FRED Module

V_{RRM} = 1200 V
I_{FAVM} = 453 A
t_{rr} = 500 ns

Fast Recovery Epitaxial Diode

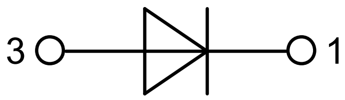
Single Diode

Part number

MEO 450-12DA

E72873

Backside: isolated



Features / Advantages:

- International standard package with DCB ceramic base plate
- Planar passivated chips
- Short recovery time
- Low switching losses
- Soft recovery behaviour
- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching
- Low losses

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

Package: Y4-M6

- Isolation voltage: 3600 V~
- Industry standard outline
- Soldering pins for PCB mounting
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

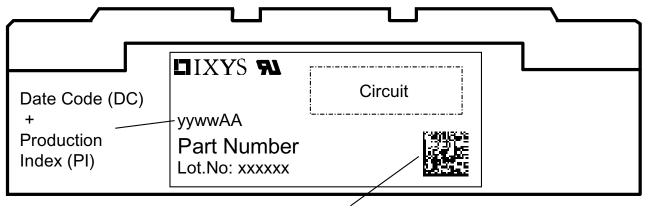
Diode				Ratings			
Symbol	**Definitions**	**Conditions**		**min.**	**typ.**	**max.**	
V_{RSM}	*max. non-repetitive reverse*		T_{VJ} = 25°C			1200	V
V_{RRM}	*max. repetitive reverse*		T_{VJ} = 25°C			1200	V
I_R	*reverse current*	$V_R = V_{RRM}$ $V_R = 0.8 \cdot V_{RRM}$ $V_R = 0.8 \cdot V_{RRM}$	T_{VJ} = 25°C T_{VJ} = 25°C T_{VJ} = 125°C			24 6 120	mA mA mA
V_F	*forward voltage*	I_F = 300 A	T_{VJ} = 25°C T_{VJ} = 125°C			1.78 1.51	V V
		I_F = 520 A	T_{VJ} = 25°C T_{VJ} = 125°C			1.96 1.76	V V
I_{FRMS}	*RMS forward current*		T_C = 75°C			640	A
I_{FAV} ①	*average forward current*	T_C = 75°C rectangular, d = 0.5	T_{VJ} = 150°C			453	A
V_{T0} r_T	*threshold voltage* *slope resistance*	for power-loss calculations only	$T_{VJ} = T_{VJM}$			1.16 1.15	V mΩ
R_{thJC} R_{thCH}	*thermal resistance junction to case* *thermal resistance junction to heatsink*				 0.043	0.071 	K/W K/W
P_{tot}	*total power dissipation*		T_{VJ} = 25°C			1750	W
I_{FSM}	*max. surge forward current*	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	T_{VJ} = 45°C			4.80 5.28	kA kA
		t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	T_{VJ} = 150°C			4.32 4.75	kA kA
I^2t	*I^2t value for fusing*	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	T_{VJ} = 45°C			115.2 117.1	kA^2s kA^2s
		t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	T_{VJ} = 150°C			93.3 94.8	kA^2s kA^2s
t_{rr}	*max. reverse recovery current*	I_F = 450 A; $-di_F/dt$ = 800 A/µs	T_{VJ} = 25°C T_{VJ} = 100°C		250 500	300 600	ns ns
I_{RM}	*reverse recovery time*	V_R = 600 V; L ≤ 0.05 µH	T_{VJ} = 25°C T_{VJ} = 100°C		80 125	100 150	A A

① I_{FAVM} rating includes reverse blocking losses at T_{VJM}, $V_R = 0.8\ V_{RRM}$, duty cycle d = 0.5

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

20200930a

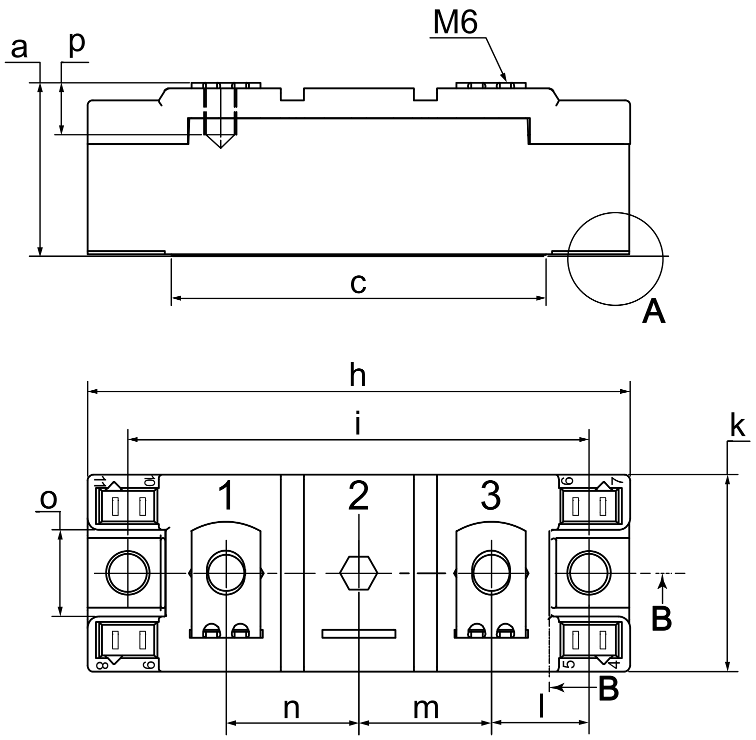
Package	Y4-M6			Ratings			
Symbol	**Definitions**	**Conditions**		**min.**	**typ.**	**max.**	
I_{RMS}	*RMS current*	per terminal				300	A
T_{VJ} T_{op} T_{stg}	*virtual junction temperature* *operation temperature* *storage temperature*			-40 -40 -40		150 125 125	°C °C °C
Weight					108		g
M_D	*mounting torque*			2.25		2.75	Nm
M_T	*terminal torque*			4.5		5.5	Nm
$d_{Spp/App}$ $d_{Spb/Apb}$	*creepage distance on surface* | *striking distance through air*	terminal to terminal terminal to backside	14.0 16.0	10.0 16.0			mm mm
V_{ISOL}	*isolation voltage*	t = 1 second t = 1 minute; 50/60 Hz, RMS; $I_{ISOL} \le 1$ mA		3600 3000			V V



Data Matrix: *part no.* (1-19), DC + *PI* (20-25), *lot.no.#* (26-31), *blank* (32), *serial no.#* (33-36)

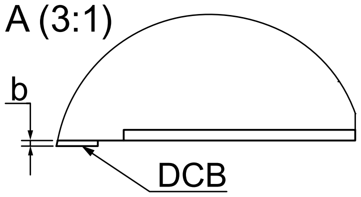
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MEO 450-12DA	MEO 450-12DA	Box	6	464635

Outlines Y4-M6

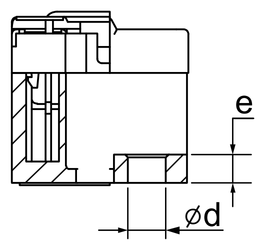


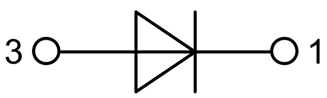
Dim.	MIN [mm]	MAX [mm]	MIN [inch]	MAX [inch]
a	30.0	30.6	1.181	1.205
b	typ. 0.25		typ. 0.010	
c	64.0	65.0	2.520	2.559
d	6.5	7.0	0.256	0.275
e	4.9	5.1	0.193	0.201
h	93.5	94.5	3.681	3.720
i	79.5	80.5	3.130	3.169
k	33.4	34.0	1.315	1.339
l	16.7	17.3	0.657	0.681
m	22.7	23.3	0.894	0.917
n	22.7	23.3	0.894	0.917
o	14.0	15.0	0.551	0.591
p	typ. 10.5		typ. 0.413	

A (3:1)



B-B (1:1)





Curves

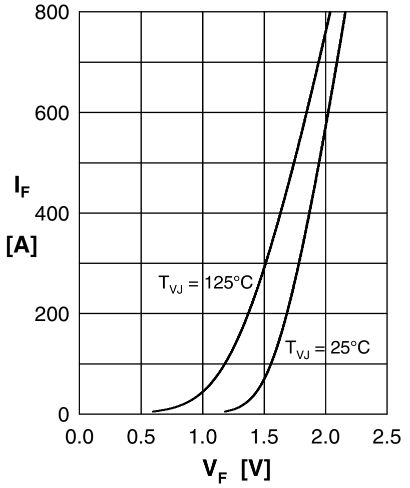


Fig. 1 Typ. forward current I_F vs. V_F

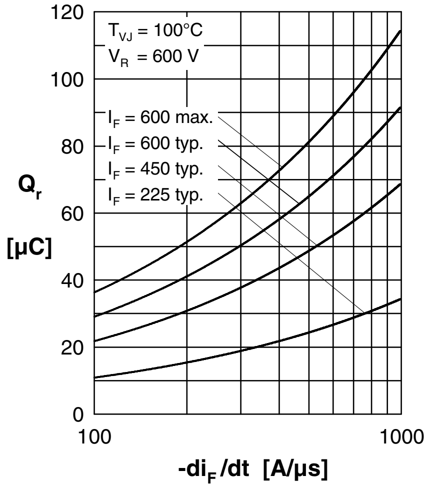


Fig. 2 Typ. reverse recovery charge Q_r versus $-di_F/dt$

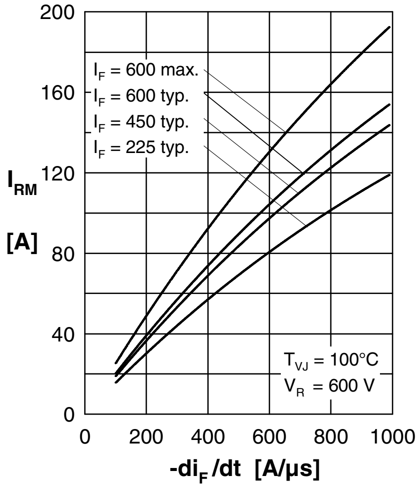


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

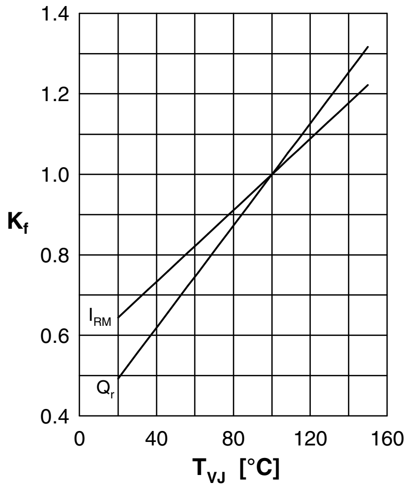


Fig. 4 Typ. dynamic parameters Q_r, I_{RM} versus T_{VJ}

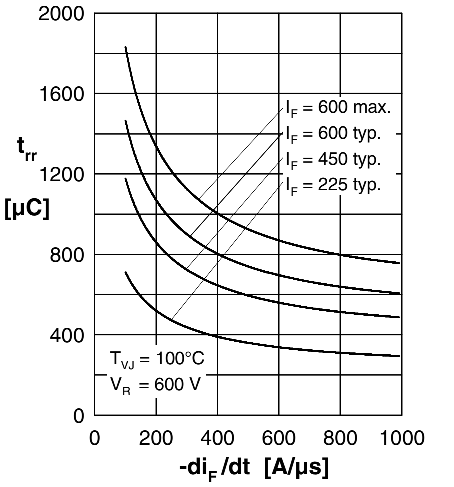


Fig. 5 Typ. recovery time t_{rr} vs. $-di_F/dt$

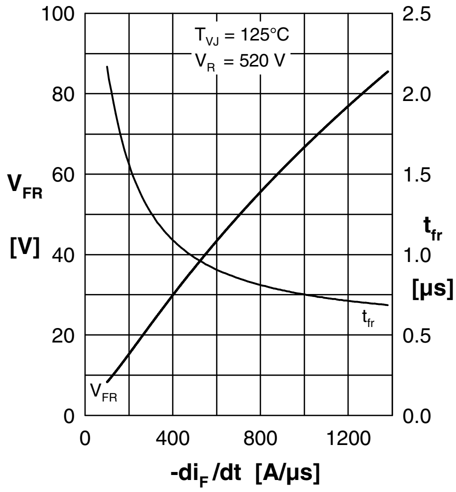


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus T_{VJ}

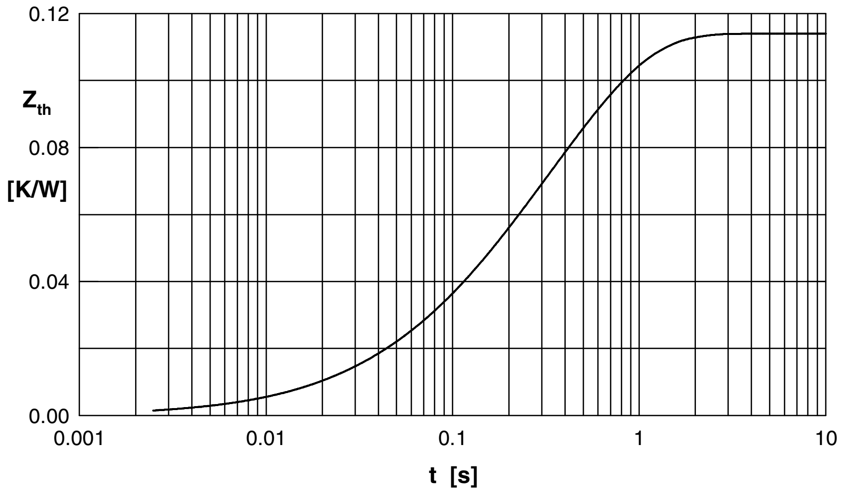


Fig. 7 Typ. transient thermal impedance junction to case

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