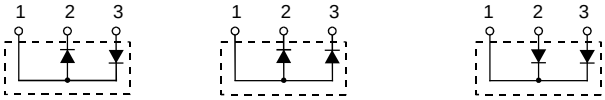
Contents

in package style 1 (TO-240)



MEE **MEA** **MEK**

in package style 2 and 3 (34 mm package)

MEO **MEE** **MEK** **MEA**

IXYS

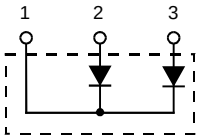
Fast Recovery Epitaxial Diode (FRED) Module

MEK 150-04 DA

V_{RRM} = 400 V
I_{FAV} = 150 A
t_{rr} = 300 ns

Preliminary data

V_{RSM} V	V_{RRM} V	Type
400	400	MEK 150-04DA



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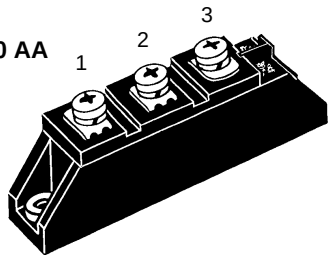


Symbol	Conditions	Maximum Ratings	
I_{FRMS}		200	A
I_{FAVM}	T_C = 100°C; rectangular, d = 0.5	150	A
I_{FSM}	T_{VJ} = 45°C; t = 10 ms (50 Hz), sine	1200	A
T_{VJ}		-40...+150	°C
T_{VJM}		175	°C
T_{stg}		-40...+150	°C
P_{tot}	T_C = 25°C	360	W
V_{ISOL}	50/60 Hz, RMS; $I_{ISOL} \leq$ 1 mA	3600	V~
M_d	Mounting torque with screw M5	2.5-4/22-35	Nm/lb.in.
	Terminal connection torque	2.5-4/22-35	Nm/lb.in.
Weight	typical	90	g

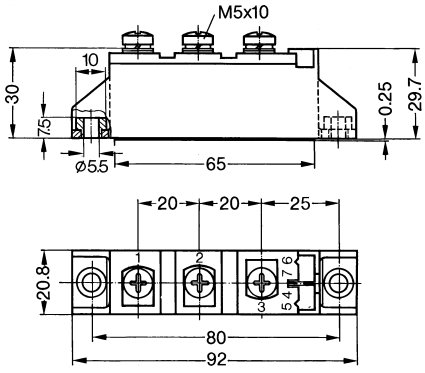
Symbol	Conditions	Characteristic Values typ.	max.	
I_R	T_{VJ} = 25°C V_R = V_{RRM}		2.0	mA
	T_{VJ} = 150°C V_R = V_{RRM}		8.5	mA
V_F	I_F = 300 A; T_{VJ} =150°C		1.4	V
	T_{VJ} = 25°C		1.6	V
R_{thJC}			0.35	K/W
R_{thCH}		0.08		K/W
I_{RM}	V_R = 100 V; I_F = 200 A; -di_F/dt = 100 A/µs T_{VJ} = 100°C	11	14	A

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

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747
IXYS reserves the right to change limits, test conditions and dimensions

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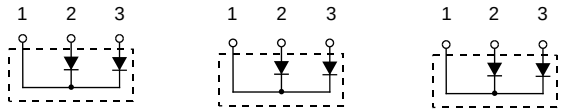
IXYS

Fast Recovery Epitaxial Diode (FRED) Module

MEA 95-06 DA
MEK 95-06 DA
MEE 95-06 DA

V_{RRM} = 600 V
I_{FAV} = 95 A
t_{rr} = 250 ns

V_{RSM} V	V_{RRM} V	Type
600	600	MEA95-06 DA
		MEK 95-06 DA
		MEE 95-06 DA



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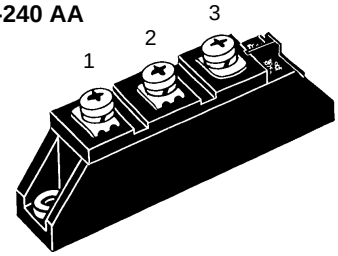


Symbol	Test Conditions		Maximum Ratings	
I_{FRMS}	T_{case} = 75°C		142	A
I_{FAV} ①	T_{case} = 75°C; rectangular, d = 0.5		95	A
I_{FRM}	t_P < 10 µs; rep. rating, pulse width limited by T_{VJM}		TBD	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	1200	A
		t = 8.3 ms (60 Hz), sine	1300	A
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	1080	A
		t = 8.3 ms (60 Hz), sine	1170	A
I^2t	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	7200	A^2s
		t = 8.3 ms (60 Hz), sine	7100	A^2s
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	5800	A^2s
		t = 8.3 ms (60 Hz), sine	5700	A^2s
T_{VJ}			-40...+150	°C
T_{stg}			-40...+125	°C
T_{Hmax}			110	°C
P_{tot}	T_{case} = 25°C		280	W
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque (M5)		2.5-4/22-35	Nm/lb.in.
	Terminal connection torque (M5)		2.5-4/22-35	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

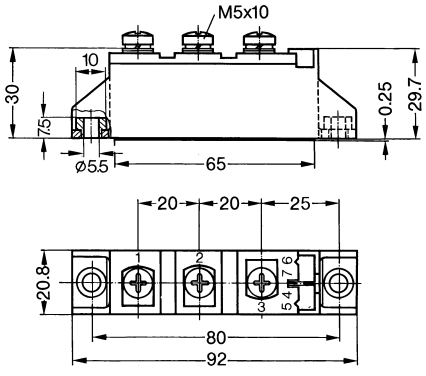
Symbol	Test Conditions		Characteristic Values (per diode) typ.	max.	
I_R	T_{VJ} = 25°C	$V_R = V_{RRM}$		2	mA
	T_{VJ} = 25°C	V_R = 0.8 • V_{RRM}		0.5	mA
	T_{VJ} = 125°C	V_R = 0.8 • V_{RRM}		34	mA
V_F	I_F = 100 A;	T_{VJ} = 125°C		1.36	V
		T_{VJ} = 25°C		1.55	V
	I_F = 300 A;	T_{VJ} = 125°C		2.05	V
		T_{VJ} = 25°C		2.09	V
V_{T0}	For power-loss calculations only			1.01	V
r_T	T_{VJ} = 125°C			2.85	mΩ
R_{thJH}	DC current			0.550	K/W
R_{thJC}	DC current			0.450	K/W
t_{rr}	I_F = 100 A	T_{VJ} = 100°C	250	300	ns
I_{RM}	V_R = 300 V	T_{VJ} = 25°C		14	A
	-di/dt = 200 A/µs	T_{VJ} = 100°C		21	A

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

Dimensions in mm (1 mm = 0.0394")



① I_{FAV} rating includes reverse blocking losses at T_{VJM}, V_R = 0.6 V_{RRM}, duty cycle d = 0.5
Data according to IEC 60747
IXYS reserves the right to change limits, test conditions and dimensions

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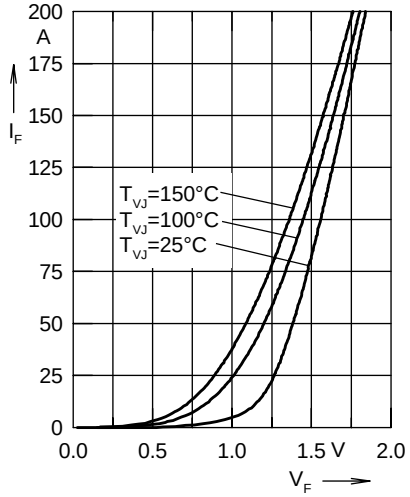


Fig. 1 Forward current I_F versus voltage drop V_F per leg

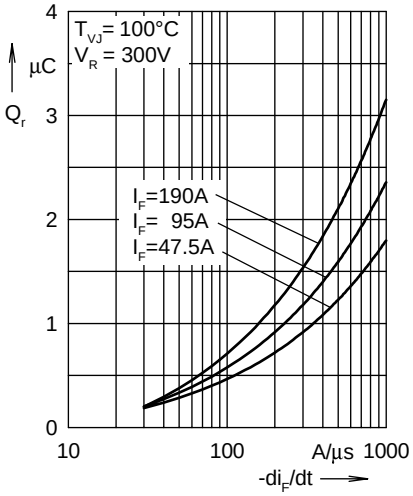


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

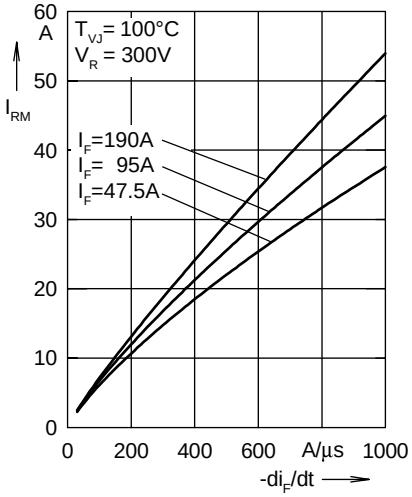


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

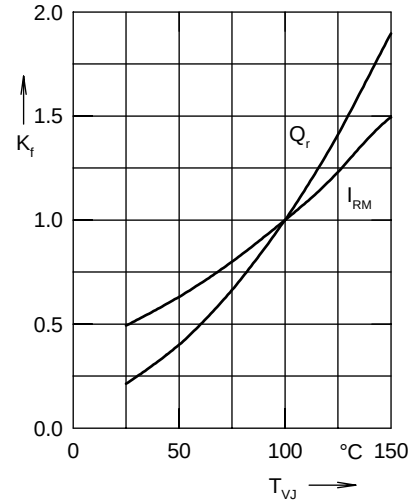


Fig. 4 Dynamic parameters Q_r, I_{RM} versus junction temperature T_{VJ}

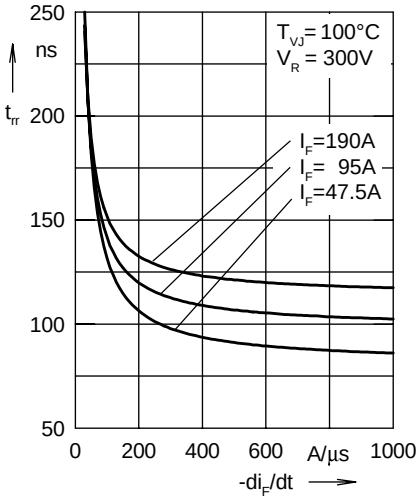


Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

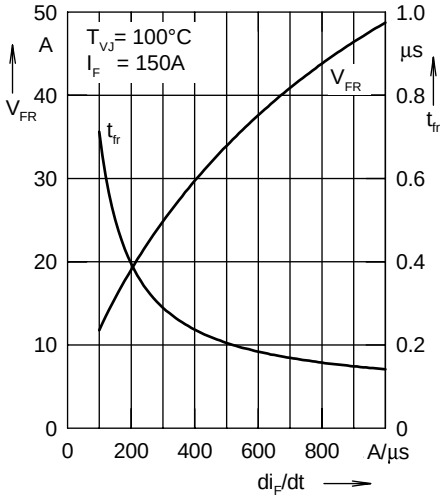


Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

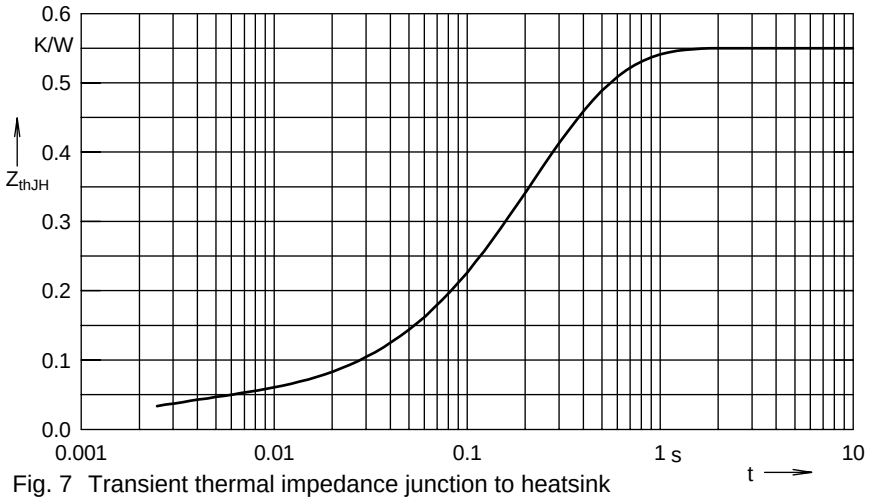


Fig. 7 Transient thermal impedance junction to heatsink

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

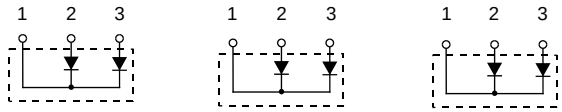
IXYS

Fast Recovery Epitaxial Diode (FRED) Module

MEA 95-06 DA
MEK 95-06 DA
MEE 95-06 DA

V_{RRM} = 600 V
I_{FAV} = 95 A
t_{rr} = 250 ns

V_{RSM} V	V_{RRM} V	Type
600	600	MEA95-06 DA
		MEK 95-06 DA
		MEE 95-06 DA



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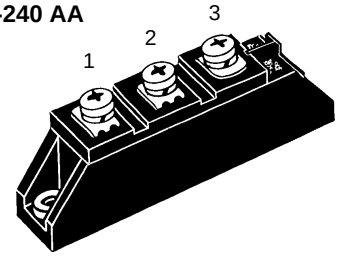

Symbol	Test Conditions		Maximum Ratings	
I_{FRMS}	T_{case} = 75°C		142	A
I_{FAV} ①	T_{case} = 75°C; rectangular, d = 0.5		95	A
I_{FRM}	t_P < 10 µs; rep. rating, pulse width limited by T_{VJM}		TBD	A
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d_A	Strike distance through air		9.6	mm
a	Maximum allowable acceleration		50	m/s^2
Weight			90	g

Symbol	Test Conditions		Characteristic Values (per diode) typ.	max.	
I_R	T_{VJ} = 25°C	$V_R = V_{RRM}$		2	mA
	T_{VJ} = 25°C	V_R = 0.8 • V_{RRM}		0.5	mA
	T_{VJ} = 125°C	V_R = 0.8 • V_{RRM}		34	mA
V_F	I_F = 100 A;	T_{VJ} = 125°C		1.36	V
		T_{VJ} = 25°C		1.55	V
	I_F = 300 A;	T_{VJ} = 125°C		2.05	V
		T_{VJ} = 25°C		2.09	V
V_{T0}	For power-loss calculations only			1.01	V
r_T	T_{VJ} = 125°C			2.85	mΩ
R_{thJH}	DC current			0.550	K/W
R_{thJC}	DC current			0.450	K/W
t_{rr}	I_F = 100 A	T_{VJ} = 100°C	250	300	ns
I_{RM}	V_R = 300 V	T_{VJ} = 25°C		14	A
	-di/dt = 200 A/µs	T_{VJ} = 100°C		21	A

Features
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- Planar passivated chips
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- Soft recovery behaviour
- Isolation voltage 3600 V~
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- Low noise switching
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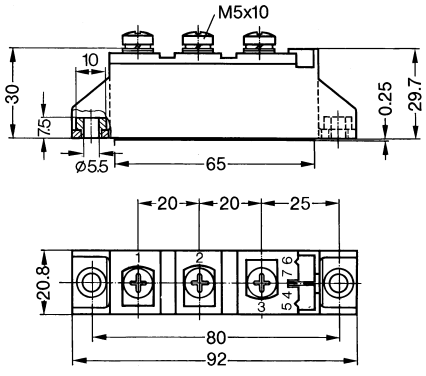
Dimensions in mm (1 mm = 0.0394")



① I_{FAV} rating includes reverse blocking losses at T_{VJM}, V_R = 0.6 V_{RRM}, duty cycle d = 0.5
Data according to IEC 60747
IXYS reserves the right to change limits, test conditions and dimensions

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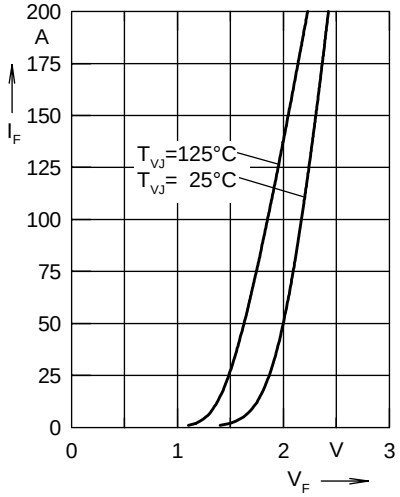

Fig. 1 Forward current I_F versus voltage drop V_F per leg

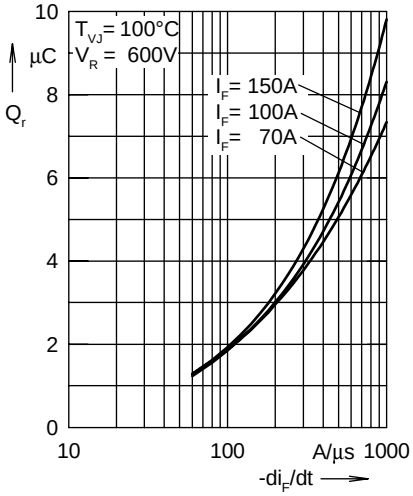

Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

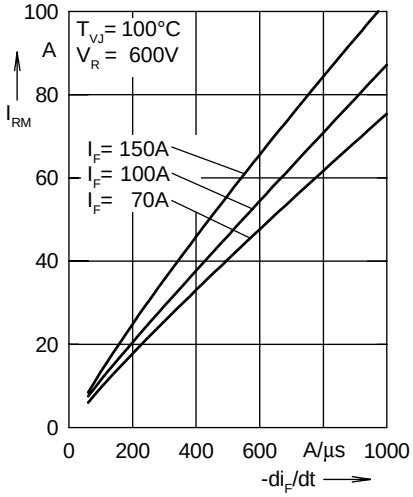

Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

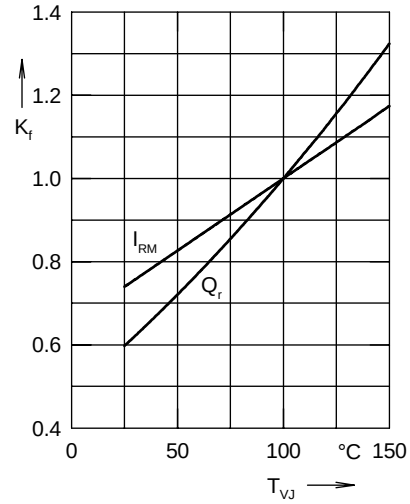

Fig. 4 Dynamic parameters Q_r, I_{RM} versus junction temperature T_{VJ}

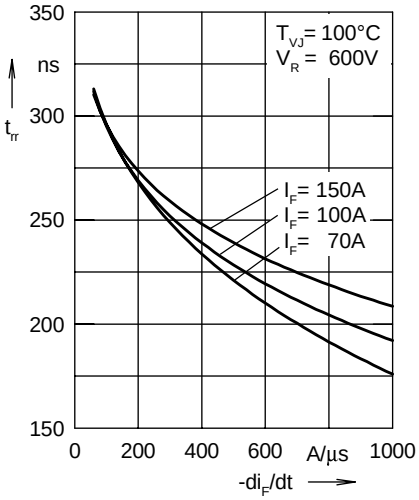

Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

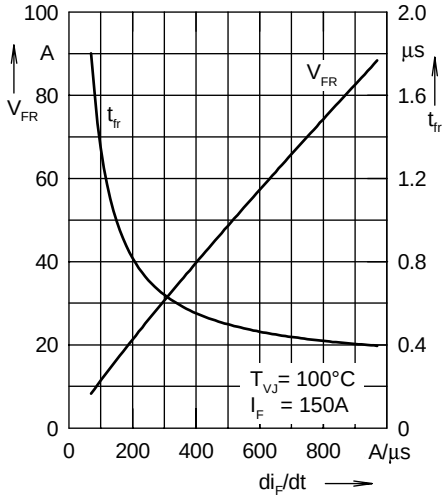

Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

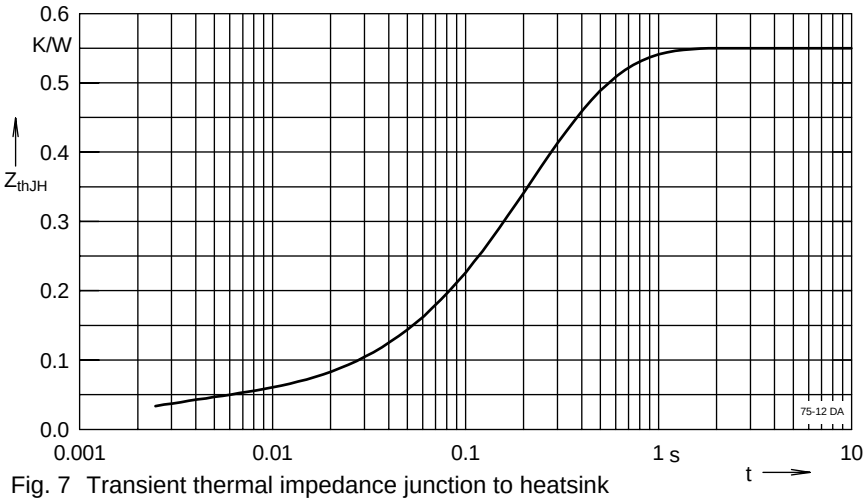

Fig. 7 Transient thermal impedance junction to heatsink

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

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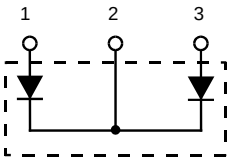
IXYS

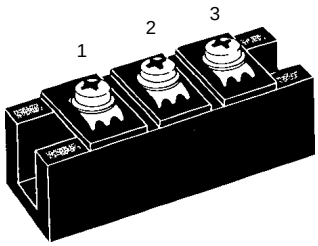
Fast Recovery Epitaxial Diode (FRED) Module

MEK 350-02 DA

V_{RRM} = 200 V
I_{FAVM} = 356 A
t_{rr} = 150 ns

V_{RSM} V	V_{RRM} V	Type
200	200	MEK 350-02DA





Symbol	Test Conditions		Maximum Ratings	
I_{FRMS}	T_C = 75°C		503	A
I_{FAVM} ①	T_C = 75°C; rectangular, d = 0.5		356	A
I_{FRM}	t_P < 10 µs; rep. rating, pulse width limited by T_{VJM}		1800	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	2400	A
		t = 8.3 ms (60 Hz), sine	2640	A
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	2160	A
		t = 8.3 ms (60 Hz), sine	2380	A
I^2t	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	28800	A^2s
		t = 8.3 ms (60 Hz), sine	29300	A^2s
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	23300	A^2s
		t = 8.3 ms (60 Hz), sine	23800	A^2s
T_{VJ}			-40...+150	°C
T_{stg}			-40...+125	°C
T_{Smax}			110	°C
P_{tot}	T_C = 25°C		875	W
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque (M6)		2.25-2.75/20-25	Nm/lb.in.
	Terminal connection torque (M6)		4.50-5.50/40-48	Nm/lb.in.
d_S	Creeping distance on surface		12.7	mm
d_A	Strike distance through air		9.6	mm
a	Maximum allowable acceleration		50	m/s^2
Weight			150	g

Symbol	Test Conditions		Characteristic Values (per diode) typ.	max.	
I_R	T_{VJ} = 25°C	$V_R = V_{RRM}$		3	mA
	T_{VJ} = 25°C	V_R = 0.8 • V_{RRM}		2	mA
	T_{VJ} = 125°C	V_R = 0.8 • V_{RRM}		80	mA
V_F	I_F = 150 A;	T_{VJ} = 125°C		0.80	V
		T_{VJ} = 25°C		0.98	V
	I_F = 260 A;	T_{VJ} = 125°C		0.92	V
		T_{VJ} = 25°C		1.07	V
V_{T0}	For power-loss calculations only			0.53	V
r_T				1.29	mΩ
R_{thJH}	DC current			0.228	K/W
R_{thJC}	DC current			0.143	K/W
t_{rr}	I_F = 300 A	T_{VJ} = 100°C	150	200	ns
I_{RM}	V_R = 100 V	T_{VJ} = 25°C		9	A
	-di/dt = 200 A/µs	T_{VJ} = 100°C		15	A

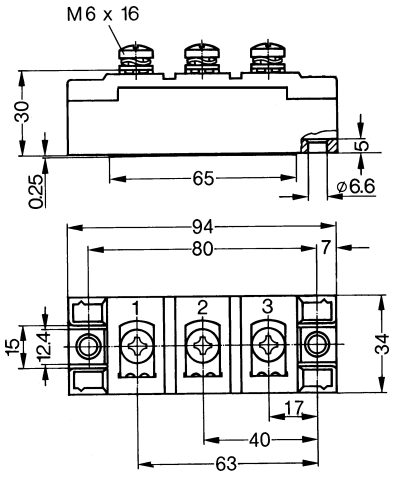
① I_{FAVM} rating includes reverse blocking losses at T_{VJM}, V_R = 0.6 V_{RRM}, duty cycle d = 0.5
Data according to IEC 60747
IXYS reserves the right to change limits, test conditions and dimensions

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

Dimensions in mm (1 mm = 0.0394")



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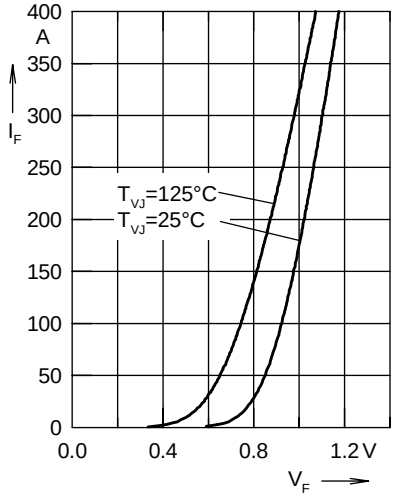


Fig. 1 Forward current I_F versus voltage drop V_F per leg

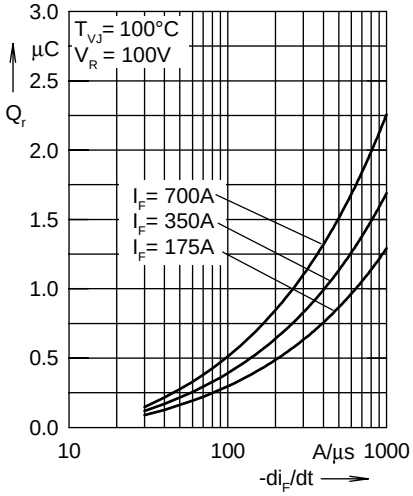


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

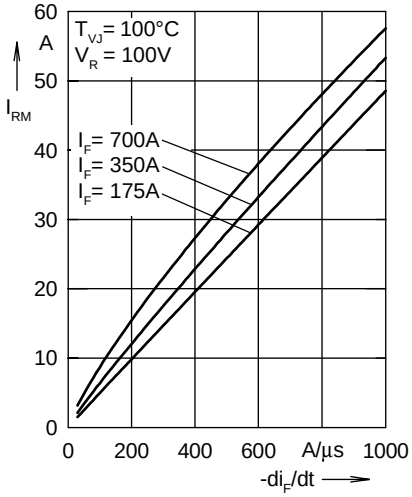


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

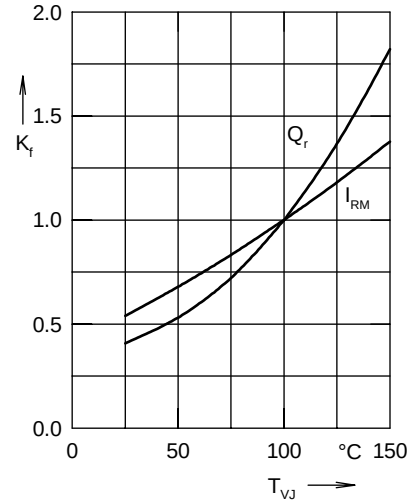


Fig. 4 Dynamic parameters Q_r, I_{RM} versus junction temperature T_{VJ}

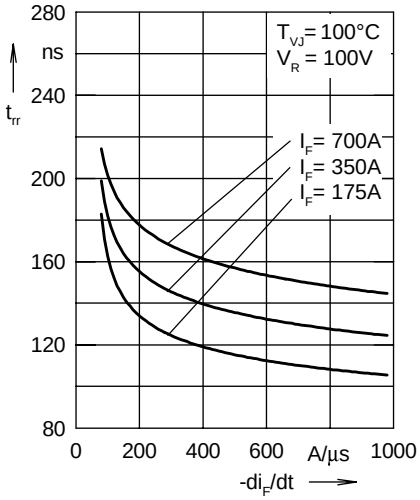


Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

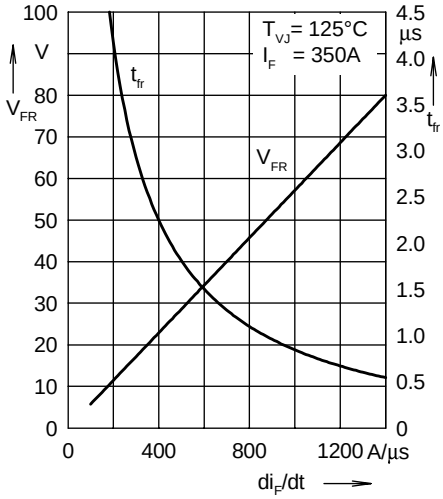


Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

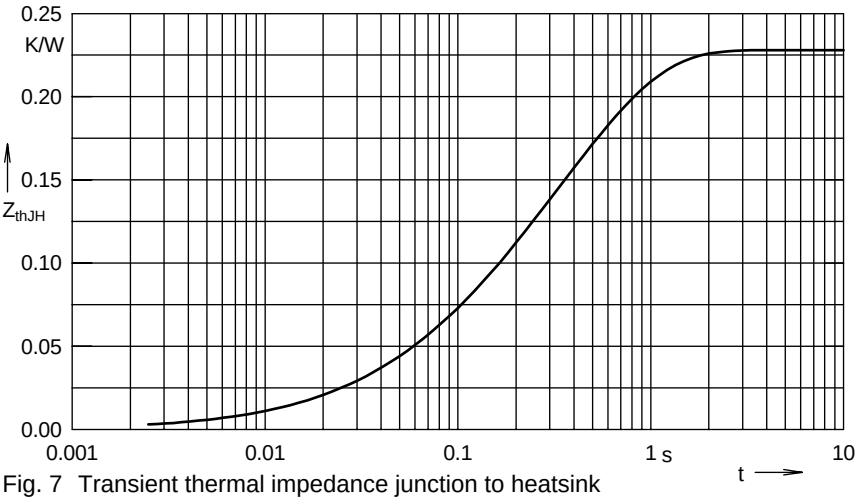


Fig. 7 Transient thermal impedance junction to heatsink

Constants for Z_{thJS} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.002	0.08
2	0.008	0.024
3	0.054	0.112
4	0.164	0.464

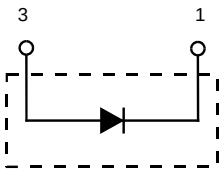
IXYS

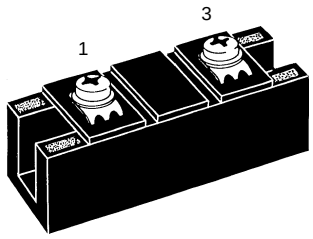
Fast Recovery Epitaxial Diode (FRED) Module

MEO 550-02 DA

V_{RRM} = 200 V
I_{FAVM} = 582 A
t_{rr} = 150 ns

V_{RSM} V	V_{RRM} V	Type
200	200	MEO 550-02DA





Symbol	Test Conditions		Maximum Ratings	
I_{FRMS}	T_C = 75°C		822	A
I_{FAVM} ①	T_C = 75°C; rectangular, d = 0.5		582	A
I_{FRM}	t_P < 10 µs; rep. rating, pulse width limited by T_{VJM}		2880	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	4800	A
		t = 8.3 ms (60 Hz), sine	5280	A
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	4320	A
		t = 8.3 ms (60 Hz), sine	4750	A
I^2t	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	115200	A^2s
		t = 8.3 ms (60 Hz), sine	117100	A^2s
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	93300	A^2s
		t = 8.3 ms (60 Hz), sine	94800	A^2s
T_{VJ}			-40...+150	°C
T_{stg}			-40...+125	°C
T_{Smax}			110	°C
P_{tot}	T_C = 25°C		1750	W
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque (M6)		2.25-2.75/20-25	Nm/lb.in.
	Terminal connection torque (M6)		4.50-5.50/40-48	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			150	g

Symbol	Test Conditions		Characteristic Values (per diode) typ.	max.	
I_R	T_{VJ} = 25°C	$V_R = V_{RRM}$		5	mA
	T_{VJ} = 25°C	$V_R = 0.8 \cdot V_{RRM}$		4	mA
	T_{VJ} = 125°C	$V_R = 0.8 \cdot V_{RRM}$		160	mA
V_F	I_F = 300 A;	T_{VJ} = 125°C		0.84	V
		T_{VJ} = 25°C		1.10	V
	I_F = 520 A;	T_{VJ} = 125°C		1.08	V
		T_{VJ} = 25°C		1.25	V
V_{T0}	For power-loss calculations only			0.52	V
r_T				1.06	mΩ
R_{thJH}	DC current			0.114	K/W
R_{thJC}	DC current			0.071	K/W
t_{rr}	I_F = 500 A	T_{VJ} = 100°C	150	200	ns
I_{RM}	V_R = 100 V	T_{VJ} = 25°C		9	A
	-di/dt = 200 A/µs	T_{VJ} = 100°C		15	A

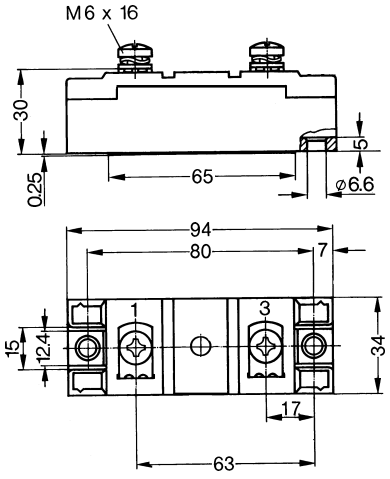
① I_{FAVM} rating includes reverse blocking losses at T_{VJM}, V_R = 0.6 V_{RRM}, duty cycle d = 0.5
Data according to IEC 60747
IXYS reserves the right to change limits, test conditions and dimensions

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

Dimensions in mm (1 mm = 0.0394")



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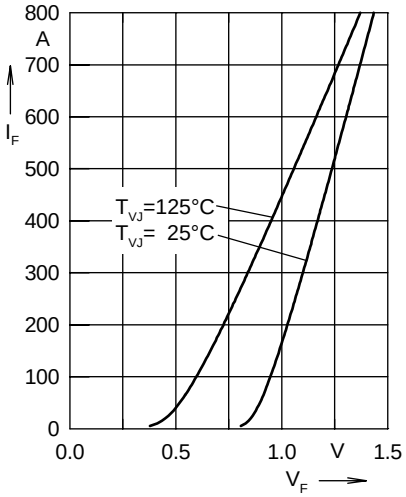


Fig. 1 Forward current I_F versus max. voltage drop V_F per leg

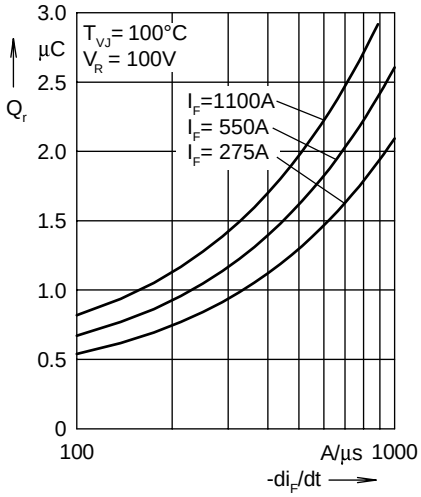


Fig. 2 Typ. reverse recovery charge Q_r versus $-di_F/dt$

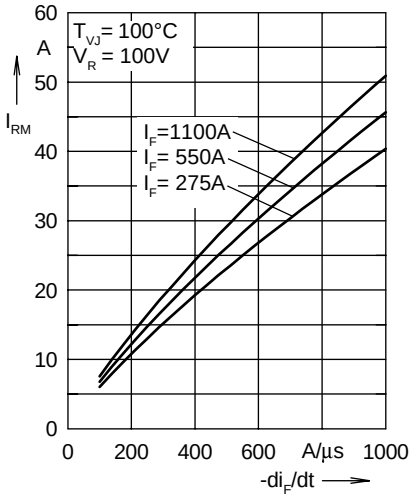


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

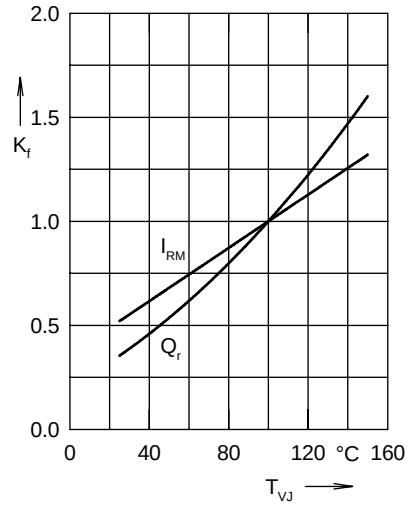


Fig. 4 Dynamic parameters Q_r, I_{RM} versus junction temperature T_{VJ}

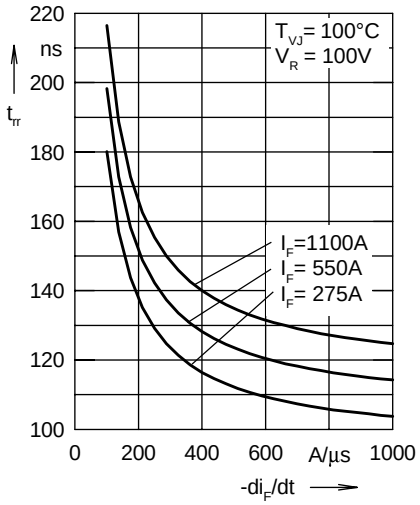


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

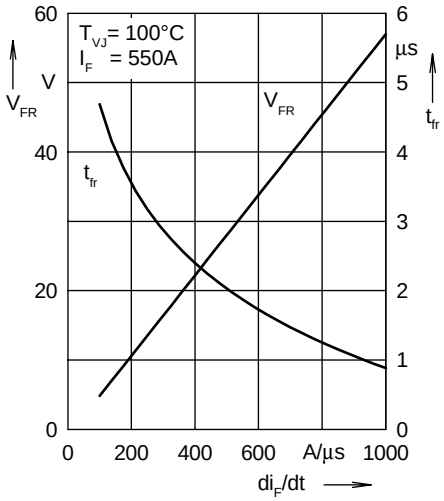


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

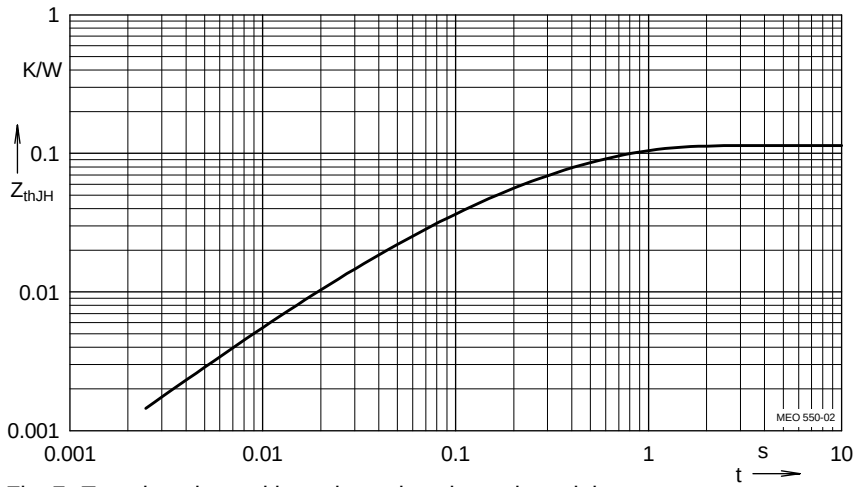


Fig. 7 Transient thermal impedance junction to heatsink

Constants for Z_{thJS} calculation:

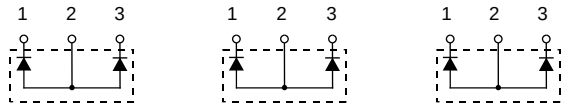
i	R_{thi} (K/W)	t_i (s)
1	0.001	0.08
2	0.004	0.024
3	0.027	0.112
4	0.082	0.464

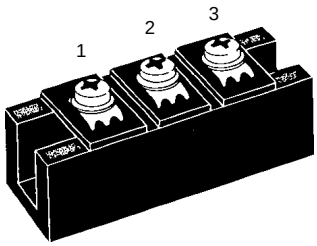
Fast Recovery Epitaxial Diode (FRED) Module

MEA 300-06 DA V_{RRM} = 600 V
MEK 300-06 DA I_{FAVM} = 304 A
MEE 300-06 DA t_{rr} = 250 ns

Preliminary data

V_{RSM} V	V_{RRM} V	Type
600	600	MEA 300-06DA
		MEK 300-06DA
		MEE 300-06DA





Symbol	Test Conditions	Maximum Ratings	
I_{FRMS}	T_C = 75 °C	430	A
I_{FAVM} ①	T_C = 75 °C; rectangular, d = 0.5	304	A
I_{FRM}	t_P < 10 µs; rep. rating, pulse width limited by T_{VJM}	1640	A
I_{FSM}	T_{VJ} = 45°C; t = 10 ms (50 Hz), sine	2400	A
	t = 8.3 ms (60 Hz), sine	2640	A
	T_{VJ} = 150°C; t = 10 ms (50 Hz), sine	2160	A
	t = 8.3 ms (60 Hz), sine	2380	A
I^2t	T_{VJ} = 45°C; t = 10 ms (50 Hz), sine	28800	A^2s
	t = 8.3 ms (60 Hz), sine	29300	A^2s
	T_{VJ} = 150°C; t = 10 ms (50 Hz), sine	23300	A^2s
	t = 8.3 ms (60 Hz), sine	23800	A^2s
T_{VJ}		-40...+150	°C
T_{stg}		-40...+125	°C
T_{Smax}		110	°C
P_{tot}	T_C = 25°C	875	W
V_{ISOL}	50/60 Hz, RMS t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA t = 1 s	3600	V~
M_d	Mounting torque (M6)	2.25-2.75/20-25	Nm/lb.in.
	Terminal connection torque (M6)	4.50-5.50/40-48	Nm/lb.in.
d_S	Creeping distance on surface	12.7	mm
d_A	Strike distance through air	9.6	mm
a	Maximum allowable acceleration	50	m/s^2
Weight		150	g

Symbol	Test Conditions		Characteristic Values (per diode) typ.	max.	
I_R	T_{VJ} = 25°C	$V_R = V_{RRM}$		12	mA
	T_{VJ} = 25°C	V_R = 0.8 • V_{RRM}		3	mA
	T_{VJ} = 125°C	V_R = 0.8 • V_{RRM}		80	mA
V_F	I_F = 150 A;	T_{VJ} = 125°C		1.05	V
		T_{VJ} = 25°C		1.27	V
	I_F = 260 A;	T_{VJ} = 125°C		1.19	V
		T_{VJ} = 25°C		1.36	V
V_{T0}	For power-loss calculations only			0.85	V
r_T				1.34	mΩ
R_{thJH}	DC current			0.228	K/W
R_{thJC}	DC current			0.143	K/W
t_{rr}	I_F = 300 A	T_{VJ} = 100°C	250	300	ns
I_{RM}	V_R = 300 V	T_{VJ} = 25°C		44	A
	-di/dt = 400 A/µs	T_{VJ} = 100°C		66	A

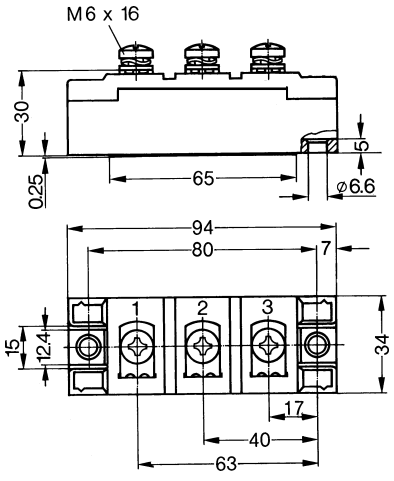
① I_{FAVM} rating includes reverse blocking losses at T_{VJM}, V_R = 0.6 V_{RRM}, duty cycle d = 0.5
Data according to IEC 60747
IXYS reserves the right to change limits, test conditions and dimensions

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

Dimensions in mm (1 mm = 0.0394")



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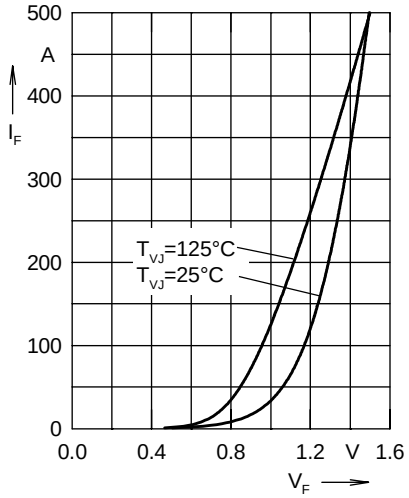

Fig. 1 Forward current I_F versus max. voltage drop V_F per leg

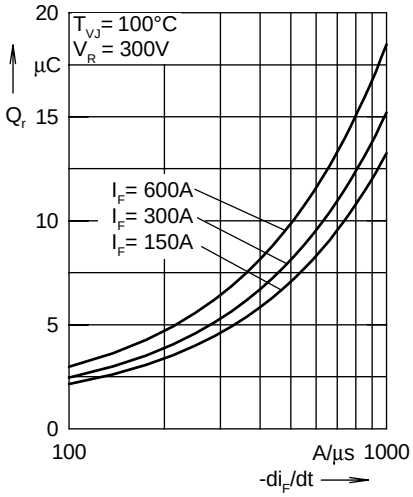

Fig. 2 Typ. reverse recovery charge Q_r versus $-di_F/dt$

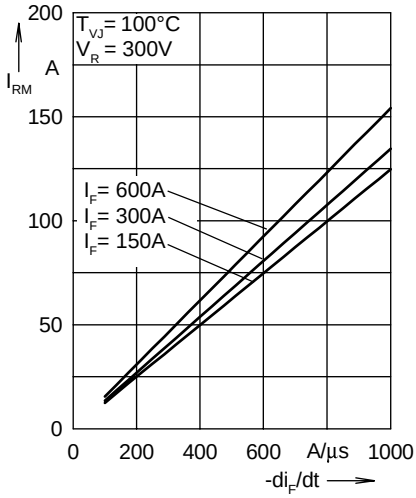

Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

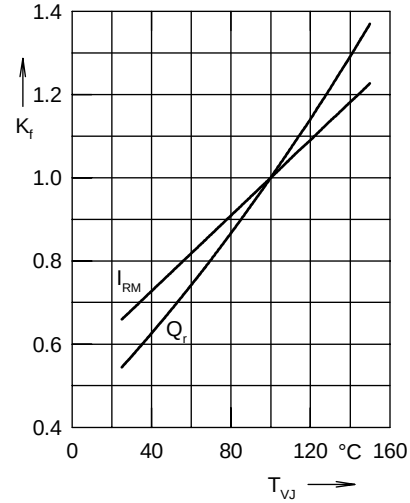

Fig. 4 Dynamic parameters Q_r, I_{RM} versus junction temperature T_{VJ}

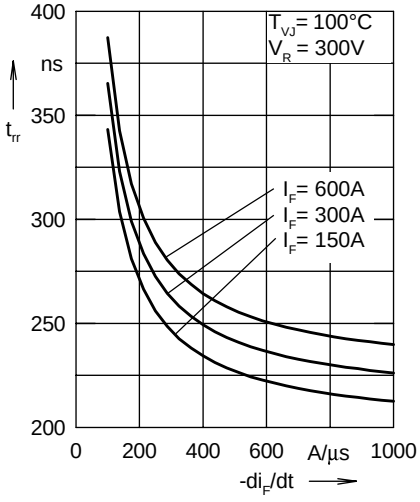

Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

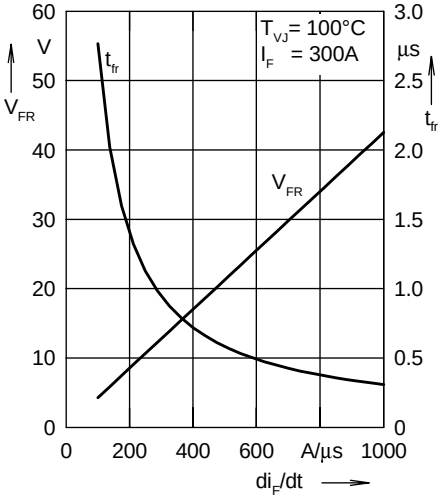

Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

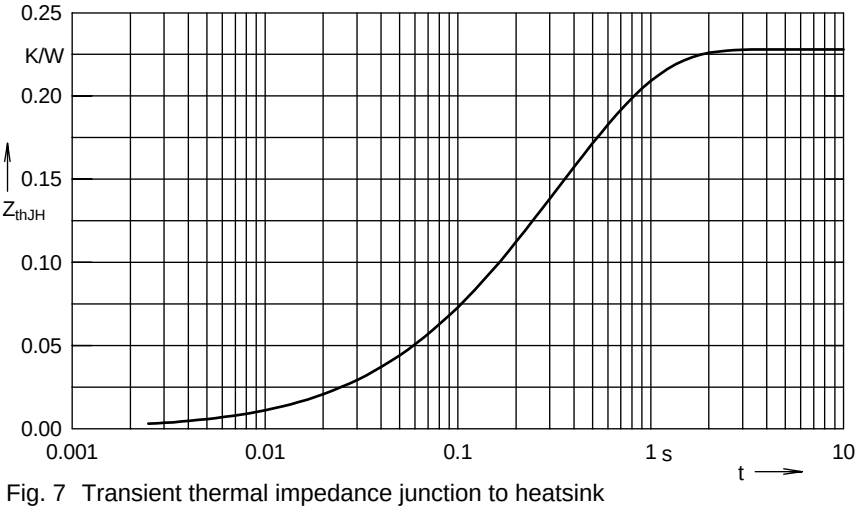

Fig. 7 Transient thermal impedance junction to heatsink

Constants for Z_{thJS} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.002	0.08
2	0.008	0.024
3	0.054	0.112
4	0.164	0.464

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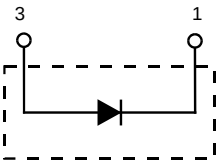
Fast Recovery Epitaxial Diode (FRED) Module

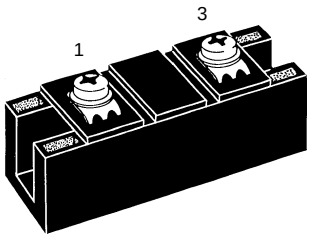
MEO 500-06 DA

V_{RRM} = 600 V
I_{FAVM} = 514 A
t_{rr} = 250 ns

Preliminary data

V_{RSM} V	V_{RRM} V	Type
600	600	MEO 500-06DA





Symbol	Test Conditions		Maximum Ratings	
I_{FRMS}	T_C = 75°C		726	A
I_{FAVM} ①	T_C = 75°C; rectangular, d = 0.5		514	A
I_{FRM}	t_P < 10 µs; rep. rating, pulse width limited by T_{VJM}		2680	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	4800	A
		t = 8.3 ms (60 Hz), sine	5280	A
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	4320	A
		t = 8.3 ms (60 Hz), sine	4750	A
I^2t	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	115200	A^2s
		t = 8.3 ms (60 Hz), sine	117100	A^2s
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	93300	A^2s
		t = 8.3 ms (60 Hz), sine	94800	A^2s
T_{VJ}			-40...+150	°C
T_{stg}			-40...+125	°C
T_{Smax}			110	°C
P_{tot}	T_C = 25°C		1750	W
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque (M6)		2.25-2.75/20-25	Nm/lb.in.
	Terminal connection torque (M6)		4.50-5.50/40-48	Nm/lb.in.
d_S	Creeping distance on surface		12.7	mm
d_A	Strike distance through air		9.6	mm
a	Maximum allowable acceleration		50	m/s^2
Weight			150	g

Symbol	Test Conditions		Characteristic Values (per diode) typ.	max.	
I_R	T_{VJ} = 25°C	$V_R = V_{RRM}$		24	mA
	T_{VJ} = 25°C	$V_R = 0.8 \cdot V_{RRM}$		6	mA
	T_{VJ} = 125°C	$V_R = 0.8 \cdot V_{RRM}$		160	mA
V_F	I_F = 300 A;	T_{VJ} = 125°C		1.17	V
		T_{VJ} = 25°C		1.36	V
	I_F = 520 A;	T_{VJ} = 125°C		1.41	V
		T_{VJ} = 25°C		1.52	V
V_{T0}	For power-loss calculations only			0.85	V
r_T				1.09	mΩ
R_{thJH}	DC current			0.114	K/W
R_{thJC}	DC current			0.071	K/W
t_{rr}	I_F = 600 A	T_{VJ} = 100°C	250	300	ns
I_{RM}	V_R = 300 V	T_{VJ} = 25°C		88	A
	-di/dt = 800 A/µs	T_{VJ} = 100°C		132	A

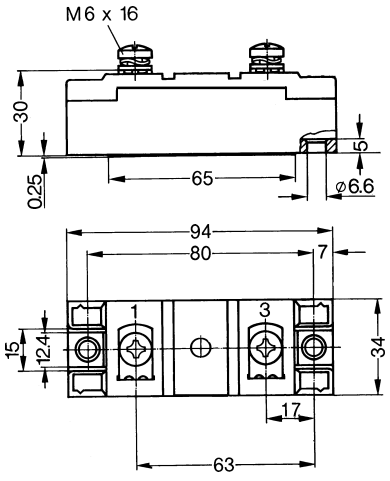
① I_{FAVM} rating includes reverse blocking losses at T_{VJM}, V_R = 0.6 V_{RRM}, duty cycle d = 0.5
Data according to IEC 60747
IXYS reserves the right to change limits, test conditions and dimensions

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

Dimensions in mm (1 mm = 0.0394")



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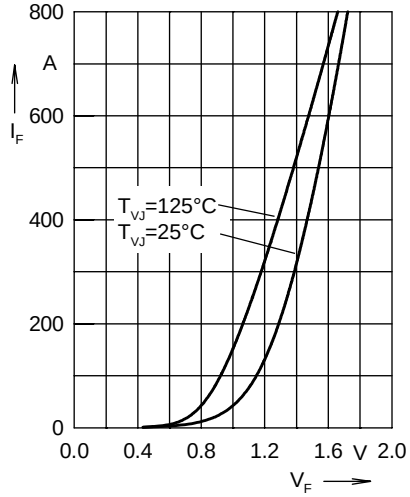

Fig. 1 Forward current I_F versus max. voltage drop V_F per leg

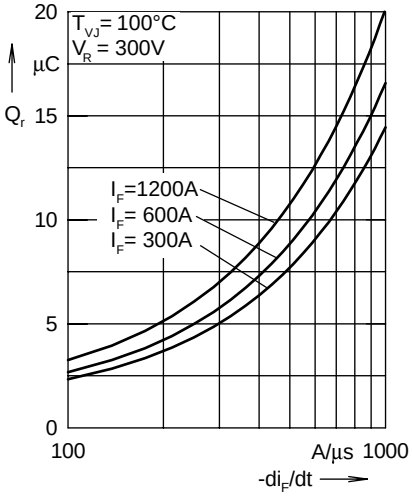

Fig. 2 Typ. reverse recovery charge Q_r versus $-di_F/dt$

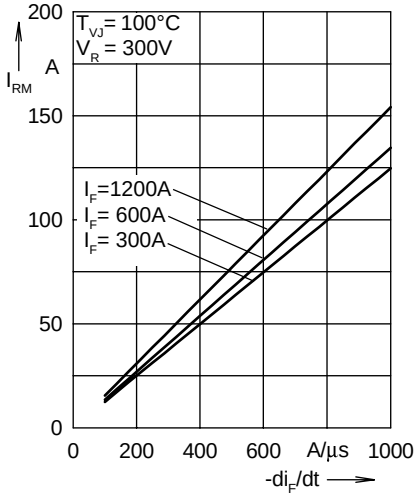

Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

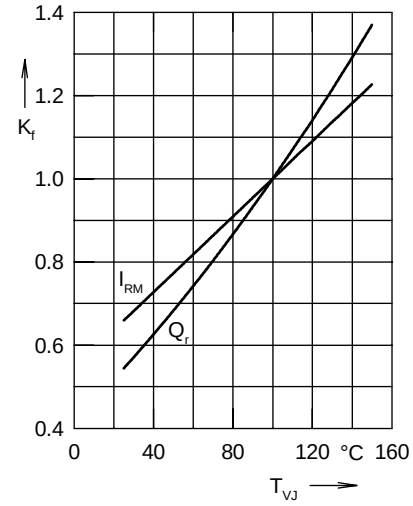

Fig. 4 Dynamic parameters Q_r, I_{RM} versus junction temperature T_{VJ}

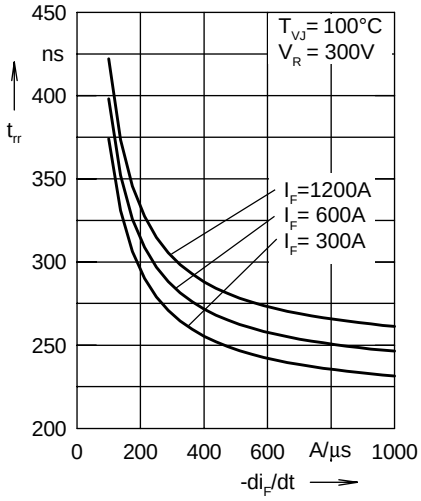

Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

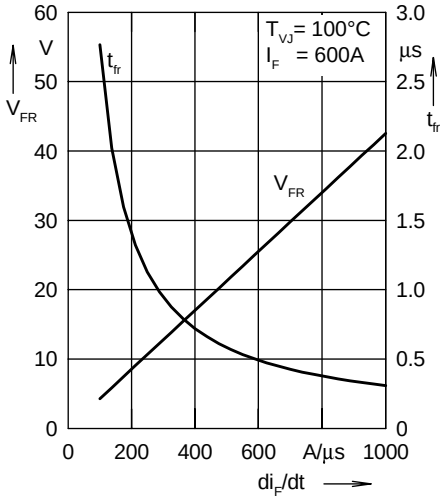

Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

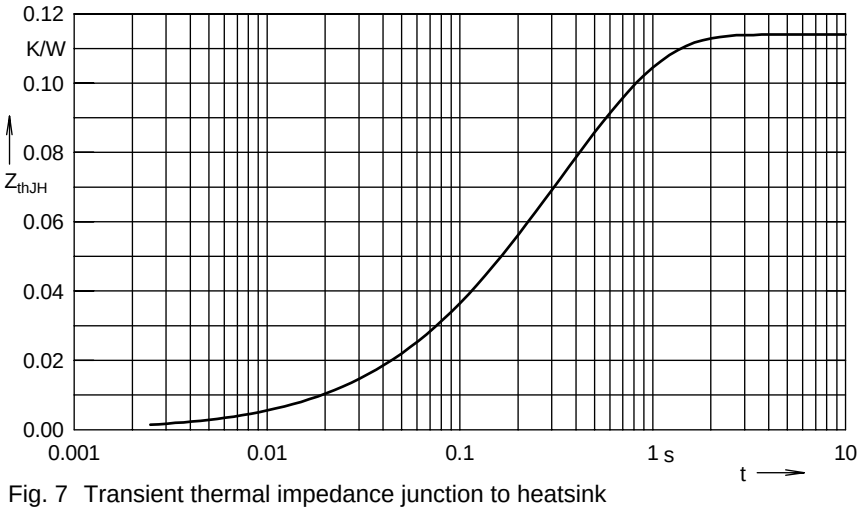

Fig. 7 Transient thermal impedance junction to heatsink

Constants for Z_{thJS} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.001	0.08
2	0.004	0.024
3	0.027	0.112
4	0.082	0.464

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IXYS

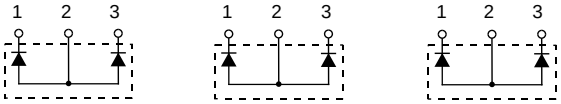
Fast Recovery Epitaxial Diode (FRED) Module

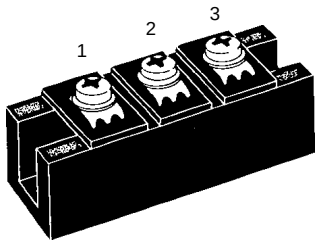
MEA 250-12 DA
MEK 250-12 DA
MEE 250-12 DA

V_{RRM} = 1200 V
I_{FAVM} = 260 A
t_{rr} = 450 ns

Preliminary data

V_{RSM} V	V_{RRM} V	Type
1200	1200	MEA 250-12DA
		MEK 250-12DA
		MEE 250-012DA





Symbol	Test Conditions		Maximum Ratings	
I_{FRMS}	T_C = 75°C		367	A
I_{FAVM} ①	T_C = 75°C; rectangular, d = 0.5		260	A
I_{FRM}	t_P < 10 µs; rep. rating, pulse width limited by T_{VJM}		1480	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	2400	A
		t = 8.3 ms (60 Hz), sine	2640	A
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	2160	A
		t = 8.3 ms (60 Hz), sine	2380	A
I^2t	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	28800	A^2s
		t = 8.3 ms (60 Hz), sine	29300	A^2s
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	23300	A^2s
		t = 8.3 ms (60 Hz), sine	23800	A^2s
T_{VJ}			-40...+150	°C
T_{stg}			-40...+125	°C
T_{Smax}			110	°C
P_{tot}	T_c = 25°C		875	W
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque (M6)		2.25-2.75/20-25	Nm/lb.in.
	Terminal connection torque (M6)		4.50-5.50/40-48	Nm/lb.in.
d_S	Creeping distance on surface		12.7	mm
d_A	Strike distance through air		9.6	mm
a	Maximum allowable acceleration		50	m/s^2
Weight			150	g

Symbol	Test Conditions		Characteristic Values (per diode) typ.	max.	
I_R	T_{VJ} = 25°C	$V_R = V_{RRM}$		12	mA
	T_{VJ} = 25°C	V_R = 0.8 • V_{RRM}		3	mA
	T_{VJ} = 125°C	V_R = 0.8 • V_{RRM}		60	mA
V_F	I_F = 150 A;	T_{VJ} = 125°C		1.38	V
		T_{VJ} = 25°C		1.69	V
	I_F = 260 A;	T_{VJ} = 125°C		1.54	V
		T_{VJ} = 25°C		1.80	V
V_{T0}	For power-loss calculations only			1.16	V
r_T				1.46	mΩ
R_{thJH}	DC current			0.228	K/W
R_{thJC}	DC current			0.143	K/W
t_{rr}	I_F = 300 A	T_{VJ} = 100°C	450	500	ns
I_{RM}	V_R = 600 V	T_{VJ} = 25°C		55	A
	-di/dt = 400 A/µs	T_{VJ} = 100°C		83	A

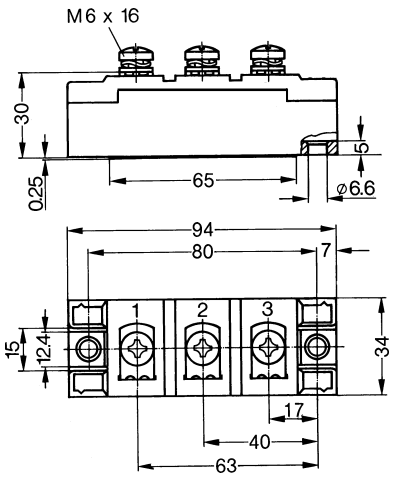
① I_{FAVM} rating includes reverse blocking losses at T_{VJM}, V_R = 0.6 V_{RRM}, duty cycle d = 0.5
Data according to IEC 60747
IXYS reserves the right to change limits, test conditions and dimensions

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

Dimensions in mm (1 mm = 0.0394")



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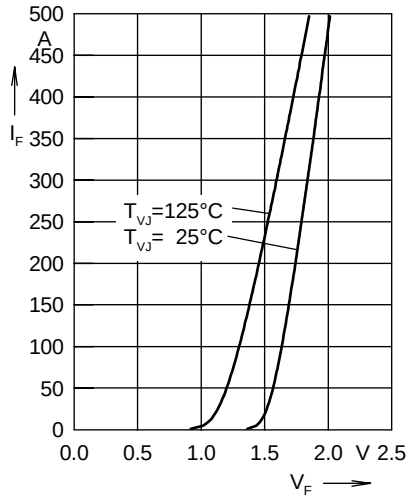


Fig. 1 Forward current I_F versus voltage drop V_F per leg

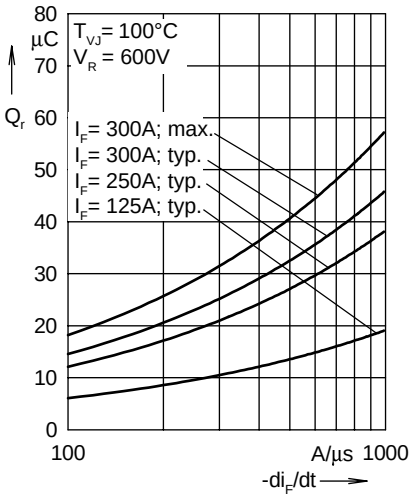


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

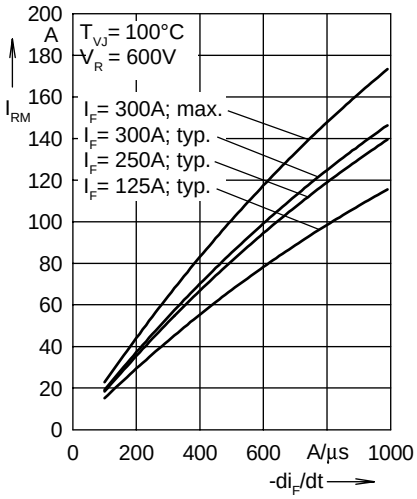


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

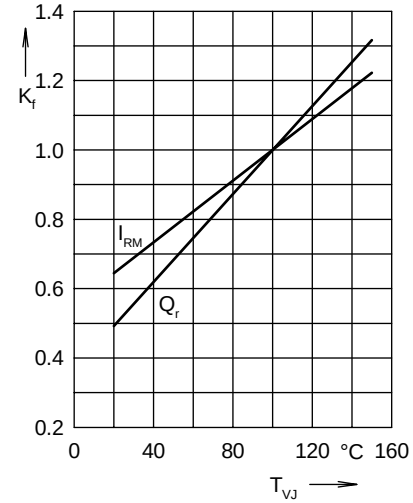


Fig. 4 Dynamic parameters Q_r, I_{RM} versus junction temperature T_{VJ}

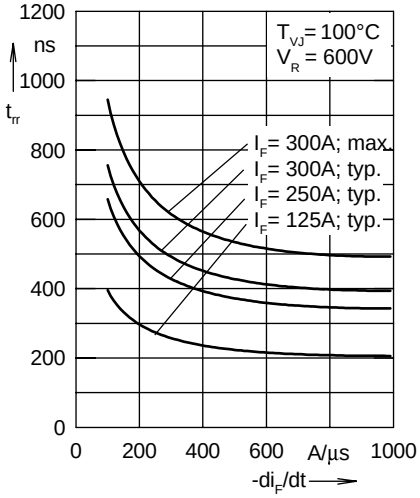


Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

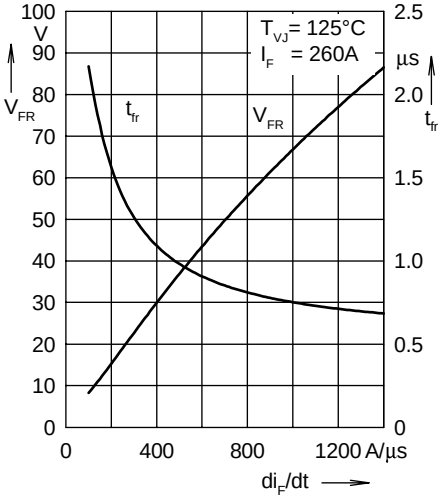


Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

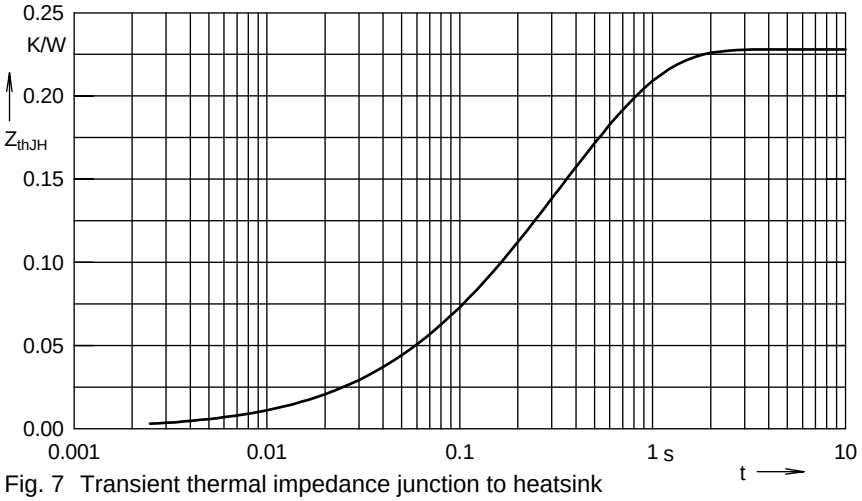


Fig. 7 Transient thermal impedance junction to heatsink

Constants for Z_{thJS} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.002	0.08
2	0.008	0.024
3	0.054	0.112
4	0.164	0.464

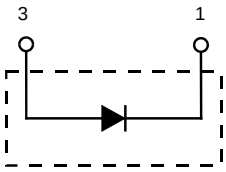
Fast Recovery Epitaxial Diode (FRED) Module

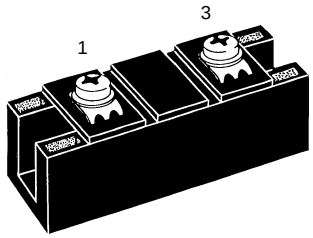
MEO 450-12 DA

V_{RRM} = 1200 V
I_{FAVM} = 453 A
t_{rr} = 450 ns

Preliminary data

V_{RSM} V	V_{RRM} V	Type
1200	1200	MEO 450-12DA





Symbol	Test Conditions		Maximum Ratings	
I_{FRMS}	T_C = 75°C		640	A
I_{FAVM} ①	T_C = 75°C; rectangular, d = 0.5		453	A
I_{FRM}	t_P < 10 µs; rep. rating, pulse width limited by T_{VJM}		2460	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	4800	A
		t = 8.3 ms (60 Hz), sine	5280	A
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	4320	A
		t = 8.3 ms (60 Hz), sine	4750	A
I^2t	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	115200	A^2s
		t = 8.3 ms (60 Hz), sine	117100	A^2s
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	93300	A^2s
		t = 8.3 ms (60 Hz), sine	94800	A^2s
T_{VJ}			-40...+150	°C
T_{stg}			-40...+125	°C
T_{Smax}			110	°C
P_{tot}	T_C = 25°C		1750	W
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque (M6)		2.25-2.75/20-25	Nm/lb.in.
	Terminal connection torque (M6)		4.50-5.50/40-48	Nm/lb.in.
d_S	Creeping distance on surface		12.7	mm
d_A	Strike distance through air		9.6	mm
a	Maximum allowable acceleration		50	m/s^2
Weight			150	g

Symbol	Test Conditions		Characteristic Values (per diode) typ.	max.	
I_R	T_{VJ} = 25°C	$V_R = V_{RRM}$		24	mA
	T_{VJ} = 25°C	$V_R = 0.8 \cdot V_{RRM}$		6	mA
	T_{VJ} = 125°C	$V_R = 0.8 \cdot V_{RRM}$		120	mA
V_F	I_F = 300 A;	T_{VJ} = 125°C		1.51	V
		T_{VJ} = 25°C		1.78	V
	I_F = 520 A;	T_{VJ} = 125°C		1.76	V
		T_{VJ} = 25°C		1.96	V
V_{T0}	For power-loss calculations only			1.16	V
r_T				1.15	mΩ
R_{thJH}	DC current			0.114	K/W
R_{thJC}	DC current			0.071	K/W
t_{rr}	I_F = 600 A	T_{VJ} = 100°C	450	500	ns
I_{RM}	V_R = 600 V	T_{VJ} = 25°C		110	A
	-di/dt = 800 A/µs	T_{VJ} = 100°C		165	A

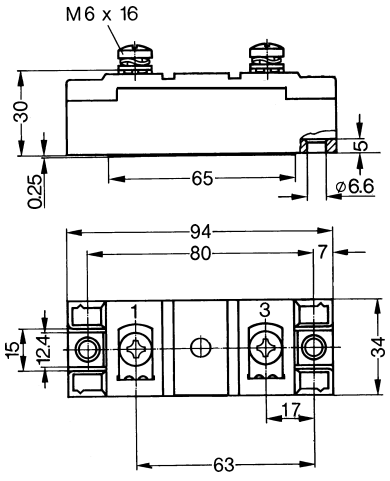
① I_{FAVM} rating includes reverse blocking losses at T_{VJM}, V_R = 0.6 V_{RRM}, duty cycle d = 0.5
Data according to IEC 60747
IXYS reserves the right to change limits, test conditions and dimensions

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

Dimensions in mm (1 mm = 0.0394")



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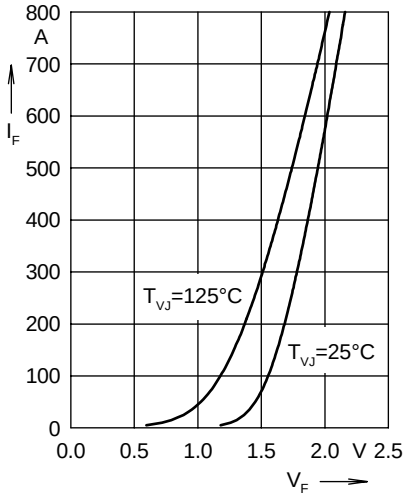

Fig. 1 Forward current I_F versus V_F

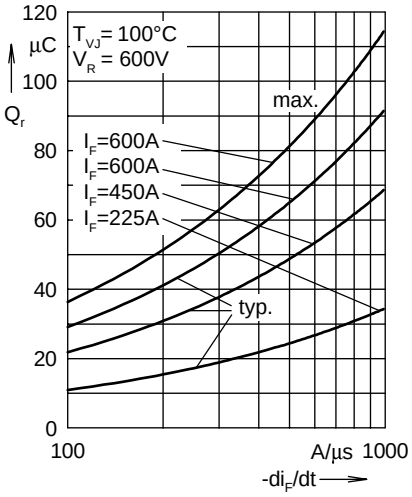

Fig. 2 Reverse recovery charge Q_r versus -di$_F$ / dt

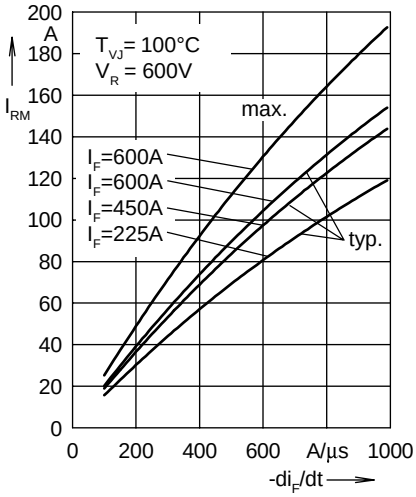

Fig. 3 Peak reverse current I_{RM} versus -di$_F$ / dt

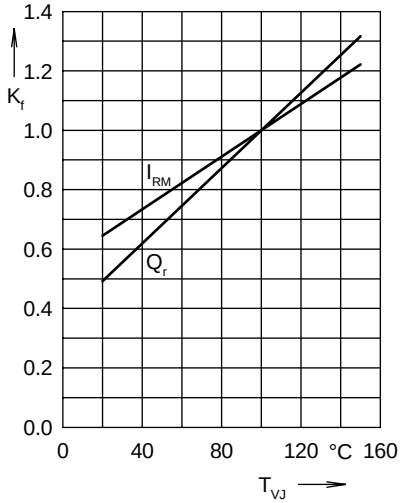

Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

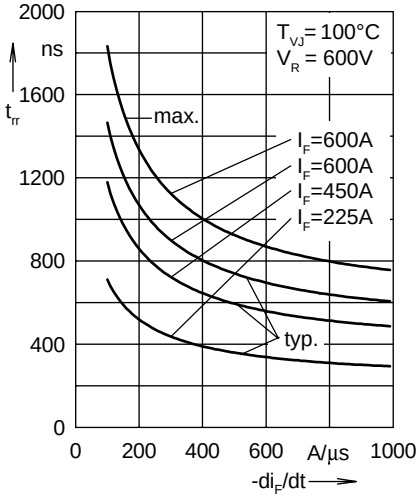

Fig. 5 Recovery time t_{rr} versus -di$_F$ / dt

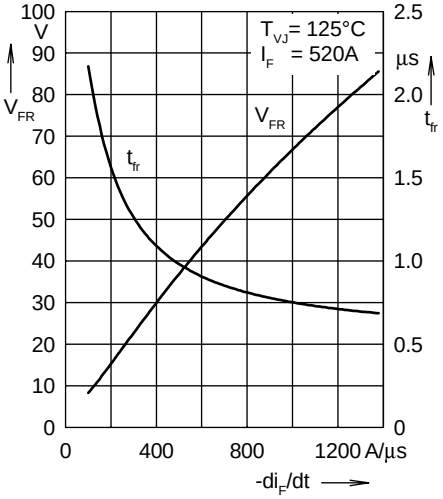

Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di$_F$ / dt

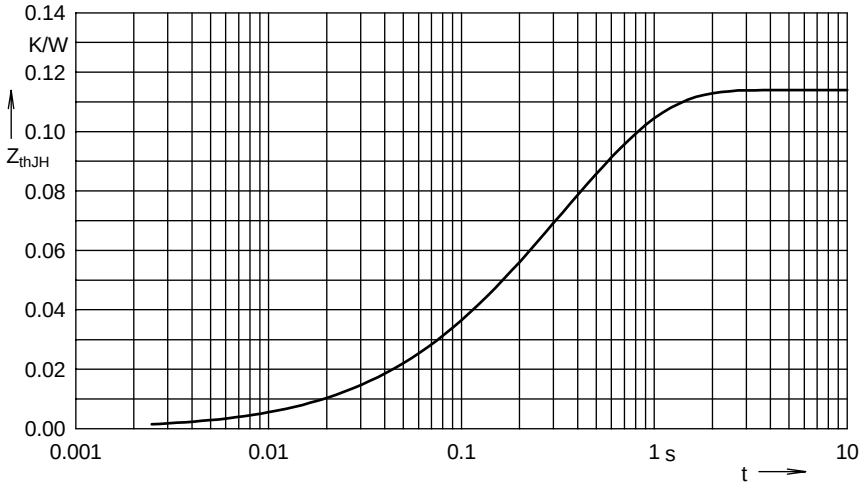

Fig. 7 Transient thermal impedance junction to case

Constants for Z_{thJS} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.001	0.08
2	0.004	0.024
3	0.027	0.112
4	0.082	0.464