SILICON BRIDGE RECTIFIERS

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.

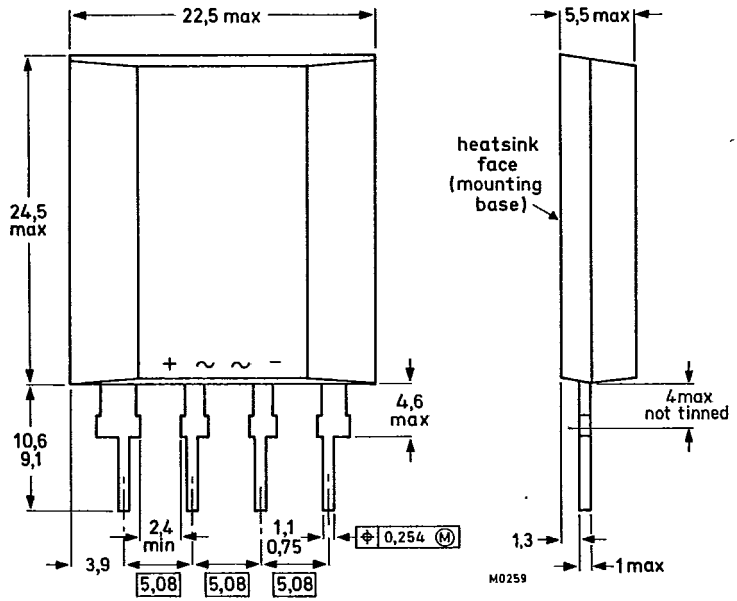
QUICK REFERENCE DATA

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

RATINGS

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

Input			BY225-100	200	
Non-repetitive peak voltage ($t \leqslant 10$ ms)	V_{ISM}	max.	100	200	V
Repetitive peak voltage	V_{IRM}	max.	100	200	V
Crest working voltage	V_{IWM}	max.	70	112	V
R.M.S. voltage (sine-wave)	$V_{I(RMS)}$	max.	50	80	V
Non-repetitive peak current; half sine-wave; t = 20 ms; with reapplied V_{IWMmax}					
T_j = 25 °C prior to surge	I_{ISM}	max.		100	A
T_j = 150 °C prior to surge	I_{ISM}	max.		85	A
Peak inrush current (see Fig. 6)	I_{IIM}	max.		200	A
Output					
Average current (averaged over any 20 ms period; see Figs 2 and 3)					
heatsink operation up to T_{mb} = 115 °C	$I_{O(AV)}$	max.		4,8	A
heatsink operation at T_{mb} = 125 °C	$I_{O(AV)}$	max.		3,6	A
free-air operation at T_{amb} = 45 °C; (mounting method 1a)	$I_{O(AV)}$	max.		3,2	A
Repetitive peak current	I_{ORM}	max.		50	A
Temperatures					
Storage temperature	T_{stg}			−40 to +150	°C
Junction temperature	T_j	max.		150	°C

THERMAL RESISTANCE

From junction to mounting base	$R_{th\ j\text{-}mb}$	=	4,0 °C/W

Influence of mounting method

1. Free-air operation

The quoted values of $R_{th\ j\text{-}a}$ 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 cm² of copper laminate to + and — leads	$R_{th\ j\text{-}a}$	=	19,5 °C/W
b. Mounted on a printed-circuit board with minimal copper laminate	$R_{th\ j\text{-}a}$	=	25 °C/W

2. Heatsink mounted with clip (see mounting instructions)

Thermal resistance from mounting base to heatsink

a. With zinc-oxide heatsink compound	$R_{th\ mb\text{-}h}$	=	1,0 °C/W
b. Without heatsink compound	$R_{th\ mb\text{-}h}$	=	2,0 °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 °C	V_F	<	2,3 V*
Reverse current (2 diodes in parallel) $V_R = V_{IWMmax}$; T_j = 25 °C	I_R	<	200 μA

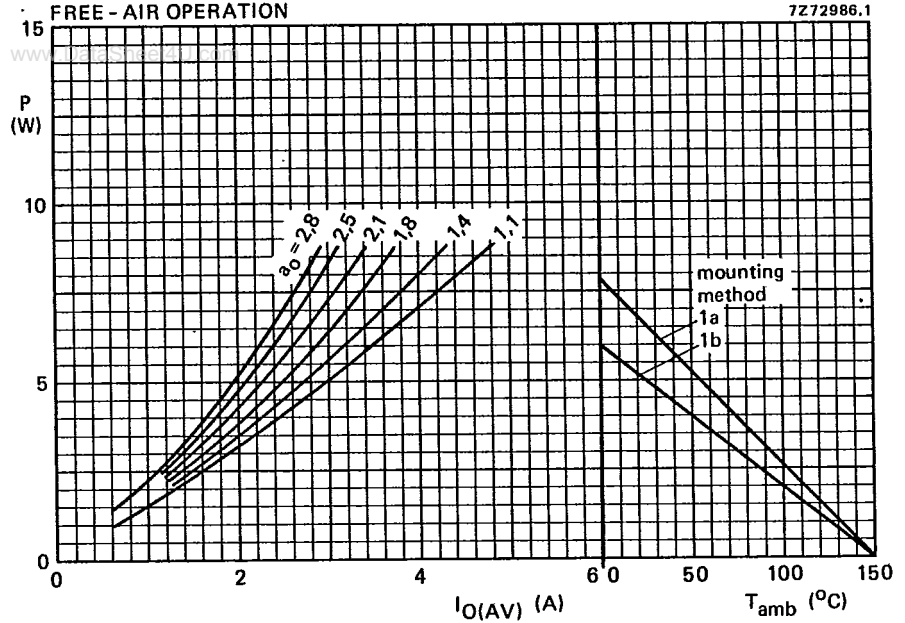


Fig. 2 The right-hand part shows the interrelationship between the power (derived from the left-hand graph) and the maximum permissible ambient temperature.

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

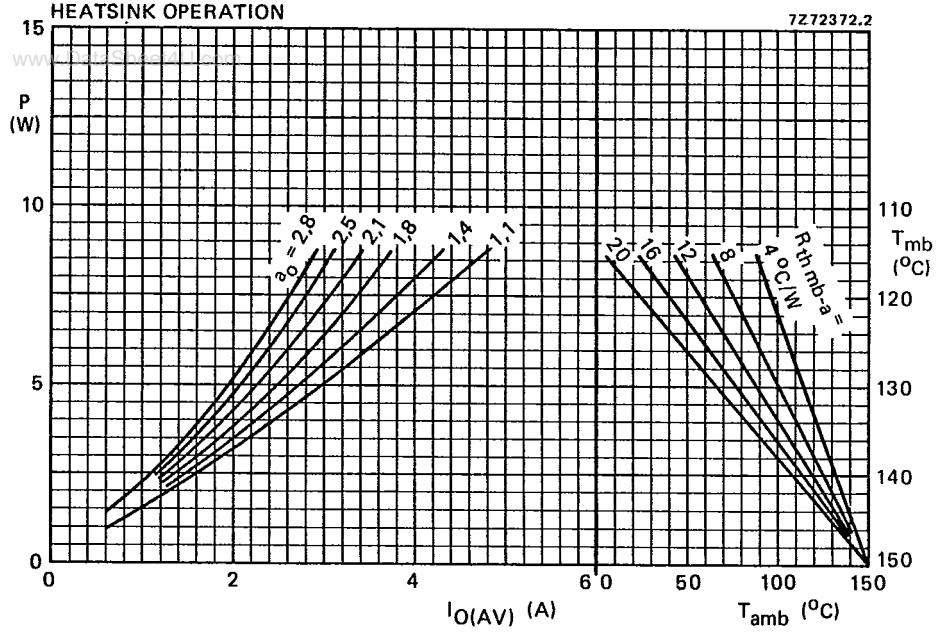


Fig. 3 The right-hand part shows the interrelationship between the power (derived from the left-hand graph) and the maximum permissible temperatures.

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

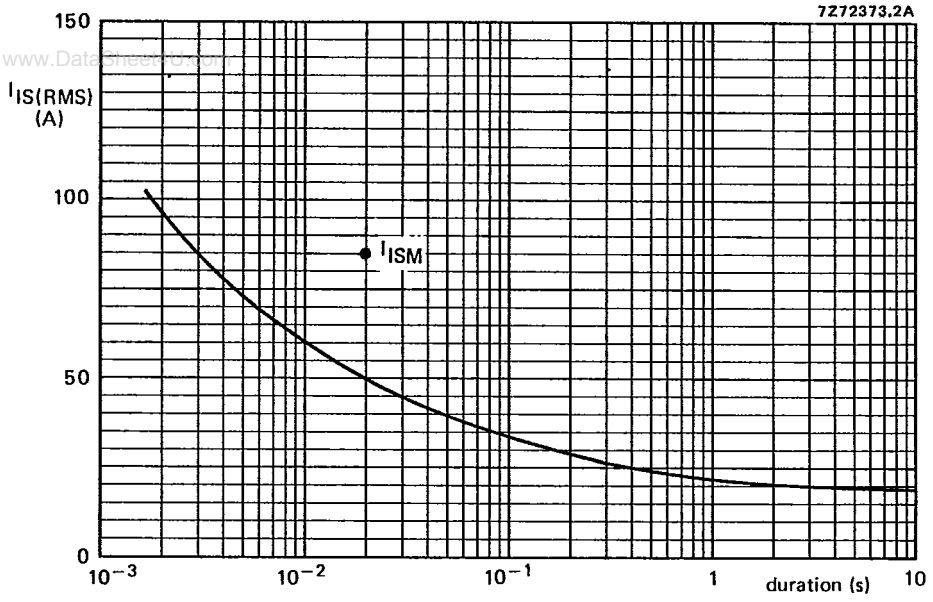
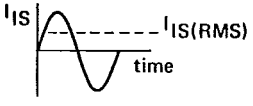


Fig. 4 Maximum permissible non-repetitive r.m.s. input current based on sinusoidal currents (f = 50 Hz); T_j = 150 °C prior to surge; with reapplied V_{IWMmax}.



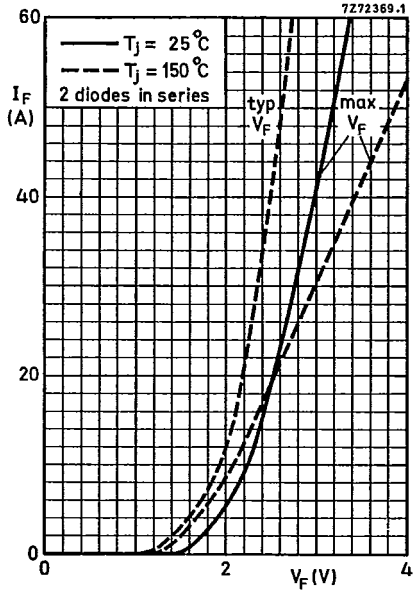
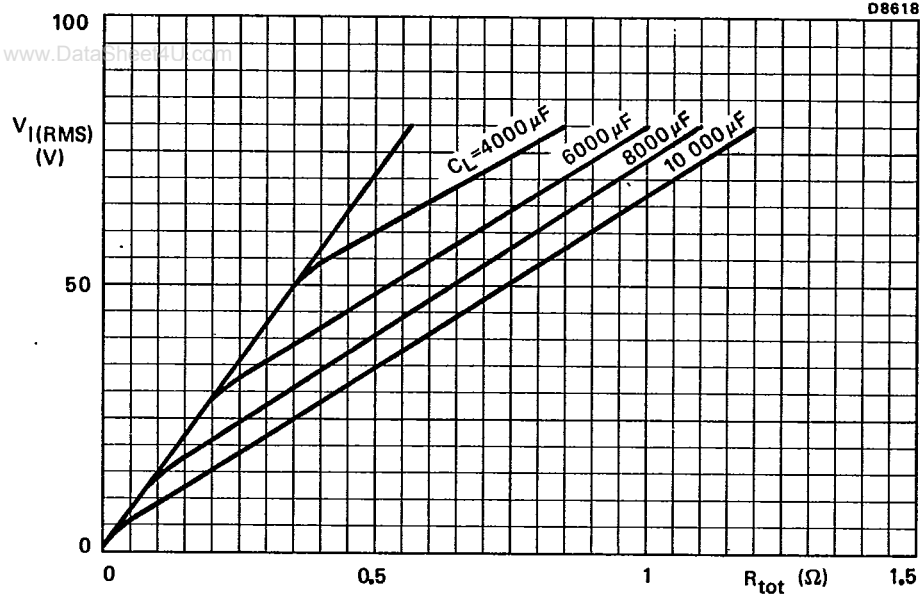
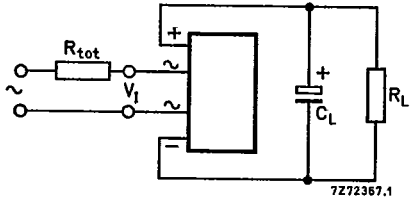


Fig. 5.





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.

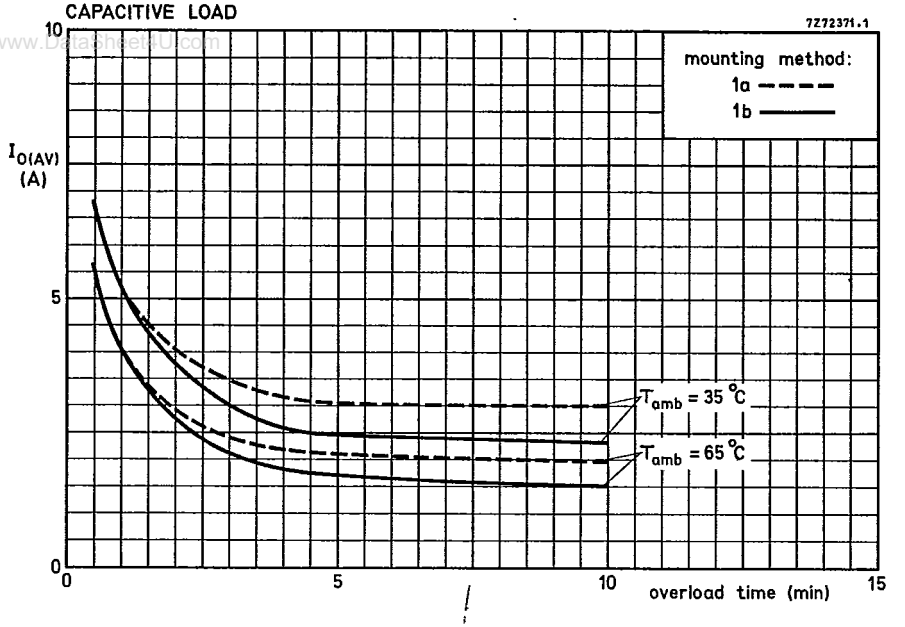


Fig. 7.