SILICON BRIDGE RECTIFIER

Plastic-encapsulated bridge rectifier comprising four silicon double-diffused diodes. It is primarily intended for use in the power supplies of many types of transistorised equipment operating at frequencies up to 400 Hz.

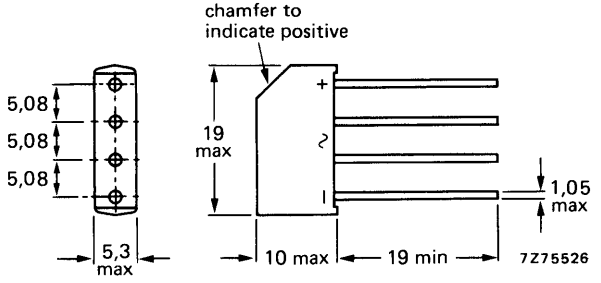
QUICK REFERENCE DATA

Input				
R.M.S. voltage	$V_{I(RMS)}$	max.	60	V
Repetitive peak voltage	V_{IRM}	max.	120	V
Non-repetitive peak current	I_{ISM}	max.	25	A
Output				
Average current	$I_{O(AV)}$	max.	1.2	A

MECHANICAL DATA

Dimensions in mm

Fig. 1 SOD-28



The sealing of the plastic envelope 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)

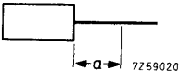
Input				
R.M.S. voltage	$V_{I(RMS)}$	max.	60	V
Crest working voltage	V_{IWM}	max.	85	V
Repetitive peak voltage	V_{IRM}	max.	120	V
Non repetitive peak voltage; $t \leqslant 10$ ms	V_{ISM}	max.	120	V
Non-repetitive peak current (see also Fig.8)	I_{ISM}	max.	25	A
Output				
Average current with C load	See Figs. 3, 6			
Average current with R and L load (see also Fig.5) $V_{I(RMS)} \leqslant 60$ V	$I_{O(AV)}$	max.	1.2	A
Repetitive peak current	I_{ORM}	max.	5	A
Temperatures				
Storage temperature	T_{stg}		−55 to +125	°C
Junction temperature	T_j	max.	150	°C

THERMAL RESISTANCE

Influence of mounting method

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.

1. Mounted to solder tags at a lead-length a > 5 mm. $R_{th\ j\text{-}a}$ = 40 °C/W
2. Mounted on printed-wiring board at a = maximum lead-length. $R_{th\ j\text{-}a}$ = 50 °C/W
3. Mounted on printed-wiring board at a lead-length a = 5 mm. $R_{th\ j\text{-}a}$ = 55 °C/W
4. Mounted on printed-wiring board at a lead-length a = 1.5 mm. $R_{th\ j\text{-}a}$ = 60 °C/W
   (distance -a- includes printed-wiring board thickness)



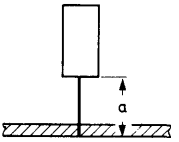


Fig.2

MOUNTING INSTRUCTIONS

1. The maximum permissible temperature of the soldering iron or bath is 270 °C; it must not be in contact with the joint for more than 3 seconds.
2. 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.
3. Exert no axial pull when bending.

CHARACTERISTICS

Forward voltage (2 diodes in series)

I_F = 2 A; T_j = 25 °C	V_F	<	2.2	V*

*Measured under pulse conditions to avoid excessive dissipation.

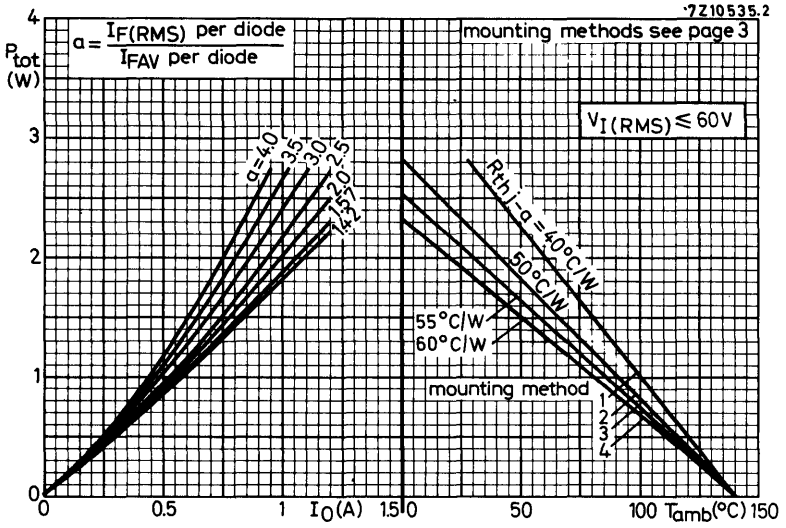


Fig.3

From the left-hand graph the total power dissipation can be found as a function of the average output current.

The parameter $a = \frac{I_{F(RMS) \text{ per diode}}}{I_{F(AV) \text{ per diode}}}$ depends on $\omega R_L C_L$ and $\frac{R_t + R_{diff}}{R_L}$ and can be found from existing graphs.

See Application Book: RECTIFIER DIODES.

Once the power dissipation is known, the max. permissible ambient temperature follows from the right-hand graph.

For the series resistance, added to limit the initial peak rectifier current, the required minimum value can be found from Fig.5.

R_{diff} is shown in Fig.4.

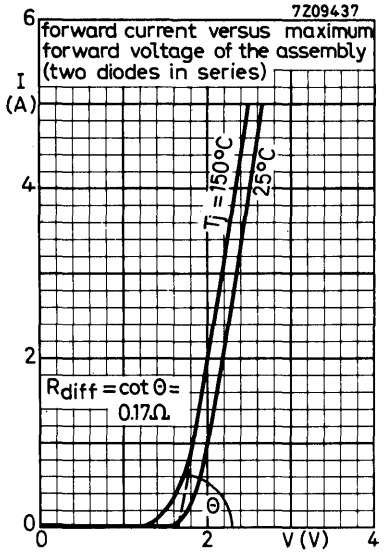


Fig.4

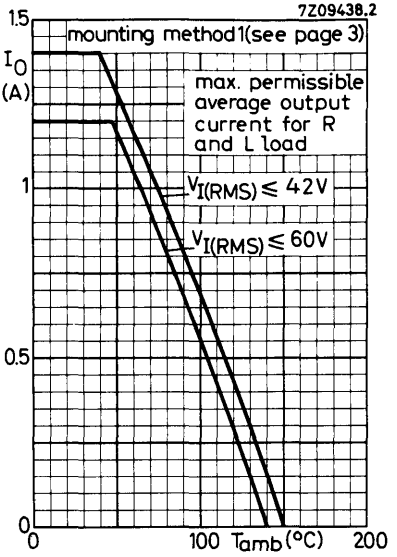


Fig.5

Example: Rectifier with C load

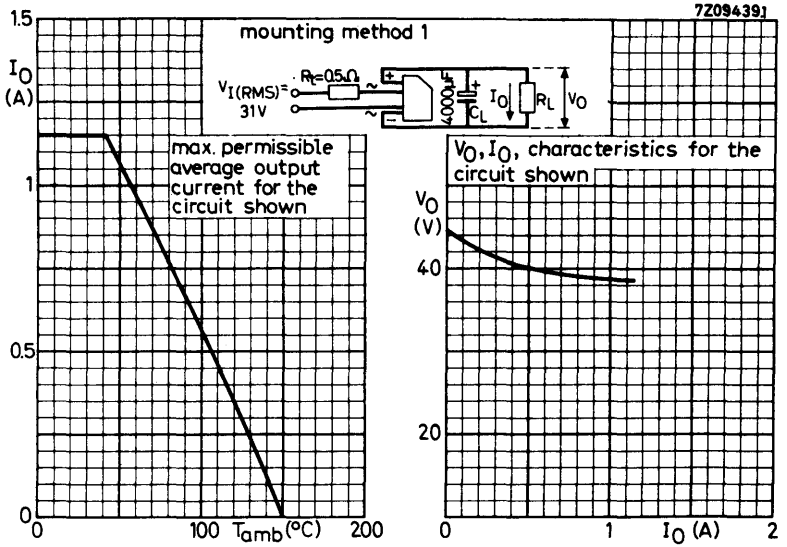


Fig.6

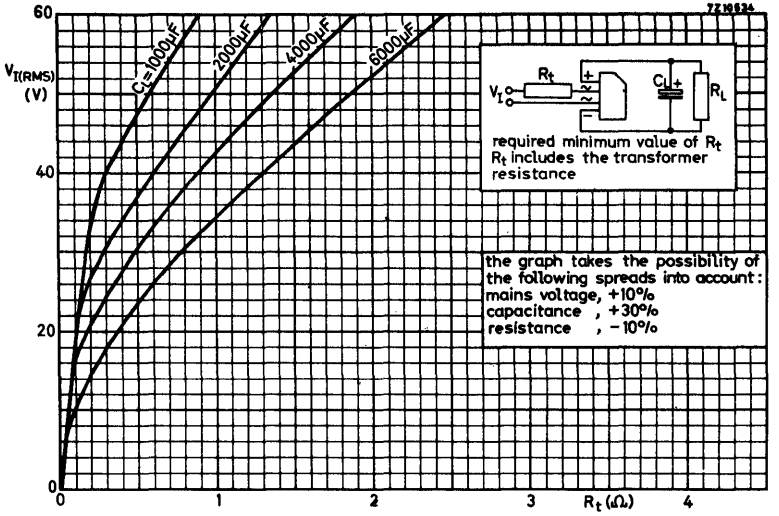

7Z19524
60
40
20
0
$V_{I(RMS)}$ (V)
C_L=1000μF
2000μF
4000μF
6000μF
0
1
2
3
R_t (Ω)
4
R_t
V_I
C_L
R_L
required minimum value of R_t
R_t includes the transformer resistance
the graph takes the possibility of the following spreads into account:
mains voltage, +10%
capacitance , +30%
resistance , −10%

Fig.7

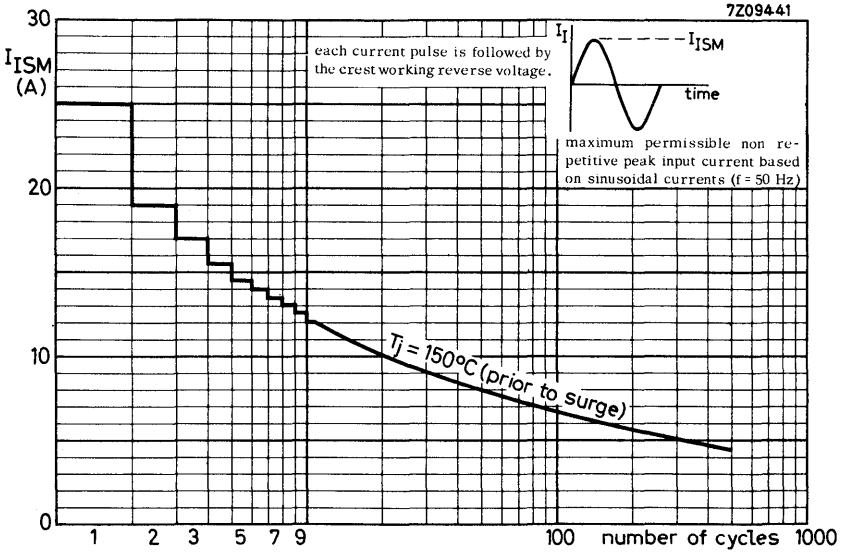

7Z09441
30
20
10
0
I_{ISM} (A)
each current pulse is followed by the crest working reverse voltage.
I_I
I_{ISM}
time
maximum permissible non repetitive peak input current based on sinusoidal currents (f = 50 Hz)
T_j = 150°C (prior to surge)
1
2
3
5
7
9
100
number of cycles
1000

Fig.8