

# Silicon Diode

## **BY559X-1500U**

1500V/10A

# DATASHEET

OEM – Philips

Source: Philips Databook 1999

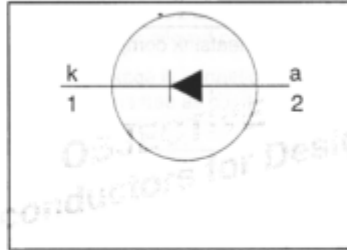
## Damper diode fast, high-voltage

BY559X-1500U

### FEATURES

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

### SYMBOL



### QUICK REFERENCE DATA

$V_R = 1500 \text{ V}$   
 $V_F \leq 1.4 \text{ V}$   
 $V_{rr} \leq 10 \text{ V}$   
 $t_{rr} \leq 120 \text{ ns}$   
 $I_{F(\text{PEAK})} = 10 \text{ A}$   
 $I_{FSM} \leq 150 \text{ A}$

### GENERAL DESCRIPTION

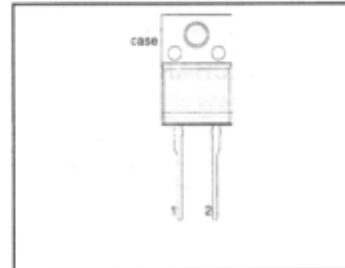
A double diffused rectifier diode in a plastic envelope, featuring fast forward and reverse recovery and low forward voltage. The device is intended for use as a damper diode in horizontal deflection circuits of large screen monitors and workstations.

The BY559X 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
$V_{RRM}$	Peak repetitive reverse voltage		-	1500	V
$V_{RWM}$	Crest working reverse voltage		-	1300	V
$I_{F(\text{PEAK})}$	Peak working forward current	$f = 130 \text{ kHz}$ ;	-	10	A
$I_{FRM}$	Peak repetitive forward current	$t = 100 \mu\text{s}$	-	150	A
$I_{FSM}$	Peak non repetitive forward current	$t = 10 \text{ ms}$ sinusoidal; $T_j = 150 \text{ }^\circ\text{C}$ prior to surge; with reapplied $V_{RWM(\text{max})}$	-	160	A
$T_{stg}$	Storage temperature		-40	150	$^\circ\text{C}$
$T_j$	Operating junction temperature		-	150	$^\circ\text{C}$

### ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{ns} = 25 \text{ }^\circ\text{C}$  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
$R_{thj-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	3.6	K/W
$R_{thj-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_F$	Forward voltage	$I_F = 6.5\text{ A}$	-	1.5	1.8	V
$I_R$	Reverse current	$I_F = 6.5\text{ A}; T_j = 125\text{ }^\circ\text{C}$	-	1.2	1.4	V
		$V_R = V_{RWMmax}$	-	-	0.5	mA
		$V_R = V_{RWMmax}; T_j = 125\text{ }^\circ\text{C}$	-	-	2.0	mA

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{rr}$	Forward recovery voltage	$I_F = 6.5$ ; $di_F/dt = 50\text{ A}/\mu\text{s}$	-	6	10	V
$t_{fr}$	Forward recovery time	$I_F = 6.5\text{ A}; di_F/dt = 50\text{ A}/\mu\text{s}; V_F = 5\text{ V}$	-	130	180	ns
$t_{rr}$	Reverse recovery time	$I_F = 1\text{ A}; -di_F/dt = 50\text{ A}/\mu\text{s}; V_R \geq 30\text{ V}$	-	90	120	ns
$Q_s$	Reverse recovery charge	$I_F = 2\text{ A}; -di_F/dt = 20\text{ A}/\mu\text{s}; V_R \geq 30\text{ V}$	-	0.2	0.25	$\mu\text{C}$