

# Single Phase Rectifier Bridge

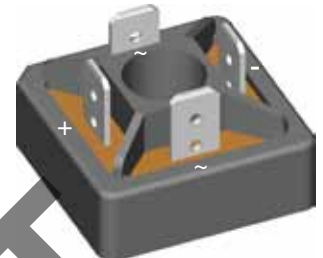
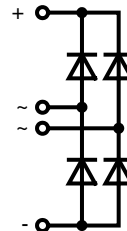
$I_{dAV} = 31 \text{ A}$   
 $V_{RRM} = 800-1600 \text{ V}$

Standard and Avalanche Types

Replacement: VBO25-12/16NO2 resp. VBO25-16AO2

$V_{RSM}$ V	$V_{BRmin}$ ① V	$V_{RRM}$ V	Standard Types	Avalanche Types
900		800	VBO 20-08NO2	
1300	1230	1200	VBO 20-12NO2	VBO 20-12AO2
1700	1630	1600	VBO 20-16NO2	VBO 20-16AO2

① For Avalanche Types only



Symbol	Conditions	Maximum Ratings	Features	
$I_{dAV}$ ②	$T_C = 85^\circ\text{C}$ , module	31 A	<ul style="list-style-type: none"> <li>• Avalanche rated parts available</li> <li>• Package with DCB ceramic base plate</li> <li>• Isolation voltage 3600 V~</li> <li>• Planar passivated chips</li> <li>• Low forward voltage drop</li> <li>• ¼" fast-on terminals</li> <li>• UL registered E 72873</li> </ul>	
$I_{dAVM}$	module	40 A		
$P_{RSM}$	$T_{VJ} = T_{VJM}$	3.4 kW		
$I_{FSM}$	$T_{VJ} = 45^\circ\text{C}$ ; $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz)		300 A
		$t = 8.3 \text{ ms}$ (60 Hz)		315 A
	$T_{VJ} = T_{VJM}$ ; $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz)		250 A
		$t = 8.3 \text{ ms}$ (60 Hz)		265 A
$I^2t$	$T_{VJ} = 45^\circ\text{C}$ ; $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz)		450 A <sup>2</sup> s
		$t = 8.3 \text{ ms}$ (60 Hz)		420 A <sup>2</sup> s
	$T_{VJ} = T_{VJM}$ ; $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz)		312 A <sup>2</sup> s
		$t = 8.3 \text{ ms}$ (60 Hz)	290 A <sup>2</sup> s	
$T_{VJ}$		-40...+150 °C		
$T_{VJM}$		150 °C		
$T_{stg}$		-40...+125 °C		
$V_{ISOL}$	50/60 Hz, RMS $t = 1 \text{ min}$ $I_{ISOL} \leq 1 \text{ mA}$ $t = 1 \text{ s}$	3000 V~		
		3600 V~		
$M_d$	Mounting torque (M5) (10-32 UNF)	1.5-2 Nm		
		13-18 lb.in.		
Weight	Typ.	15 g		

### Features

- Avalanche rated parts available
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Low forward voltage drop
- ¼" fast-on terminals
- UL registered E 72873

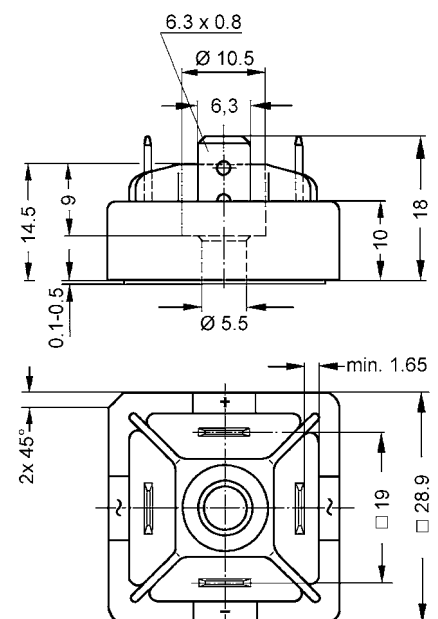
### Applications

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

### Advantages

- Easy to mount with one screw
- Space and weight savings
- Improved temperature & power cycling

### Dimensions in mm (1 mm = 0.0394")



Symbol	Conditions	Characteristic Values
$I_R$	$V_R = V_{RRM}$ $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = T_{VJM}$	0.3 mA
		5.0 mA
$V_F$	$I_F = 55 \text{ A}$ $T_{VJ} = 25^\circ\text{C}$	1.8 V
$V_{TO}$	For power-loss calculations only	0.85 V
$r_t$		14 mΩ
$R_{thJC}$	per diode; 120° el.	3.00 K/W
	per module	0.75 K/W
$R_{thJH}$	per diode; 120° el.	3.40 K/W
	per module	0.85 K/W
$d_s$	Creeping distance on surface	13 mm
$d_a$	Creepage distance in air ③	9.5 mm
$a$	Max. allowable acceleration	50 m/s <sup>2</sup>

Data according to IEC 60747 and refer to a single diode unless otherwise stated.

② for resistive load at bridge output

③ with isolated fast-on tabs.

IXYS reserves the right to change limits, test conditions and dimensions.

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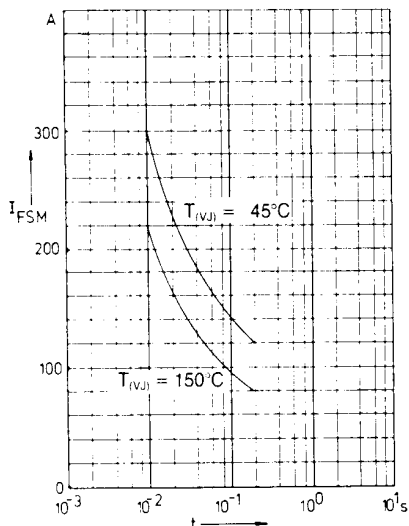


Fig. 1 Surge overload current per diode  
 $I_{FSM}$ : Crest value,  $t$ : duration

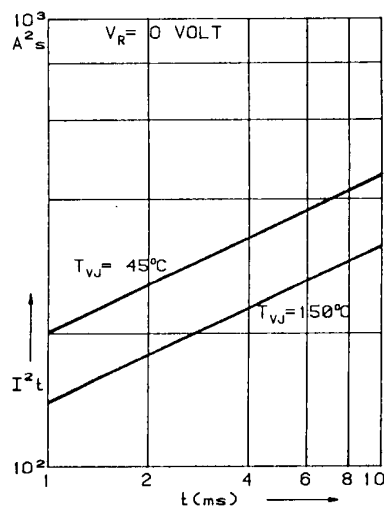


Fig. 2  $I^2t$  versus time (1-10 ms)  
 per diode

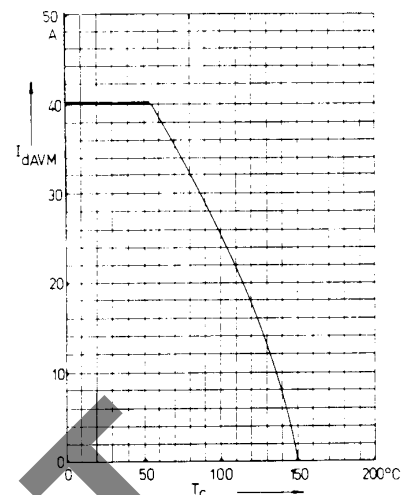


Fig. 3 Max. forward current at case temperature

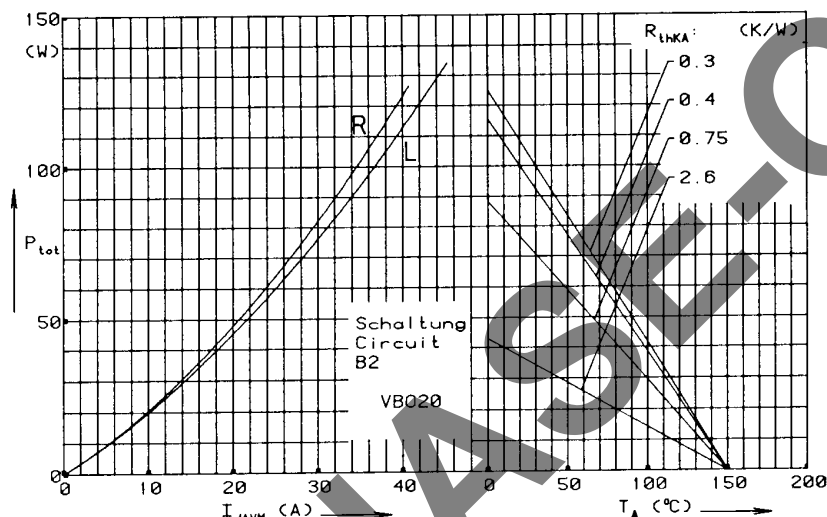


Fig. 4 Power dissipation versus direct output current and ambient temperature

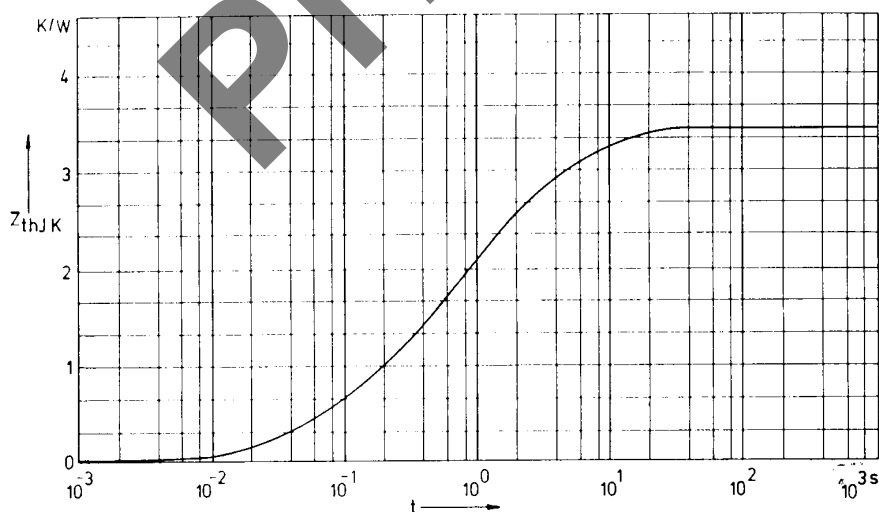


Fig. 5 Transient thermal impedance junction to heatsink per diode

Constants for  $Z_{thJK}$  calculation:

$i$	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.775	0.0788
2	1.390	0.504
3	1.255	3.701