RECTIFIER DIODES

Also available to BS9331-F130

Silicon rectifier diodes in metal envelopes similar to DO-5, intended for use in power rectifier applications.
The series consists of the following types:
Normal polarity (cathode to stud): BYX97-300 to 1600.
Reverse polarity (anode to stud): BYX97-300R to 1600R.

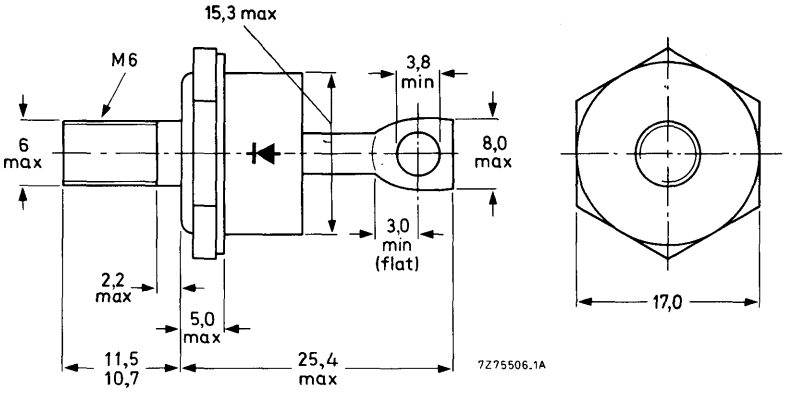
QUICK REFERENCE DATA

		BYX97-300 BYX97-300R	600 600R	1200 1200R	1600 1600R	
Repetitive peak reverse voltage	V_{RRM}	max.	300	600	1200	1600	V
Average forward current	$I_{F(AV)}$	max.		47		A
Non-repetitive peak forward current	I_{FSM}	max.		800		A

MECHANICAL DATA

Dimensions in mm

DO-5 (except for M6 stud); Supplied with device: 1 nut, 1 lock-washer
Nut dimensions across the flats: 10 mm



Net mass: 22 g
Diameter of clearance hole: max. 6.5 mm
Supplied on request: accessories 56264A
(mica washer, insulating ring, tag)
a version with insulated flying leads
The mark shown applies to normal polarity types

Torque on nut: min. 1.7 Nm
(17 kg cm)
max. 3.5 Nm
(35 kg cm)

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

Voltages [1]		BYX97-	300(R)	600(R)	1200(R)	1600(R)	
Non-repetitive peak reverse voltage ($t \leq 10$ ms)	V_{RSM}	max.	300	600	1200	1600	V
Repetitive peak reverse voltage ($\delta \leq 0,01$)	V_{RRM}	max.	300	600	1200	1600	V
Crest working reverse voltage	V_{RWM}	max.	200	400	800	800	V
Continuous reverse voltage	V_R	max.	200	400	800	800	V

Currents				
Average forward current (averaged over any 20 ms period) up to $T_{mb} = 120$ °C	$I_{F(AV)}$	max.	47	A
at $T_{mb} = 125$ °C	$I_{F(AV)}$	max.	40	A
R.M.S. forward current	$I_{F(RMS)}$	max.	75	A
Repetitive peak forward current	I_{FRM}	max.	550	A
Non-repetitive peak forward current ($t = 10$ ms; half sine-wave) $T_j = 150$ °C prior to surge; with reapplied V_{RWMmax}	I_{FSM}	max.	800	A
I^2t for fusing ($t = 10$ ms)	I^2t	max.	3200	A^2s

Temperatures				
Storage temperature	T_{stg}		−55 to +150	°C
Junction temperature	T_j	max.	150	°C

THERMAL RESISTANCE

From junction to mounting base	$R_{th\ j\text{-}mb}$	=	0,6	°C/W
From mounting base to heatsink without heatsink compound	$R_{th\ mb\text{-}h}$	=	0,3	°C/W
with heatsink compound	$R_{th\ mb\text{-}h}$	=	0,2	°C/W
Transient thermal impedance; $t = 1$ ms	$Z_{th\ j\text{-}mb}$	=	0,1	°C/W

[1]) To ensure thermal stability: $R_{th\ j\text{-}a} \leq 1$ °C/W (continuous reverse voltage) or ≤ 4 °C/W (a.c.)
For smaller heatsinks $T_{j\,max}$ should be derated. For a.c. see page 4.
For continuous reverse voltage: if $R_{th\ j\text{-}a} = 2$ °C/W, then $T_{j\,max} = 138$ °C,
if $R_{th\ j\text{-}a} = 3$ °C/W, then $T_{j\,max} = 125$ °C.

CHARACTERISTICS

Forward voltage

I_F = 150 A; T_j = 25 °C	V_F	< 1,45	V [1]

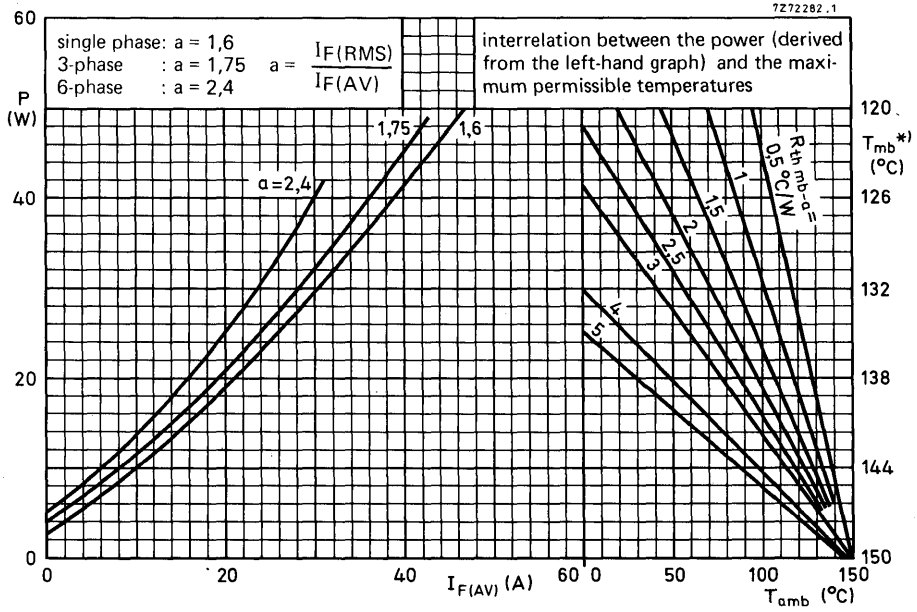
Reverse current

$V_R = V_{RWMmax}$; T_j = 125 °C	I_R	< 4	mA

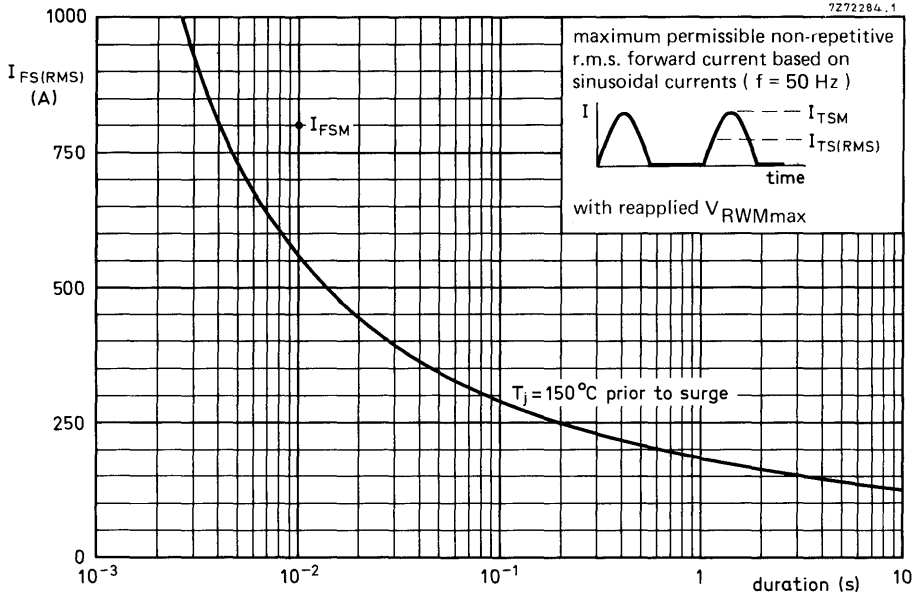
OPERATING NOTES

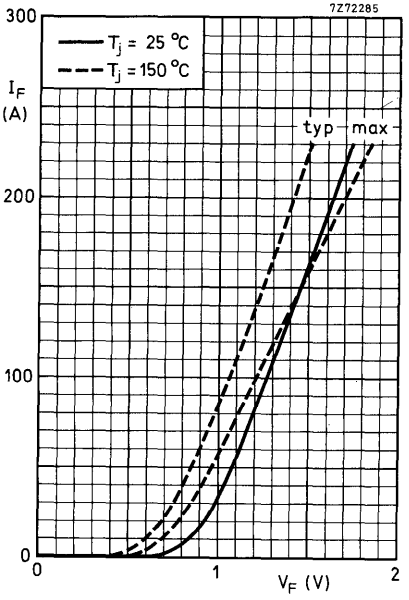
1. The top connector should neither be bent nor twisted; it should be soldered into the circuit so that there is no strain on it.
   During soldering the heat conduction to the junction should be kept to a minimum.
2. Where there is a possibility that transients, due to the energy stored in the transformer, will exceed the maximum permissible non-repetitive peak reverse voltage, see General Section for information on damping circuits in Data Handbook Part SC1a.

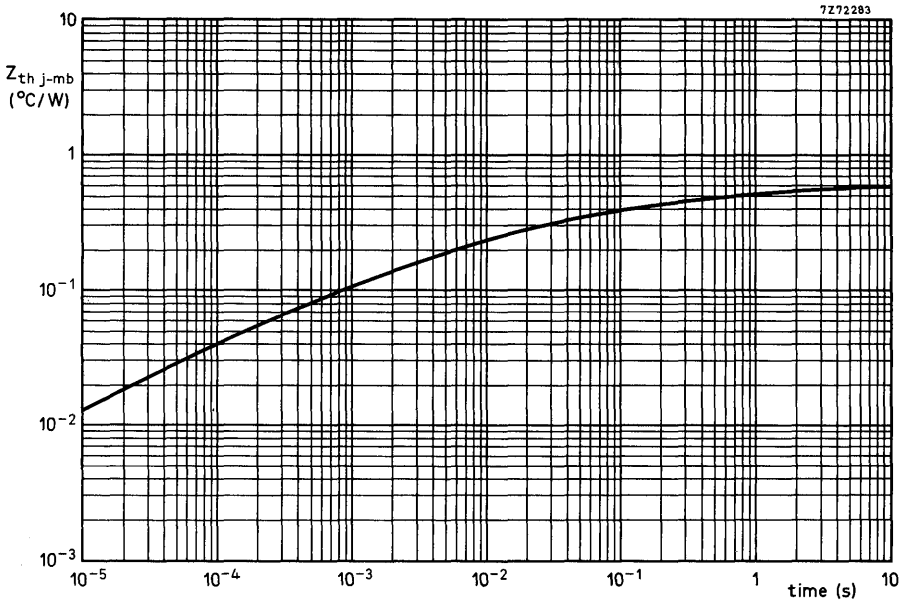
[1]) Measured under pulse conditions to avoid excessive dissipation.



*) T_{mb}-scale is for comparison purposes only and is correct only for $R_{th\ mb\text{-}a} \leq 3{,}4\ ^{o}C/W$


7Z72284.1
1000
$I_{FS(RMS)}$ (A)
750
500
250
0
10^{-3}
10^{-2}
10^{-1}
1
10
duration (s)
I_{FSM}
maximum permissible non-repetitive r.m.s. forward current based on sinusoidal currents (f = 50 Hz)
I
I_{TSM}
$I_{TS(RMS)}$
time
with reapplied V_{RWMmax}
T_j = 150 °C prior to surge


7Z72285
300
I_F (A)
200
100
0
0
1
2
V_F (V)
T_j = 25 °C
T_j = 150 °C
typ
max


7Z72283
10
$Z_{th\ j\text{-}mb}$
(°C/W)
1
10^{-1}
10^{-2}
10^{-3}
10^{-5}
10^{-4}
10^{-3}
10^{-2}
10^{-1}
1
10
time (s)