



# 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

**BYW29EB, BYW29ED series**  
Rectifier diodes  
ultrafast, rugged

Product specification

November 1998



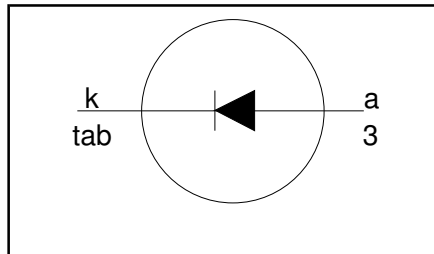
**Rectifier diodes  
ultrafast, rugged**

**BYW29EB, BYW29ED 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**

$V_R = 150\text{ V} / 200\text{ V}$
$V_F \leq 0.895\text{ V}$
$I_{F(AV)} = 8\text{ A}$
$I_{RRM} = 0.2\text{ A}$
$t_r \leq 25\text{ ns}$

**GENERAL DESCRIPTION**

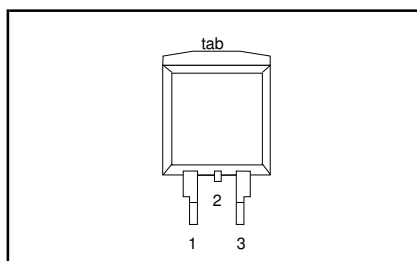
Ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

The BYW29EB series is supplied in the SOT404 surface mounting package.  
The BYW29ED series is supplied in the SOT428 surface mounting package.

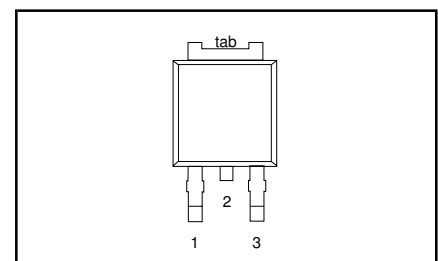
**PINNING**

PIN	DESCRIPTION
1	no connection
2	cathode <sup>1</sup>
3	anode
tab	cathode

**SOT404**



**SOT428**



**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.		UNIT
				BYW29EB/ BYW29ED		
$V_{RRM}$	Peak repetitive reverse voltage		-	-150	-200	V
$V_{RWM}$	Working peak reverse voltage		-	150	200	V
$V_R$	Continuous reverse voltage		-	150	200	V
$I_{F(AV)}$	Average rectified forward current	square wave; $\delta = 0.5$ ; $T_{mb} \leq 128\text{ }^\circ\text{C}$	-	8		A
$I_{FRM}$	Repetitive peak forward current	square wave; $\delta = 0.5$ ; $T_{mb} \leq 128\text{ }^\circ\text{C}$	-	16		A
$I_{FSM}$	Non-repetitive peak forward current	$t = 10\text{ ms}$	-	80		A
		$t = 8.3\text{ ms}$	-	88		A
$I_{RRM}$	Peak repetitive reverse surge current	sinusoidal; with reapplied $V_{RRM(max)}$ $t_p = 2\text{ }\mu\text{s}$ ; $\delta = 0.001$	-	0.2		A
$I_{RSM}$	Peak non-repetitive reverse surge current	$t_p = 100\text{ }\mu\text{s}$	-	0.2		A
$T_j$	Operating junction temperature		-	150		$^\circ\text{C}$
$T_{stg}$	Storage temperature		- 40	150		$^\circ\text{C}$

1. It is not possible to make connection to pin 2 of the SOT428 or SOT404 packages.

## Rectifier diodes ultrafast, rugged

## BYW29EB, BYW29ED series

### 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

### THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	SOT404 and SOT428 packages, pcb mounted, minimum footprint, FR4 board	-	-	2.7	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	50	-	K/W

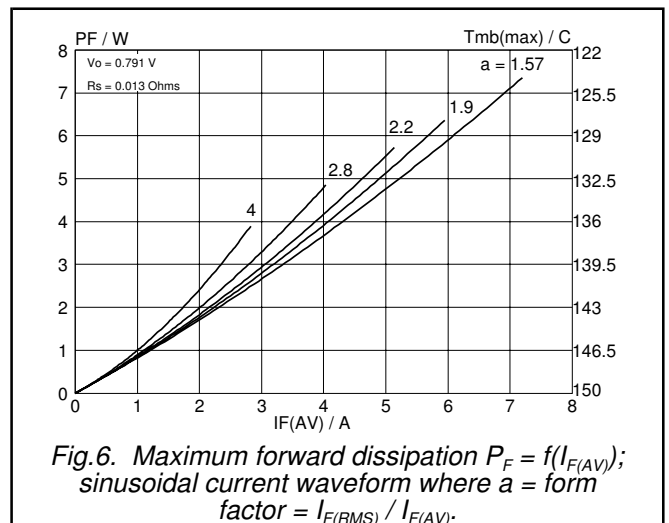
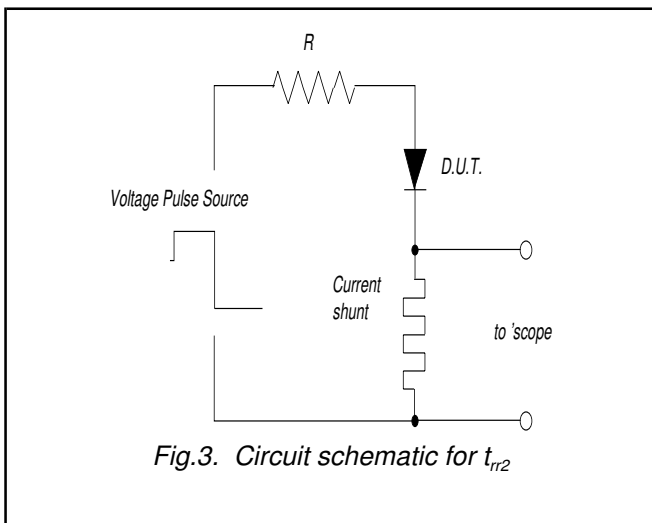
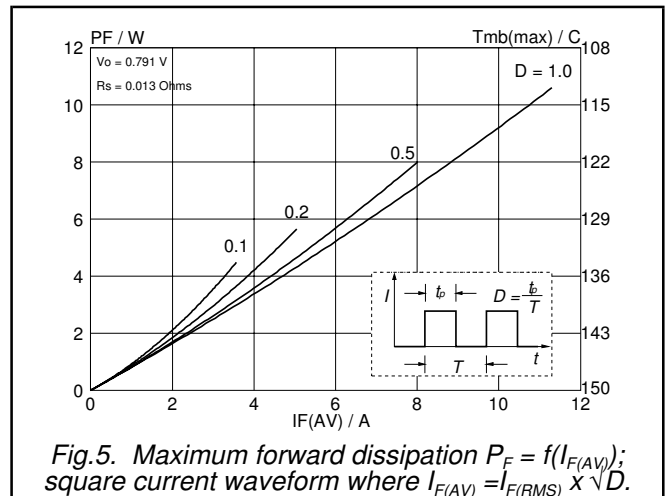
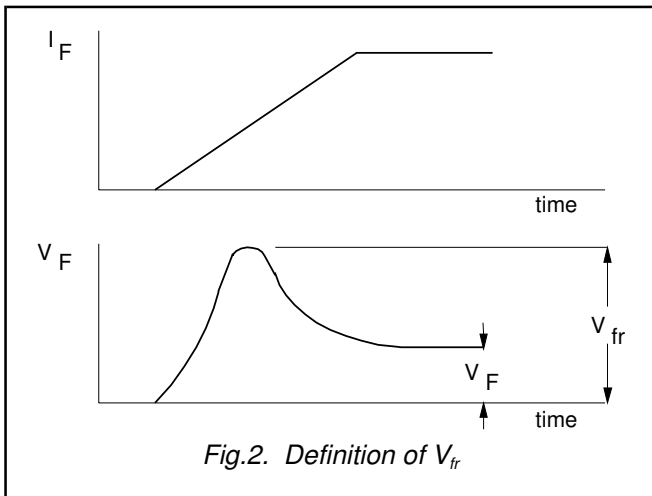
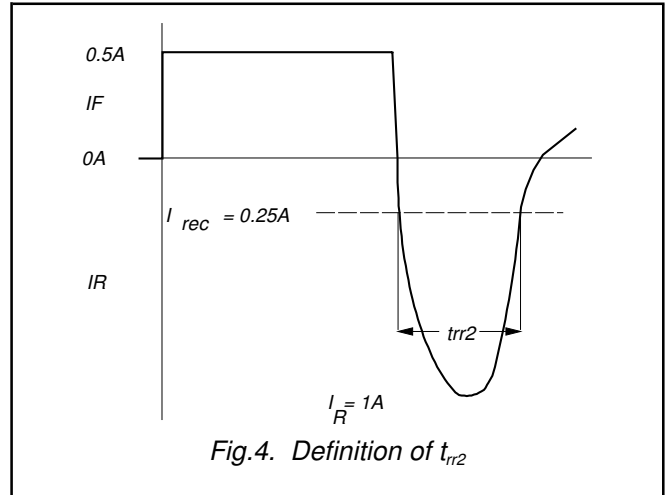
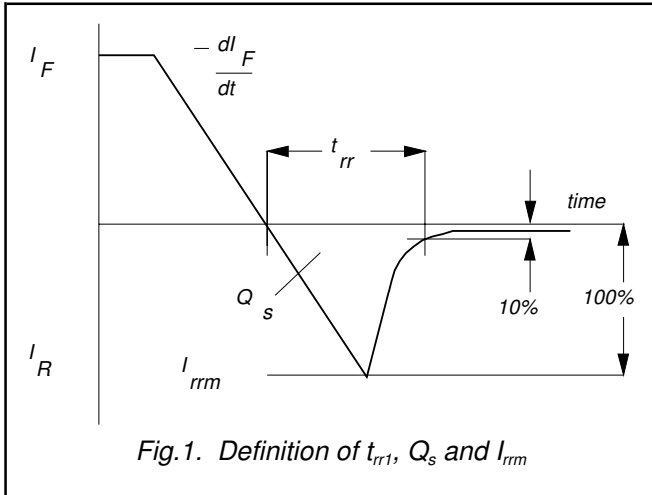
### ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_F$	Forward voltage	$I_F = 8 \text{ A}$ ; $T_j = 150^\circ\text{C}$	-	0.8	0.895	V
		$I_F = 8 \text{ A}$	-	0.92	1.05	V
		$I_F = 20 \text{ A}$	-	1.1	1.3	V
$I_R$	Reverse current	$V_R = V_{RWM}$	-	2	10	$\mu\text{A}$
		$V_R = V_{RWM}$ ; $T_j = 100^\circ\text{C}$	-	0.2	0.6	mA
$Q_{rr}$	Reverse recovered charge	$I_F = 2 \text{ A}$ ; $V_R \geq 30 \text{ V}$ ; $-di_F/dt = 20 \text{ A}/\mu\text{s}$	-	4	11	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	25	ns
$t_{rr2}$	Reverse recovery time	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$ ; $I_{rec} = 0.25 \text{ A}$	-	15	20	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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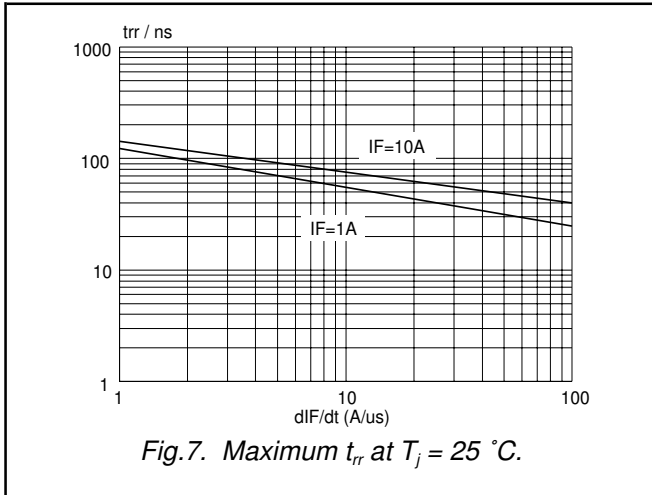


Fig.7. Maximum  $t_{rr}$  at  $T_j = 25^\circ C$ .

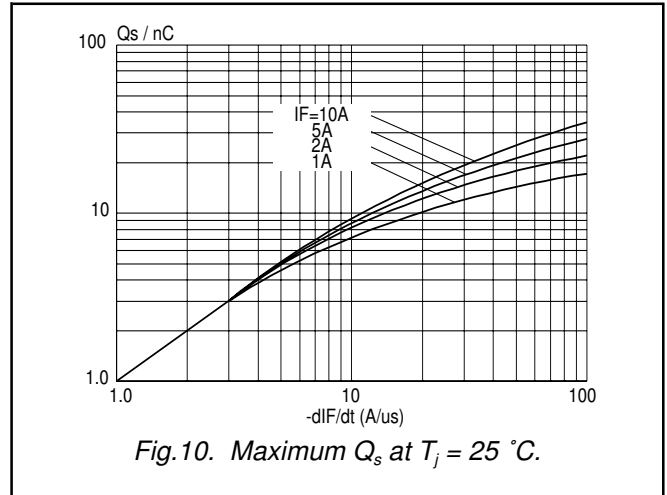


Fig.10. Maximum  $Q_s$  at  $T_j = 25^\circ C$ .

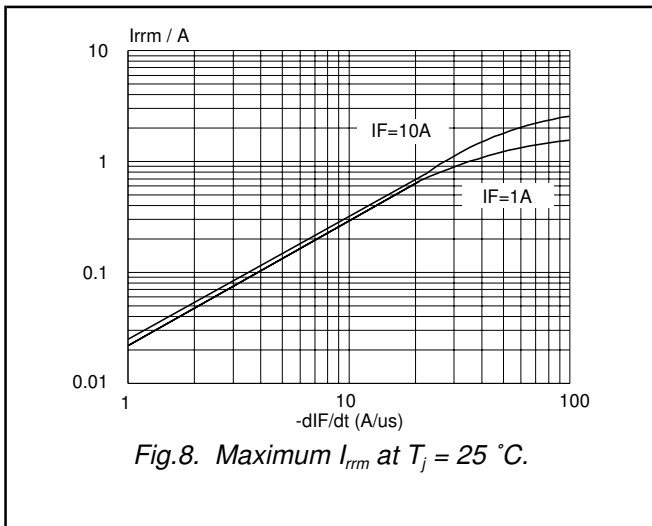


Fig.8. Maximum  $I_{rrm}$  at  $T_j = 25^\circ C$ .

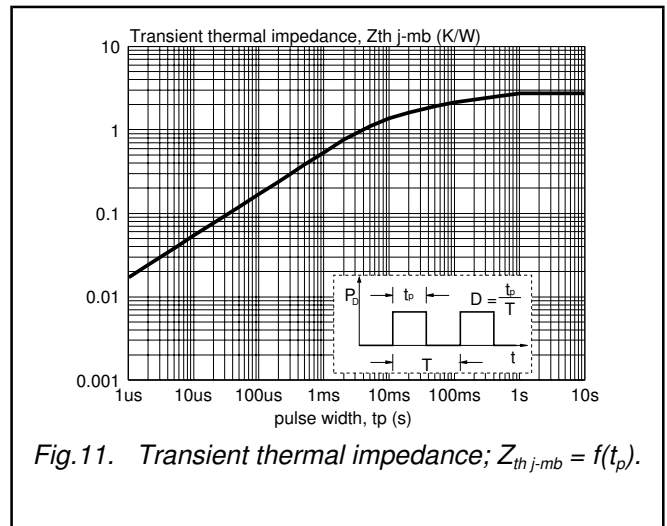


Fig.11. Transient thermal impedance;  $Z_{th\ j-mb} = f(t_p)$ .

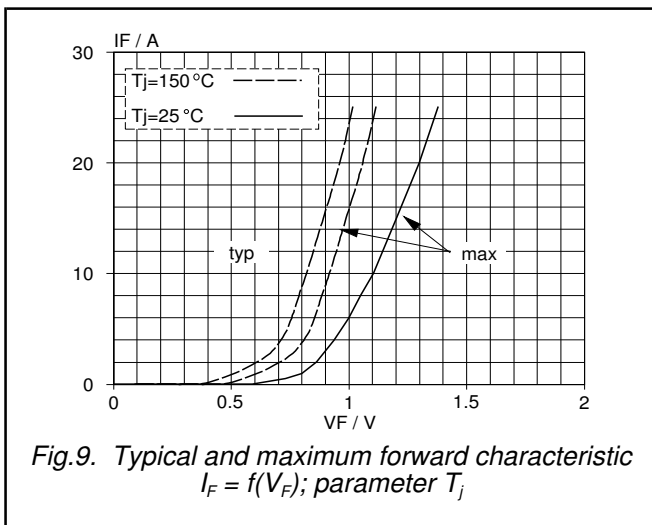
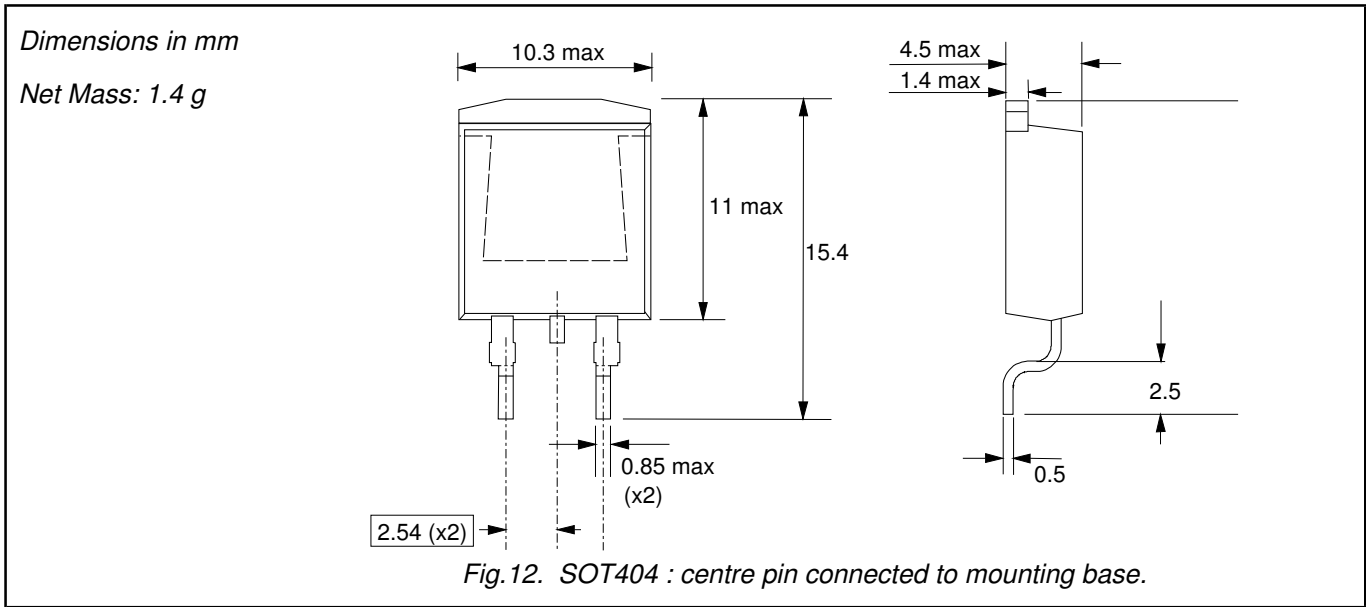


Fig.9. Typical and maximum forward characteristic  $I_F = f(V_F)$ ; parameter  $T_j$

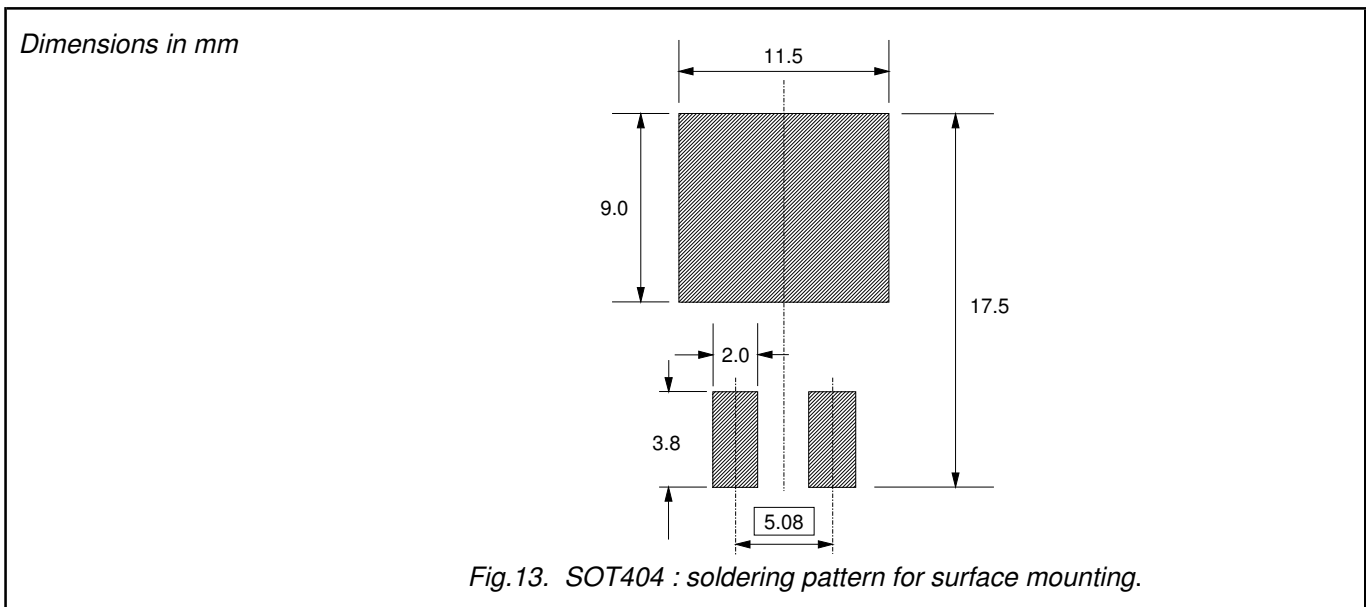
Rectifier diodes  
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**MECHANICAL DATA**



**MOUNTING INSTRUCTIONS**



**Notes**

- 1. Epoxy meets UL94 V0 at 1/8".

Rectifier diodes  
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**MECHANICAL DATA**

*Dimensions in mm*

*Net Mass: 1.1 g*

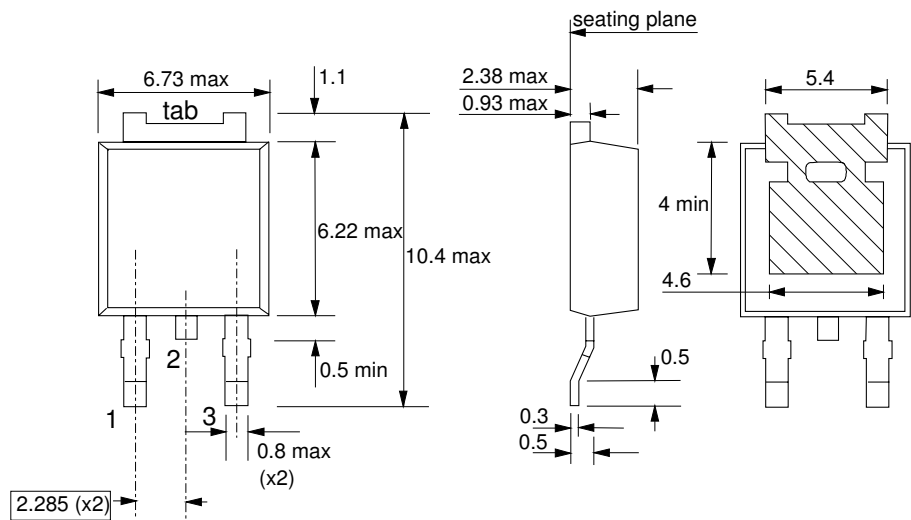


Fig.14. SOT428 : centre pin connected to tab.

**MOUNTING INSTRUCTIONS**

*Dimensions in mm*

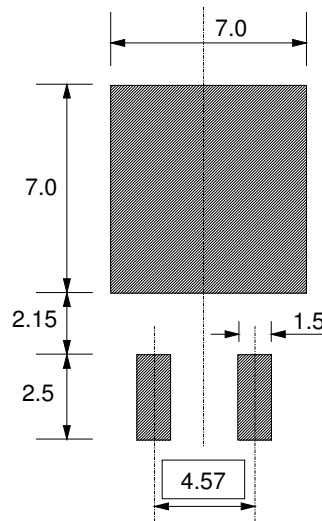


Fig.15. SOT428 : minimum pad sizes for surface mounting.

**Notes**

- 1. Plastic 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>

For sales offices addresses send e-mail to: [salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)

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