BYV29B-500

Rectifier diodes ultrafast

FEATURES

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



SYMBOL

QUICK REFERENCE DATA



SOT404 (D²-PAK)

GENERAL DESCRIPTION

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

The BYV29B-500 is supplied in the SOT404 surface mounting package.

PINNING PIN DESCRIPTION 1 no connection 2 cathode¹

anode

cathode

3

1

LIMITING VALUES

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

3

tab

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{RRM}	Peak repetitive reverse voltage		-	500	V
V _{RWM}	Crest working reverse voltage		-	500	
V _R	Continuous reverse voltage		-	500	V
I _{F(AV)}	Average forward current ²	square wave; $\delta = 0.5$; $T_{mb} \le 123$ °C	-	9	A
I I _{FRM}	Repetitive peak forward current	t = 25 μs; δ = 0.5; T _{mb} \leq 123 °C	-	18	A
I _{FSM}	Non-repetitive peak forward	t = 10 ms	-	100	A
	current.	t = 8.3 ms	-	110	A
		sinusoidal; with reapplied V _{RRM(max)}			
T _{sta}	Storage temperature		-40	150	°C
T	Operating junction temperature		-	150	°C

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
R _{th j-mb}	Thermal resistance junction to		-	-	2.5	K/W
R _{th j-a}	mounting base Thermal resistance junction to ambient	minimum footprint, FR4 board.	-	50	-	K/W

¹ it is not possible to make a connection to pin 2 of the SOT404 package

² Neglecting switching and reverse current losses.

Rectifier diodes ultrafast

BYV29B-500

ELECTRICAL CHARACTERISTICS

 $T_i = 25$ °C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V _F	Forward voltage	I _F = 8 A; T _i = 150°C	-	0.90	1.03	V
	_	$I_F = 8 A$	-	1.05	1.25	V
		$I_{\rm F} = 20 {\rm A}$	-	1.20	1.40	V
I _R	Reverse current	$\dot{V}_{R} = V_{RRM}$	-	2.0	50	μA
		$V_{R} = V_{RRM}; T_{i} = 100 \ ^{\circ}C$	-	0.1	0.35	mΑ
Q _s	Reverse recovery charge	$I_F = 2 \text{ A to } V_R \ge 30 \text{ V};$	-	40	60	nC
-		dI _F /dt = 20 A/μs				
t _{rr}	Reverse recovery time	$I_F = 1 A \text{ to } V_R \ge 30 \text{ V};$	-	50	60	ns
		dI _F /dt = 100 A/μs				
l _{rrm}	Peak reverse recovery current	$I_F = 10 \text{ A to } V_R \ge 30 \text{ V};$	-	4.0	5.5	А
		dI _F /dt = 50 A/μs; T _i = 100°C				
V _{fr}	Forward recovery voltage	I _F = 10 A; dI _F /dt = 10 A/μs	-	2.5	-	V









BYV29B-500

Rectifier diodes ultrafast



10us

100us

1ms

pulse width, tp (s) Fig.9. Transient thermal impedance $Z_{th i-mb} = f(t_p)$

10ms

100ms

1s

10s

Rectifier diodes ultrafast

BYV29B-500

MECHANICAL DATA



MOUNTING INSTRUCTIONS



Notes

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

Rectifier diodes ultrafast

BYV29B-500

DEFINITIONS

DATA SHEET STATUS				
DATA SHEET STATUS ³	PRODUCT STATUS⁴	DEFINITIONS		
Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice		
Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in ordere to improve the design and supply the best possible product		
Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Changes will be communicated according to the Customer Product/Process Change Notification (CPCN) procedure SNW-SQ-650A		

Limiting values

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.

Application information

Where application information is given, it is advisory and does not form part of the specification.

© Philips Electronics N.V. 2001

All rights are reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner.

The information presented in this document does not form part of any quotation or contract, it is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent or other industrial or intellectual property rights.

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

³ Please consult the most recently issued datasheet before initiating or completing a design.

⁴ The product status of the device(s) described in this datasheet may have changed since this datasheet was published. The latest information is available on the Internet at URL http://www.semiconductors.philips.com.