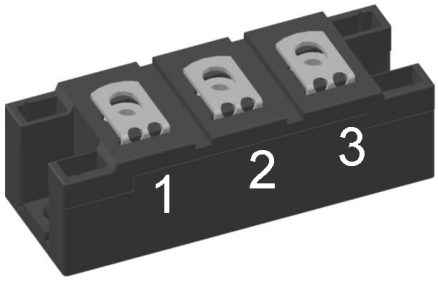
HiPerFRED Module

V_{RRM} = 400 V
I_{FAV} = 2x 300 A
t_{rr} = 60 ns

Common Cathode

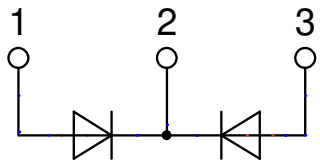
Part number

MEK600-04DA



Backside: isolated

E72873



Features / Advantages:

- Planar passivated chips
- Low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low Irm-values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low Irm 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)

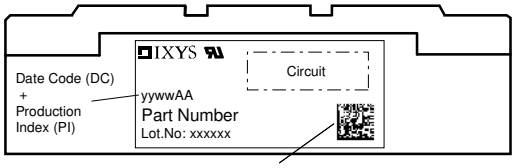
Package: Y4

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

Fast Diode

Symbol	Definition	Conditions		Ratings 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	T_{VJ} = 150°C			300	A
		rectangular d = 0.5					
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*		T_{VJ} = 25 °C		29		A
		I_F = 300 A; V_R = 200 V	T_{VJ} = 125 °C		58		A
t_{rr}	*reverse recovery time*	$-di_F/dt$ = 400 A/µs	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

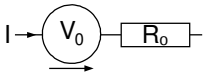


Data Matrix: *part no.* (1-19), DC + *PI* (20-25), *lot.no.#* (26-31), *blank* (32), *serial no.#* (33-36)

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

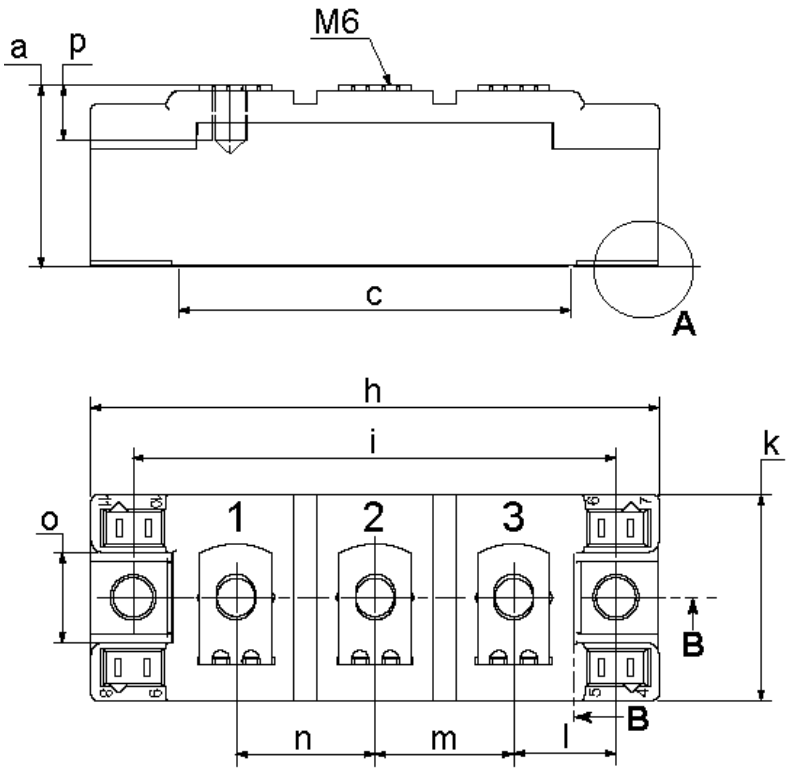
Equivalent Circuits for Simulation

** on die level* T_{VJ} = 150 °C

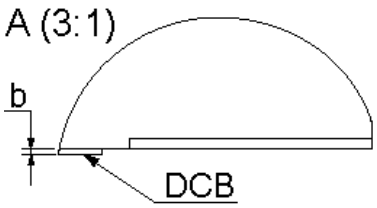


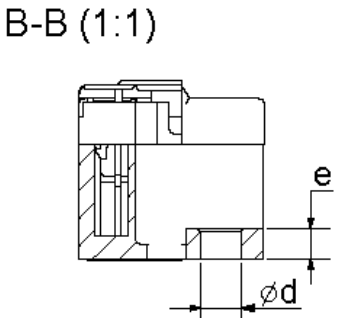
		Fast Diode	
$V_{0\,max}$	*threshold voltage*	0.74	V
$R_{0\,max}$	*slope resistance **	0.17	mΩ

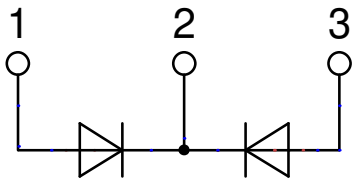
Outlines Y4



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

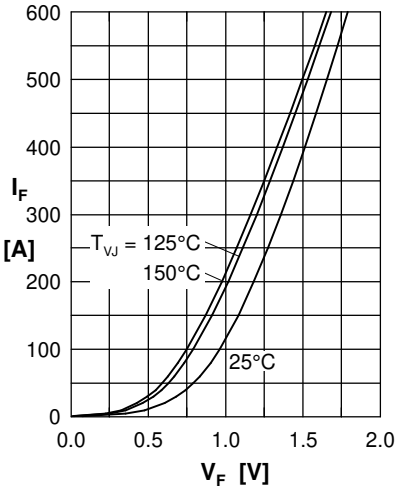


Fig. 1 Forward current I_F vs. V_F

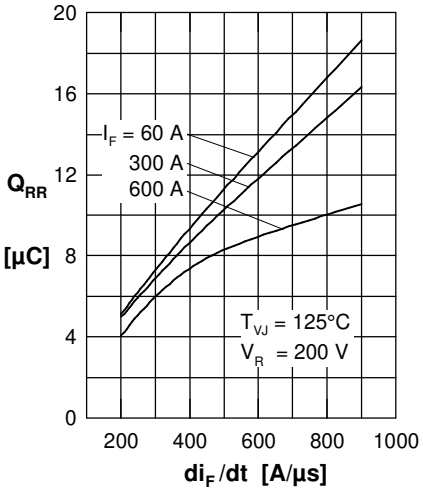


Fig. 2 Typ. reverse recovery charge Q_{RR} versus di_F/dt

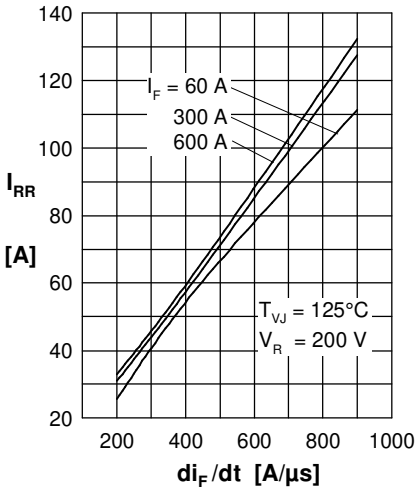


Fig. 3 Typ. reverse recovery current I_{RR} versus di_F/dt

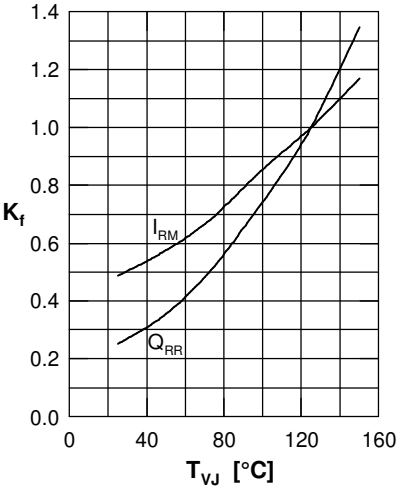


Fig. 4 Typ. dynamic parameters Q_{RR}, I_{RM} versus T_{VJ}

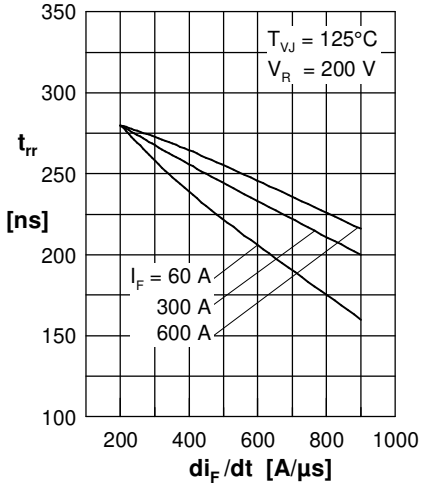


Fig. 5 Typ. reverse recovery time t_{rr} versus di_F/dt

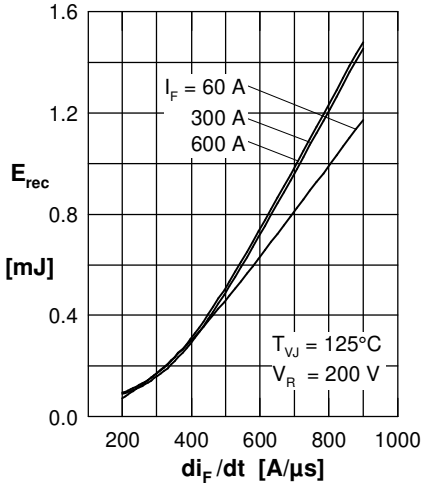


Fig. 7 Typ. recovery energy E_{rec} versus di_F/dt

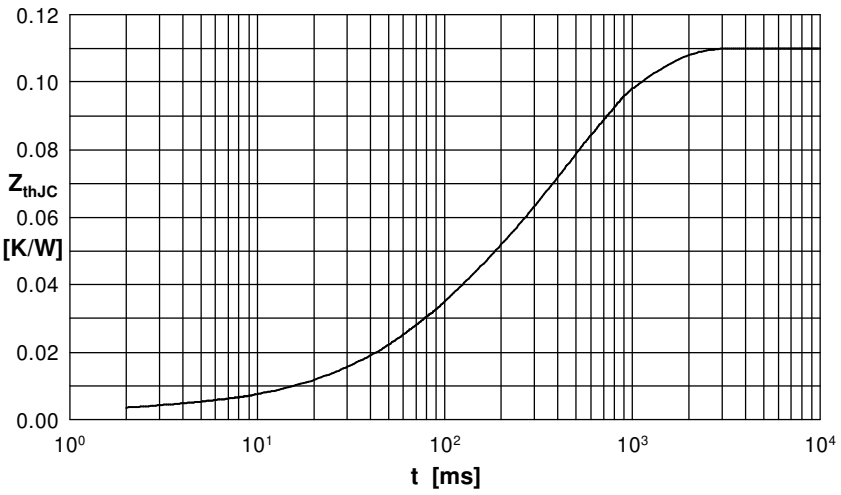


Fig. 8 Transient thermal impedance junction to case

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