

# DEVELOPMENT DATA

This data sheet contains advance information and specifications are subject to change without notice.

BYT230PIV-1000

## 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 characteristic. 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

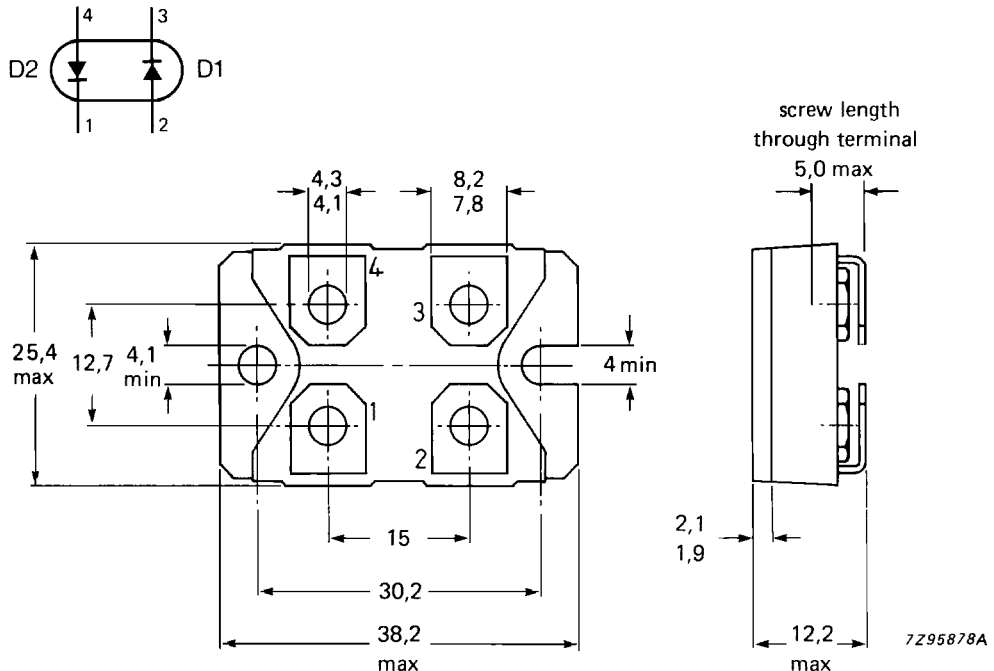
Repetitive peak reverse voltage	$V_{RRM}$	max.	1000	V
Average forward current	$I_{F(AV)}$	max.	2 x 30	A
Forward voltage	$V_F$	<	1.8	V
Reverse recovery time	$t_{rr}$	<	70	ns

### 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 r.m.s.  
Capacitance: 45 pF.

Supplied with device: 4 x M4 screws.

**RATINGS**

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

**Voltages**

Repetitive peak reverse voltage	$V_{RRM}$	max.	1000	V
Non repetitive peak reverse voltage	$V_{RSM}$	max.	1000	V

**Currents (per diode)**

Average forward current; switching losses negligible up to 100 kHz square wave; $\delta = 0.5$ ; up to $T_{mb} = 50\text{ }^{\circ}\text{C}$	$I_F(AV)$	max.	30	A
R.M.S. forward current	$I_F(RMS)$	max.	70	A
Repetitive peak forward current $t_p = 20\text{ }\mu\text{s}$ , $\delta = 0.02$	$I_{FRM}$	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
$I^2t$ for fusing ( $t = 10\text{ ms}$ )	$I^2t$	max.	200	$\text{A}^2\text{s}$

**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-1000.

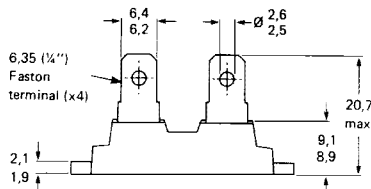
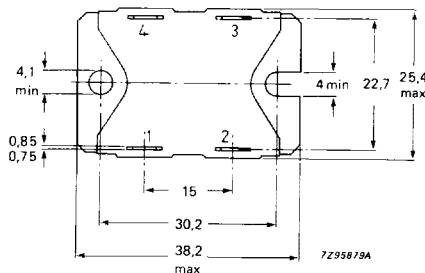
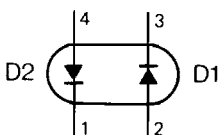


Fig.2 SOT-227A.

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

$$t_{rr} < 70\text{ ns}$$

$$I_F = 1\text{ A to } V_R \geq 30\text{ V with } -dI_F/dt = 15\text{ A}/\mu\text{s};$$

recovery time

$$t_{rr} < 145\text{ ns}$$

$$I_F = 2\text{ A to } V_R \geq 30\text{ V with } -dI_F/dt = 20\text{ A}/\mu\text{s};$$

recovered charge

$$Q_S < 250\text{ nC}$$

DEVELOPMENT DATA

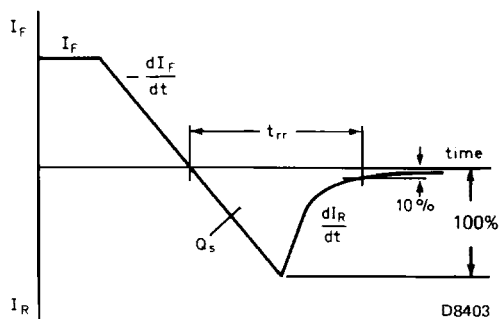


Fig.3 Definition of  $t_{rr}$  and  $Q_S$ .

\*Measured under pulse conditions to avoid excessive dissipation.

SQUARE - WAVE OPERATION

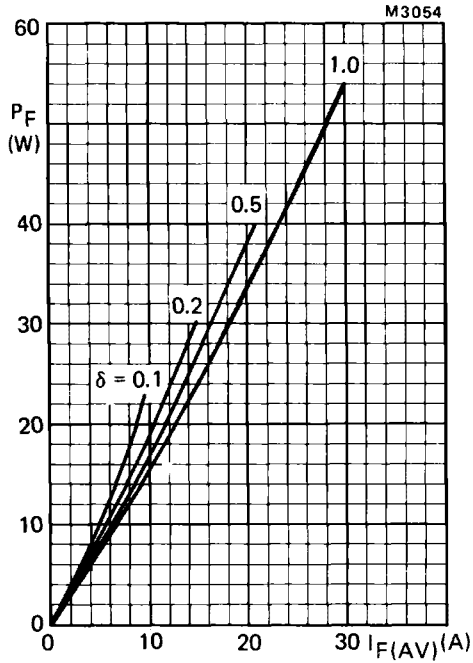
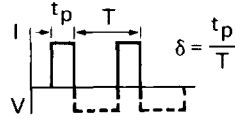


Fig.4 Forward power losses versus average forward current; per diode.



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

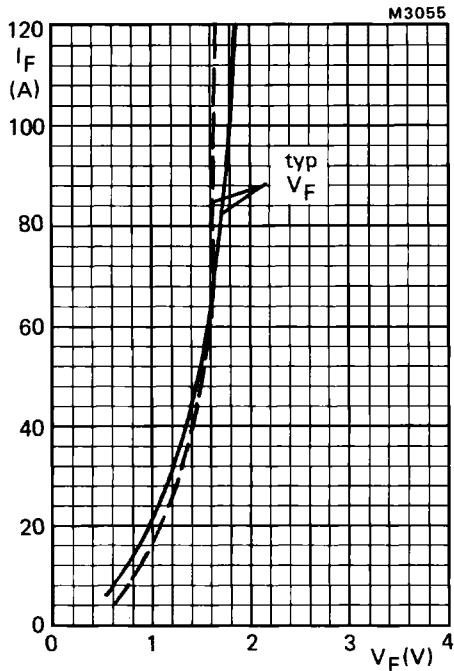


Fig.5 Typical forward voltage versus forward current;  
 ---  $T_j = 25\text{ °C}$ ; —  $T_j = 100\text{ °C}$ .