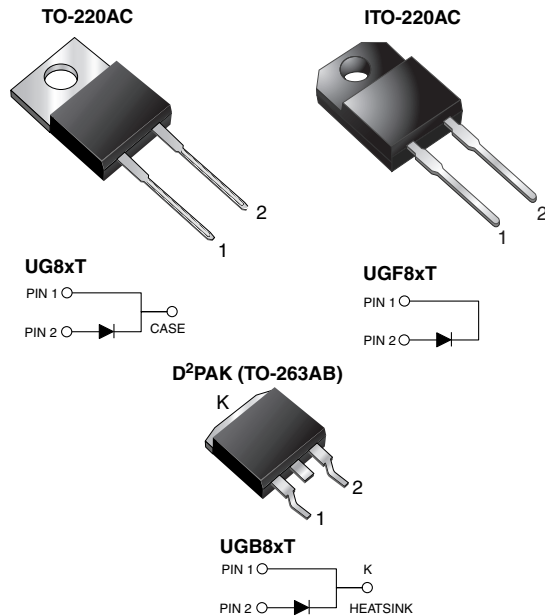




Ultrafast Rectifier



RoHS
COMPLIANT

FEATURES

- Power pack
- Glass passivated pellet chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- 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 available
 - Automotive ordering code: base P/NHE3 (for ITO-220AC and D²PAK (TO-263AB) package)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

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

LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS | |
|-------------------------|--|
| $I_{F(AV)}$ | 8.0 A |
| V_{RRM} | 50 V to 200 V |
| I_{FSM} | 150 A |
| t_{rr} | 20 ns |
| V_F at I_F | 0.95 V |
| T_J max. | 150 °C |
| Package | TO-220AC, ITO-220AC, D ² PAK (TO-263AB) |
| Circuit configuration | Single |

MECHANICAL DATA

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

Molding compound meets UL 94V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
Base P/NHE3_X - RoHS-compliant and AEC-Q101 qualified ("X" denotes revision code e.g. A, B,...)

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD22-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 ($T_C = 25$ °C unless otherwise noted) | | | | | | |
|--|----------------|-------------|-------|-------|-------|------|
| PARAMETER | SYMBOL | UG8AT | UG8BT | UG8CT | UG8DT | UNIT |
| Max. repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 150 | 200 | V |
| Max. RMS voltage | V_{RMS} | 35 | 70 | 105 | 140 | V |
| Max. DC blocking voltage | V_{DC} | 50 | 100 | 150 | 200 | V |
| Max. average forward rectified current at $T_C = 100$ °C | $I_{F(AV)}$ | 8.0 | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 150 | | | | A |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +150 | | | | °C |
| Isolation voltage (ITO-220AC only) from terminals to heatsink $t = 1$ min | V_{AC} | 1500 | | | | V |



| ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | | | |
|---|--|-----------------------------------|-------------|-----------------------------------|-------|-------|-------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | UG8AT | UG8BT | UG8CT | UG8DT | UNIT |
| Max. instantaneous forward voltage | 8.0 A | $T_J = 150\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 1.0 | | | V | |
| | 20.0 A | | | 1.2 | | | | |
| | 5.0 A | | | 0.95 | | | | |
| Max. DC reverse current at rated DC blocking voltage | | | I_R | $T_J = 25\text{ }^\circ\text{C}$ | | | 10 | μA |
| | | | | $T_J = 100\text{ }^\circ\text{C}$ | | | 300 | |
| Max. reverse recovery time | $I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$ | | t_{rr} | 20 | | | ns | |
| Max. reverse recovery time | $I_F = 8.0\text{ A}, V_R = 30\text{ V},$ $dI/dt = 50\text{ A}/\mu\text{s},$ $I_{rr} = 10\% I_{RM}$ | $T_J = 25\text{ }^\circ\text{C}$ | t_{rr} | 30 | | | ns | |
| | | $T_J = 100\text{ }^\circ\text{C}$ | | 50 | | | | |
| Max. recovered stored charged | $I_F = 8.0\text{ A}, V_R = 30\text{ V},$ $dI/dt = 50\text{ A}/\mu\text{s}$ | $T_J = 25\text{ }^\circ\text{C}$ | Q_{rr} | 20 | | | nC | |
| | | $T_J = 100\text{ }^\circ\text{C}$ | | 45 | | | | |
| 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 ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | |
|--|-----------------------|-------|--------|--------|---------------------------|
| PARAMETER | SYMBOL | UG8xT | UGF8xT | UGB8xT | UNIT |
| Typical thermal resistance from junction to case | $R_{\theta JC}^{(1)}$ | 4.0 | 5.0 | 4.0 | $^\circ\text{C}/\text{W}$ |

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AC | UG8DT-E3/45 | 1.80 | 45 | 50/tube | Tube |
| ITO-220AC | UGF8DT-E3/45 | 1.95 | 45 | 50/tube | Tube |
| D ² PAK (TO-263AB) | UGB8DT-E3/45 | 1.33 | 45 | 50/tube | Tube |
| D ² PAK (TO-263AB) | UGB8DT-E3/81 | 1.33 | 81 | 800/reel | Tape and reel |
| ITO-220AC | UGF8DTHE3_A/P ⁽¹⁾ | 1.95 | P | 50/tube | Tube |
| D ² PAK (TO-263AB) | UGB8DTHE3_A/P ⁽¹⁾ | 1.33 | P | 50/tube | Tube |
| D ² PAK (TO-263AB) | UGB8DTHE3_A/I ⁽¹⁾ | 1.33 | I | 800/reel | Tape and reel |

Note(1) AEC-Q101 qualified, available in ITO-220AC and D²PAK (TO-263AB) package



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

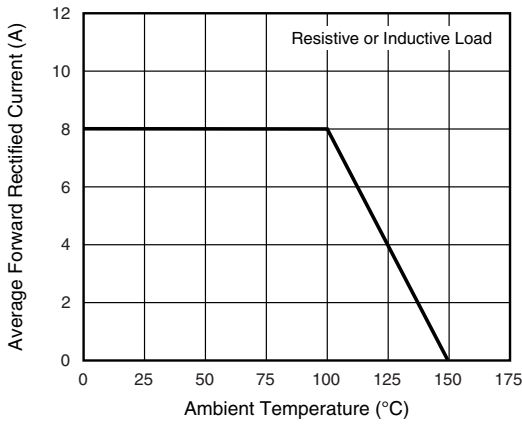


Fig. 1 - Max. Forward Current Derating Curve

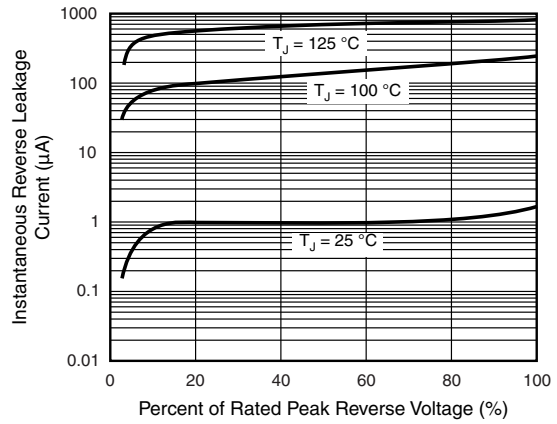


Fig. 4 - Typical Reverse Characteristics

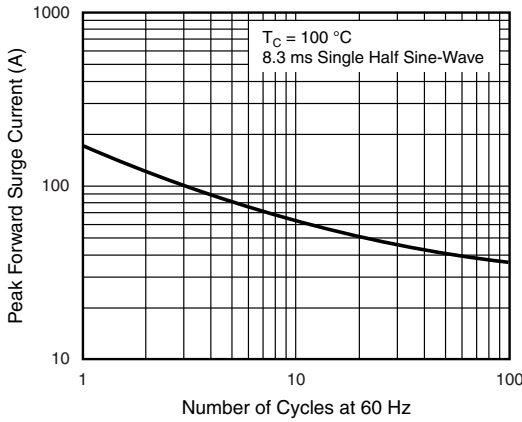


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current

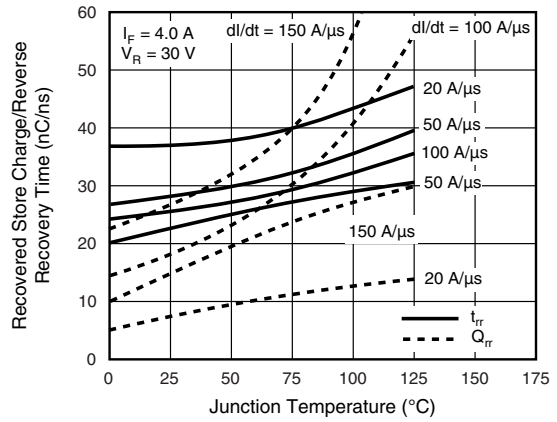


Fig. 5 - Reverse Switching Characteristics

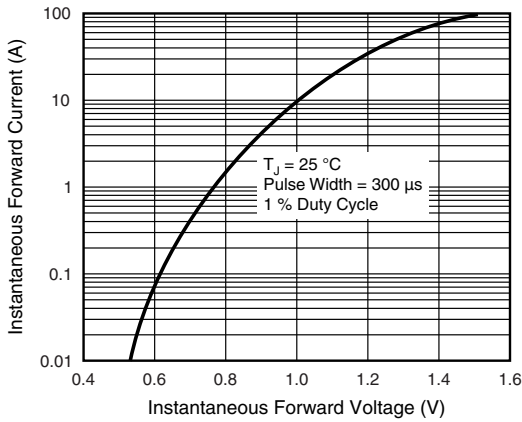


Fig. 3 - Typical Instantaneous Forward Characteristics

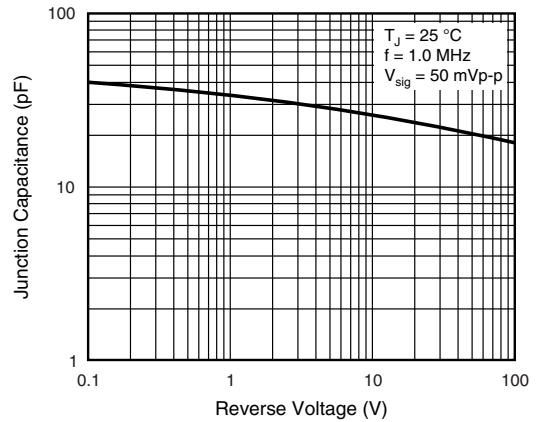
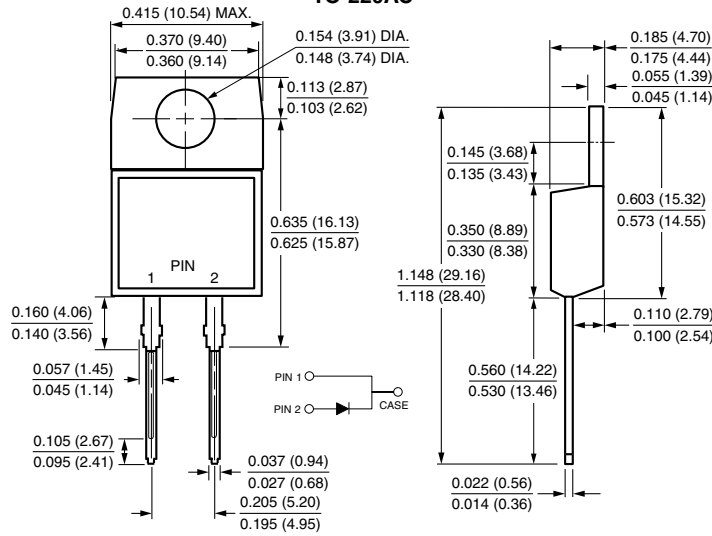


Fig. 6 - Typical Junction Capacitance

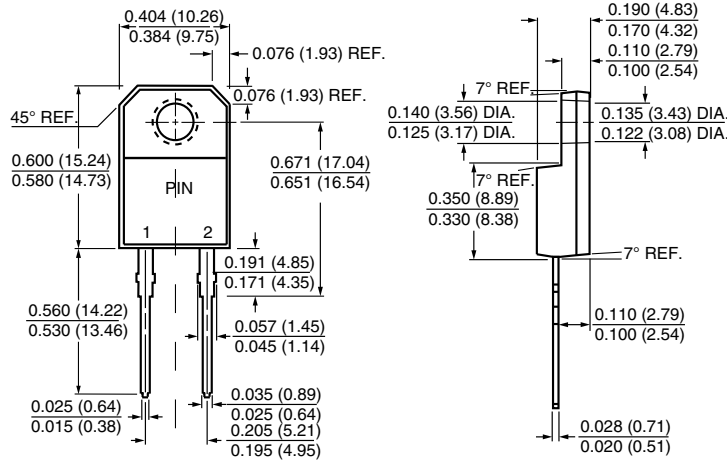


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

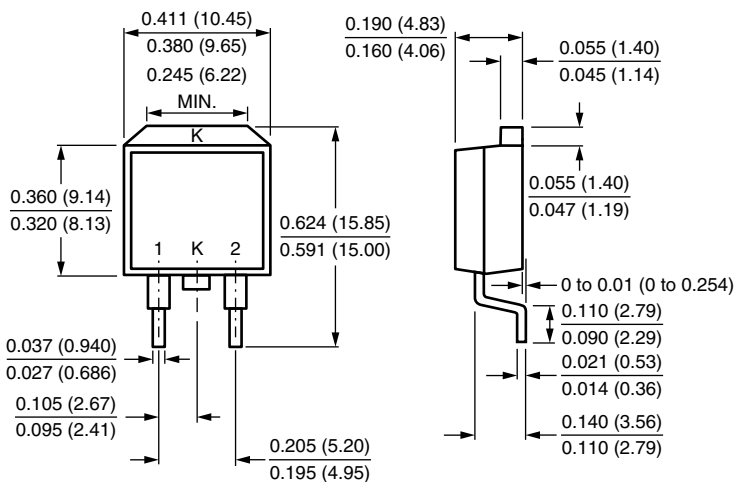
TO-220AC



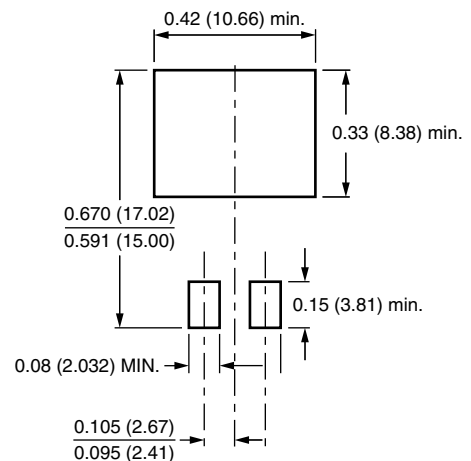
ITO-220AC



D²PAK (TO-263AB)



Mounting Pad Layout





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