

Dual Common-Cathode Ultrafast Plastic Rectifier



TO-220AB

UGE18XCT Series



FEATURES

- Glass passivated chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- Low leakage current
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- 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.

MECHANICAL DATA

Case: TO-220AB

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

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

E3 suffix meets JESD 201 class 1A whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS

| | |
|--------------------|---------------|
| $I_{F(AV)}$ | 18 A |
| V_{RRM} | 50 V to 200 V |
| I_{FSM} | 175 A |
| t_{rr} | 20 ns |
| V_F | 0.95 V |
| $T_J \text{ max.}$ | 150 °C |

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

| PARAMETER | SYMBOL | UGE18ACT | UGE18BCT | UGE18CCT | UGE18DCT | 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 $T_C = 105\text{ °C}$ | $I_{F(AV)}$ | 18 | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 175 | | | | A |
| Operating and storage temperature range | T_J, T_{STG} | - 65 to + 150 | | | | °C |



| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | | |
|--|--|-------------------------|-------------------------------|----------|----------|----------|----------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | UGE18ACT | UGE18BCT | UGE18CCT | UGE18DCT | UNIT |
| Maximum instantaneous forward voltage per diode | 9.0 A | T _A = 25 °C | V _F ⁽¹⁾ | 1.1 | | | | V |
| | 20.0 A | | | 1.2 | | | | |
| | 5.0 A | T _J = 100 °C | | 0.95 | | | | |
| Maximum DC reverse current at rated DC blocking voltage per diode | | | I _R ⁽²⁾ | 10 | | | | μA |
| | | | | 300 | | | | |
| Maximum reverse recovery time per diode | I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A | | t _{rr} | 20 | | | | ns |
| Typical reverse recovery time per diode | I _F = 9.0 A, V _R = 30 V, dI/dt = 50 A/μs, I _{rr} = 10 % I _{RM} | T _J = 25 °C | t _{rr} | 30 | | | | ns |
| | | T _J = 100 °C | | 50 | | | | |
| Typical stored charge per diode | I _F = 9.0 A, V _R = 30 V, dI/dt = 50 A/μs, I _{rr} = 10 % I _{RM} | T _J = 25 °C | Q _{rr} | 20 | | | | nC |
| | | T _J = 100 °C | | 45 | | | | |
| Typical junction capacitance per diode | 4.0 V, 1 MHz | | C _J | 30 | | | | pF |

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
 (2) Pulse test: Pulse width $\leq 40\text{ ms}$

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | |
|---|------------|---------------------------------|----------|----------|----------|----------|------|
| PARAMETER | | SYMBOL | UGE18ACT | UGE18BCT | UGE18CCT | UGE18DCT | UNIT |
| Typical thermal resistance | per diode | R _{θJC} | 4.0 | | | | °C/W |
| | per device | R _{θJA} ⁽¹⁾ | 50 | | | | |

Note

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB | UGE18DCT-E3/45 | 1.92 | 45 | 50/tube | Tube |

RATINGS AND CHARACTERISTICS CURVES

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

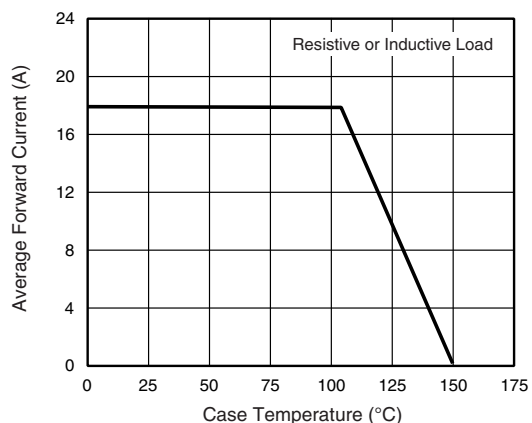


Fig. 1 - Forward Current Derating Curve

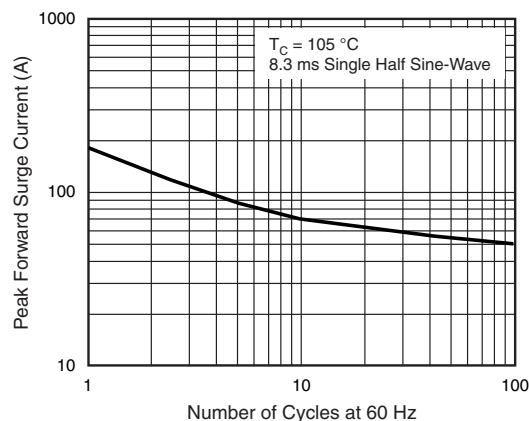


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

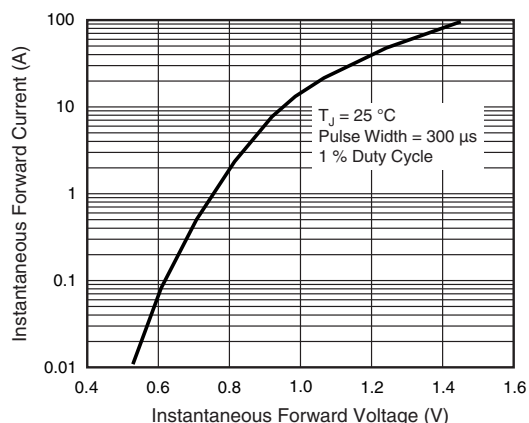


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

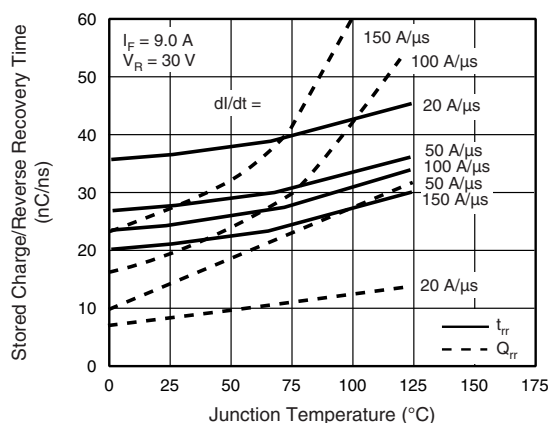


Fig. 5 - Reverse Switching Characteristics Per Diode

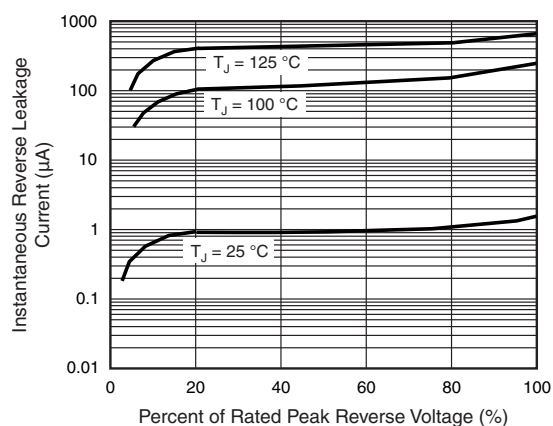


Fig. 4 - Typical Reverse Characteristics Per Diode

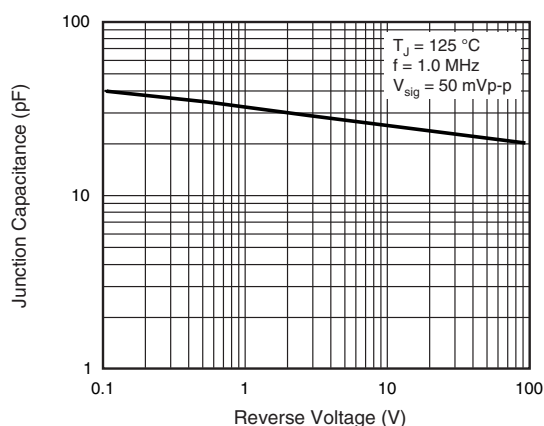
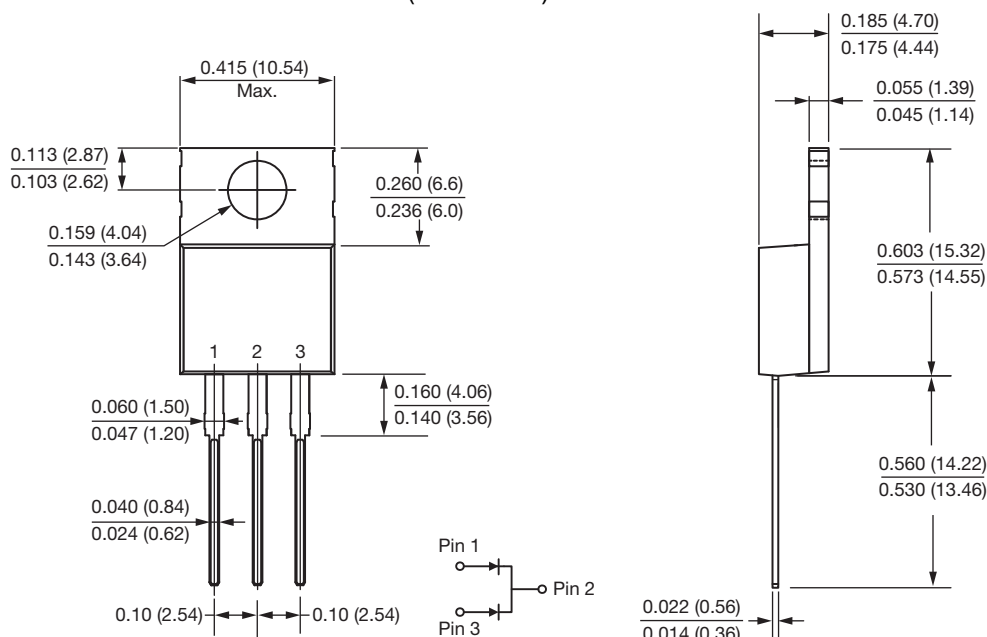


Fig. 6 - Typical Junction Capacitance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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