

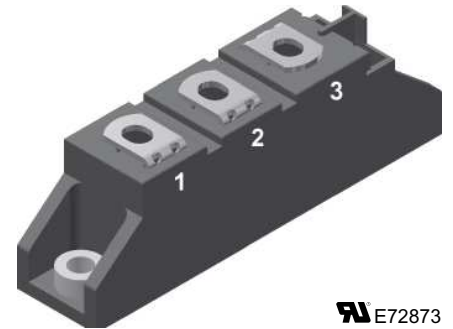
FRED Module

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

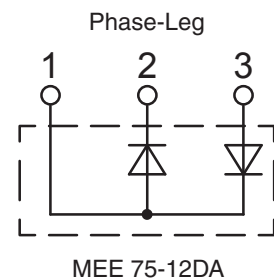
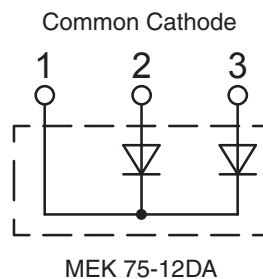
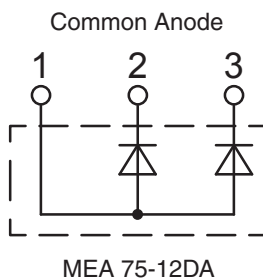
Fast Recovery Epitaxial Diode

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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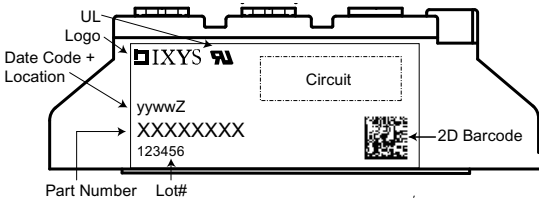


| Diode | | | | Ratings | | | |
|-------------|--|--|-------------------------|---------|------|------------------|-----|
| Symbol | Definitions | Conditions | min. | typ. | max. | | |
| V_{RSM} | max. non-repetitive reverse blocking voltage | | $T_{VJ} = 25^{\circ}C$ | | 1200 | V | |
| V_{RRM} | max. 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 | $I_F = 100 A$ $I_F = 300 A$ | $T_{VJ} = 25^{\circ}C$ | | 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 | $I_F = 70 A; V_R = 600 V$ -di/dt = 400 A/ μ s; L \leq 0.05 μ H | $T_{VJ} = 25^{\circ}C$ | | 140 | 200 | ns |
| | | | $T_{VJ} = 100^{\circ}C$ | | 230 | 300 | ns |
| I_{RM} | reverse recovery time | | $T_{VJ} = 25^{\circ}C$ | | 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

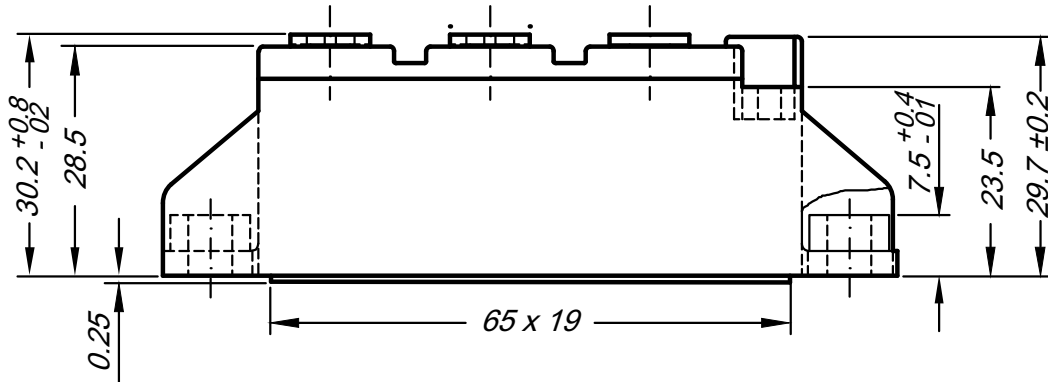


| Package TO-240AA | | | Ratings | | | |
|------------------|--|----------------------|-------------------------------------|------|------|----|
| Symbol | Definitions | Conditions | min. | typ. | max. | |
| I_{RMS} | RMS current | per terminal | | | 200 | A |
| T_{VJ} | virtual junction temperature | | -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 |

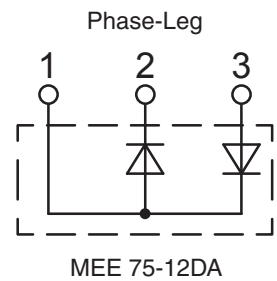
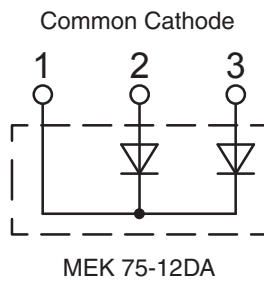
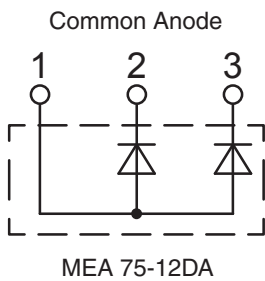
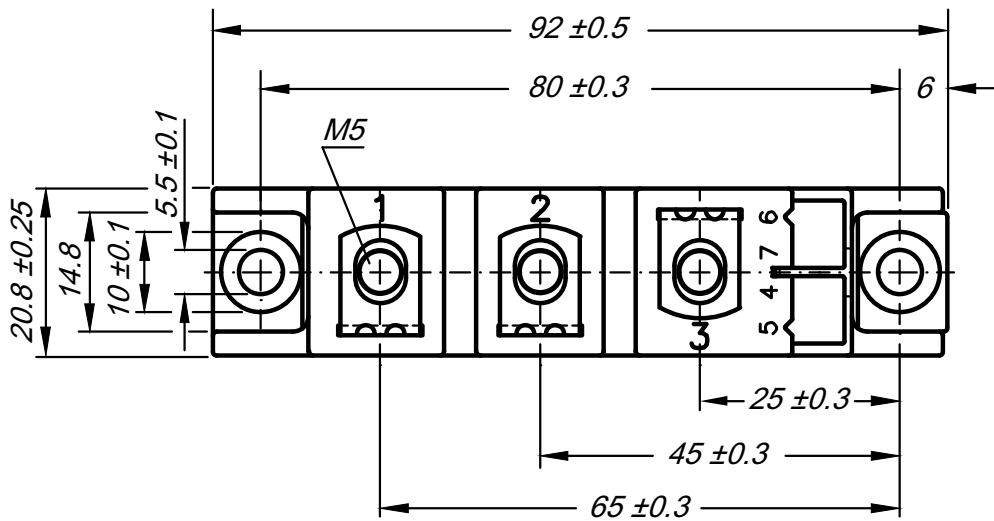


| Ordering | Part Name | Marking on Product | Delivering Mode | Base Qty | Ordering Code |
|----------|-------------|--------------------|-----------------|----------|---------------|
| Standard | MEA 75-12DA | MEA 75-12DA | Box | 36 | 469130 |
| Standard | MEK 75-12DA | MEK 75-12DA | Box | 36 | 468541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

Outlines TO-240AA



General tolerance: DIN ISO 2768 class „c“



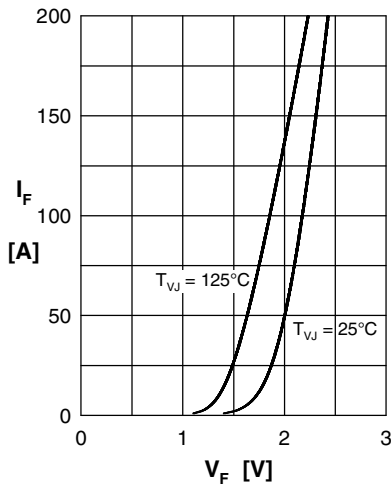
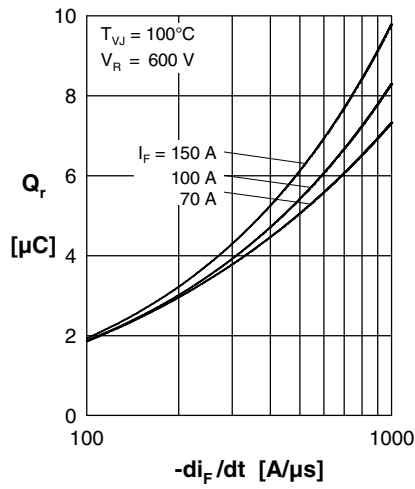
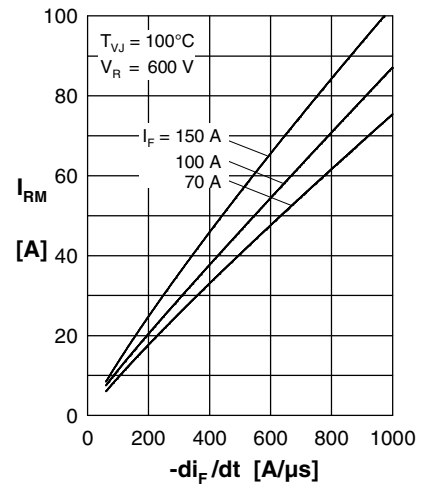
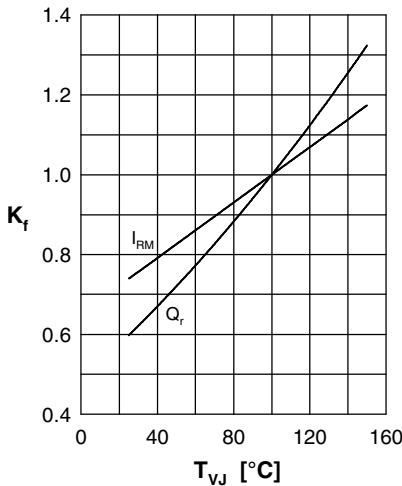
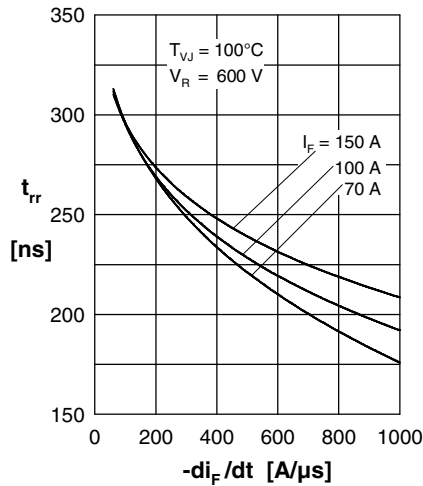
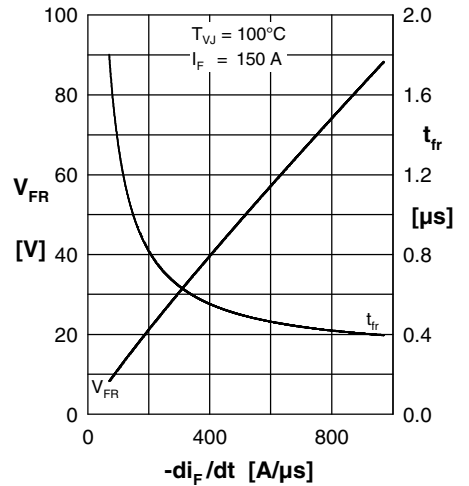
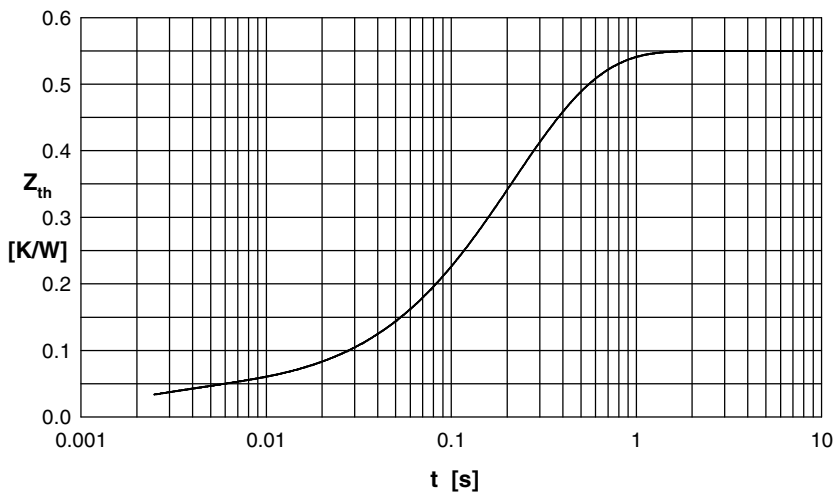
Curves

 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 |