

#### 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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Thank you for your cooperation and understanding,

WeEn Semiconductors



#### DISCRETE SEMICONDUCTORS

# DATA SHEET

# BYT79 series Rectifier diodes ultrafast

**Product specification** 

September 1998



NXP Semiconductors Product specification

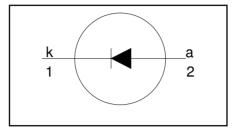
## Rectifier diodes ultrafast

**BYT79** series

#### **FEATURES**

- · Low forward volt drop
- · Fast switching
- · Soft recovery characteristic
- · High thermal cycling performance
- · Low thermal resistance

#### **SYMBOL**



#### **QUICK REFERENCE DATA**

$$V_R = 300 \text{ V} / 400 \text{ V} / 500 \text{ V}$$
  $V_F \le 1.05 \text{ V}$   $I_{F(AV)} = 14 \text{ A}$   $t_{rr} \le 60 \text{ ns}$ 

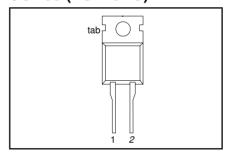
#### **GENERAL DESCRIPTION**

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

The BYT79 series is supplied in the conventional leaded SOD59 (TO220AC) package.

#### **PINNING**

#### SOD59 (TO220AC)



#### **LIMITING VALUES**

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

| SYMBOL                                       | PARAMETER   | CONDITIONS  | MIN.     | MAX.                      |                           |                           | UNIT          |
|--|---|---|----------|---------------------------|---------------------------|---------------------------|---------------|
| $egin{array}{c} V_{RRM} \ V_{R} \end{array}$ | Peak repetitive reverse voltage<br>Continuous reverse voltage | $\textbf{BYT79}$ $T_{mb} \leq 147^{\circ} \textbf{C}$           |          | <b>-300</b><br>300<br>300 | <b>-400</b><br>400<br>400 | <b>-500</b><br>500<br>500 | <b>&gt;</b> > |
| I <sub>F(AV)</sub>                           | Average forward current <sup>1</sup>                          | square wave; $\delta = 0.5$ ; $T_{mb} \le 117 ^{\circ}\text{C}$ | -        |                           | 14                        |                           | Α             |
| I <sub>FSM</sub>                             | Non-repetitive peak forward current.                          | t = 10 ms<br>t = 8.3 ms<br>sinusoidal; with reapplied           | -        |                           | 130<br>143                |                           | A<br>A        |
| T <sub>stg</sub>                             | Storage temperature Operating junction temperature            | V <sub>RRM(max)</sub>   | -40<br>- |                           | 150<br>150                |                           | ο̈́ο          |

#### THERMAL RESISTANCES

| SYMBOL               | PARAMETER                                    | CONDITIONS   | MIN. | TYP. | MAX. | UNIT |
|----------------------|--|--------------|------|------|------|------|
| R <sub>th j-mb</sub> | Thermal resistance junction to mounting base |              | -    | -    | 2.0  | K/W  |
| R <sub>th j-a</sub>  |  | in free air. | -    | 60   | -    | K/W  |

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

NXP Semiconductors Product specification

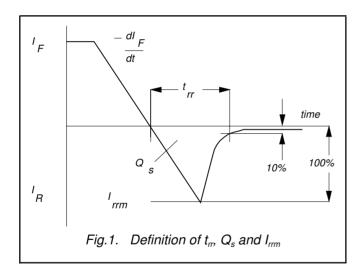
Rectifier diodes ultrafast

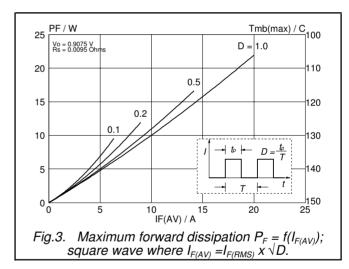
BYT79 series

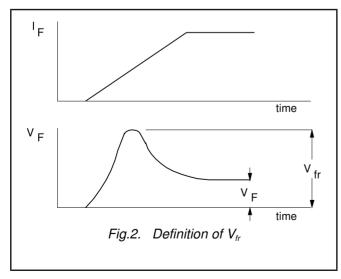
#### **ELECTRICAL CHARACTERISTICS**

T<sub>i</sub> = 25 °C unless otherwise stated

| SYMBOL           | PARAMETER                     | CONDITIONS  | MIN. | TYP. | MAX. | UNIT |
|------------------|-------------------------------|---|------|------|------|------|
| $V_{F}$          | Forward voltage               | $I_F = 15 \text{ A}; T_j = 150^{\circ}\text{C}$   | -    | 0.90 | 1.05 | V    |
| ١.               | D                             | $I_{\rm F} = 30  {\rm A}$   | -    | 1.17 | 1.38 | V    |
| I <sub>R</sub>   | Reverse current               | $V_R = V_{RRM}$   | -    | 5.0  | 50   | μΑ   |
|                  | D                             | $V_{R} = V_{RRM}$ ; $T_{j} = 100 ^{\circ}C$<br>$I_{F} = 2 ^{\circ}A ^{\circ}to ^{\circ}V_{R} \geq 30 ^{\circ}V$ ; | -    | 0.2  | 0.8  | mA   |
| $Q_s$            | Reverse recovery charge       | $I_{\rm F} = 2$ A to $V_{\rm R} \ge 30$ V;  | -    | 50   | 60   | nC   |
| l .              | l                             | $dI_F/dt = 20 A/\mu s$  |      |      |      |      |
| t <sub>rr</sub>  | Reverse recovery time         | $I_F = 1 \text{ A to } V_R \ge 30 \text{ V};$   | -    | 50   | 60   | ns   |
| l .              | <u> </u>                      | $dI_F/dt = 100 A/\mu s$   |      | ١    |      | _    |
| I <sub>rrm</sub> | Peak reverse recovery current | $I_{\rm F} = 10 \text{ A to } V_{\rm R} \ge 30 \text{ V};$  | -    | 4.0  | 5.2  | Α    |
|                  |                               | $dI_{F}/dt = 50 \text{ A/}\mu\text{s}; T_{i} = 100^{\circ}\text{C}$   |      |      |      |      |
| $V_{fr}$         | Forward recovery voltage      | $I_{F} = 10 \text{ A}; dI_{F}/dt = 10 \text{ A}/\mu\text{s}$  | -    | 2.5  | -    | V    |







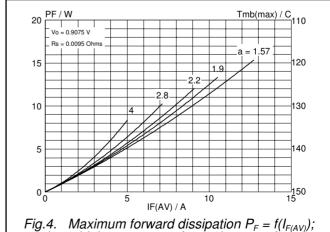
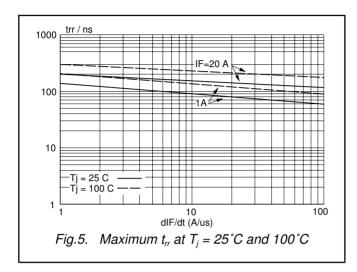


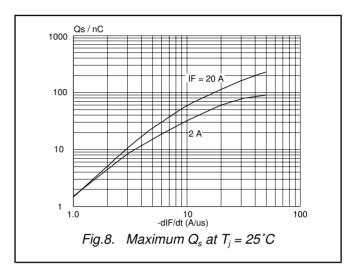
Fig.4. Maximum forward dissipation  $P_F = f(I_{F(AV)})$ ; sinusoidal current waveform where a = form factor =  $I_{F(RMS)} / I_{F(AV)}$ .

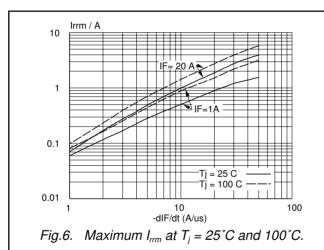
NXP Semiconductors Product specification

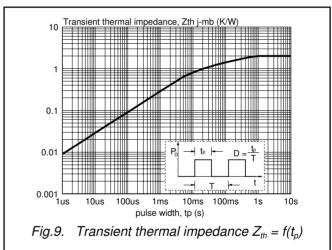
## Rectifier diodes ultrafast

BYT79 series









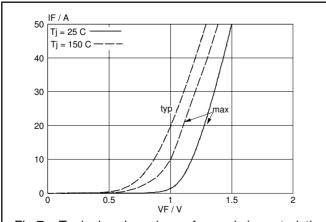


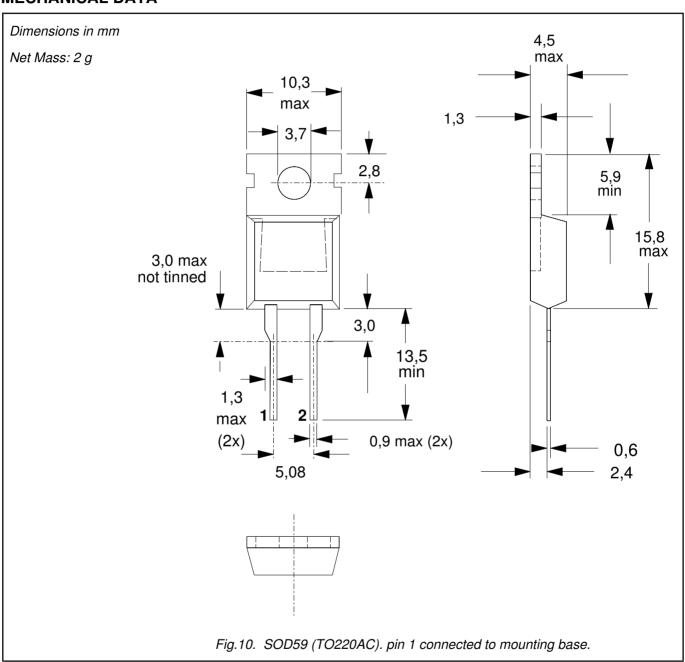
Fig.7. Typical and maximum forward characteristic  $I_F = f(V_F)$ ; parameter  $T_j$ 

**NXP Semiconductors** Product specification

Rectifier diodes ultrafast

BYT79 series

#### **MECHANICAL DATA**



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

#### Legal information

#### **DATA SHEET STATUS**

| DOCUMENT<br>STATUS <sup>(1)</sup> | PRODUCT<br>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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