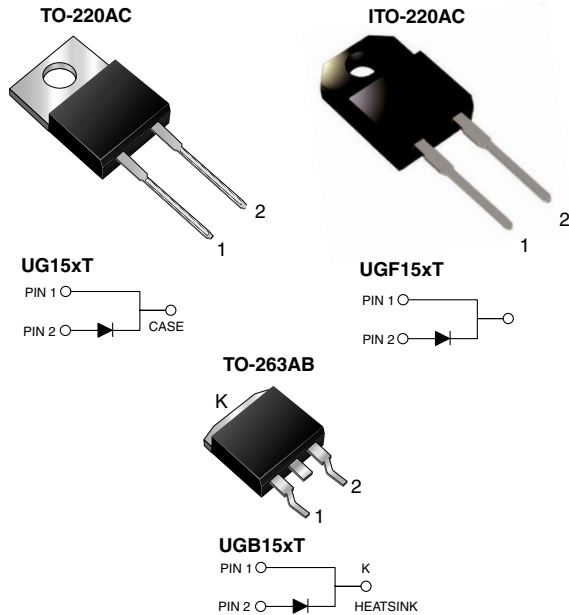


## High Voltage Ultrafast Rectifier



### FEATURES

- Glass passivated chip junction
- Ultrafast recovery times
- Soft recovery characteristics
- Low switching losses, high efficiency
- High forward surge capability
- Meets MSL level 1, per J-STD-020C, LF max peak of 245 °C (for TO-263AB package)
- Solder Dip 260 °C, 40 seconds (for TO-220AC & ITO-220AC package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



### TYPICAL APPLICATIONS

For use in high voltage, high frequency power factor correctors, switching mode power supplies, 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-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

**Polarity:** As marked

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

### MAJOR RATINGS AND CHARACTERISTICS

$I_{F(AV)}$	15 A
$V_{RRM}$	500 V, 600 V
$I_{FSM}$	135 A
$t_{rr}$	35 ns
$V_F$	1.5 V
$T_j \text{ max.}$	150 °C

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

PARAMETER	SYMBOL	UG15HT	UG15JT	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	500	600	V
Maximum working reverse voltage	$V_{RWM}$	400	480	V
Maximum RMS voltage	$V_{RMS}$	350	420	V
Maximum DC blocking voltage	$V_{DC}$	500	600	V
Maximum average forward rectified current (see Fig. 1)	$I_{F(AV)}$	15		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	135		A
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150		°C
Isolation voltage (ITO-220AC only) From terminal to heatsink $t = 1$ minute	$V_{AC}$	1500		V

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	UG15HT	UG15JT	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	$I_F = 15\text{ A}, T_j = 25\text{ }^\circ\text{C}$ $I_F = 15\text{ A}, T_j = 125\text{ }^\circ\text{C}$	$V_F$	1.75 1.50		V
Maximum DC reverse current at $V_{RWM}$	$T_j = 25\text{ }^\circ\text{C}$ $T_j = 125\text{ }^\circ\text{C}$	$I_R$	30 4.0		$\mu\text{A}$ mA
Maximum reverse recovery time	at $I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$	$t_{rr}$	35		ns
Maximum reverse recovery time	at $I_F = 1.0\text{ A}, di/dt = 50\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}, I_{rr} = 0.1 I_{RM}$	$t_{rr}$	50		ns
Typical softness factor (tb/ta)	$I_F = 15\text{ A}, di/dt = 240\text{ A}/\mu\text{s}$ , $V_R = 400\text{ V}, I_{rr} = 0.1 I_{RM}$	S	0.9		-
Maximum reverse recovery current	at $I_F = 15\text{ A}, di/dt = 120\text{ A}/\mu\text{s}$ , $V_R = 400\text{ V}, T_C = 125\text{ }^\circ\text{C}$	$I_{RM}$	9.0		A
Peak forward recovery time	at $I_F = 15\text{ A}, di/dt = 120\text{ A}/\mu\text{s}$ , $V_F = 1.1 \times V_F \text{ max.}$	$t_{fr}$	500		ns

<b>THERMAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	UG15	UGF15	UGB15	UNIT
Typical thermal resistance from junction to case	$R_{\theta JC}$	1.5	3.0	1.5	$^\circ\text{C}/\text{W}$

**Note:**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

<b>ORDERING INFORMATION</b>					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	UG15JT-E3/45	1.85	45	50/Tube	Tube
ITO-220AC	UGF15JT-E3/45	1.98	45	50/Tube	Tube
TO-263AB	UGB15JT-E3/45	1.35	45	50/Tube	Tube
TO-263AB	UGB15JT-E3/81	1.35	81	800/Reel	Tape Reel

## RATINGS AND CHARACTERISTICS CURVES

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

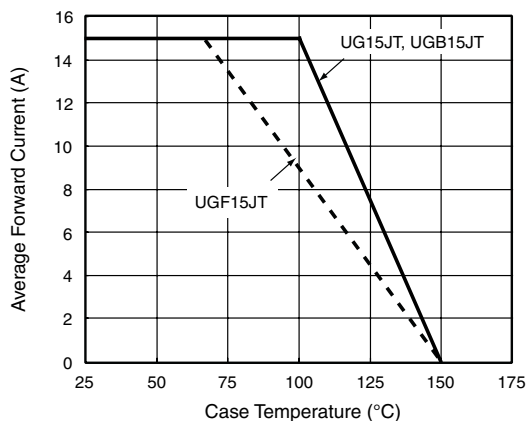


Figure 1. Forward Current Derating Curve

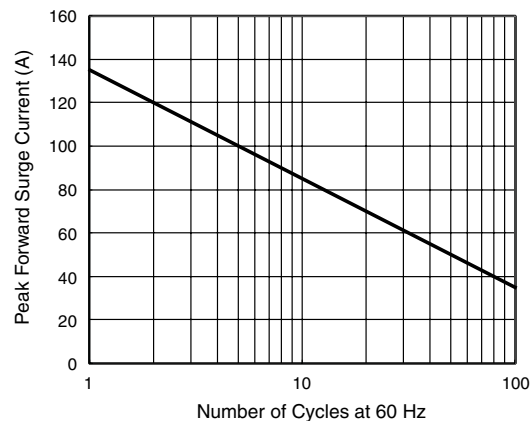


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

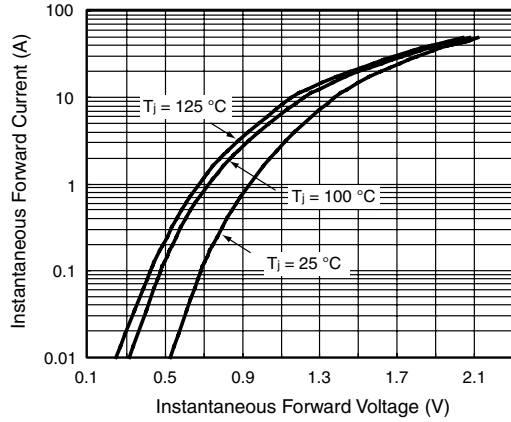


Figure 3. Typical Instantaneous Forward Characteristics

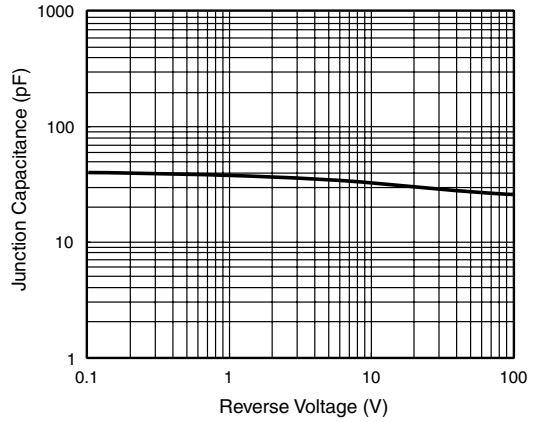


Figure 5. Typical Junction Capacitance

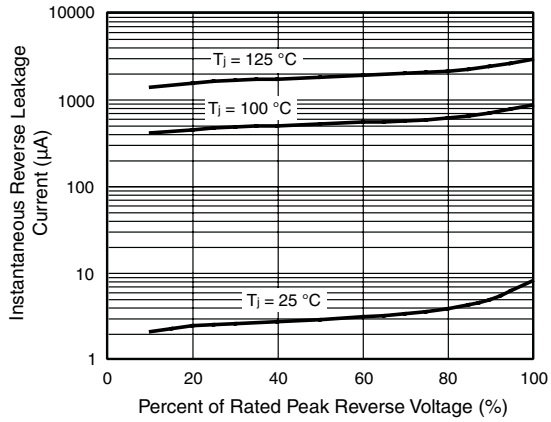


Figure 4. Typical Reverse Leakage Characteristics

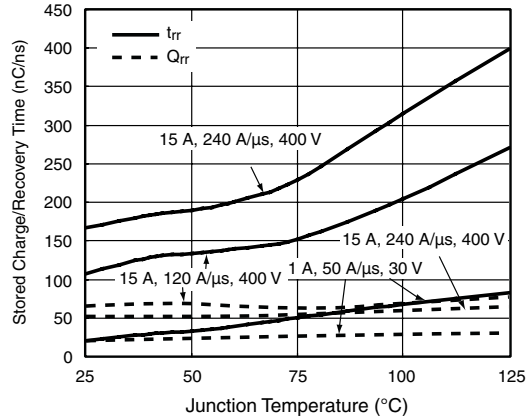


Figure 6. Reverse Switching Characteristics

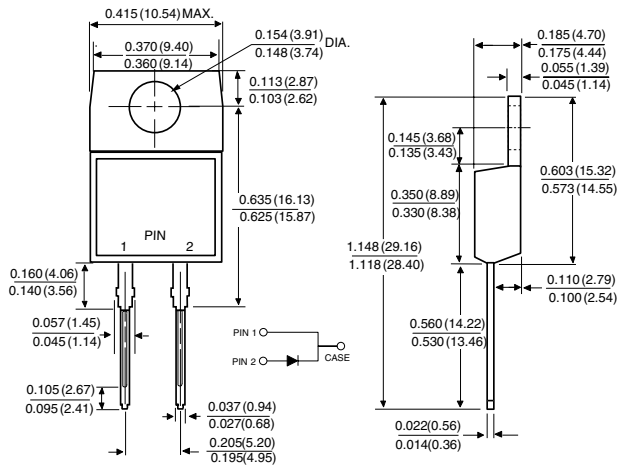
# UG(F,B)15HT & UG(F,B)15JT

Vishay General Semiconductor

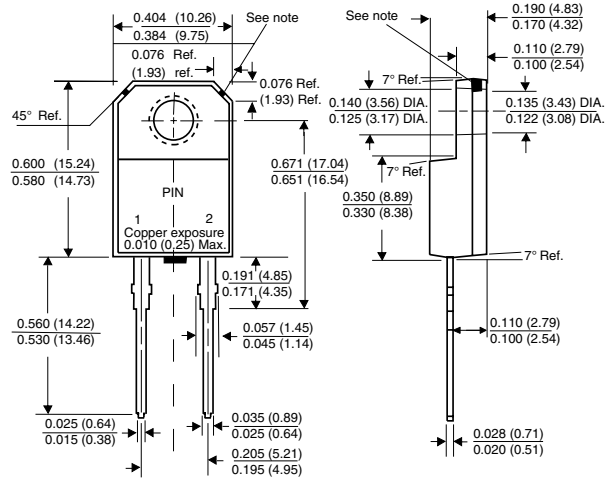


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AC

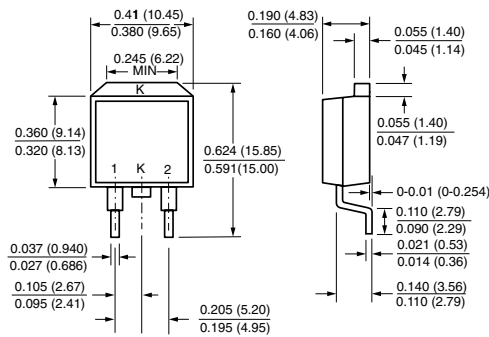


ITO-220AC

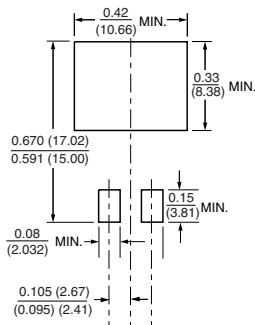


Note: Copper exposure is allowable for 0.005 (0.13) Max. from the body

TO-263AB



Mounting Pad Layout





## Notice

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