



# Rectifier diodes ultrafast

## BYW29 series

### GENERAL DESCRIPTION

Glass passivated high efficiency rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

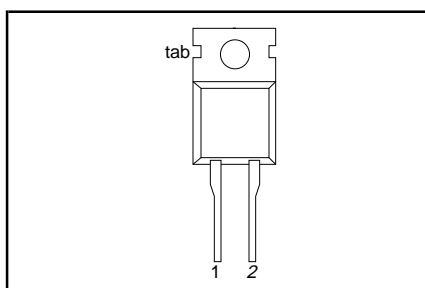
### QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
$V_{RRM}$	<b>BYW29-</b> Repetitive peak reverse voltage	<b>100</b> 100	<b>150</b> 150	<b>200</b> 200	V
$V_F$	Forward voltage	0.895	0.895	0.895	V
$I_{F(AV)}$	Forward current	8	8	8	A
$t_{rr}$	Reverse recovery time	25	25	25	ns

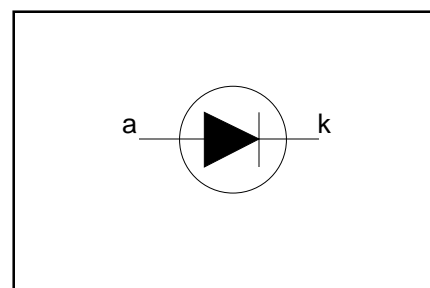
### PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

### PIN CONFIGURATION



### SYMBOL



### LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
$V_{RRM}$	Repetitive peak reverse voltage		-	<b>-100</b> 100	<b>-150</b> 150	<b>-200</b> 200	V
$V_{RWM}$	Crest working reverse voltage		-	100	150	200	V
$V_R$	Continuous reverse voltage		-	100	150	200	V
$I_{F(AV)}$	Average forward current <sup>1</sup>	square wave; $\delta = 0.5$ ; $T_{mb} \leq 128^\circ\text{C}$	-	8			A
		sinusoidal; $a = 1.57$ ; $T_{mb} \leq 130^\circ\text{C}$	-	7.3			A
$I_{F(RMS)}$	RMS forward current		-	11.3			A
$I_{FRM}$	Repetitive peak forward current	$t = 25\ \mu\text{s}$ ; $\delta = 0.5$ ; $T_{mb} \leq 128^\circ\text{C}$	-	16			A
$I_{FSM}$	Non-repetitive peak forward current	$t = 10\ \text{ms}$	-	80			A
		$t = 8.3\ \text{ms}$	-	88			A
		sinusoidal; with reapplied $V_{RWM(max)}$					
$I^2t$	$I^2t$ for fusing	$t = 10\ \text{ms}$	-	32			A <sup>2</sup> s
$T_{stg}$	Storage temperature		-40	150			$^\circ\text{C}$
$T_j$	Operating junction temperature		-	150			$^\circ\text{C}$

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

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### THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	in free air	-	-	2.7	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

### STATIC CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_F$	Forward voltage	$I_F = 8\text{ A}$ ; $T_j = 150\text{ °C}$	-	0.80	0.895	V
		$I_F = 8\text{ A}$	-	0.92	1.05	V
		$I_F = 20\text{ A}$	-	1.1	1.3	V
$I_R$	Reverse current	$V_R = V_{RWM}$ ; $T_j = 100\text{ °C}$	-	0.3	0.6	mA
		$V_R = V_{RWM}$	-	2	10	$\mu\text{A}$

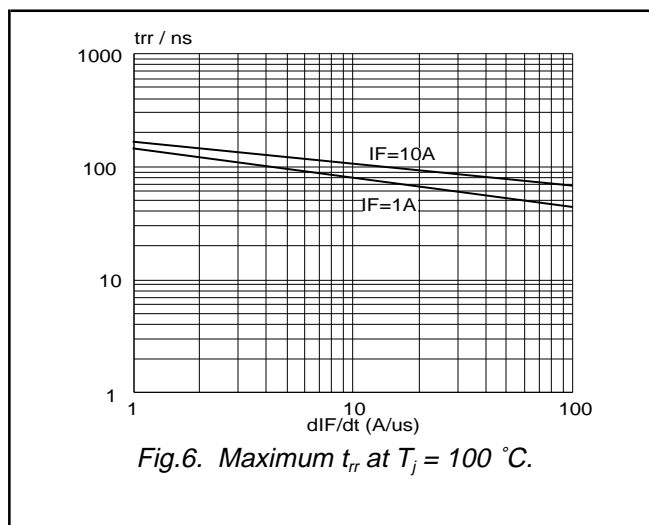
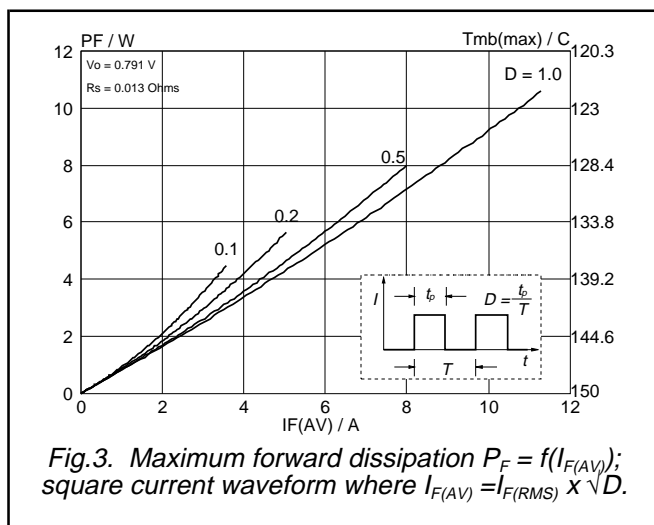
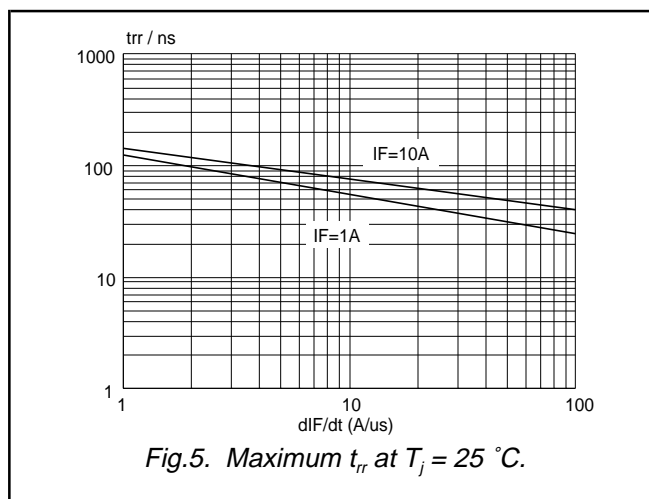
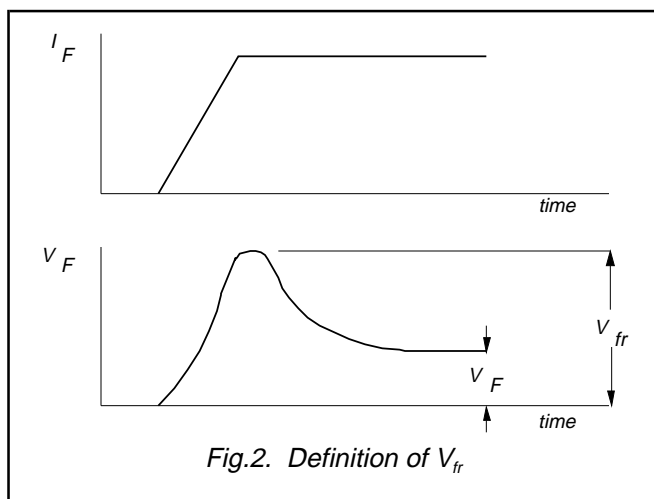
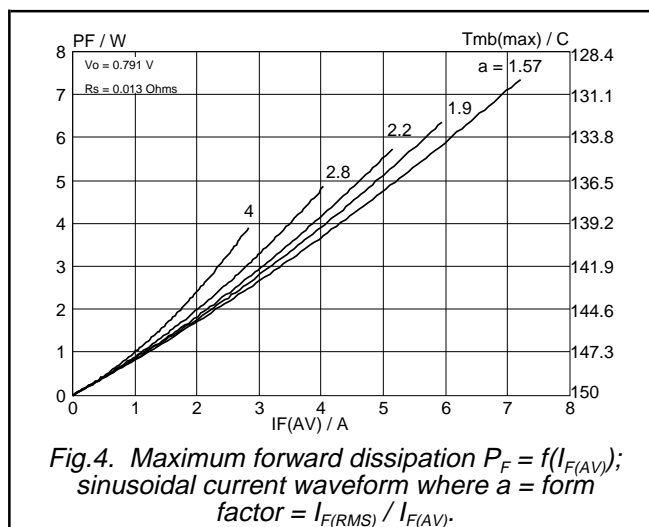
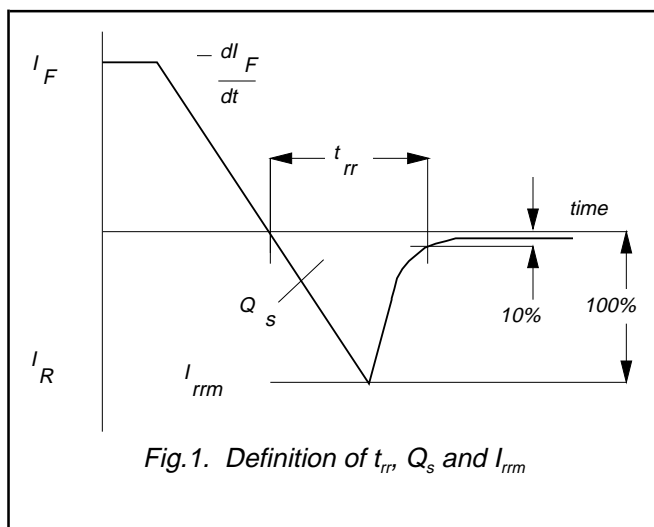
### DYNAMIC CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$Q_s$	Reverse recovery charge	$I_F = 2\text{ A}$ ; $V_R \geq 30\text{ V}$ ; $-di_F/dt = 20\text{ A}/\mu\text{s}$	-	4	11	nC
$t_{rr}$	Reverse recovery time	$I_F = 1\text{ A}$ ; $V_R \geq 30\text{ V}$ ; $-di_F/dt = 100\text{ A}/\mu\text{s}$	-	20	25	ns
$I_{rrm}$	Peak reverse recovery current	$I_F = 10\text{ A}$ ; $V_R \geq 30\text{ V}$ ; $T_j = 100\text{ °C}$ ; $-di_F/dt = 50\text{ A}/\mu\text{s}$	-	1	2	A
$V_{fr}$	Forward recovery voltage	$I_F = 1\text{ A}$ ; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	1	-	V

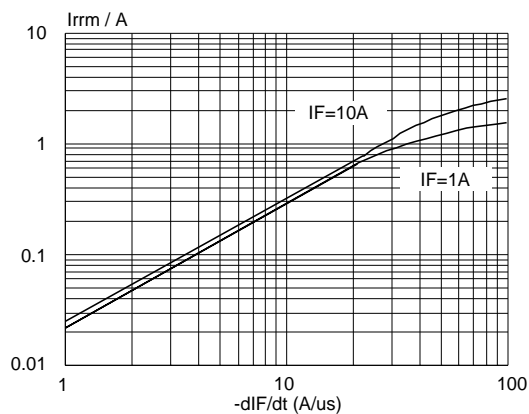
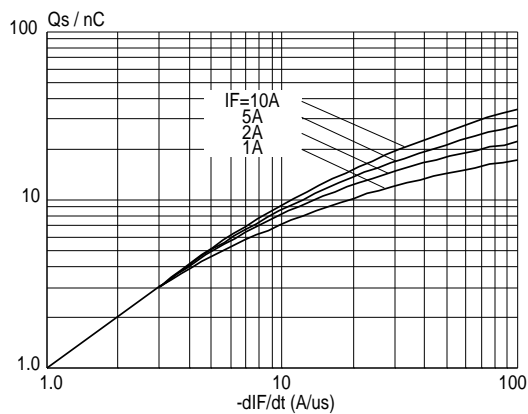
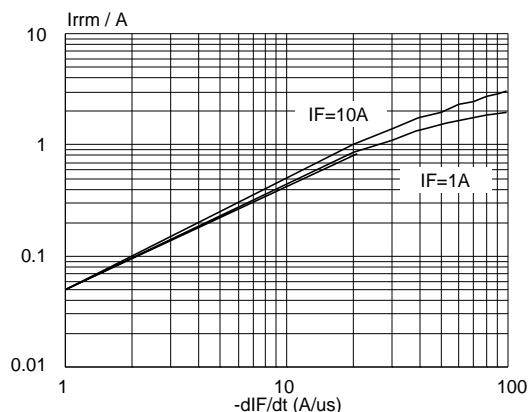
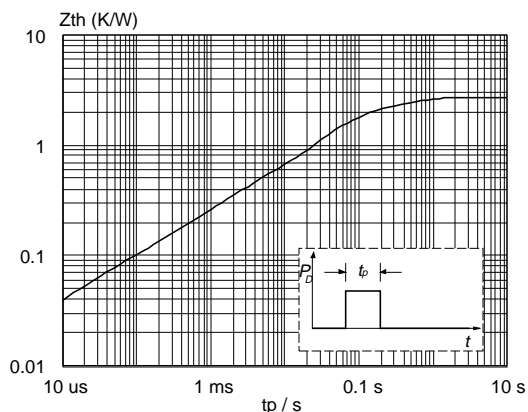
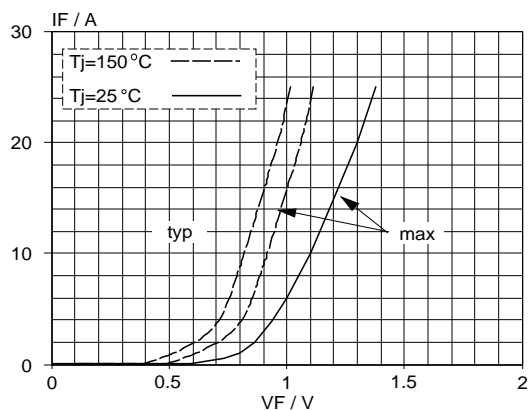
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ultrafast

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Fig. 7. Maximum  $I_{rrm}$  at  $T_j = 25\text{ }^{\circ}\text{C}$ .Fig. 10. Maximum  $Q_s$  at  $T_j = 25\text{ }^{\circ}\text{C}$ .Fig. 8. Maximum  $I_{rrm}$  at  $T_j = 100\text{ }^{\circ}\text{C}$ .Fig. 11. Transient thermal impedance;  $Z_{th\ j-mb} = f(t_p)$ .Fig. 9. Typical and maximum forward characteristic  
 $I_F = f(V_F)$ ; parameter  $T_j$

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## MECHANICAL DATA

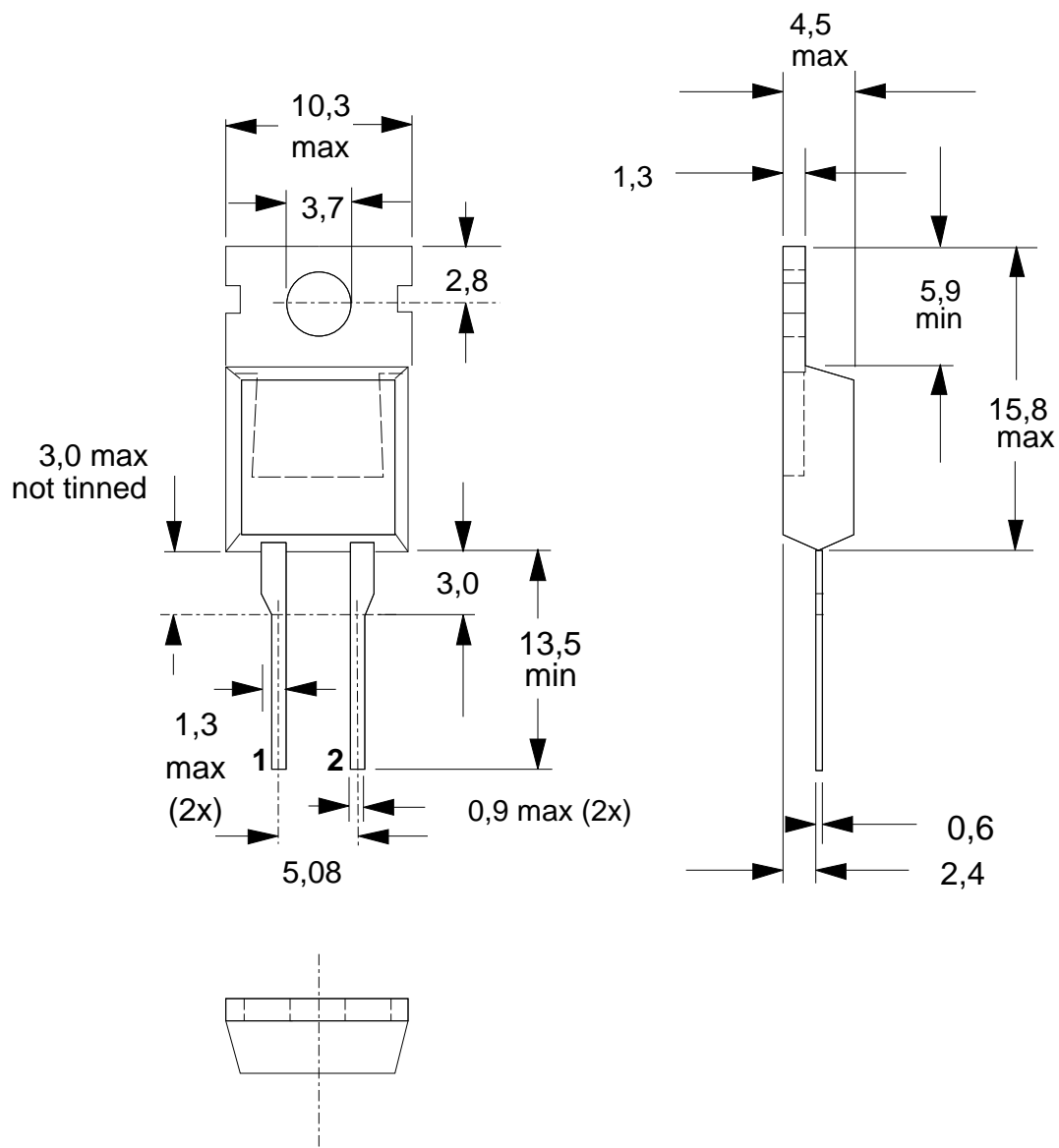
*Dimensions in mm**Net Mass: 2 g*

Fig.12. TO220AC; pin 1 connected to mounting base.

**Notes**

1. Accessories supplied on request: refer to mounting instructions for TO220 envelopes.
2. Epoxy meets UL94 V0 at 1/8".

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### DEFINITIONS

<b>Data sheet status</b>	
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.
<b>Limiting values</b>	
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.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	
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