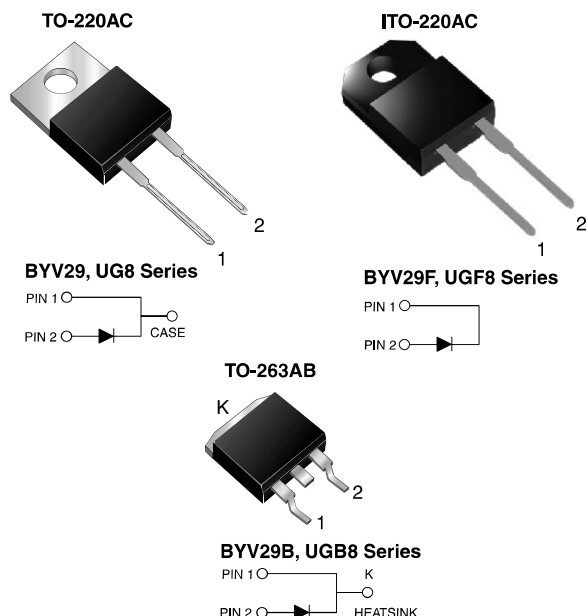


Ultrafast Rectifier



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-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 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}	300 V, 400 V
I_{FSM}	110 A
t_{rr}	35 ns
V_F	1.03 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-002B and JESD22-B102D

E3 suffix for commercial 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 ($T_C = 25\text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	BYV29-300 UG8FT	BYV29-400 UG8GT	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	300	400	V
Maximum working reverse voltage	V_{RWM}	300	400	V
Maximum RMS voltage	V_{RMS}	210	280	V
Maximum DC blocking voltage	V_{DC}	300	400	V
Maximum average forward rectified current at $T_C = 100\text{ °C}$	$I_{F(AV)}$	8.0		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	110		A
Operating junction and storage temperature range	T_J, T_{STG}	- 40 to + 150		°C
Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1\text{ min}$	V_{AC}	1500		V

ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	TEST CONDITIONS		SYMBOL	BYV29-300 UG8FT	BYV29-400 UG8GT	UNIT
Maximum instantaneous forward voltage ⁽¹⁾	$I_F = 8\text{ A}$ $I_F = 8\text{ A}$ $I_F = 20\text{ A}$	$T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 150\text{ }^{\circ}\text{C}$ $T_J = 25\text{ }^{\circ}\text{C}$	V_F	1.25 1.03 1.40		V
Maximum DC reverse current at V_{RRM}		$T_C = 25\text{ }^{\circ}\text{C}$ $T_C = 100\text{ }^{\circ}\text{C}$	I_R	10 350		μA
Maximum reverse recovery time	$I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$		t_{rr}	35		ns
Maximum reverse recovery time	$I_F = 1.0\text{ A}$, $dI/dt = 100\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1\text{ I}_{RM}$		t_{rr}	50		ns
Maximum reverse recovery current	$I_F = 10\text{ A}$, $dI/dt = 50\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $T_C = 100\text{ }^{\circ}\text{C}$		I_{RM}	5.5		A
Maximum recovered stored charged	$I_F = 2\text{ A}$, $dI/dt = 20\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1\text{ I}_{RM}$		Q_{rr}	55		nC

Note:(1) Pulse test: 300 μs pulse width, 1 % duty cycle**THERMAL CHARACTERISTICS** ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	BYV29 UG8	BYV29F UGF8	BYV29B UGB8	UNIT
Typical thermal resistance from junction to case	$R_{\theta JC}$	2.5	5.5	2.5	$^{\circ}\text{C}/\text{W}$

ORDERING INFORMATION (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	BYV29-400-E3/45	1.80	45	50/tube	Tube
ITO-220AC	BYV29F-400-E3/45	1.95	45	50/tube	Tube
TO-263AB	BYV29B-400-E3/45	1.77	45	50/tube	Tube
TO-263AB	BYV29B-400-E3/81	1.77	81	800/reel	Tape reel
TO-220AC	BYV29-400HE3/45 ⁽¹⁾	1.80	45	50/tube	Tube
ITO-220AC	BYV29F-400HE3/45 ⁽¹⁾	1.95	45	50/tube	Tube
TO-263AB	BYV29B-400HE3/45 ⁽¹⁾	1.77	45	50/tube	Tube
TO-263AB	BYV29B-400HE3/81 ⁽¹⁾	1.77	81	800/reel	Tape reel

Note:

(1) Automotive grade AEC Q101 qualified



RATINGS AND CHARACTERISTICS CURVES

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

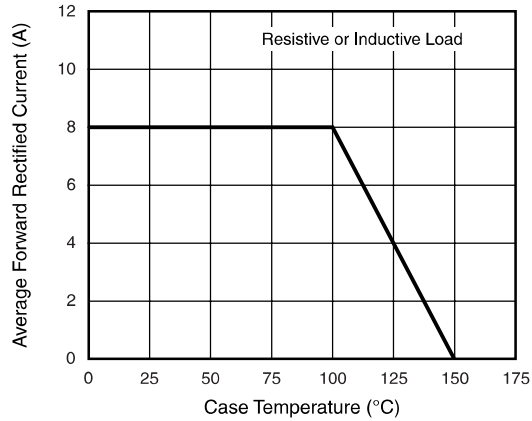


Figure 1. Maximum Forward Current Derating Curve

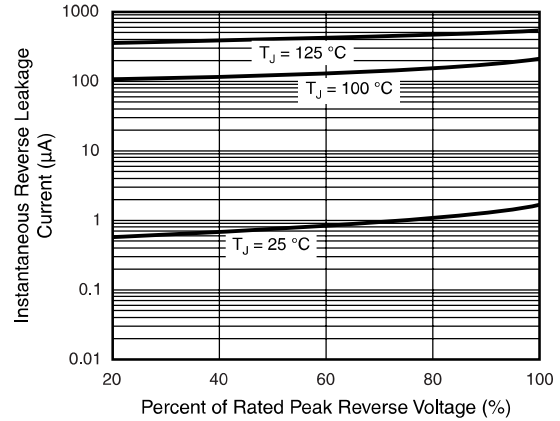


Figure 4. Typical Reverse Leakage Characteristics

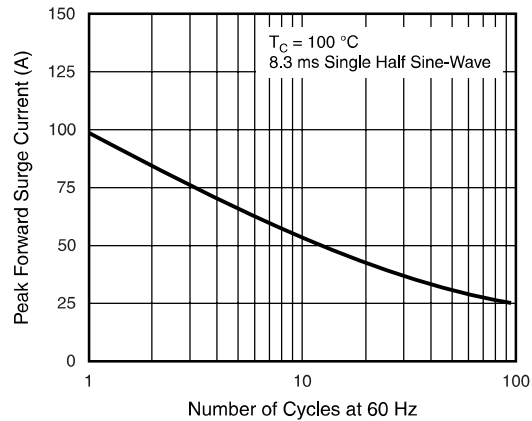


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

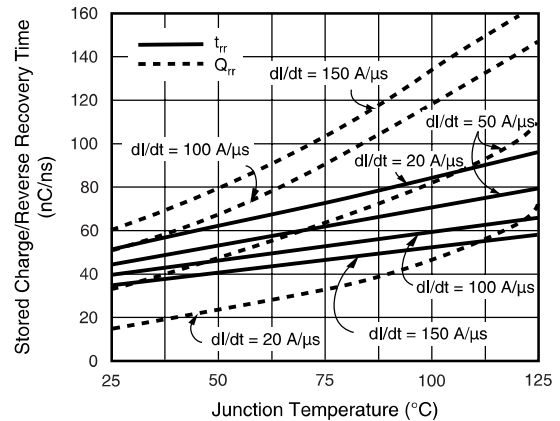


Figure 5. Reverse Switching Characteristics Per Leg

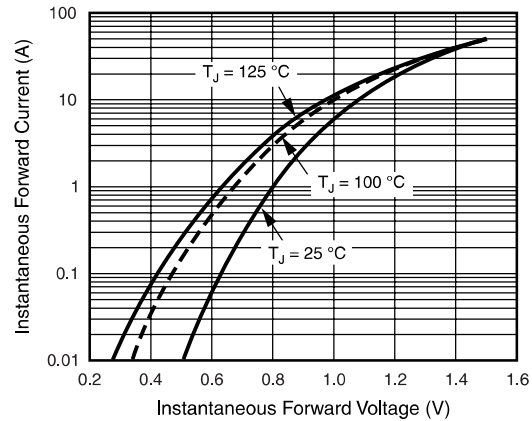


Figure 3. Typical Instantaneous Forward Characteristics

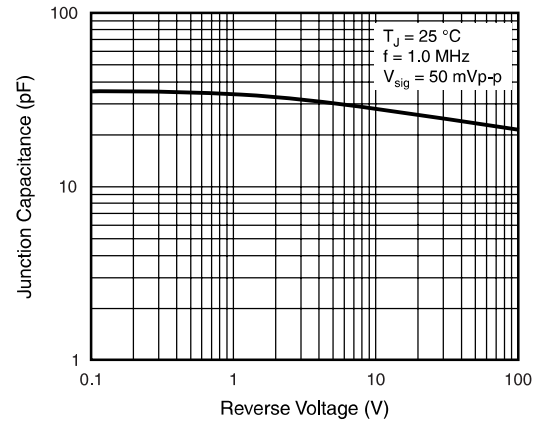


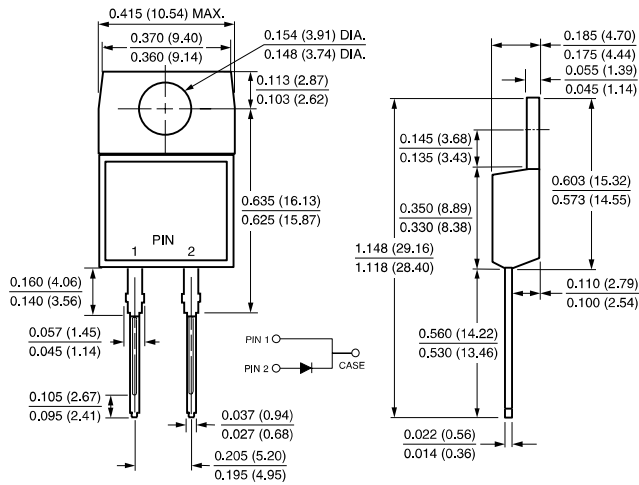
Figure 6. Typical Junction Capacitance

Vishay General Semiconductor

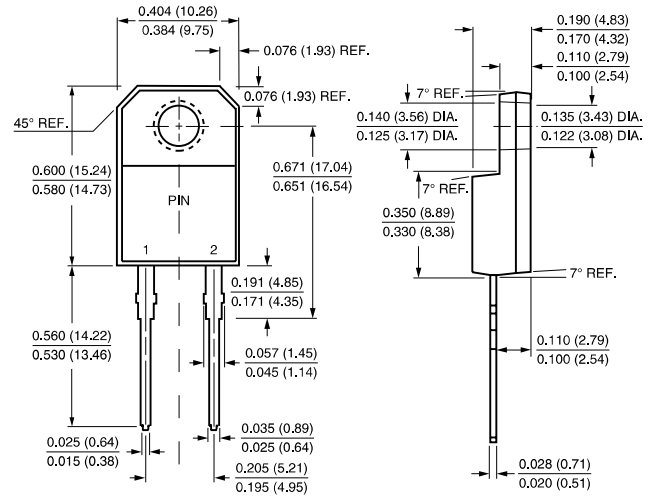


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

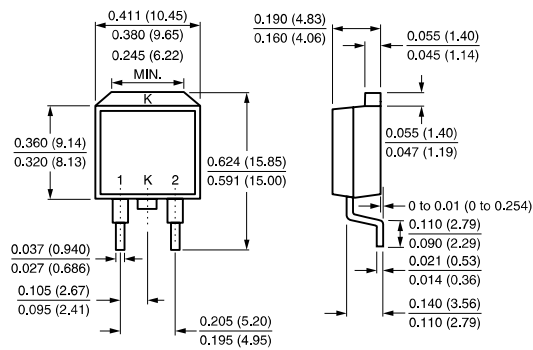
TO-220AC



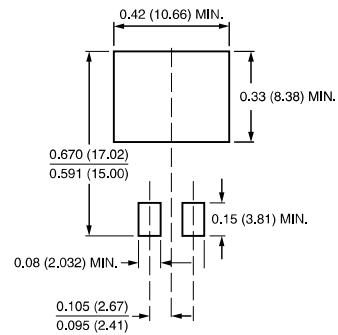
ITO-220AC



TO-263AB



Mounting Pad Layout





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