

DATA SHEET

BYR29 series
Rectifier diodes
ultrafast

Product specification

September 2018



WeEn
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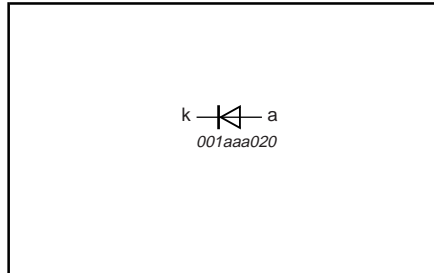
**Rectifier diodes
ultrafast**

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

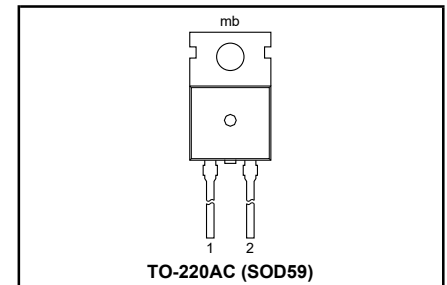
Ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

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	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	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

¹ 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	μA
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

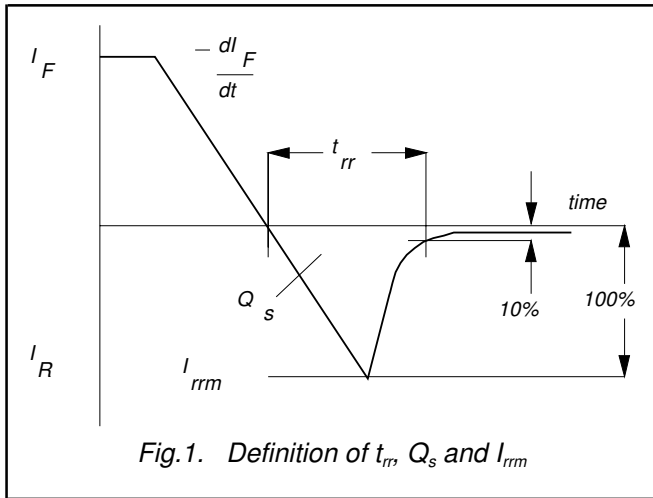


Fig.1. Definition of t_{rr} , Q_s and I_{rrm}

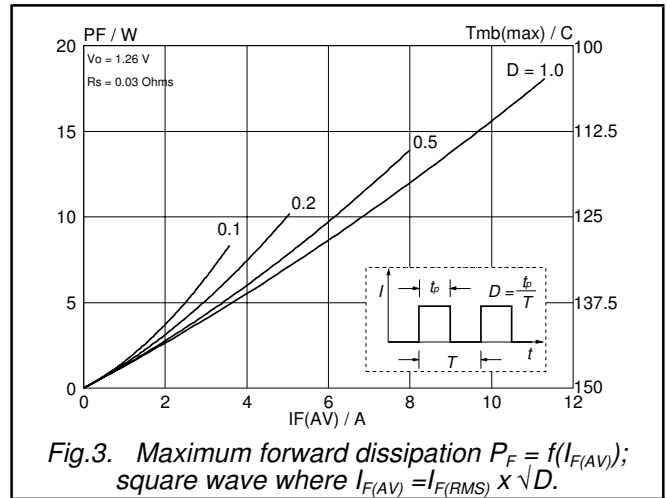


Fig.3. Maximum forward dissipation $P_F = f(I_{F(AV)})$; square wave where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

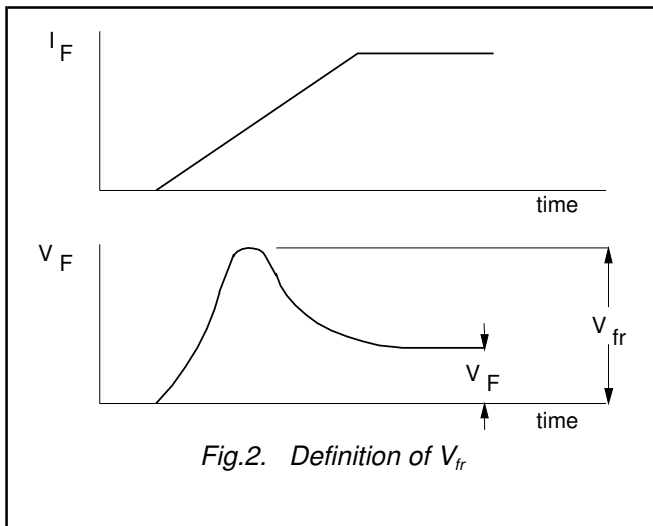


Fig.2. Definition of V_{fr}

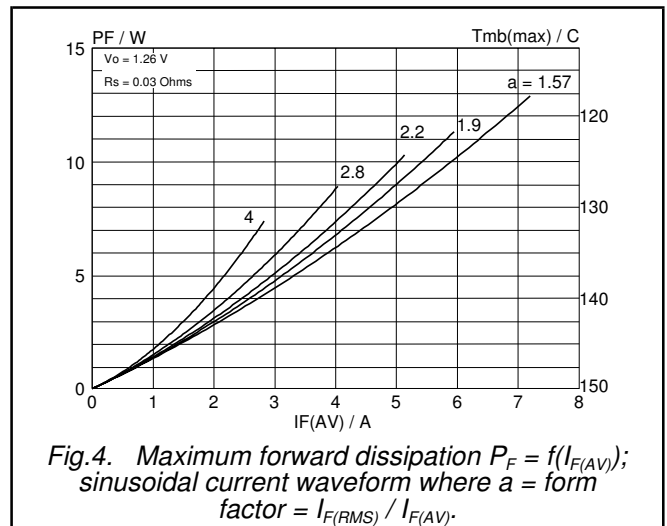


Fig.4. Maximum forward dissipation $P_F = f(I_{F(AV)})$; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

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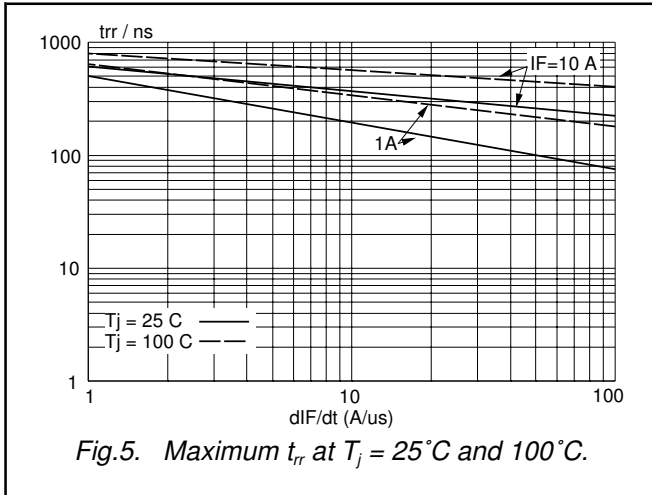


Fig.5. Maximum t_{rr} at $T_j = 25\text{ C}$ and 100 C .

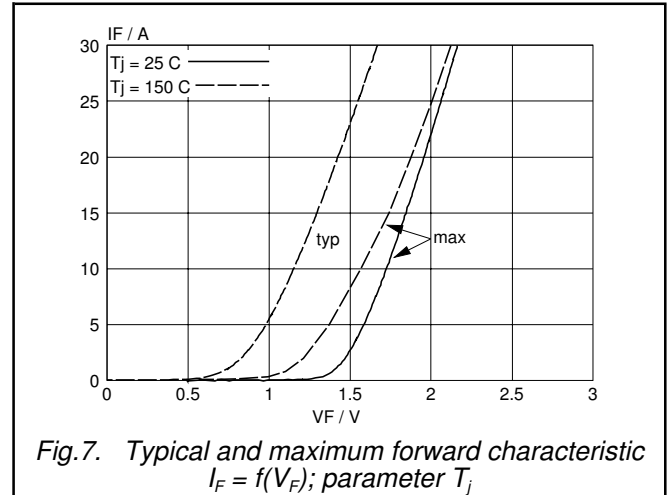


Fig.7. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

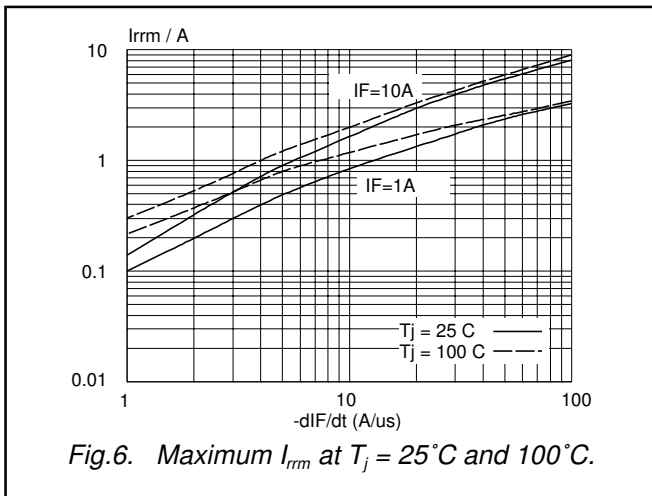


Fig.6. Maximum I_{rrm} at $T_j = 25\text{ C}$ and 100 C .

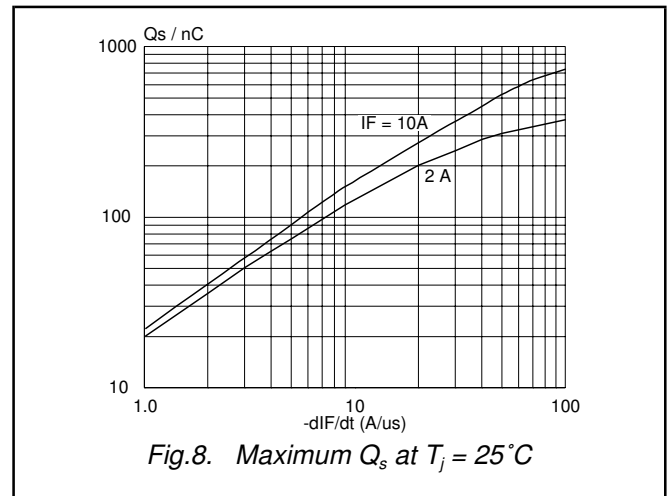


Fig.8. Maximum Q_s at $T_j = 25\text{ C}$

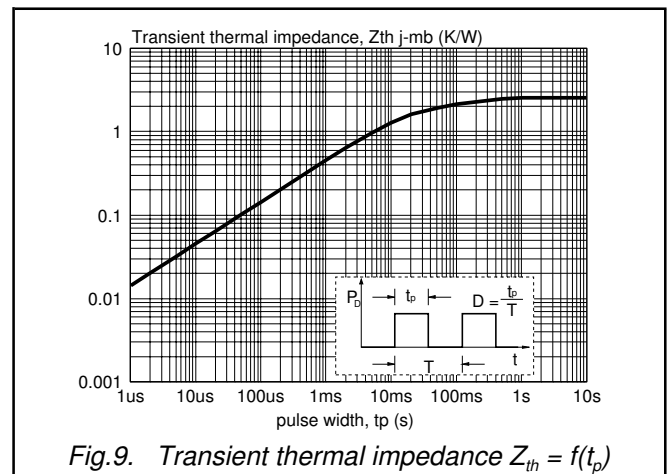


Fig.9. Transient thermal impedance $Z_{th} = f(t_p)$

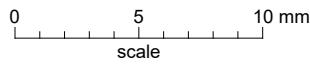
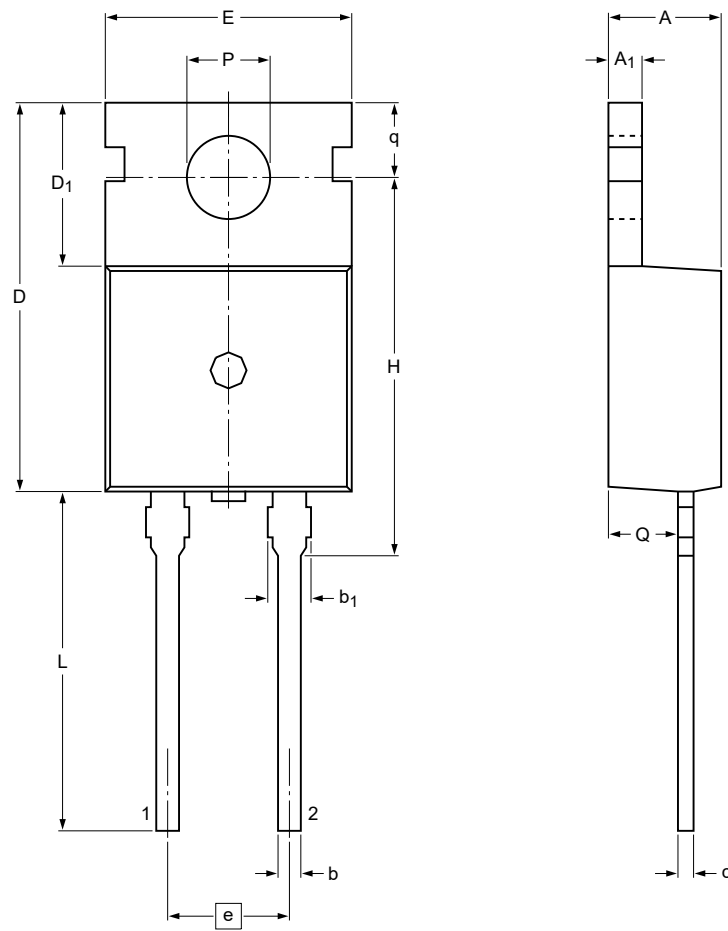
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MECHANICAL DATA

Plastic single-ended package; heatsink mounted; 1 mounting hole; 2-lead TO-220AC

SOD59



Dimensions

Unit	A	A ₁	b	b ₁ (¹)	c	D	D ₁	E	e	H	L	P	Q	q
mm	max	4.7	1.40	0.95	1.7	0.65	15.8	6.8	10.30	16.25	15.0	3.80	2.6	2.9
	nom								5.08					
	min	4.3	1.15	0.70	1.3	0.45	15.6	6.4	9.65	(REF)	15.70	12.5	3.65	2.2

Note

1. Protruded dambar are included in the dimension.

sod059_po

Outline version	References			European projection	Issue date
	IEC	JEDEC	JEITA		
SOD59	2-lead TO-220AC				09-08-25- 12-11-27

Legal information

Data sheet status

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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