

IXYS

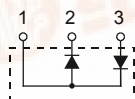
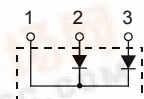
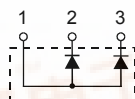
Fast Recovery Epitaxial Diode (FRED) Module

MEA 75-12 DA
MEK 75-12 DA
MEE 75-12 DA

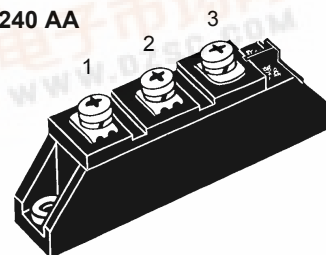
$V_{RRM} = 1200\text{ V}$
 $I_{FAV} = 75\text{ A}$
 $t_{rr} = 250\text{ ns}$

Preliminary data

V_{RSM} V	V_{RRM} V	Type
1200	1200	MEA75-12 DA
		MEK 75-12 DA
		MEE 75-12 DA



TO-240 AA



Symbol	Test Conditions	Maximum Ratings	
I_{FRMS}	$T_{case} = 75^\circ\text{C}$	107	A
I_{FAV}	$T_{case} = 75^\circ\text{C}$; rectangular, $d = 0.5$	75	A
I_{FRM}	$t_p < 10\text{ }\mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	TBD	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	1200	A
	$t = 8.3\text{ ms}$ (60 Hz), sine	1300	A
	$T_{VJ} = 150^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	1080	A
	$t = 8.3\text{ ms}$ (60 Hz), sine	1170	A
I^2t	$T_{VJ} = 45^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	7200	A ² s
	$t = 8.3\text{ ms}$ (60 Hz), sine	7100	A ² s
	$T_{VJ} = 150^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	5800	A ² s
	$t = 8.3\text{ ms}$ (60 Hz), sine	5700	A ² s
T_{VJ}		-40...+150	$^\circ\text{C}$
T_{stg}		-40...+125	$^\circ\text{C}$
T_{Hmax}		110	$^\circ\text{C}$
P_{tot}	$T_{case} = 25^\circ\text{C}$	280	W
V_{ISOL}	50/60 Hz, RMS $t = 1\text{ min}$	3000	V~
	$I_{ISOL} \leq 1\text{ mA}$ $t = 1\text{ s}$	3600	V~
M_d	Mounting torque (M5)	2.50-4/22-35	Nm/lb.in.
	Terminal connection torque (M5)	2.50-4/22-35	Nm/lb.in.
d_s	Creep distance on surface	12.7	mm
d_A	Strike distance through air	9.6	mm
a	Maximum allowable acceleration	50	m/s ²
Weight		90	g

Features

- International standard package with DCB ceramic base plate
- Planar passivated chips
- Short recovery time
- Low switching losses
- Soft recovery behaviour
- Isolation voltage 3600 V~
- UL registered E 72873

Applications

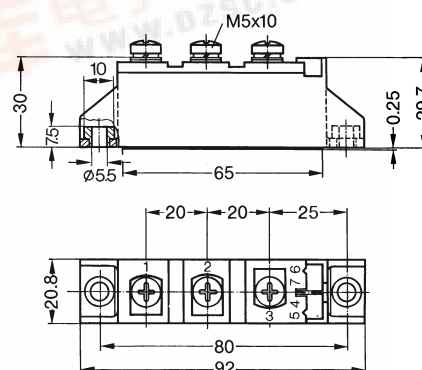
- Antiparallel diode for high frequency switching devices
- Free wheeling diode in converters and motor control circuits
- Inductive heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

Advantages

- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching
- Low losses

Symbol	Test Conditions	Characteristic Values (per diode)	
		typ.	max.
I_R	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$		2 mA
	$T_{VJ} = 25^\circ\text{C}$ $V_R = 0.8 \cdot V_{RRM}$		0.5 mA
	$T_{VJ} = 125^\circ\text{C}$ $V_R = 0.8 \cdot V_{RRM}$		34 mA
V_F	$I_F = 100\text{ A}$; $T_{VJ} = 125^\circ\text{C}$		1.85 V
	$T_{VJ} = 25^\circ\text{C}$		2.17 V
	$I_F = 300\text{ A}$; $T_{VJ} = 125^\circ\text{C}$		2.58 V
	$T_{VJ} = 25^\circ\text{C}$		2.64 V
V_{T0}	For power-loss calculations only		1.48 V
r_T			3.65 m Ω
R_{thJH}	DC current		0.550 K/W
R_{thJC}	DC current		0.450 K/W
t_{rr} I_{RM}	$I_F = 150\text{ A}$ $T_{VJ} = 100^\circ\text{C}$	250	300 ns
	$V_R = 600\text{ V}$ $T_{VJ} = 25^\circ\text{C}$		22 A
	$-di/dt = 200\text{ A}/\mu\text{s}$ $T_{VJ} = 100^\circ\text{C}$		33 A
			A

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747

IXYS reserves the right to change limits, test conditions and dimensions

© 2000 IXYS All rights reserved

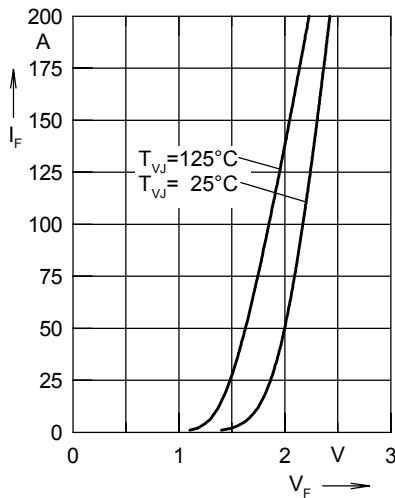


Fig. 1 Forward current I_F versus voltage drop V_F per leg

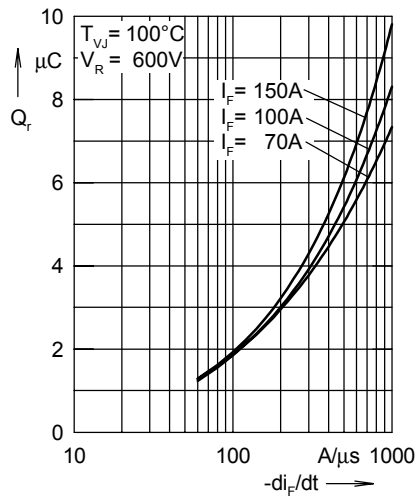


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

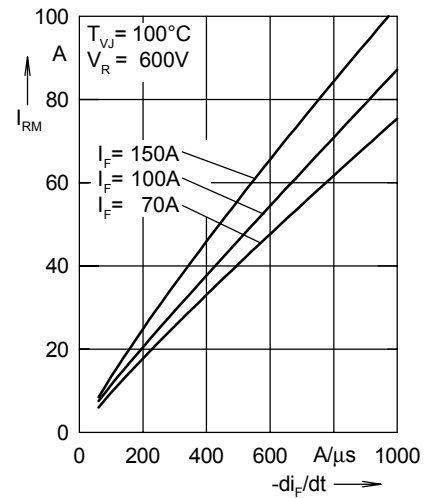


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

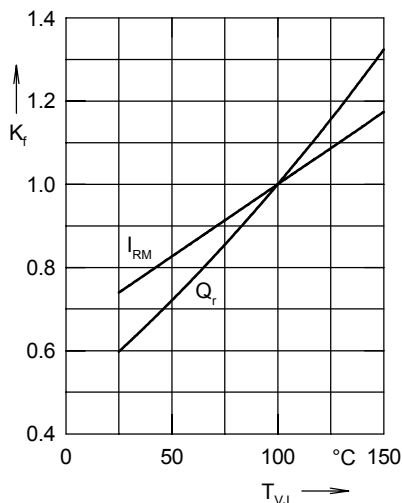


Fig. 4 Dynamic parameters Q_r , I_{RM} versus junction temperature T_{VJ}

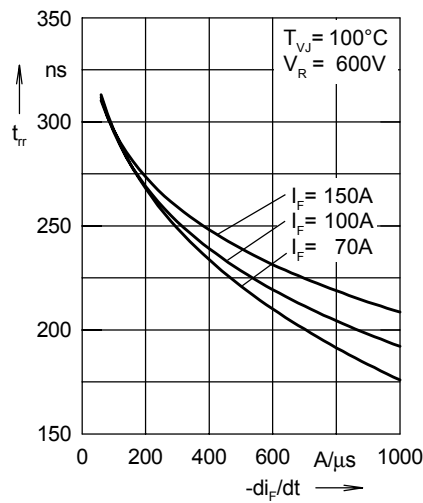


Fig. 5 Recovery time t_{tr} versus $-di_F/dt$

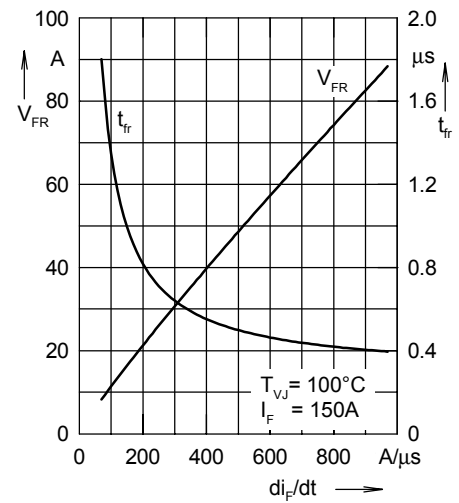


Fig. 6 Peak forward voltage V_{FR} and t_{tr} versus di_F/dt

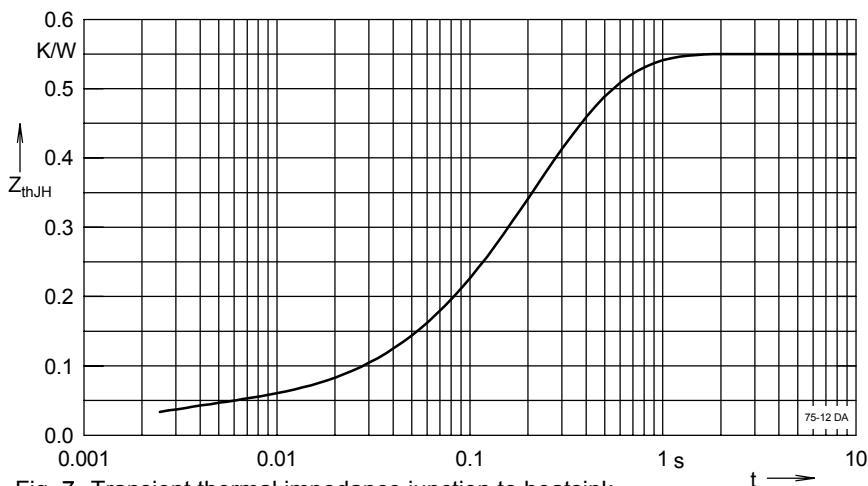


Fig. 7 Transient thermal impedance junction to heatsink

Constants for Z_{thJH} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.037	0.002
2	0.138	0.134
3	0.093	0.25
4	0.282	0.274