

# FRED Module

 $V_{RRM} = 1200\text{ V}$   
 $I_{FAV} = 75\text{ A}$   
 $t_{rr} = 230\text{ ns}$ 

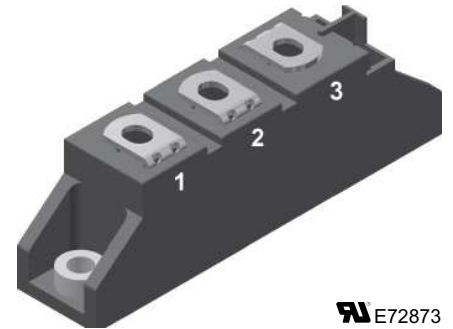
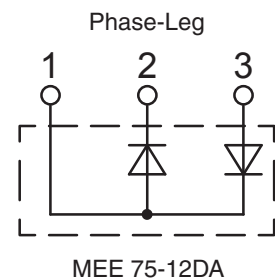
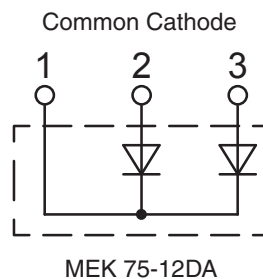
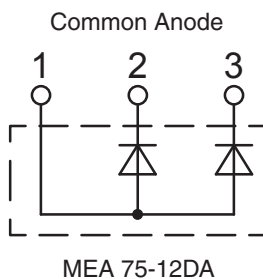
## Fast Recovery Epitaxial Diode

### Part number

MEA 75-12DA

MEK 75-12DA

MEE 75-12DA


 E72873  
 Backside: isolated


### Features / Advantages:

- Planar passivated chips
- 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: TO-240AA

- Isolation voltage: 4800 V~
- Industry standard outline
- RoHS compliant
- Height: 30 mm
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

### Disclaimer Notice

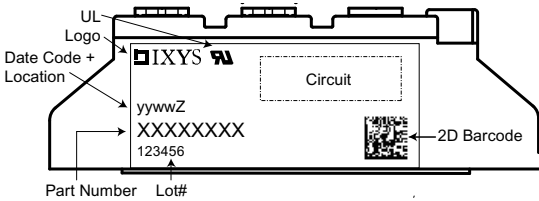
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Diode				Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.		
$V_{RSM}$	max. non-repetitive reverse blocking voltage		$T_{VJ} = 25^{\circ}C$			1200	V
$V_{RRM}$	max. repetitive reverse blocking voltage		$T_{VJ} = 25^{\circ}C$			1200	V
$I_R$	reverse current	$V_R = V_{RRM}$ $V_R = 0.8 \cdot V_{RRM}$ $V_R = 0.8 \cdot V_{RRM}$	$T_{VJ} = 25^{\circ}C$			2	mA
			$T_{VJ} = 25^{\circ}C$			0.5	mA
			$T_{VJ} = 125^{\circ}C$			34	mA
$V_F$	forward voltage	$I_F = 100 A$	$T_{VJ} = 25^{\circ}C$			2.17	V
			$T_{VJ} = 125^{\circ}C$			1.85	V
			$T_{VJ} = 25^{\circ}C$			2.64	V
			$T_{VJ} = 125^{\circ}C$			2.58	V
$I_{FRMS}$	RMS forward current		$T_C = 75^{\circ}C$			107	A
$I_{FAV}$ ①	average forward current	$T_C = 75^{\circ}C$ rectangular, d = 0.5	$T_{VJ} = 150^{\circ}C$			75	A
$V_{TO}$	threshold voltage	for power-loss calculations only	$T_{VJ} = T_{VJM}$			1.48	V
$r_T$	slope resistance					3.65	m $\Omega$
$R_{thJC}$	thermal resistance junction to case					0.45	K/W
$R_{thCH}$	thermal resistance junction to heatsink				0.10		K/W
$P_{tot}$			$T_C = 25^{\circ}C$			280	W
$I_{FSM}$	max. surge forward current	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	$T_{VJ} = 45^{\circ}C$			1200	A
						1300	A
			$T_{VJ} = 150^{\circ}C$			1080	A
						1170	A
$I^2t$	$I^2t$ value for fusing	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	$T_{VJ} = 45^{\circ}C$			7200	A <sup>2</sup> s
						7100	A <sup>2</sup> s
			$T_{VJ} = 150^{\circ}C$			5800	A <sup>2</sup> s
						5700	A <sup>2</sup> s
$t_{rr}$	max. reverse recovery current	$I_F = 70 A; V_R = 600 V$	$T_{VJ} = 25^{\circ}C$			140	ns
			$T_{VJ} = 100^{\circ}C$			230	ns
$I_{RM}$	reverse recovery time	-di/dt = 400 A/ $\mu$ s; L $\leq$ 0.05 $\mu$ H	$T_{VJ} = 25^{\circ}C$			25	A
			$T_{VJ} = 100^{\circ}C$			33	A

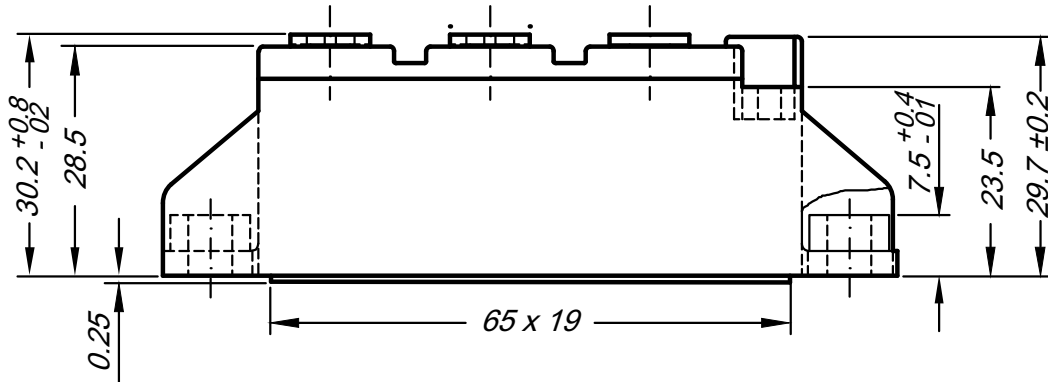
①  $I_{FAVM}$  rating includes reverse blocking losses at  $T_{VJM}$ ,  $V_R = 0.8 V_{RRM}$ , duty cycle d = 0.5



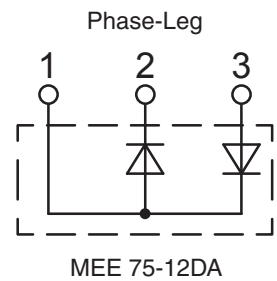
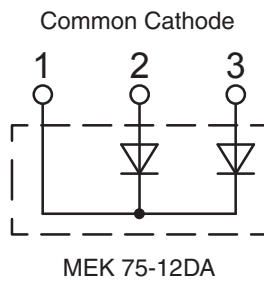
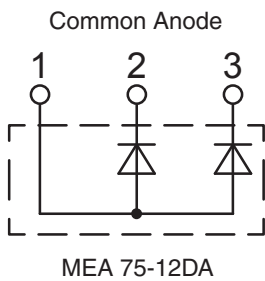
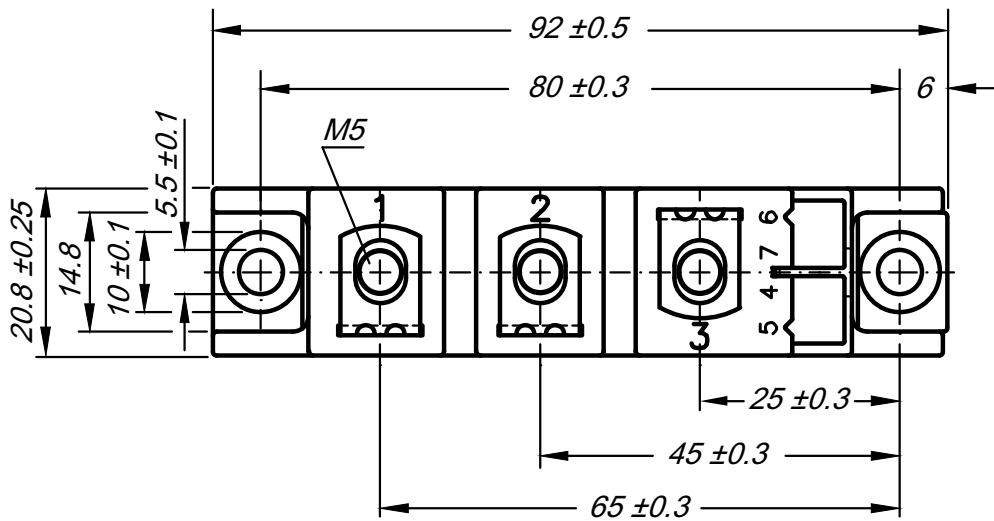
Package TO-240AA			Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.	
$I_{RMS}$	RMS current	per terminal			200	A
$T_{VJ}$	virtual junction temperature		-40		150	°C
$T_{op}$	operation temperature		-40		125	°C
$T_{stg}$	storage temperature		-40		125	°C
<b>Weight</b>				76		g
$M_D$	mounting torque		2.5		4	Nm
$M_T$	terminal torque		2.5		4	Nm
$d_{Spp/App}$	creepage distance on surface   striking distance through air	terminal to terminal	13.0	9.7		mm
$d_{Spb/Apb}$		terminal to backside	16.0	16.0		mm
$V_{ISOL}$	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA		4800	V
		t = 1 minute			4000	V



Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MEA 75-12DA	MEA 75-12DA	Box	36	469130
Standard	MEK 75-12DA	MEK 75-12DA	Box	36	468541
Standard	MEE 75-12DA	MEE 75-12DA	Box	36	469297

**Outlines TO-240AA**


General tolerance: DIN ISO 2768 class „c“



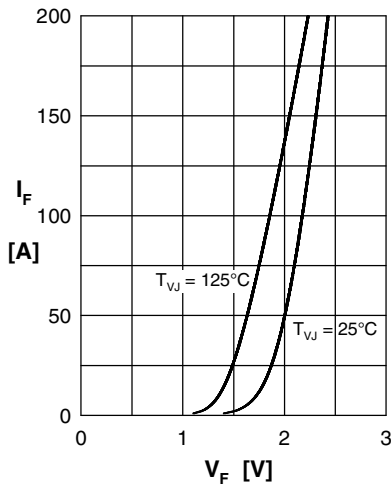
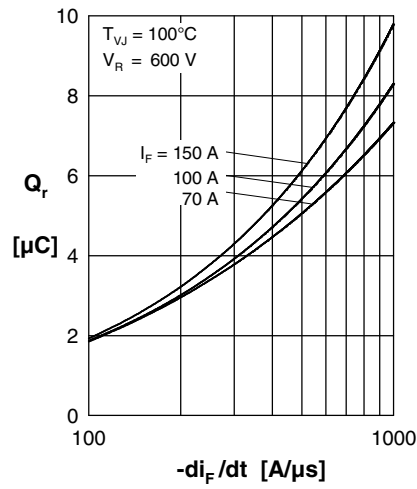
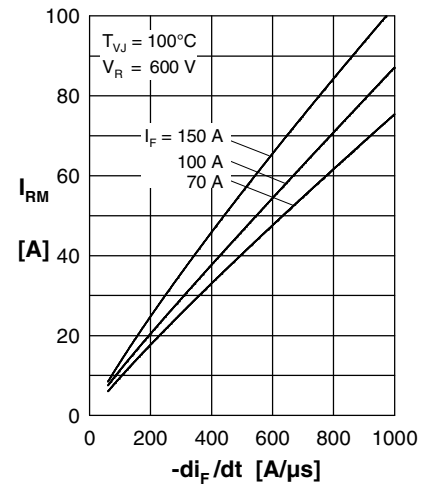
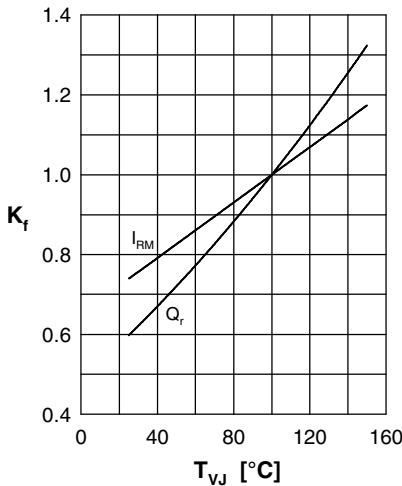
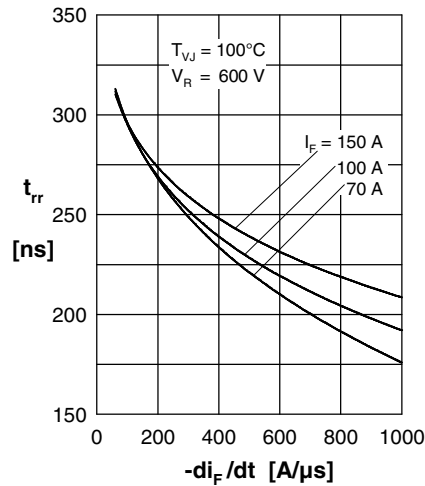
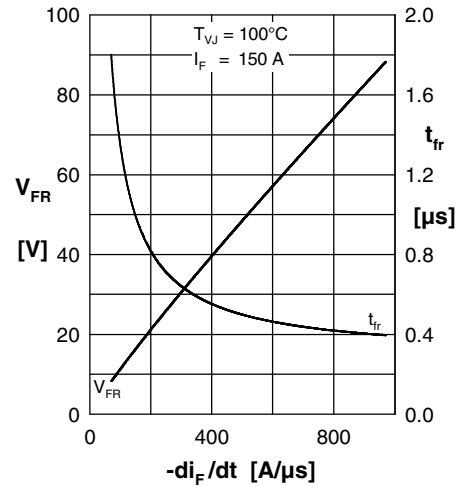
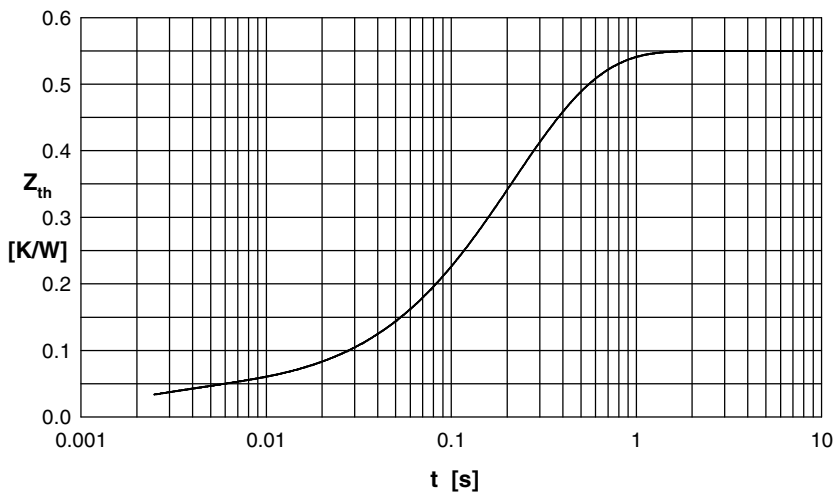
**Curves**

 Fig. 1 Typ. forward current  $I_F$  vs. 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 Typ. dynamic parameters  $Q_r$ ,  $I_{RM}$  vs. 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 Typ. transient thermal impedance junction to heatsink

 Constants for  $Z_{thJS}$  calculation:

i	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.037	0.002
2	0.138	0.134
3	0.093	0.250
4	0.282	0.274