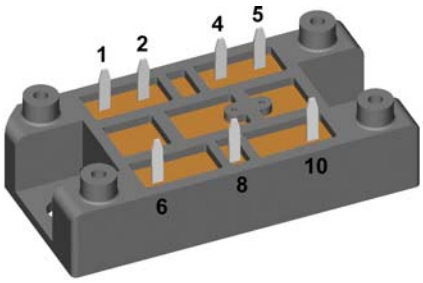
Standard Rectifier Module

3~ Rectifier		
V_{RRM}	=	1800 V
I_{DAV}	=	30 A
I_{FSM}	=	150 A

3~ Rectifier Bridge

Part number

VUO22-18NO1



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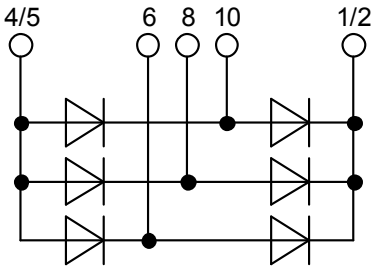


Features / Advantages:

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

Applications:

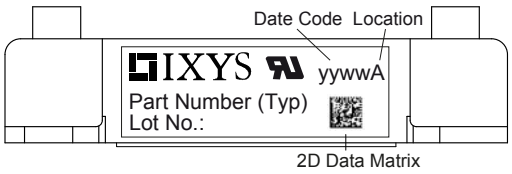
- Diode for main rectification
- For three phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Package: V1-A-Pack

- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Height: 17 mm
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1900	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1800	V
I_R	*reverse current*	V_R = 1800 V	T_{VJ} = 25°C			10	µA
		V_R = 1800 V	T_{VJ} = 150°C			0.7	mA
V_F	*forward voltage drop*	I_F = 10 A	T_{VJ} = 25°C			1.19	V
		I_F = 30 A				1.59	V
		I_F = 10 A	T_{VJ} = 125°C			1.13	V
		I_F = 30 A				1.66	V
I_{DAV}	*bridge output current*	T_C = 110°C	T_{VJ} = 150°C			30	A
		rectangular d = ⅓					
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 150°C			0.84	V
r_F	*slope resistance* }					28	mΩ
R_{thJC}	*thermal resistance junction to case*					2.5	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.4		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			50	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			150	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			160	A
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			130	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			140	A
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			115	A²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			105	A²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			85	A²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			82	A²s
C_J	*junction capacitance*	V_R = 400 V; f = 1 MHz	T_{VJ} = 25°C		4		pF

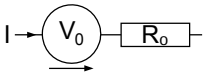
Package V1-A-Pack				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I_{RMS}	*RMS current*	per terminal				100	A
T_{stg}	*storage temperature*			-40		125	°C
T_{VJ}	*virtual junction temperature*			-40		150	°C
Weight					37		g
M_D	*mounting torque*			2		2.5	Nm
$d_{Spp/App}$	*creepage distance on surface | striking distance through air*		*terminal to terminal*	6.0			mm
$d_{Spb/Apb}$			*terminal to backside*	12.0			mm
V_{ISOL}	*isolation voltage*	t = 1 second	50/60 Hz, RMS; I_{ISOL} ≤ 1 mA	3600			V
		t = 1 minute		3000			V



Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO22-18NO1	VUO22-18NO1	Box	10	461105

Equivalent Circuits for Simulation

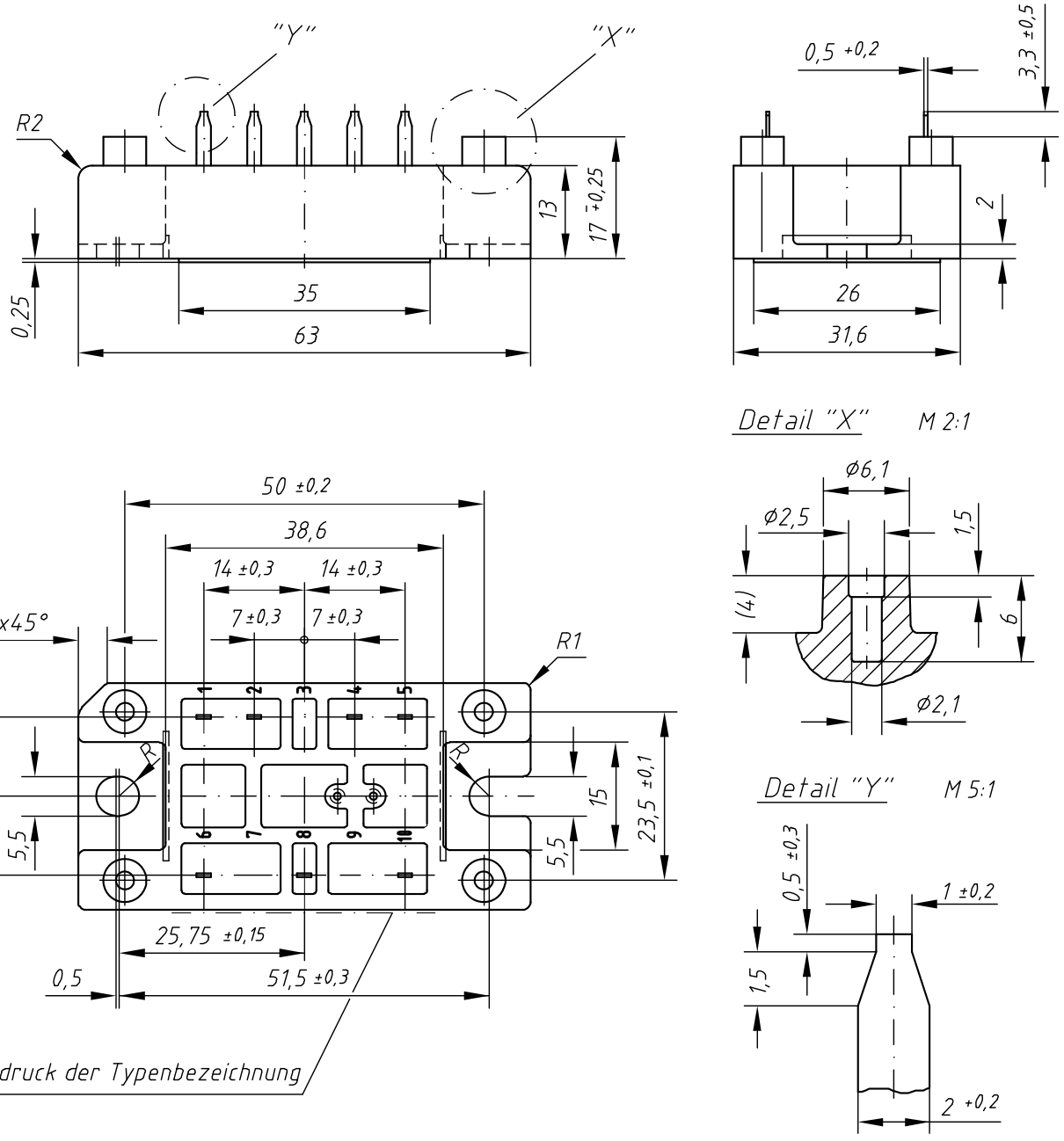
** on die level* T_{VJ} = 150 °C

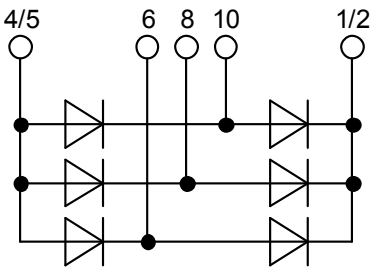


Rectifier

$V_{0\,max}$	*threshold voltage*	0.84	V
$R_{0\,max}$	*slope resistance **	27	mΩ

Outlines V1-A-Pack





Rectifier

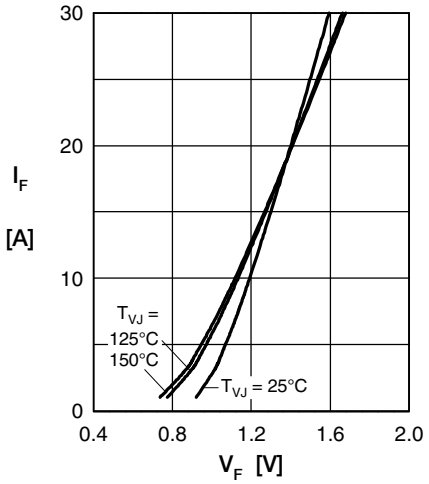


Fig. 1 Forward current vs. voltage drop per diode

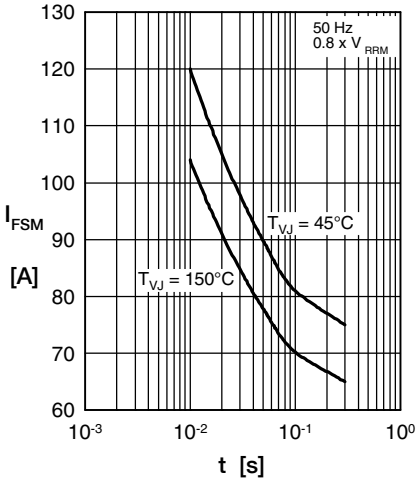


Fig. 2 Surge overload current vs. time per diode

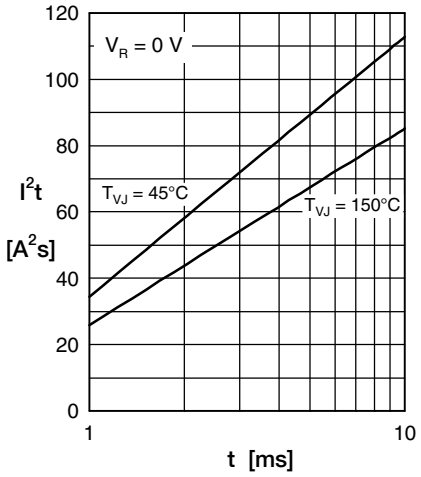


Fig. 3 I^2t vs. time per diode

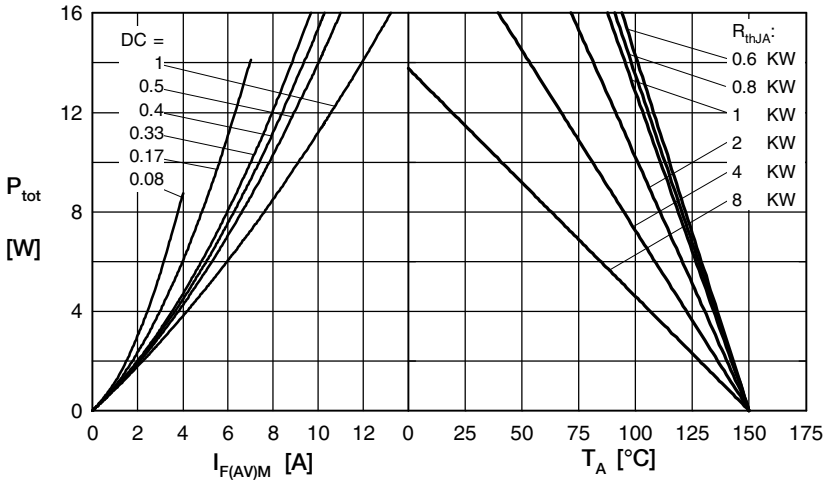


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

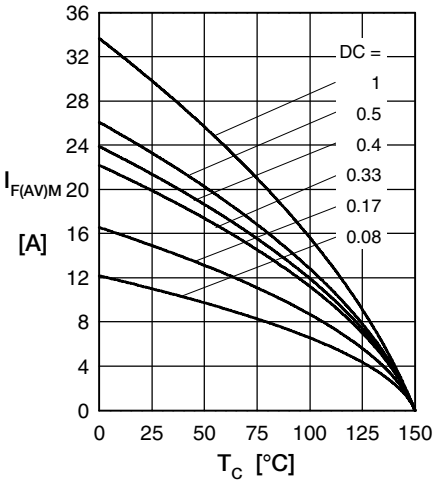


Fig. 5 Max. forward current vs. case temperature per diode

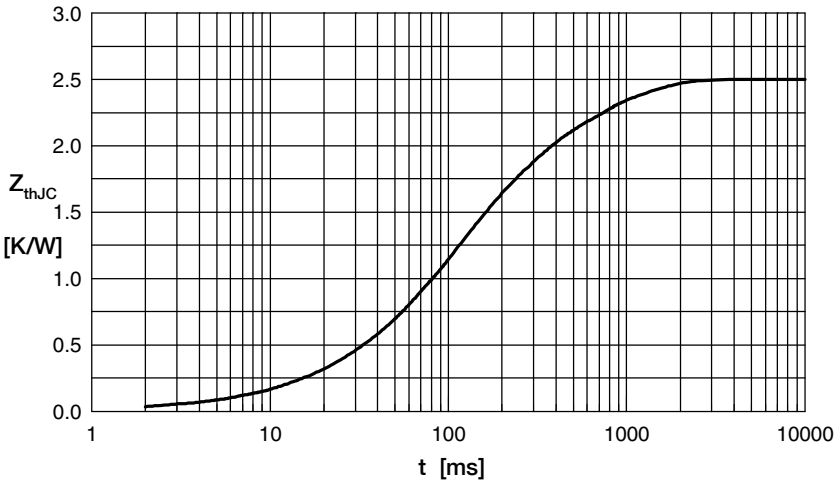


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	1.300	0.1015
2	0.300	0.1026
3	0.350	0.4919
4	0.550	0.6200