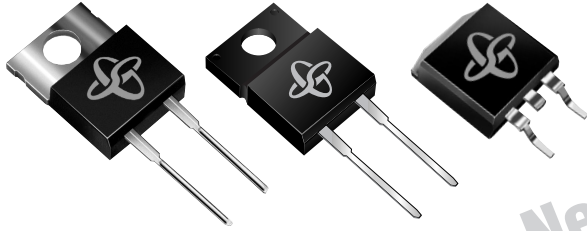


**GENERAL SEMICONDUCTOR® UG12JT, UGF12JT, UGB12JT Series**



**Ultrafast Rectifiers**

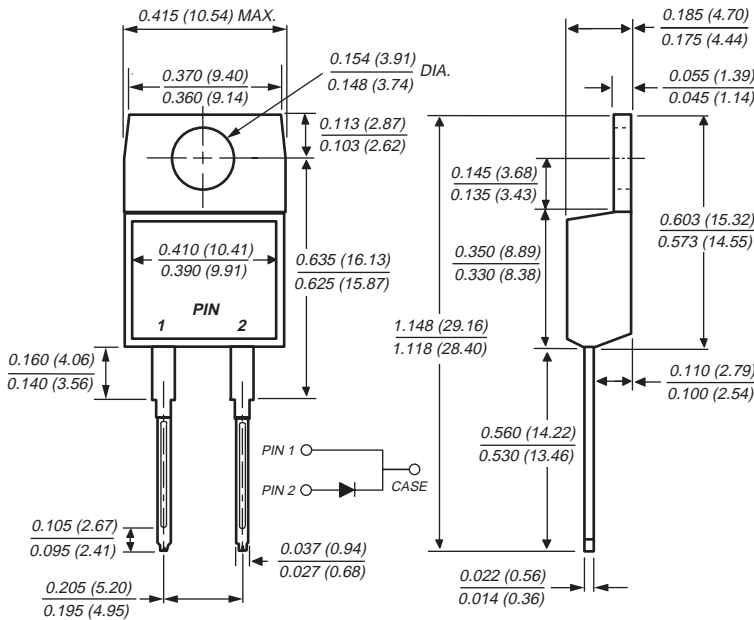
Reverse Voltage 500 to 600V

Forward Current 12A

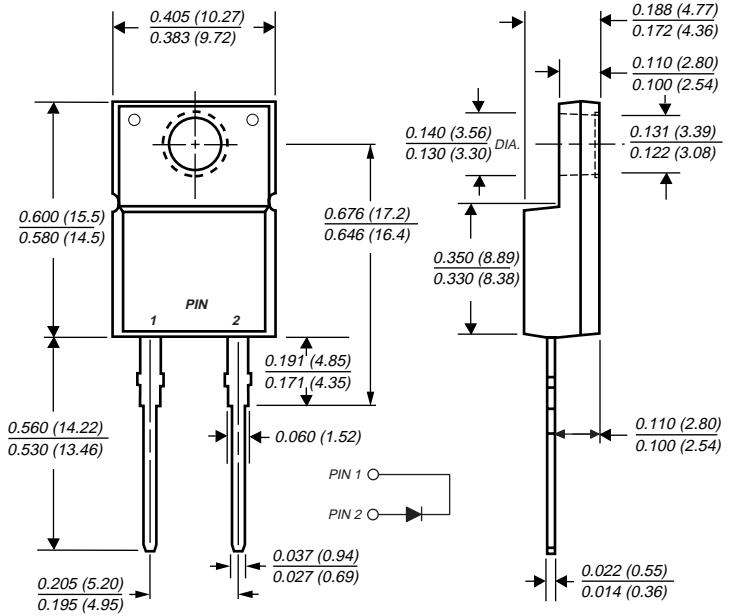
Reverse Recovery Time 30ns

*New Product*

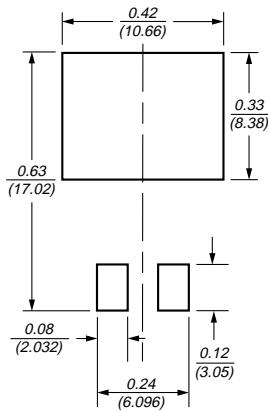
**TO-220AC (UG12 Series)**



**ITO-220AC (UGF12 Series)**

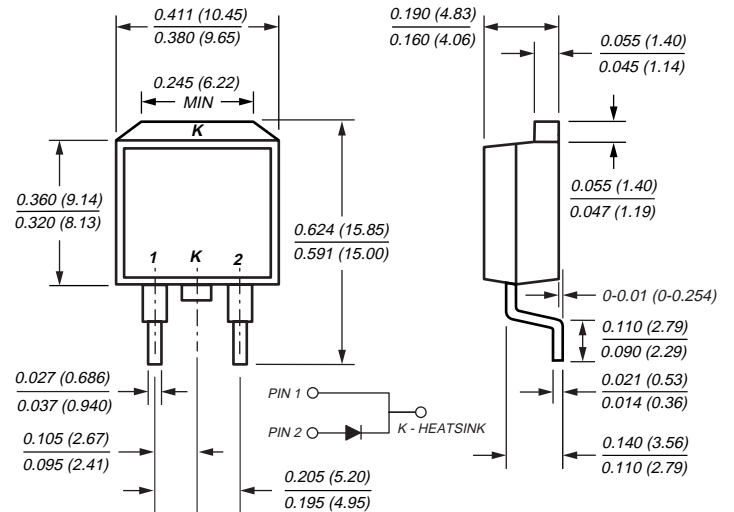


**Mounting Pad Layout TO-263AB**



Dimensions in inches and millimeters

**TO-263AB (UGB12 Series)**



**Mechanical Data**

**Case:** JEDEC TO-220AC, ITO-220AC & TO-263AB molded plastic body

**Terminals:** Plated leads, solderable per MIL-STD-750, Method 2026

High temperature soldering in accordance with CECC 802 / Reflow guaranteed

**Polarity:** As marked

**Mounting Position:** Any

**Mounting Torque:** 10 in-lbs maximum

**Weight:** 0.08oz., 2.24g

**Features**

- Plastic package has Underwriters Laboratories Flammability Classification 94V-0
- Ideally suited for freewheeling diode and power factor correction applications
- Soft recovery characteristics
- Excellent high temperature switching
- Optimized to reduce switching losses
- Glass passivated chip junction

## Ultrafast Rectifier

### Maximum Ratings (T<sub>C</sub> = 25°C unless otherwise noted)

| Parameter  | Symbol                            | UG12HT  | UG12JT | Unit |
|--|-----------------------------------|---|--------|------|
| Maximum repetitive peak reverse voltage  | V <sub>RRM</sub>                  | 500   | 600    | V    |
| Maximum working reverse voltage  | V <sub>RWM</sub>                  | 400   | 480    | V    |
| Maximum RMS voltage  | V <sub>RMS</sub>                  | 350   | 420    | V    |
| Maximum DC blocking voltage  | V <sub>DC</sub>                   | 500   | 600    | V    |
| Maximum average forward rectified current  | I <sub>F(AV)</sub>                | 12  |        | A    |
| Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) | I <sub>FSM</sub>                  | 135   |        | A    |
| Operating junction and storage temperature range   | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150   |        | °C   |
| RMS Isolation voltage (UGF types only) from terminals to heatsink with t = 1.0 second, RH ≤ 30%  | V <sub>ISOL</sub>                 | 4500 <sup>(1)</sup><br>3500 <sup>(2)</sup><br>1500 <sup>(3)</sup> |        | V    |

### Electrical Characteristics (T<sub>C</sub> = 25°C unless otherwise noted)

| Parameter  | Symbol          | UG12HT           | UG12JT | Unit           |
|--|-----------------|------------------|--------|----------------|
| Maximum instantaneous forward voltage <sup>(4)</sup><br>I <sub>F</sub> = 12A, T <sub>J</sub> = 25°C<br>I <sub>F</sub> = 12A, T <sub>J</sub> = 125°C              | V <sub>F</sub>  | 1.75<br>1.50     |        | V              |
| Maximum DC reverse current at V <sub>RWM</sub><br>T <sub>J</sub> = 25°C<br>T <sub>J</sub> = 100°C<br>T <sub>J</sub> = 125°C                                      | I <sub>R</sub>  | 30<br>800<br>4.0 |        | μA<br>μA<br>mA |
| Maximum reverse recovery time at<br>I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1.0A, I <sub>rr</sub> = 0.25A  | t <sub>rr</sub> | 30               |        | ns             |
| Maximum reverse recovery time at<br>I <sub>F</sub> = 1.0A, di/dt = 50A/μs, V <sub>R</sub> = 30V, I <sub>rr</sub> = 0.1 I <sub>RM</sub>                           | t <sub>rr</sub> | 50               |        | ns             |
| Typical softness factor (t <sub>b</sub> /t <sub>a</sub> )<br>I <sub>F</sub> = 12A, di/dt = 240A/μs, V <sub>R</sub> = 400V, I <sub>rr</sub> = 0.1 I <sub>RM</sub> | S               | 0.9              |        | —              |
| Maximum reverse recovery current at<br>I <sub>F</sub> = 12A, di/dt = 96A/μs, V <sub>R</sub> = 400V, T <sub>C</sub> = 125°C                                       | I <sub>RM</sub> | 7.5              |        | A              |
| Peak forward recovery time at<br>I <sub>F</sub> = 12A, di/dt = 96A/μs, V <sub>F</sub> = 1.1V   | t <sub>fr</sub> | 500              |        | ns             |

### Thermal Characteristics (T<sub>C</sub> = 25°C unless otherwise noted)

| Parameter  | Symbol           | UG12 | UGF12 | UGB12 | Unit |
|--|------------------|------|-------|-------|------|
| Typical thermal resistance from junction to case | R <sub>θJC</sub> | 1.73 | 3.04  | 1.73  | °C/W |

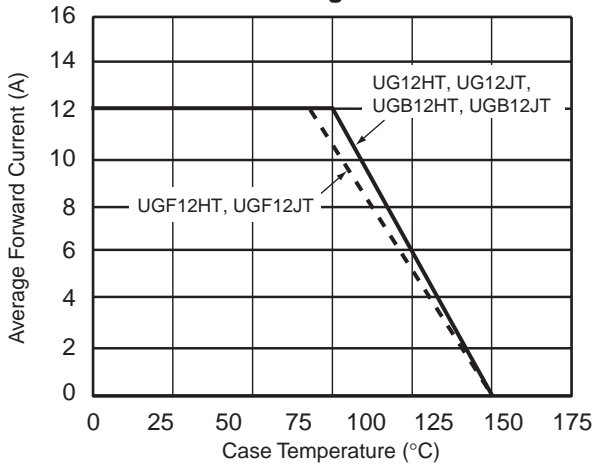
**Notes:** (1) Clip mounting (on case), where lead does not overlap heatsink with 0.110" offset  
(2) Clip mounting (on case), where leads do overlap heatsink  
(3) Screw mounting with 4-40 screw, where washer diameter is ≤ 4.9 mm (0.19")  
(4) Pulse test: 300μs pulse width, 1% duty cycle

### Ordering Information

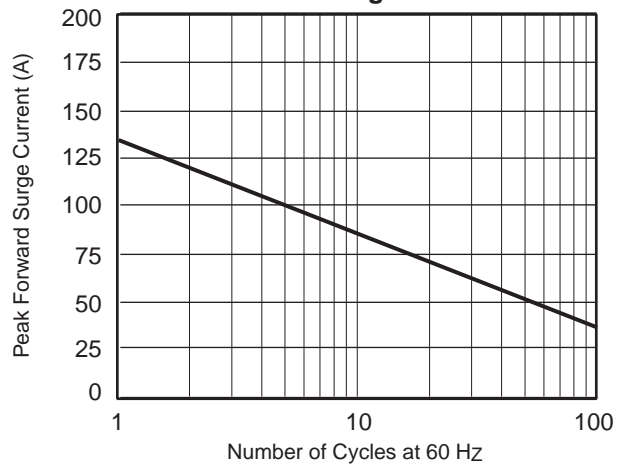
| Product           | Case      | Package Code | Package Option                              |
|-------------------|-----------|--------------|---|
| UG12HT & UG12JT   | TO-220AC  | 45           | Anti-Static tube, 50/tube, 2K/carton        |
| UGF12HT & UGF12JT | ITO-220AC | 45           | Anti-Static tube, 50/tube, 2K/carton        |
| UGB12HT & UGB12JT | TO-263AB  | 31           | 13" reel, 800/reel, 4.8K/carton             |
|                   |           | 45           | Anti-Static tube, 50/tube, 2K/carton        |
|                   |           | 81           | Anti-Static 13" reel, 800/reel, 4.8K/carton |

**Ratings and Characteristic Curves**

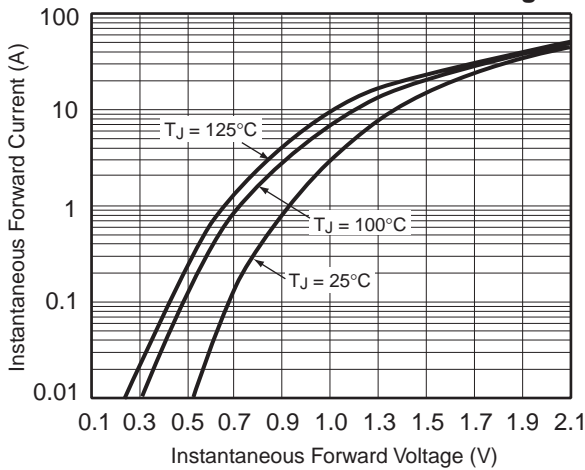
**Fig. 1 – Forward Current Derating Curve**



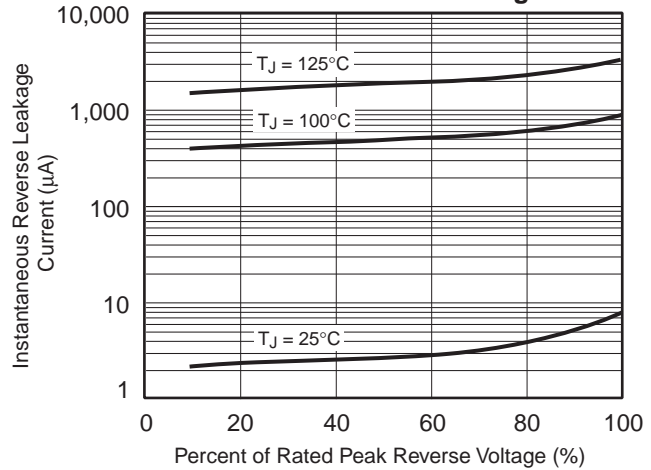
**Fig. 2 – Maximum Non-Repetitive Peak Forward Surge Current**



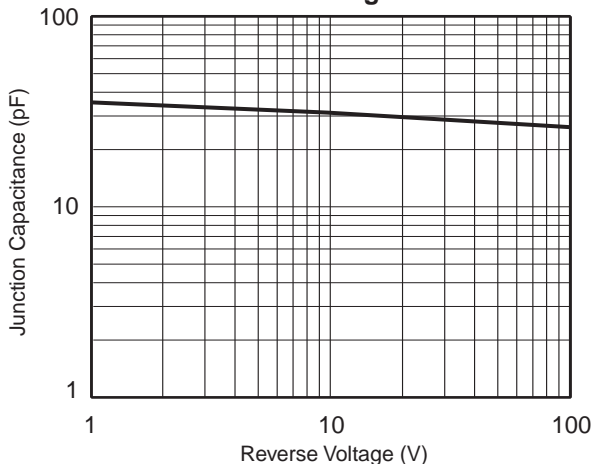
**Fig. 3 – Typical Instantaneous Forward Characteristics Per Leg**



**Fig. 4 – Typical Reverse Leakage Characteristics Per Leg**



**Fig. 5 – Typical Junction Capacitance Per Leg**



**Fig. 6 – Reverse Switching Characteristics Per Leg**

