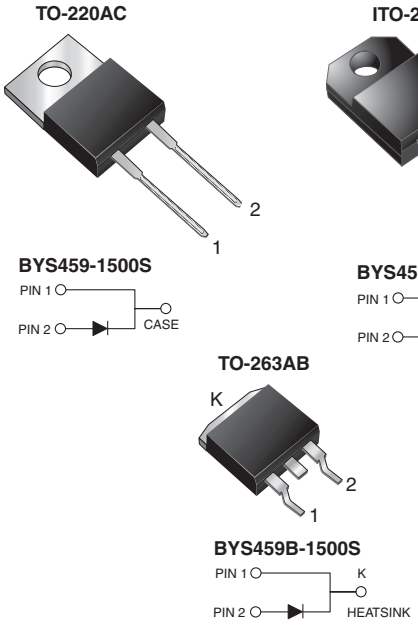
BYS459-1500S, BYS459F-1500S & BYS459B-1500S

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	
$I_{F(AV)}$	10 A
V_{RRM}	1500 V
I_{FSM}	130 A
t_{rr}	220 ns
t_{fr}	300 ns
V_F	1.25 V
T_J 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 °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 (Fig. 1)	$I_{F(AV)}$	10	A
Peak working forward current at f = 82 kHz	$I_{F(Peak)}$	10	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 min	V_{AC}	1500	V

BYS459-1500S, BYS459F-1500S & BYS459B-1500S

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ELECTRICAL CHARACTERISTICS (T_J = 25 °C unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage (1)	I_F = 6.5 A, I_F = 6.5 A,	T_J = 25 °C T_J = 125 °C	V_F	1.35 1.25	V
Maximum DC reverse current	V_{RWM}	T_J = 25 °C T_J = 125 °C	I_R	250 1.0	µA mA
Maximum reverse recovery time	I_F = 1.0 A, dI/dt = 50 A/µs, V_R = 30 V		t_{rr}	220	ns
Maximum reverse recovery charge	I_F = 2.0 A, dI/dt = 20 A/µs, V_R = 30 V		Q_{rr}	0.95	µC
Maximum forward recovery time	I_F = 6.5 A, dI/dt = 52 A/µs, V_R = 5 V		t_{fr}	300	ns
Peak forward recovery overshoot voltage	I_F = 6.5 A, dI/dt = 52 A/µs		V_{FP}	27	V

Note:

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	BYS459	BYS459F	BYS459B	UNIT
Typical thermal resistance from junction to case	$R_{\theta JC}$	2.0	4.0	2.0	°C/W

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

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

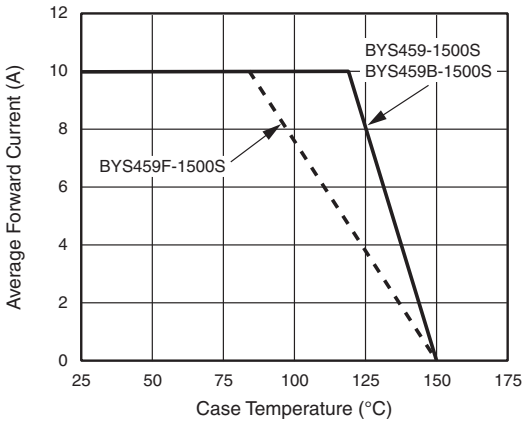

Figure 1. Forward Current Derating Curve

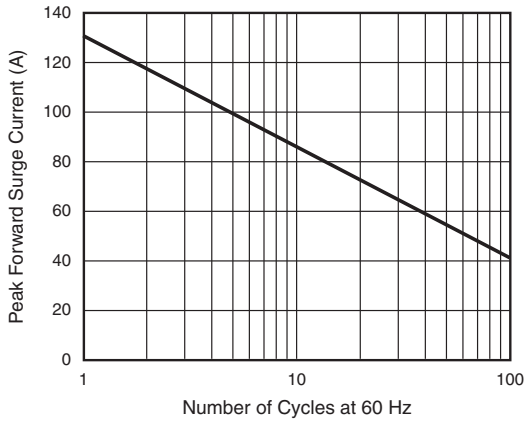

Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

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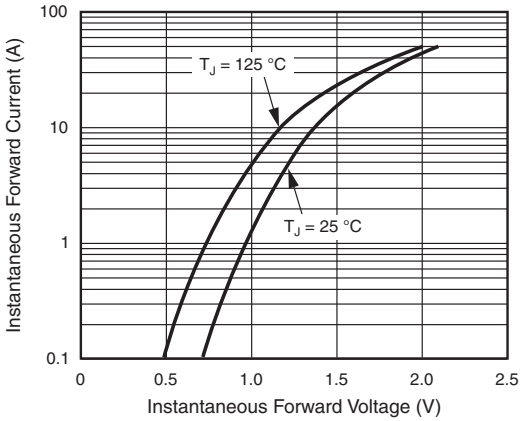


Figure 3. Typical Forward Voltage

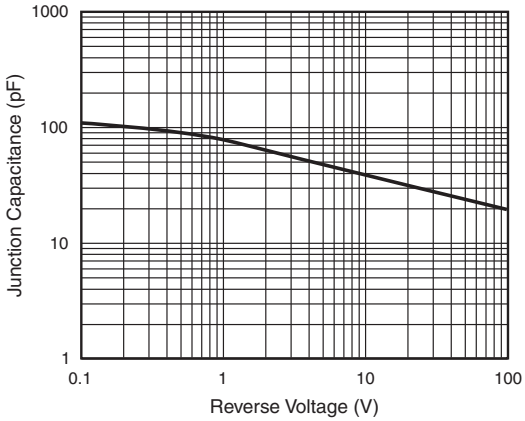


Figure 5. Typical Capacitance

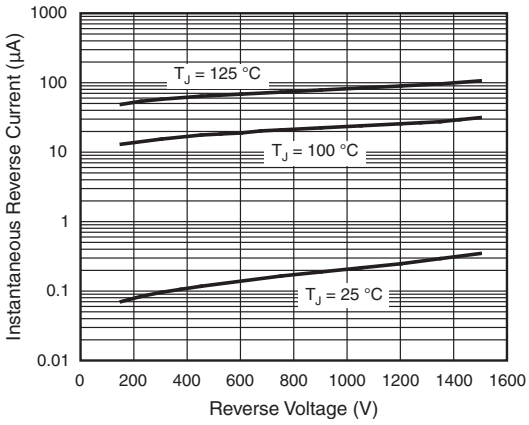


Figure 4. Typical Reverse Current

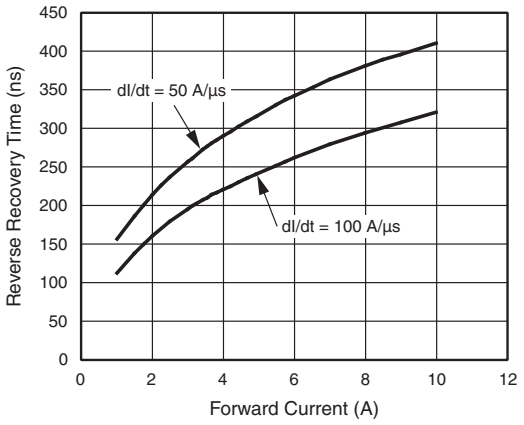
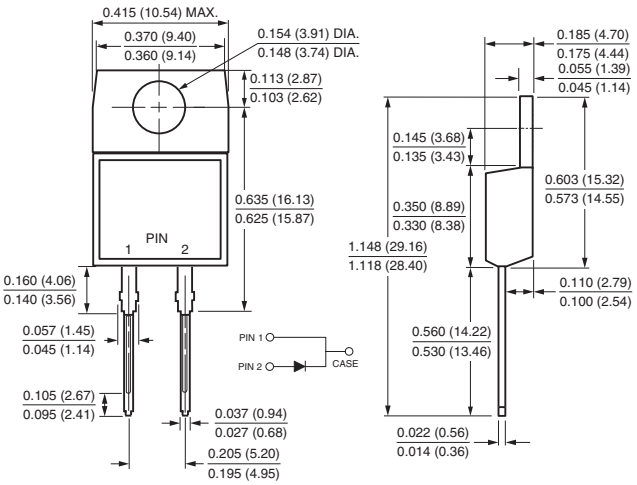


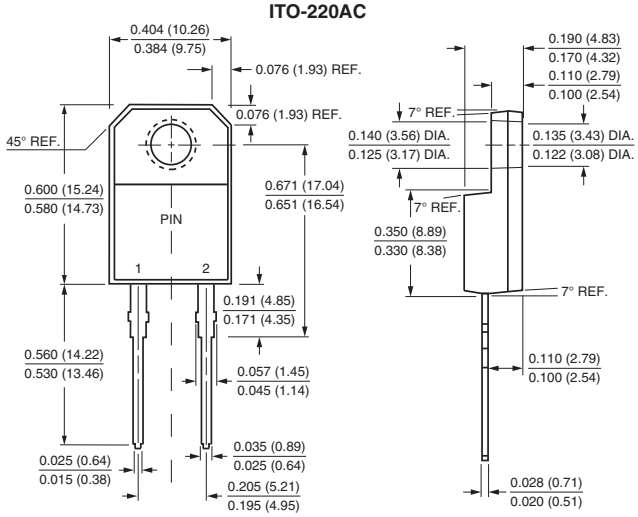
Figure 6. Typical Reverse Recovery Time

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

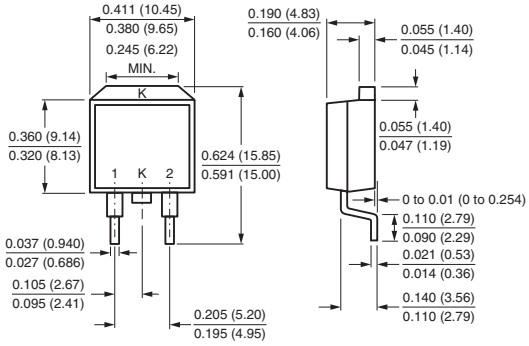
TO-220AC



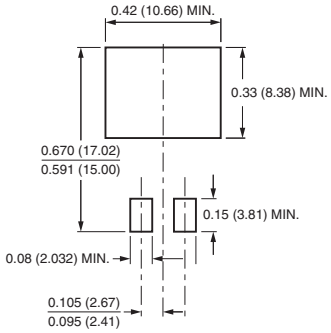
ITO-220AC



TO-263AB



Mounting Pad Layout



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