

HiPerFRED Module

$$V_{RRM} = 400\text{ V}$$

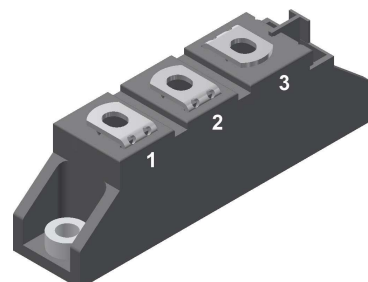
$$I_{FAV} = 2 \times 150\text{ A}$$

$$t_{rr} = 40\text{ ns}$$

Common Cathode

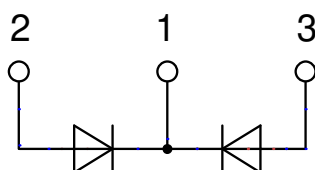
Part number

MEK150-04DA



Backside: isolated

 E72873



Features / Advantages:

- Planar passivated chips
- Low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low I_{rm} -values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I_{rm} reduces:
 - Power dissipation within the diode
 - Turn-on loss in the commutating switch

Applications:

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode
- Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

Package: TO-240AA

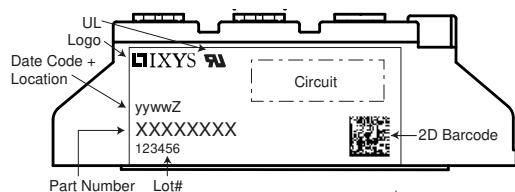
- Isolation Voltage: 4800 V~
- Industry standard outline
- RoHS compliant
- Height: 30 mm
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

Disclaimer Notice

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Fast Diode				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				400	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				400	V
I_R	reverse current, drain current	$V_R = 400\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			2	mA
		$V_R = 400\text{ V}$	$T_{VJ} = 150^{\circ}\text{C}$			8,5	mA
V_F	forward voltage drop	$I_F = 150\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$			1,35	V
		$I_F = 300\text{ A}$				1,63	V
		$I_F = 150\text{ A}$	$T_{VJ} = 150^{\circ}\text{C}$			1,09	V
		$I_F = 300\text{ A}$				1,41	V
I_{FAV}	average forward current	$T_C = 100^{\circ}\text{C}$ rectangular $d = 0.5$	$T_{VJ} = 175^{\circ}\text{C}$			150	A
V_{F0}	threshold voltage	} for power loss calculation only		$T_{VJ} = 175^{\circ}\text{C}$		0,73	V
r_F	slope resistance					2	mΩ
R_{thJC}	thermal resistance junction to case					0,35	K/W
R_{thCH}	thermal resistance case to heatsink				0,08		K/W
P_{tot}	total power dissipation	$T_C = 25^{\circ}\text{C}$				430	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$	$T_{VJ} = 45^{\circ}\text{C}$			1,20	kA
C_J	junction capacitance	$V_R = 400\text{ V}$ $f = 1\text{ MHz}$	$T_{VJ} = 25^{\circ}\text{C}$		220		pF
I_{RM}	max. reverse recovery current	$I_F = 200\text{ A}; V_R = 200\text{ V}$ $-di_F/dt = 600\text{ A}/\mu\text{s}$		$T_{VJ} = 25^{\circ}\text{C}$		30	A
				$T_{VJ} = 100^{\circ}\text{C}$		60	A
t_{rr}	reverse recovery time			$T_{VJ} = 25^{\circ}\text{C}$		40	ns
				$T_{VJ} = 100^{\circ}\text{C}$		90	ns

Package TO-240AA				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal				200	A
T_{VJ}	virtual junction temperature			-40		175	°C
T_{op}	operation temperature			-40		150	°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		4800			V
		t = 1 minute	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	4000			V

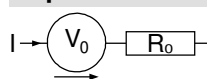


Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MEK150-04DA	MEK150-04DA	Box	36	480086

Equivalent Circuits for Simulation

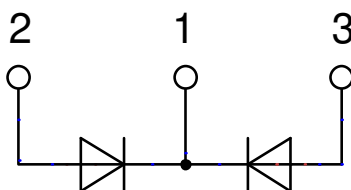
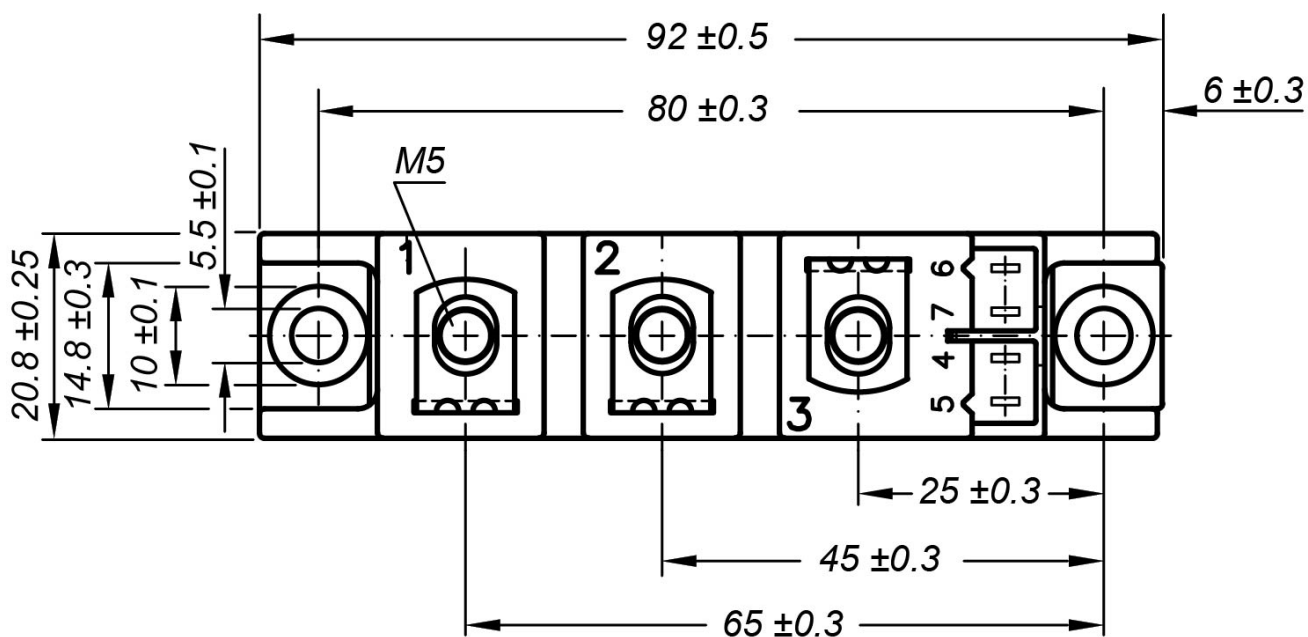
* on die level

$T_{VJ} = 150^{\circ}\text{C}$

		Fast Diode	
$V_{0\ max}$	threshold voltage	0,73	V
$R_{0\ max}$	slope resistance *	1,3	mΩ

Technical drawing of a rectangular box with dimensions and tolerances:

- Overall height: 30 ± 0.5
- Internal height: 28.1 ± 0.5
- Top flange thickness: $typ. 9$
- Bottom flange thickness: $typ. 0.25$
- Length: 64×19
- Right side height: 23.5 ± 0.5
- Right side internal height: $7.6^{+0.4}_{-0.1}$
- Right side total height: 29.7 ± 0.3



Fast Diode

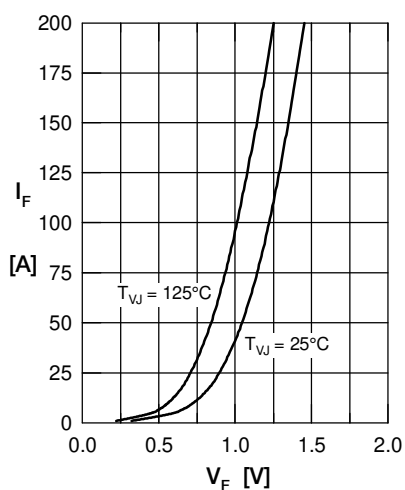


Fig. 1 Forward current I_F versus voltage drop V_F per leg