

DATA SHEET

BYR29 series Rectifier diodes ultrafast

Product specification

September 1998



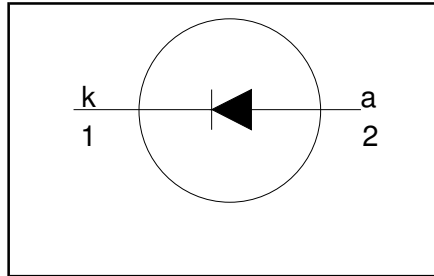
Rectifier diodes ultrafast

BYR29 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

$$V_R = 500 \text{ V} / 600 \text{ V} / 700 \text{ V} / 800 \text{ V}$$

$$V_F \leq 1.5 \text{ V}$$

$$I_{F(AV)} = 8 \text{ A}$$

$$t_{rr} \leq 75 \text{ ns}$$

GENERAL DESCRIPTION

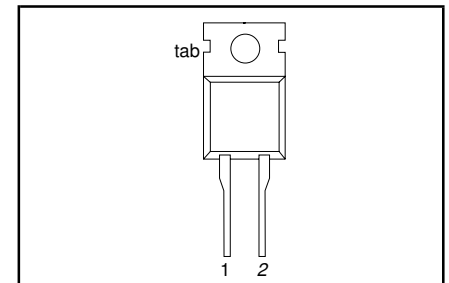
Ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

The BYR29 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	BYR29	-	-500	-600	-700	-800	V
V_{RWM}	Crest working reverse voltage		-	500	600	700	800	V
V_R	Continuous reverse voltage		-	500	600	700	800	V
$I_{F(AV)}$	Average forward current ¹		-	8				A
I_{FRM}	Repetitive peak forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 115^\circ\text{C}$ $t = 25 \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 115^\circ\text{C}$	-	16				A
I_{FSM}	Non-repetitive peak forward current	$t = 10 \text{ ms}$	-	60				A
		$t = 8.3 \text{ ms}$ sinusoidal; with reapplied $V_{RRM(max)}$	-	66				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

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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	-	1.07	1.50	V
I _R	Reverse current	I _F = 20 A	-	1.75	1.95	V
Q _s	Reverse recovery charge	V _R = V _{RRM} V _R = V _{RRM} ; T _j = 100 °C I _F = 2 A to V _R ≥ 30 V; dI _F /dt = 20 A/μs	-	1.0	10	μA
t _{rr}	Reverse recovery time	I _F = 2 A to V _R ≥ 30 V; dI _F /dt = 100 A/μs	-	0.1	0.2	mA
I _{rrm}	Peak reverse recovery current	I _F = 2 A to V _R ≥ 30 V; dI _F /dt = 100 A/μs	-	150	200	nC
V _{fr}	Forward recovery voltage	I _F = 10 A to V _R ≥ 30 V; dI _F /dt = 50 A/μs; T _j = 100 °C I _F = 10 A; dI _F /dt = 10 A/μs	-	60	75	ns
			-	-	6	A
			-	5.0	-	V

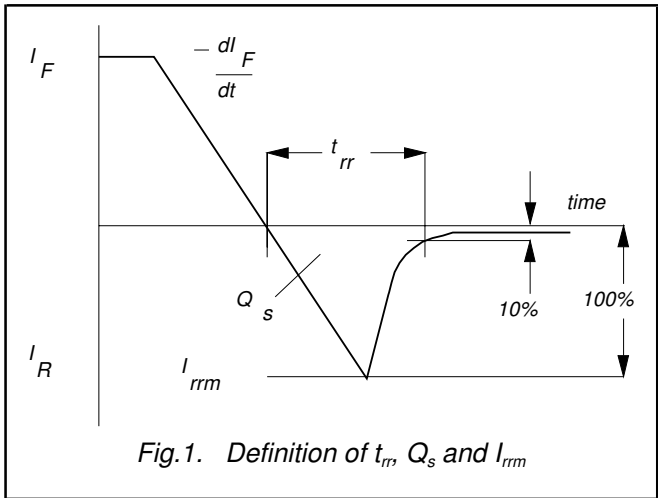


Fig.1. Definition of t_{rr}, Q_s and I_{rrm}

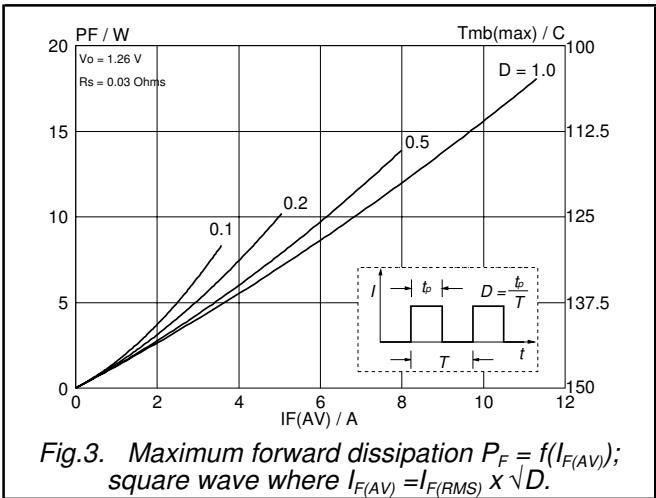


Fig.3. Maximum forward dissipation $P_F = f(I_{F(AV)})$; square wave where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

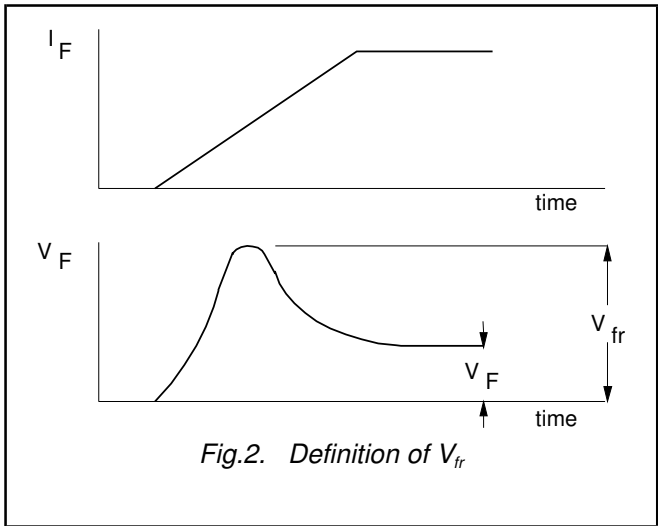


Fig.2. Definition of V_{fr}

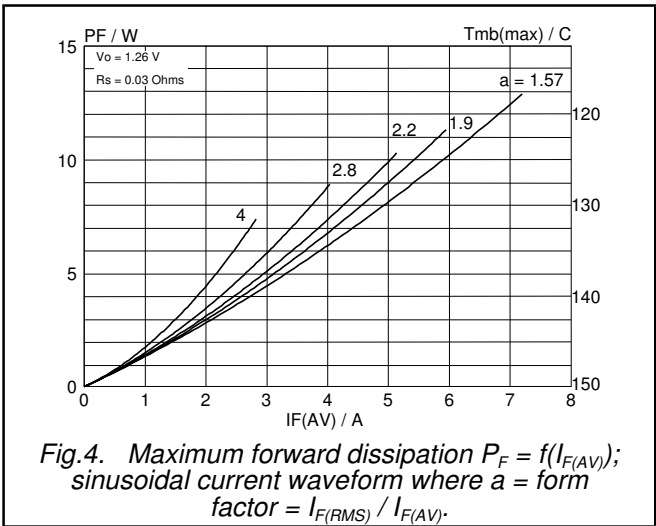
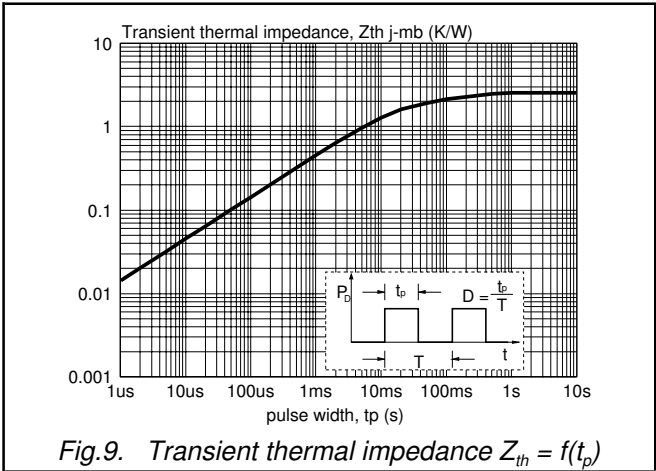
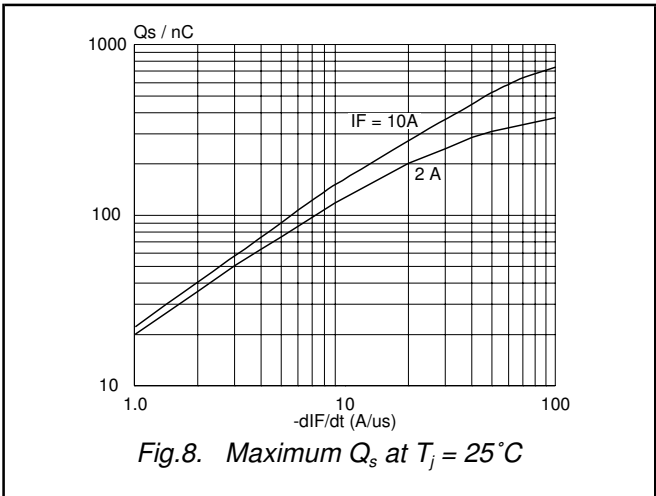
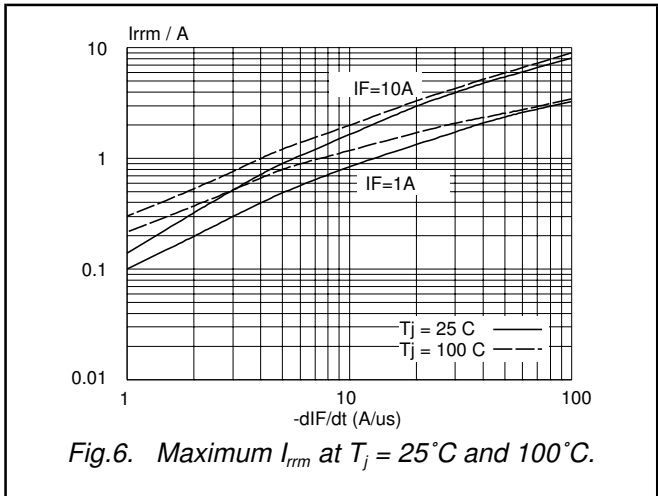
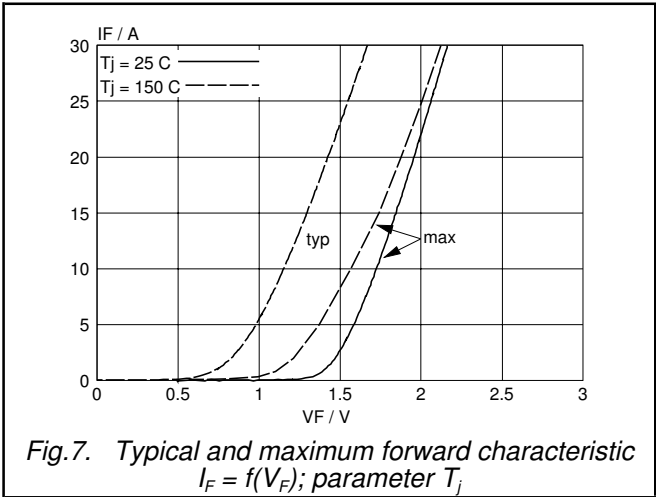
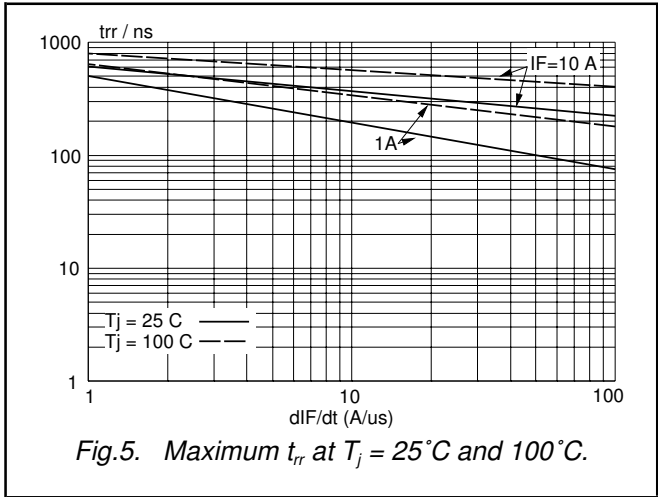


Fig.4. Maximum forward dissipation $P_F = f(I_{F(AV)})$; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.



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MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

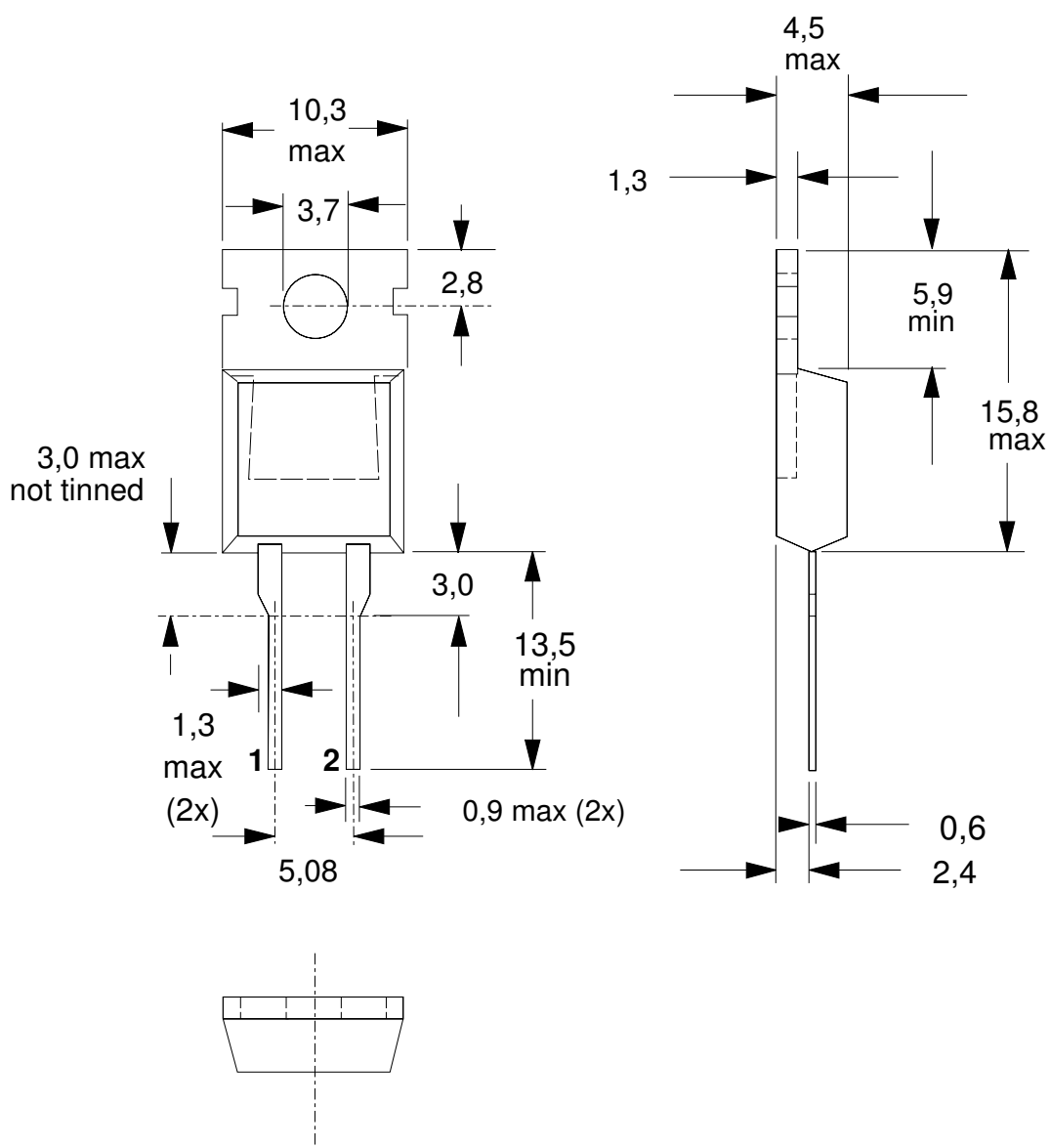


Fig.10. SOD59 (TO220AC). pin 1 connected to mounting base.

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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