

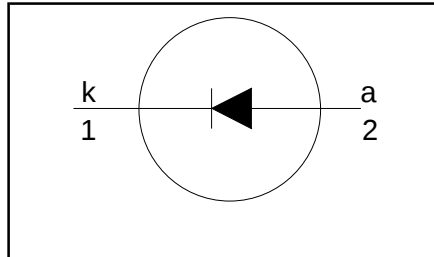
Rectifier diodes ultrafast, rugged

BYV79E 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

$$V_R = 150 \text{ V} / 200 \text{ V}$$

$$V_F \leq 0.9 \text{ V}$$

$$I_{F(AV)} = 14 \text{ A}$$

$$I_{RRM} \leq 0.2 \text{ A}$$

$$t_{rr} \leq 30 \text{ ns}$$

GENERAL DESCRIPTION

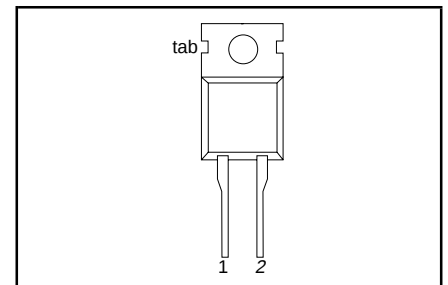
Ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

The BYV79E 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	BYV79E $T_{mb} \leq 145^\circ\text{C}$	-	-150 150	-200 200	V
V_{RWM}	Crest working reverse voltage		-	150	200	V
V_R	Continuous reverse voltage		-	150	200	V
$I_{F(AV)}$	Average forward current ¹		-	14		A
I_{FRM}	Repetitive peak forward current	square wave $\delta = 0.5$; $T_{mb} \leq 120^\circ\text{C}$ $t = 25 \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 120^\circ\text{C}$	-	28		A
I_{FSM}	Non-repetitive peak forward current	$t = 10 \text{ ms}$	-	150		A
		$t = 8.3 \text{ ms}$ sinusoidal; with reappplied $V_{RWM(max)}$	-	160		A
I_{RRM}	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$; $\delta = 0.001$	-	0.2		A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100 \mu\text{s}$	-	0.2		A
T_{stg}	Storage temperature		-40	150		$^\circ\text{C}$
T_j	Operating junction temperature		-	150		$^\circ\text{C}$

1. Neglecting switching and reverse current losses.

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

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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	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

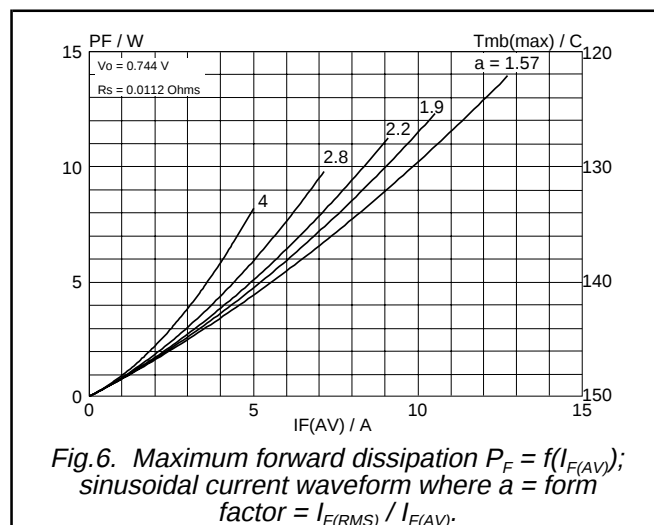
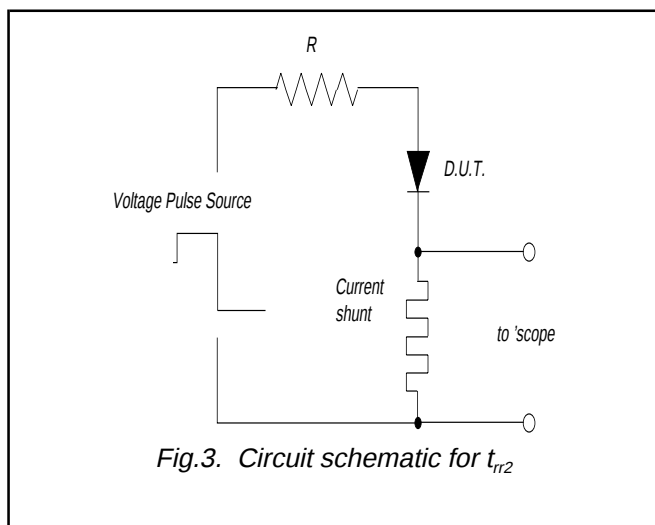
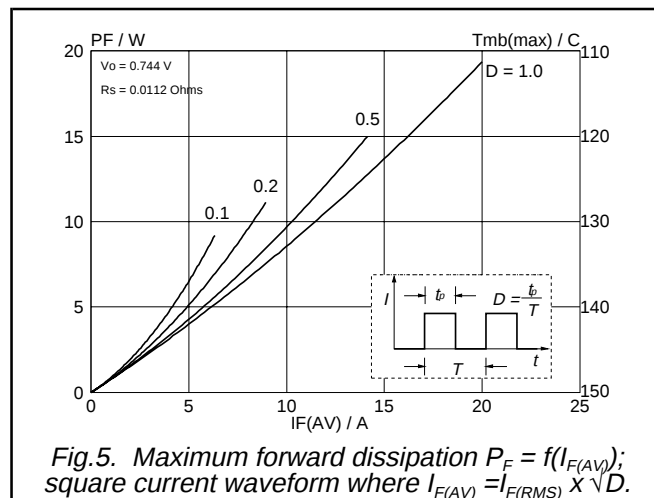
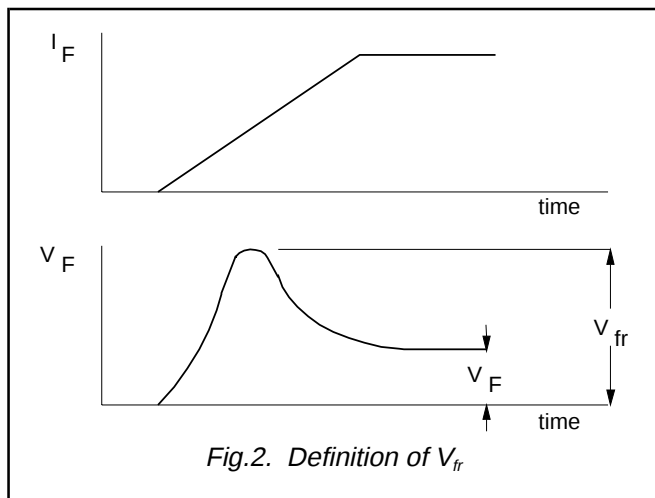
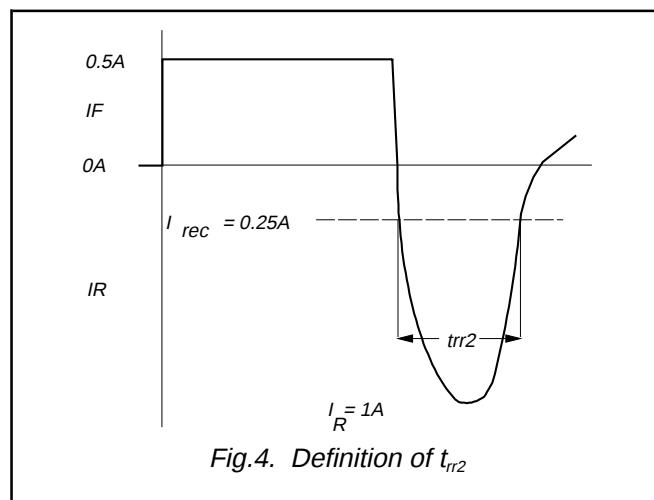
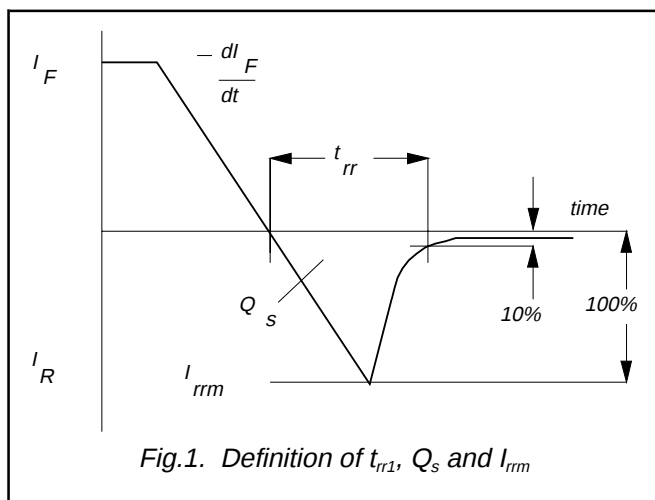
STATIC CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 14\ \text{A}$; $T_j = 150\ ^\circ\text{C}$	-	0.83	0.90	V
		$I_F = 14\ \text{A}$	-	0.95	1.05	V
		$I_F = 50\ \text{A}$	-	1.2	1.4	V
I_R	Reverse current	$V_R = V_{RWM}$; $T_j = 100\ ^\circ\text{C}$	-	0.5	1.3	mA
		$V_R = V_{RWM}$	-	5	50	μA
Q_s	Reverse recovery charge	$I_F = 2\ \text{A}$; $V_R \geq 30\ \text{V}$; $-dI_F/dt = 20\ \text{A}/\mu\text{s}$	-	6	15	nC
t_{rr1}	Reverse recovery time	$I_F = 1\ \text{A}$; $V_R \geq 30\ \text{V}$; $-dI_F/dt = 100\ \text{A}/\mu\text{s}$	-	20	30	ns
t_{rr2}	Reverse recovery time	$I_F = 0.5\ \text{A}$ to $I_R = 1\ \text{A}$; $I_{rec} = 0.25\ \text{A}$	-	13	22	ns
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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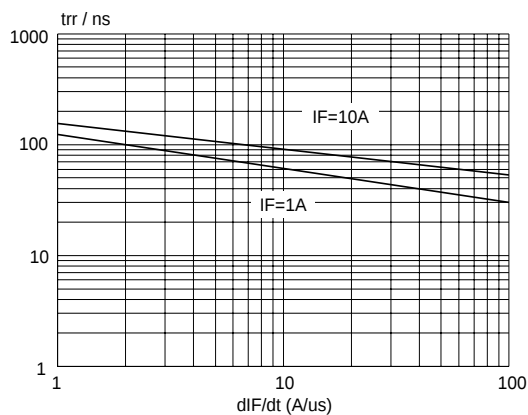


Fig.7. Maximum t_{rr} at $T_j = 25\text{ }^{\circ}\text{C}$.

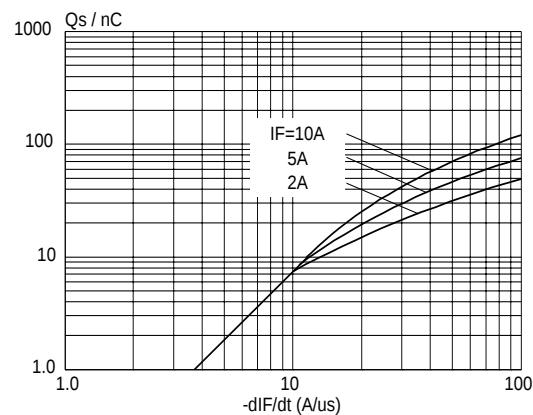


Fig.10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$.

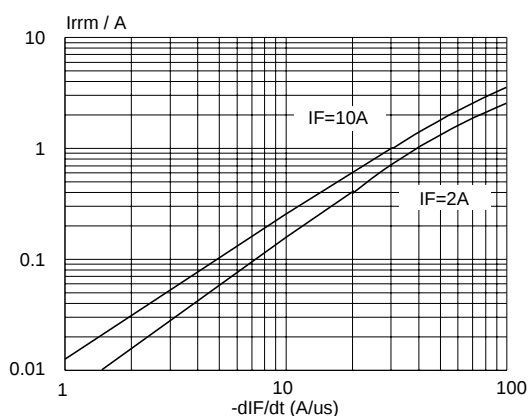


Fig.8. Maximum I_{rrm} at $T_j = 25\text{ }^{\circ}\text{C}$.

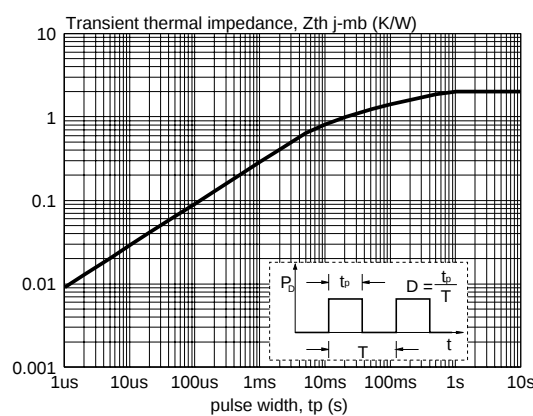


Fig.11. Transient thermal impedance; $Z_{th\ j-mb} = f(t_p)$.

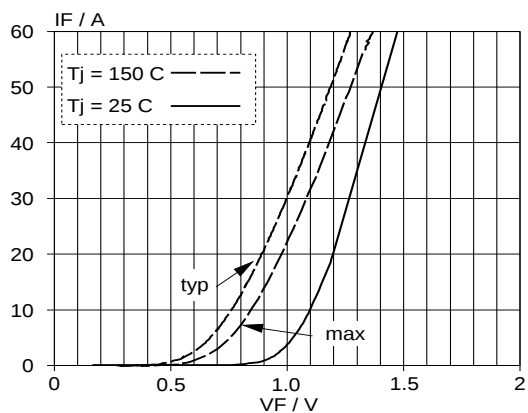


Fig.9. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

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MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

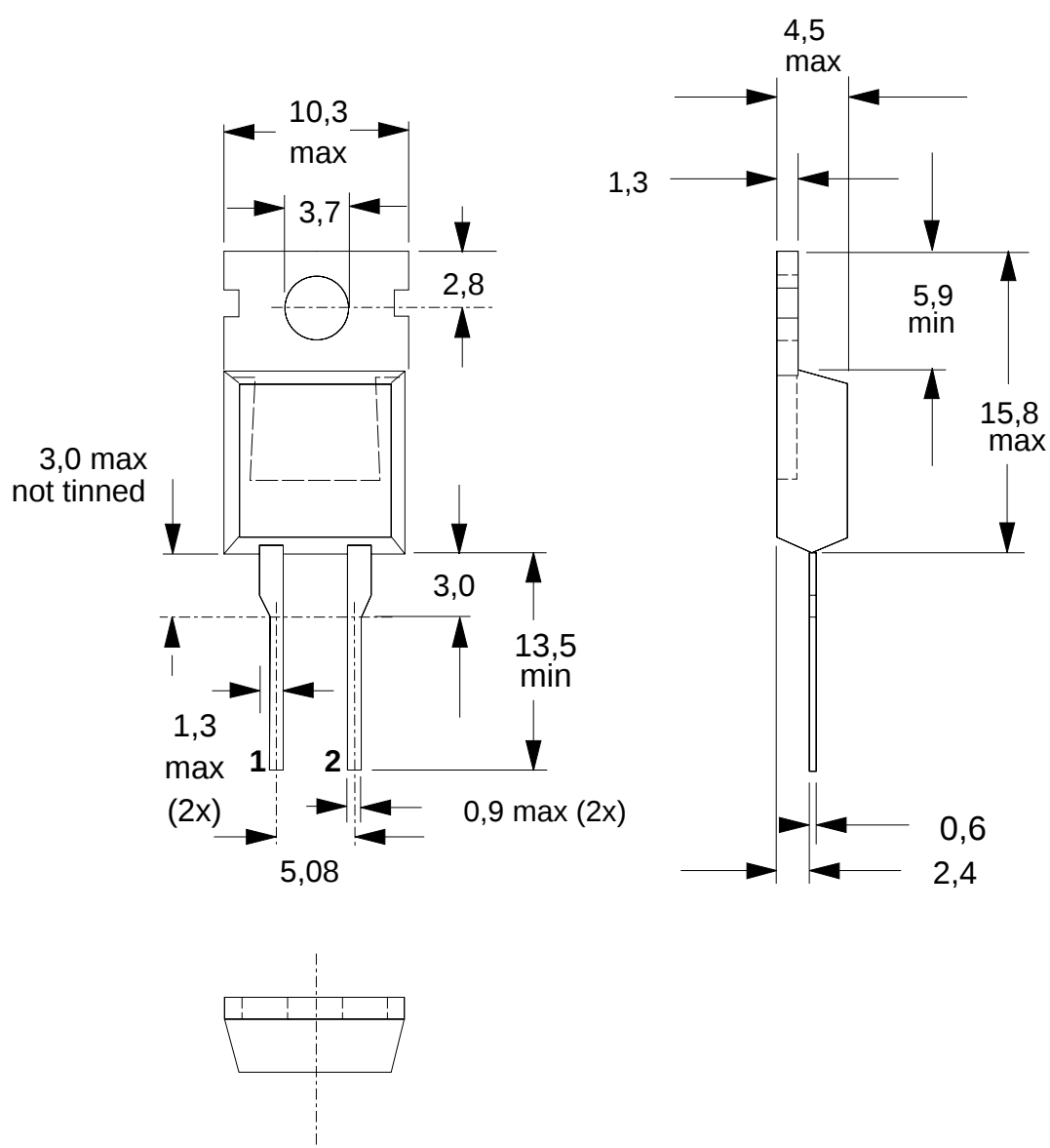


Fig.12. SOD59 (TO220AC). pin 1 connected to mounting base.

Notes

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

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DEFINITIONS

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