

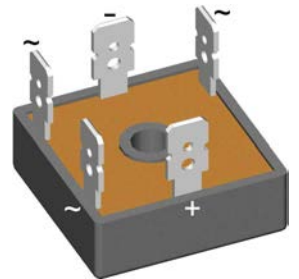
# Standard Rectifier Module

<b>3~ Rectifier</b>	
$V_{RRM}$	= 1400 V
$I_{DAV}$	= 20 A
$I_{FSM}$	= 380 A

## 3~ Rectifier Bridge

Part number

**VUO25-14N08**



 E72873



### Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour

### 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-B

- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- 1/4" fast-on terminals
- Easy to mount with one screw

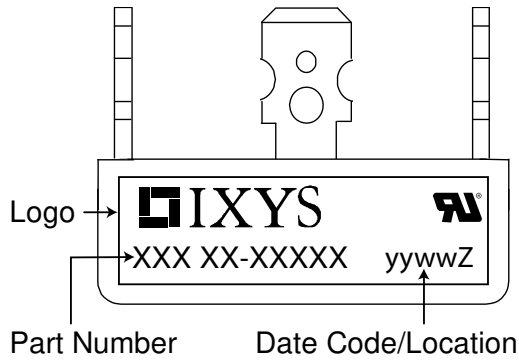
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Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage					1500	V
$V_{RRM}$	max. repetitive reverse blocking voltage					1400	V
$I_R$	reverse current	$V_R = 1400$ V		$T_{VJ} = 25^\circ\text{C}$		40	$\mu\text{A}$
		$V_R = 1400$ V		$T_{VJ} = 150^\circ\text{C}$		1,5	mA
$V_F$	forward voltage drop	$I_F = 10$ A		$T_{VJ} = 25^\circ\text{C}$		1,05	V
		$I_F = 30$ A				1,25	V
		$I_F = 10$ A		$T_{VJ} = 125^\circ\text{C}$		0,94	V
		$I_F = 30$ A				1,21	V
$I_{DAV}$	bridge output current	$T_C = 85^\circ\text{C}$		$T_{VJ} = 150^\circ\text{C}$		20	A
		rectangular	$d = \frac{1}{3}$				
$V_{FO}$	threshold voltage			$T_{VJ} = 150^\circ\text{C}$		0,77	V
$r_F$	slope resistance					14,2	m $\Omega$
							for power loss calculation only
$R_{thJC}$	thermal resistance junction to case					8	K/W
$R_{thCH}$	thermal resistance case to heatsink				1		K/W
$P_{tot}$	total power dissipation			$T_C = 25^\circ\text{C}$		15	W
$I_{FSM}$	max. forward surge current	$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 45^\circ\text{C}$		380	A
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		410	A
		$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		325	A
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		350	A
$I^2t$	value for fusing	$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 45^\circ\text{C}$		720	A <sup>2</sup> s
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		700	A <sup>2</sup> s
		$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		530	A <sup>2</sup> s
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		510	A <sup>2</sup> s
$C_J$	junction capacitance	$V_R = 400$ V; $f = 1$ MHz		$T_{VJ} = 25^\circ\text{C}$		10	pF



Package FO-B		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
<b>Weight</b>				20		g
$M_D$	mounting torque		1,8		2,2	Nm
$d_{Spp/App}$	creepage distance on surface   striking distance through air	terminal to terminal	9,0	7,0		mm
$d_{Spb/Apb}$		terminal to backside	10,0	10,0		mm
$V_{ISOL}$	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3000		V
		t = 1 minute		2500		V

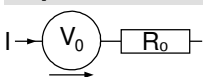


Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUO25-14NO8	VUO25-14NO8	Box	50	465119

**Equivalent Circuits for Simulation**

\* on die level

$T_{VJ} = 150^{\circ}C$

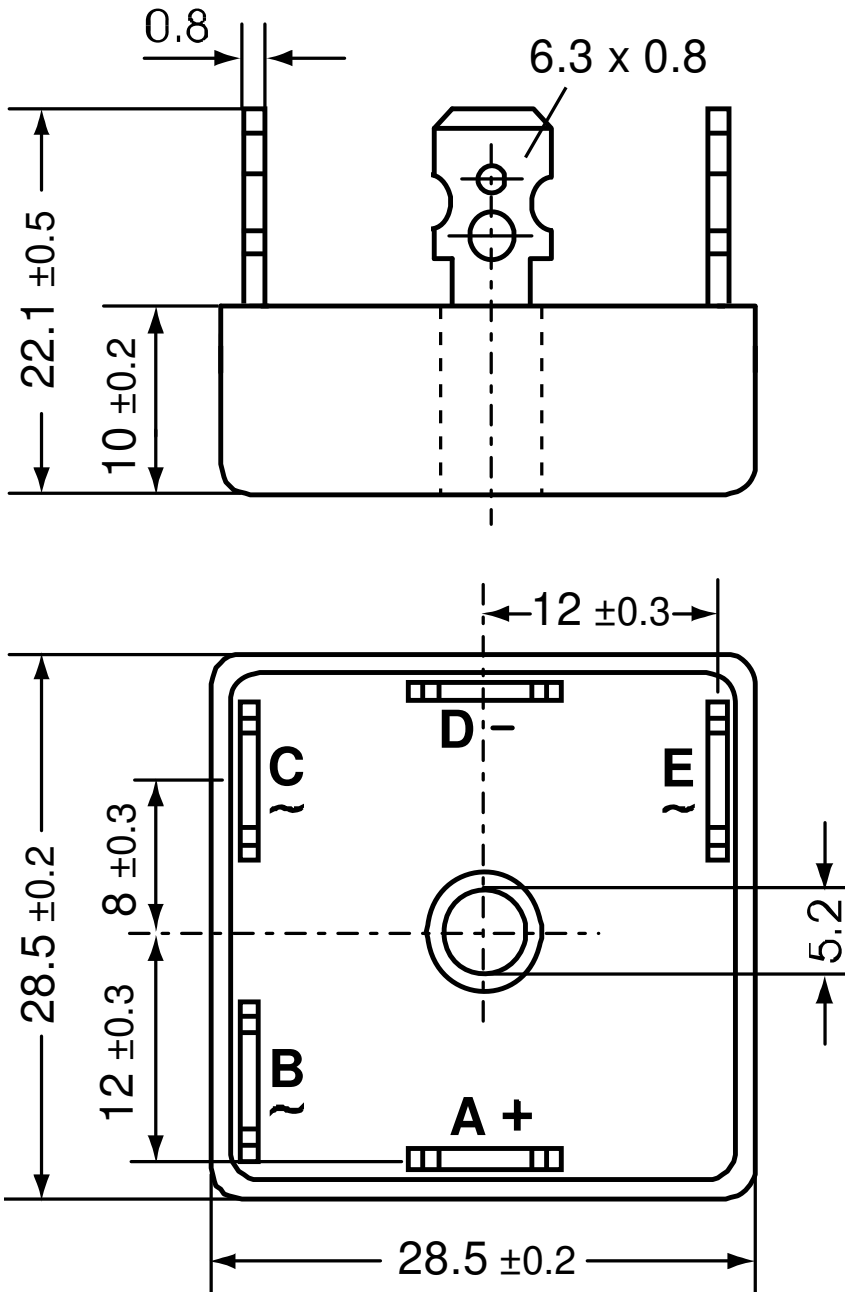


Rectifier

$V_{0\ max}$	threshold voltage	0,77	V
$R_{0\ max}$	slope resistance *	13	mΩ



Outlines FO-B



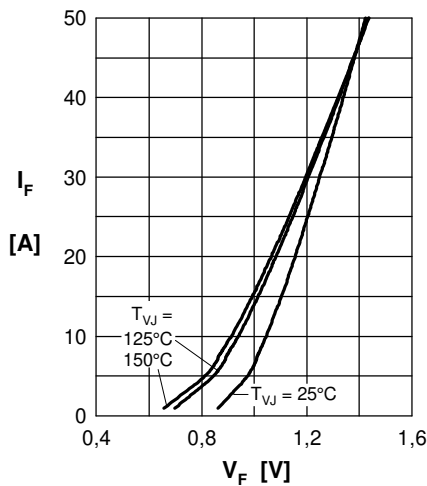
**Rectifier**


Fig. 1 Forward current vs. voltage drop per diode

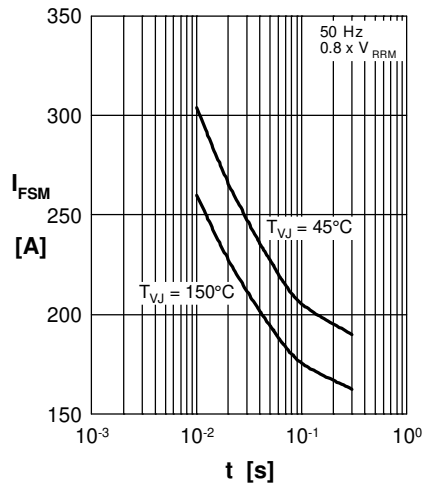


Fig. 2 Surge overload current vs. time per diode

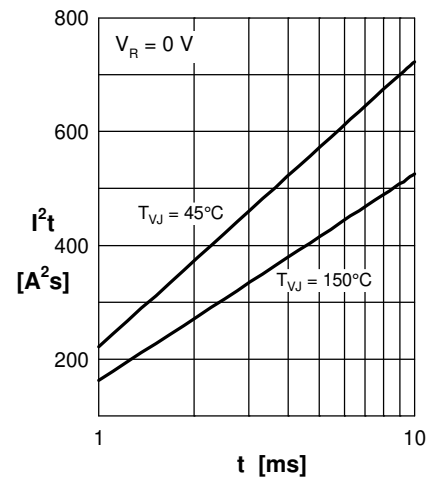
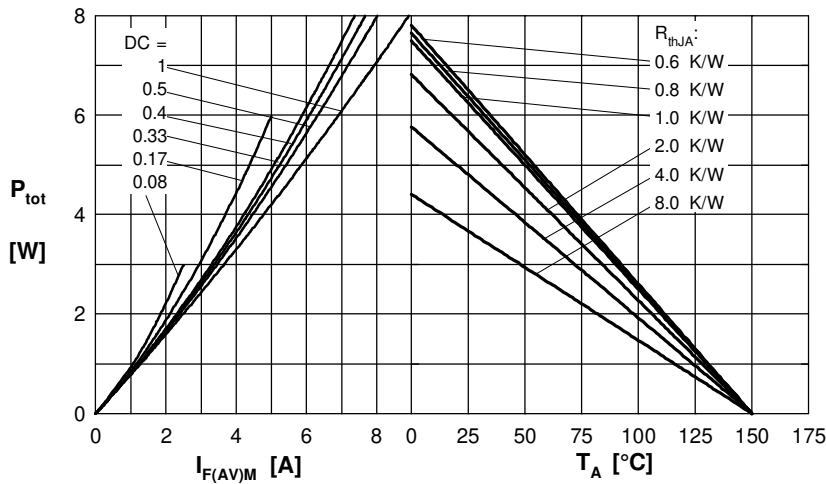

 Fig. 3  $I^2t$  vs. time per diode


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

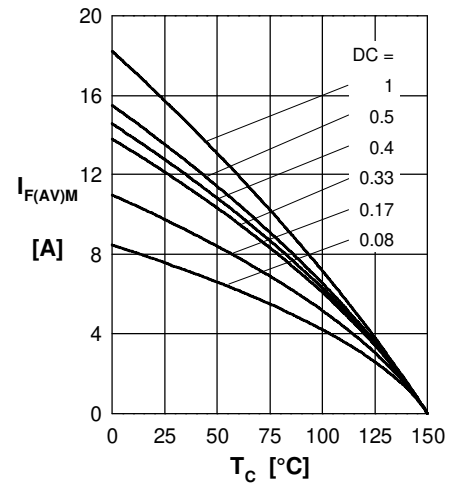


Fig. 5 Max. forward current vs. case temperature per diode

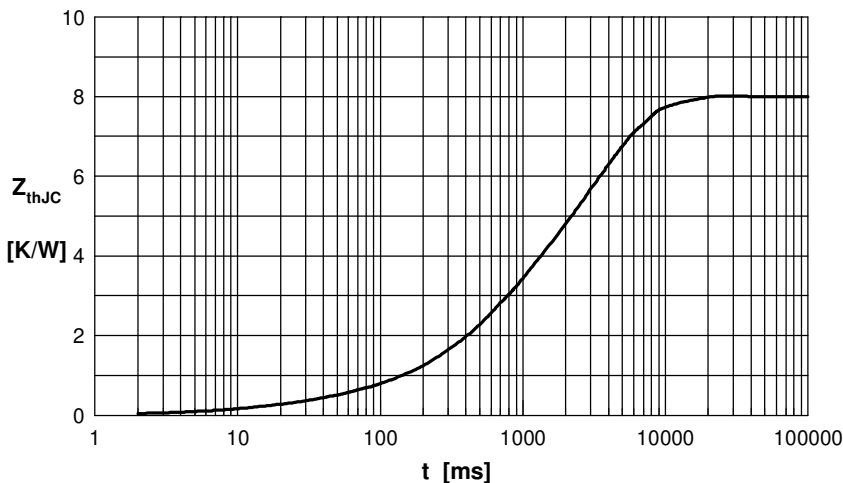


Fig. 6 Transient thermal impedance junction to case vs. time per diode

 Constants for  $Z_{thJC}$  calculation:

i	$R_{th}$ (K/W)	$t_i$ (s)
1	0.040	0.005
2	0.250	0.030
3	1.810	0.500
4	5.900	3.200