

ULTRA FAST-RECOVERY DOUBLE RECTIFIER DIODES

Glass-passivated, high-efficiency epitaxial rectifier diodes in ISOTOP envelopes, featuring low forward voltage drop, ultra fast reverse recovery times, very low stored charge and soft-recovery characterisitc. They are intended for use in switched-mode power supplies and high-frequency circuits in general, where both low conduction and low switching losses are essential. Their electrical isolation makes them ideal for mounting on a common heatsink alongside other components without the need for additional insulators.

QUICK REFERENCE DATA

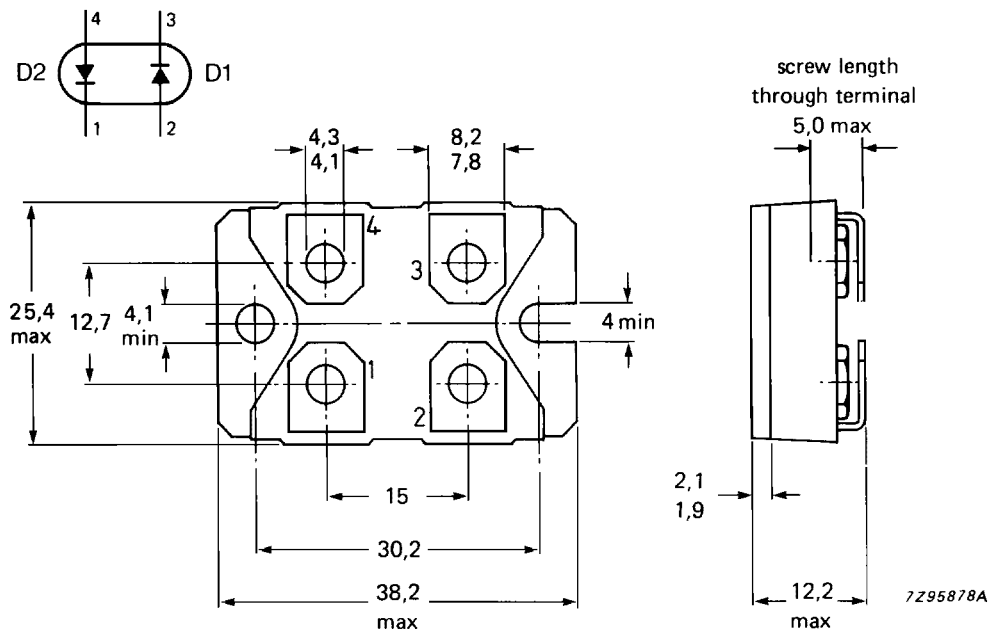
		BYT230PIV– 600 700 800			
Repetitive peak reverse voltage	V_{RRM}	max.	600 700 800		V
Average forward current	$I_F(AV)$	max.	2 x 30		A
Forward voltage	V_F	<	1.8		V
Reverse recovery time	t_{rr}	<	55		ns

MECHANICAL DATA

Dimensions in mm

Fig.1 SOT-227B.

Types with Faston terminals are available on request (see overleaf).



Baseplate is electrically isolated.
Isolation voltage: 2500 V RMS.
Capacitance: 45 pF.

Supplied with device: 4 x M4 screws.

RATINGS

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

→ Voltages

Repetitive peak reverse voltage

V_{RRM}

BYT230PIV–	600	700	800
max.	600	700	800 V
max.	640	750	850 V

Non repetitive peak reverse voltage

V_{RSM}

max.

Currents (per diode)

Average forward current;

switching losses negligible up to 100 kHz

square-wave, $\delta = 0.5$, up to $T_{mb} = 50^\circ\text{C}$

$I_F(AV)$

max.

30

A

RMS forward current

$I_F(RMS)$

max.

70

A

Repetitive peak forward current

$t_p = 20 \mu\text{s}$, $\delta = 0.02$

I_{FRM}

max.

375

A

Non-repetitive peak forward current

half sine-wave

$t = 10 \text{ ms}$

I_{FSM}

max.

200

A

$t = 8.3 \text{ ms}$

I_{FSM}

max.

240

A

$I^2 t$ for fusing ($t = 10 \text{ ms}$)

$I^2 t$

max.

200

A^2s

Temperatures

Storage temperature

T_{stg}

–40 to +150

$^\circ\text{C}$

Junction temperature

T_j

–40 to +150

$^\circ\text{C}$

THERMAL RESISTANCE

From junction to mounting base
per diode

$R_{th j-mb}$

=

1.5

K/W

From junction to mounting base total

$R_{th j-mb}$

=

0.8

K/W

From mounting base to heatsink
with heatsink compound

$R_{th mb-h}$

=

0.1

K/W

ORDERING NOTE

Types with Faston terminals are available
on request (see Fig.2).

Omit suffix V from the type number
when ordering, e.g. BYT230PI-600.

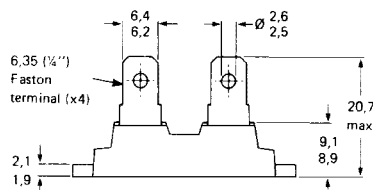
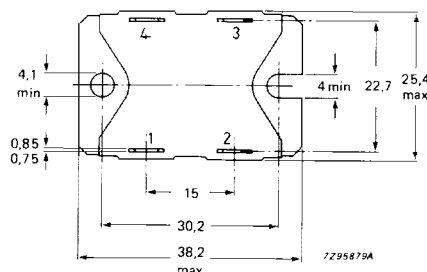
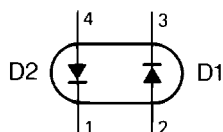


Fig.2 SOT-227A.

Dimensions in mm.



CHARACTERISTICS $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated.

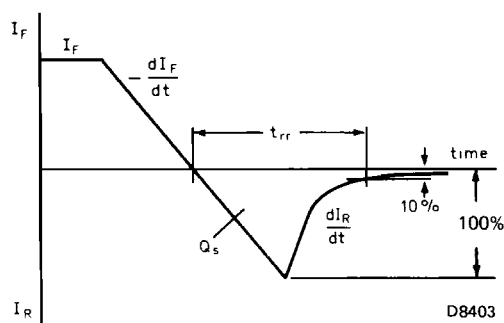
Forward voltage

 $I_F = 30\text{ A}; T_j = 100\text{ }^{\circ}\text{C}$ $V_F < 1.8\text{ V}^*$ $I_F = 30\text{ A}$ $V_F < 1.9\text{ V}^*$

Reverse current

 $V_R = V_{RRM\text{ max}}; T_j = 100\text{ }^{\circ}\text{C}$ $I_R < 5.0\text{ mA}$ $V_R = V_{RRM\text{ max}}$ $I_R < 100\text{ }\mu\text{A}$

Reverse recovery when switched from

 $I_F = 0.5\text{ A}$ to $I_R = 1\text{ A}$ measured at $I_R = 0.25\text{ A}$
recovery time $t_{rr} < 55\text{ ns}$ $I_F = 1\text{ A}$ to $V_R \geq 30\text{ V}$ with $-dI_F/dt = 50\text{ A}/\mu\text{s}$;
recovery time $t_{rr} < 100\text{ ns}$ $I_F = 2\text{ A}$ to $V_R \geq 30\text{ V}$ with $-dI_F/dt = 20\text{ A}/\mu\text{s}$;
recovered charge $Q_s < 150\text{ nC}$ Fig.3 Definition of t_{rr} and Q_s .

*Measured under pulse conditions to avoid excessive dissipation.

SQUARE-WAVE OPERATION

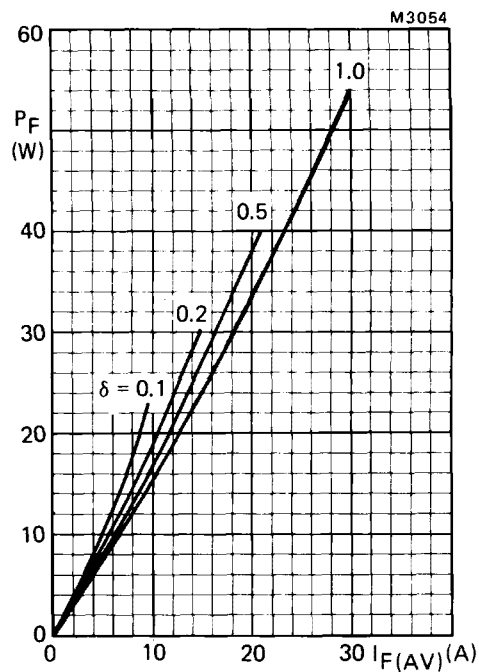
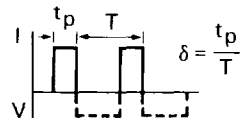


Fig.4 Forward power losses versus average forward current; per diode.



$$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$$

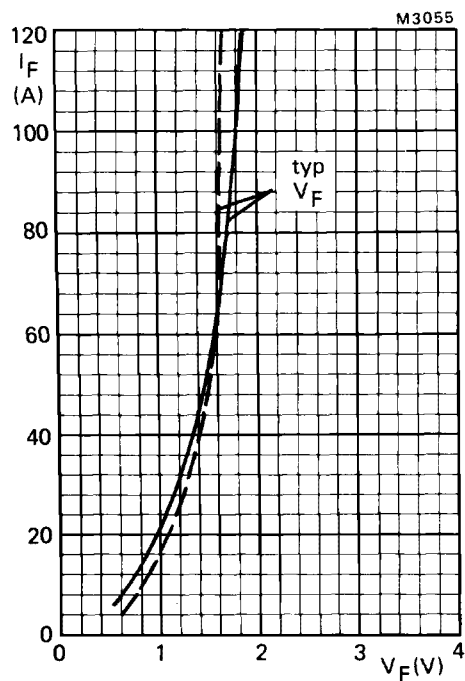


Fig.5 Typical forward voltage versus forward current;
--- $T_j = 25\text{ }^{\circ}\text{C}$; — $T_j = 100\text{ }^{\circ}\text{C}$.