SILICON RECTIFIER DIODES

Also available to BS9331-F131

The BYX22–600 and BYX22–1200 are silicon diodes in a metal DO–1 envelope, intended for power rectifier applications up to 1.4 A.

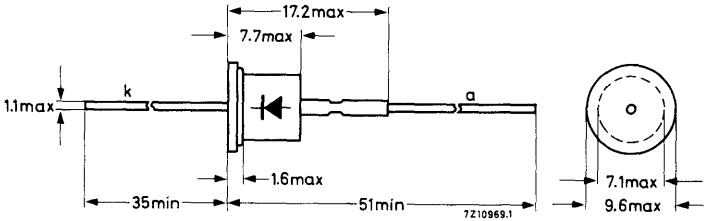
QUICK REFERENCE DATA

			BYX22–600	1200	
Crest working reverse voltage	V_{RWM}	max.	400	800	V
Repetitive peak reverse voltage	V_{RRM}	max.	600	1200	V
Average forward current	$I_{F(AV)}$	max.	1.4		A
Non-repetitive peak forward current	I_{FSM}	max.	40		A

MECHANICAL DATA

Dimensions in mm

DO–1



MOUNTING METHODS see page 3

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

All information applies to frequencies up to 400Hz

Voltages

		BYX22-600	1200	
Crest working reverse voltage	V_{RWM}	max. 400	800	V
Repetitive peak reverse voltage ($d \leq 1\%$)	V_{RRM}	max. 600	1200	V
Non repetitive peak reverse voltage ($t \leq 10$ ms)	V_{RSM}	max. 600	1200	V

Currents

Average forward current (averaged over any 20 ms period) for R-load up to $T_{amb} = 30\,^{o}C$	I_{FAV}	max.	1.4	A
Forward current (d.c.) up to $T_{amb} = 30\,^{o}C$	I_F	max.	1.6	A
Repetitive peak forward current	I_{FRM}	max.	15	A
Non repetitive peak forward current $t = 10$ ms; $T_j = 150\,^{o}C$ (see page 6)	I_{FSM}	max.	40	A

Temperatures

Storage temperature	T_{stg}	−65 to +150		^{o}C
Ambient temperature	T_{amb}	max.	150	^{o}C

THERMAL RESISTANCE

From junction to ambient	$R_{th\ j\text{-}a}$	See page 3		

CHARACTERISTICS

Forward voltage at $I_F = 5A$; $T_{amb} = 25\,^{o}C$	V_F	<	1.5	V [1]
Reverse current at $V_R = V_{RWMmax}$; $T_{amb} = 125\,^{o}C$	I_R	<	120	μA

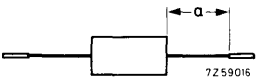
[1]) Measured under pulsed conditions to avoid excessive dissipation.

THERMAL RESISTANCE

Effect of mounting on thermal resistance $R_{th\ j\text{-}a}$

The quoted values apply when no other leads run to the tie-points. If leads of other dissipating components share the same tie-points, the thermal resistance will be higher than that quoted.

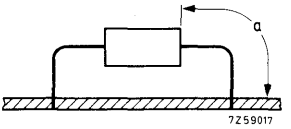
1. Mounted to solder tags at a lead-length a = 10 mm. $R_{th\ j\text{-}a}$ = 60 °C/W



2. Mounted to solder tags at a = maximum lead-length. $R_{th\ j\text{-}a}$ = 70 °C/W

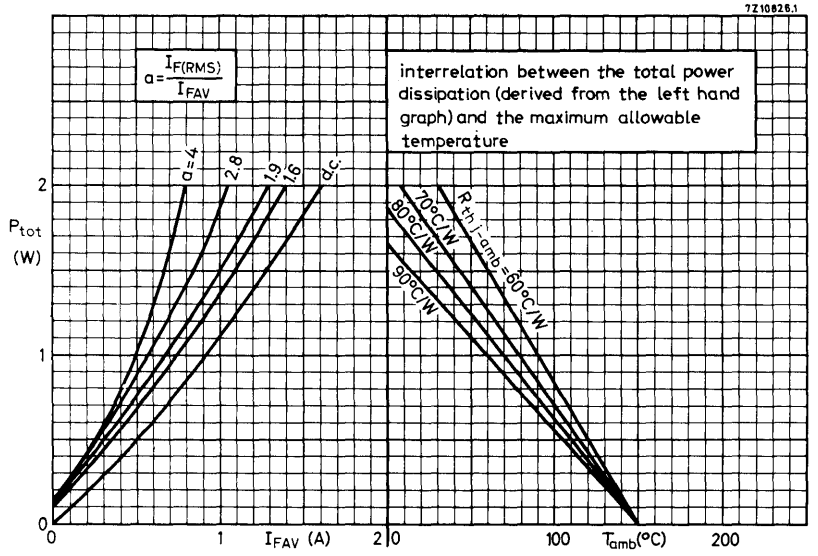
3. Mounted on printed-wiring board at a = maximum lead-length. $R_{th\ j\text{-}a}$ = 80 °C/W

4. Mounted on printed-wiring board at a lead-length a = 10 mm. $R_{th\ j\text{-}a}$ = 90 °C/W



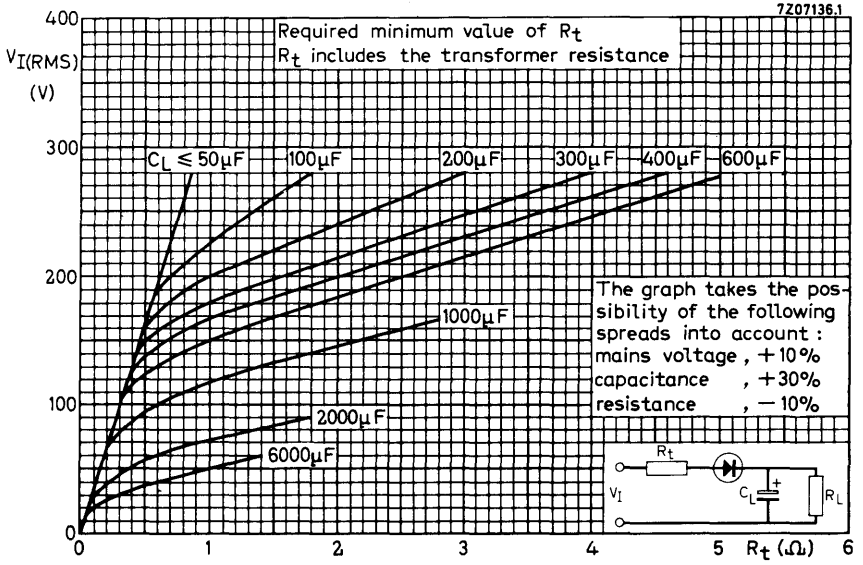
SOLDERING AND MOUNTING NOTES

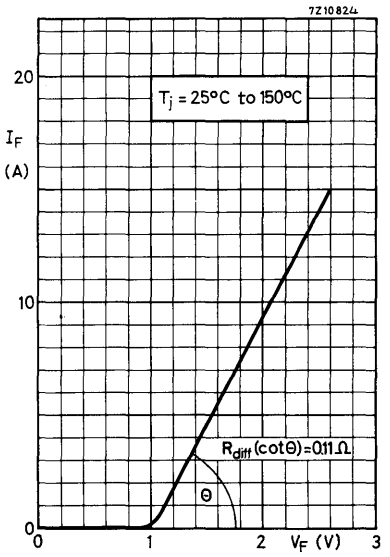
1. At a soldering iron or bath temperature of up to 245 °C, the maximum permissible soldering time is 10 s if the joint is 5 mm from the seal, 3 s if it is 1.5 mm from the seal.
2. At a temperature between 245 °C and 400 °C (max.), the joint must be more than 5 mm from the seal and soldering time must not exceed 5 s.
3. Leads should not be bent less than 1.5 mm from the seal; excert no axial pull when bending.

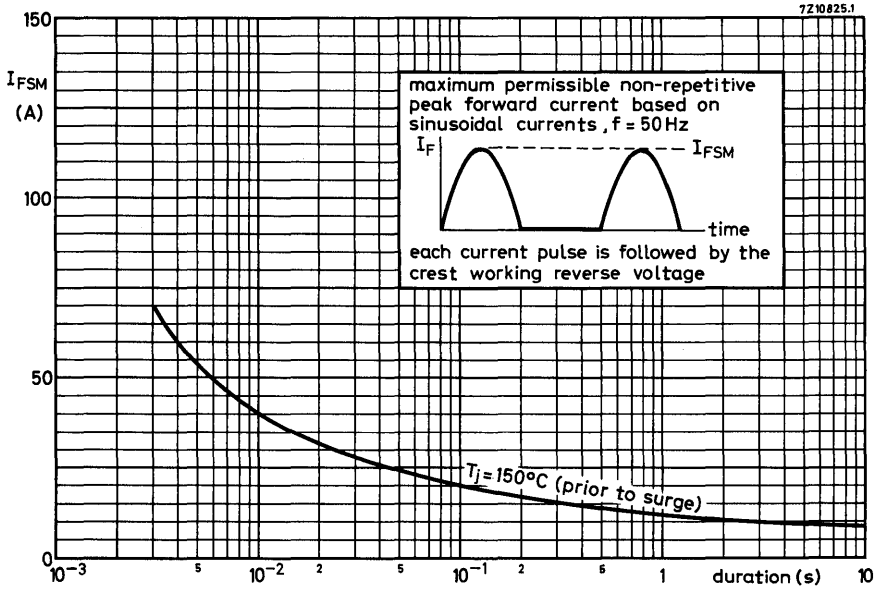


The form factor $a = \frac{I_{F(RMS)\ \text{per diode}}}{I_{FAV\ \text{per diode}}}$ depends on $n\omega R_L C_L$ and $\frac{R_t + R_{diff}}{nR_L}$ and can be found from existing graphs.

See Application Book: RECTIFIER DIODES.


7Z07136.1
Required minimum value of R_t
R_t includes the transformer resistance
$V_{I(RMS)}$ (V)
400
300
200
100
0
$C_L \leq 50\mu F$
100μF
200μF
300μF
400μF
600μF
1000μF
2000μF
6000μF
The graph takes the possibility of the following spreads into account:
mains voltage, +10%
capacitance, +30%
resistance, −10%
R_t
V_I
C_L
R_L
0
1
2
3
4
5
R_t (Ω)
6


7Z10824
T_j = 25°C to 150°C
I_F (A)
20
10
0
$R_{diff}(\cot\Theta)$=0.11Ω
Θ
0
1
2
V_F (V)
3


7Z10825.1
150
I_{FSM}
(A)
100
50
0
10^{-3}
5
10^{-2}
2
5
10^{-1}
2
5
1
duration (s)
10
maximum permissible non-repetitive peak forward current based on sinusoidal currents, f = 50 Hz
I_F
I_{FSM}
time
each current pulse is followed by the crest working reverse voltage
T_j = 150 °C (prior to surge)