

# IMPORTANT NOTICE

10 December 2015

## 1. Global joint venture starts operations as WeEn Semiconductors

Dear customer,

As from November 9th, 2015 NXP Semiconductors N.V. and Beijing JianGuang Asset Management Co. Ltd established Bipolar Power joint venture (JV), **WeEn Semiconductors**, which will be used in future Bipolar Power documents together with new contact details.

In this document where the previous NXP references remain, please use the new links as shown below.

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If you have any questions related to this document, please contact our nearest sales office via e-mail or phone ([details via salesaddresses@ween-semi.com](mailto:salesaddresses@ween-semi.com)).

Thank you for your cooperation and understanding,

WeEn Semiconductors

# DATA SHEET

**BYV79E series**  
Rectifier diodes  
ultrafast, rugged

Product specification

July 1998



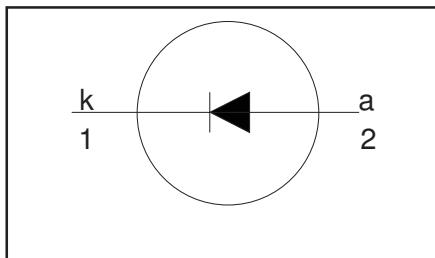
## Rectifier diodes ultrafast, rugged

## 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

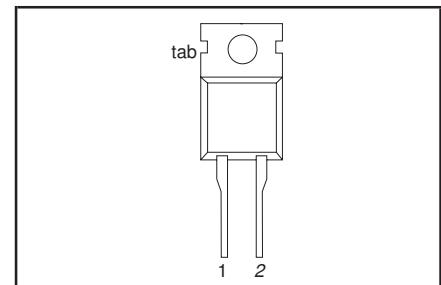
Ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

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	-	-150	V
$V_{RWM}$	Crest working reverse voltage		-	150	V
$V_R$	Continuous reverse voltage		-	150	V
$I_{F(AV)}$	Average forward current <sup>1</sup>	$T_{mb} \leq 145^\circ\text{C}$ square wave $\delta = 0.5$ ; $T_{mb} \leq 120^\circ\text{C}$	-	14	A
$I_{FRM}$	Repetitive peak forward current	$t = 25 \mu\text{s}$ ; $\delta = 0.5$ ; $T_{mb} \leq 120^\circ\text{C}$	-	28	A
$I_{FSM}$	Non-repetitive peak forward current	$t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$ sinusoidal; with reapplied	-	150	A
$I_{RRM}$	Repetitive peak reverse current	$V_{RWM(\text{max})}$ $t_p = 2 \mu\text{s}$ ; $\delta = 0.001$	-	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	°C
$T_j$	Operating junction temperature		-	150	°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**

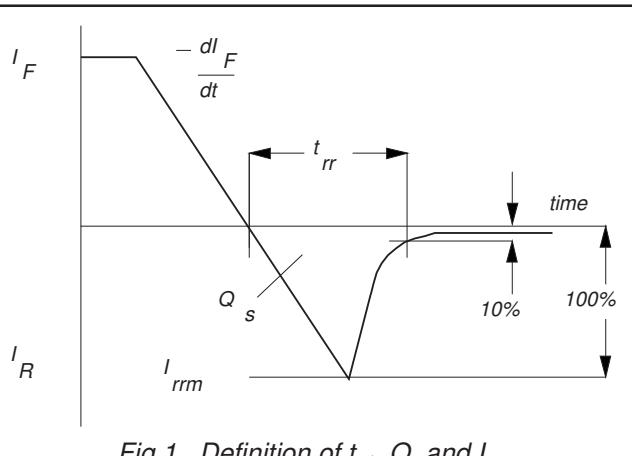
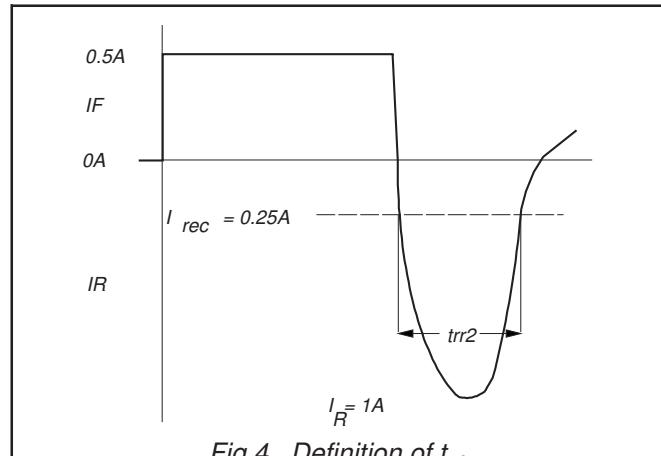
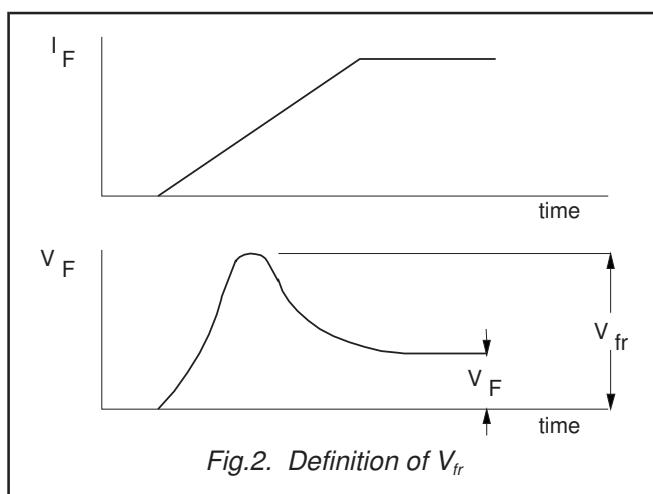
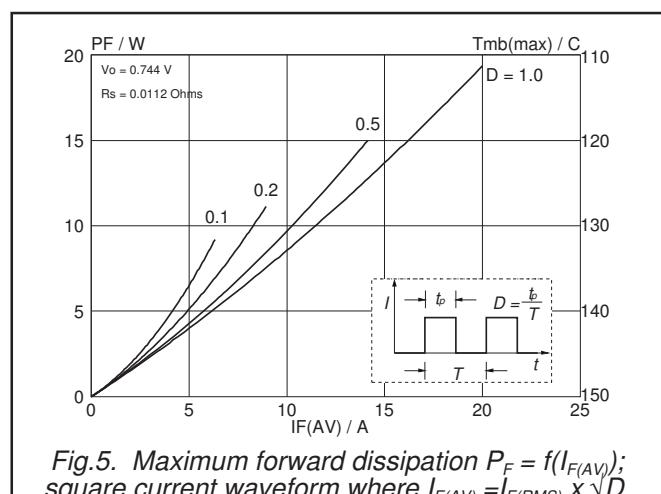
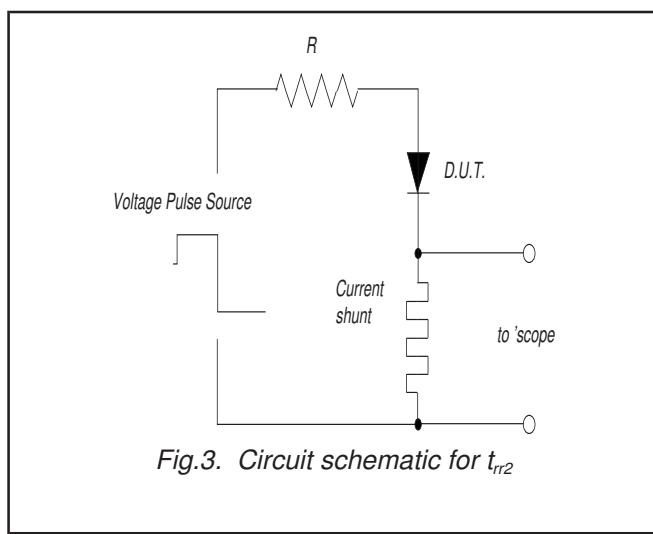
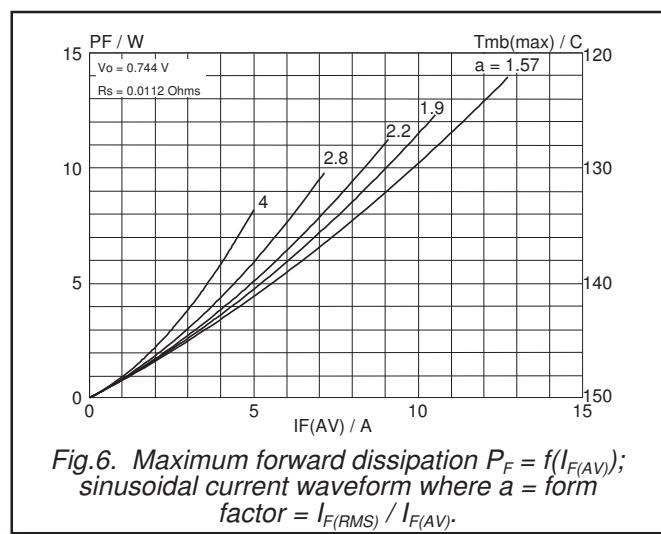
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j\cdot mb}$	Thermal resistance junction to mounting base		-	-	2	K/W
$R_{th\ j\cdot a}$	Thermal resistance junction to ambient	in free air	-	60	-	K/W

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_F$	Forward voltage	$I_F = 14\text{ A}; T_j = 150^\circ\text{C}$ $I_F = 14\text{ A}$ $I_F = 50\text{ A}$	-	0.83	0.90	V
$I_R$	Reverse current	$V_R = V_{RWM}; T_j = 100^\circ\text{C}$ $V_R = V_{RWM}$	-	0.5	1.3	mA
$Q_s$ $t_{rr1}$	Reverse recovery charge Reverse recovery time	$I_F = 2\text{ A}; V_R \geq 30\text{ V}; -dI_F/dt = 20\text{ A}/\mu\text{s}$ $I_F = 1\text{ A}; V_R \geq 30\text{ V};$ $-dI_F/dt = 100\text{ A}/\mu\text{s}$	-	6	15	nC
$t_{rr2}$ $V_{fr}$	Reverse recovery time Forward recovery voltage	$I_F = 0.5\text{ A to } I_R = 1\text{ A}; I_{rec} = 0.25\text{ A}$ $I_F = 1\text{ A}; dI_F/dt = 10\text{ A}/\mu\text{s}$	-	20	30	ns
			-	13	22	ns
			-	1	-	V

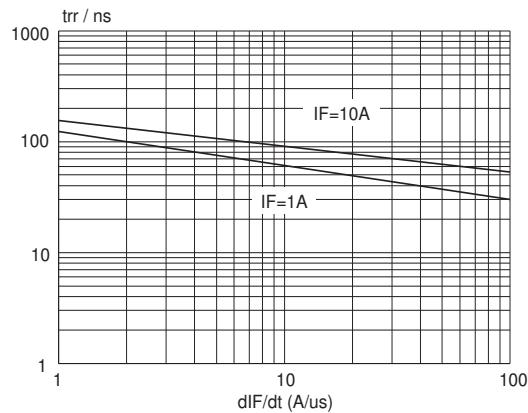
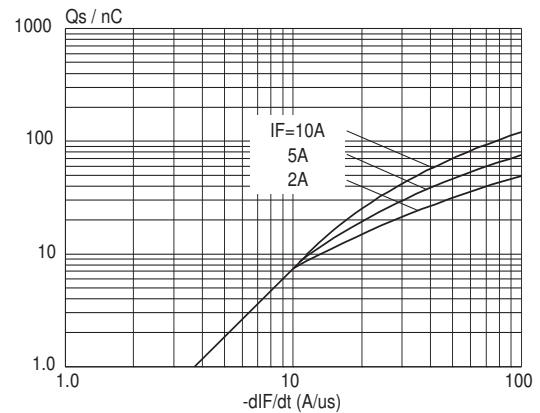
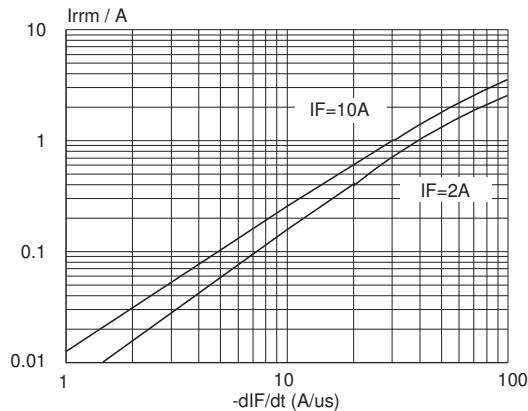
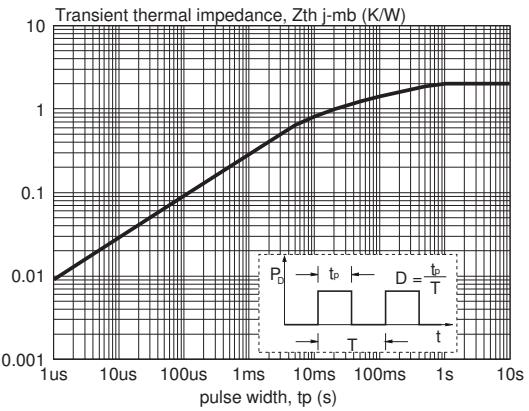
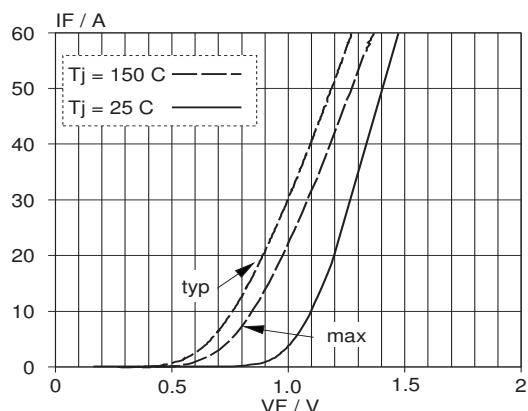
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ultrafast, rugged

## BYV79E series

Fig.1. Definition of  $t_{rr1}$ ,  $Q_s$  and  $I_{rrm}$ Fig.4. Definition of  $t_{rr2}$ Fig.2. Definition of  $V_{fr}$ Fig.5. Maximum forward dissipation  $P_F = f(I_{F(AV)})$ ; square current waveform where  $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$ .Fig.3. Circuit schematic for  $t_{rr2}$ Fig.6. 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.7. Maximum  $t_{rr}$  at  $T_j = 25$  °C.Fig.10. Maximum  $Q_s$  at  $T_j = 25$  °C.Fig.8. Maximum  $I_{rrm}$  at  $T_j = 25$  °C.Fig.11. Transient thermal impedance;  $Z_{th\ j\cdot mb} = f(t_p)$ .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

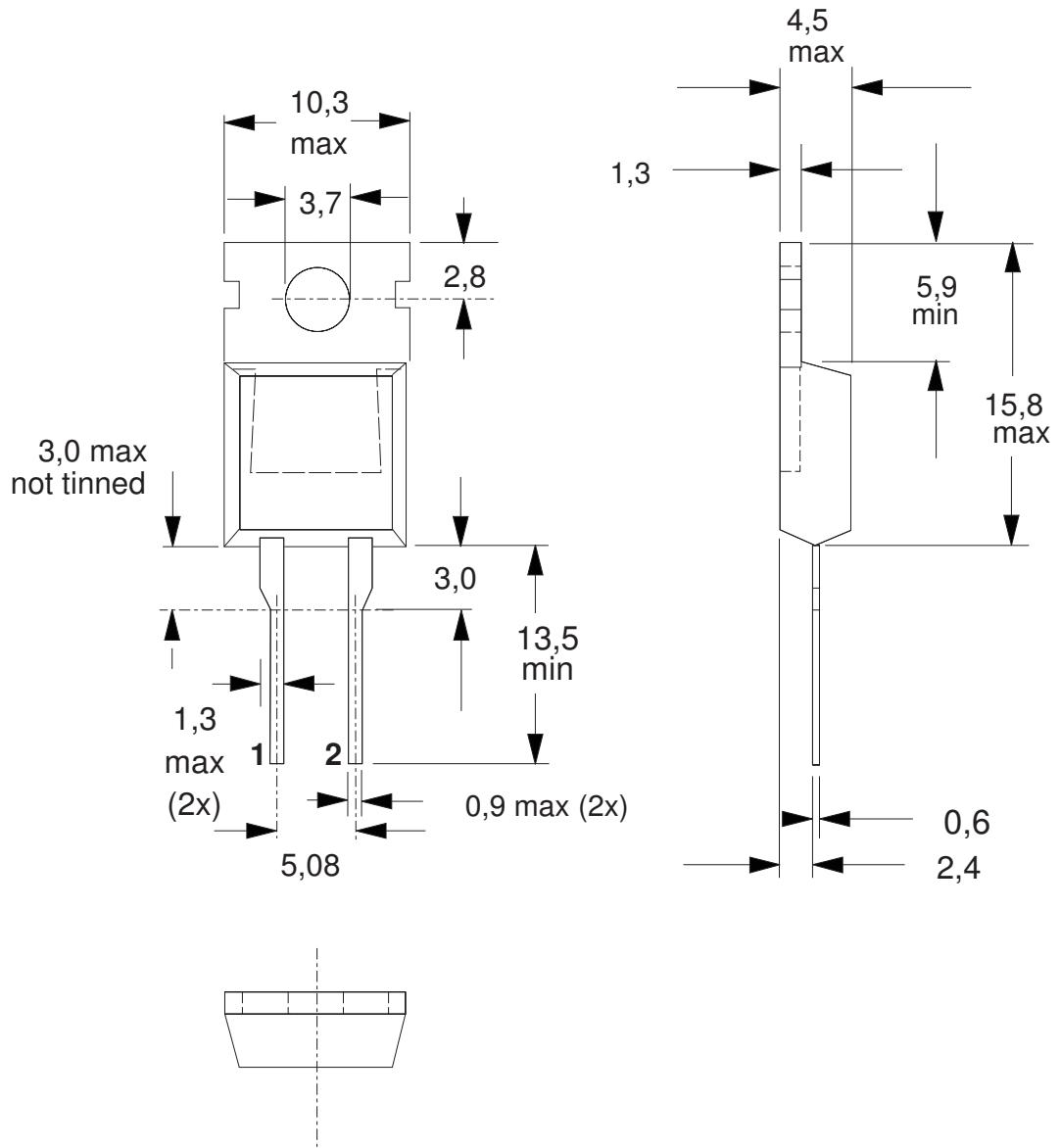


Fig.12. SOD59 (TO220AC). pin 1 connected to mounting base.

**Notes**

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

## 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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### Contact information

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

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