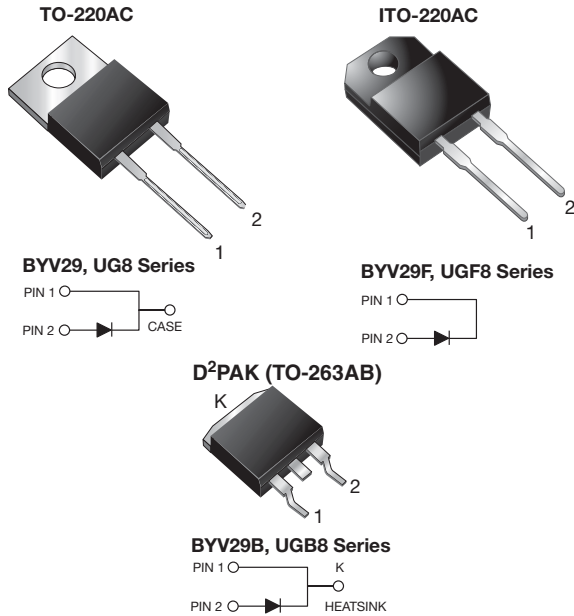




Ultrafast Rectifier



FEATURES

- Power pack
- Glass passivated pellet 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 275 °C max. 10 s, per JESD 22-B106 (for TO-220AC and ITO-220AC package)
- AEC-Q101 qualified (for ITO-220AC and TO-263AB package)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS COMPLIANT

TYPICAL APPLICATIONS

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

DESIGN SUPPORT TOOLS

[click logo to get started](#)



| PRIMARY CHARACTERISTICS | |
|-------------------------|---------------------------------------|
| $I_{F(AV)}$ | 8.0 A |
| V_{RRM} | 300 V to 400 V |
| I_{FSM} | 110 A |
| t_{rr} | 35 ns |
| V_F | 1.03 V |
| T_J max. | 150 °C |
| Package | TO-220AC, ITO-220AC, D2PAK (TO-263AB) |
| Circuit configurations | Single |

MECHANICAL DATA

Case: TO-220AC, ITO-220AC, D²PAK (TO-263AB)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs max.

| MAXIMUM RATINGS ($T_C = 25\text{ °C}$ unless otherwise noted) | | | | |
|--|----------------|-------------|-----------|------|
| PARAMETER | SYMBOL | BYV29-300 | BYV29-400 | UNIT |
| | | UG8FT | UG8GT | |
| 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 | $I_F = 8\text{ A}$ | $T_J = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 1.25 | | V |
| | | $T_J = 150\text{ }^\circ\text{C}$ | | 1.03 | | |
| | $I_F = 20\text{ A}$ | $T_J = 25\text{ }^\circ\text{C}$ | | 1.40 | | |
| Maximum DC reverse current at V_{RRM} | | | I_R | 10 | | μA |
| | | | | $T_C = 100\text{ }^\circ\text{C}$ | | |
| 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 | $I_F = 1.0\text{ A}, dI/dt = 100\text{ A}/\mu\text{s}, V_R = 30\text{ V}, I_{rr} = 0.1 I_{RM}$ | | 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 | $I_F = 2\text{ A}, dI/dt = 20\text{ A}/\mu\text{s}, V_R = 30\text{ V}, I_{rr} = 0.1 I_{RM}$ | | 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 and reel |
| 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 and reel |

Note⁽¹⁾ AEC-Q101 qualified, available in ITO-220AC and TO-263AB package



RATINGS AND CHARACTERISTICS CURVES (T_C = 25 °C unless otherwise noted)

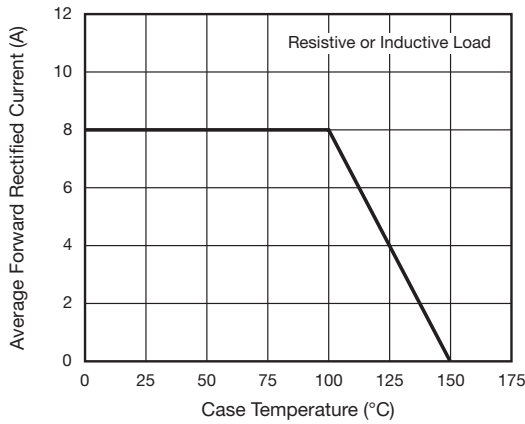


Fig. 1 - Maximum Forward Current Derating Curve

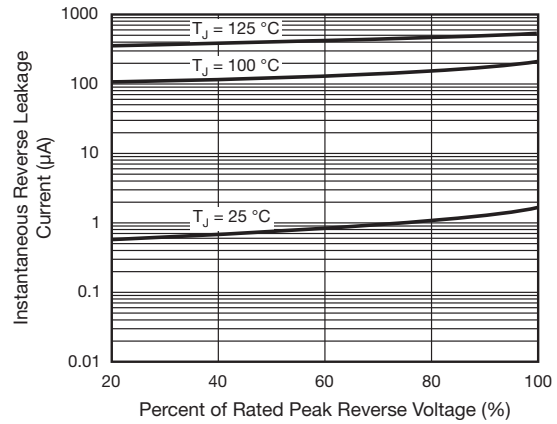


Fig. 4 - Typical Reverse Leakage Characteristics

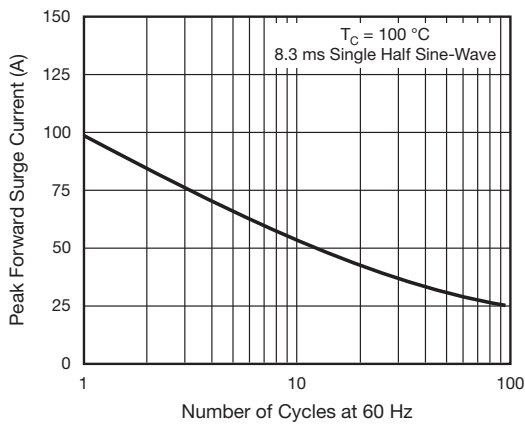


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

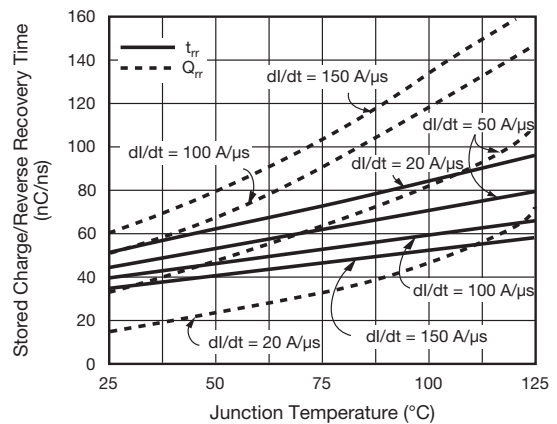


Fig. 5 - Reverse Switching Characteristics Per Leg

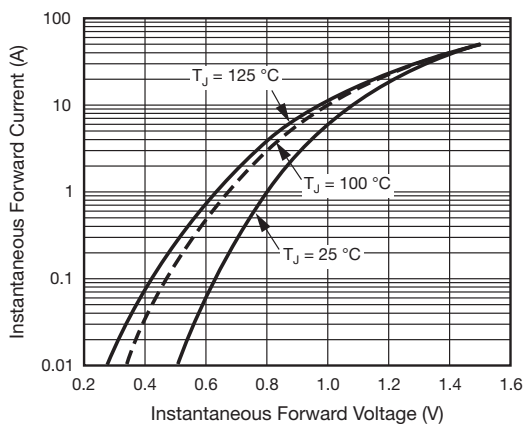


Fig. 3 - Typical Instantaneous Forward Characteristics

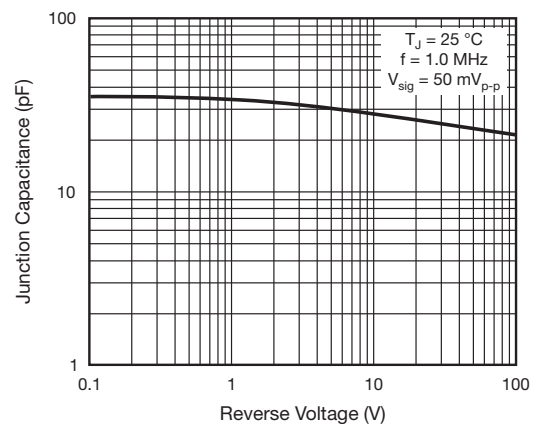
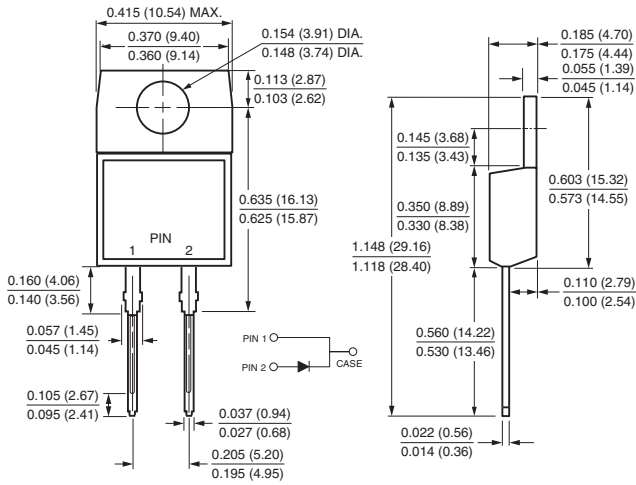


Fig. 6 - Typical Junction Capacitance

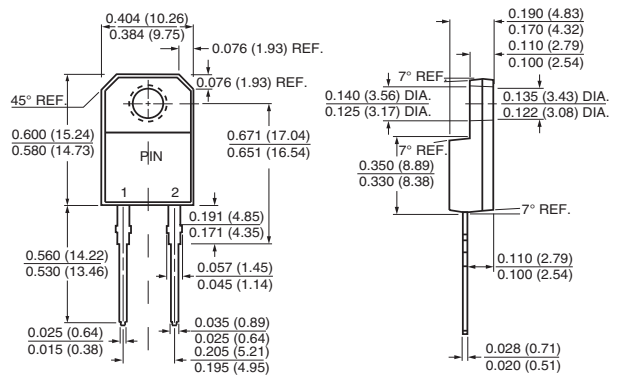


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

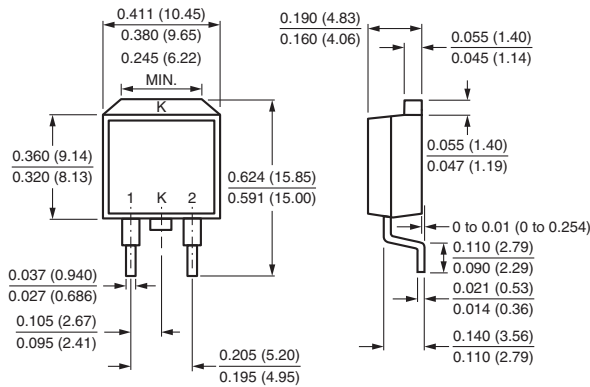
TO-220AC



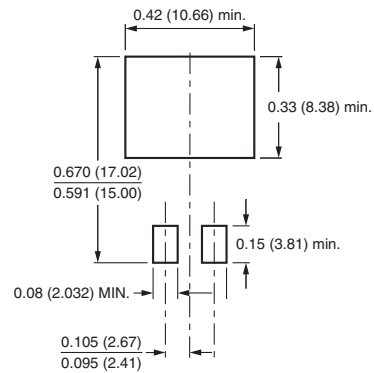
ITO-220AC



D²PAK (TO-263AB)



Mounting Pad Layout





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