

# Silicon Diode

## **BY359X-1500**

1500V/10A

# DATASHEET

OEM – Philips

Source: Philips Databook 1999

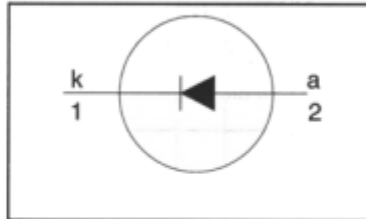
## Damper diode fast, high-voltage

## 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

$V_R = 1500 \text{ V}$   
 $V_F \leq 1.8 \text{ V} / 2 \text{ V}$   
 $I_{F(RMS)} = 15.7 \text{ A}$   
 $I_{FSM} \leq 60 \text{ A}$   
 $t_{rr} \leq 600 \text{ ns} / 350 \text{ ns}$

### GENERAL DESCRIPTION

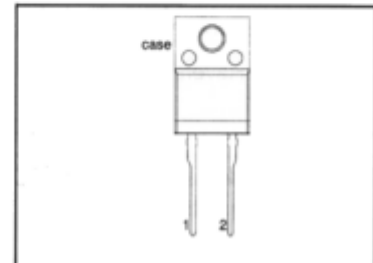
Glass-passivated double diffused rectifier diode in a plastic envelope featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The device is intended for use in TV receivers and PC monitors.

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 31-70kHz monitor	-	10 7	A
$I_{F(RMS)}$	RMS forward current	BY359X-1500 BY359X-1500S	-	15.7	A
$I_{FRM}$	Peak repetitive forward current	sinusoidal; $a = 1.57$ $t = 10 \text{ ms}$	-	60	A
$I_{FSM}$	Peak non-repetitive forward current	$t = 8.3 \text{ ms}$ sinusoidal; $T_J = 150 \text{ }^\circ\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	60 66	A
$T_{stg}$	Storage temperature		-40	150	$^\circ\text{C}$
$T_J$	Operating junction temperature		-	150	$^\circ\text{C}$

### ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{75} = 25 \text{ }^\circ\text{C}$  unless otherwise specified

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

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### THERMAL RESISTANCES

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

### STATIC CHARACTERISTICS

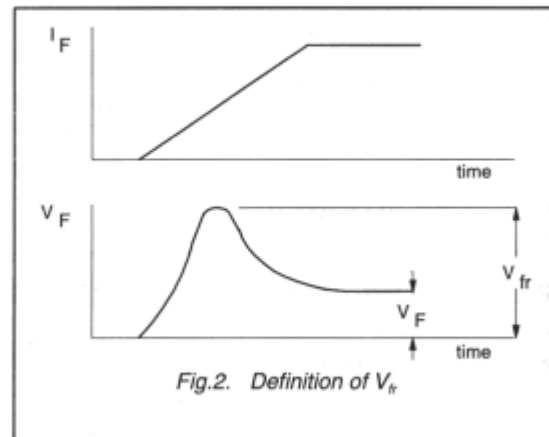
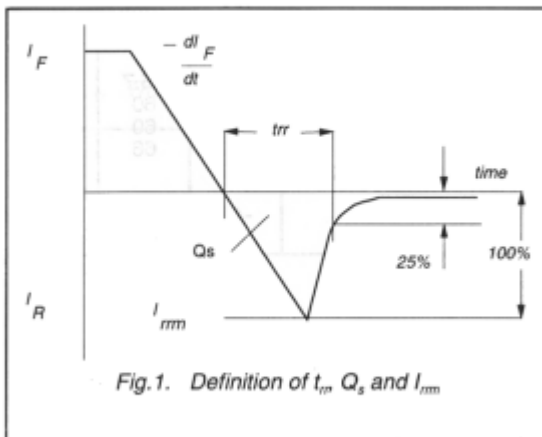
$T_j = 25\text{ }^\circ\text{C}$  unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	BY359X-1500		BY359X-1500S		UNIT
			TYP.	MAX.	TYP.	MAX.	
$V_F$	Forward voltage	$I_F = 20\text{ A}$ $I_F = 10\text{ A}; T_j = 150\text{ }^\circ\text{C}$	1.3 1.00	1.8 1.5	1.5 1.25	2.0 1.75	V V
$I_R$	Reverse current	$V_R = 1300\text{ V}$ $V_R = 1300\text{ V};$ $T_j = 100\text{ }^\circ\text{C}$	10 50	100 300	10 100	100 600	$\mu\text{A}$ $\mu\text{A}$

### DYNAMIC CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	BY359X-1500		BY359X-1500S		UNIT
			TYP.	MAX.	TYP.	MAX.	
$t_{rr}$	Reverse recovery time	$I_F = 2\text{ A}; V_R \geq 30\text{ V};$ $-di_F/dt = 20\text{ A}/\mu\text{s}$	0.47	0.60	0.28	0.35	$\mu\text{s}$
$Q_s$	Reverse recovery charge		1.6	2.0	0.70	0.95	$\mu\text{C}$
$V_{fr}$	Peak forward recovery voltage	$I_F = 10\text{ A};$ $dI_F/dt = 30\text{ A}/\mu\text{s}$	11.0	-	17.0	-	V



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