

FRED Module

$$V_{RRM} = 1200 \text{ V}$$

$$I_{FAV} = 75 \text{ A}$$

$$t_{rr} = 230 \text{ ns}$$

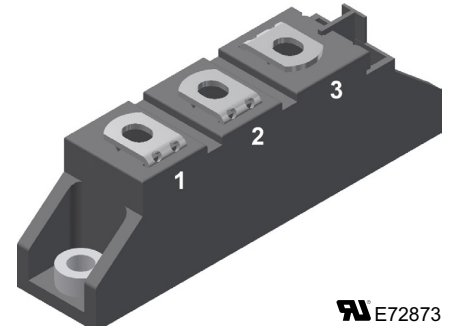
Fast Recovery Epitaxial Diode

Part number

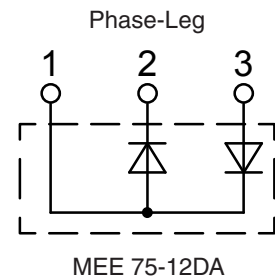
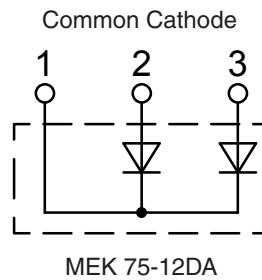
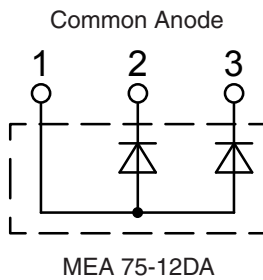
MEA 75-12DA

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

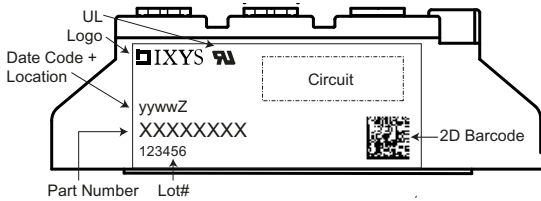
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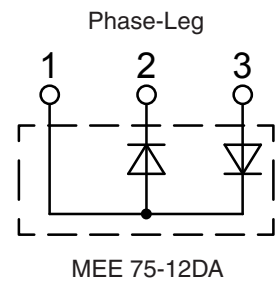
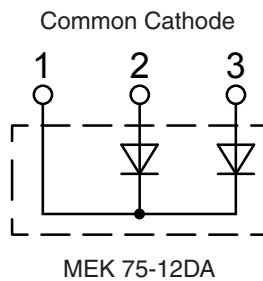
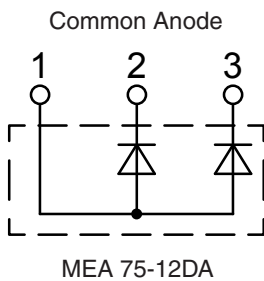
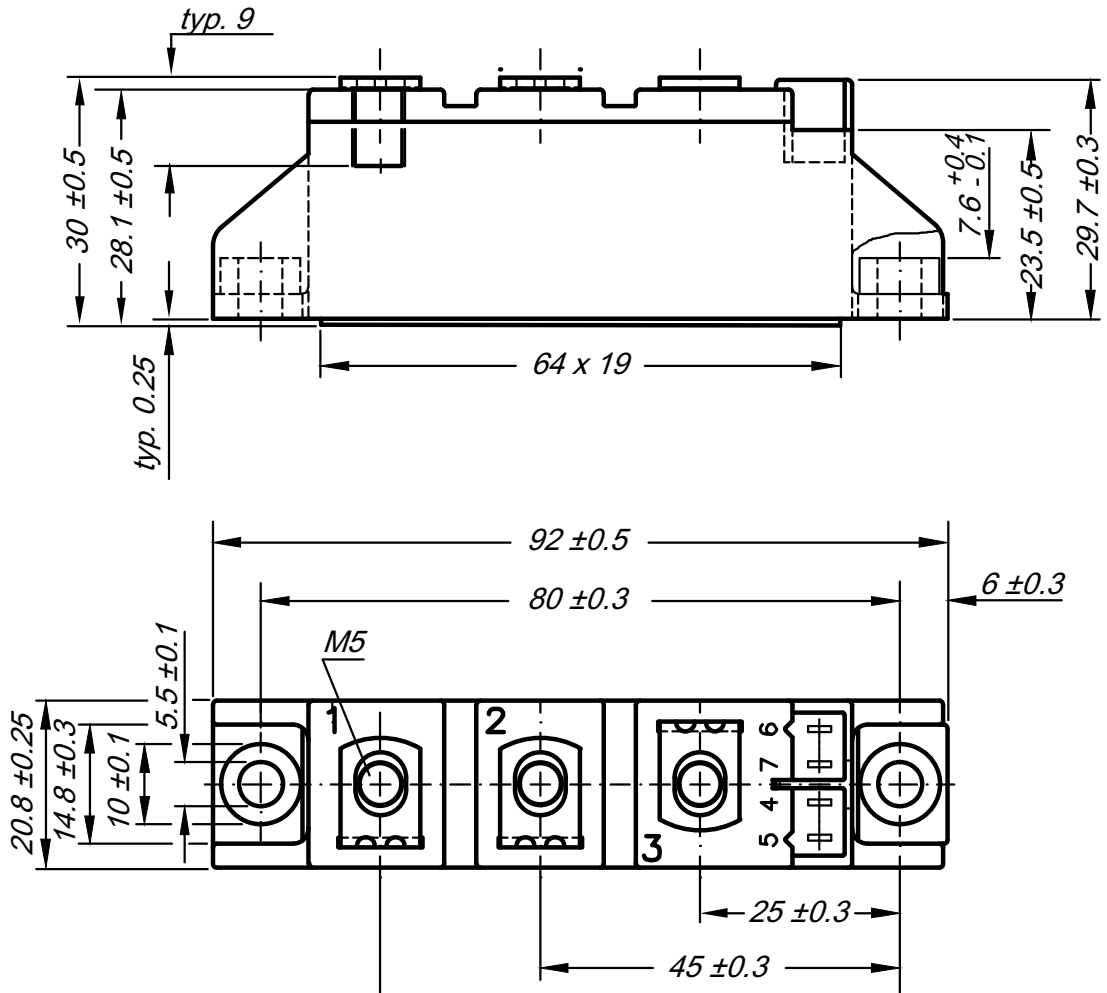
Diode				Ratings		
Symbol	Definitions	Conditions	min.	typ.	max.	
V_{RSM}	max. non-repetitive reverse blocking voltage		$T_{VJ} = 25^{\circ}C$		1200	V
V_{RRM}	max. repetitive reverse blocking voltage		$T_{VJ} = 25^{\circ}C$		1200	V
I_R	reverse current	$V_R = V_{RRM}$ $V_R = 0.8 \cdot V_{RRM}$ $V_R = 0.8 \cdot V_{RRM}$	$T_{VJ} = 25^{\circ}C$		2	mA
			$T_{VJ} = 25^{\circ}C$		0.5	mA
			$T_{VJ} = 125^{\circ}C$		34	mA
V_F	forward voltage	$I_F = 100 A$ $I_F = 300 A$	$T_{VJ} = 25^{\circ}C$		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 Ω
R_{thJC}	thermal resistance junction to case			0.10	0.45	K/W
R_{thCH}	thermal resistance junction to heatsink					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 ² s
					7100	A ² s
			$T_{VJ} = 150^{\circ}C$		5800	A ² s
					5700	A ² s
t_{rr}	max. reverse recovery current	$I_F = 70 A; V_R = 600 V$	$T_{VJ} = 25^{\circ}C$	140	200	ns
			$T_{VJ} = 100^{\circ}C$	230	300	ns
I_{RM}	reverse recovery time	-di/dt = 400 A/ μ s; L \leq 0.05 μ H	$T_{VJ} = 25^{\circ}C$	25	30	A
			$T_{VJ} = 100^{\circ}C$	33	40	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
Weight					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


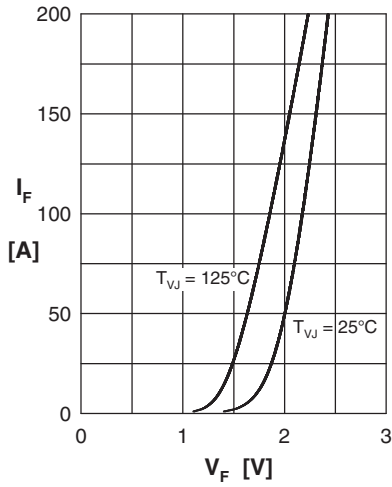
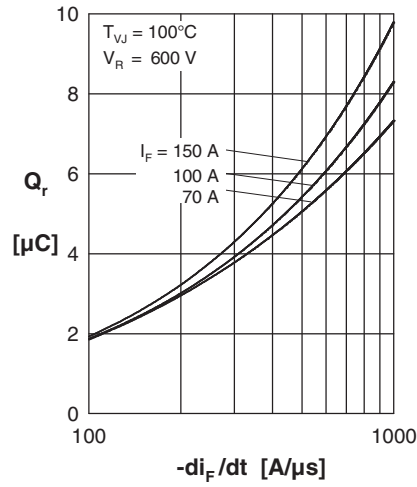
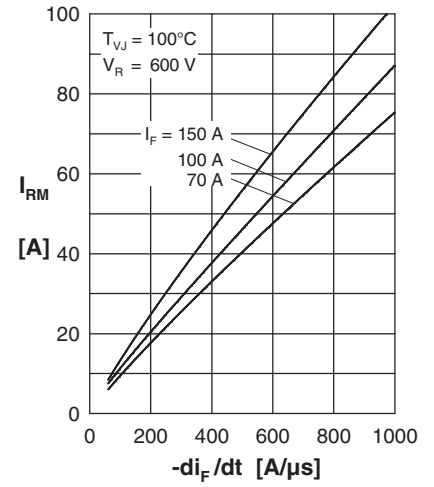
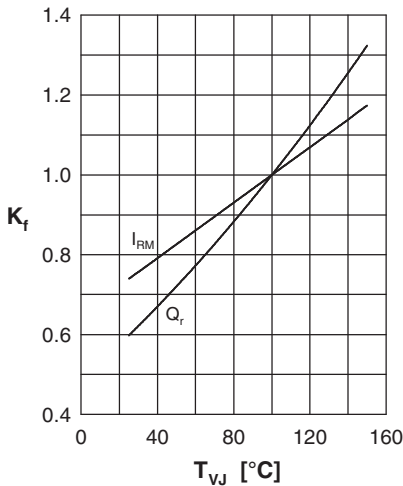
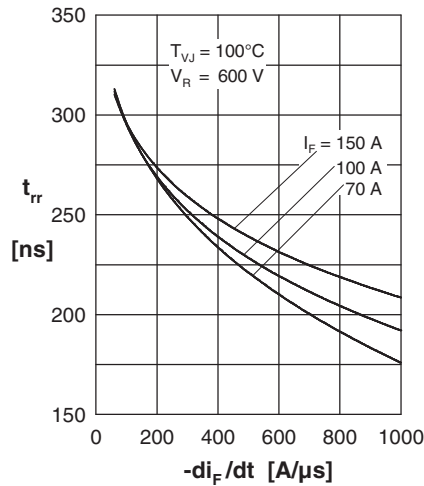
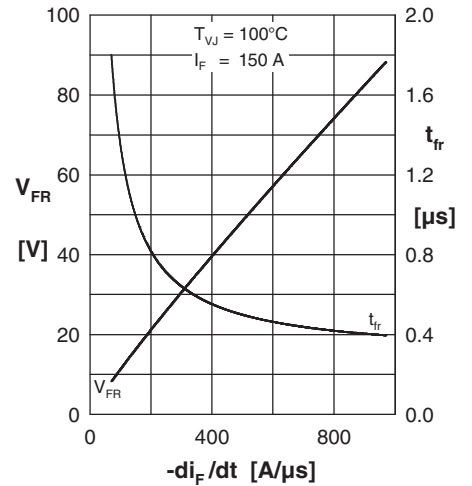
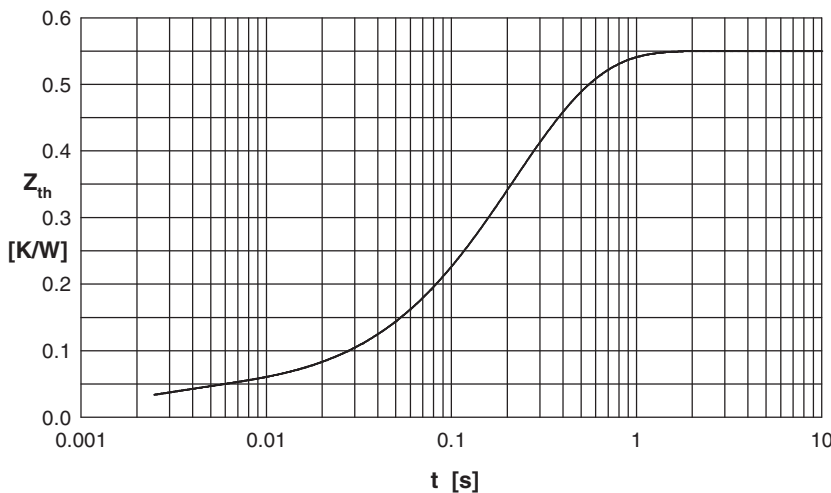
Curves

 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