



**THE DATASHEET OF
BYS459F-1500E3/45**

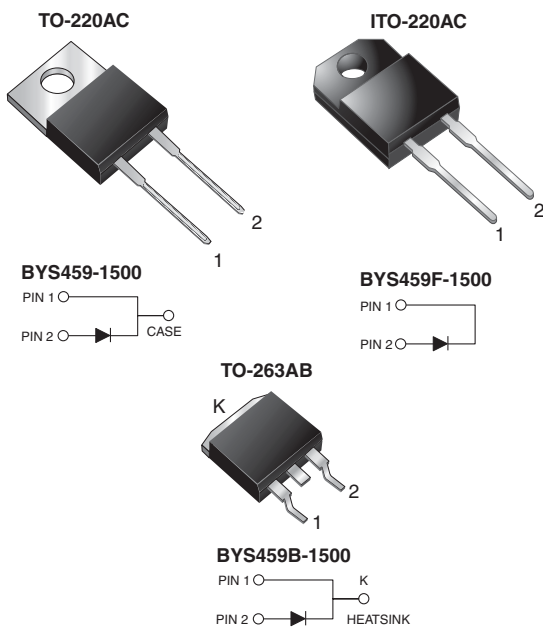




BYS459-1500, BY5459F-1500 & BY5459B-1500

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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ELECTRICAL CHARACTERISTICS ($T_J = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage ⁽¹⁾	$I_F = 6.5\text{ A}$, $I_F = 6.5\text{ A}$,	$T_J = 25\text{ }^\circ\text{C}$ $T_J = 125\text{ }^\circ\text{C}$	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	μA 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	μC
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 μs pulse width, 1 % duty cycle

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

ORDERING INFORMATION (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)

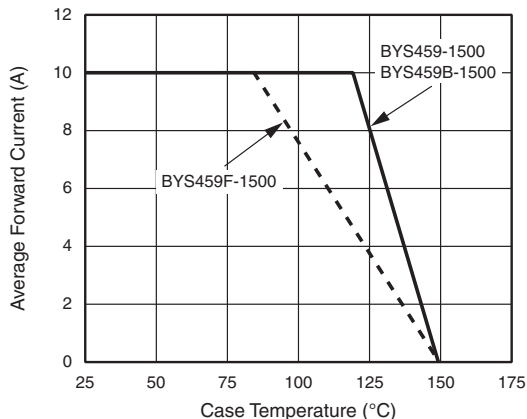


Figure 1. Forward Current Derating Curve

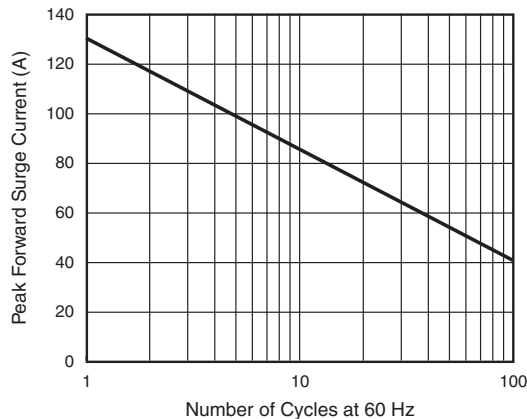


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current



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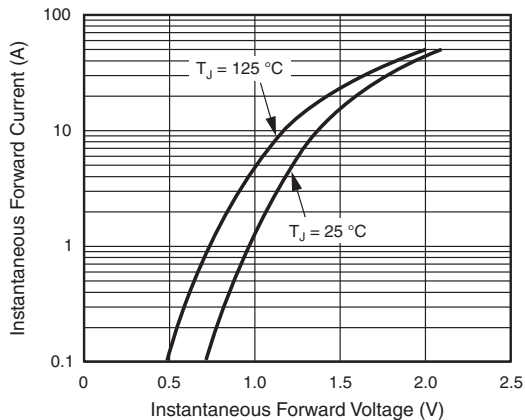


Figure 3. Typical Forward Voltage

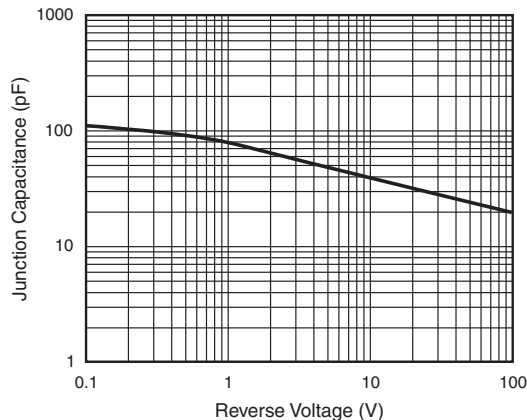


Figure 5. Typical Capacitance

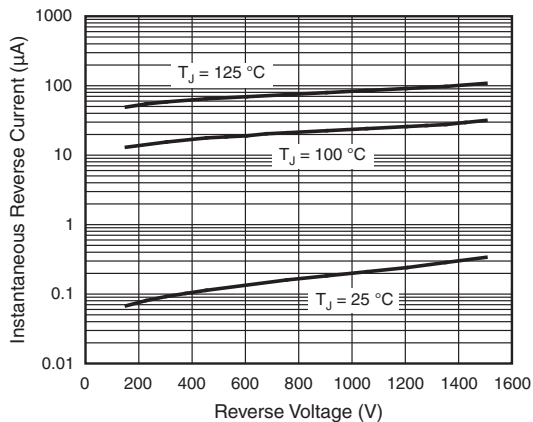


Figure 4. Typical Reverse Current

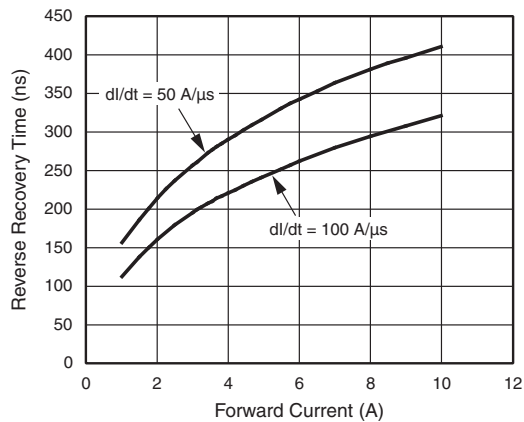


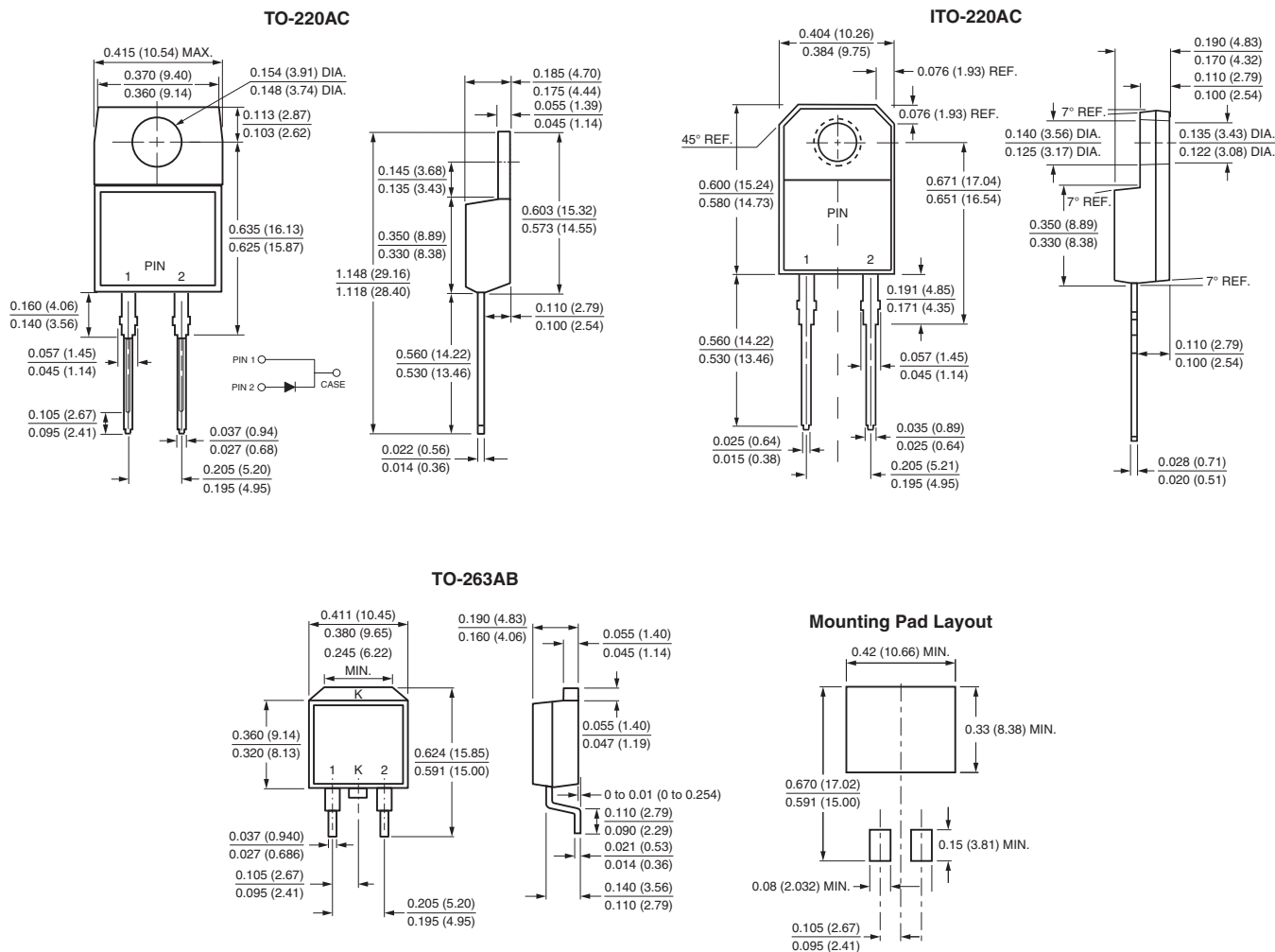
Figure 6. Typical Reverse Recovery Time

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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