

HiPerFRED Module

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

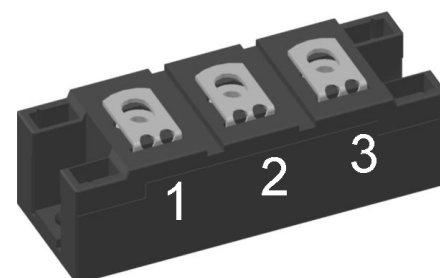
$$I_{FAV} = 2 \times 300 \text{ A}$$

$$t_{rr} = 60 \text{ ns}$$

Common Cathode

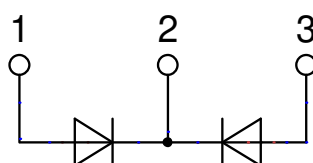
Part number

MEK600-04DA



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: Y4

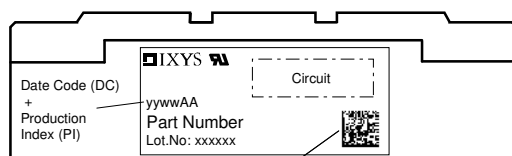
- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Height: 30 mm
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

Disclaimer Notice

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

Fast Diode				Ratings				
Symbol	Definition	Conditions		min.	typ.	max.	Unit	
V _{RSM}	max. non-repetitive reverse blocking voltage	T _{VJ} = 25°C				400	V	
V _{RRM}	max. repetitive reverse blocking voltage	T _{VJ} = 25°C				400	V	
I _R	reverse current, drain current	V _R = 400 V	T _{VJ} = 25°C			6	mA	
		V _R = 400 V	T _{VJ} = 125°C			18	mA	
V _F	forward voltage drop	I _F = 300 A	T _{VJ} = 25°C			1.36	V	
		I _F = 600 A				1.79	V	
		I _F = 300 A	T _{VJ} = 125°C			1.20	V	
		I _F = 600 A				1.68	V	
I _{FAV}	average forward current	T _C = 95°C rectangular d = 0.5	T _{VJ} = 150°C			300	A	
V _{F0}	threshold voltage	} for power loss calculation only		T _{VJ} = 150°C		0.74	V	
r _F	slope resistance					1.42	mΩ	
R _{thJC}	thermal resistance junction to case					0.11	K/W	
R _{thCH}	thermal resistance case to heatsink				0.08		K/W	
P _{tot}	total power dissipation	T _C = 25°C				1100	W	
I _{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine; V _R = 0 V		T _{VJ} = 45°C		3.00	kA	
C _J	junction capacitance	V _R = 200 V f = 1 MHz		T _{VJ} = 25°C	935		pF	
I _{RM}	max. reverse recovery current	} I _F = 300 A; V _R = 200 V -di _F /dt = 400 A/μs		T _{VJ} = 25 °C	29		A	
				T _{VJ} = 125 °C	58		A	
t _{rr}	reverse recovery time			T _{VJ} = 25 °C	60		ns	
				T _{VJ} = 125 °C	255		ns	

Package Y4				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I _{RMS}	RMS current	per terminal				300	A
T _{VJ}	virtual junction temperature			-40		150	°C
T _{op}	operation temperature			-40		125	°C
T _{stg}	storage temperature			-40		125	°C
Weight					150		g
M _D	mounting torque			2.25		2.75	Nm
M _T	terminal torque			4.5		5.5	Nm
d _{Spp/App}	creepage distance on surface striking distance through air	terminal to terminal	14.0	10.0			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} ≤ 1 mA	3600			V
		t = 1 minute		3000			V



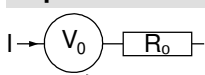
Data Matrix: part no. (1-19), DC + PI (20-25), lot.no.# (26-31), blank (32), serial no.# (33-36)

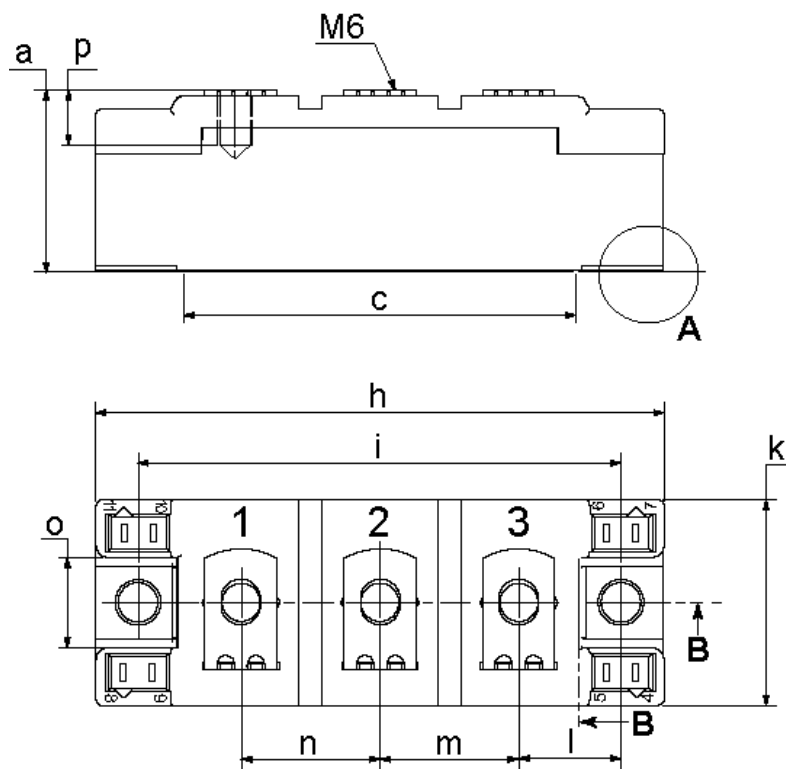
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MEK600-04DA	MEK600-04DA	Box	6	485365

Equivalent Circuits for Simulation

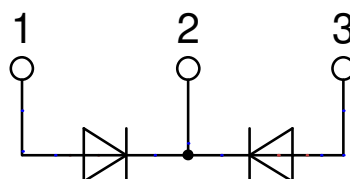
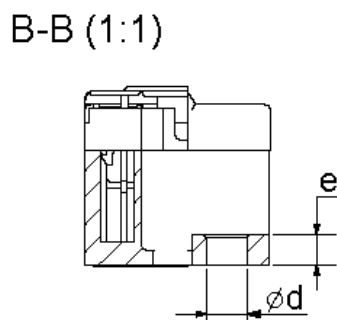
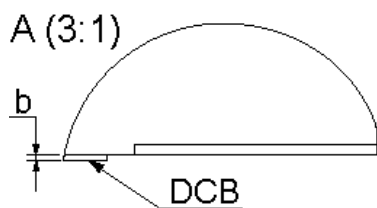
* on die level

$T_{VJ} = 150\text{ °C}$

		Fast Diode	
$V_{0\text{ max}}$	threshold voltage	0.74	V
$R_{0\text{ max}}$	slope resistance *	0.17	mΩ

Outlines Y4


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	



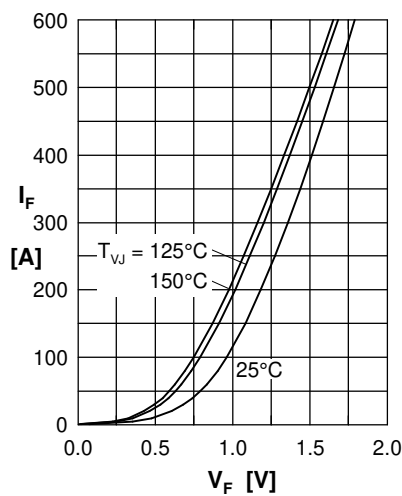
Fast Diode


Fig. 1 Forward current
 I_F vs. V_F

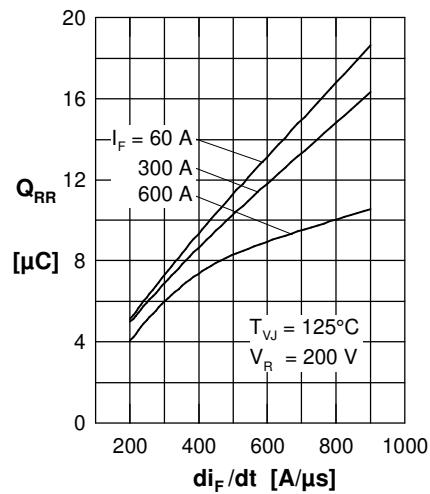


Fig. 2 Typ. reverse recovery charge
 Q_{RR} versus di_F/dt

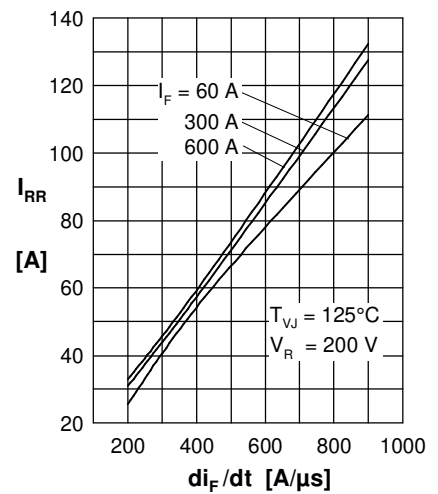


Fig. 3 Typ. reverse recovery current
 I_{RR} versus di_F/dt

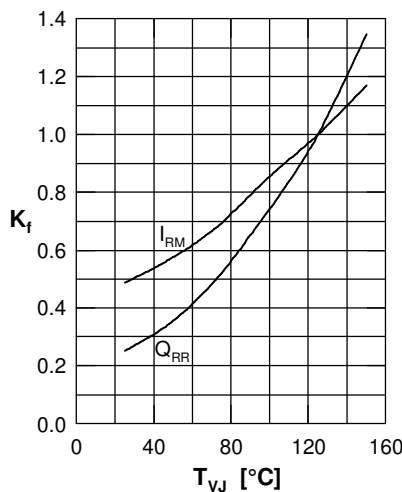


Fig. 4 Typ. dynamic parameters
 Q_{RR} , I_{RM} versus T_{VJ}

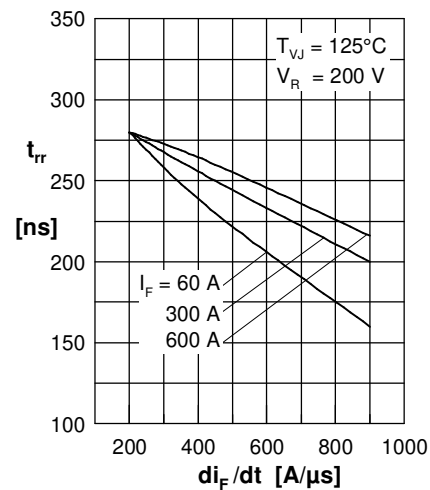


Fig. 5 Typ. reverse recovery time
 t_{rr} versus di_F/dt

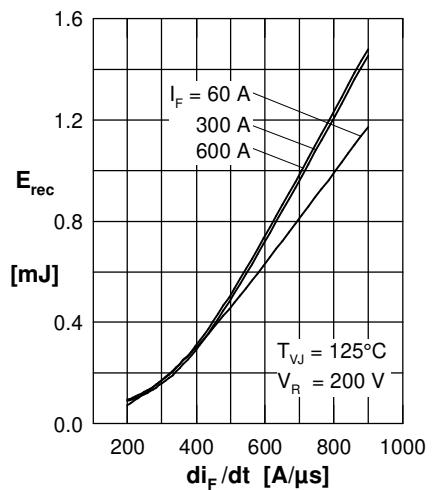


Fig. 7 Typ. recovery energy
 E_{rec} versus di_F/dt

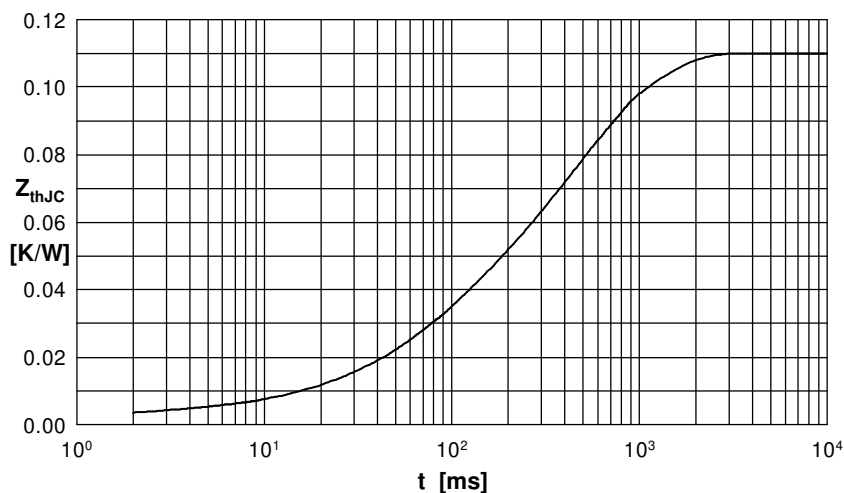


Fig. 8 Transient thermal impedance junction to case

R_{thi} [K/W]	t_i [s]
0.0030	0.001
0.0210	0.070
0.0390	0.380
0.0470	0.610