

DATA SHEET

BYV29 series Rectifier diodes ultrafast

Product specification

September 1998



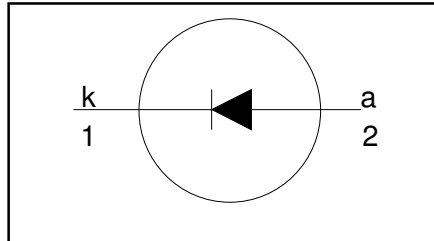
Rectifier diodes ultrafast

BYV29 series

FEATURES

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

SYMBOL



QUICK REFERENCE DATA

$$V_R = 300 \text{ V} / 400 \text{ V} / 500 \text{ V}$$

$$V_F \leq 1.03 \text{ V}$$

$$I_{F(AV)} = 9 \text{ A}$$

$$t_{rr} \leq 60 \text{ ns}$$

GENERAL DESCRIPTION

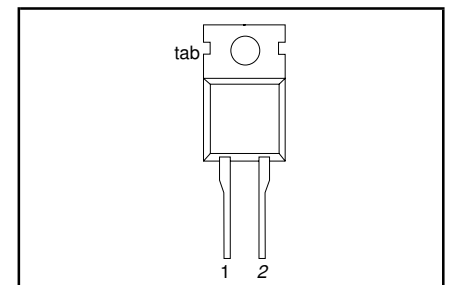
Ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

The BYV29 series is supplied in the conventional leaded SOD59 (TO220AC) package.

PINNING

PIN	DESCRIPTION
1	cathode
2	anode
tab	cathode

SOD59 (TO220AC)



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	BYV29 square wave; $\delta = 0.5$; $T_{mb} \leq 123^\circ\text{C}$ $t = 25 \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 123^\circ\text{C}$ $t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$ sinusoidal; with reappplied $V_{RRM(max)}$	-	-300	-400	-500	V
V_{RWM}	Crest working reverse voltage		-	300	400	500	V
V_R	Continuous reverse voltage		-	300	400	500	V
$I_{F(AV)}$	Average forward current ¹		-	9			A
I_{FRM}	Repetitive peak forward current		-	18			A
I_{FSM}	Non-repetitive peak forward current.		-	100			A
			-	110			A
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th j-mb}$	Thermal resistance junction to mounting base	in free air.	-	-	2.5	K/W
$R_{th j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

¹ Neglecting switching and reverse current losses.

ELECTRICAL CHARACTERISTICS

T_j = 25 °C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V _F	Forward voltage	I _F = 8 A; T _j = 150 °C	-	0.90	1.03	V
		I _F = 8 A	-	1.05	1.25	V
		I _F = 20 A	-	1.20	1.40	V
I _R	Reverse current	V _R = V _{RRM}	-	2.0	50	µA
Q _s	Reverse recovery charge	V _R = V _{RRM} ; T _j = 100 °C	-	0.1	0.35	mA
		I _F = 2 A to V _R ≥ 30 V;	-	40	60	nC
t _{rr}	Reverse recovery time	dI _F /dt = 20 A/µs	-			
		I _F = 1 A to V _R ≥ 30 V;	-	50	60	ns
		dI _F /dt = 100 A/µs	-			
I _{rrm}	Peak reverse recovery current	I _F = 10 A to V _R ≥ 30 V;	-	4.0	5.5	A
		dI _F /dt = 50 A/µs; T _j = 100 °C	-			
V _{fr}	Forward recovery voltage	I _F = 10 A; dI _F /dt = 10 A/µs	-	2.5	-	V

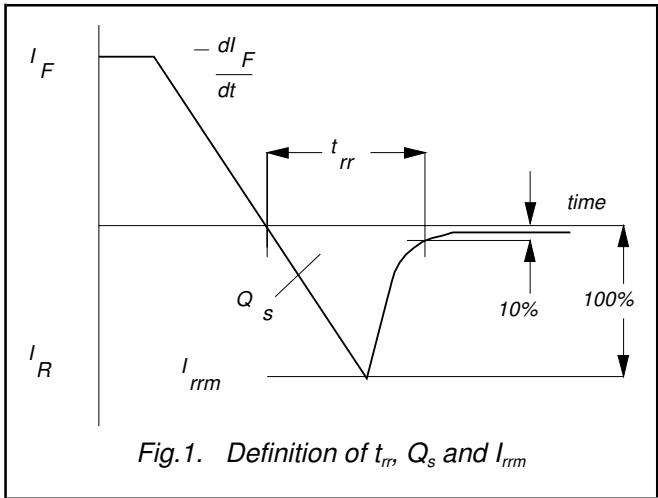


Fig.1. Definition of t_{rr}, Q_s and I_{rrm}

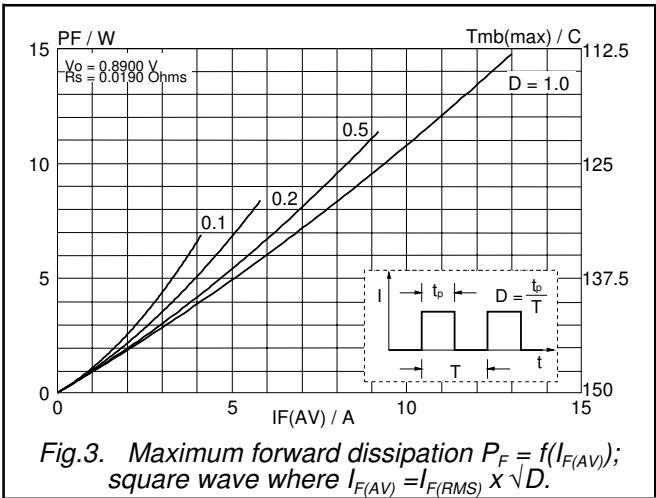


Fig.3. Maximum forward dissipation $P_F = f(I_{F(AV)})$; square wave where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

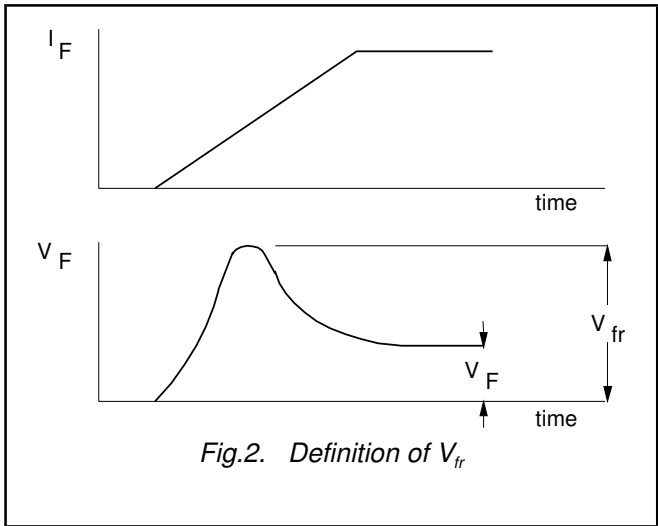


Fig.2. Definition of V_{fr}

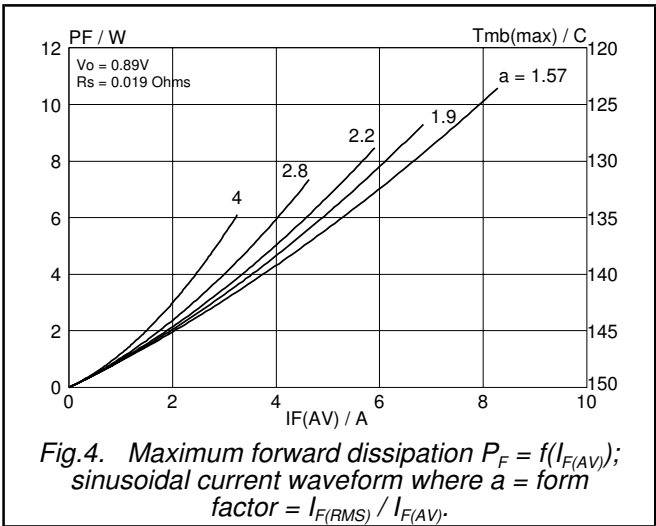
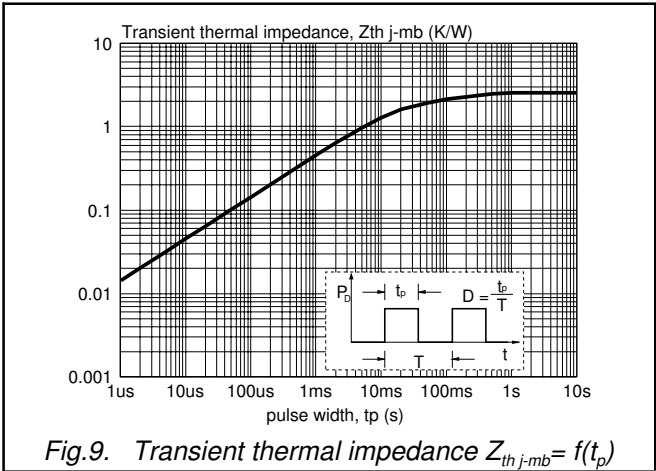
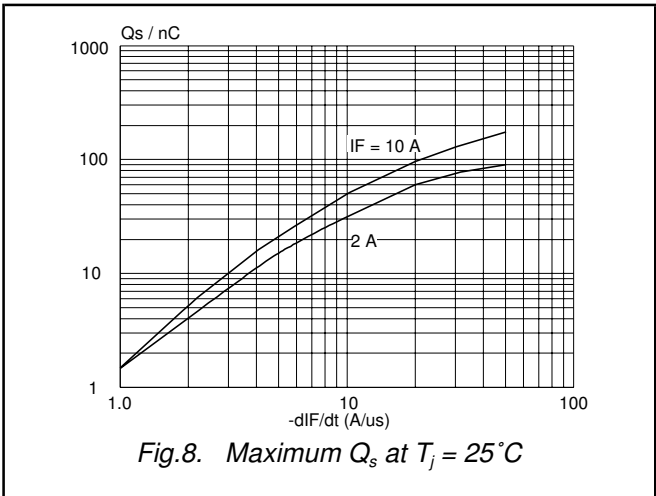
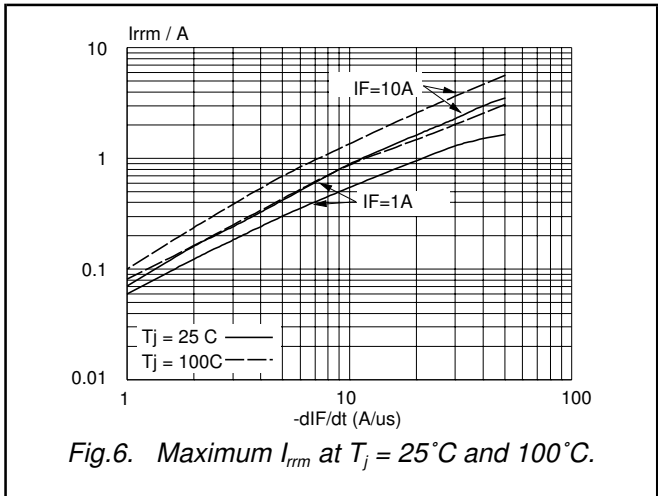
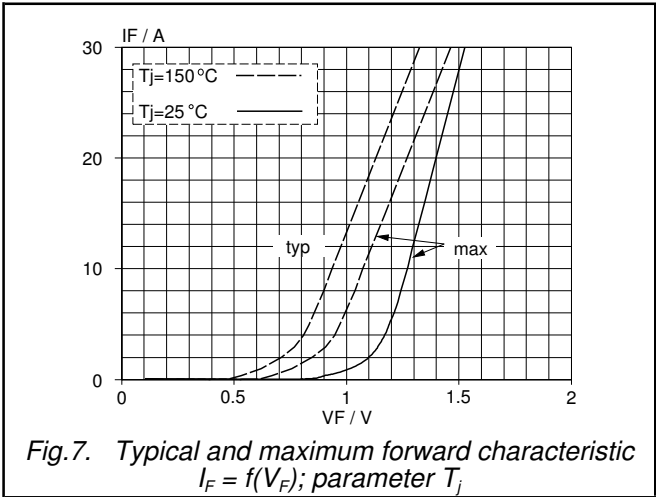
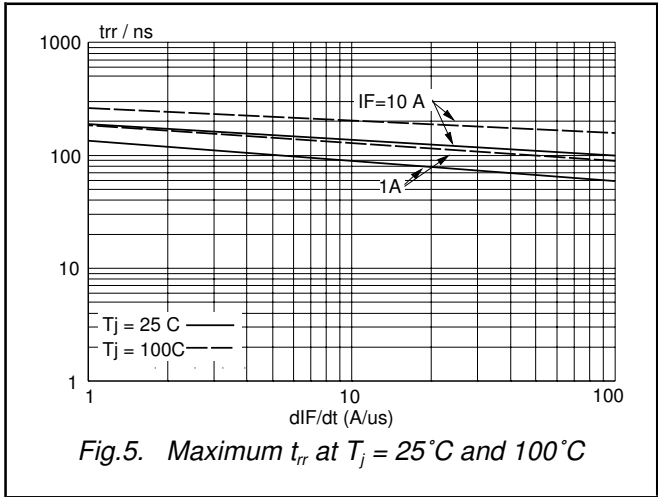


Fig.4. Maximum forward dissipation $P_F = f(I_{F(AV)})$; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.



Rectifier diodes
ultrafast

BYV29 series

MECHANICAL DATA

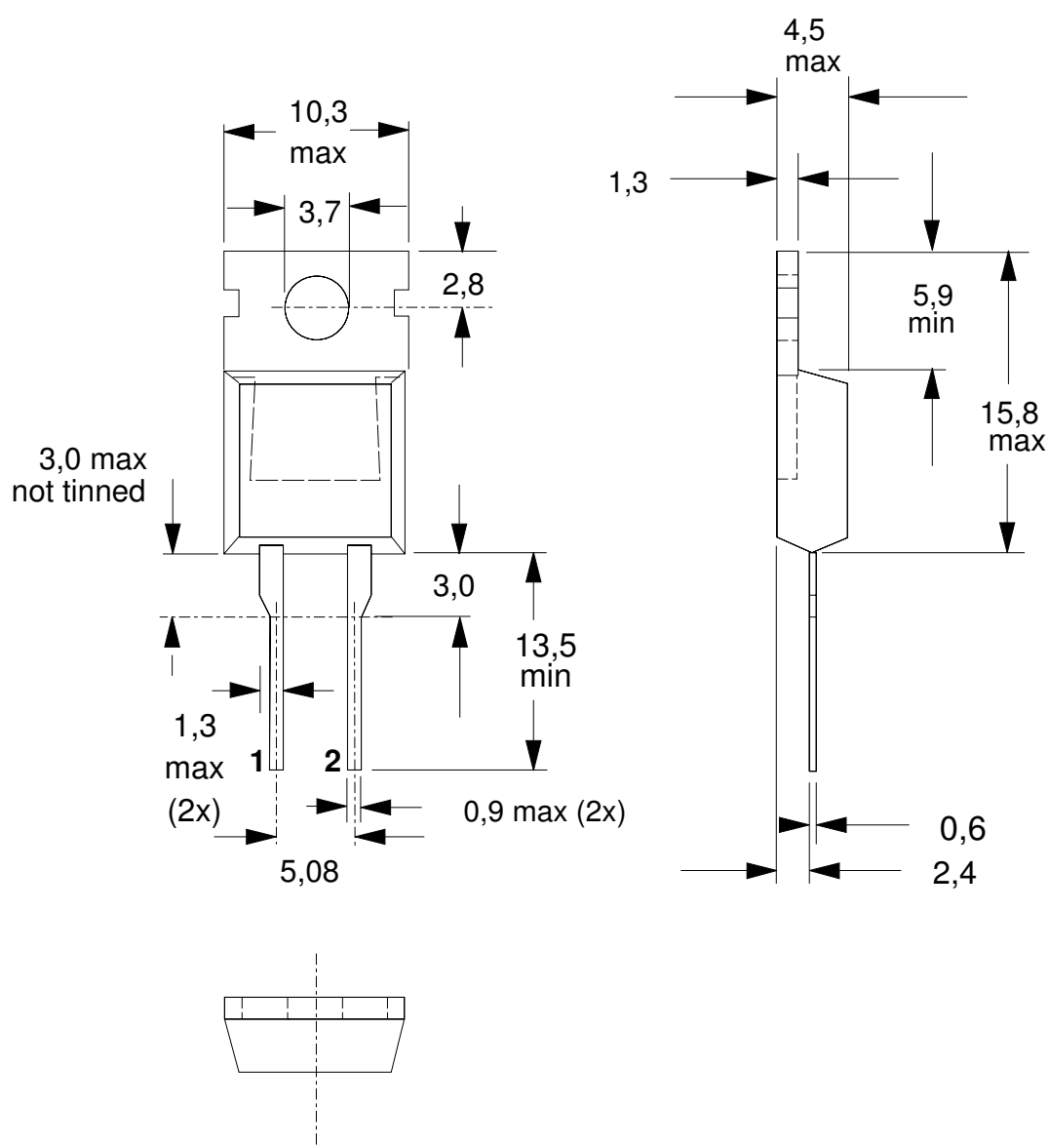
*Dimensions in mm**Net Mass: 2 g*

Fig.10. SOD59 (TO220AC). pin 1 connected to mounting base.

Notes

1. Refer to mounting instructions for TO220 envelopes.
2. Epoxy meets UL94 V0 at 1/8".

Legal information

DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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