



**THE DATASHEET OF  
BYS459B-1500E3/45**

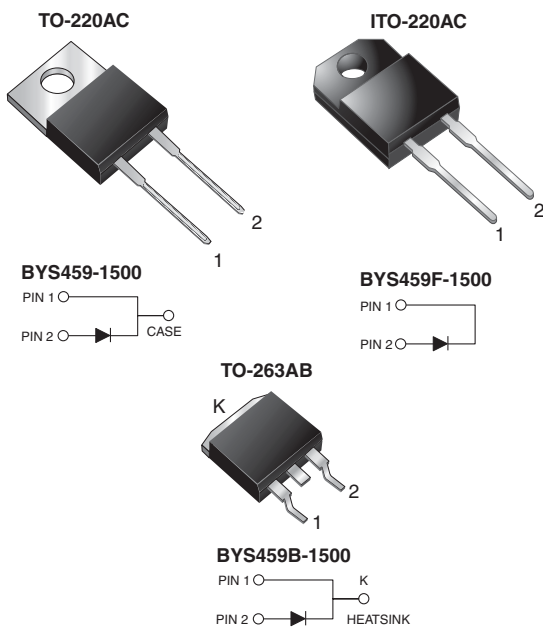




# BYS459-1500, BY5459F-1500 & BY5459B-1500

Vishay General Semiconductor

## High Voltage Damper Diodes



### FEATURES

- Glass passivated chip junction
- Fast reverse recovery time
- Low switching loss, high efficiency
- Low forward voltage drop
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AC and ITO-220AC package)
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



RoHS  
COMPLIANT

### TYPICAL APPLICATIONS

For use in high voltage and high frequency rectification of switching mode inverters, converters, freewheeling and ideal for CRT horizontal deflection application.

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	6.5 A
$V_{RRM}$	1500 V
$I_{FSM}$	130 A
$t_{rr}$	350 ns
$t_{fr}$	250 ns
$V_F$	1.2 V
$T_J \text{ max.}$	150 °C

### MECHANICAL DATA

**Case:** TO-220AC, ITO-220AC, TO-263AB

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs maximum

### MAXIMUM RATINGS ( $T_A = 25 \text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	1500	V
Maximum working reverse voltage	$V_{RWM}$	1300	V
Maximum DC blocking voltage	$V_{DC}$	1500	V
Maximum average forward rectified current	$I_{F(AV)}$	6.5	A
Peak working forward current at $f = 48 \text{ kHz}$	$I_{F(Peak)}$	12	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	130	A
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150	°C
Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1 \text{ min}$	$V_{AC}$	1500	V

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<b>ELECTRICAL CHARACTERISTICS</b> ( $T_J = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	$I_F = 6.5\text{ A}$ , $I_F = 6.5\text{ A}$ ,	$T_J = 25\text{ }^\circ\text{C}$ $T_J = 125\text{ }^\circ\text{C}$	$V_F$	1.3 1.2	V
Maximum DC reverse current	$V_{RWM}$	$T_J = 25\text{ }^\circ\text{C}$ $T_J = 125\text{ }^\circ\text{C}$	$I_R$	250 1.0	$\mu\text{A}$ mA
Maximum reverse recovery time	$I_F = 1.0\text{ A}$ , $dI/dt = 50\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$		$t_{rr}$	350	ns
Maximum reverse recovery charge	$I_F = 2.0\text{ A}$ , $dI/dt = 20\text{ A}/\mu\text{s}$		$Q_{rr}$	3.0	$\mu\text{C}$
Maximum forward recovery time	$I_F = 6.5\text{ A}$ , $dI/dt = 52\text{ A}/\mu\text{s}$		$t_{fr}$	250	ns
Peak forward recovery overshoot voltage	$I_F = 6.5\text{ A}$ , $dI/dt = 52\text{ A}/\mu\text{s}$		$V_{FP}$	20	V

**Note:**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	BYS459	BYS459F	BYS459B	UNIT
Typical thermal resistance from junction to ambient	$R_{\theta JA}$	60	55	60	$^\circ\text{C}/\text{W}$

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	BYS459-1500-E3/45	1.80	45	50/tube	Tube
ITO-220AC	BYS459F-1500-E3/45	1.95	45	50/tube	Tube
TO-263AB	BYS459B-1500-E3/45	1.77	45	50/tube	Tube
TO-263AB	BYS459B-1500-E3/81	1.77	81	800/reel	Tape and reel

## RATINGS AND CHARACTERISTICS CURVES

( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

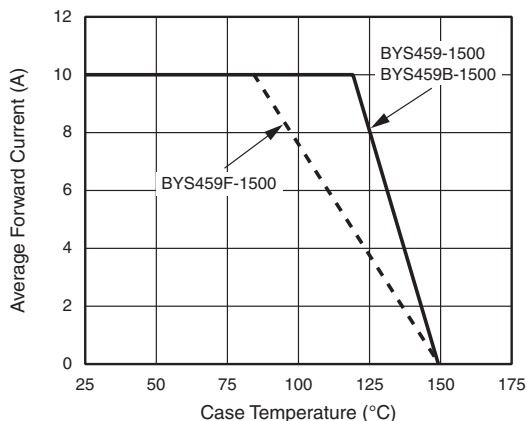


Figure 1. Forward Current Derating Curve

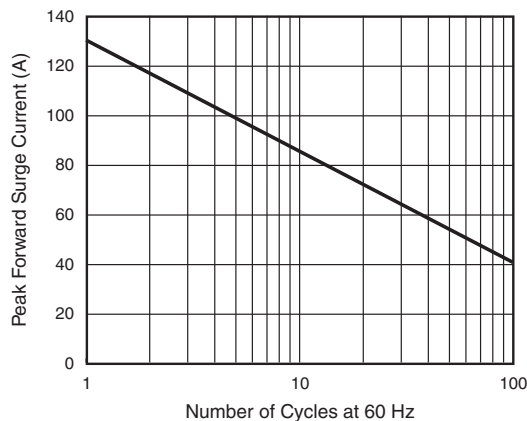


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current



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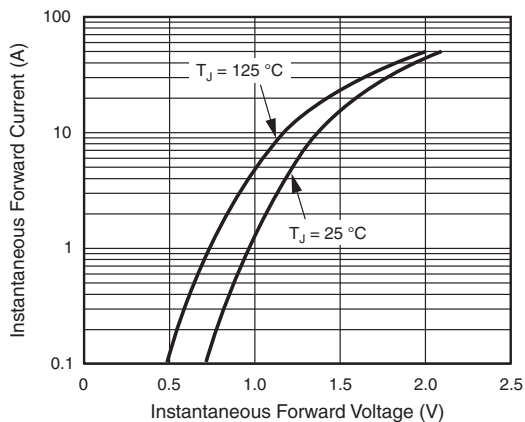


Figure 3. Typical Forward Voltage

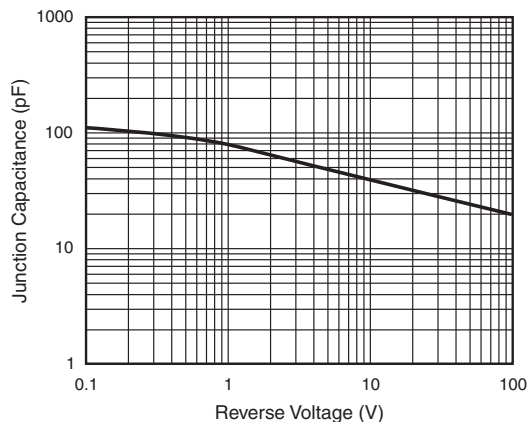


Figure 5. Typical Capacitance

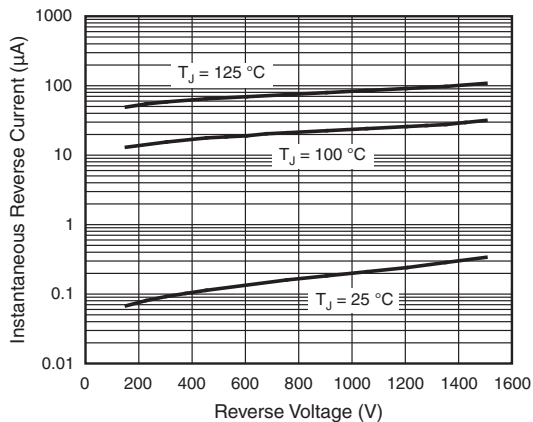


Figure 4. Typical Reverse Current

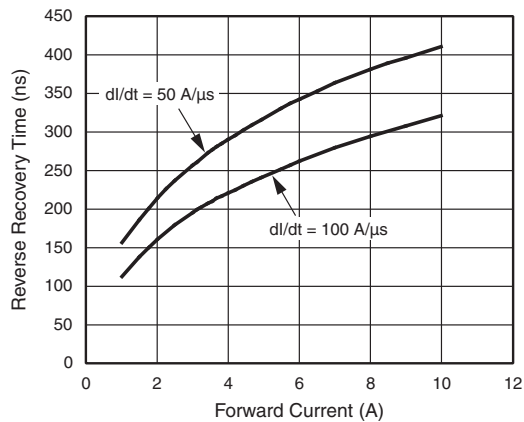


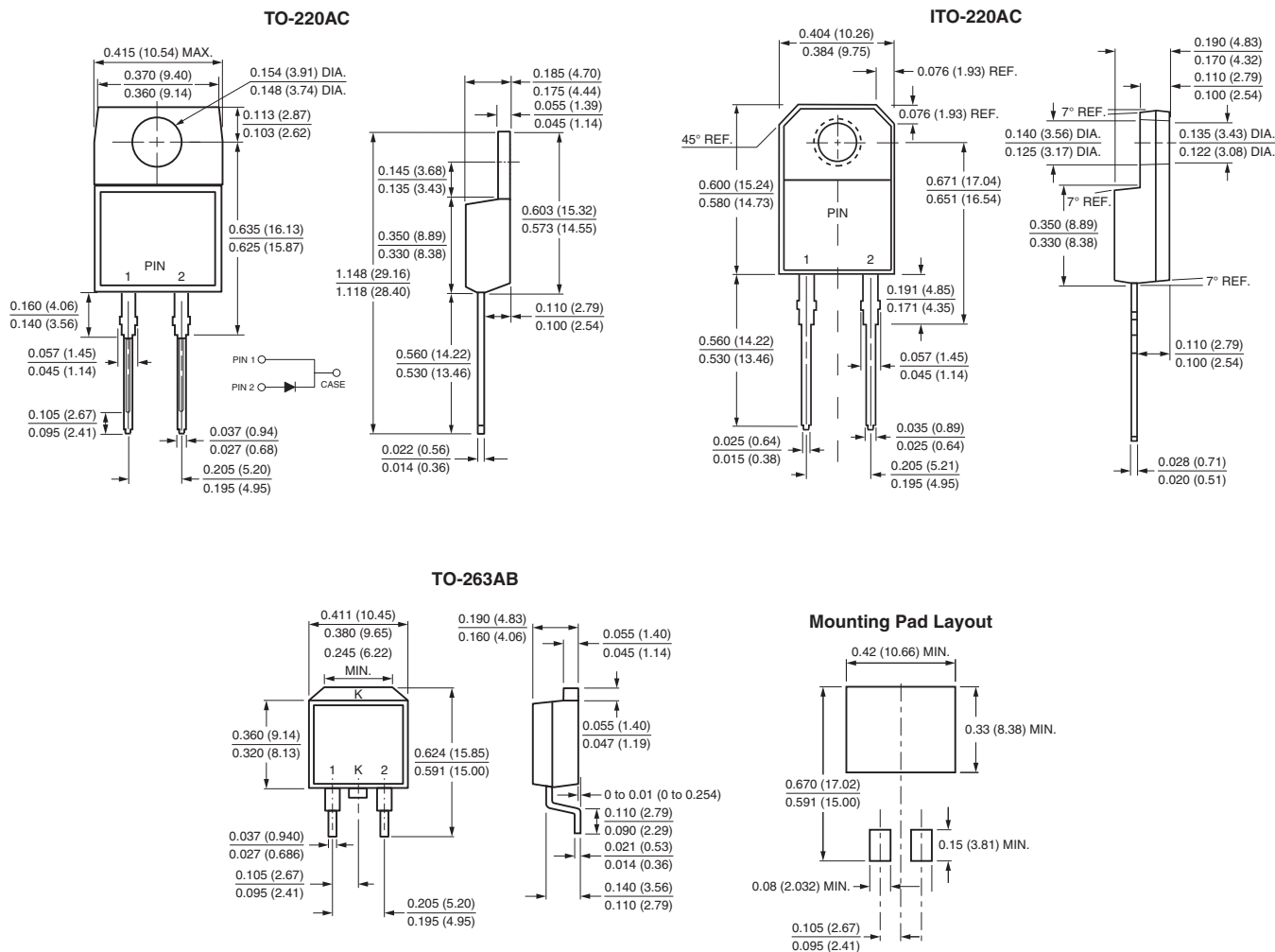
Figure 6. Typical Reverse Recovery Time

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## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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