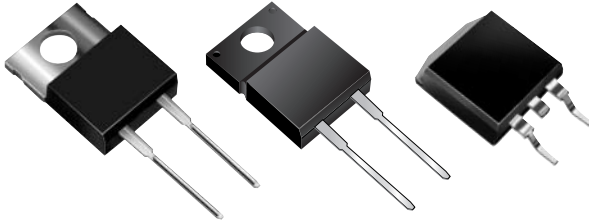


## Ultrafast Rectifiers

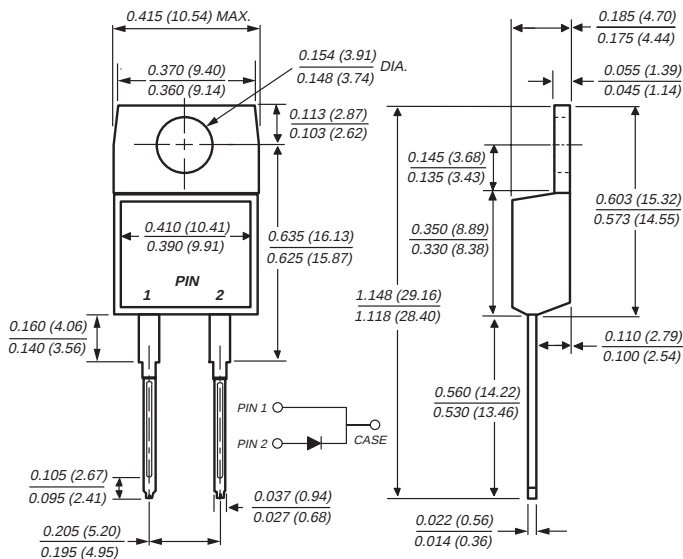
**Reverse Voltage** 500 to 600V

**Forward Current 5.0A**

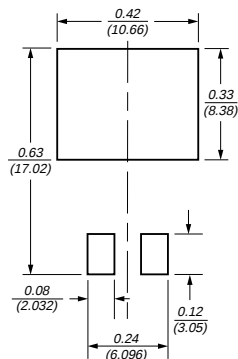
Reverse Recovery Time 25ns



## TO-220AC (UG5 Series)



### Mounting Pad Layout TO-263AB

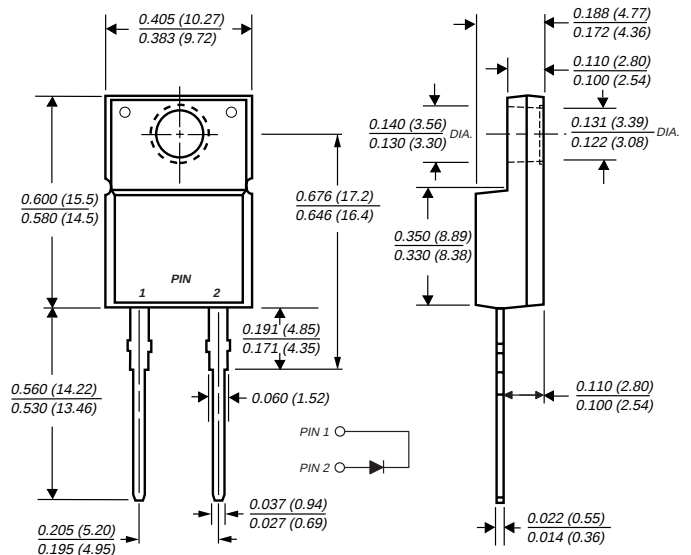


Dimensions in inches  
and (millimeters)

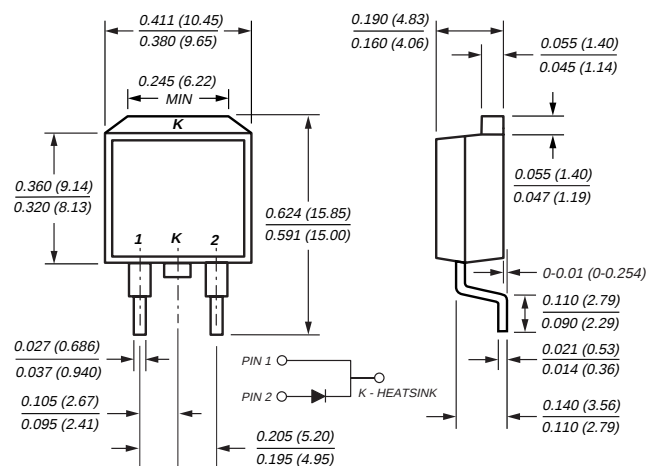
## Features

- 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

## ITO-220AC (UGF5 Series)



## TO-263AB (UGB5 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:** 0.08 oz., 2.24 g

# UG5JT, UGF5JT, UGB5JT Series

Vishay Semiconductors  
formerly General Semiconductor



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

| Parameter                                                                                                                  | Symbol                            | UG5HT                                                             | UG5JT | 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>                | 5.0                                                               |       | A    |
| Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) at T <sub>C</sub> = 100°C | I <sub>FSM</sub>                  | 65                                                                |       | 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)<br>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          | UG5HT            | UG5JT | Unit           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|-------|----------------|
| Maximum instantaneous forward voltage <sup>(4)</sup><br>I <sub>F</sub> = 5A, T <sub>J</sub> = 25°C<br>I <sub>F</sub> = 5A, 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> | 25               |       | 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> = 5.0A, 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> = 5.0A, di/dt = 40A/μs, V <sub>R</sub> = 400V, T <sub>C</sub> = 125°C                                       | I <sub>RM</sub> | 3.0              |       | A              |
| Maximum reverse recovery current at<br>I <sub>F</sub> = 5.0A, di/dt = 240A/μs, V <sub>R</sub> = 400V, T <sub>C</sub> = 125°C                                      | I <sub>RM</sub> | 9.0              |       | A              |
| Peak forward recovery time at<br>I <sub>F</sub> = 5.0A, di/dt = 64A/μs, V <sub>F</sub> = 1.1V <sub>F max</sub>                                                    | t <sub>fr</sub> | 500              |       | ns             |

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

| Parameter                                        | Symbol           | UG5 | UGF5 | UGB5 | Unit |
|--------------------------------------------------|------------------|-----|------|------|------|
| Typical thermal resistance from junction to case | R <sub>θJC</sub> | 3.0 | 5.5  | 3.0  | °C/W |

Notes: (1) Clip mounting (on case), where lead does not overlap heatsink with 0.110" offset  
(3) Screw mounting with 4-40 screw, where washer diameter is ≤ 4.9 mm (0.19")

(2) Clip mounting (on case), where leads do overlap heatsink  
(4) Pulse test: 300μs pulse width, 1% duty cycle

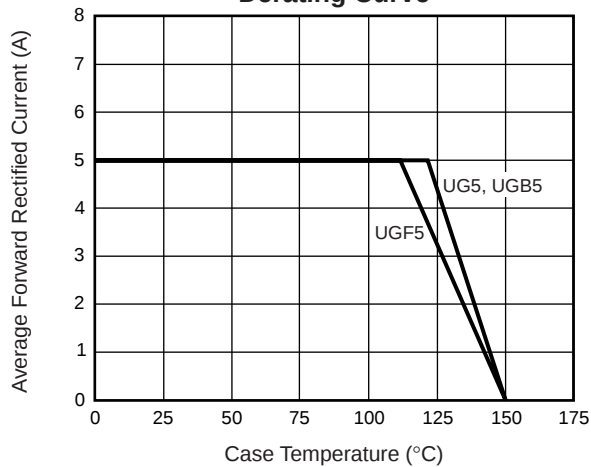
## Ordering Information

| Product         | Case      | Package Code | Package Option                              |
|-----------------|-----------|--------------|---------------------------------------------|
| UG5HT & UG5JT   | TO-220AC  | 45           | Anti-Static tube, 50/tube, 2K/carton        |
| UGF5HT & UGF5JT | ITO-220AC | 45           | Anti-Static tube, 50/tube, 2K/carton        |
| UGB5HT & UGB5JT | 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 |

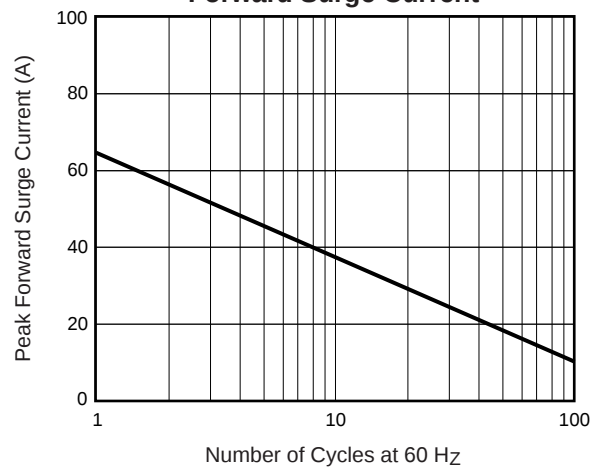


## Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

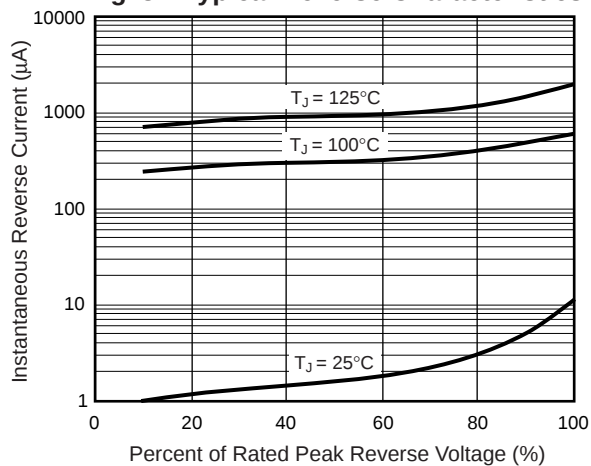
**Fig. 1 – Forward Current Derating Curve**



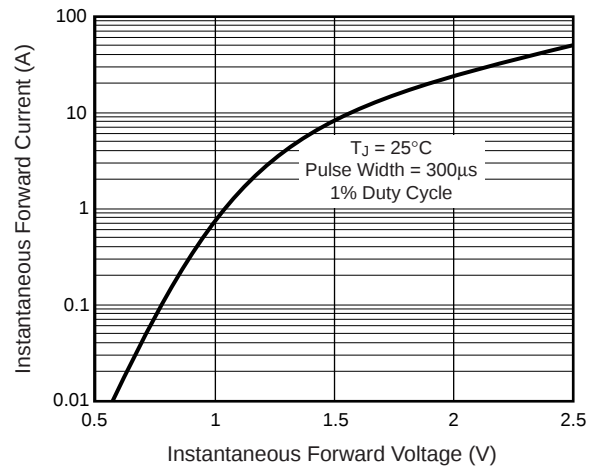
**Fig. 2 – Maximum Non-Repetitive Peak Forward Surge Current**



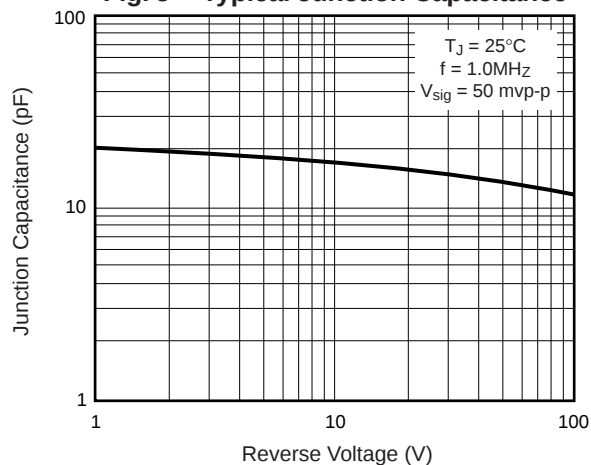
**Fig. 3 – Typical Reverse Characteristics**



**Fig. 4 – Typical Instantaneous Forward Characteristics**



**Fig. 5 – Typical Junction Capacitance**



**Fig. 6 – Reverse Switching Characteristics**

