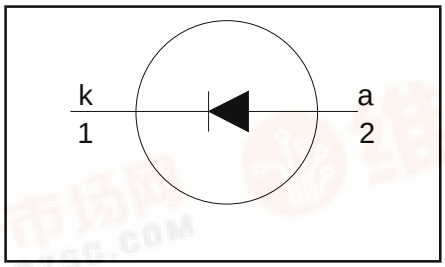
Damper diode fast, high-voltage

BY359X-1500, BY359X-1500S

FEATURES

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

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

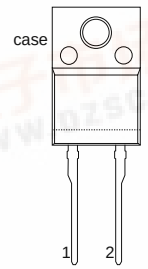
Glass-passivated double diffused rectifier diode in a plastic envelope featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The device is intended for use in TV receivers and PC monitors.

The BY359X series is supplied in the conventional leaded SOD113 package.

PINNING

PIN	DESCRIPTION
1	cathode
2	anode
tab	isolated

SOD113



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	BY359X-1500	-	10	A
		31-70kHz monitor	BY359X-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

ISOLATION LIMITING VALUE & CHARACTERISTIC

T_{hs} = 25 ˚C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from both terminals to external heatsink	f = 50-60 Hz; sinusoidal waveform; R.H. ≤ 65% ; clean and dustfree	-		2500	V
C_{isol}	Capacitance from both terminals to external heatsink	f = 1 MHz	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j\text{-}hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	4.8	K/W
		without heatsink compound	-	-	5.9	K/W
$R_{th\ j\text{-}a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

STATIC CHARACTERISTICS

T_j = 25 ˚C unless otherwise stated

			BY359X-1500		BY359X-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

			BY359X-1500		BY359X-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

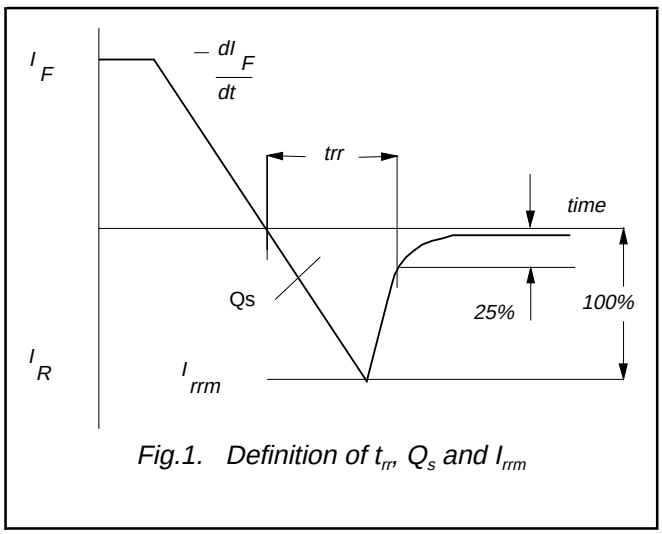


Fig.1. Definition of t_{rr}, Q_s and I_{rrm}

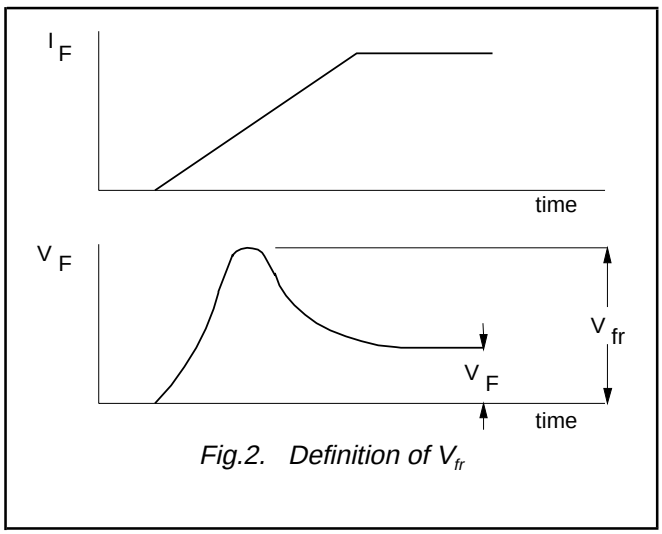


Fig.2. Definition of V_{fr}

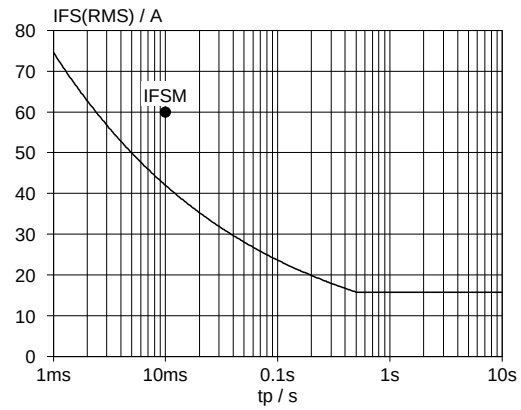


Fig.3. Maximum non-repetitive rms forward current. $I_F = f(t_p)$; sinusoidal current waveform; $T_j = 150^{\circ}C$ prior to surge with reapplied V_{RWM}.

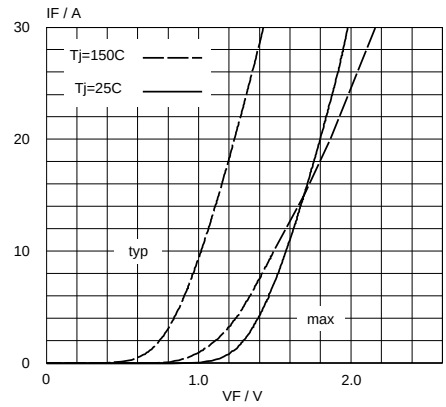


Fig.5. BY359X-1500 forward characteristic $I_F = f(V_F)$; parameter T_j

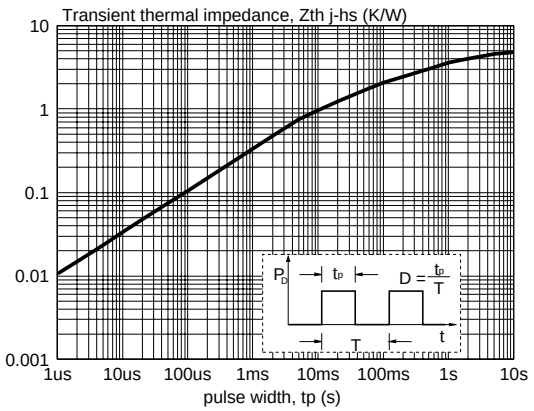


Fig.4. Transient thermal impedance $Z_{th} = f(t_p)$

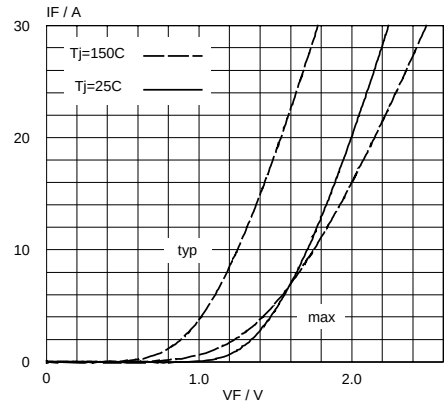


Fig.6. BY359X-1500S forward characteristic $I_F = f(V_F)$; parameter T_j

MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

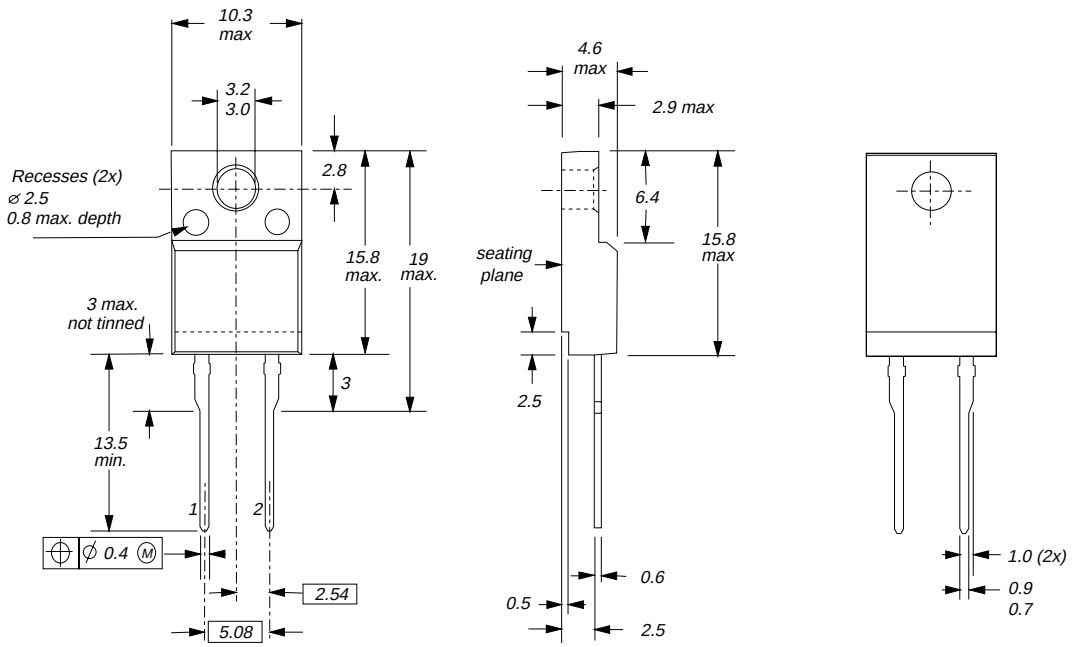


Fig.7. SOD113; The seating plane is electrically isolated from all terminals.

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

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.	

LIFE SUPPORT APPLICATIONS

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