

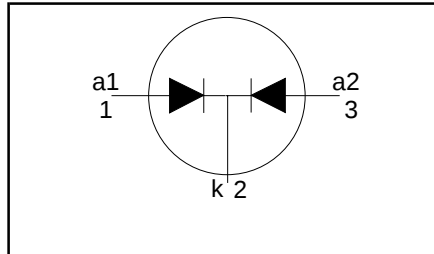
Rectifier diodes ultrafast, rugged

BYV72EW series

FEATURES

- Low forward volt drop
- Fast switching
- Soft recovery characteristic
- Reverse surge capability
- High thermal cycling performance
- Low thermal resistance

SYMBOL



QUICK REFERENCE DATA

$$V_R = 150 \text{ V} / 200 \text{ V}$$

$$V_F \leq 0.85 \text{ V}$$

$$I_{O(AV)} = 30 \text{ A}$$

$$I_{RRM} = 0.2 \text{ A}$$

$$t_{rr} \leq 28 \text{ ns}$$

GENERAL DESCRIPTION

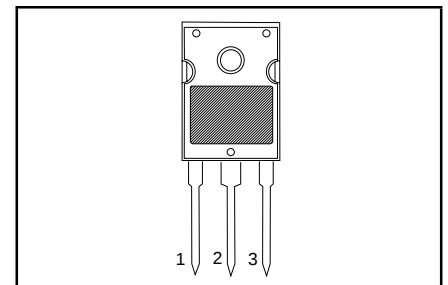
Dual, ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

The BYV72EW series is supplied in the conventional leaded SOT429 (TO247) package.

PINNING

PIN	DESCRIPTION
1	anode 1
2	cathode
3	anode 2
tab	cathode

SOT429 (TO247)



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.		UNIT
V_{RRM}	Peak repetitive reverse voltage	BYV72EW $T_{mb} \leq 144^\circ\text{C}$	-	-150 150	-200 200	V
V_{RWM}	Crest working reverse voltage		-	150	200	V
V_R	Continuous reverse voltage		-	150	200	V
$I_{O(AV)}$	Average rectified output current (both diodes conducting) ¹		-	30		A
I_{FRM}	Repetitive peak forward current per diode	square wave $\delta = 0.5$; $T_{mb} \leq 104^\circ\text{C}$ $t = 25 \mu\text{s}$; $\delta = 0.5$;	-	30		A
I_{FSM}	Non-repetitive peak forward current per diode	$T_{mb} \leq 104^\circ\text{C}$ $t = 10 \text{ ms}$	-	150		A
		$t = 8.3 \text{ ms}$ sinusoidal; with reappplied $V_{RWM(max)}$	-	160		A
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 2 \mu\text{s}$; $\delta = 0.001$	-	0.2		A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100 \mu\text{s}$	-	0.2		A
T_{stg}	Storage temperature		-40	150		$^\circ\text{C}$
T_j	Operating junction temperature		-	150		$^\circ\text{C}$

1 Neglecting switching and reverse current losses.

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

Rectifier diodes ultrafast, rugged

BYV72EW series

THERMAL RESISTANCES

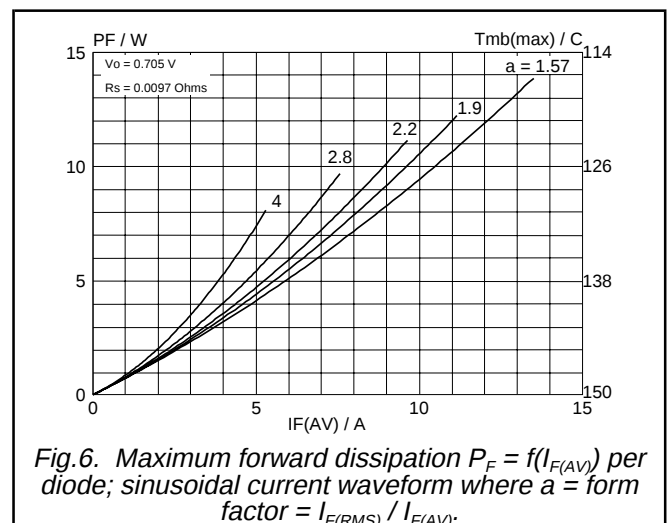
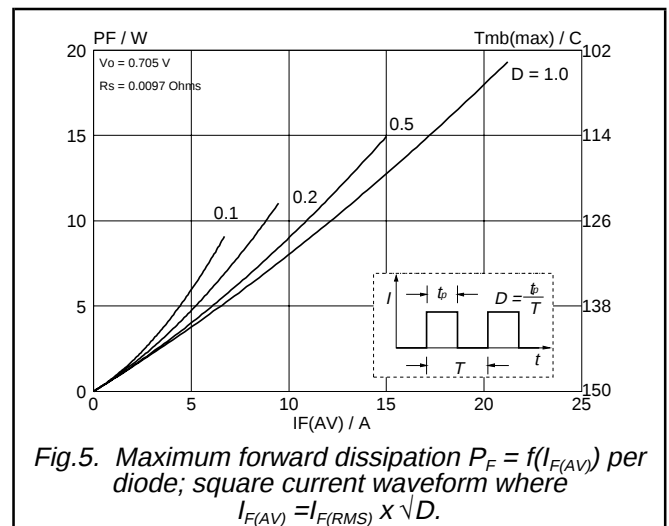
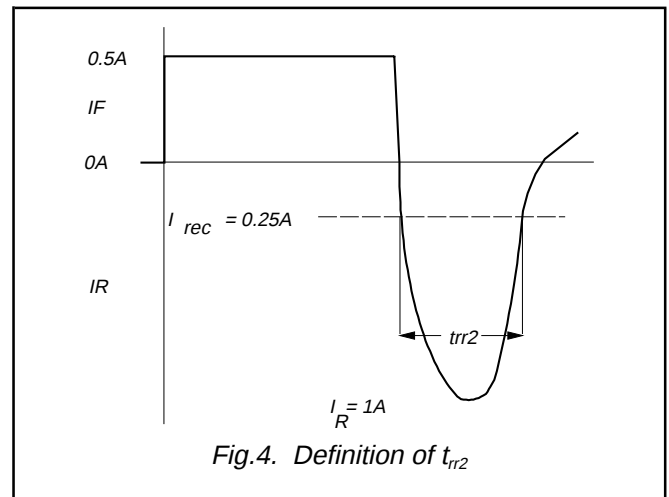
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	2.4	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes conducting in free air	-	-	1.4	K/W
			-	45	-	K/W

ELECTRICAL CHARACTERISTICS

characteristics are per diode at $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 15\ \text{A}$; $T_j = 150\ ^\circ\text{C}$	-	0.83	0.90	V
		$I_F = 15\ \text{A}$	-	0.95	1.05	V
		$I_F = 30\ \text{A}$	-	1.00	1.20	V
I_R	Reverse current	$V_R = V_{RWM}$; $T_j = 100\ ^\circ\text{C}$	-	0.5	1	mA
		$V_R = V_{RWM}$	-	10	100	μA
Q_s	Reverse recovery charge	$I_F = 2\ \text{A}$; $V_R \geq 30\ \text{V}$; $-dI_F/dt = 20\ \text{A}/\mu\text{s}$	-	6	15	nC
t_{rr1}	Reverse recovery time	$I_F = 1\ \text{A}$; $V_R \geq 30\ \text{V}$; $-dI_F/dt = 100\ \text{A}/\mu\text{s}$	-	20	28	ns
t_{rr2}	Reverse recovery time	$I_F = 0.5\ \text{A}$ to $I_R = 1\ \text{A}$; $I_{rec} = 0.25\ \text{A}$	-	13	22	ns
V_{fr}	Forward recovery voltage	$I_F = 1\ \text{A}$; $dI_F/dt = 10\ \text{A}/\mu\text{s}$	-	1	-	V

BYV72EW series



Rectifier diodes ultrafast, rugged

BYV72EW series

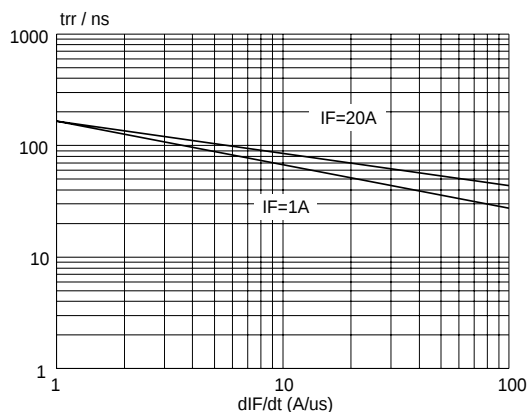


Fig.7. Maximum t_{rr} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

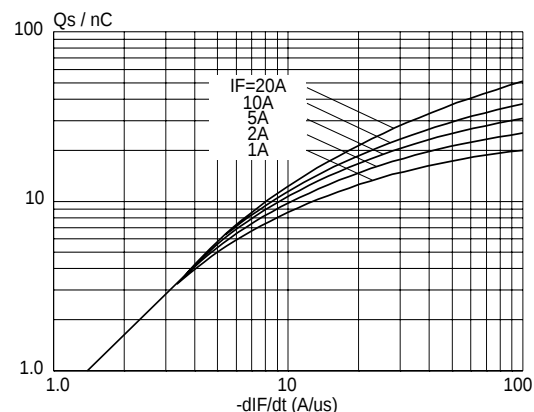


Fig.10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

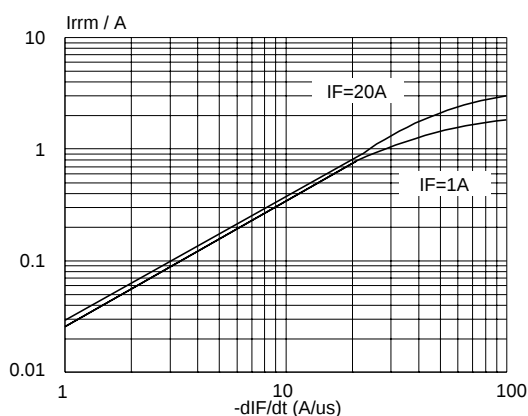


Fig.8. Maximum I_{rrm} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

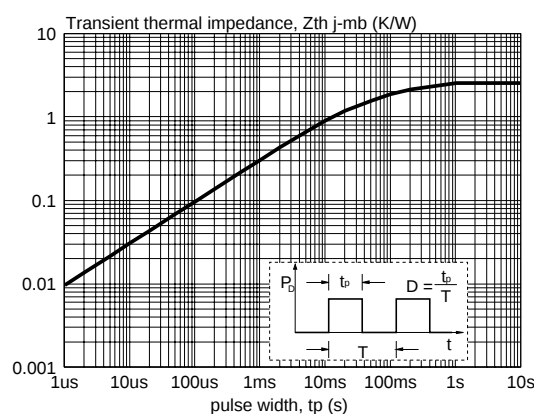


Fig.11. Transient thermal impedance; per diode;
 $Z_{th\ j-mb} = f(t_p)$.

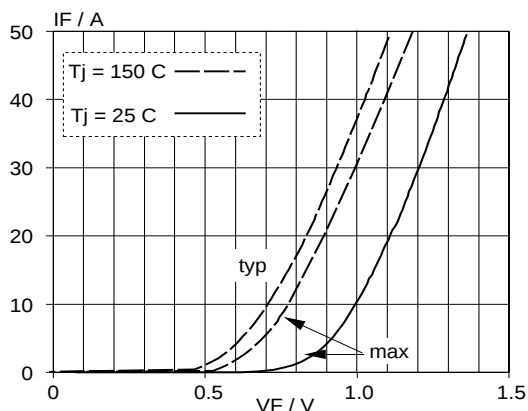
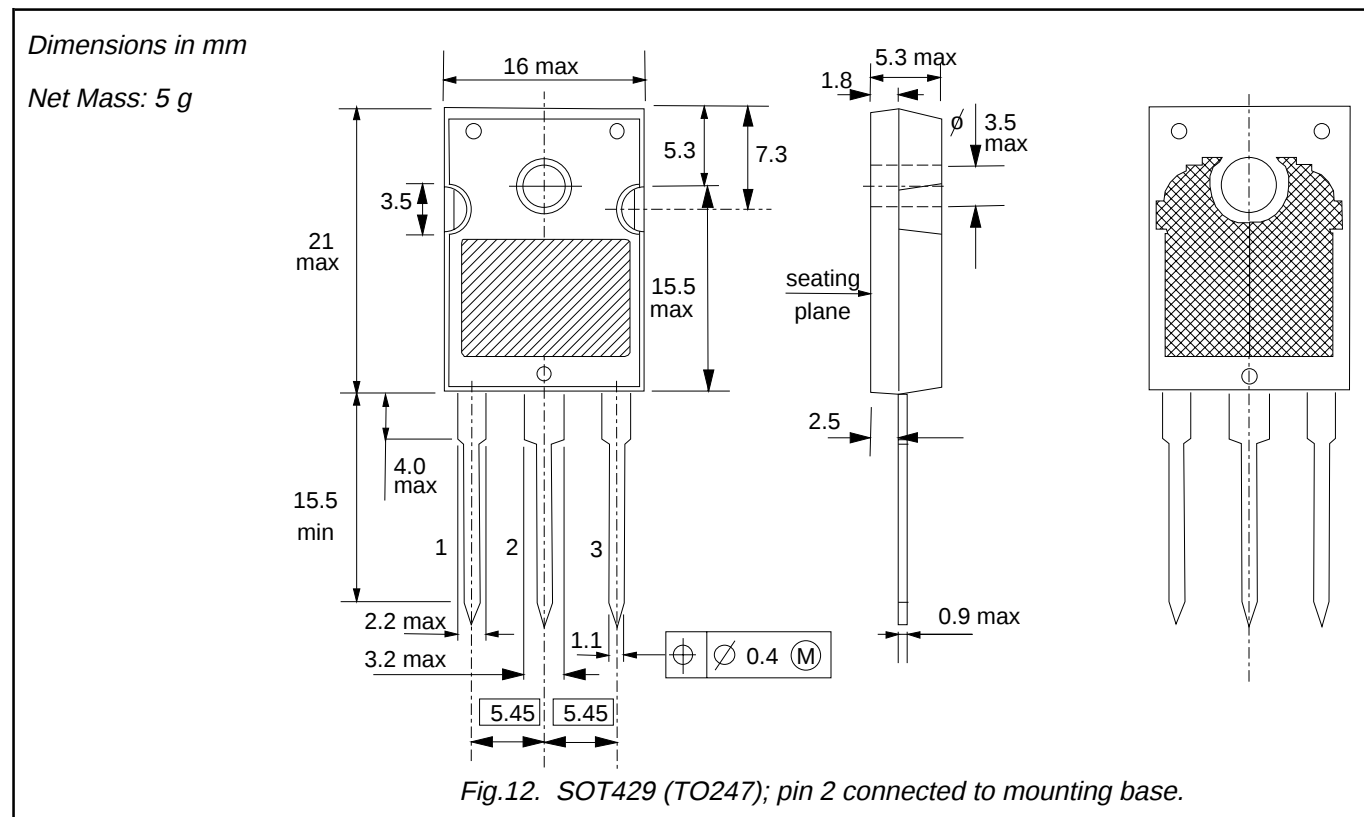


Fig.9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Rectifier diodes
ultrafast, rugged

BYV72EW series

MECHANICAL DATA



Notes

1. Refer to mounting instructions for SOT429 envelope.
2. Epoxy meets UL94 V0 at 1/8".

Rectifier diodes ultrafast, rugged

BYV72EW series

DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values are given in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of this specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	
© Philips Electronics N.V. 1998	
All rights are reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner.	
The information presented in this document does not form part of any quotation or contract, it is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent or other industrial or intellectual property rights.	

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.