

DFM600FXM12-A000

Fast Recovery Diode Module

Replaces DS5478-2

DS5478-3 December 2018 (LN36849)

FEATURES

- Low Reverse Recovery Charge
- High Switching Speed
- Low Forward Volt Drop
- Isolated AlSiC Base with AIN Substrates
- Dual Diodes can be paralleled for 1200A Rating
- Lead Free Construction

APPLICATIONS

- Chopper Diodes
- Boost and Buck Circuits
- Free-wheel Circuits
- Multi-level Switch Inverters

The DFM600FXM12-A000 is a dual 1200V, fast recovery diode (FRD) module. Designed for low power loss, the module is suitable for a variety of high voltage applications in motor drives and power conversion.

Fast switching times and low reverse recovery losses allow high frequency operation, making the device suitable for the latest drive designs employing PWM and high frequency switching.

The module incorporates an electrically isolated base plate and low inductance construction enabling circuit designers to optimise circuit layouts and utilise grounded heat sinks for safety.

ORDERING INFORMATION

Order As:

DFM600FXM12-A000

Note: When ordering, please use the complete part number

KEY PARAMETERS

V_{RRM}		1200V
V_{F}	(typ)	1.9V
I _F	(max)	600A
I _{FM}	(max)	1200A

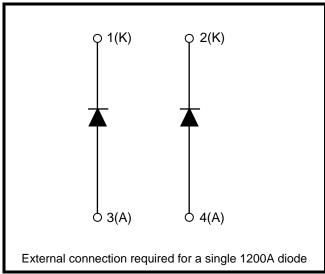


Fig. 1 Circuit configuration

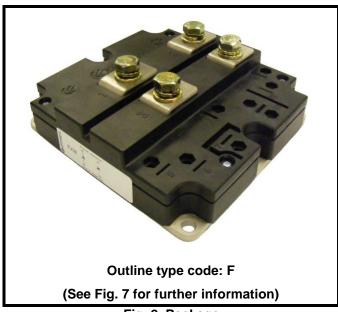


Fig. 2 Package

ABSOLUTE MAXIMUM RATINGS

Stresses above those listed under 'Absolute Maximum Ratings' may cause permanent damage to the device. In extreme conditions, as with all semiconductors, this may include potentially hazardous rupture of the package. Appropriate safety precautions should always be followed. Exposure to Absolute Maximum Ratings may affect device reliability.

T_{case} = 25°C unless stated otherwise

Symbol	Parameter	Test Conditions	Max.	Units
V_{RRM}	Repetitive peak reverse voltage	T _j = 125°C	1200	V
I _F	Forward current (per arm)	DC, T _{case} = 75°C, T _j = 125°C	600	Α
I _{FM}	Max. forward current	$T_{case} = 110$ °C, $t_p = 1$ ms	1200	Α
l ² t	I ² t value fuse current rating	$V_R = 0$, $t_p = 10$ ms, $T_j = 125$ °C	100	kA ² s
P _{max}	Max. transistor power dissipation	$T_{case} = 25^{\circ}C, T_{j} = 125^{\circ}C$	2500	W
V _{isol}	Isolation voltage – per module	Commoned terminals to base plate. AC RMS, 1 min, 50Hz	2500	V
Q_{PD}	Partial discharge – per module	IEC1287, V ₁ = 1300V, V ₂ = 1000V, 50Hz RMS	10	рС

THERMAL AND MECHANICAL RATINGS

Internal insulation material:

Baseplate material:

Creepage distance:

Clearance:

CTI (Comparative Tracking Index):

AIN

AISiC

20mm

10mm

>600

Symbol	Parameter	Test Conditions	Min	Тур.	Max	Units
R _{th(j-c)}	Thermal resistance (per arm)	Continuous dissipation – junction to case	-	-	40	°C/kW
R _{th(c-h)}	Thermal resistance – case to heatsink (per module)	Mounting torque 5Nm (with mounting grease)	ı	-	8	°C/kW
T_j	Junction temperature		-	-	125	°C
T _{stg}	Storage temperature range		-40	-	125	°C
	Sorow Torquo	Mounting – M6	-	-	5	Nm
	Screw Torque	Electrical connections – M8	-	-	10	Nm

STATIC ELECTRICAL CHARACTERISTICS - PER ARM

 T_{case} = 25°C unless stated otherwise.

Symbol	Parameter	Test Conditions	Min	Тур	Max	Units
I _{RM}	Peak reverse current	$V_R = 1200V, T_j = 125$ °C			15	mA
V _F	Forward voltage	I _F = 600A		1.9	2.2	V
		I _F = 600A, T _j = 125°C		2.1	2.4	V
L _M	Inductance			20		nΗ

STATIC ELECTRICAL CHARACTERISTICS

 T_{case} = 25°C unless stated otherwise.

Symbol	Parameter	Test Conditions	Min	Тур	Max	Units
L_M	Module inductance (externally connected in parallel)			15		nΗ

DYNAMIC ELECTRICAL CHARACTERISTICS - PER ARM

T_{case} = 25°C unless stated otherwise

Symbol	Parameter	Test Conditions	Min	Тур.	Max	Units
Q_{rr}	Reverse recovery charge	$I_F = 600A$ $V_R = 600V$ $dI_F/dt = 4500A/\mu s$		100		μC
I _{rr}	Peak reverse recovery current			400		Α
E _{rec}	Reverse recovery energy			40		mJ

T_{case} = 125°C unless stated otherwise

Symbol	Parameter	Test Conditions	Min	Тур.	Max	Units
Q_{rr}	Reverse recovery charge	$I_F = 600A$ $V_R = 600V$ $dI_F/dt = 4200A/\mu s$		150		μC
I _{rr}	Peak reverse recovery current			475		Α
E _{rec}	Reverse recovery energy			70		mJ

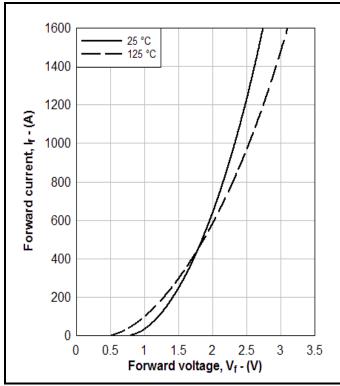


Fig. 3 Diode typical forward characteristics

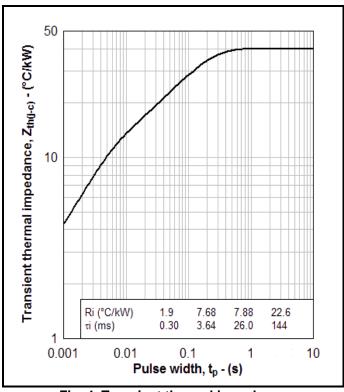


Fig. 4 Transient thermal impedance

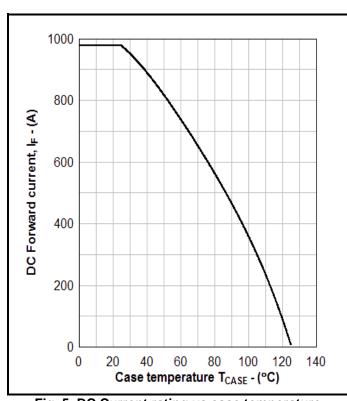


Fig. 5 DC Current rating vs case temperature

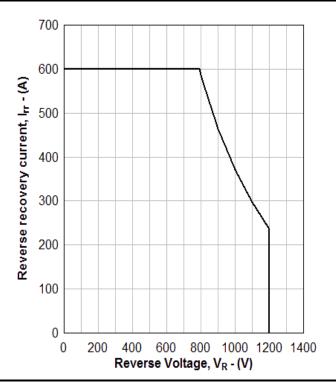


Fig. 6 RBSOA

PACKAGE DETAILS

For further package information, please visit our website or contact Customer Services. All dimensions in mm, unless stated otherwise.

DO NOT SCALE.

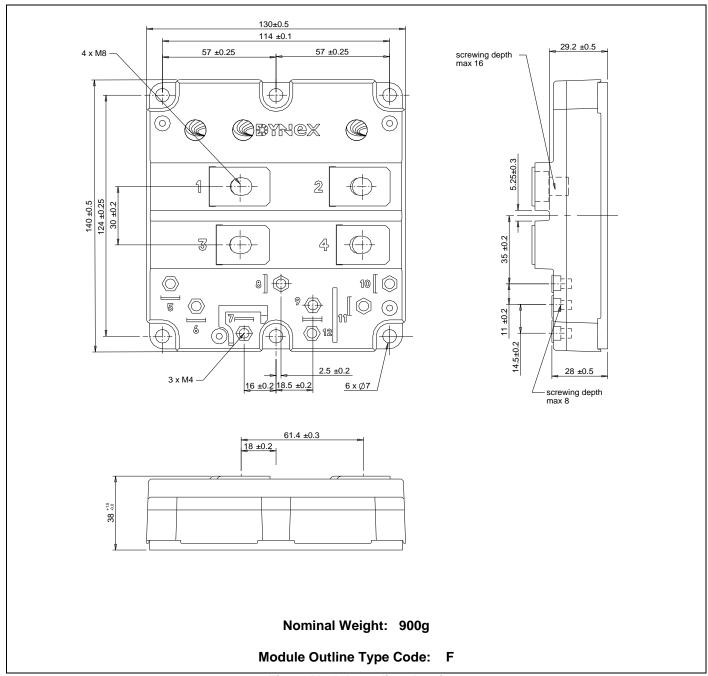


Fig. 7 Module outline drawing

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