



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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Thank you for your cooperation and understanding,

WeEn Semiconductors



DATA SHEET

BYV29F, BYV29X series
Rectifier diodes
ultrafast

Product specification

February 1999



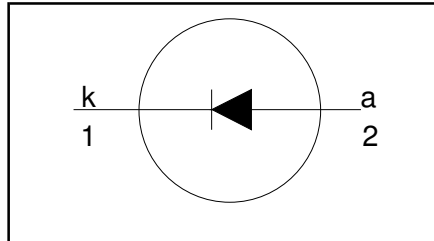
Rectifier diodes ultrafast

BYV29F, BYV29X series

FEATURES

- Low forward volt drop
- Fast switching
- Soft recovery characteristic
- High thermal cycling performance
- Isolated mounting tab

SYMBOL



QUICK REFERENCE DATA

$$V_R = 300 \text{ V} / 400 \text{ V} / 500 \text{ V}$$

$$V_F \leq 1.03 \text{ V}$$

$$I_{F(AV)} = 9 \text{ A}$$

$$t_{rr} \leq 60 \text{ ns}$$

GENERAL DESCRIPTION

Ultra-fast epitaxial rectifier diodes intended for use in switched mode power supply output rectification, electronic lighting ballasts and high frequency switching circuits in general.

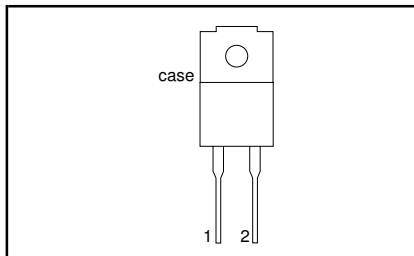
The BYV29F series is supplied in the SOD100 package.

The BYV29X series is supplied in the SOD113 package.

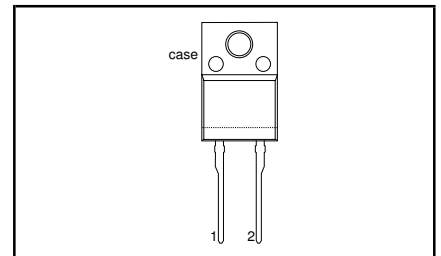
PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1 | cathode (k) |
| 2 | anode (a) |
| tab | isolated |

SOD100



SOD113



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 | BYV29F/BYV29X $T_{hs} \leq 138^\circ\text{C}^1$ square wave; $\delta = 0.5$; $T_{hs} \leq 90^\circ\text{C}$ $t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$ sinusoidal; with reappplied $V_{RRM(max)}$ | - | -300 | -400 | -500 | V |
| V_R | Continuous reverse voltage | | - | 300 | 400 | 500 | V |
| $I_{F(AV)}$ | Average forward current ² | | - | 9 | | | A |
| I_{FSM} | Non-repetitive peak forward current | | - | 100 | | | A |
| | | | - | 110 | | | A |
| T_{stg} | Storage temperature | | -40 | 150 | | | $^\circ\text{C}$ |
| T_j | Operating junction temperature | | - | 150 | | | $^\circ\text{C}$ |

¹ T_{hs} de-rating for thermal stability.

² Neglecting switching and reverse current losses

Rectifier diodes ultrafast

BYV29F, BYV29X series

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25\text{ °C}$ unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|------------|--|---|------|------|------|------|
| V_{isol} | Peak isolation voltage from all terminals to external heatsink | SOD100 package; R.H. $\leq 65\%$; clean and dustfree | - | - | 1500 | V |
| V_{isol} | R.M.S. isolation voltage from all terminals to external heatsink | SOD113 package; $f = 50\text{-}60\text{ Hz}$; sinusoidal waveform; R.H. $\leq 65\%$; clean and dustfree | - | - | 2500 | V |
| C_{isol} | Capacitance from pin 2 to external heatsink | $f = 1\text{ MHz}$ | - | 10 | - | pF |

THERMAL RESISTANCES

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|----------------|---|--|------|------|------|------|
| $R_{th\ j-hs}$ | Thermal resistance junction to heatsink | with heatsink compound | - | - | 5.5 | K/W |
| $R_{th\ j-a}$ | Thermal resistance junction to ambient | without heatsink compound in free air. | - | - | 7.2 | K/W |
| | | | - | 55 | - | K/W |

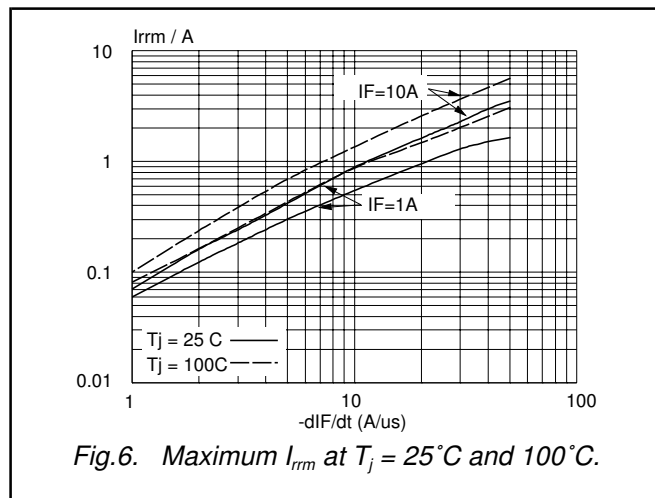
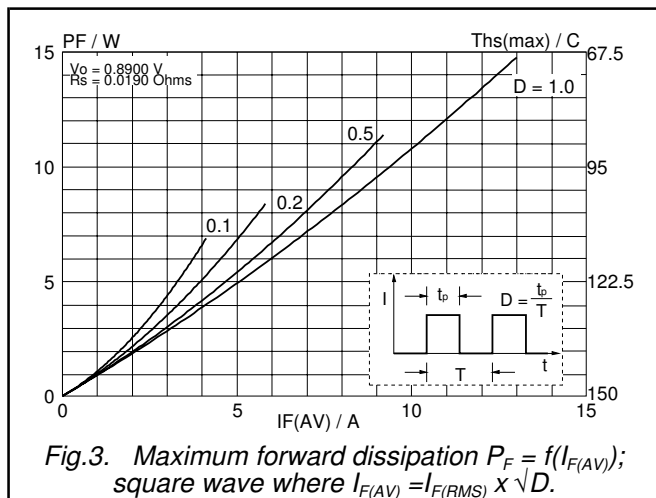
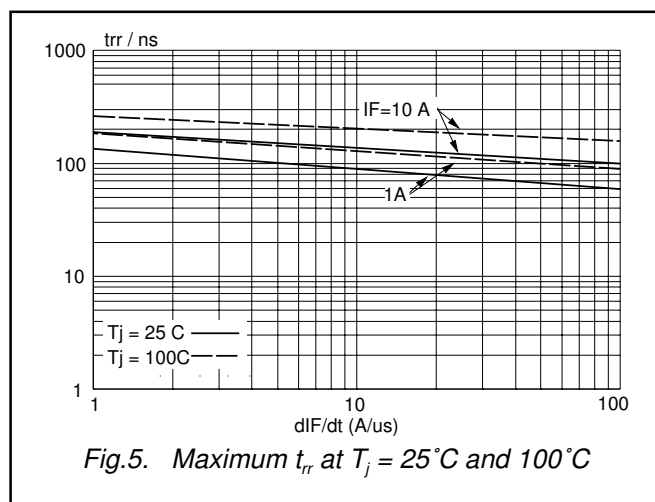
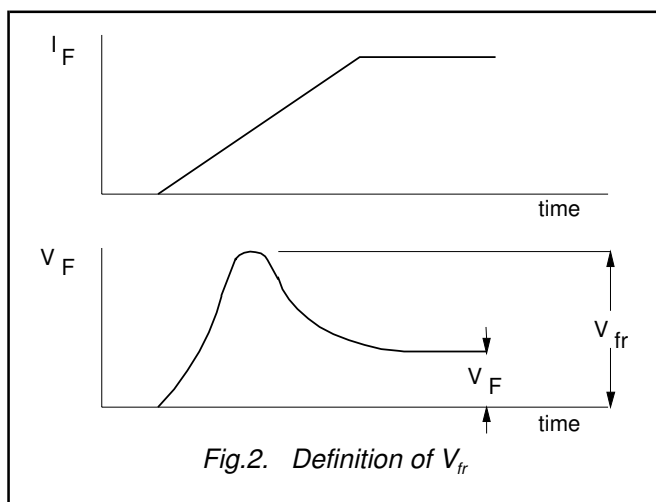
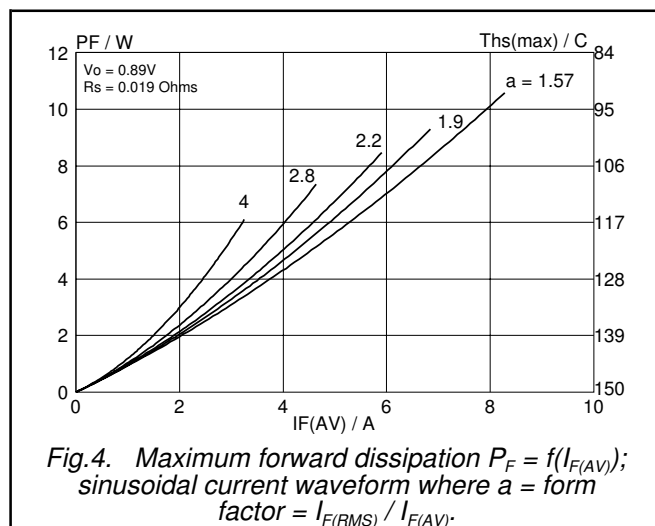
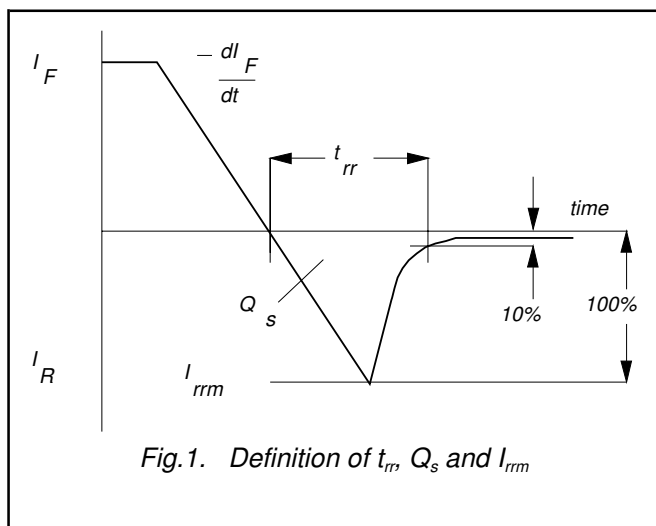
ELECTRICAL CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-----------|-------------------------------|--|------|------|------|---------------|
| V_F | Forward voltage | $I_F = 8\text{ A}$; $T_j = 150\text{ °C}$ | - | 0.90 | 1.03 | V |
| | | $I_F = 8\text{ A}$ | - | 1.05 | 1.25 | V |
| | | $I_F = 20\text{ A}$ | - | 1.20 | 1.40 | V |
| I_R | Reverse current | $V_R = V_{RRM}$ | - | 2.0 | 50 | μA |
| | | $V_R = V_{RRM}$; $T_j = 100\text{ °C}$ | - | 0.1 | 0.35 | mA |
| Q_s | Reverse recovery charge | $I_F = 2\text{ A}$ to $V_R \geq 30\text{ V}$; $dI_F/dt = 20\text{ A}/\mu\text{s}$ | - | 40 | 60 | nC |
| t_{rr} | Reverse recovery time | $I_F = 1\text{ A}$ to $V_R \geq 30\text{ V}$; $dI_F/dt = 100\text{ A}/\mu\text{s}$ | - | 50 | 60 | ns |
| I_{rrm} | Peak reverse recovery current | $I_F = 10\text{ A}$ to $V_R \geq 30\text{ V}$; $dI_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 100\text{ °C}$ | - | 4.0 | 5.5 | A |
| V_{fr} | Forward recovery voltage | $I_F = 10\text{ A}$; $dI_F/dt = 10\text{ A}/\mu\text{s}$ | - | 2.5 | - | V |

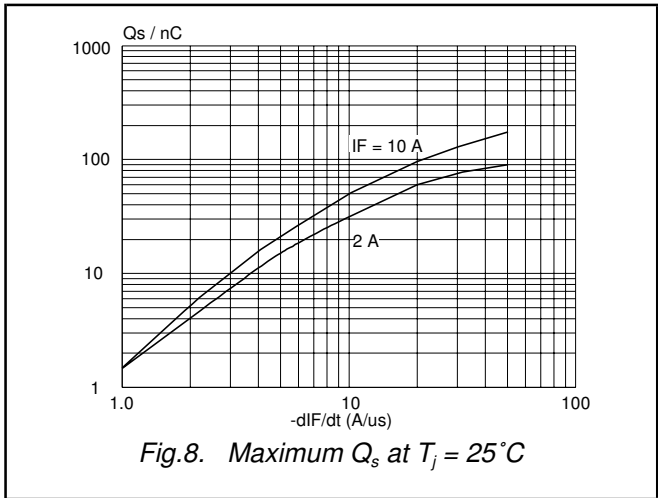
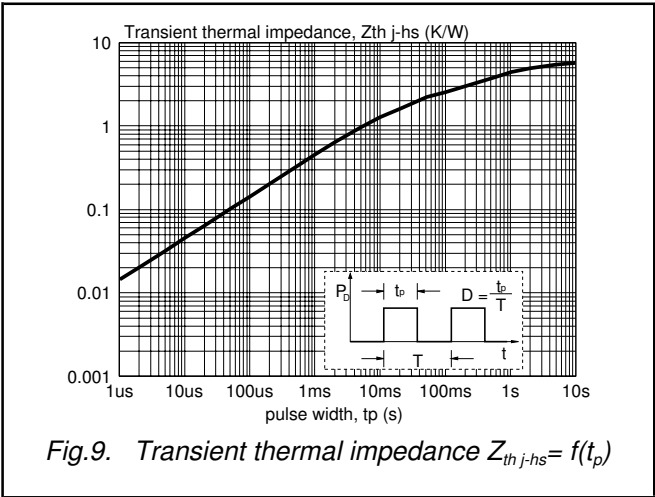
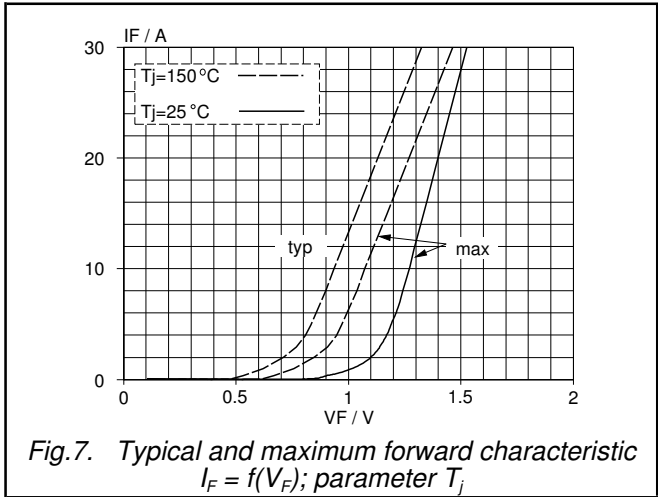
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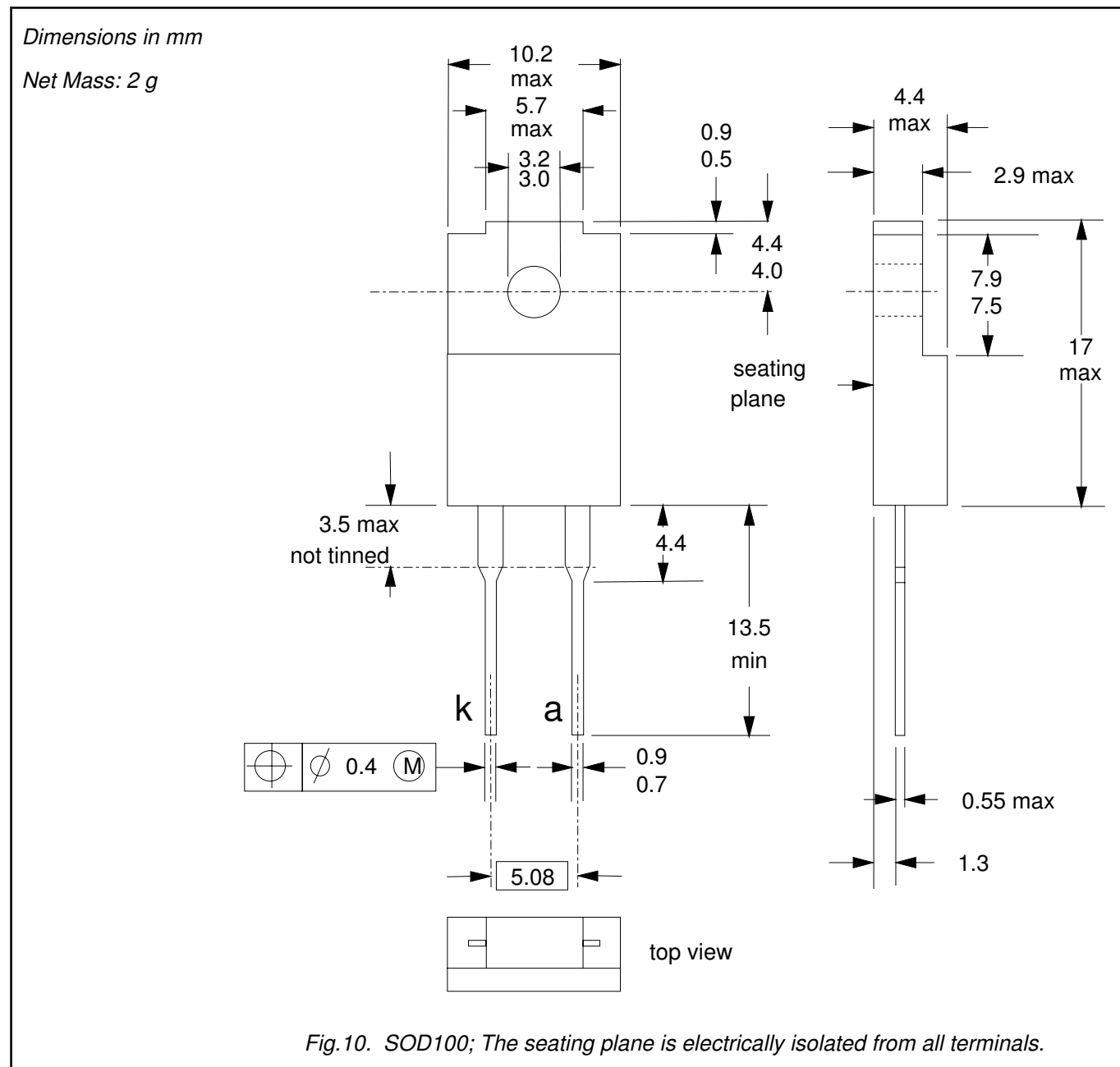
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MECHANICAL DATA



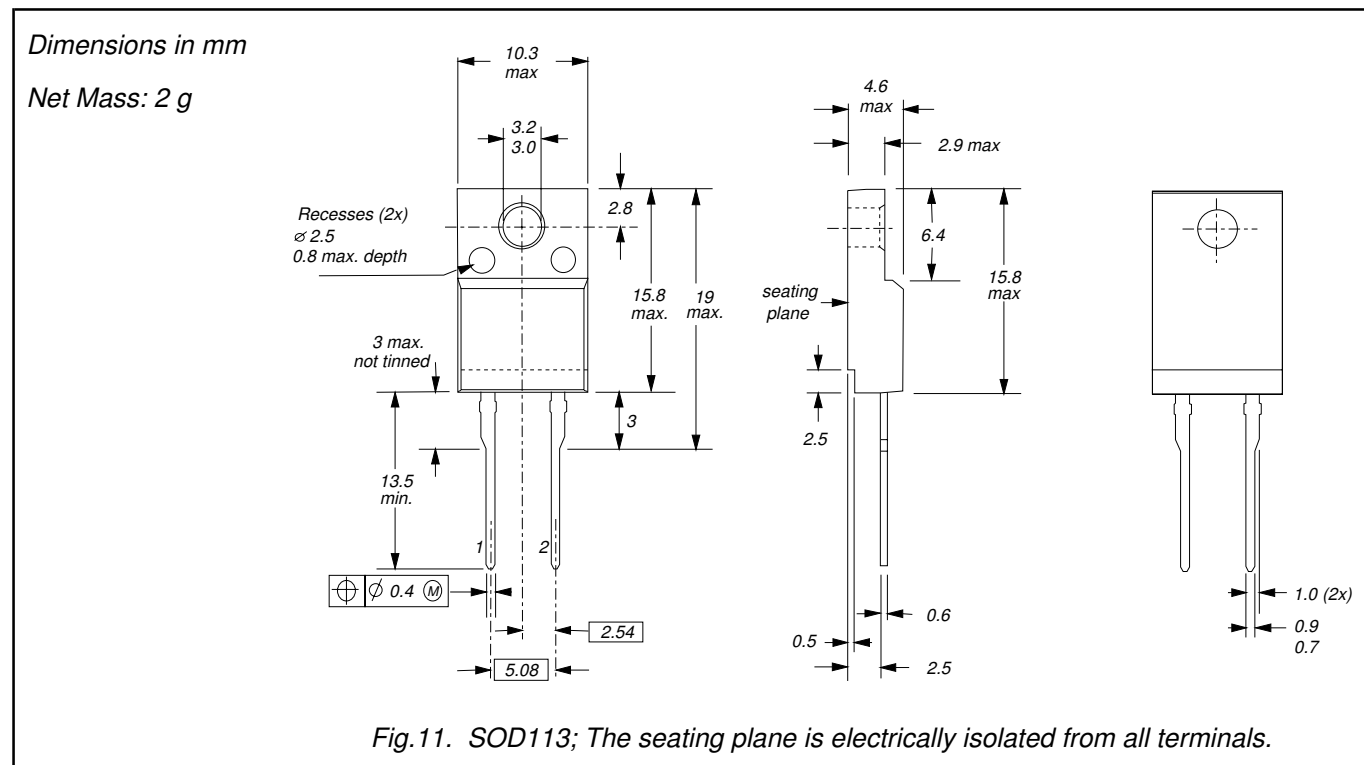
Notes

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

Rectifier diodes
ultrafast

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MECHANICAL DATA

**Notes**

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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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Contact information

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