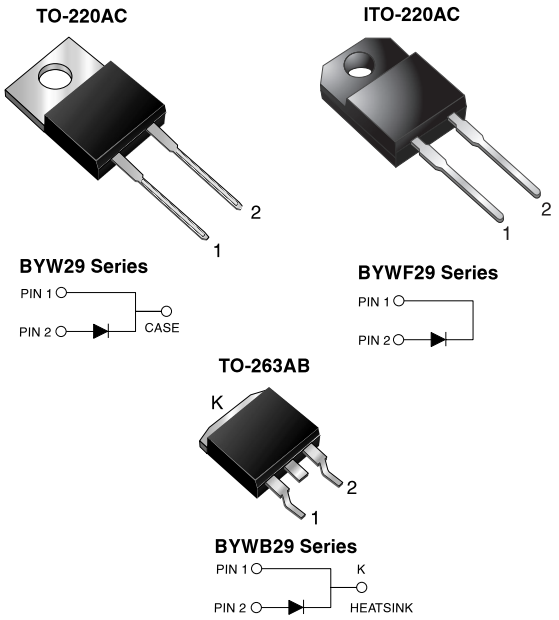
Ultrafast Rectifier



FEATURES

- Glass passivated chip junction
- Ultrafast recovery time
- Low switching losses, 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)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, inverters, freewheeling diodes, dc-to-dc converters, and other power switching application.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	8.0 A
V_{RRM}	50 V to 200 V
I_{FSM}	100 A
t_{rr}	25 ns
V_F	0.8 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, HE3 suffix for high reliability grade (AEC Q101 qualified), meets JESD 201 class 2 whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

MAXIMUM RATINGS (T_C = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	BYW29-50	BYW29-100	BYW29-150	BYW29-200	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	150	200	V
Maximum RMS voltage	V_{RMS}	35	70	105	140	V
Maximum DC blocking voltage	V_{DC}	50	100	150	200	V
Maximum average forward rectified current at T_C = 105 °C	$I_{F(AV)}$	8.0				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	100				A
Operating and storage temperature range	T_J, T_{STG}	- 65 to + 150				°C
Isolation voltage (ITO-220AC only) from terminal to heatsink t = 1 min	V_{AC}	1500				V

ELECTRICAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)								
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**BYW29-50**	**BYW29-100**	**BYW29-150**	**BYW29-200**	**UNIT**
Maximum instantaneous forward voltage (1)	I_F = 20 A I_F = 8.0 A	T_J = 25 °C T_J = 150 °C	V_F	1.3 0.8				V
Maximum DC reverse current at rated DC blocking voltage		T_C = 25 °C T_C = 100 °C	I_R	10 500				µA
Maximum reverse recovery time	I_F = 1 A, V_R = 30 V, dI/dt = 100 A/µs, I_{rr} = 10 % I_{RM}		t_{rr}	25				ns
Typical junction capacitance	4.0 V, 1 MHz		C_J	45				pF

Note:

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

THERMAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)					
PARAMETER	**SYMBOL**	**BYW**	**BYWF**	**BYWB**	**UNIT**
Typical thermal resistance from junction to case per leg	$R_{\theta JC}$	2.5	5.5	2.5	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AC	BYW29-200-E3/45	1.80	45	50/tube	Tube
ITO-220AC	BYWF29-200-E3/45	1.95	45	50/tube	Tube
TO-263AB	BYWB29-200-E3/45	1.77	45	50/tube	Tube
TO-263AB	BYWB29-200-E3/81	1.77	81	800/reel	Tape and reel
TO-220AC	BYW29-200HE3/45 (1)	1.80	45	50/tube	Tube
ITO-220AC	BYWF29-200HE3/45 (1)	1.95	45	50/tube	Tube
TO-263AB	BYWB29-200HE3/45 (1)	1.77	45	50/tube	Tube
TO-263AB	BYWB29-200HE3/81 (1)	1.77	81	800/reel	Tape and reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

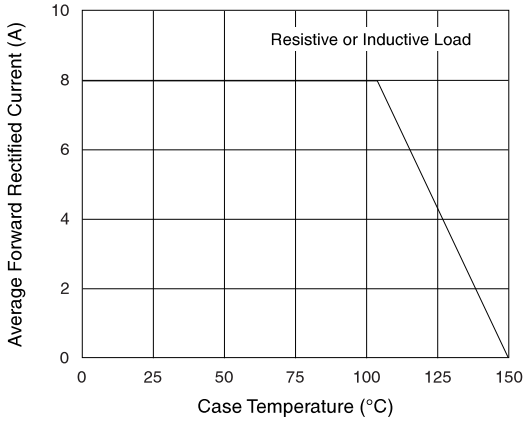


Figure 1. Maximum Forward Current Derating Curve

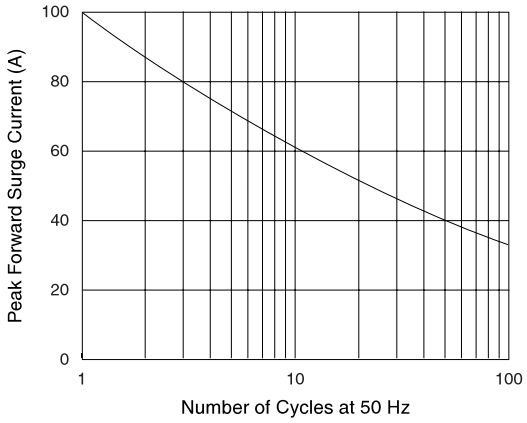


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

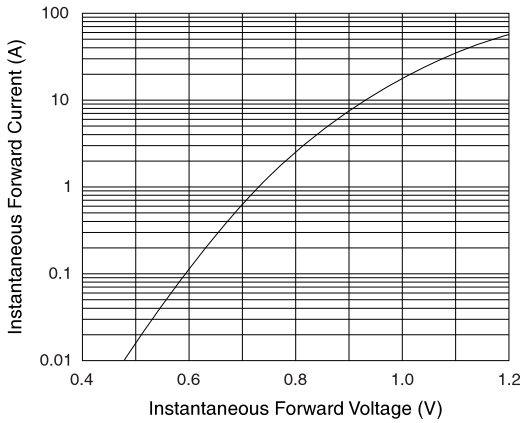


Figure 3. Typical Instantaneous Forward Charateristics

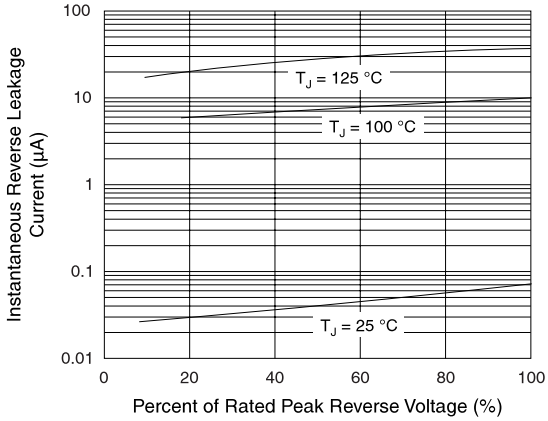


Figure 4. Typical Reverse Leakage Charateristics

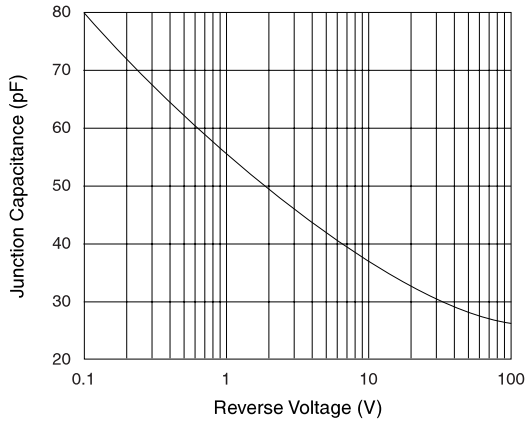
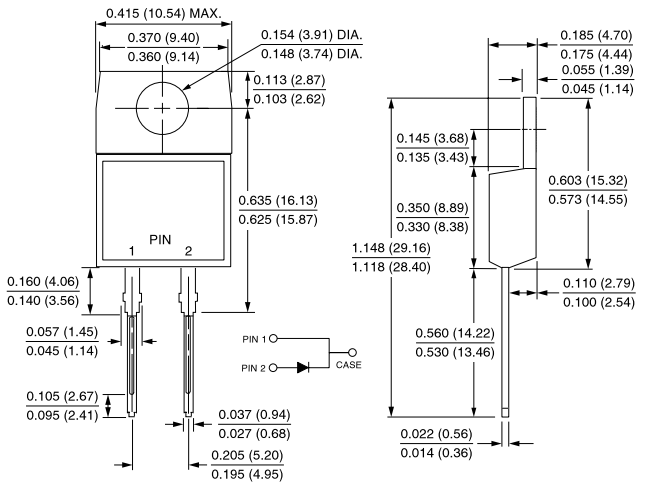


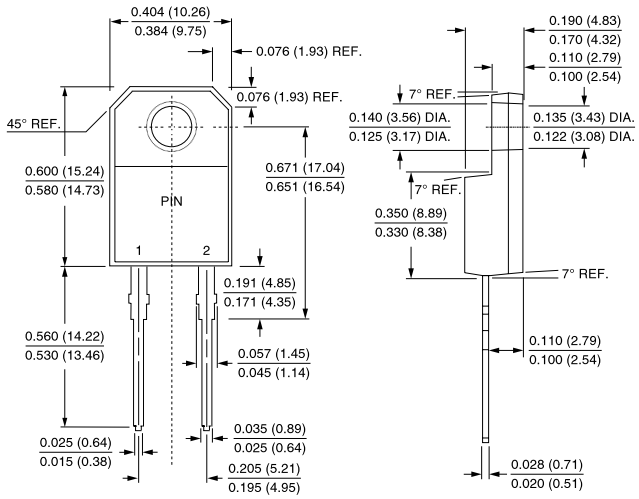
Figure 5. Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

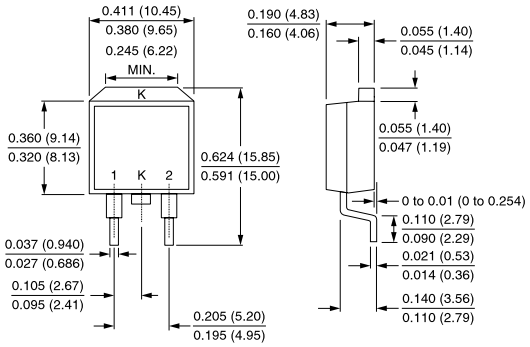
TO-220AC

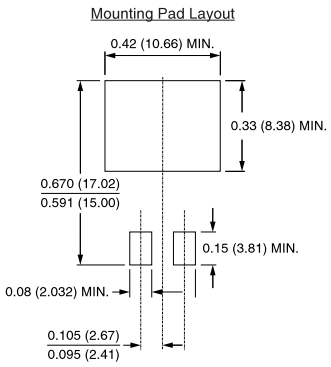


ITO-220AC



TO-263AB





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