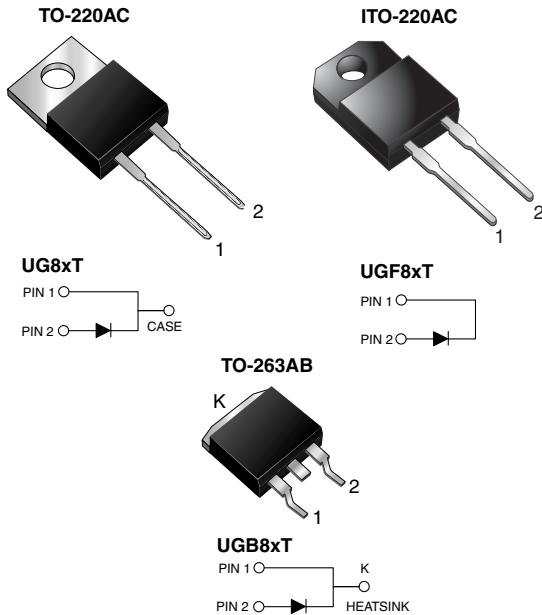


Ultrafast Rectifier



FEATURES

- Glass passivated 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 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.

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

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 | 0.95 V |
| $T_J \text{ max.}$ | 150 °C |

MAXIMUM RATINGS ($T_C = 25 \text{ °C}$ unless otherwise noted)

| PARAMETER | SYMBOL | UG8AT | UG8BT | UG8CT | UG8DT | 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 $T_C = 100 \text{ °C}$ | $I_{F(AV)}$ | 8.0 | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 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 $t = 1 \text{ min}$ | V_{AC} | 1500 | | | | V |

UG(F,B)8AT thru UG(F,B)8DT

Vishay General Semiconductor



| ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | | | |
|---|---|---|----------|-------|--------------------|-------|-------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | UG8AT | UG8BT | UG8CT | UG8DT | UNIT |
| Maximum instantaneous forward voltage ⁽¹⁾ | 8.0 A 20.0 A 5.0 A | $T_J = 150\text{ }^\circ\text{C}$ | V_F | | 1.0 1.2 0.95 | | | V |
| Maximum DC reverse current at rated DC blocking voltage | | $T_J = 25\text{ }^\circ\text{C}$ $T_J = 100\text{ }^\circ\text{C}$ | I_R | | 10 300 | | | 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} | | 20 | | | ns |
| Maximum reverse recovery time | $I_F = 8.0\text{ A}$, $V_R = 30\text{ V}$, $dI/dt = 50\text{ A}/\mu\text{s}$, $I_{rr} = 10\% I_{RM}$ | $T_J = 25\text{ }^\circ\text{C}$ $T_J = 100\text{ }^\circ\text{C}$ | t_{rr} | | 30 50 | | | ns |
| Maximum recovered stored charged | $I_F = 8.0\text{ A}$, $V_R = 30\text{ V}$, $dI/dt = 50\text{ A}/\mu\text{s}$ | $T_J = 25\text{ }^\circ\text{C}$ $T_J = 100\text{ }^\circ\text{C}$ | Q_{rr} | | 20 45 | | | nC |
| Typical junction capacitance | 4.0 V, 1 MHz | | C_J | | 45 | | | pF |

| THERMAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | |
|--|-----------------|-------|--------|--------|---------------------------|
| PARAMETER | SYMBOL | UG8AT | UGF8AT | UGB8AT | UNIT |
| Typical thermal resistance from junction to case | $R_{\theta JC}$ | 4.0 | 5.0 | 4.0 | $^\circ\text{C}/\text{W}$ |

Note:

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

| 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 |
| TO-263AB | UGB8DT-E3/45 | 1.33 | 45 | 50/tube | Tube |
| TO-263AB | UGB8DT-E3/81 | 1.33 | 81 | 800/reel | Tape reel |
| TO-220AC | UG8DTHE3/45 ⁽¹⁾ | 1.80 | 45 | 50/tube | Tube |
| ITO-220AC | UGF8DTHE3/45 ⁽¹⁾ | 1.95 | 45 | 50/tube | Tube |
| TO-263AB | UGB8DTHE3/45 ⁽¹⁾ | 1.33 | 45 | 50/tube | Tube |
| TO-263AB | UGB8DTHE3/81 ⁽¹⁾ | 1.33 | 81 | 800/reel | Tape reel |

Note:

(1) Automotive grade AEC Q101 qualified



RATINGS AND CHARACTERISTICS CURVES

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

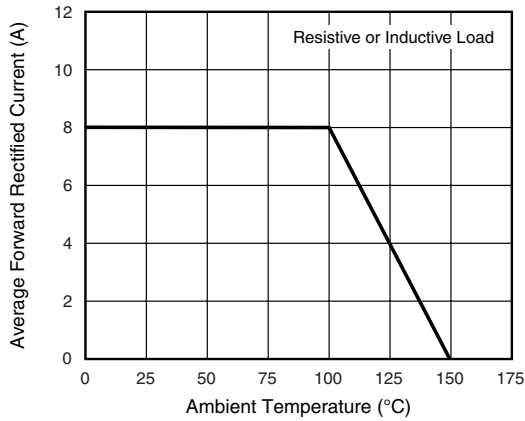


Figure 1. Maximum Forward Current Derating Curve

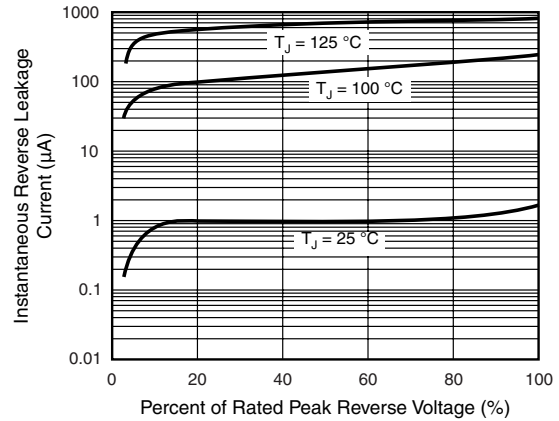


Figure 4. Typical Reverse Characteristics

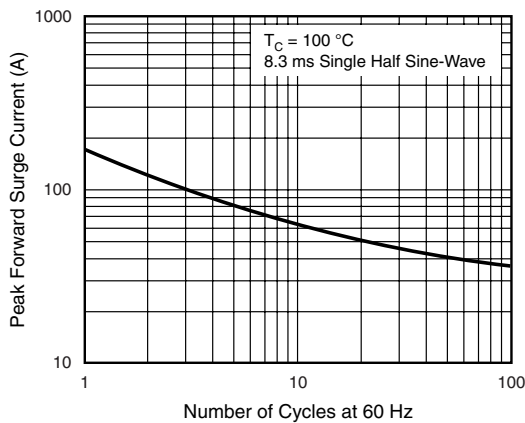


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

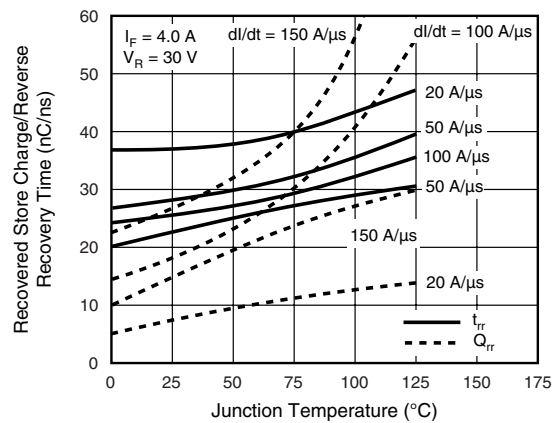


Figure 5. Reverse Switching Characteristics

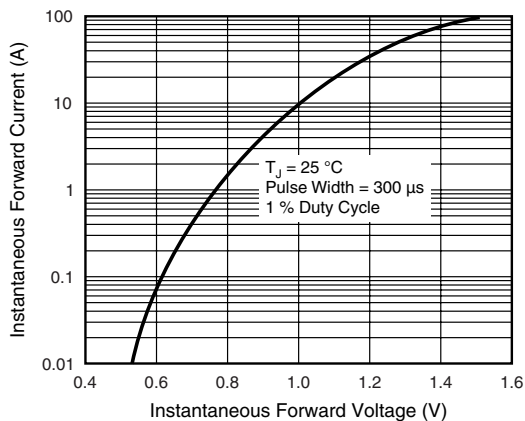


Figure 3. Typical Instantaneous Forward Characteristics

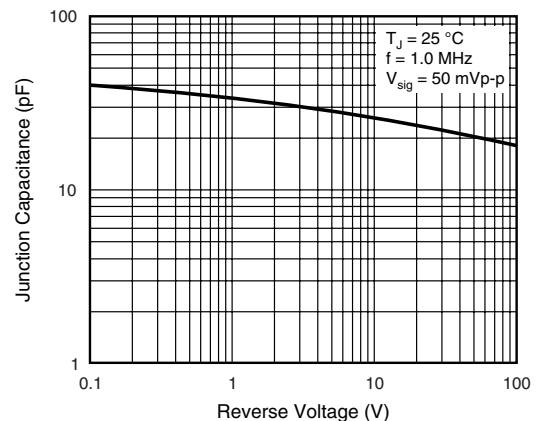


Figure 6. Typical Junction Capacitance

UG(F,B)8AT thru UG(F,B)8DT

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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