

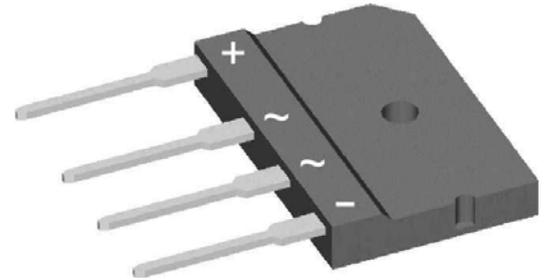
# Standard Rectifier

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

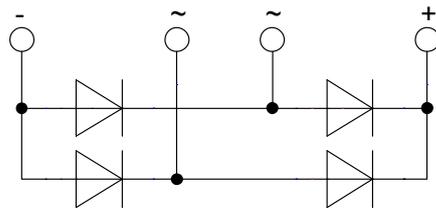
## 1~ Rectifier Bridge

Part number

**GBO25-12NO1**



Backside: isolated



### Features / Advantages:

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

### Applications:

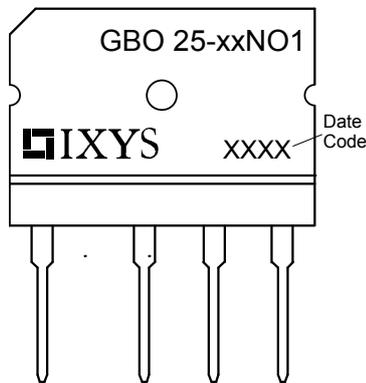
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

### Package: GBFP

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

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

Package GBFP		Ratings				
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal			70	A
$T_{stg}$	storage temperature		-55		150	°C
$T_{VJ}$	virtual junction temperature		-40		175	°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
$d_{Spb/Appb}$		terminal to backside	2.5			mm
$V_{ISOL}$	isolation voltage	t = 1 second	2500			V
		t = 1 minute	2080			V
		50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA				
$R_{thJA}$	thermal resistance junction to ambient			50		K/W

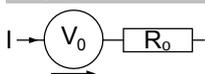


Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	GBO25-12NO1	GBO25-12NO1	Tube	16	500233

### Equivalent Circuits for Simulation

\* on die level

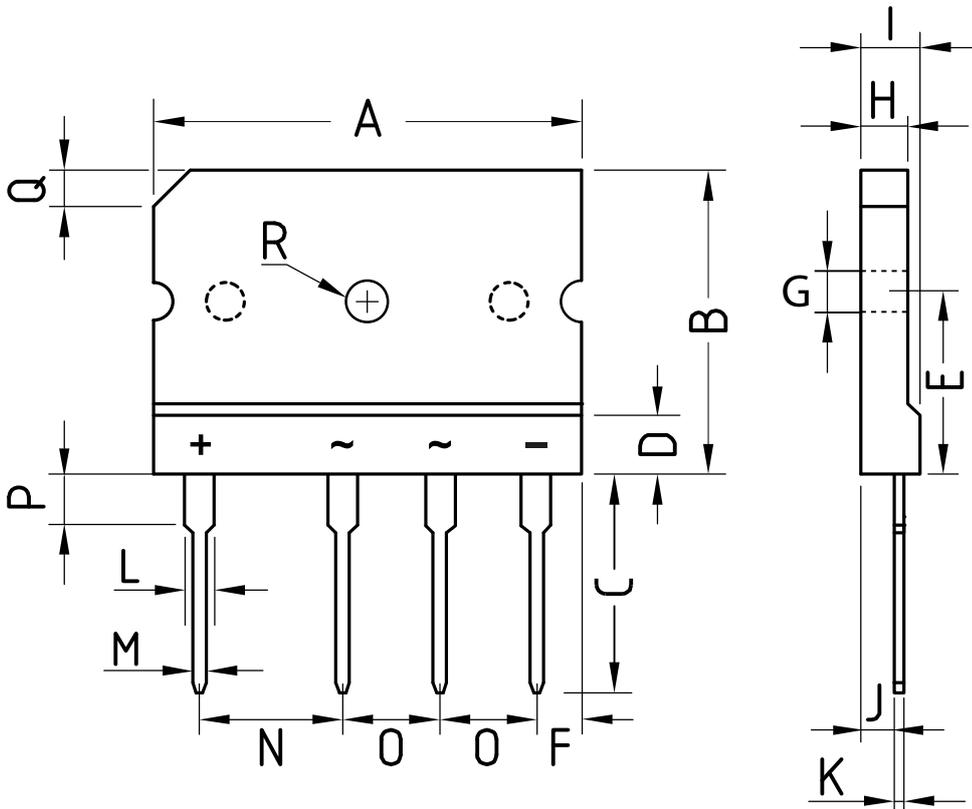
$T_{VJ} = 175^\circ\text{C}$



Rectifier

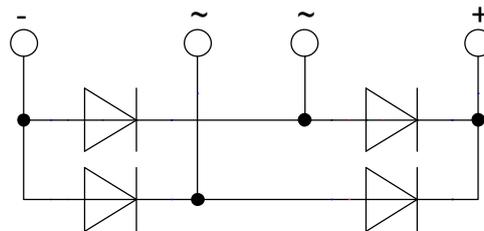
$V_{0\max}$	threshold voltage	0.74	V
$R_{0\max}$	slope resistance *	13.7	mΩ

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

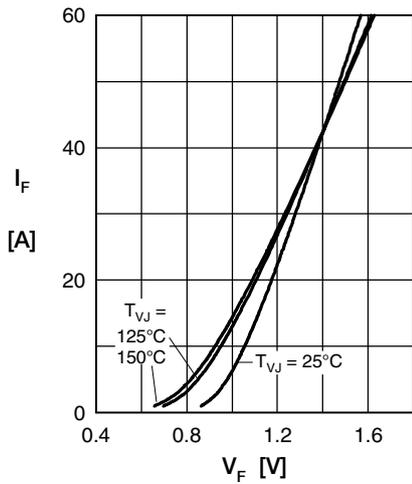


Fig. 1 Forward current vs. voltage drop per diode

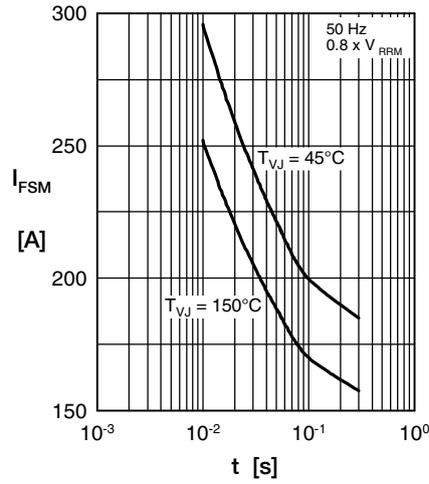


Fig. 2 Surge overload current vs. time per diode

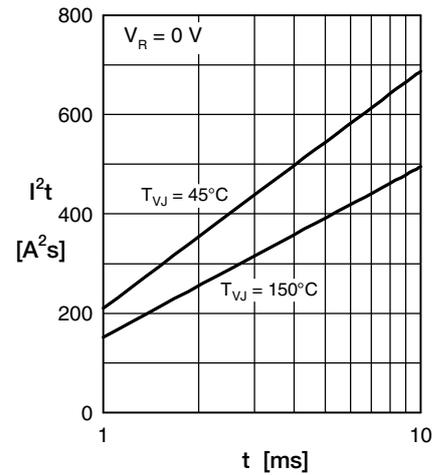


Fig. 3  $I^2t$  vs. time per diode

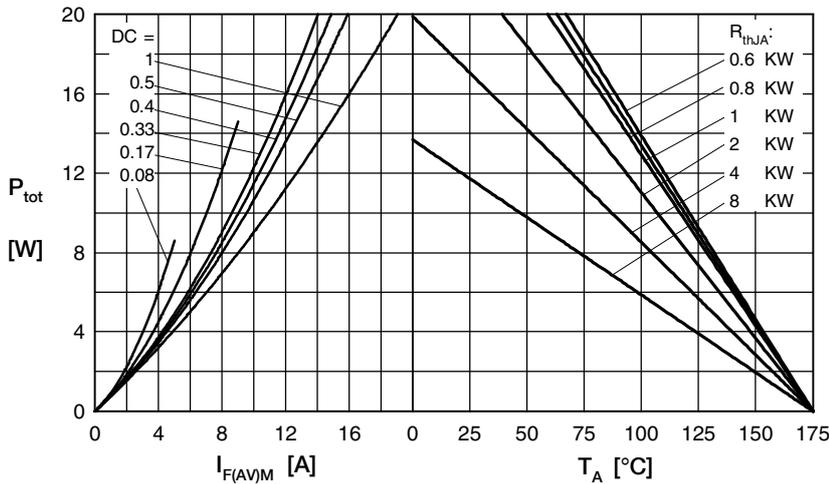


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

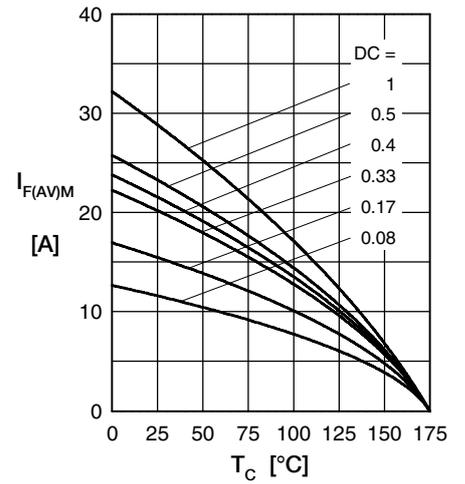


Fig. 5 Max. forward current vs. case temperature per diode

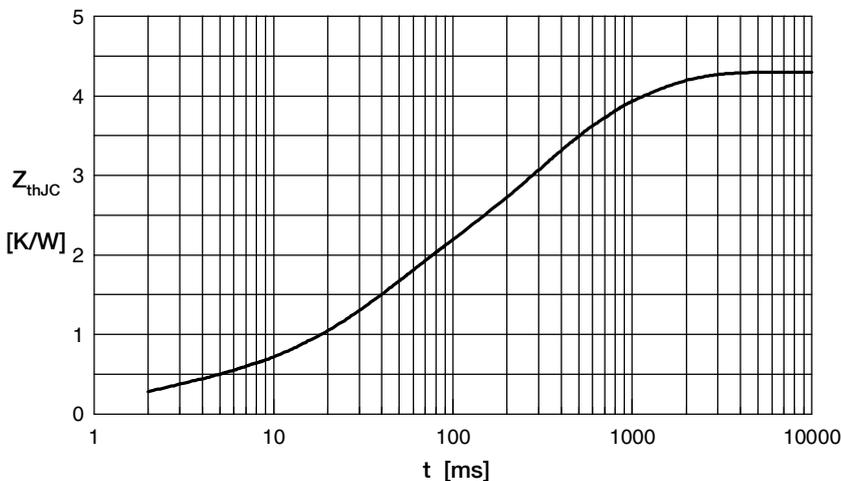


Fig. 6 Transient thermal impedance junction to case vs. time per diode

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