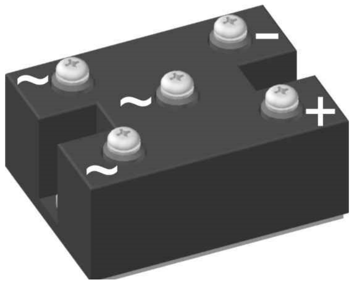
Standard Rectifier Module

3~ Rectifier		
V_{RRM}	=	1200 V
I_{DAV}	=	150 A
I_{FSM}	=	1800 A

3~ Rectifier Bridge

Part number

VUO125-12NO7



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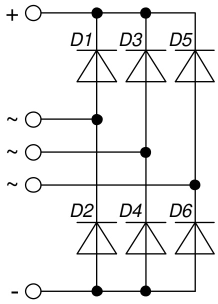

Features / Advantages:

- 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: PWS-C

- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- Easy to mount with two screws
- Base plate: Copper internally DCB isolated
- Advanced power cycling

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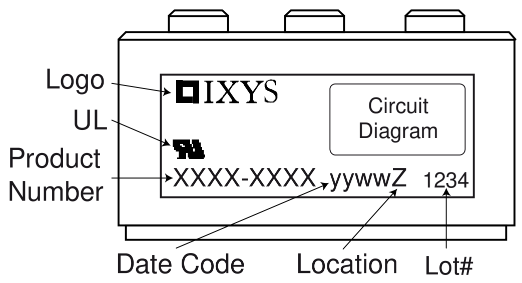
Rectifier

Symbol	Definition	Conditions		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			200	µA
		V_R = 1200 V	T_{VJ} = 150°C			2	mA
V_F	forward voltage drop	I_F = 50 A	T_{VJ} = 25°C			1.07	V
		I_F = 150 A				1.34	V
		I_F = 50 A	T_{VJ} = 125°C			0.97	V
		I_F = 150 A				1.31	V
I_{DAV}	bridge output current	T_C = 110°C rectangular d = ⅓	T_{VJ} = 150°C			150	A
V_{F0}	threshold voltage	for power loss calculation only	T_{VJ} = 150°C			0.76	V
r_F	slope resistance					3.6	mΩ
R_{thJC}	thermal resistance junction to case					0.6	K/W
R_{thCH}	thermal resistance case to heatsink				0.3		K/W
P_{tot}	total power dissipation		T_C = 25°C			205	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			1.80	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1.95	kA
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			1.53	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1.65	kA
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			16.2	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			15.7	kA²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			11.7	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			11.3	kA²s
C_J	junction capacitance	V_R = 400 V; f = 1 MHz	T_{VJ} = 25°C		58		pF

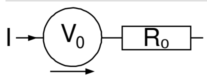
Package PWS-C				Ratings		
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal			150	A
T_{VJ}	*virtual junction temperature*		-40		150	°C
T_{op}	*operation temperature*		-40		125	°C
T_{stg}	*storage temperature*		-40		125	°C
Weight				250		g
M_D	*mounting torque*		4.25		5.75	Nm
M_T	*terminal torque*		4.25		5.75	Nm
$d_{Spp/App}$	*creepage distance on surface | striking distance through air*	*terminal to terminal*	26.0			mm
$d_{Spb/Apb}$		*terminal to backside*	14.0			mm
V_{ISOL}	*isolation voltage*	t = 1 second; 50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3000			V
		t = 1 minute	2500			V



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO125-12NO7	VUO125-12NO7	Box	10	456764

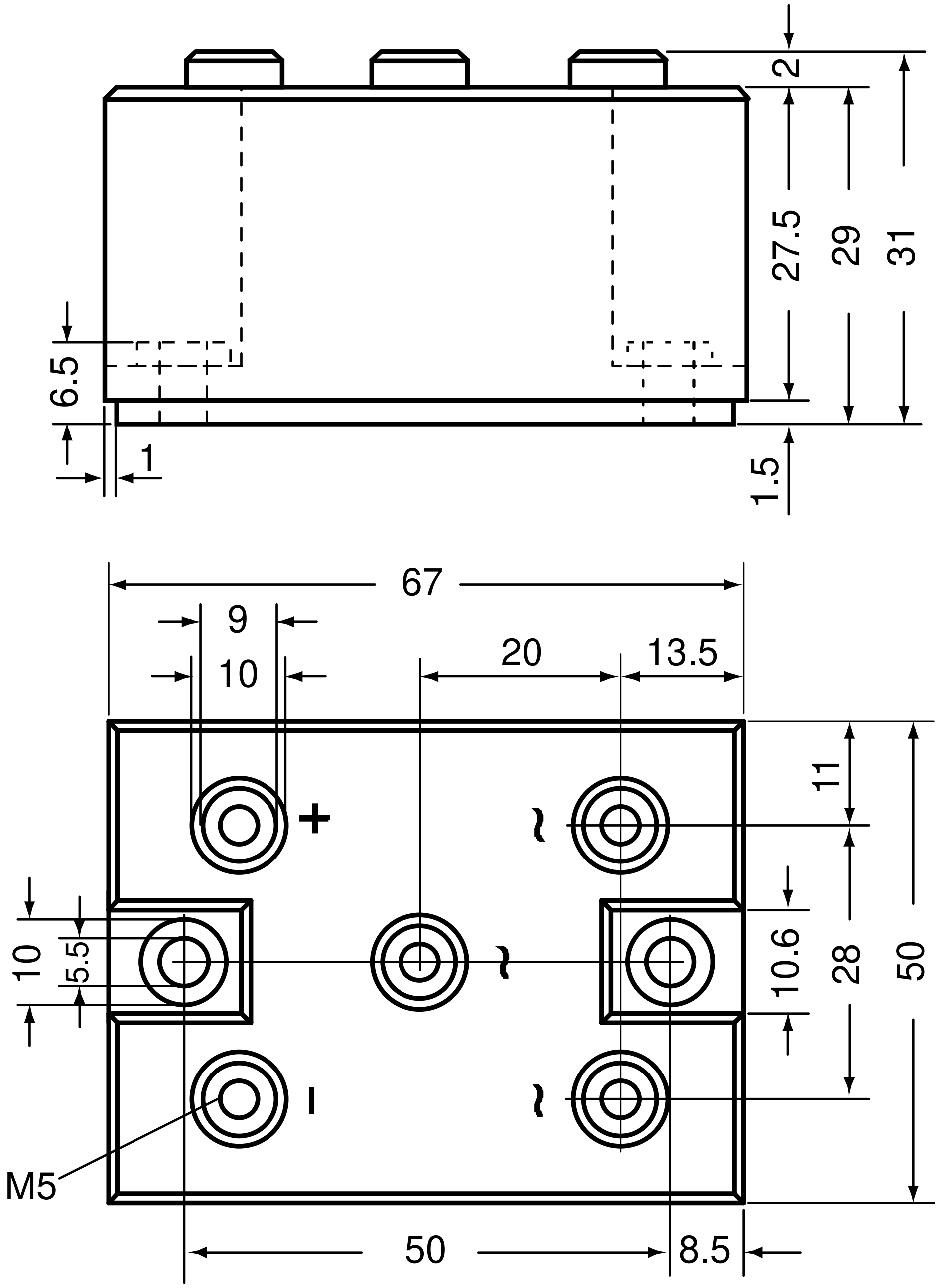
Equivalent Circuits for Simulation

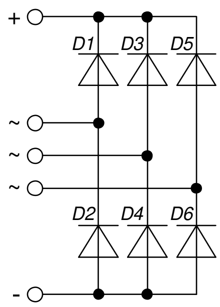
* *on die level* $T_{VJ} = 150°C$



		Rectifier	
$V_{0\,max}$	*threshold voltage*	0.76	V
$R_{0\,max}$	*slope resistance **	2.4	mΩ

Outlines PWS-C





IXYS reserves the right to change limits, conditions and dimensions. Data according to IEC 60747and per semiconductor unless otherwise specified 20191220b

Rectifier

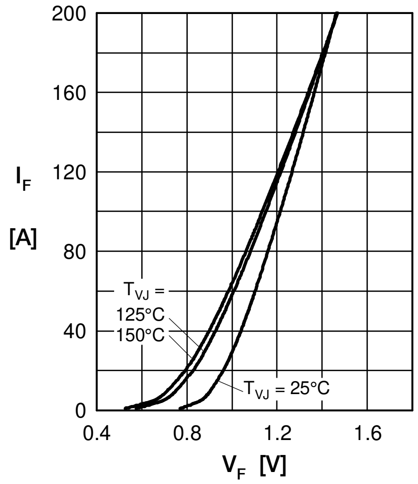


Fig. 1 Forward current versus voltage drop per diode

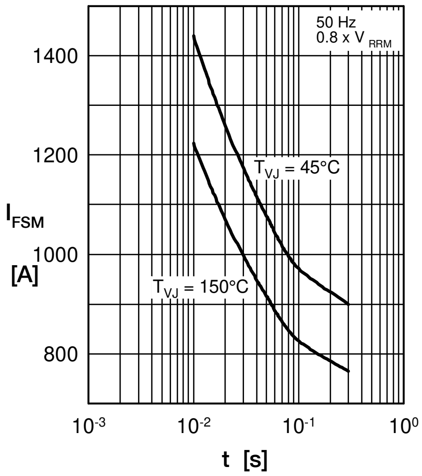


Fig. 2 Surge overload current vs. time per diode

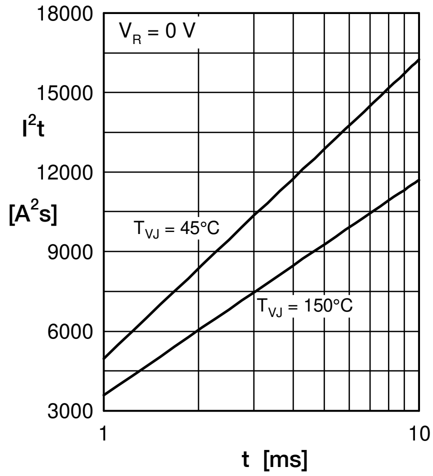


Fig. 3 I^2t versus time per diode

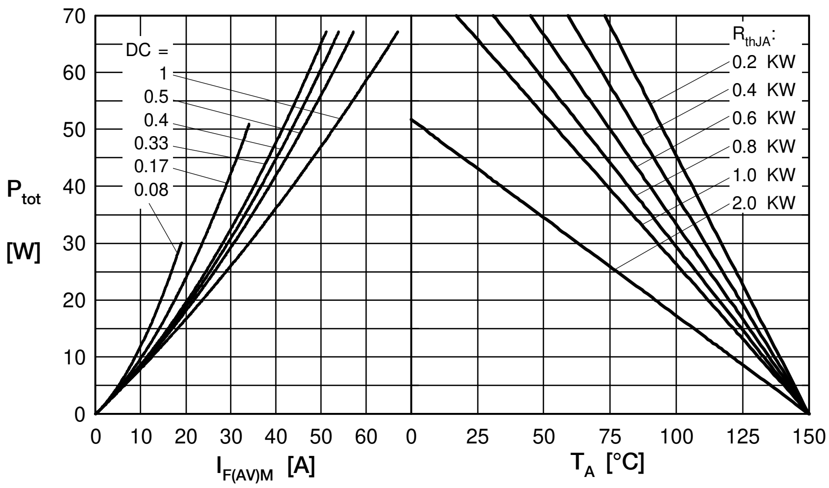


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

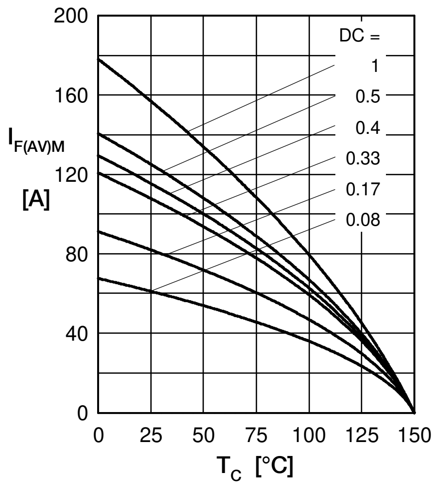


Fig. 5 Max. forward current vs. case temperature per diode

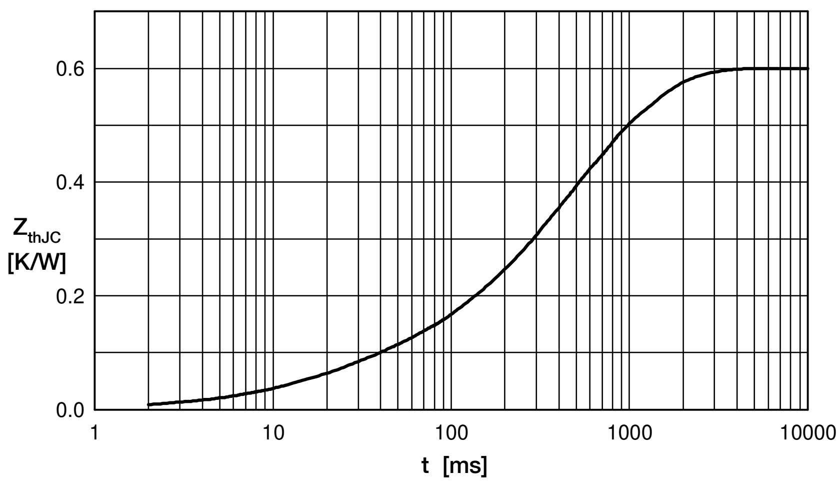


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.060	0.020
2	0.003	0.010
3	0.150	0.225
4	0.243	0.800
5	0.144	0.580