous Forward Current T_C=80°C	60	A
I_{FSM}	Surge Forward Current V_R=0V,t_p=10ms,T_j=45°C V_R=0V,t_p=10ms,T_j=150°C	500 450	A
I^2t	I^2t-value V_R=0V,t_p=10ms,T_j=45°C I^2t-value V_R=0V,t_p=10ms,T_j=150°C	1250 1012	A^2s
P_D	Maximum Power Dissipation @ T_j=150°C	233	W

Module

Symbol	Description	Value	Unit
T_{jmax}	Maximum Junction Temperature	150	°C
T_{jop}	Operating Junction Temperature	-40 to +125	°C
T_{STG}	Storage Temperature Range	-40 to +125	°C
V_{ISO}	Isolation Voltage RMS,f=50Hz,t=1min	2500	V

Diode Characteristics T_C=25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_F	Diode Forward Voltage	I_F=60A,T_j=25°C		2.05	2.50	V
		I_F=60A,T_j=125°C		2.15		
I_R	Diode Reverse Current	V_R=V_{RRM}			1.0	mA
Q_r	Recovered Charge	V_{CC}=600V,I_F=60A, -di/dt=1300A/μs,T_j=25°C		4.7		μC
I_{RM}	Peak Reverse Recovery Current			54		A
t_{rr}	Reverse Recovery Time			210		ns
E_{rec}	Reverse Recovery Energy			2.41		mJ
Q_r	Recovered Charge	V_{CC}=600V,I_F=60A, -di/dt=1300A/μs,T_j=125°C		9.2		μC
I_{RM}	Peak Reverse Recovery Current			65		A
t_{rr}	Reverse Recovery Time			430		ns
E_{rec}	Reverse Recovery Energy			4.15		mJ

Module Characteristics T_C=25°C unless otherwise noted

Symbol	Parameter	Min.	Typ.	Max.	Unit
R_{thJC}	Junction-to-Case (per Diode)			0.536	K/W
R_{thCH}	Case-to-Heatsink (per Module)		0.15		K/W
M	Terminal Connection Torque, Screw M3 Mounting Torque, Screw M3	2.5 2.5		5.0 5.0	N.m
G	Weight of Module		35		g

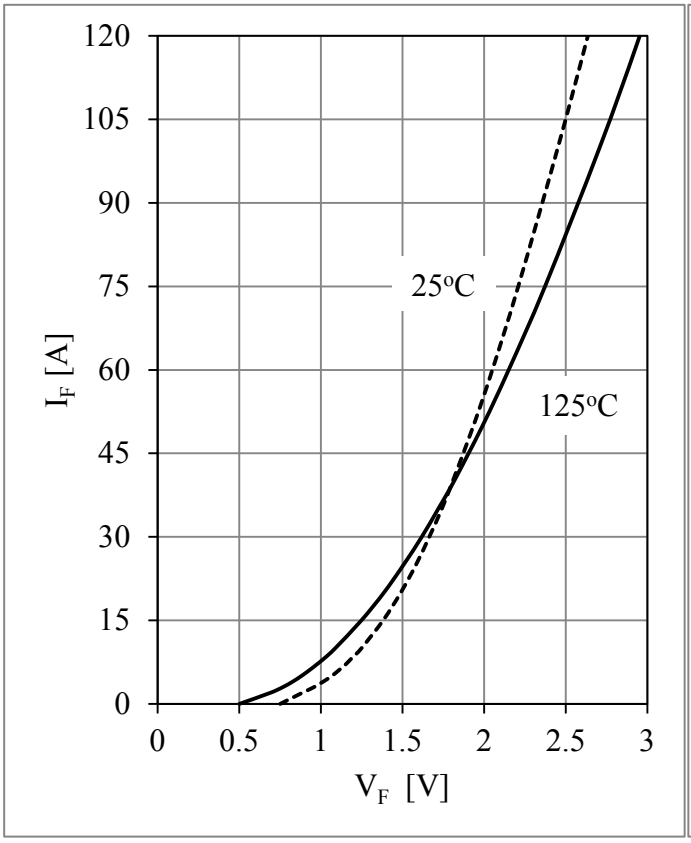


Fig 1. Diode Forward Characteristics

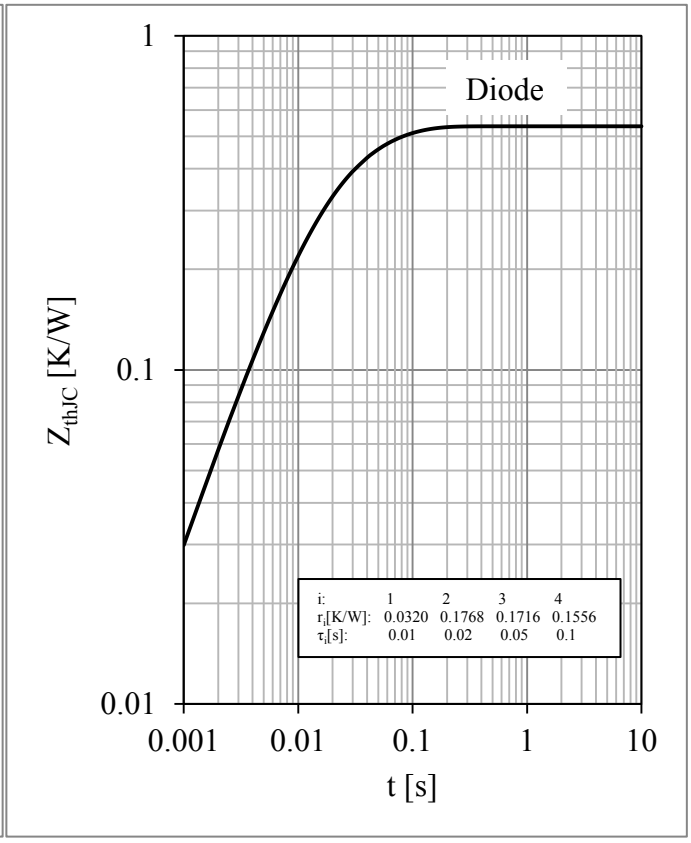
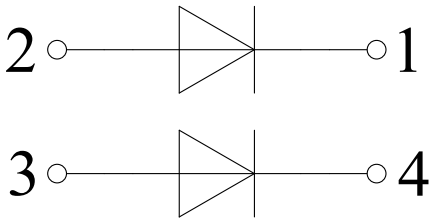


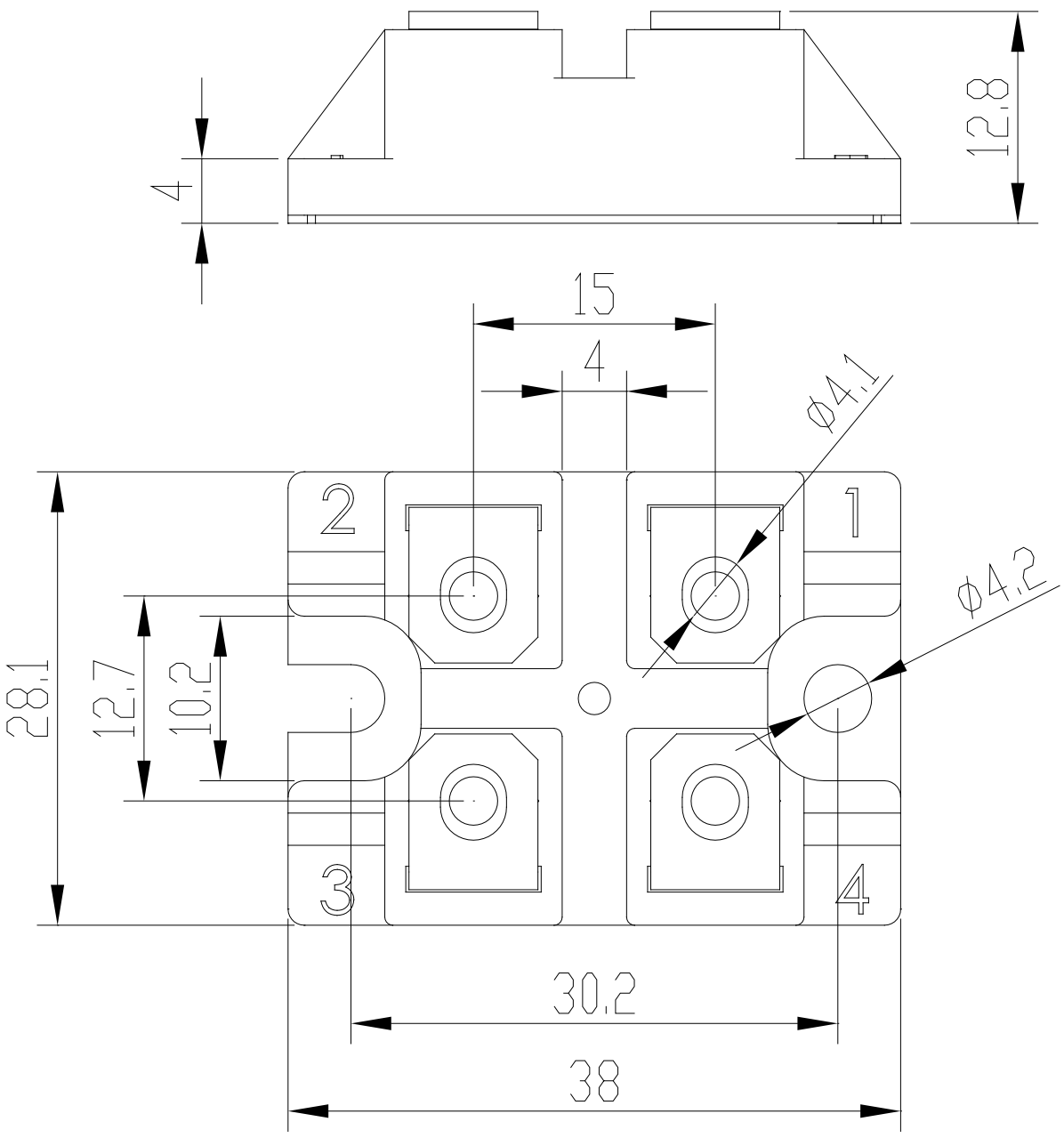
Fig 2. Diode Transient Thermal Impedance

Circuit Schematic



Package Dimensions

Dimensions in Millimeters



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