

# DATA SHEET

**BYR29 series**  
Rectifier diodes  
ultrafast

Product specification

September 1998



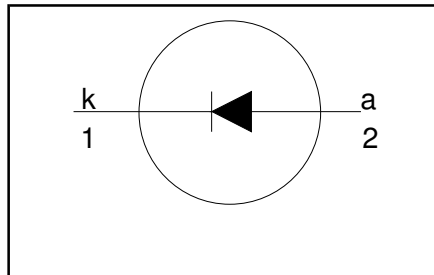
**Rectifier diodes  
ultrafast**

**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**

$V_R = 500\text{ V} / 600\text{ V} / 700\text{ V} / 800\text{ V}$
$V_F \leq 1.5\text{ V}$
$I_{F(AV)} = 8\text{ A}$
$t_{tr} \leq 75\text{ ns}$

**GENERAL DESCRIPTION**

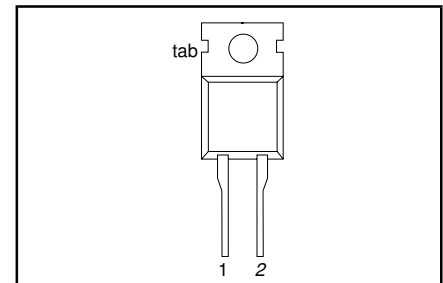
Ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

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
				-500	-600	-700	-800	
$V_{RRM}$	Peak repetitive reverse voltage	<b>BYR29</b>	-	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 <sup>1</sup>	square wave; $\delta = 0.5$ ; $T_{mb} \leq 115\text{ }^\circ\text{C}$	-	8				A
$I_{FRM}$	Repetitive peak forward current	$t = 25\text{ }\mu\text{s}$ ; $\delta = 0.5$ ; $T_{mb} \leq 115\text{ }^\circ\text{C}$	-	16				A
$I_{FSM}$	Non-repetitive peak forward current	$t = 10\text{ ms}$	-	60				A
		$t = 8.3\text{ ms}$	-	66				A
$T_{stg}$	Storage temperature	sinusoidal; with reappplied $V_{RRM(max)}$	-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

<sup>1</sup> Neglecting switching and reverse current losses

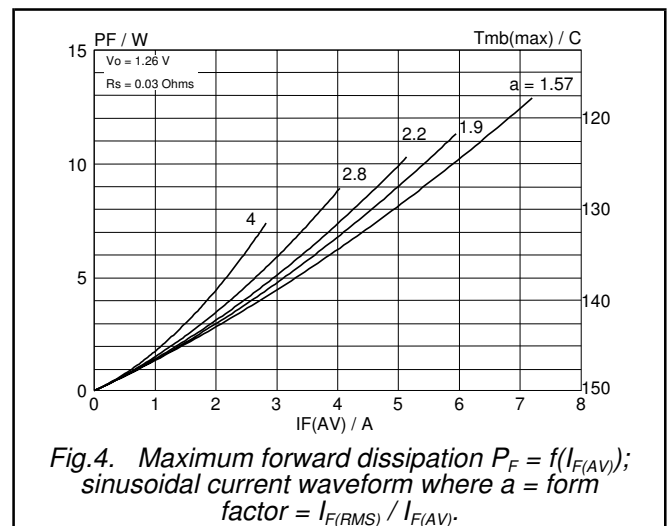
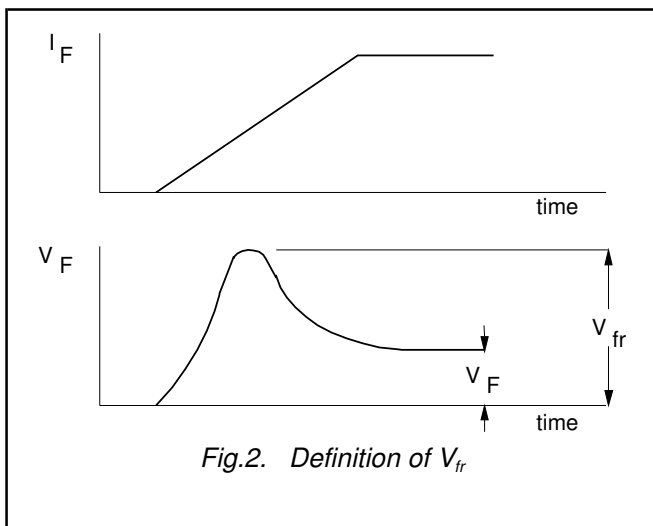
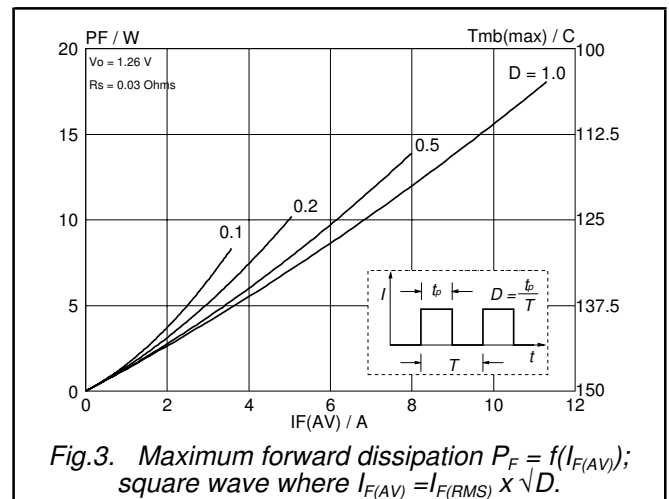
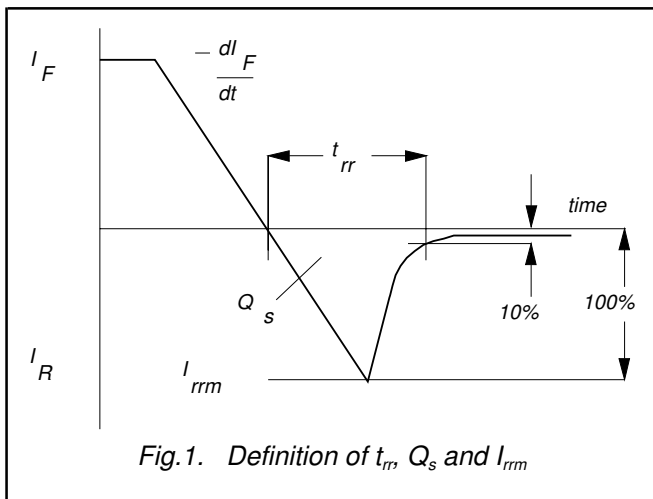
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**ELECTRICAL CHARACTERISTICS**

$T_j = 25\text{ }^\circ\text{C}$  unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_F$	Forward voltage	$I_F = 8\text{ A}; T_j = 150\text{ }^\circ\text{C}$	-	1.07	1.50	V
		$I_F = 20\text{ A}$	-	1.75	1.95	V
$I_R$	Reverse current	$V_R = V_{RRM}$	-	1.0	10	$\mu\text{A}$
$Q_s$	Reverse recovery charge	$V_R = V_{RRM}; T_j = 100\text{ }^\circ\text{C}$ $I_F = 2\text{ A to } V_R \geq 30\text{ V};$ $di_F/dt = 20\text{ A}/\mu\text{s}$	-	0.1	0.2	mA
$t_{rr}$	Reverse recovery time	$I_F = 2\text{ A to } V_R \geq 30\text{ V};$ $di_F/dt = 100\text{ A}/\mu\text{s}$	-	60	75	ns
$I_{rrm}$	Peak reverse recovery current	$I_F = 10\text{ A to } V_R \geq 30\text{ V};$ $di_F/dt = 50\text{ A}/\mu\text{s}; T_j = 100\text{ }^\circ\text{C}$	-	-	6	A
$V_{fr}$	Forward recovery voltage	$I_F = 10\text{ A}; di_F/dt = 10\text{ A}/\mu\text{s}$	-	5.0	-	V



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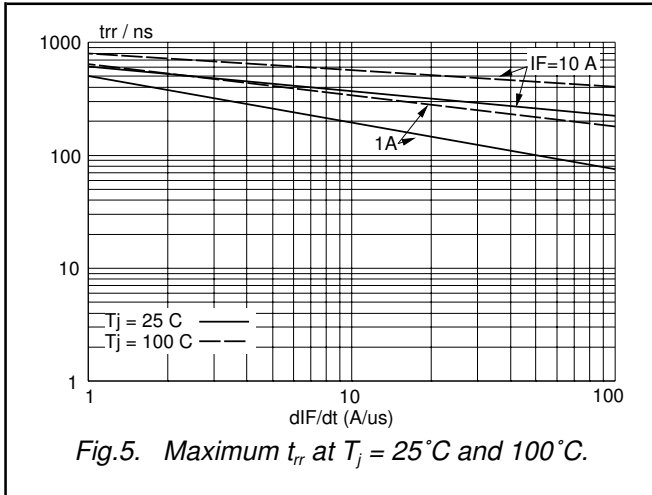


Fig.5. Maximum  $t_{rr}$  at  $T_j = 25\text{ C}$  and  $100\text{ C}$ .

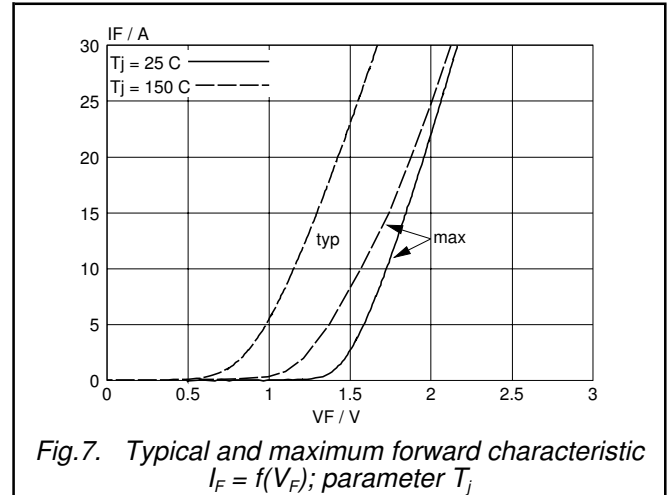


Fig.7. Typical and maximum forward characteristic  $I_F = f(V_F)$ ; parameter  $T_j$

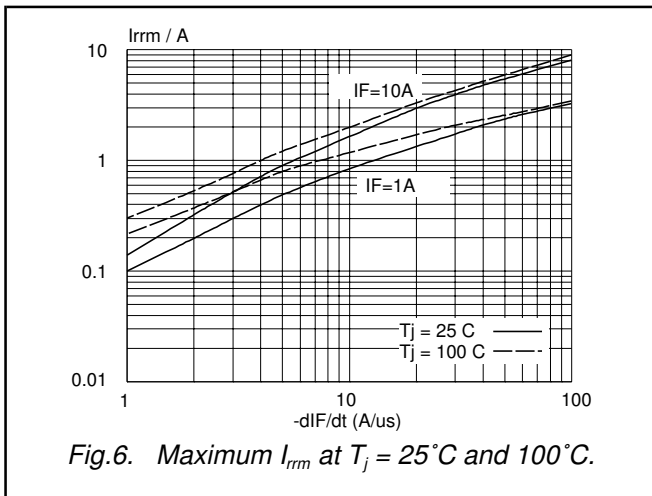


Fig.6. Maximum  $I_{rrm}$  at  $T_j = 25\text{ C}$  and  $100\text{ C}$ .

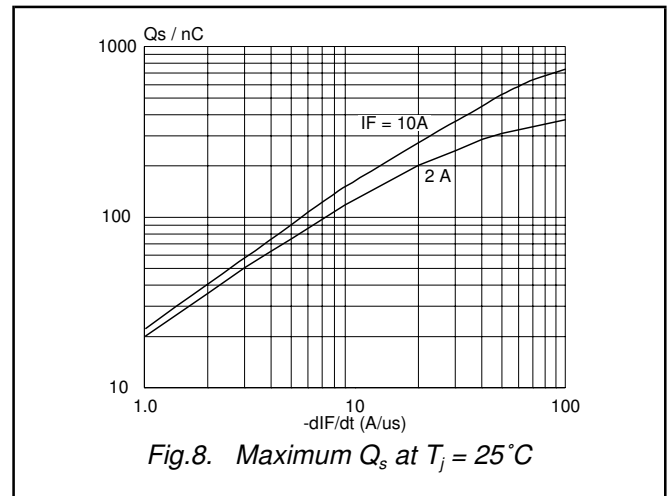


Fig.8. Maximum  $Q_s$  at  $T_j = 25\text{ C}$

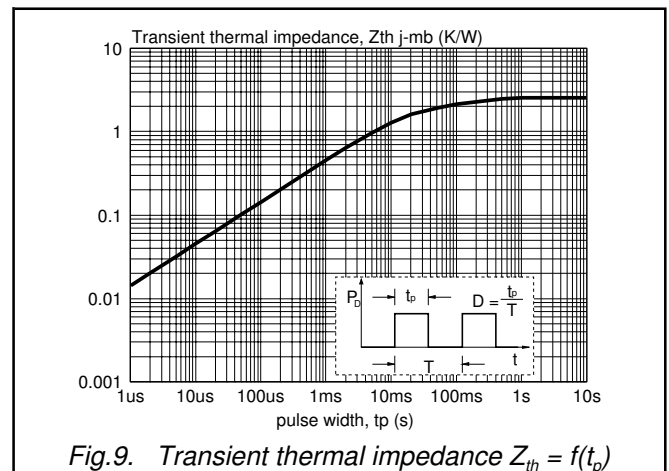
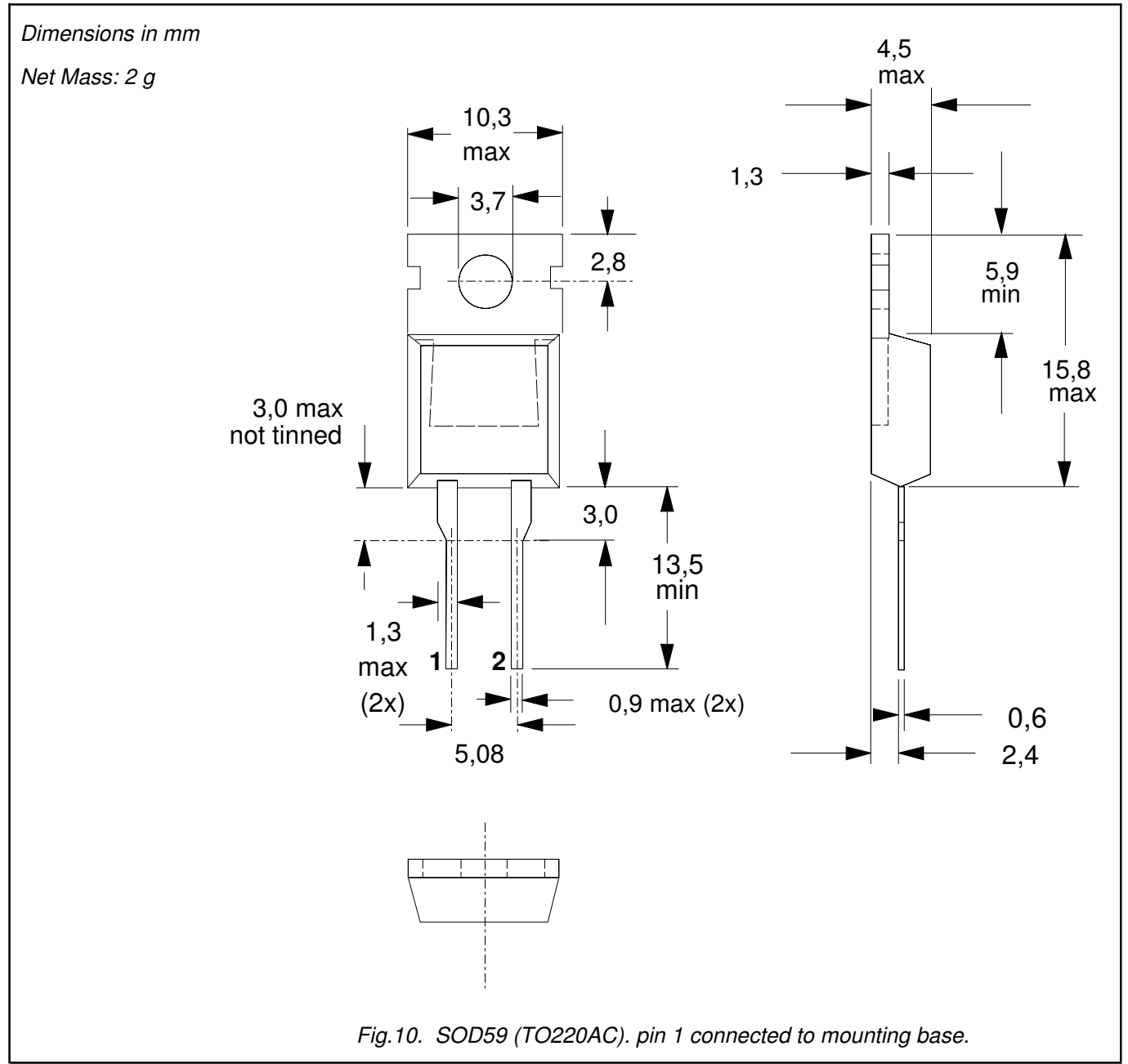


Fig.9. Transient thermal impedance  $Z_{th} = f(t_p)$

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**MECHANICAL DATA**



**Notes**

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

## Legal information

### DATA SHEET STATUS

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	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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