

DEVELOPMENT DATA

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

BYT230PIV-1000

7-03-19

N AMER PHILIPS/DISCRETE

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

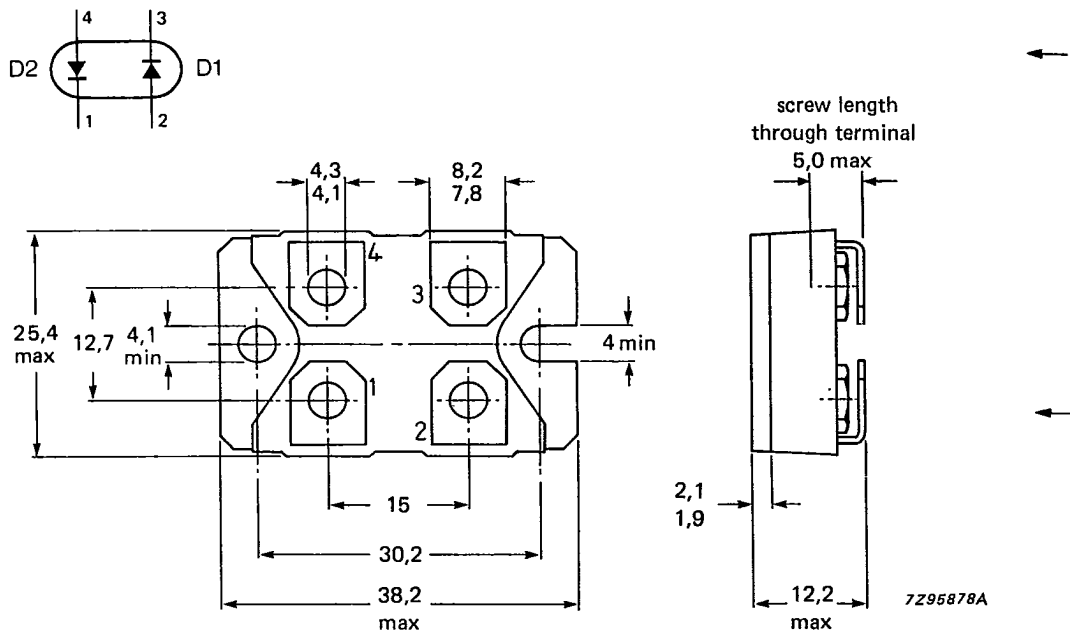
Repetitive peak reverse voltage	V_{RRM}	max.	1000	V
Average forward current	$I_F(AV)$	max.	2 x 30	A
Forward voltage	V_F	<	1.8	V
Reverse recovery time	t_{rr}	<	70	ns

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 $T_{mb} = 50^\circ\text{C}$	$I_{F(AV)}$	max.	30	A
R.M.S. forward current	$I_{F(RMS)}$	max.	70	A
Repetitive peak forward current $t_p = 20 \mu\text{s}$, $\delta = 0.02$	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-1000.

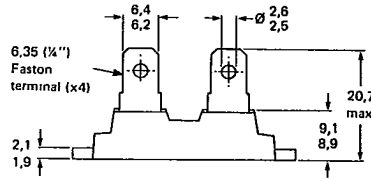
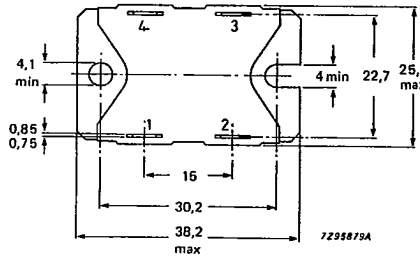
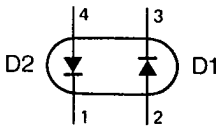


Fig.2 SOT-227A.

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

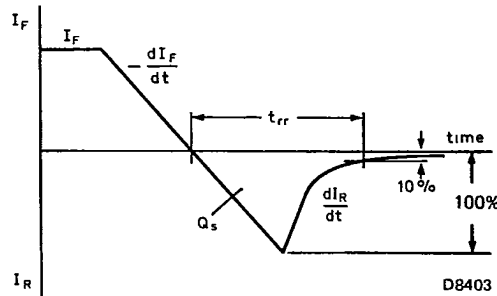


Fig.3 Definition of t_{rr} and Q_s .

*Measured under pulse conditions to avoid excessive dissipation.

SQUARE - WAVE OPERATION

T-03-19

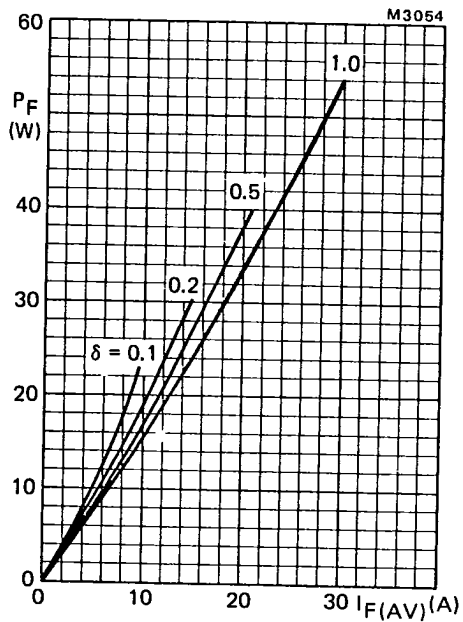
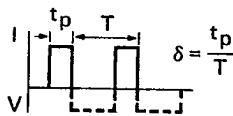


Fig.4 Forward power losses versus average forward current; per diode.



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

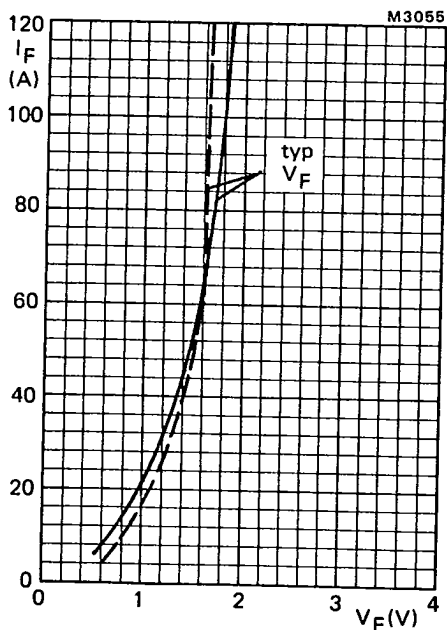


Fig.5 Typical forward voltage versus forward current; --- $T_j = 25^\circ C$; — $T_j = 100^\circ C$.