

# SILICON BRIDGE RECTIFIERS

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Ready-for-use full-wave bridge rectifiers in a plastic encapsulation. The bridges are intended for use in equipment supplied from a.c. with r.m.s. voltages up to 80 V and are capable of delivering output currents up to 4,8 A. They are also suitable for use in hi-fi audio equipments and low-voltage industrial power supplies. They may be used in free air or clipped to a heatsink.

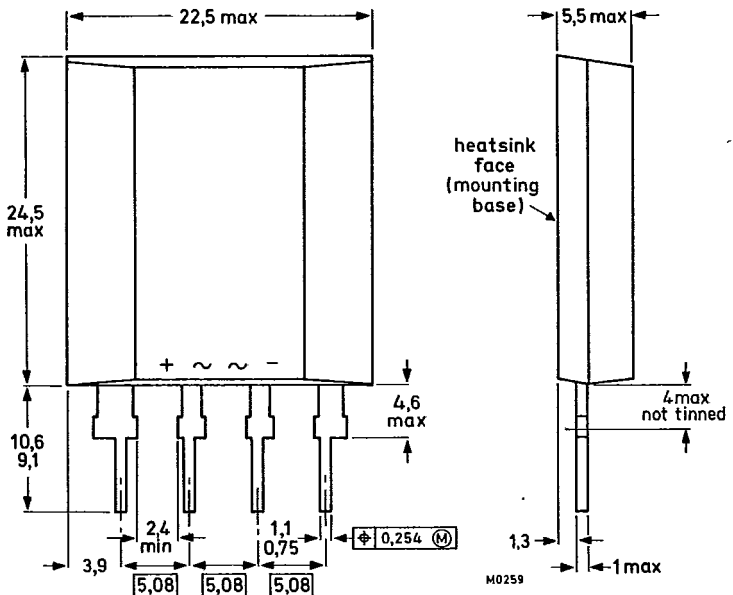
## QUICK REFERENCE DATA

Input		BY225-100	200
R.M.S. voltage	$V_I(\text{RMS})$	max. 50	80 V
Repetitive peak voltage	$V_{\text{IRM}}$	max. 100	200 V
Non-repetitive peak current	$I_{\text{ISM}}$	max.	100 A
Peak inrush current	$I_{\text{IIM}}$	max.	200 A
Output			
Average current	$I_{\text{O(AV)}}$	max.	4,8 A

## MECHANICAL DATA

Dimensions in mm

Fig. 1 SOT-112.



Net mass: 6,8 g

Accessories supplied on request: 56379 (clip); see Accessories and Mounting Instructions.

The sealing of the plastic withstands the accelerated damp heat test of IEC recommendation 68-2 (test D, severity IV, 6 cycles).

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## RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

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### Input

Non-repetitive peak voltage ( $t \leq 10$  ms)

	BY225-100	200
$V_{ISM}$	max. 100	200 V
$V_{IRM}$	max. 100	200 V
$V_{IWM}$	max. 70	112 V
$V_{I(RMS)}$	max. 50	80 V

Repetitive peak voltage

Crest working voltage

R.M.S. voltage (sine-wave)

Non-repetitive peak current;  
half sine-wave;  $t = 20$  ms; with reapplied  $V_{IWMmax}$

$T_j = 25$  °C prior to surge

$T_j = 150$  °C prior to surge

Peak inrush current (see Fig. 6)

### Output

Average current (averaged over any 20 ms period;

see Figs 2 and 3)

heatsink operation up to  $T_{mb} = 115$  °C

heatsink operation at  $T_{mb} = 125$  °C

free-air operation at  $T_{amb} = 45$  °C;

(mounting method 1a)

Repetitive peak current

### Temperatures

Storage temperature

$T_{stg}$  -40 to +150 °C

Junction temperature

$T_j$  max. 150 °C

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## THERMAL RESISTANCE

From junction to mounting base

$$R_{th\ j-mb} = 4,0\ ^\circ C/W$$

### Influence of mounting method

#### 1. Free-air operation

The quoted values of  $R_{th\ j-a}$  should be used only when no leads of other dissipating components run to the same tie-point (see Fig. 2).

Thermal resistance from junction to ambient in free air

a. Mounted on a printed-circuit board with 4 cm<sup>2</sup> of copper laminate to + and – leads

$$R_{th\ j-a} = 19,5\ ^\circ C/W$$

b. Mounted on a printed-circuit board with minimal copper laminate

$$R_{th\ j-a} = 25\ ^\circ C/W$$

#### 2. Heatsink mounted with clip (see mounting instructions)

Thermal resistance from mounting base to heatsink

a. With zinc-oxide heatsink compound

$$R_{th\ mb-h} = 1,0\ ^\circ C/W$$

b. Without heatsink compound

$$R_{th\ mb-h} = 2,0\ ^\circ C/W$$

## MOUNTING INSTRUCTIONS

1. Soldered joints must be at least 4 mm from the seal.
2. The maximum permissible temperature of the soldering iron or bath is 270 °C; contact with the joint must not exceed 3 seconds.
3. Avoid hot spots due to handling or mounting; the body of the device must not come into contact with or be exposed to a temperature higher than 150 °C.
4. Leads should not be bent less than 4 mm from the seal. Exert no axial pull when bending.
5. Recommended force of clip on device is 120 N (12 kgf).
6. The heatsink should be in contact with the entire mounting base of the device and heatsink compound should be used.

## CHARACTERISTICS

Forward voltage (2 diodes in series)

$$I_F = 10\ A; T_j = 25\ ^\circ C$$

$$V_F < 2,3\ V^*$$

Reverse current (2 diodes in parallel)

$$V_R = V_{IWMmax}; T_j = 25\ ^\circ C$$

$$I_R < 200\ \mu A$$

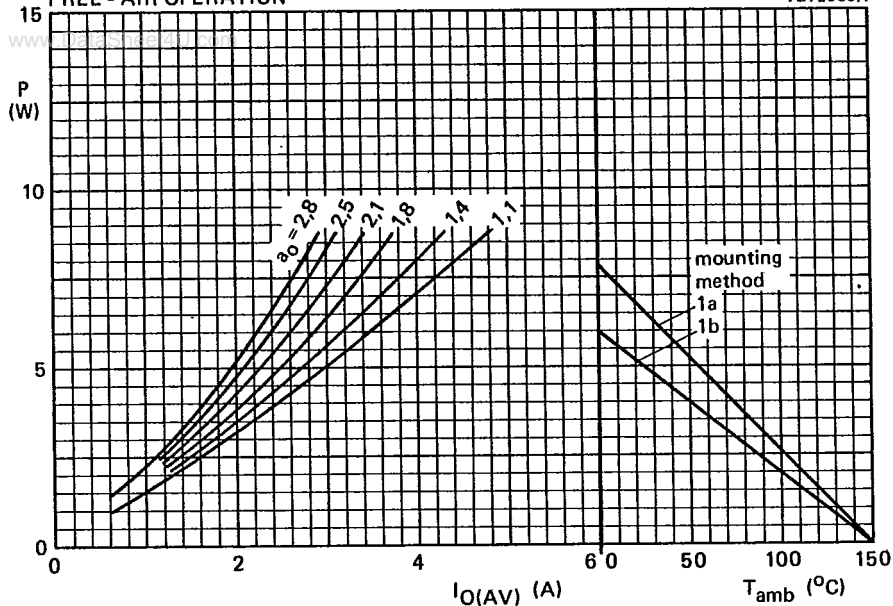


Fig. 2 The right-hand part shows the interrelationship between the power (derived from the left-hand graph) and the maximum permissible ambient temperature.

Output form factor  $a_0 = I_{O(RMS)}/I_{O(AV)} = 0,707 \times I_{F(RMS)}/I_{F(AV)}$  per diode.

## HEATSINK OPERATION

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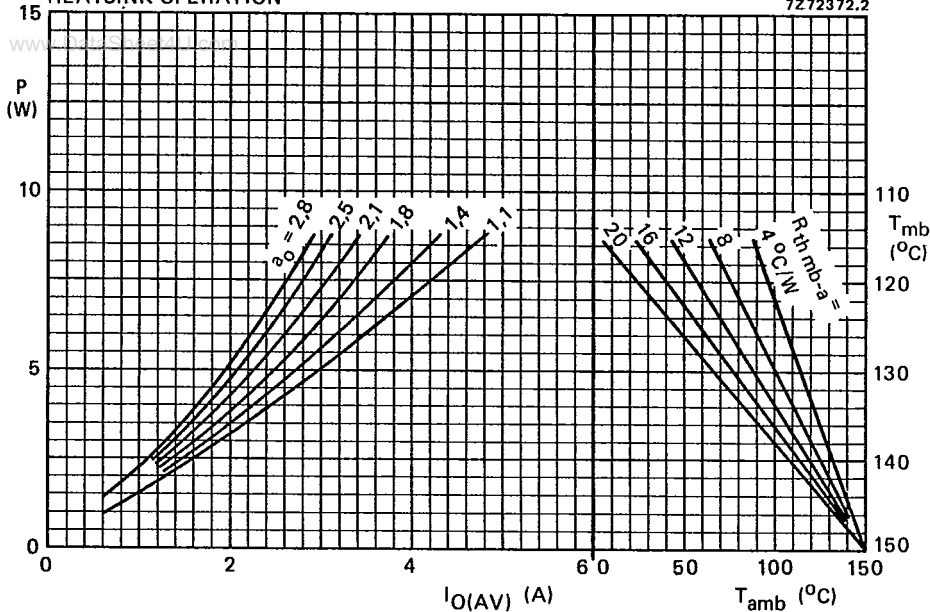


Fig. 3 The right-hand part shows the interrelationship between the power (derived from the left-hand graph) and the maximum permissible temperatures.

Output form factor  $a_o = I_{O(RMS)}/I_{O(AV)} = 0,707 \times I_{F(RMS)}/I_{F(AV)}$  per diode.

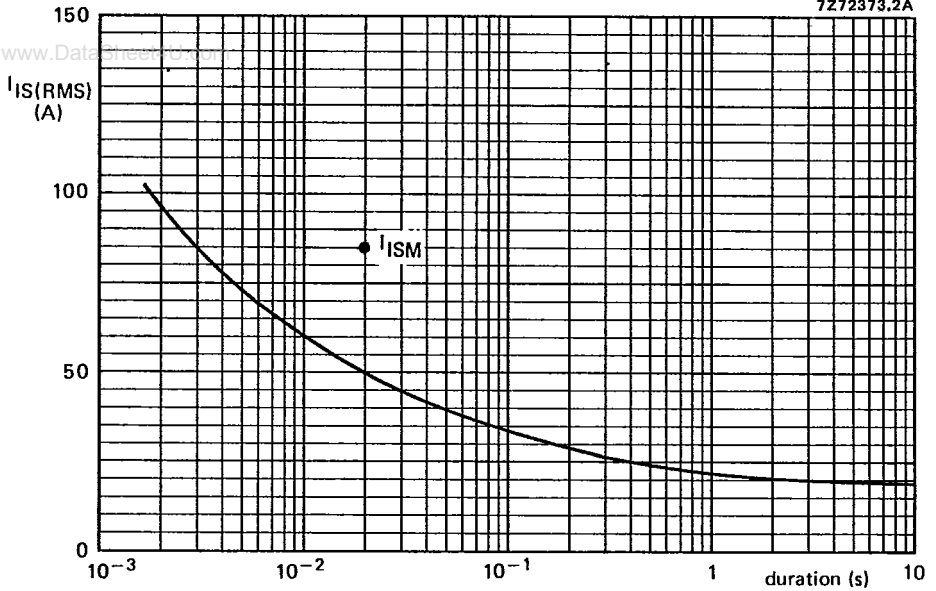


Fig. 4 Maximum permissible non-repetitive r.m.s. input current based on sinusoidal currents ( $f = 50$  Hz);  $T_j = 150$  °C prior to surge; with reapplied  $V_{IWMmax}$ .

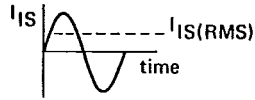
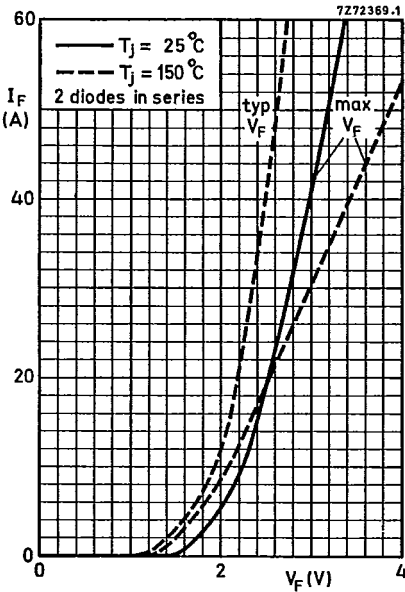
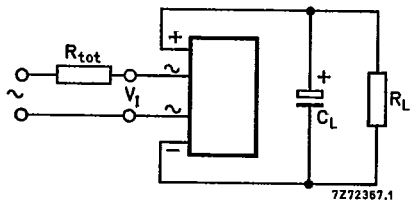
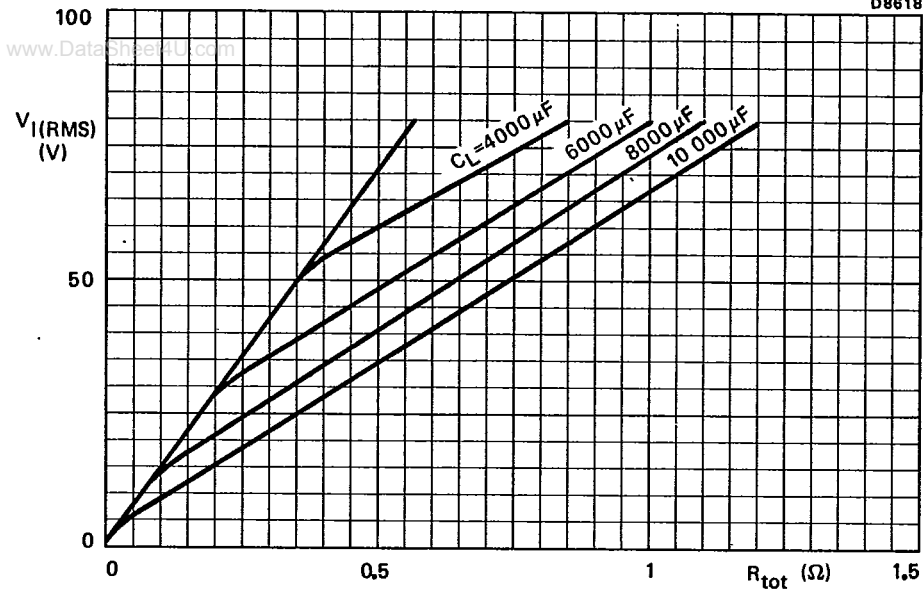


Fig. 5.



The graph takes the possibility of the following spreads into account:

- input voltage +10%
- capacitance +50%
- resistance -10%

Fig. 6 Minimum value of the total series resistance  $R_{tot}$  (including the transformer resistance) required to limit the peak inrush current.

CAPACITIVE LOAD

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mounting method:  
 1a - - - -  
 1b - - - -

$I_{O(AV)}$   
(A)

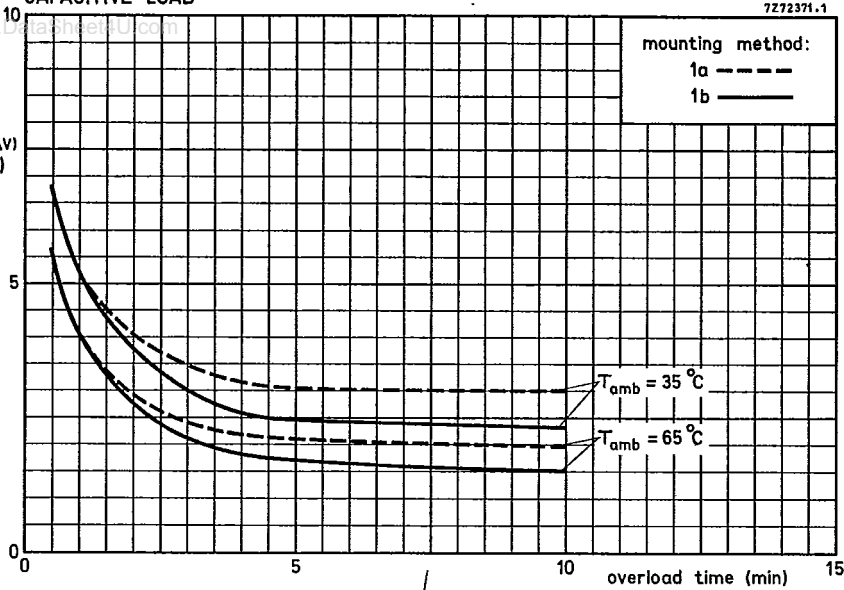


Fig. 7.