

FAST SOFT-RECOVERY RECTIFIER DIODES

Silicon diodes in DO-4 metal envelopes, intended for use in high-frequency power supplies, thyristor inverters and multi-phase power rectifier applications. The series consists of the following types:

Normal polarity (cathode to stud): BYX50-200, 300.

These devices feature non-snap-off characteristics.

QUICK REFERENCE DATA

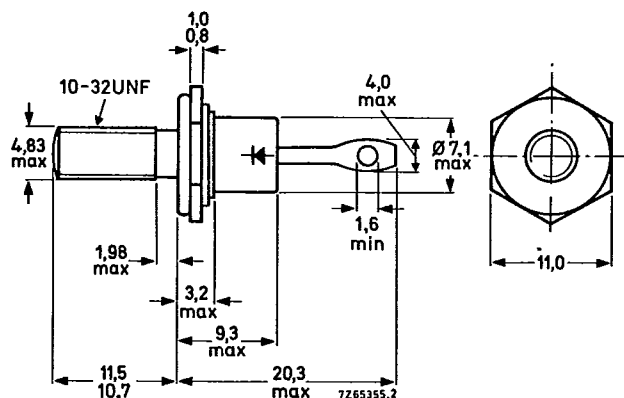
		BYX50-200		300	
		max.	200	300	
Repetitive peak reverse voltage	V_{RRM}	max.	200	300	V
Average forward current	$I_F(AV)$	max.	7	7	A
Non-repetitive peak forward current	I_{FSM}	max.	80	80	A
Reverse recovery time	t_{rr}	<	100	100	ns

MECHANICAL DATA

Dimensions in mm

Fig.1 DO-4, Supplied with device: 1 nut, 1 lock washer

Nut dimensions across the flats: 9,5 mm



Net mass: 6 g

Diameter of clearance hole: max. 5,2 mm

Accessories supplied on request: mica washer (56295a);

PTFE ring (56295b); insulating bush (56295c).

Torque on nut: min. 0,9 Nm

(9 kg cm)

max. 1,7 Nm

(17 kg cm)

BYX50 SERIES

90D 10521

D

T-03-17

RATINGS Limiting values in accordance with the Absolute Maximum System (IEC134).

→ Voltages

			BYX50-200	300	
Non-repetitive peak reverse voltage; $t \leq 10$ ms	V_{RSM}	max.	250	350	V
Repetitive peak reverse voltage	V_{RRM}	max.	200	300	V
Crest working reverse voltage	V_{RWM}	max.	200	300	V
Continuous reverse voltage	V_R	max.	200	300	V

Currents

Average on-state current assuming zero
switching losses (averaged over any 20 ms period)

up to $T_{mb} = 103^\circ\text{C}$

at $T_{mb} = 125^\circ\text{C}$

R.M.S. forward current

Repetitive peak forward current

Non-repetitive peak forward current

$t = 10$ ms; $T_j = 150^\circ\text{C}$ prior to surge

with reapplied V_{RWMmax}

I^2t for fusing ($t = 10$ ms)

Rate of change of commutation current

$I_F(AV)$	max.	7	A
$I_F(AV)$	max.	4	A
$I_F(RMS)$	max.	11	A
I_{FRM}	max.	80	A
I_{FSM}	max.	80	A
I^2t	max.	32	A ² s

See nomogram (Fig.6)

Temperatures

Storage temperature

Junction temperature

T_{stg}	-55 to +150	$^\circ\text{C}$
T_j	max. 150	$^\circ\text{C}$

THERMAL RESISTANCE

From junction to ambient in free air

From junction to mounting base

From mounting base to heatsink

Transient thermal impedance; $t = 1$ ms

$R_{th j-a}$	=	50	K/W
$R_{th j-mb}$	=	3,5	K/W
$R_{th mb-h}$	=	0,5	K/W
$Z_{th j-mb}$	=	1	K/W

Fast soft-recovery rectifier diodes

90D 10522

D T-03-17

BYX50 SERIES

CHARACTERISTICS

Forward voltage

 $I_F = 20 \text{ A}; T_j = 25^\circ\text{C}$ $V_F < 1,95 \text{ V}^*$

Reverse current

 $V_R = V_{RWM\max}; T_j = 125^\circ\text{C}$ $I_R < 3 \text{ mA}$

Reverse recovery when switched from

 $I_F = 1 \text{ A to } V_R = 30 \text{ V};$
 $-dI_F/dt = 100 \text{ A}/\mu\text{s}; T_j = 25^\circ\text{C}$

Recovery time

 $t_{rr} < 100 \text{ ns}$ $I_F = 1 \text{ A to } V_R = 30 \text{ V};$
 $-dI_F/dt = 35 \text{ A}/\mu\text{s}; T_j = 25^\circ\text{C}$

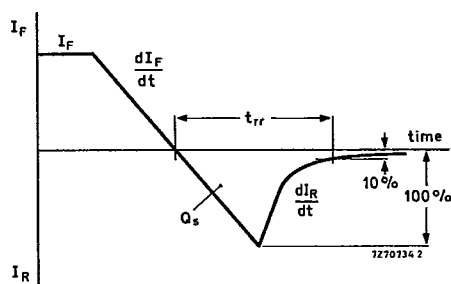
Recovery time

 $t_{rr} < 150 \text{ ns}$ $I_F = 2 \text{ A to } V_R = 30 \text{ V};$
 $-dI_F/dt = 20 \text{ A}/\mu\text{s}; T_j = 25^\circ\text{C}$

Recovered charge

 $Q_s < 250 \text{ nC}$ $I_F = 2 \text{ A to } V_R = 50 \text{ V};$
 $-dI_F/dt = 2 \text{ A}/\mu\text{s}; T_j = 25^\circ\text{C}$

Max. slope of the reverse recovery current

 $|dI_R/dt| < 5 \text{ A}/\mu\text{s}$ Fig.2 Definition of t_{rr} and Q_s .

* Measured under pulse conditions to avoid excessive dissipation.

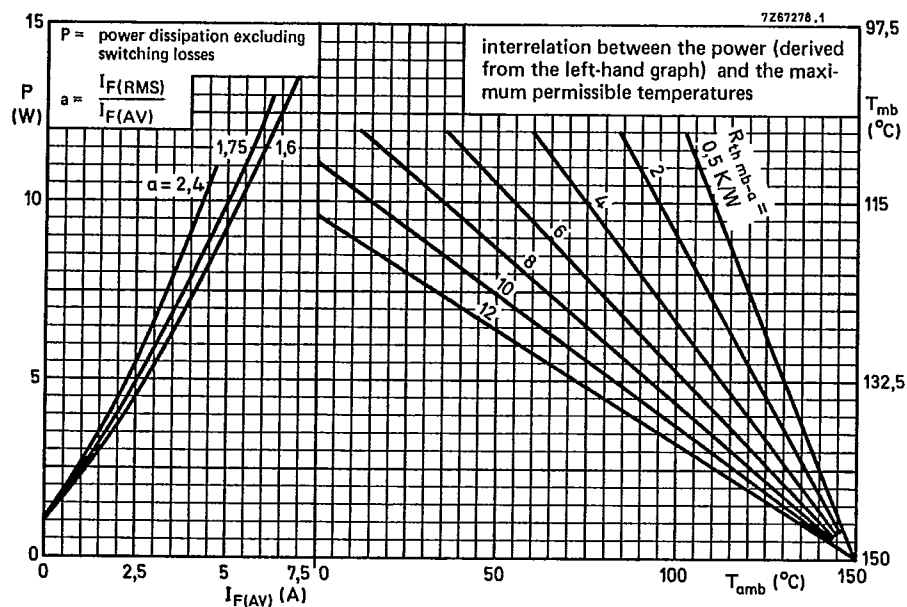


Fig.3

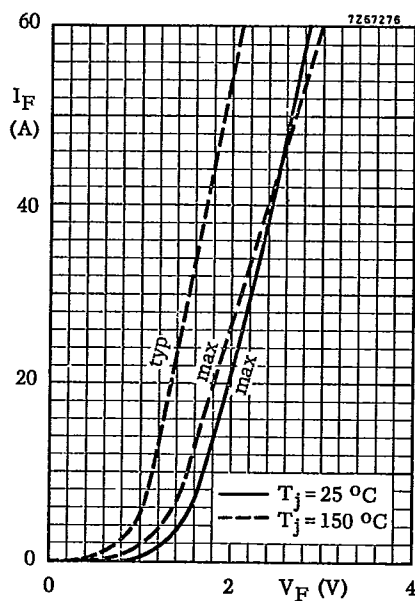


Fig.4

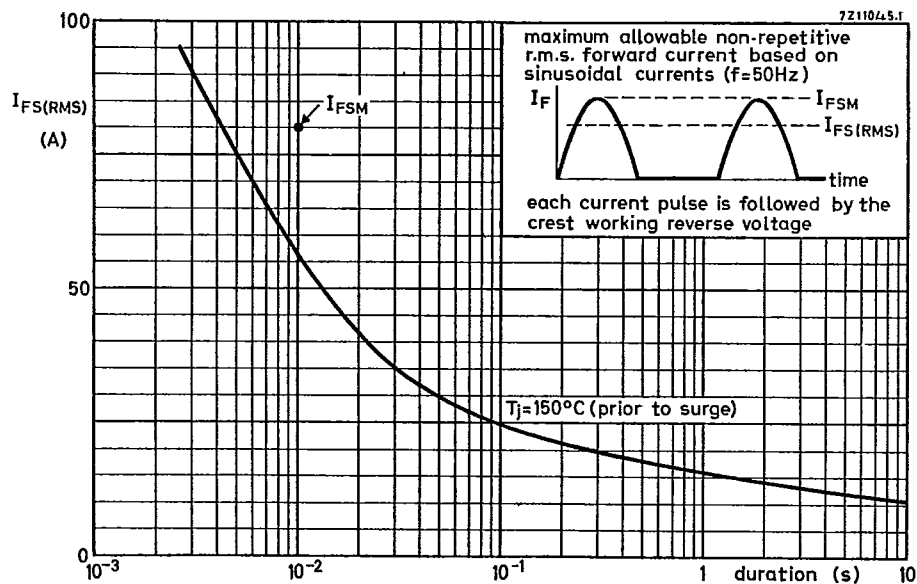


Fig.5

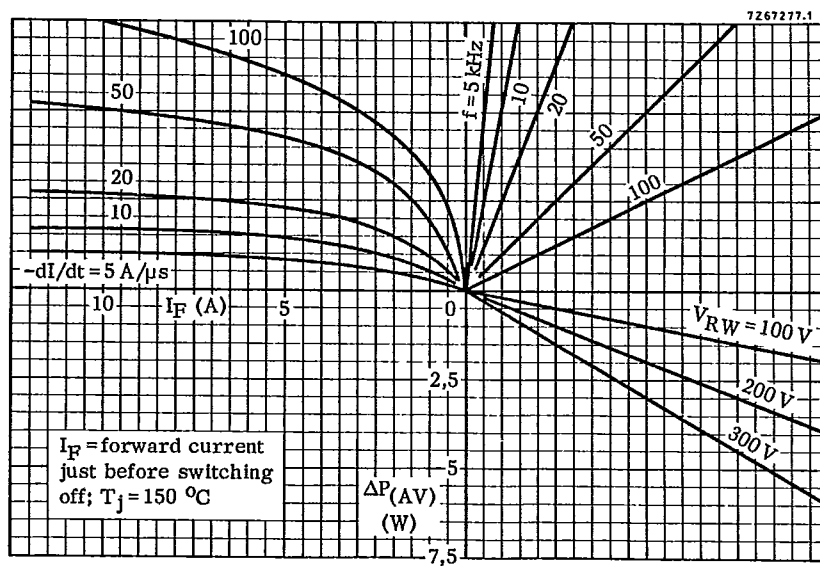


Fig.6

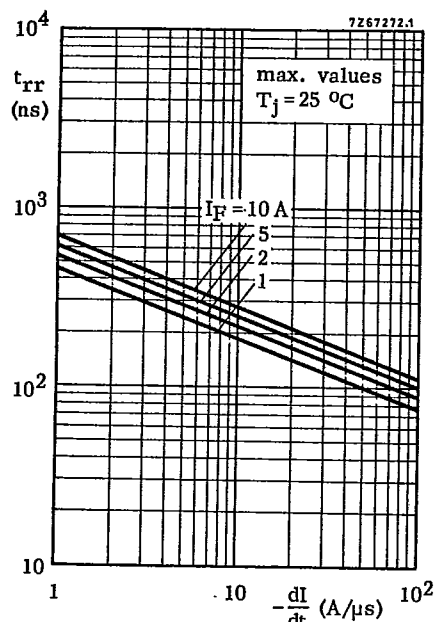


Fig.7

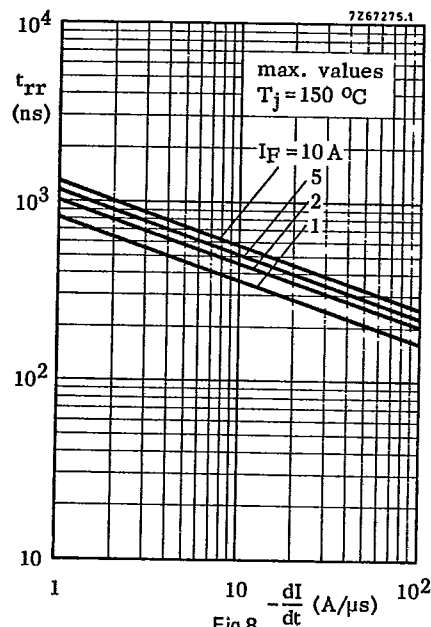


Fig.8

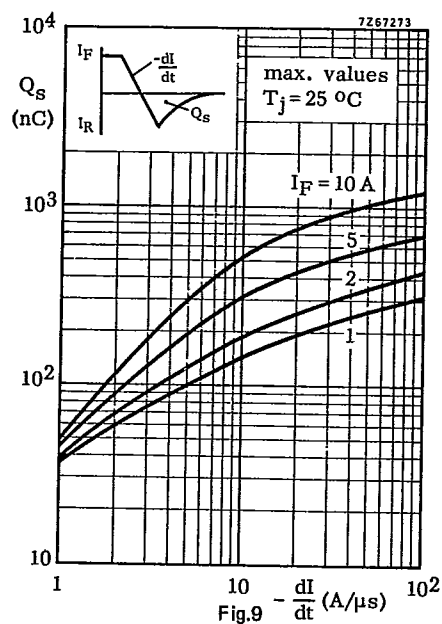


Fig.9

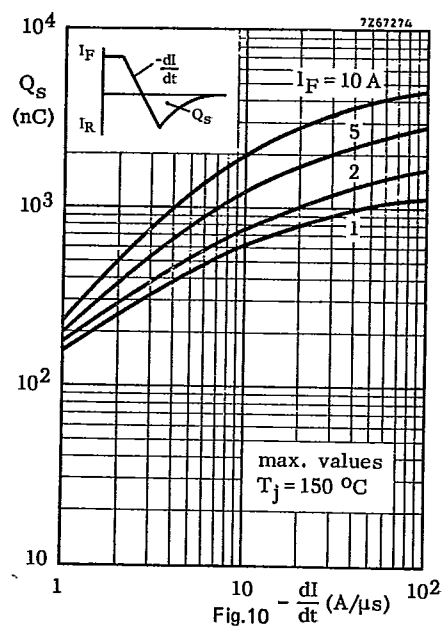


Fig.10

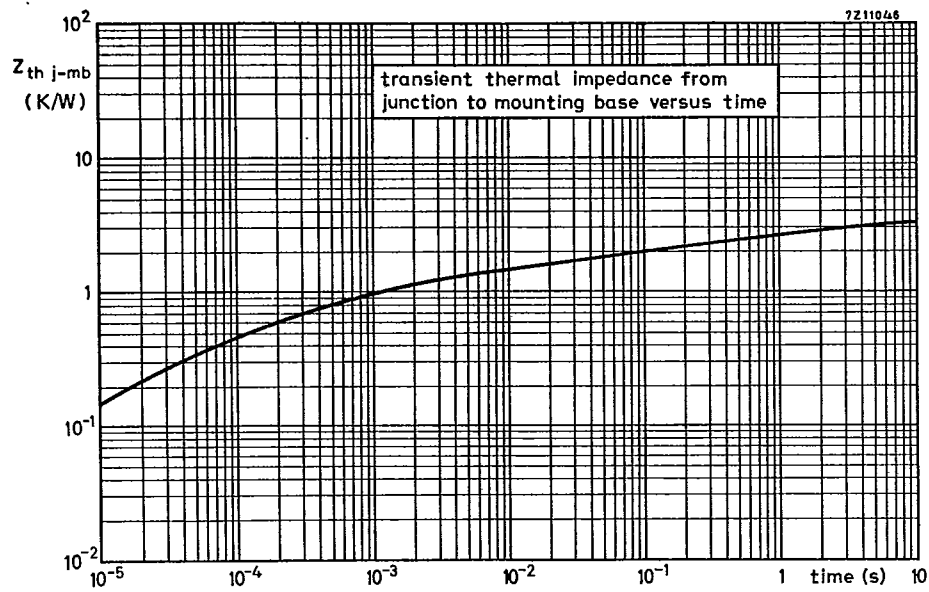


Fig.11