

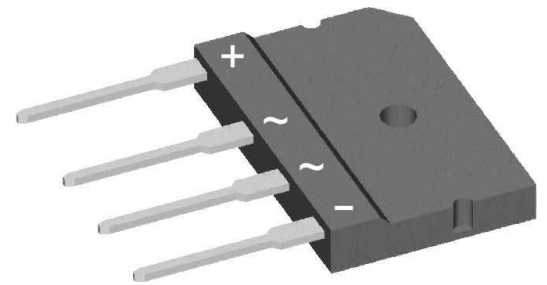
# Standard Rectifier

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

## 1~ Rectifier Bridge

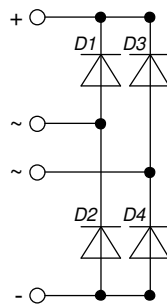
Part number

**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

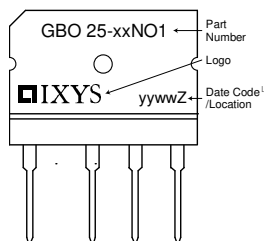
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Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage					1300	V
$V_{RRM}$	max. repetitive reverse blocking voltage					1200	V
$I_R$	reverse current	$V_R = 1200$ V		$T_{VJ} = 25^\circ\text{C}$		40	$\mu\text{A}$
		$V_R = 1200$ V		$T_{VJ} = 150^\circ\text{C}$		1.5	mA
$V_F$	forward voltage drop	$I_F = 10$ A		$T_{VJ} = 25^\circ\text{C}$		1.06	V
		$I_F = 20$ A				1.17	V
		$I_F = 10$ A		$T_{VJ} = 150^\circ\text{C}$		0.92	V
		$I_F = 20$ 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				0.5		K/W
$P_{tot}$	total power dissipation			$T_C = 25^\circ\text{C}$		35	W
$I_{FSM}$	max. forward surge current	t = 10 ms; (50 Hz), sine		$T_{VJ} = 45^\circ\text{C}$		370	A
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		400	A
		t = 10 ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		315	A
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		340	A
$I^2t$	value for fusing	t = 10 ms; (50 Hz), sine		$T_{VJ} = 45^\circ\text{C}$		685	A <sup>2</sup> s
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		665	A <sup>2</sup> s
		t = 10 ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		495	A <sup>2</sup> s
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		480	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 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

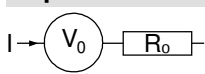


Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	GBO25-12NO1	GBO25-12NO1	Tube	16	500233

**Equivalent Circuits for Simulation**

\* on die level

$T_{VJ} = 175^{\circ}\text{C}$

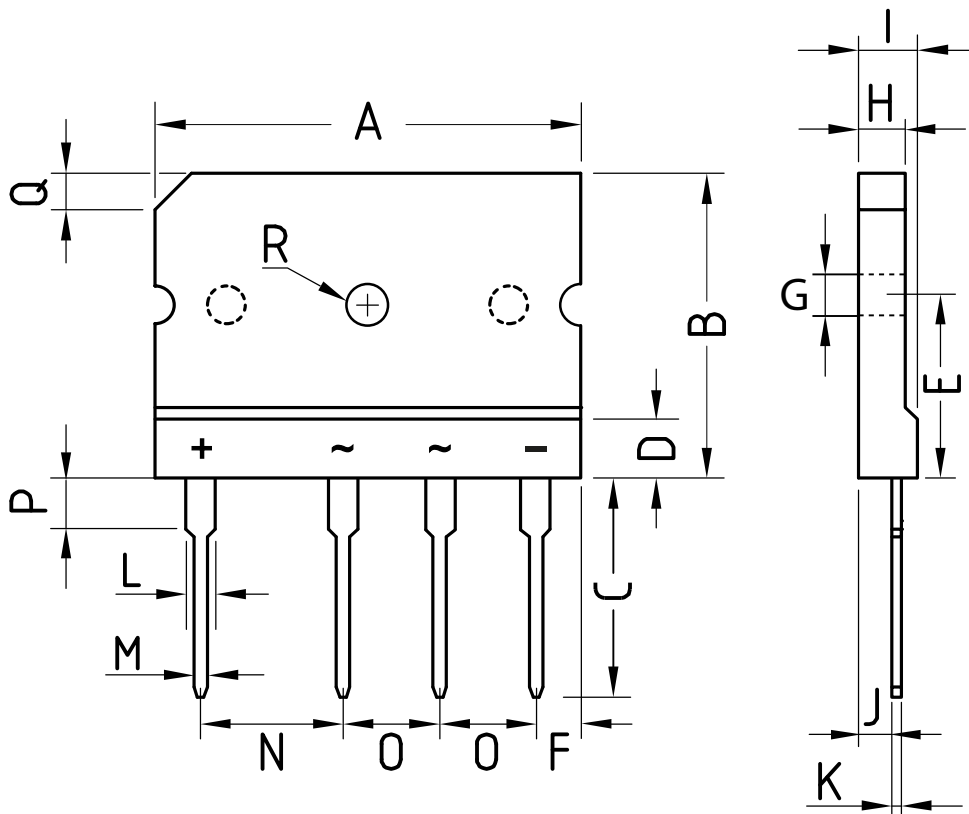


**Rectifier**

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

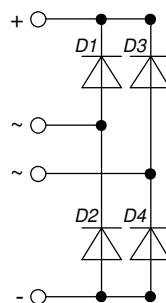


Outlines GBFP



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**

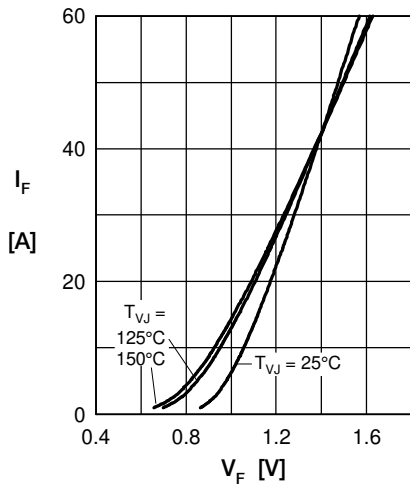


Fig. 1 Forward current vs. voltage drop per diode

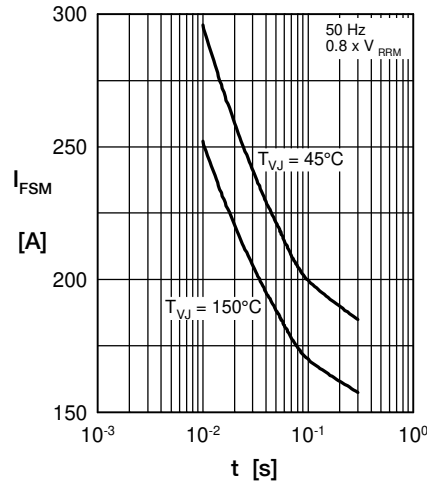


Fig. 2 Surge overload current vs. time per diode

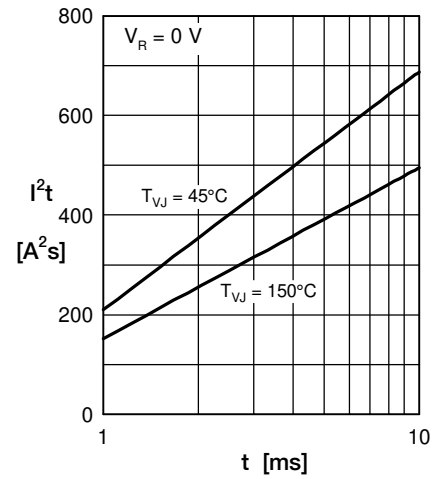


Fig. 3  $I^2t$  vs. time per diode

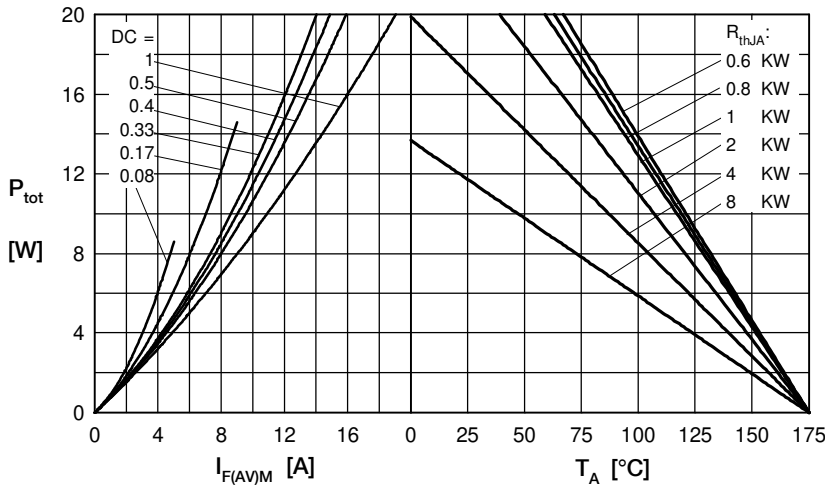


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

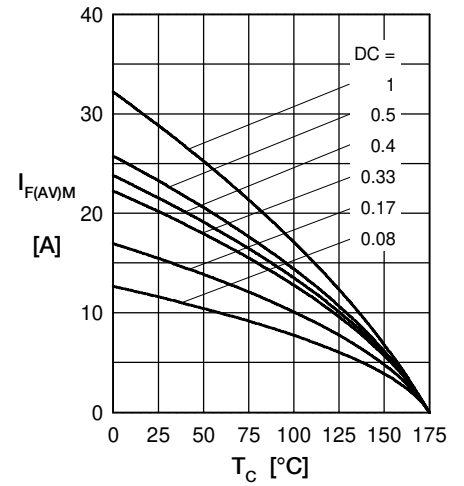


Fig. 5 Max. forward current vs. case temperature per diode

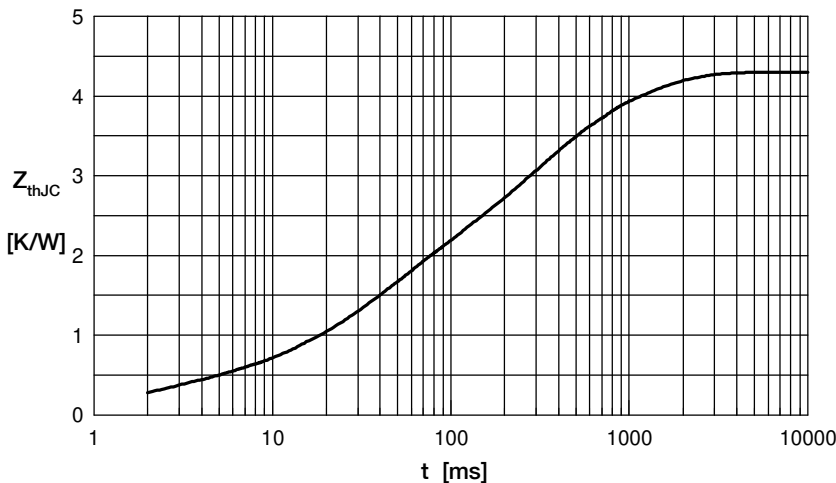


Fig. 6 Transient thermal impedance junction to case vs. time per diode

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