

Silicon Diode

BY359-1500S

1500V/7A

DATASHEET

OEM – Philips

Source: Philips Databook 1999

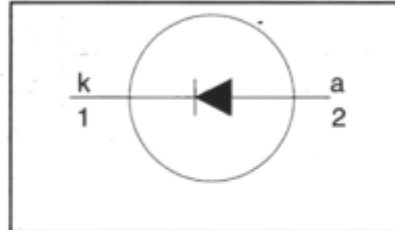
Damper diode fast, high-voltage

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

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

GENERAL DESCRIPTION

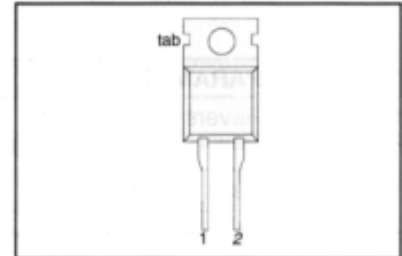
Glass-passivated double diffused rectifier diode featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The device is intended for use in TV receivers and PC monitors.

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 31-70kHz monitor BY359-1500S	-	10	A
			-	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	$t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$ sinusoidal; $T_J = 150^\circ\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	60	A
			-	66	A
T_{stg}	Storage temperature		-40	150	$^\circ\text{C}$
T_J	Operating junction temperature		-	150	$^\circ\text{C}$

THERMAL RESISTANCES

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

Damper diode fast, high-voltage

BY359-1500, BY359-1500S

STATIC CHARACTERISTICS

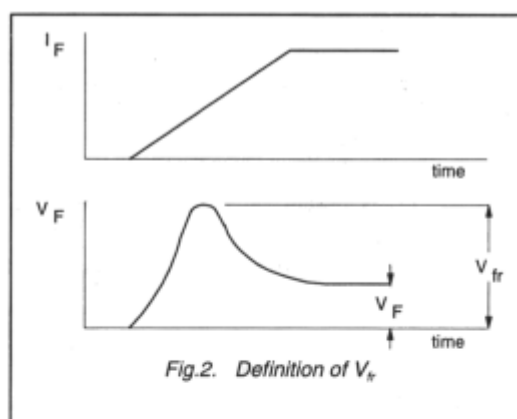
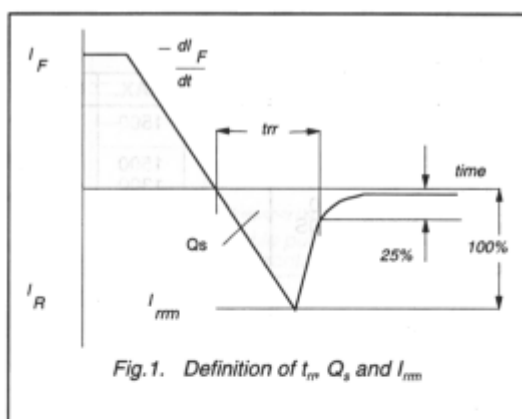
 $T_J = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	BY359-1500		BY359-1500S		UNIT
			TYP.	MAX.	TYP.	MAX.	
V_F	Forward voltage	$I_F = 20\text{ A}$	1.3	1.8	1.5	2.0	V
I_R	Reverse current	$I_F = 10\text{ A}; T_J = 150\text{ }^{\circ}\text{C}$	1.00	1.5	1.25	1.75	V
		$V_R = 1300\text{ V}$	10	100	10	100	μA
		$V_R = 1300\text{ V};$	50	300	100	600	μA
		$T_J = 100\text{ }^{\circ}\text{C}$					

DYNAMIC CHARACTERISTICS

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

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



Damper diode fast, high-voltage

BY359-1500, BY359-1500S

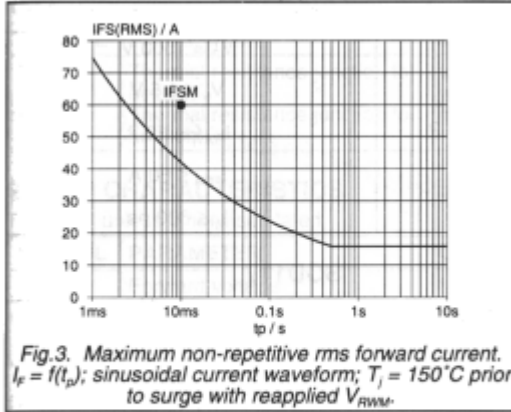


Fig.3. Maximum non-repetitive rms forward current. $I_F = f(t_p)$; sinusoidal current waveform; $T_J = 150^\circ\text{C}$ prior to surge with reapplied V_{RWM} .

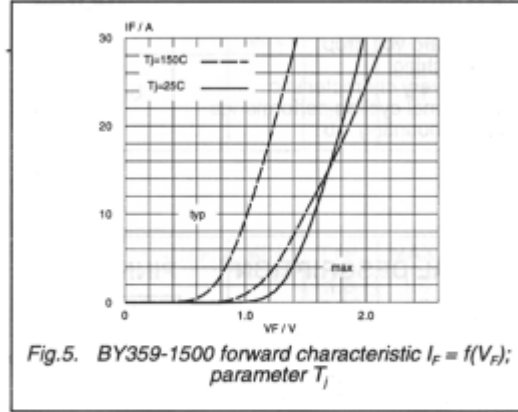


Fig.5. BY359-1500 forward characteristic $I_F = f(V_F)$; parameter T_J

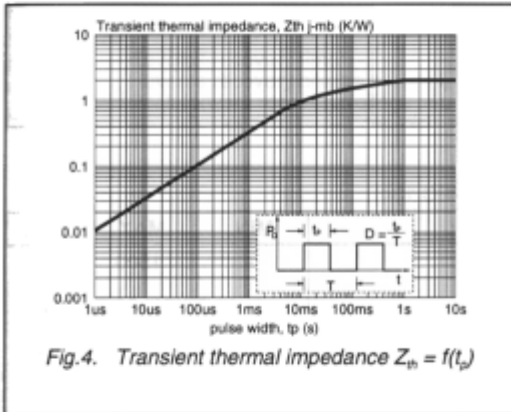


Fig.4. Transient thermal impedance $Z_{th} = f(t_p)$

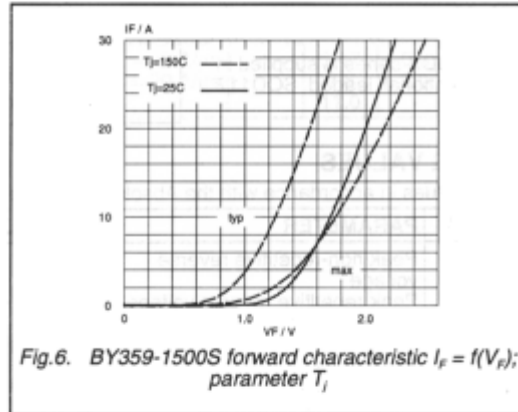


Fig.6. BY359-1500S forward characteristic $I_F = f(V_F)$; parameter T_J