

CONTROLLED AVALANCHE RECTIFIER DIODES



Silicon diodes in a DO-5 metal envelope, capable of absorbing transients and intended for power rectifier applications.

The series consists of the following types:

Normal polarity (cathode to stud): BYX56-600 to BYX56-1400.

Reverse polarity (anode to stud): BYX56-600R to BYX56-1400R.

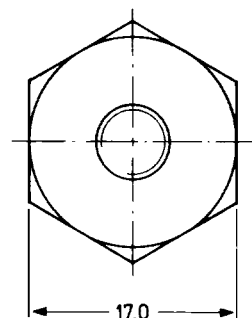
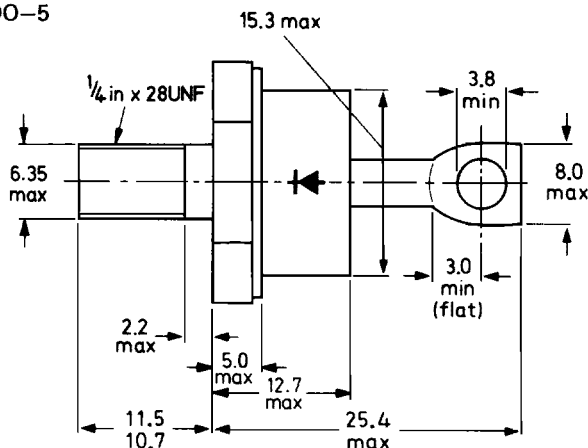
QUICK REFERENCE DATA

			BYX56-600(R)	800(R)	1000(R)	1200(R)	1400(R)	
Crest working reverse voltage	V_{RWM}	max.	600	800	1000	1200	1400	V
Reverse avalanche breakdown voltage	$V_{(BR)R}$	>	750	1000	1250	1450	1650	V
Average forward current	$I_F(AV)$	max.			48			A
Non-repetitive peak forward current	I_{FSM}	max.			800			A
Non-repetitive peak reverse power dissipation	P_{RSM}	max.			40			kW

MECHANICAL DATA

Dimensions in mm

Fig. 1 DO-5



M0186

Net mass: 22 g

Diameter of clearance hole: max. 6.5 mm

Accessories supplied on request:
see ACCESSORIES section

Supplied with device: 1 nut, 1 lock washer.

Nut dimensions across the flats: 11.1 mm.

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

The mark shown applies
to normal polarity types.



Products approved to CECC 50 009-023 available on request.

RATINGS

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

Voltages*		BYX56-600(R)	800(R)	1000(R)	1200(R)	1400(R)	
Crest working reverse voltage	V_{RWM}	max. 600	800	1000	1200	1400	V
Continuous reverse voltage	V_R	max. 600	800	1000	1200	1400	V

Currents

Average forward current

(averaged over any 20 ms period)

up to $T_{mb} = 112^\circ\text{C}$

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

$I_F(AV)$ max. 48 A

$I_F(AV)$ max. 40 A

R.M.S. forward current

$I_F(RMS)$ max. 75 A

Repetitive peak forward current

I_{FRM} max. 450 A

Non-repetitive peak forward current

$t = 10$ ms (half sine-wave);

$T_j = 175^\circ\text{C}$ prior to surge;

with reapplied V_{RWMmax}

I_{FSM} max. 800 A

$I^2 t$ for fusing ($t \leq 10$ ms)

$I^2 t$ max. 3200 A^2s

Reverse power dissipation

Repetitive peak reverse power dissipation

$t = 10$ μs (square-wave; $f = 50$ Hz);

$T_j = 175^\circ\text{C}$

P_{RRM} max. 6.5 kW

Non-repetitive peak reverse power dissipation

$t = 10$ μs (square-wave)

$T_j = 25^\circ\text{C}$ prior to surge

$T_j = 175^\circ\text{C}$ prior to surge

P_{RSM} max. 40 kW

P_{RSM} max. 6.5 kW

Temperatures

Storage temperature

T_{stg} -55 to +175 $^\circ\text{C}$

Junction temperature

T_j max. 175 $^\circ\text{C}$

THERMAL RESISTANCE

From junction to mounting base

$R_{th j-mb}$ = 0.8 $^\circ\text{C/W}$

From mounting base to heatsink

$R_{th mb-h}$ = 0.2 $^\circ\text{C/W}$

Transient thermal impedance; $t = 1$ ms

$Z_{th j-h}$ = 0.03 $^\circ\text{C/W}$

*To ensure thermal stability: $R_{th j-a} < 2.2^\circ\text{C/W}$ (a.c.)

CHARACTERISTICS

		BYX56-600(R)	800(R)	1000(R)	1200(R)	1400(R)	
Forward voltage							
$I_F = 150 \text{ A}; T_j = 25^\circ \text{C}$	V_F	< 1.8	1.8	1.8	1.8	1.8	V*
Reverse avalanche breakdown voltage							
$I_R = 5 \text{ mA}; T_j = 25^\circ \text{C}$	$V_{(BR)R}$	> 750	1000	1250	1450	1650	V
		< 2400	2400	2400	2400	2400	V
Reverse current							
$V_R = V_{RWMmax}; T_j = 125^\circ \text{C}$	I_R	< 1.6	1.6	1.6	1.6	1.6	mA

OPERATING NOTES

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 by using a thermal shunt.

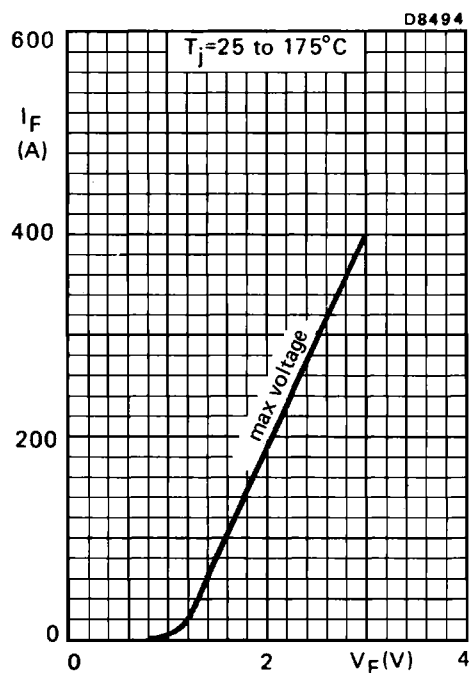
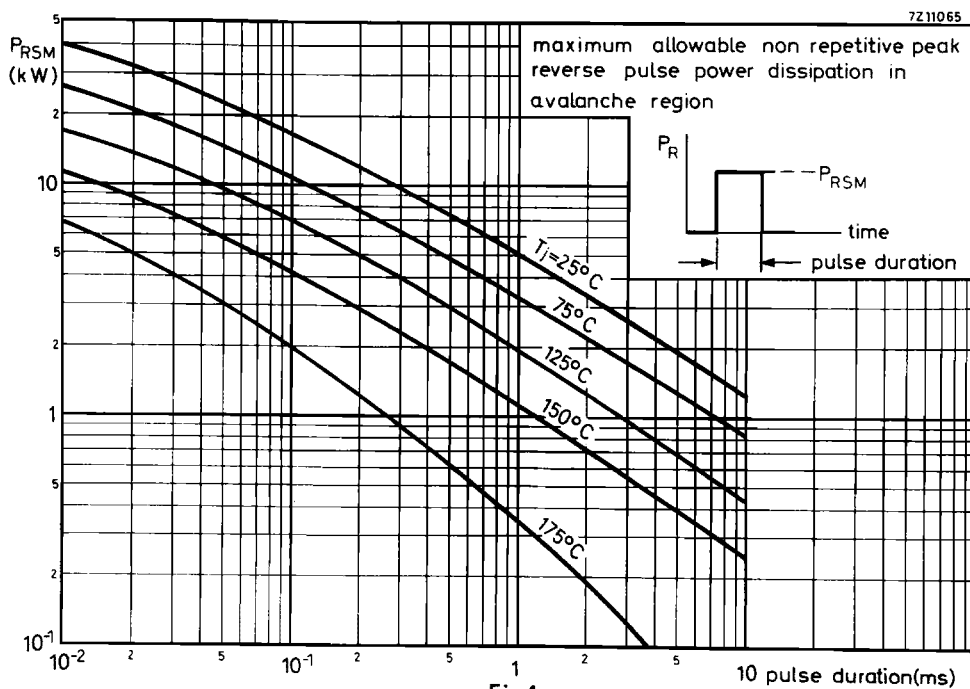
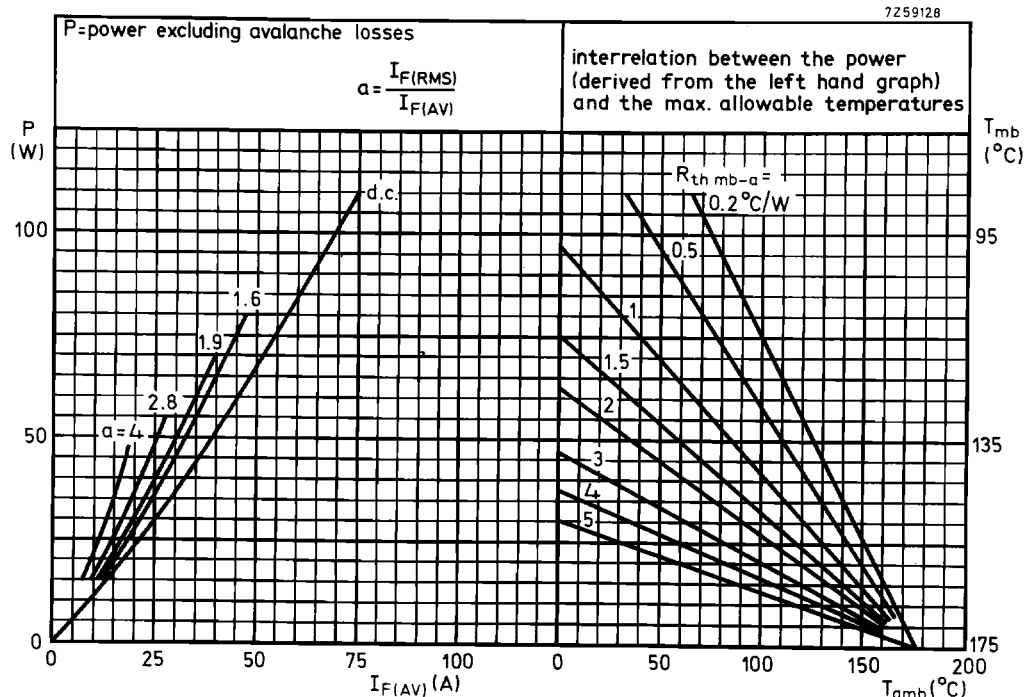


Fig.2

*Measured under pulsed conditions to avoid excessive dissipation.



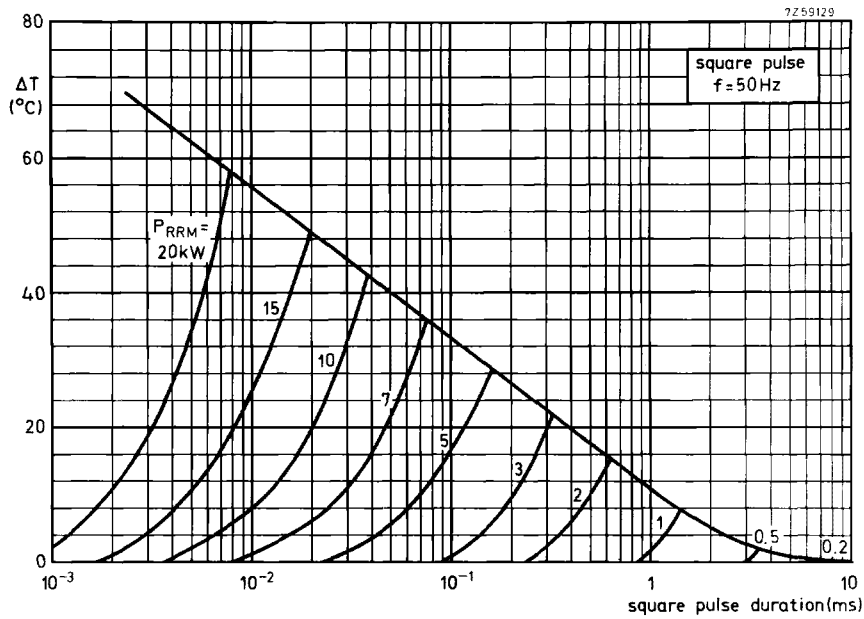


Fig.5

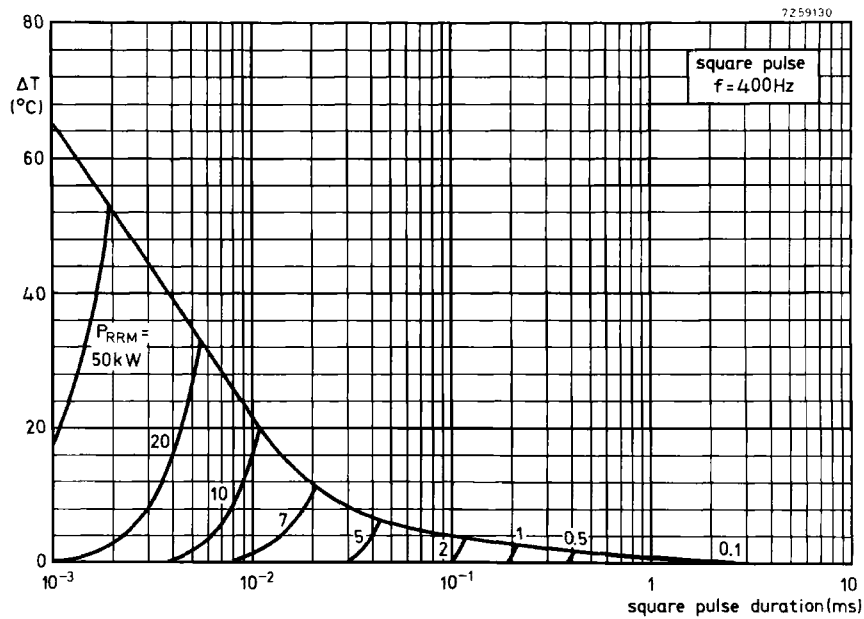


Fig.6

ΔT = necessary derating of T_{jmax} to accommodate repetitive transients in the reverse direction. Allowance can be made for this by assuming the ambient temperature ΔT higher.

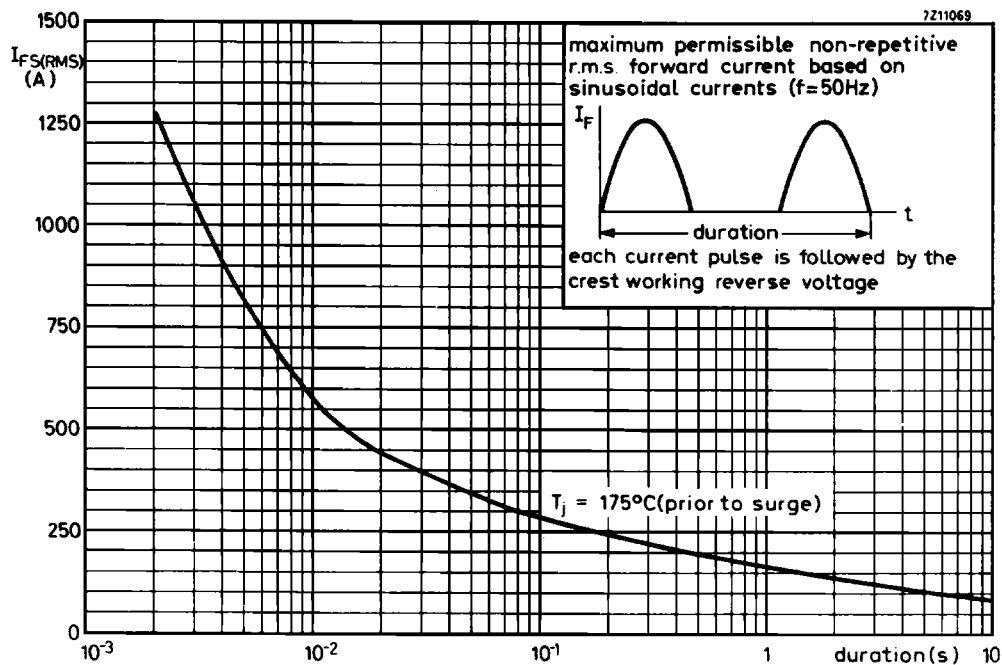


Fig.7

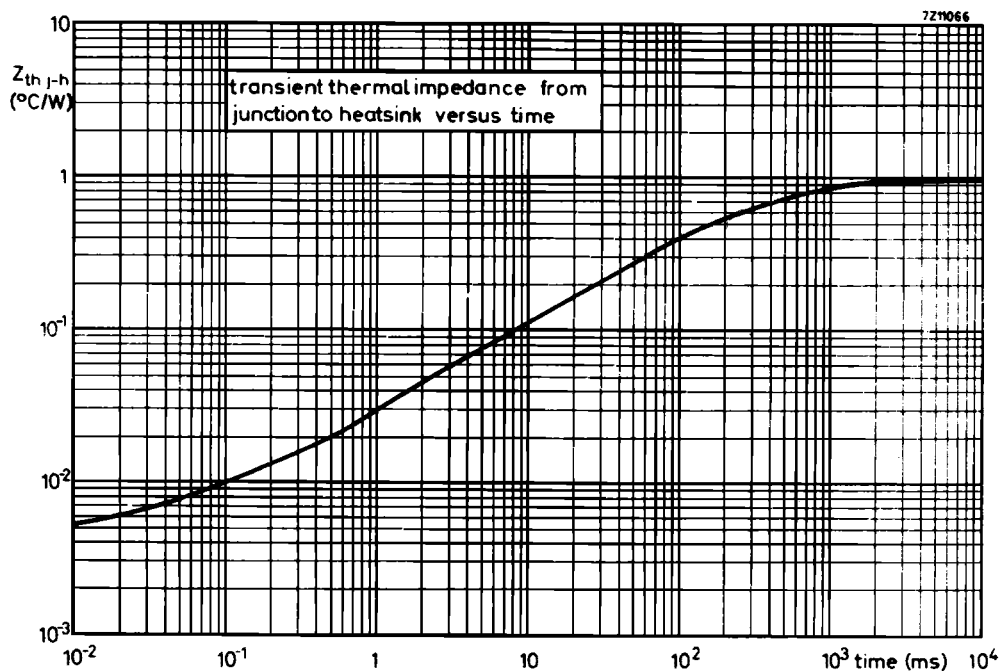


Fig.8