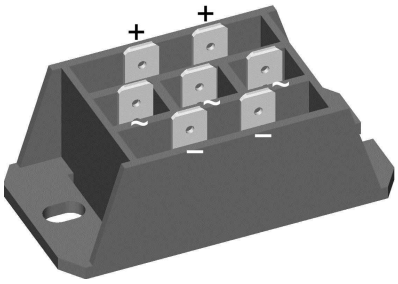
Standard Rectifier Module

3~ Rectifier		
V_{RRM}	=	1200 V
I_{DAV}	=	45 A
I_{FSM}	=	300 A

3~ Rectifier Bridge

Part number

VUO30-12NO3



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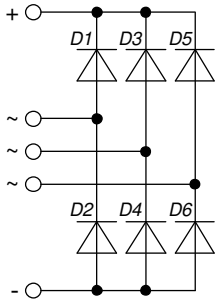


Features / Advantages:

- Package with DCB ceramic
- Improved temperature and power cycling
- Planar passivated chips
- Very low forward voltage drop
- Very low leakage current

Applications:

- Diode for main rectification
- For three phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

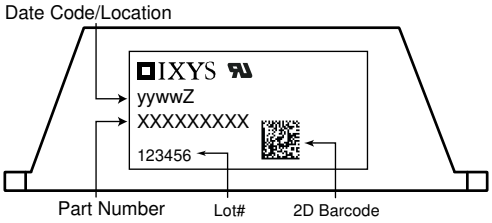
Package: FO-F

- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- ¼“ fast-on terminals
- Easy to mount with two screws
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

Rectifier

Symbol	Definition	Conditions		Ratings min.	typ.	max.	Unit
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1300	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1200	V
I_R	*reverse current*	V_R = 1200 V	T_{VJ} = 25°C			40	µA
		V_R = 1200 V	T_{VJ} = 150°C			1.5	mA
V_F	*forward voltage drop*	I_F = 15 A	T_{VJ} = 25°C			1.10	V
		I_F = 45 A				1.38	V
		I_F = 15 A	T_{VJ} = 125°C			1.01	V
		I_F = 45 A				1.38	V
I_{DAV}	*bridge output current*	T_C = 110°C	T_{VJ} = 150°C			45	A
		rectangular d = ⅓					
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 150°C			0.80	V
r_F	*slope resistance* }					12.9	mΩ
R_{thJC}	*thermal resistance junction to case*					2	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.4		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			60	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			300	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			325	A
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			255	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			275	A
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			450	A^2s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			440	A^2s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			325	A^2s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			315	A^2s
C_J	*junction capacitance*	V_R = 400 V; f = 1 MHz	T_{VJ} = 25°C		10		pF

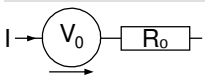
Package FO-F					Ratings			
Symbol	**Definition**	**Conditions**			**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal					100	A
T_{VJ}	*virtual junction temperature*				-40		150	°C
T_{op}	*operation temperature*				-40		125	°C
T_{stg}	*storage temperature*				-40		125	°C
Weight						45		g
M_D	*mounting torque*				2		2.5	Nm
$d_{Spp/App}$	*creepage distance on surface | striking distance through air*		*terminal to terminal*	18.0	6.0			mm
$d_{Spb/Apb}$			*terminal to backside*	26.0	20.0			mm
V_{ISOL}	*isolation voltage*	t = 1 second	50/60 Hz, RMS; I_{ISOL} ≤ 1 mA		3600			V
		t = 1 minute			3000			V



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO30-12NO3	VUO30-12NO3	Box	10	417203

Equivalent Circuits for Simulation

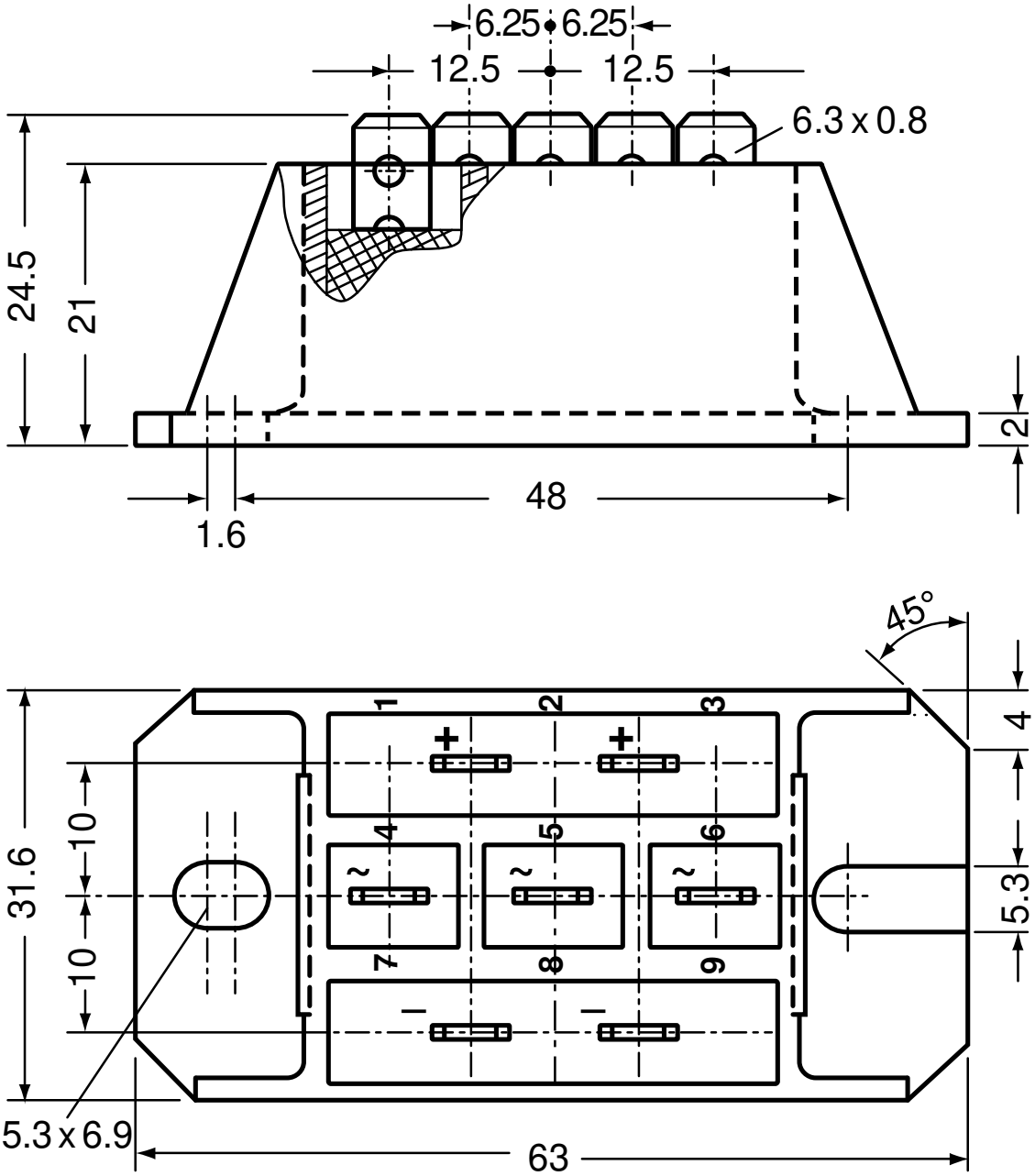
** on die level* T_{VJ} = 150°C

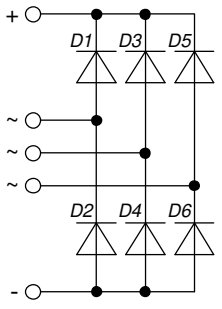


Rectifier

$V_{0\,max}$	*threshold voltage*	0.8	V
$R_{0\,max}$	*slope resistance **	11.7	mΩ

Outlines FO-F





Rectifier

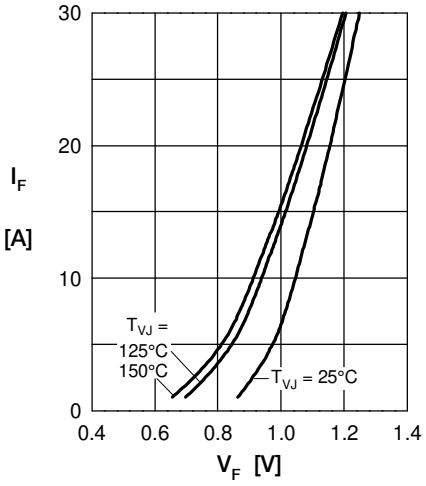


Fig. 1 Forward current vs. voltage drop per diode

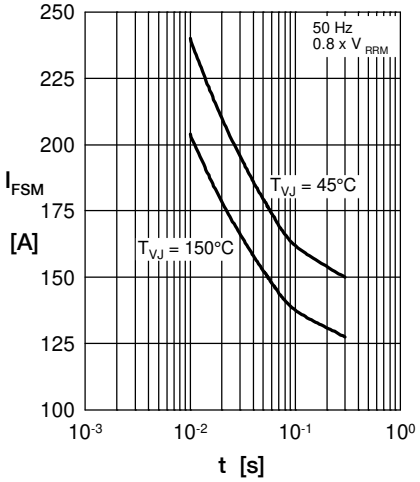


Fig. 2 Surge overload current vs. time per diode

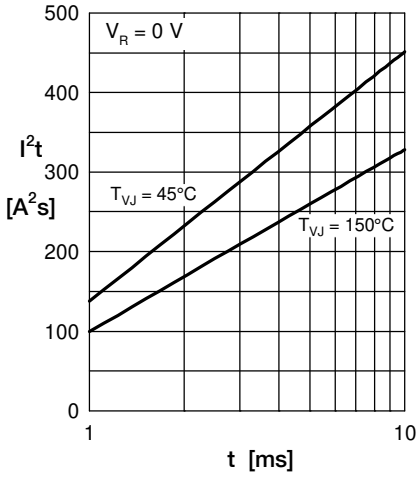


Fig. 3 I^2t vs. time per diode

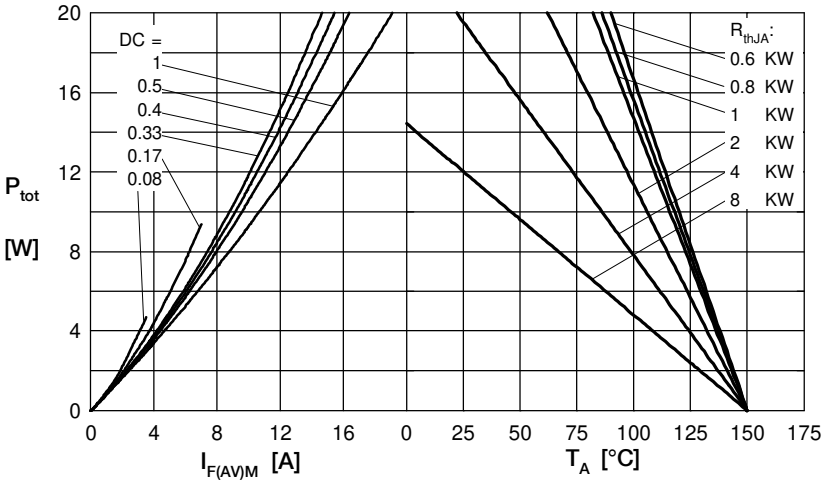


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

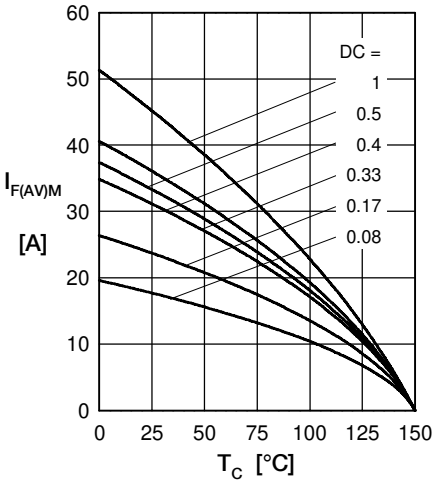


Fig. 5 Max. forward current vs. case temperature per diode

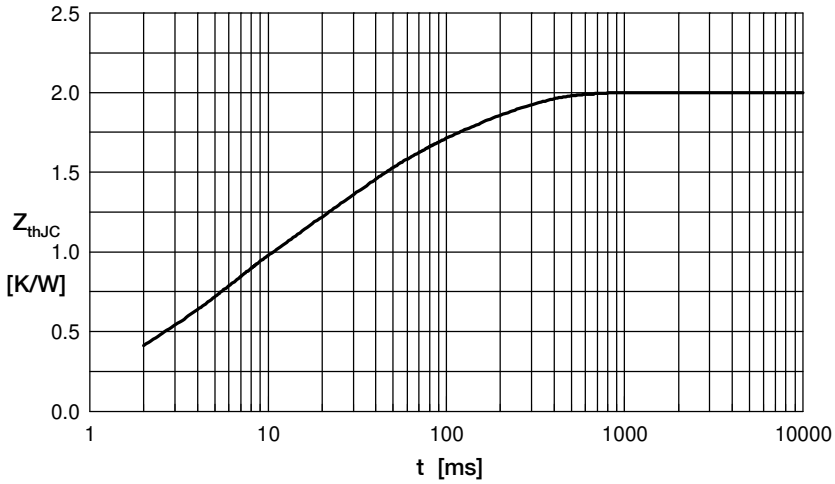


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.0607	0.00040
2	0.2030	0.00256
3	0.5005	0.00450
4	0.7030	0.02420
5	0.5328	0.15000