

Philips Semiconductors

Product specification

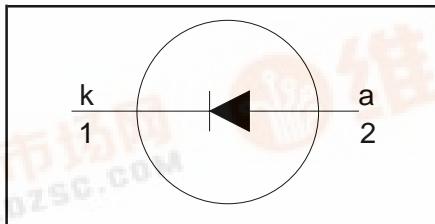
Rectifier diodes  
general purpose

BY249 series

## FEATURES

- Low forward volt drop
- High thermal cycling performance
- Low thermal resistance

## SYMBOL



## QUICK REFERENCE DATA

$V_R = 300 \text{ V} / 600 \text{ V} / 800 \text{ V}$   
 $V_F \leq 1.05 \text{ V}$   
 $I_{F(AV)} = 7 \text{ A}$   
 $I_{FSM} \leq 60 \text{ A}$

## GENERAL DESCRIPTION

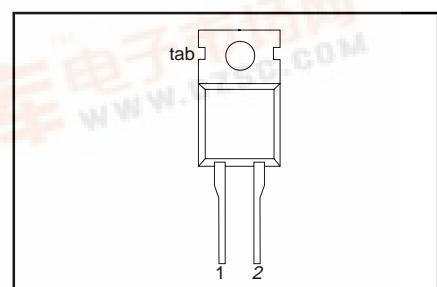
Glass-passivated double diffused rectifier diodes. The devices are intended for low frequency power rectifier applications.

The BY249 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
$V_{RSM}$	Peak non-repetitive reverse voltage	BY249	-	-300 300	V
$V_{RRM}$	Peak repetitive reverse voltage		-	600 800	V
$V_{RWM}$	Crest working reverse voltage		-	200	V
$V_R$	Continuous reverse voltage		-	500 700	V
$I_{F(AV)}$	Average forward current <sup>1</sup>	sinusoidal; $a = 1.57$ ; $T_{mb} \leq 131 \text{ }^\circ\text{C}$	-	7	A
$I_{F(RMS)}$	RMS forward current		-	11	A
$I_{FRM}$	Peak repetitive forward current	sinusoidal; $a = 1.57$	-	60	A
$I_{FSM}$	Peak non-repetitive forward current.	$t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$ sinusoidal; $T_j = 150 \text{ }^\circ\text{C}$ prior to surge; with reapplied $V_{RWM(\max)}$ $t = 10 \text{ ms}$	- - -	60 66	A
$I^2t$	$I^2t$ for fusing		-	18	$\text{A}^2\text{s}$
$T_{stg}$	Storage temperature		-40	150	$^\circ\text{C}$
$T_j$	Operating junction temperature		-	150	$^\circ\text{C}$

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

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**THERMAL RESISTANCES**

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j\rightarrow mb}$	Thermal resistance junction to mounting base		-	-	2.0	K/W
$R_{th\ j\rightarrow a}$	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	$I_F = 20\text{ A}$	-	1.2	1.6	V
$I_R$	Reverse current	$I_F = 5\text{ A}; T_j = 100^\circ\text{C}$ $V_R = V_{RWM}; T_j = 125^\circ\text{C}$	-	0.9	1.05	V

## Rectifier diodes general purpose

## BY249 series

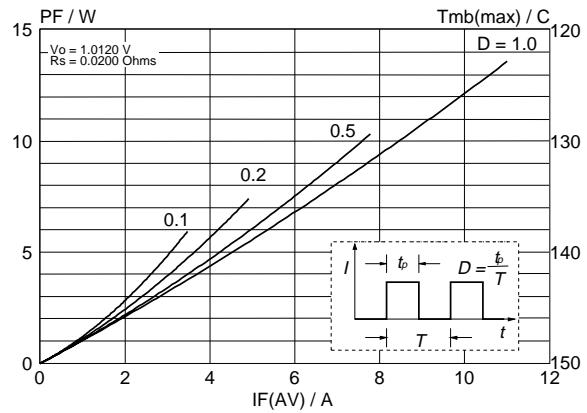


Fig.1. Maximum forward dissipation  $P_F = f(IF_{(AV)})$ ;  
square wave where  $IF_{(AV)} = IF_{(RMS)} \times \sqrt{D}$ .

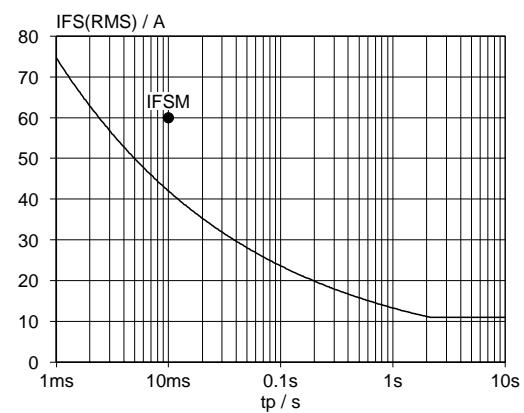


Fig.3. Maximum non-repetitive rms forward current.  
 $I_F = f(t_p)$ ; sinusoidal current waveform;  $T_j = 150^\circ\text{C}$  prior  
to surge with reapplied  $V_{RWM}$ .

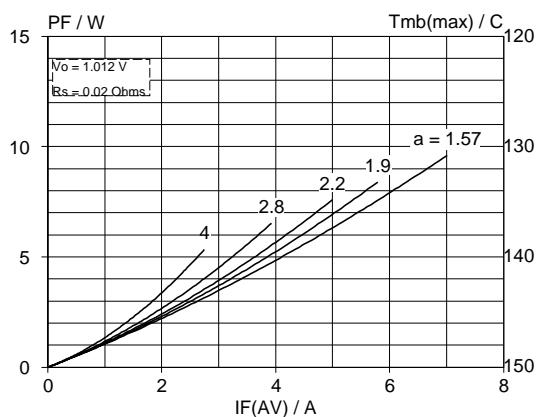


Fig.2. Maximum forward dissipation  $P_F = f(IF_{(AV)})$ ;  
sinusoidal current waveform where  $a = \text{form}$   
 $\text{factor} = IF_{(RMS)} / IF_{(AV)}$ .

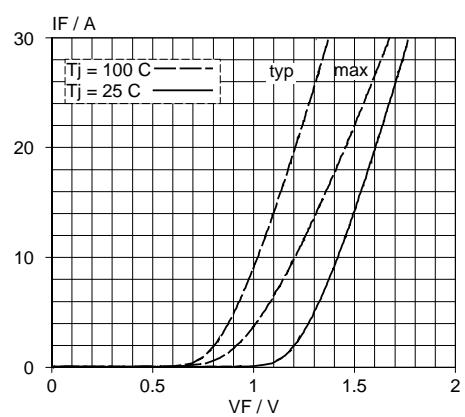


Fig.4. Typical and maximum forward characteristic  
 $I_F = f(V_F)$ ; parameter  $T_j$

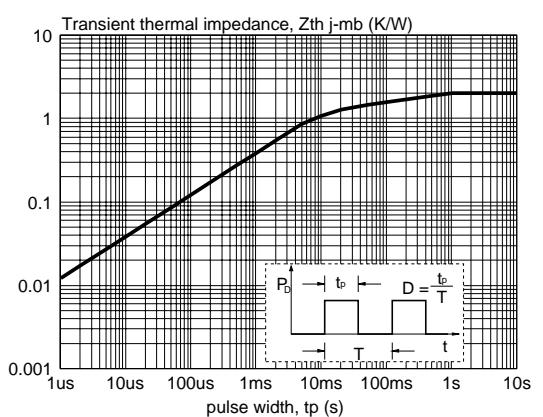


Fig.5. Transient thermal impedance  $Z_{th} = f(t_p)$

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## MECHANICAL DATA

*Dimensions in mm*

*Net Mass: 2 g*

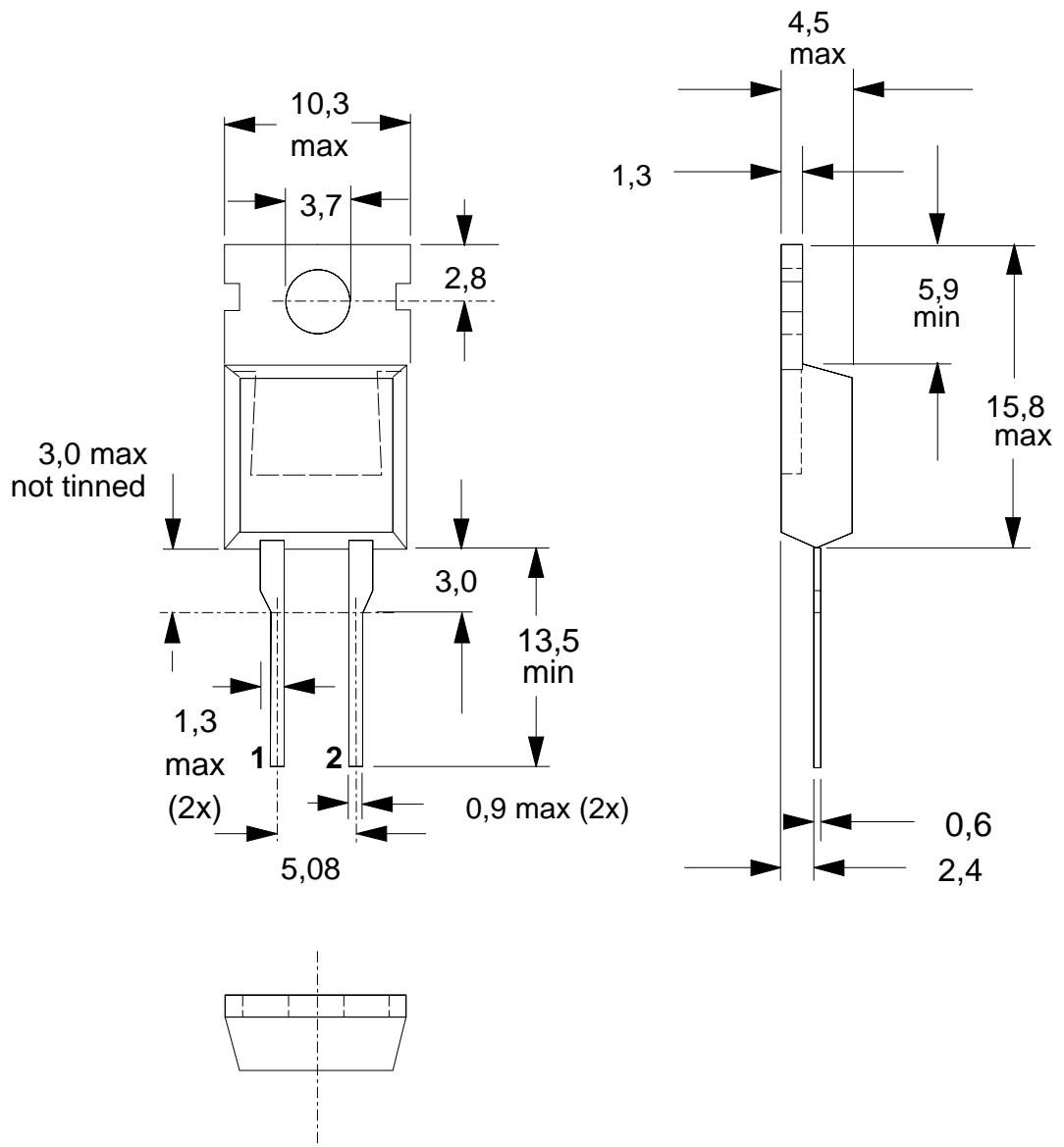


Fig.6. SOD59 (TO220AC). pin 1 connected to mounting base.

## Notes

**Notes**

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

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**DEFINITIONS**

<b>Data sheet status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values are given in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of this specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	
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