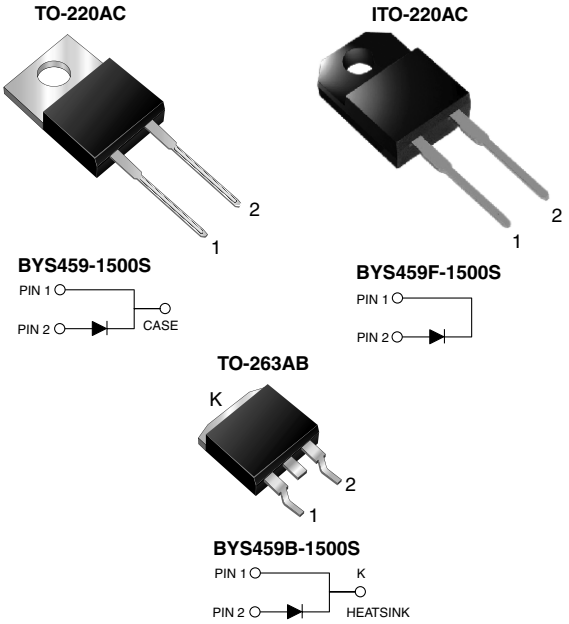
High Voltage Damper Diodes



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-020C, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AC and ITO-220AC package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

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-002B and JESD22-B102D

E3 suffix for commercial 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

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 reel

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

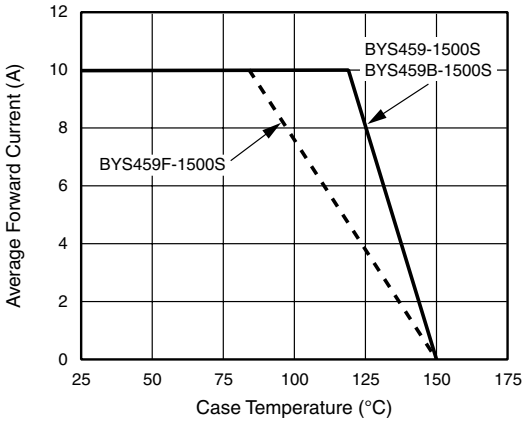


Figure 1. Forward Current Derating Curve

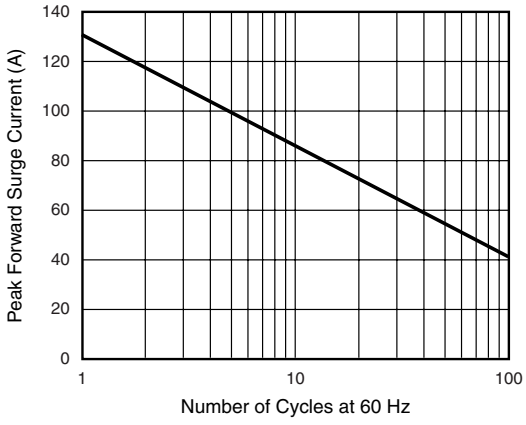


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

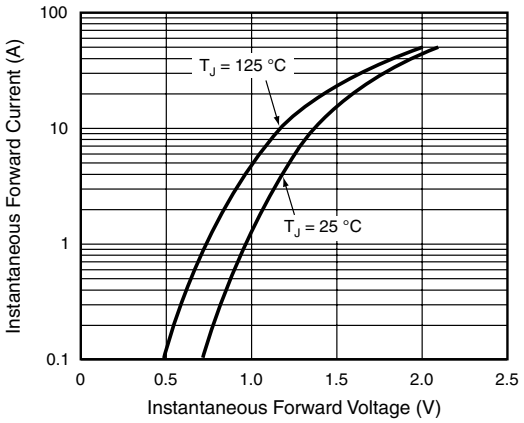


Figure 3. Typical Forward Voltage

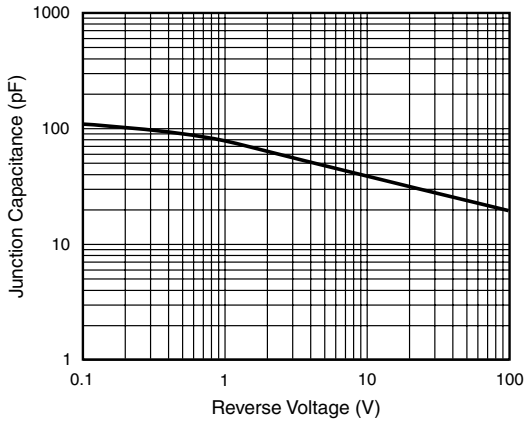


Figure 5. Typical Capacitance

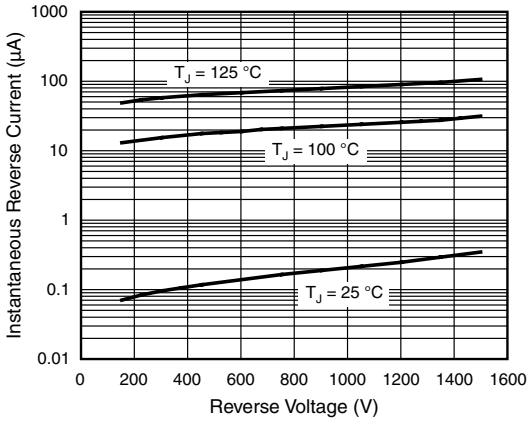


Figure 4. Typical Reverse Current

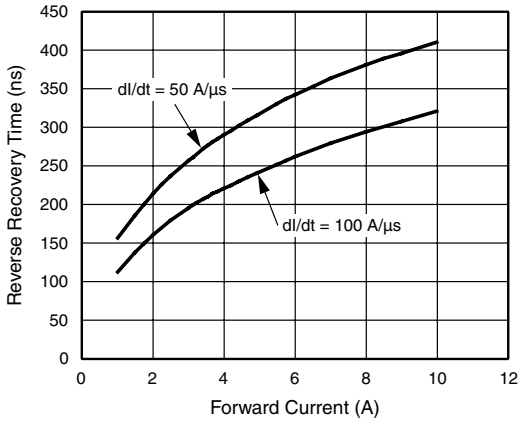
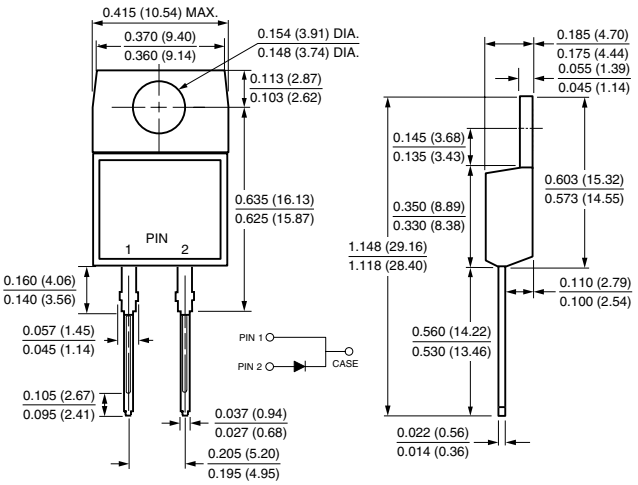


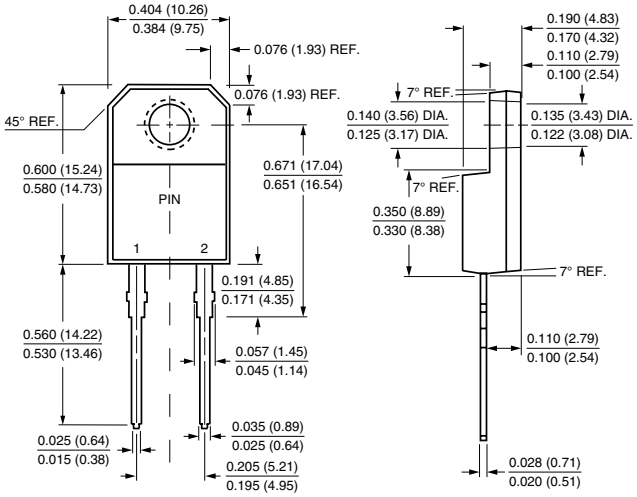
Figure 6. Typical Reverse Recovery Time

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

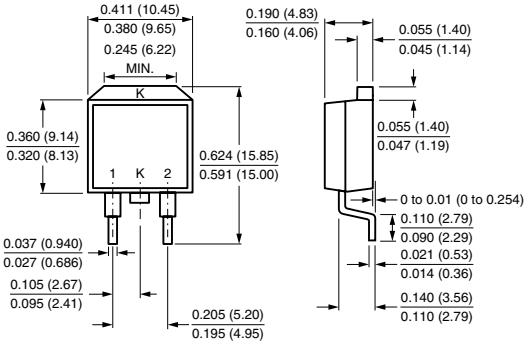
TO-220AC

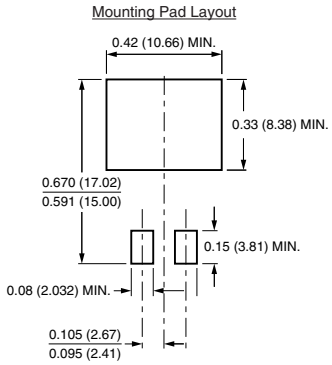


ITO-220AC



TO-263AB





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