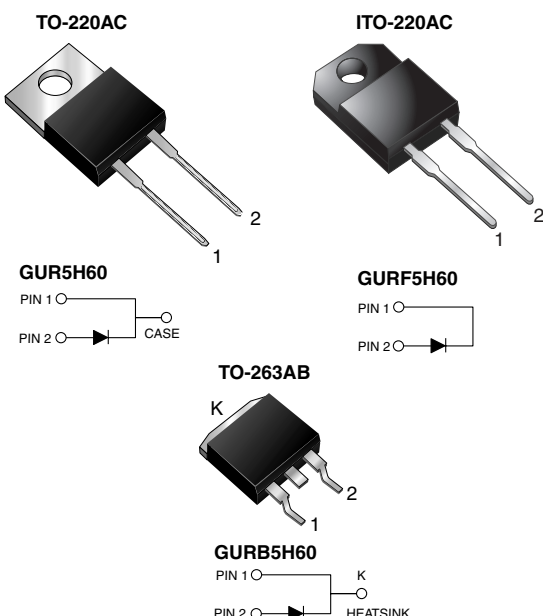


Ultrafast Rectifier



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 voltage and high frequency power factor corrector, freewheeling diodes and secondary dc-to-dc rectification 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

| | |
|-------------|--------|
| $I_{F(AV)}$ | 5.0 A |
| V_{RRM} | 600 V |
| I_{FSM} | 90 A |
| t_{rr} | 30 ns |
| V_F | 1.6 V |
| T_J max. | 150 °C |

MAXIMUM RATINGS ($T_C = 25$ °C unless otherwise noted)

| PARAMETER | SYMBOL | VALUE | UNIT |
|--|----------------|---------------|------|
| Maximum repetitive peak reverse voltage | V_{RRM} | 600 | V |
| Maximum working reverse voltage | V_{RWM} | 480 | V |
| Maximum RMS voltage | V_{RMS} | 420 | V |
| Maximum DC blocking voltage | V_{DC} | 600 | V |
| Maximum average forward rectified current | $I_{F(AV)}$ | 5 | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 90 | A |
| Reverse energy | E_R | 10 | mJ |
| Operating junction and storage temperature range | T_J, T_{STG} | - 55 to + 150 | °C |
| Isolation voltage (ITO-220AC only) from terminal 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 | VALUE | UNIT |
| Maximum instantaneous forward voltage ⁽¹⁾ | $I_F = 5\text{ A}$ | $T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 150\text{ }^{\circ}\text{C}$ | V_F | 1.8 1.6 | V |
| Maximum DC reverse current | V_{RWM} | $T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 150\text{ }^{\circ}\text{C}$ | I_R | 20 400 | 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} | 30 | ns |

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 | GUR | GURF | GURB | UNIT |
| Typical thermal resistance from junction to case | $R_{\theta JC}$ | 2.0 | 3.0 | 2.0 | $^{\circ}\text{C/W}$ |

| ORDERING INFORMATION (Example) | | | | | |
|---------------------------------------|-------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AC | GUR5H60-E3/45 | 1.80 | 45 | 50/tube | Tube |
| ITO-220AC | GURF5H60-E3/45 | 1.95 | 45 | 50/tube | Tube |
| TO-263AB | GURB5H60-E3/45 | 1.33 | 45 | 50/tube | Tube |
| TO-263AB | GURB5H60-E3/81 | 1.33 | 81 | 800/reel | Tape and reel |
| TO-220AC | GUR5H60HE3/45 ⁽¹⁾ | 1.80 | 45 | 50/tube | Tube |
| ITO-220AC | GURF5H60HE3/45 ⁽¹⁾ | 1.95 | 45 | 50/tube | Tube |
| TO-263AB | GURB5H60HE3/45 ⁽¹⁾ | 1.33 | 45 | 50/tube | Tube |
| TO-263AB | GURB5H60HE3/81 ⁽¹⁾ | 1.33 | 81 | 800/reel | Tape and reel |

Note:

(1) Automotive grade AEC Q101 qualified



RATINGS AND CHARACTERISTICS CURVES

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

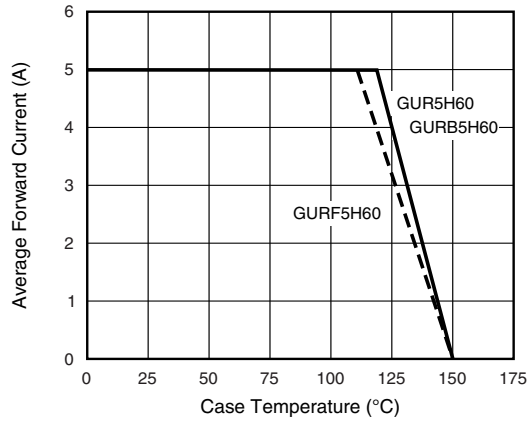


Figure 1. Forward Current Derating Curve

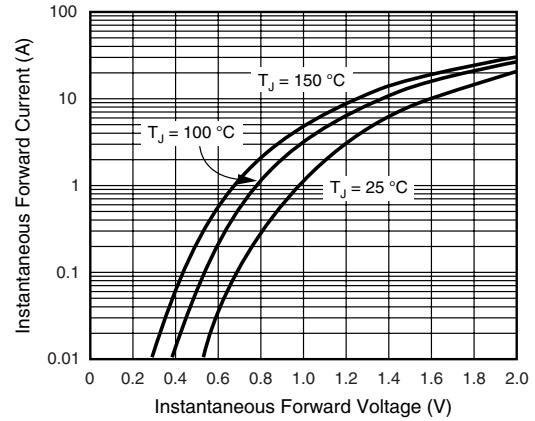


Figure 4. Typical Forward Voltage

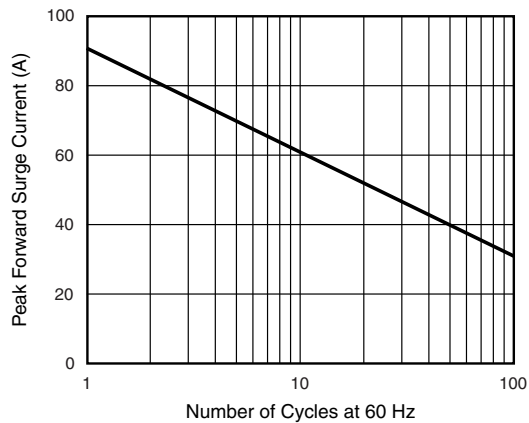


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

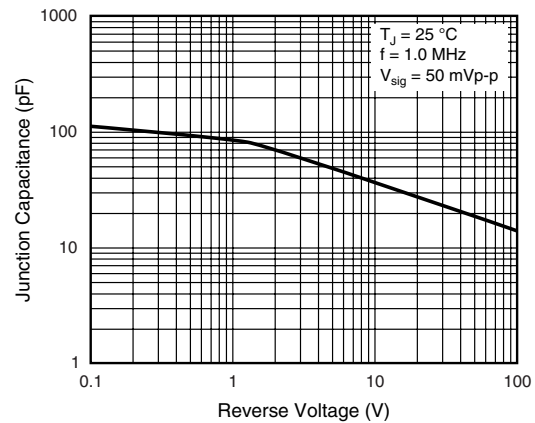


Figure 5. Typical Junction Capacitance

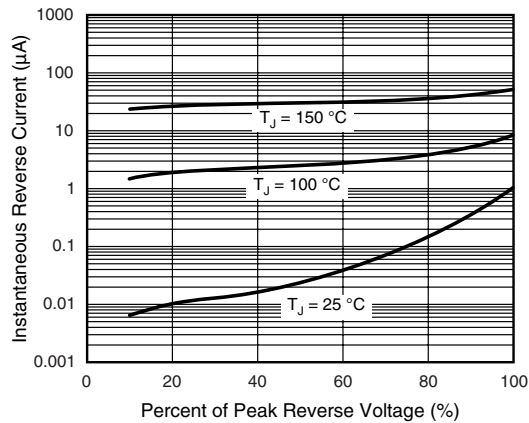
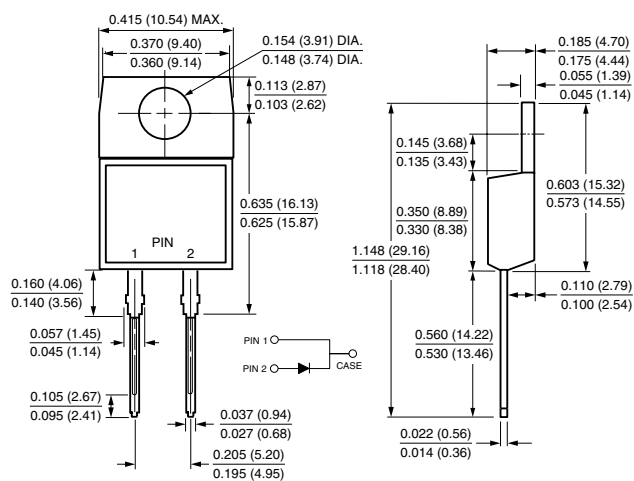


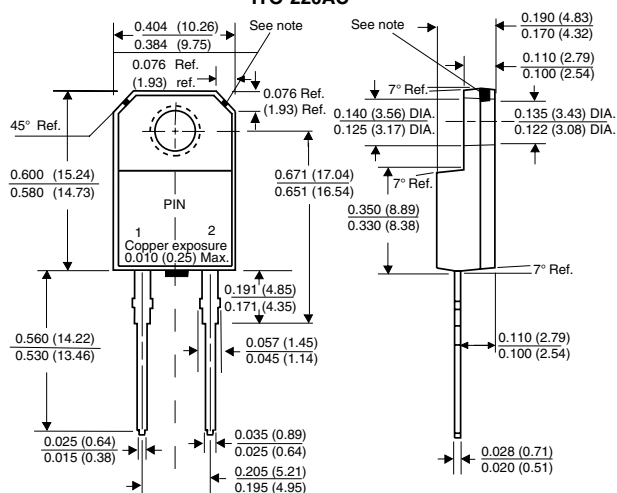
Figure 3. Typical Reverse Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AC

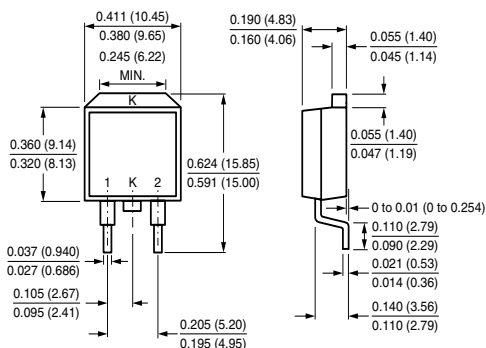


ITO-220AC

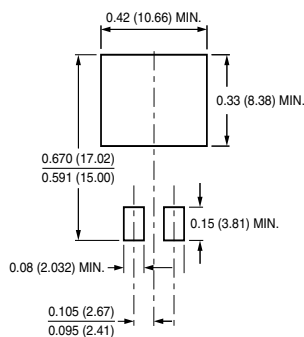


Note: Copper exposure is allowable for 0.005 (0.13) Max. from the body

TO-263AB



Mounting Pad Layout





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