

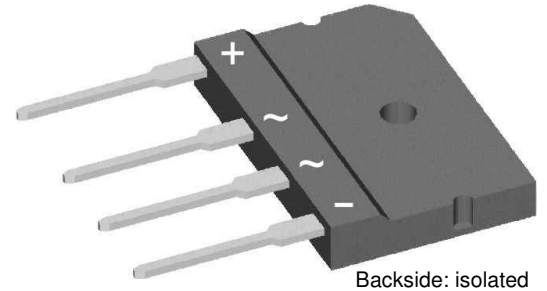
# Standard Rectifier

<b>1~ Rectifier</b>	
$V_{RRM}$	= 1200 V
$I_{DAV}$	= 25 A
$I_{FSM}$	= 370 A

## 1~ Rectifier Bridge

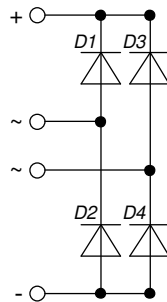
**Part number**

**GBO25-12N01**



Backside: isolated

E72873



### Features / Advantages:

- Low forward voltage drop
- Planar passivated chips
- Easy to mount with one screw
- Space and weight savings

### Applications:

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

### Package: GBFP

- Isolation Voltage: 2500 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Base plate: Plastic overmolded tab
- Reduced weight

### Terms and Conditions of Usage

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact your local sales office.

Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact your local sales office.

Should you intend to use the product in aviation, in health or life endangering or life support applications, please notify. For any such application we urgently recommend

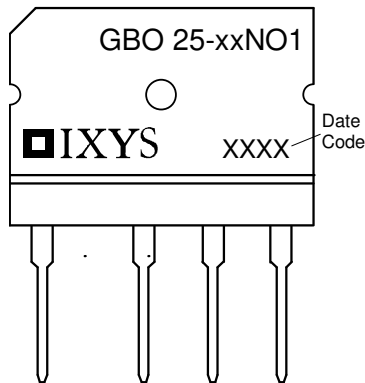
- to perform joint risk and quality assessments;

- the conclusion of quality agreements;

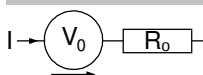
- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage			$T_{VJ} = 25^{\circ}\text{C}$		1300	V
$V_{RRM}$	max. repetitive reverse blocking voltage			$T_{VJ} = 25^{\circ}\text{C}$		1200	V
$I_R$	reverse current	$V_R = 1200\text{ V}$		$T_{VJ} = 25^{\circ}\text{C}$		40	$\mu\text{A}$
		$V_R = 1200\text{ V}$		$T_{VJ} = 150^{\circ}\text{C}$		1.5	mA
$V_F$	forward voltage drop	$I_F = 10\text{ A}$		$T_{VJ} = 25^{\circ}\text{C}$		1.06	V
		$I_F = 20\text{ A}$				1.17	V
		$I_F = 10\text{ A}$		$T_{VJ} = 150^{\circ}\text{C}$		0.92	V
		$I_F = 20\text{ A}$				1.09	V
$I_{DAV}$	bridge output current	$T_C = 105^{\circ}\text{C}$		$T_{VJ} = 175^{\circ}\text{C}$		25	A
		rectangular	$d = 0.5$				
$V_{FO}$	threshold voltage			$T_{VJ} = 175^{\circ}\text{C}$		0.74	V
$r_F$	slope resistance					16.3	m $\Omega$
						} for power loss calculation only	
$R_{thJC}$	thermal resistance junction to case					4.3	K/W
$R_{thCH}$	thermal resistance case to heatsink				0.50		K/W
$P_{tot}$	total power dissipation			$T_C = 25^{\circ}\text{C}$		35	W
$I_{FSM}$	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$		$T_{VJ} = 45^{\circ}\text{C}$		370	A
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$		$V_R = 0\text{ V}$		400	A
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$		$T_{VJ} = 150^{\circ}\text{C}$		315	A
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$		$V_R = 0\text{ V}$		340	A
$I^2t$	value for fusing	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$		$T_{VJ} = 45^{\circ}\text{C}$		685	A <sup>2</sup> s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$		$V_R = 0\text{ V}$		665	A <sup>2</sup> s
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$		$T_{VJ} = 150^{\circ}\text{C}$		495	A <sup>2</sup> s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$		$V_R = 0\text{ V}$		480	A <sup>2</sup> s
$C_J$	junction capacitance	$V_R = 400\text{ V}; f = 1\text{ MHz}$		$T_{VJ} = 25^{\circ}\text{C}$		10	pF

Package GBFP		Ratings				
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal			70	A
$T_{VJ}$	virtual junction temperature		-40		175	°C
$T_{op}$	operation temperature		-40		150	°C
$T_{stg}$	storage temperature		-40		150	°C
<b>Weight</b>				7		g
$M_D$	mounting torque		0.5		0.8	Nm
$F_C$	mounting force with clip		20		120	N
$d_{Spp/App}$	creepage distance on surface   striking distance through air	terminal to terminal	4.9			mm
$d_{Spb/Apb}$		terminal to backside	2.5			mm
$V_{ISOL}$	isolation voltage	t = 1 second	2500			V
		t = 1 minute	2100			V
		50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA				
$R_{thJA}$	thermal resistance junction to ambient			50		K/W

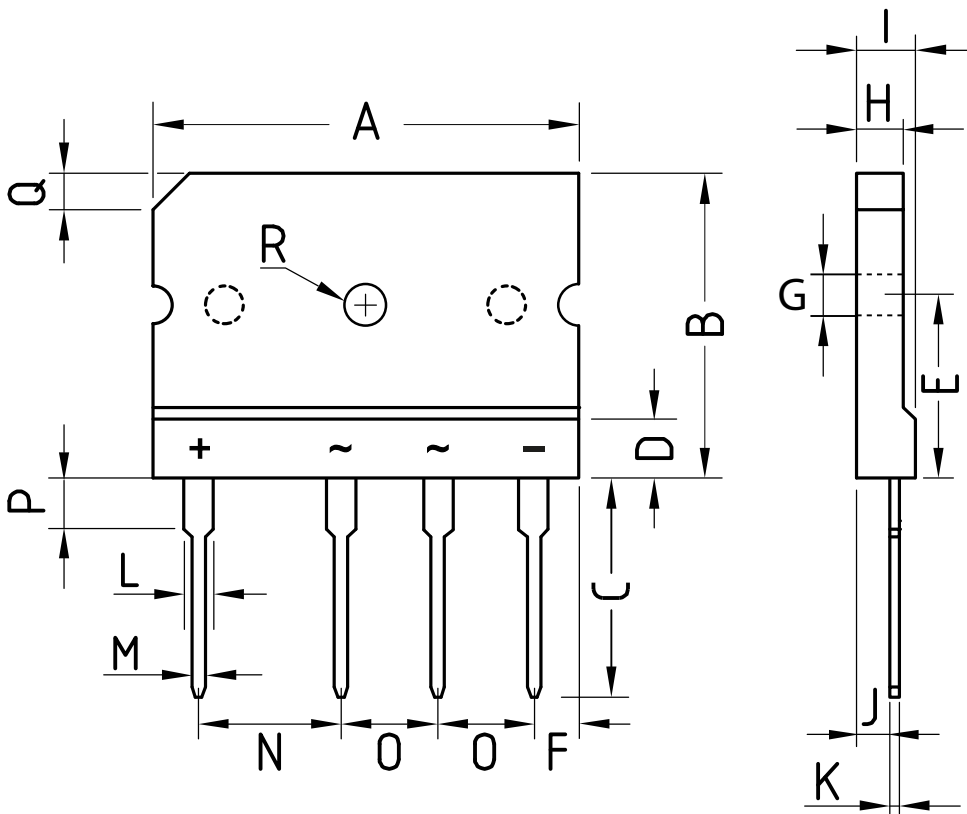


Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	GBO25-12NO1	GBO25-12NO1	Tube	16	500233

**Equivalent Circuits for Simulation**
*\* on die level*
 $T_{VJ} = 175\text{ °C}$ 

**Rectifier**

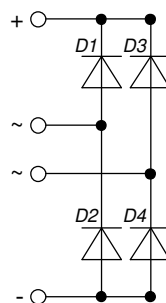
$V_{0\ max}$	threshold voltage	0.74	V
$R_{0\ max}$	slope resistance *	13.7	mΩ

Outlines GBFP



DIM.	MIN.	MAX.
A	29.7	30.3
B	19.7	20.3
C	17.0	18.0
D	4.7	4.9
E	10.8	11.2
F	2.3	2.7
G	3.1	3.4
H	3.4	3.8
I	4.4	4.8
J	2.5	2.9
K	0.6	0.8
L	2.0	2.4
M	0.9	1.1
N	9.8	10.2
O	7.3	7.7
P	3.8	4.2
Q	(3.0) x 45°	
R (Ø)	3.1	3.4

All Dimensions in millimeter



**Rectifier**

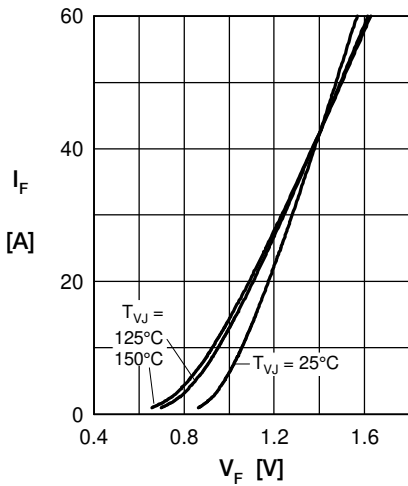


Fig. 1 Forward current vs. voltage drop per diode

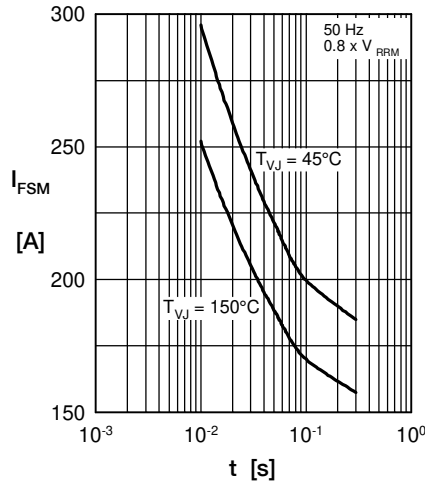


Fig. 2 Surge overload current vs. time per diode

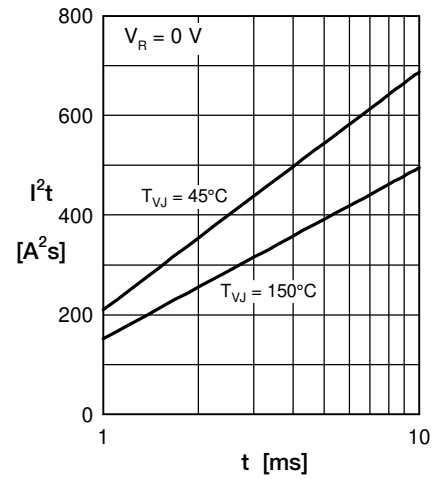


Fig. 3  $I^2t$  vs. time per diode

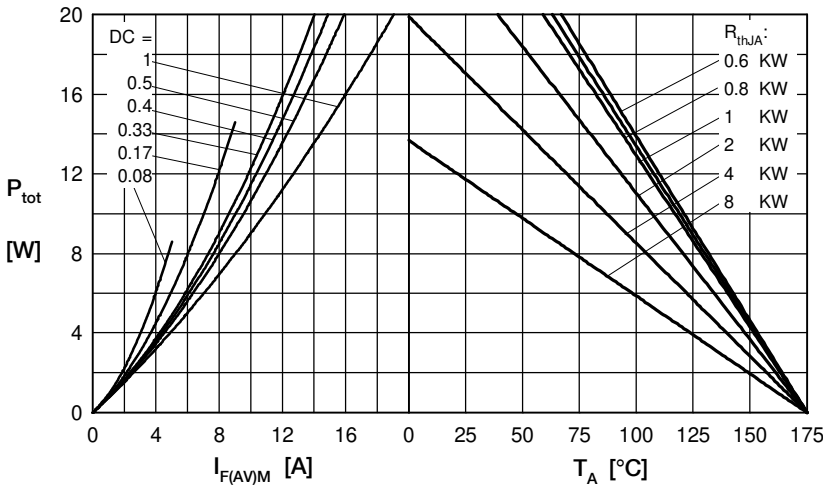


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

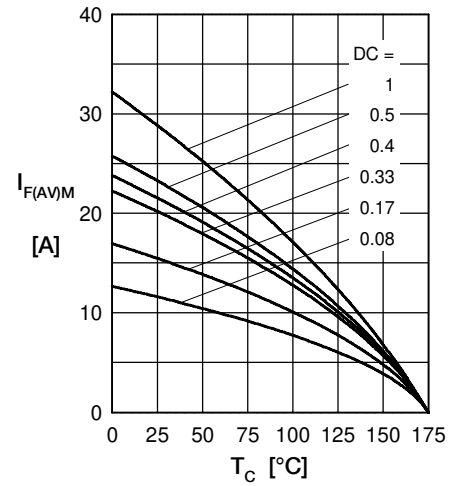


Fig. 5 Max. forward current vs. case temperature per diode

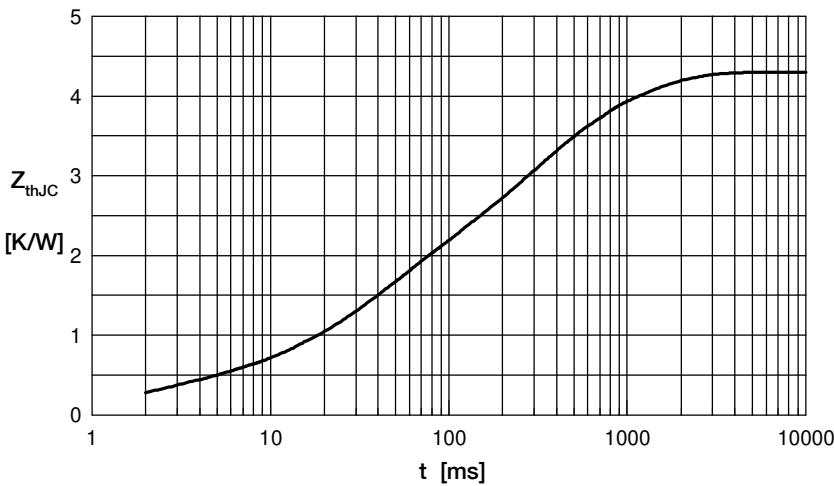


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for  $Z_{thJC}$  calculation:

i	$R_{th}$ (K/W)	$t_i$ (s)
1	0.302	0.002
2	1.252	0.032
3	1.582	0.227
4	1.164	0.820