

DATA SHEET

BYV79E series
Rectifier diodes
ultrafast, rugged

Product specification

July 1998



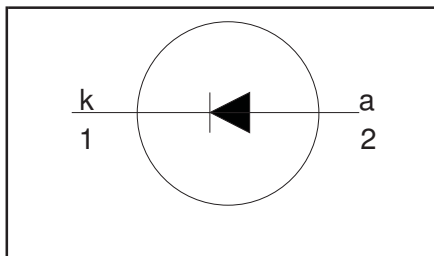
Rectifier diodes ultrafast, rugged

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FEATURES

- Low forward volt drop
- Fast switching
- Soft recovery characteristic
- Reverse surge capability
- High thermal cycling performance
- Low thermal resistance

SYMBOL



QUICK REFERENCE DATA

$V_R = 150\text{ V} / 200\text{ V}$
$V_F \leq 0.9\text{ V}$
$I_{F(AV)} = 14\text{ A}$
$I_{RRM} \leq 0.2\text{ A}$
$t_r \leq 30\text{ ns}$

GENERAL DESCRIPTION

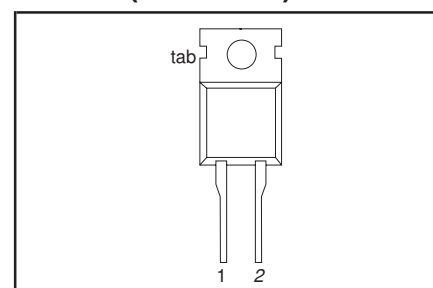
Ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

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 $T_{mb} \leq 145\text{ }^\circ\text{C}$	-	-150	-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	square wave $\delta = 0.5; T_{mb} \leq 120\text{ }^\circ\text{C}$	-	14		A
I_{FRM}	Repetitive peak forward current	$t = 25\text{ }\mu\text{s}; \delta = 0.5;$ $T_{mb} \leq 120\text{ }^\circ\text{C}$	-	28		A
I_{FSM}	Non-repetitive peak forward current	$t = 10\text{ ms}$	-	150		A
		$t = 8.3\text{ ms}$ sinusoidal; with reappplied	-	160		A
I_{RRM}	Repetitive peak reverse current	$V_{RWM(max)}$ $t_p = 2\text{ }\mu\text{s}; \delta = 0.001$	-	0.2		A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$	-	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

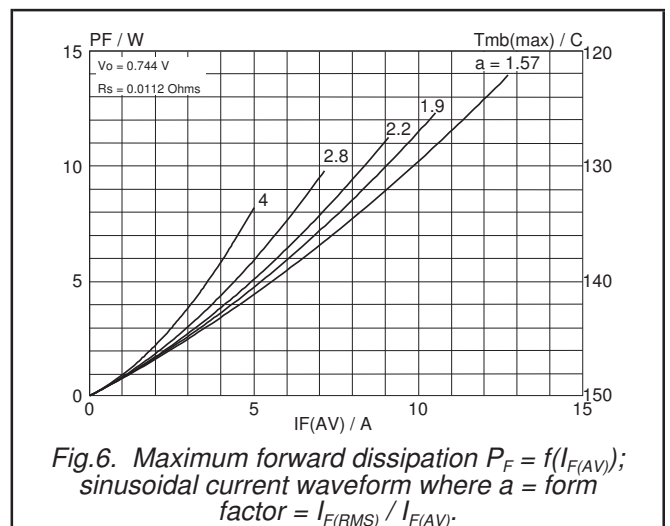
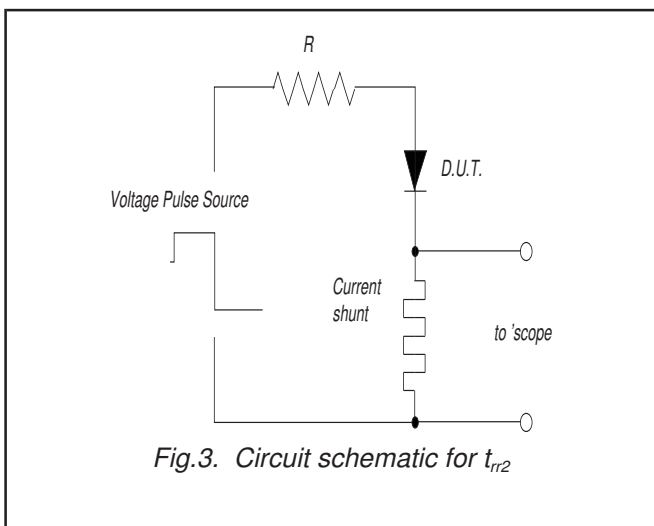
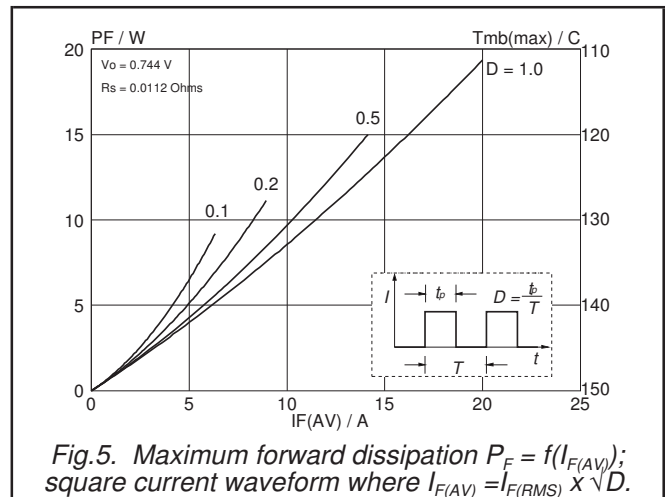
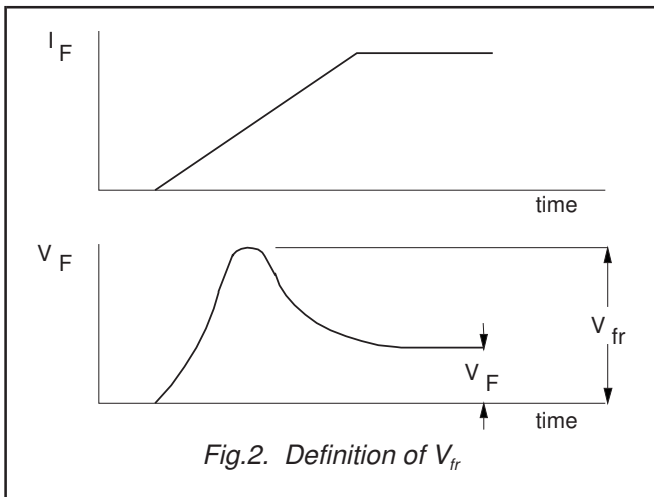
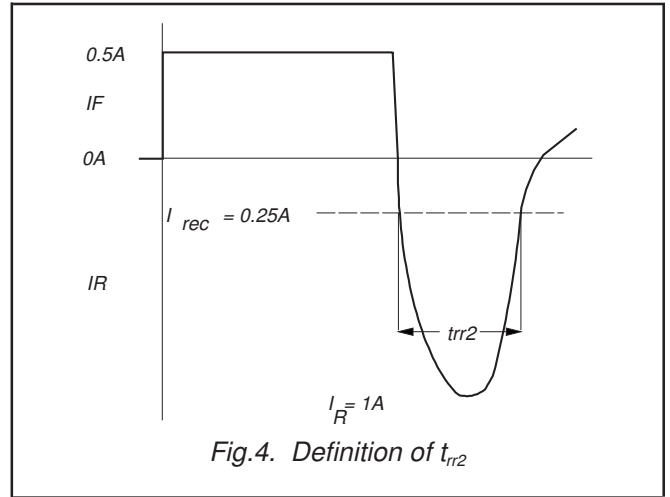
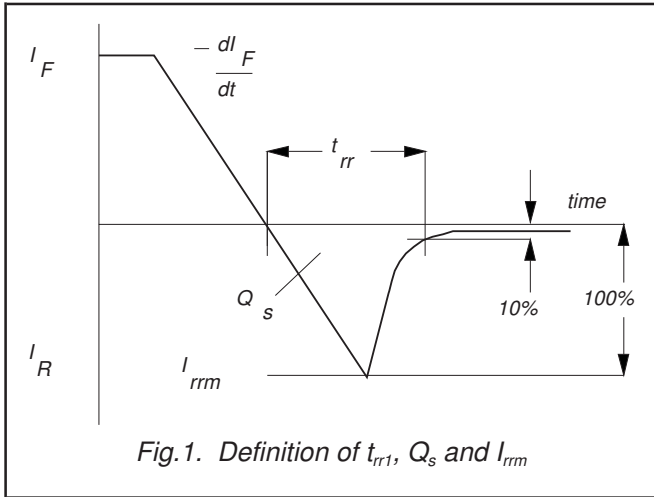
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base		-	-	2	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air	-	60	-	K/W

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 14\text{ A}; T_j = 150\text{ °C}$	-	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	$V_R = V_{RWM}; T_j = 100\text{ °C}$	-	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

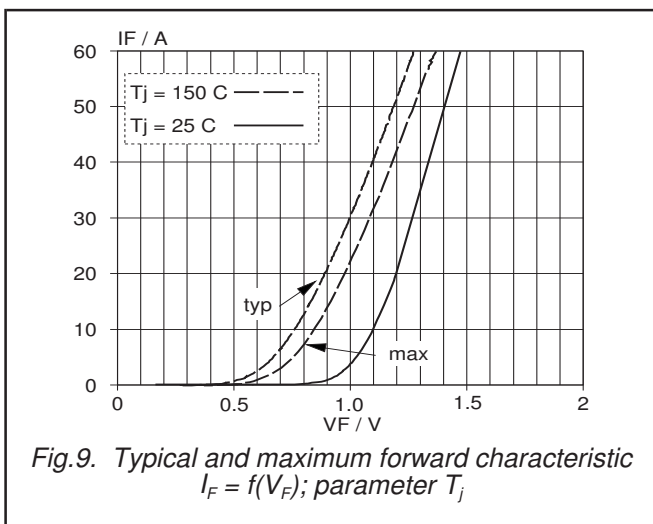
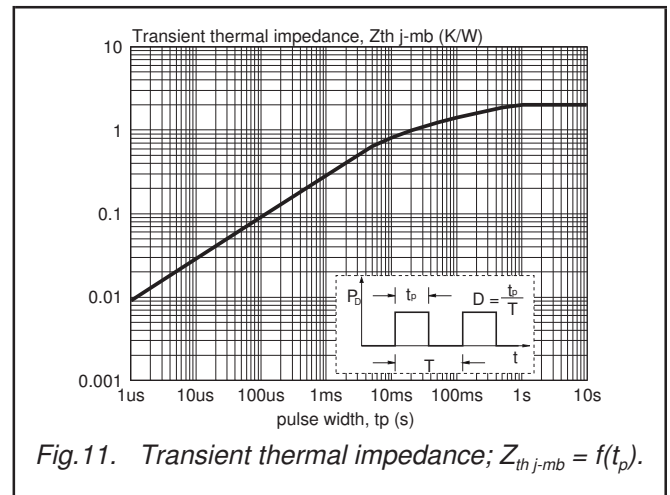
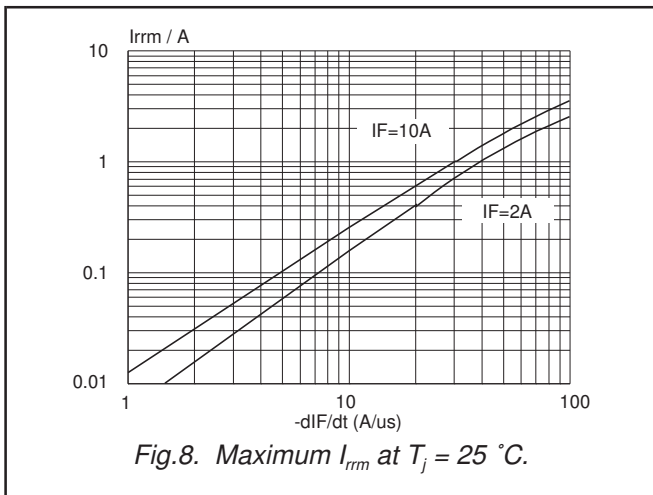
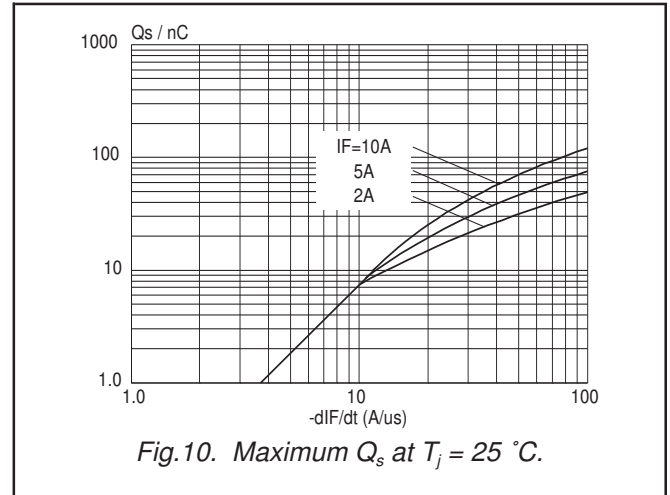
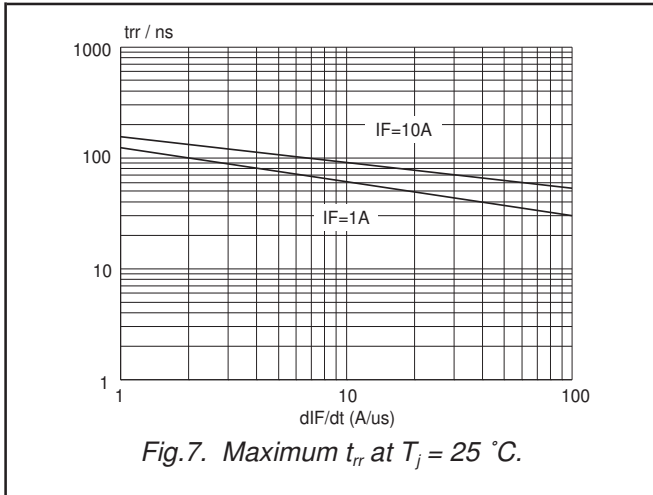
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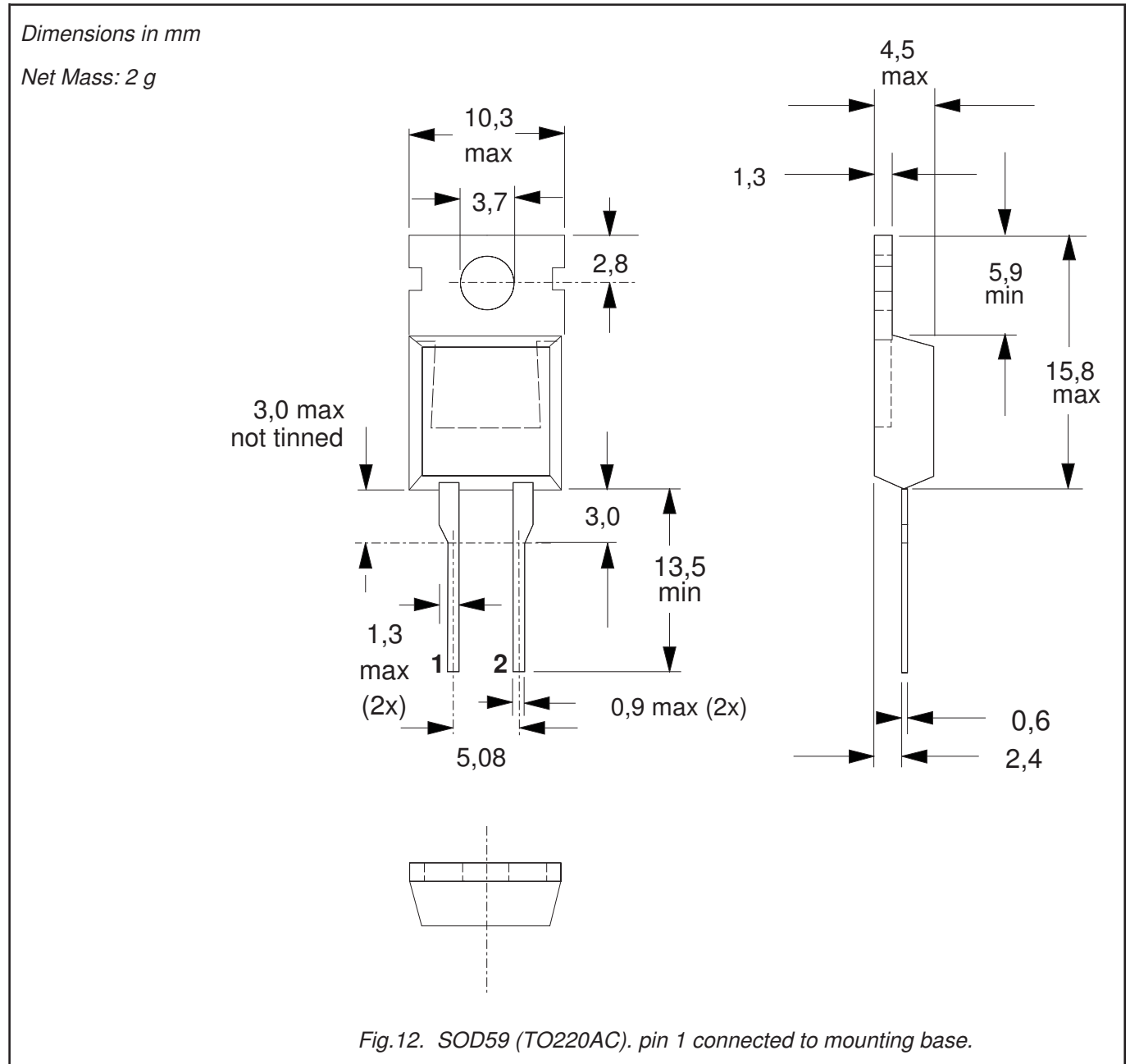
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MECHANICAL DATA



Notes

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

Legal information

DATA SHEET STATUS

DOCUMENT STATUS ⁽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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For additional information please visit: <http://www.nxp.com>

For sales offices addresses send e-mail to: salesaddresses@nxp.com

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