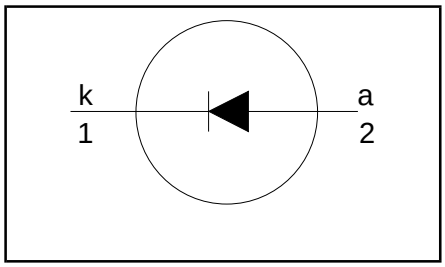
Damper diode fast, high-voltage

BY359-1500, BY359-1500S

FEATURES

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

SYMBOL



QUICK REFERENCE DATA

V_R = 1500 V

$V_F \leq$ 1.8 V / 2 V

$I_{F(RMS)}$ = 15.7 A

$I_{FSM} \leq$ 60 A

$t_{rr} \leq$ 600 ns / 350 ns

GENERAL DESCRIPTION

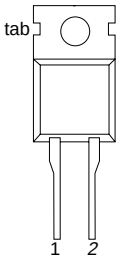
Glass-passivated double diffused rectifier diode featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The device is intended for use in TV receivers and PC monitors.

The BY359 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			-	1500	V
V_{RRM}	Peak repetitive reverse voltage			-	1500	V
V_{RWM}	Crest working reverse voltage			-	1300	V
$I_{F(peak)}$	Peak forward current	16-32kHz TV	BY359-1500	-	10	A
		31-70kHz monitor	BY359-1500S	-	7	A
$I_{F(RMS)}$	RMS forward current			-	15.7	A
I_{FRM}	Peak repetitive forward current	sinusoidal; a = 1.57		-	60	A
I_{FSM}	Peak non-repetitive forward current	t = 10 ms		-	60	A
		t = 8.3 ms		-	66	A
		sinusoidal; T_j = 150 ˚C prior to surge; with reapplied $V_{RWM(max)}$				
T_{stg}	Storage temperature			-40	150	˚C
T_j	Operating junction temperature			-	150	˚C

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j\text{-}mb}$	Thermal resistance junction to mounting base		-	-	2.0	K/W
$R_{th\ j\text{-}a}$	Thermal resistance junction to ambient	in free air.	-	60	-	K/W

Downloaded from Arrow.com.

Damper diode fast, high-voltage

BY359-1500, BY359-1500S

STATIC CHARACTERISTICS

T_j = 25 ˚C unless otherwise stated

			BY359-1500		BY359-1500S		
SYMBOL	**PARAMETER**	**CONDITIONS**	**TYP.**	**MAX.**	**TYP.**	**MAX.**	**UNIT**
V_F	Forward voltage	I_F = 20 A	1.3	1.8	1.5	2.0	V
		I_F = 10 A; T_j = 150˚C	1.00	1.5	1.25	1.75	V
I_R	Reverse current	V_R = 1300 V	10	100	10	100	µA
		V_R = 1300 V; T_j = 100 ˚C	50	300	100	600	µA

DYNAMIC CHARACTERISTICS

T_j = 25 ˚C unless otherwise stated

			BY359-1500		BY359-1500S		
SYMBOL	**PARAMETER**	**CONDITIONS**	**TYP.**	**MAX.**	**TYP.**	**MAX.**	**UNIT**
t_{rr}	Reverse recovery time	I_F = 2 A; $V_R \geq$ 30 V;	0.47	0.60	0.28	0.35	µs
Q_s	Reverse recovery charge	$-dI_F/dt$ = 20 A/µs	1.6	2.0	0.70	0.95	µC
V_{fr}	Peak forward recovery voltage	I_F = 10 A; dI_F/dt = 30 A/µs	11.0	-	17.0	-	V

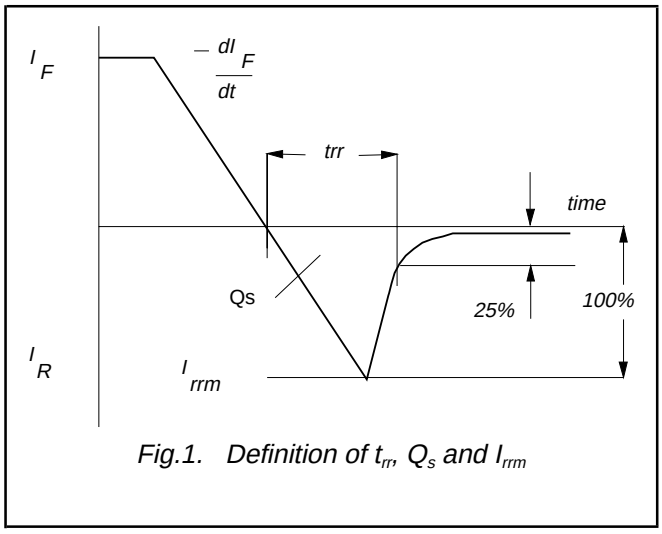


Fig.1. Definition of t_{rr}, Q_s and I_{rrm}

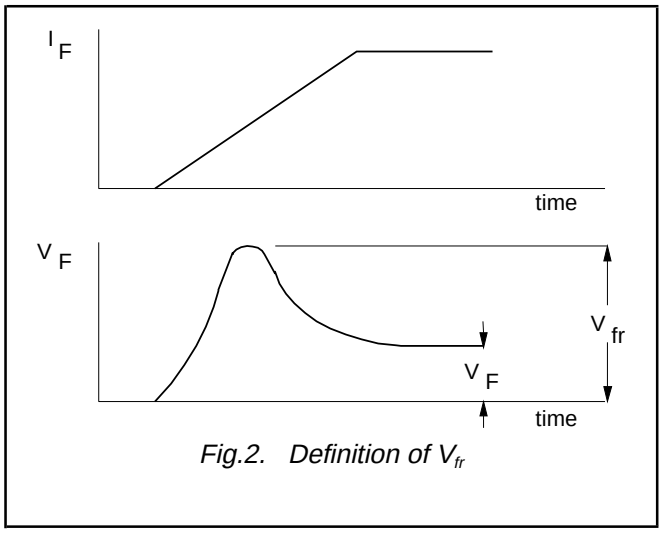


Fig.2. Definition of V_{fr}

Downloaded from Arrow.com.

Damper diode fast, high-voltage

BY359-1500, BY359-1500S

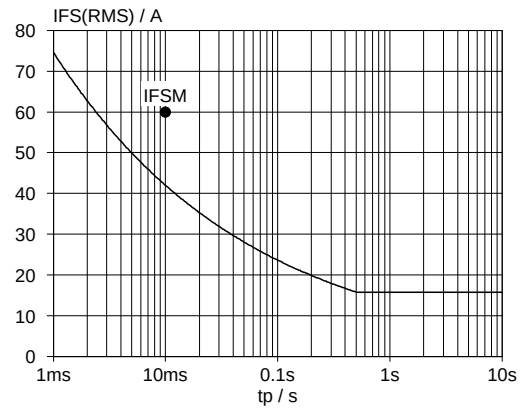


Fig.3. Maximum non-repetitive rms forward current. $I_F = f(t_p)$; sinusoidal current waveform; $T_j = 150^{\circ}C$ prior to surge with reapplied V_{RWM}.

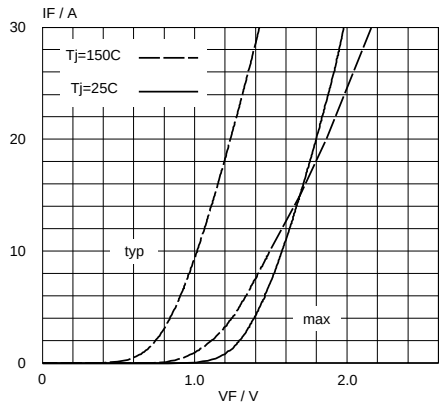


Fig.5. BY359-1500 forward characteristic $I_F = f(V_F)$; parameter T_j

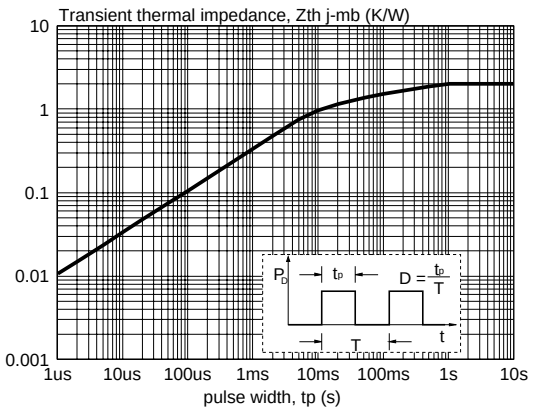


Fig.4. Transient thermal impedance $Z_{th} = f(t_p)$

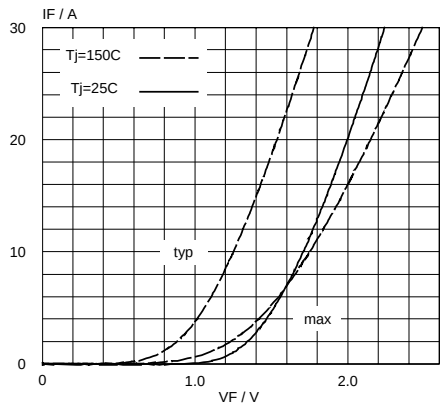


Fig.6. BY359-1500S forward characteristic $I_F = f(V_F)$; parameter T_j

Downloaded from Arrow.com.

MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

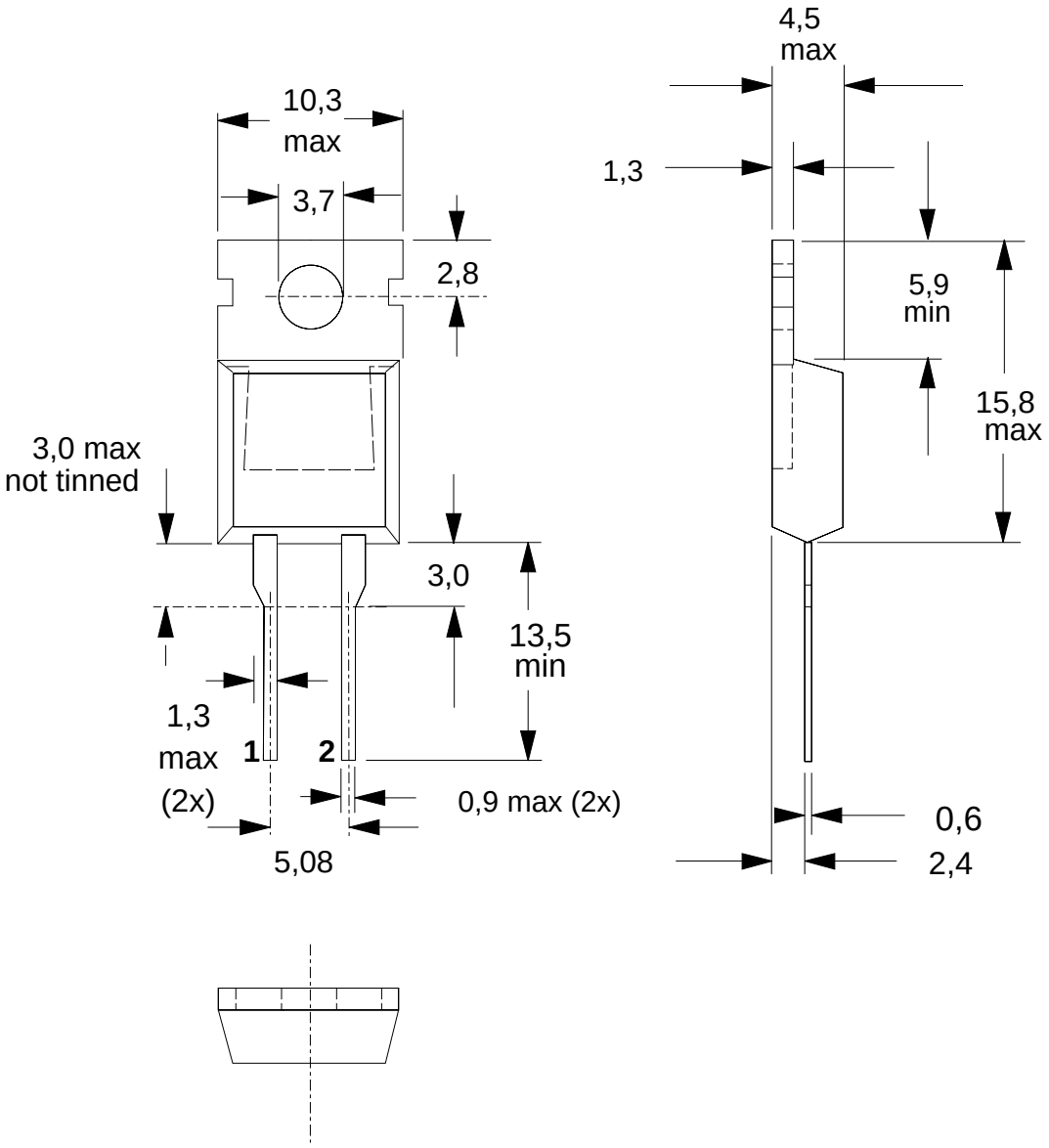


Fig.7. SOD59 (TO220AC). pin 1 connected to mounting base.

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

Downloaded from Arrow.com.

DEFINITIONS

Data sheet status	
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.
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. 1998**	
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.

Downloaded from Arrow.com.