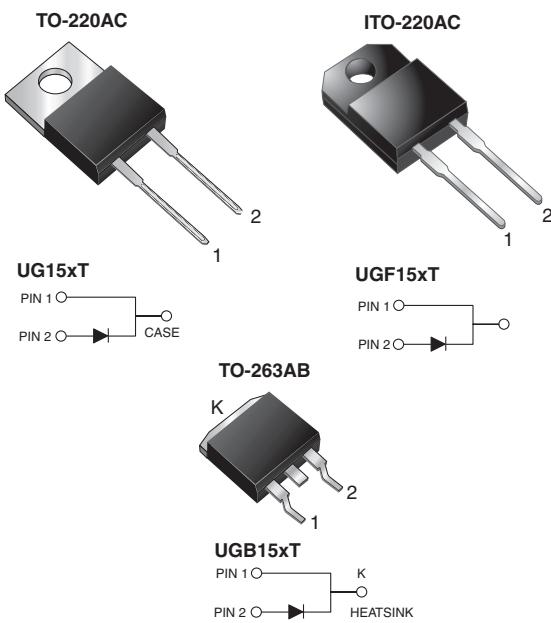


## High Voltage Ultrafast Rectifier



### FEATURES

- Power pack
- Glass passivated pallet chip junction
- Ultrafast recovery times
- Soft recovery characteristics
- 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 275 °C max., 10 s per JESD 22-B106 (for TO-220AC and ITO-220AC package)
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

For use in high voltage, high frequency power factor correctors, switching mode power supplies, freewheeling diodes and secondary DC/DC rectification application.

### MECHANICAL DATA

**Case:** TO-220AC, ITO-220AC, TO-263AB

Molding compound meets UL 94V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade  
Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs max.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	15 A
$V_{RRM}$	500 V to 600 V
$I_{FSM}$	135 A
$t_{rr}$	35 ns
$V_F$ at $I_F$	1.5 V
$T_J$ max.	150 °C
Package	TO-220AC, ITO-220AC, TO-263AB
Diode variations	Single die

MAXIMUM RATINGS ( $T_C = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	UG15HT	UG15JT	UNIT
Max. repetitive peak reverse voltage	$V_{RRM}$	500	600	V
Max. working reverse voltage	$V_{RWM}$	400	480	V
Max. RMS voltage	$V_{RMS}$	350	420	V
Max. DC blocking voltage	$V_{DC}$	500	600	V
Max. average forward rectified current (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 $t = 1$ min	$V_{AC}$	1500		V

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

<b>THERMAL CHARACTERISTICS</b> ( $T_C = 25^\circ\text{C}$ 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	$^\circ\text{C}/\text{W}$

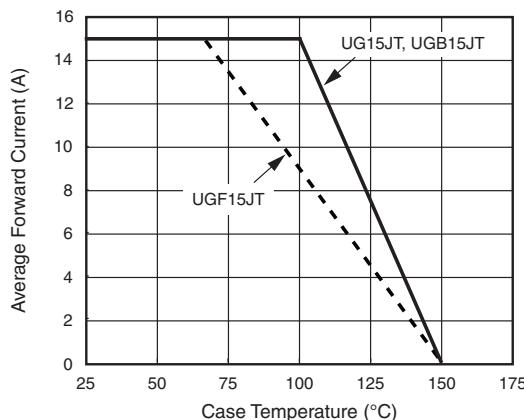
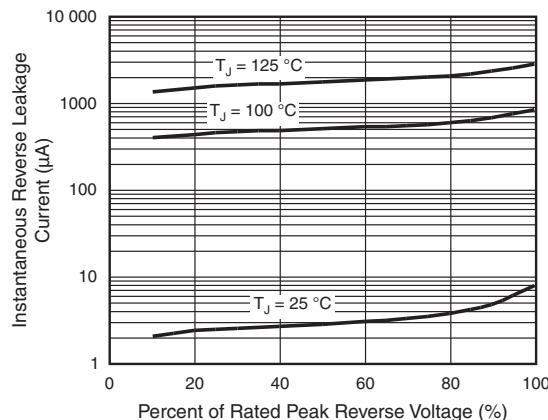
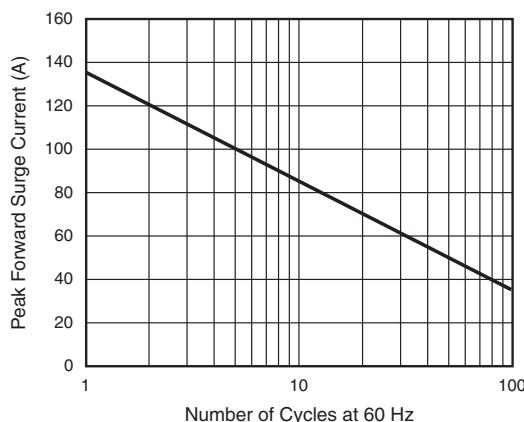
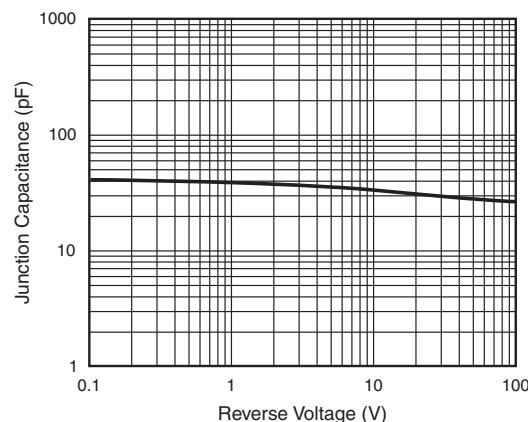
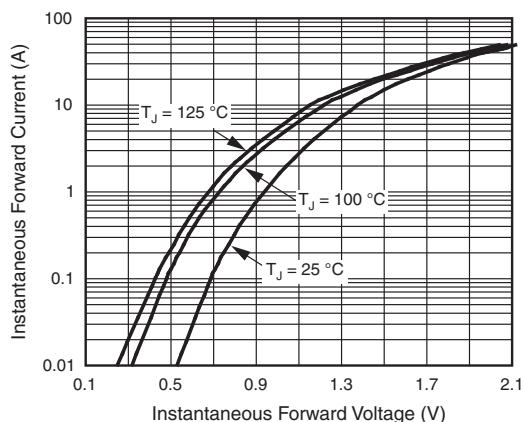
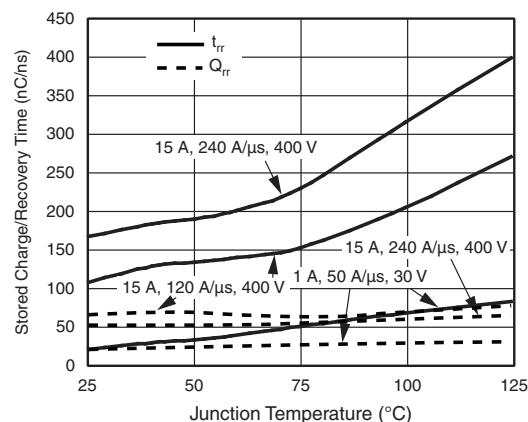
**Note**

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

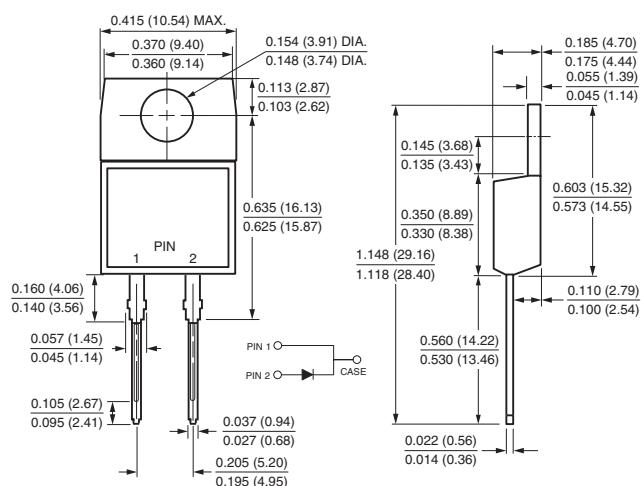
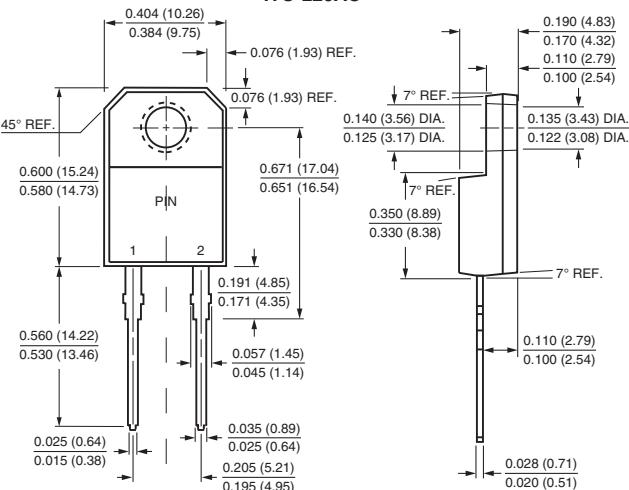
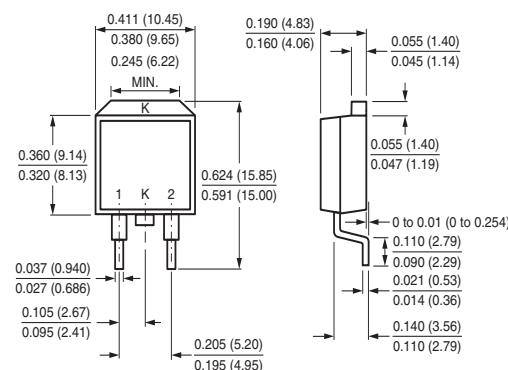
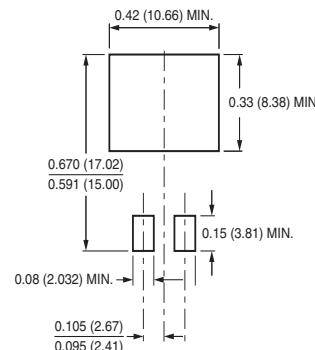
<b>ORDERING INFORMATIONS</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	UG15JT-E3/45	1.85	45	50/tube	Tube
ITO-220AC	UGF15JT-E3/45	1.98	45	50/tube	Tube
TO-263AB	UGB15JT-E3/45	1.35	45	50/tube	Tube
TO-263AB	UGB15JT-E3/81	1.35	81	800/reel	Tape and reel
TO-220AC	UG15JTHER3/45 ( <sup>1</sup> )	1.85	45	50/tube	Tube
ITO-220AC	UGF15JTHER3/45 ( <sup>1</sup> )	1.98	45	50/tube	Tube
TO-263AB	UGB15JTHER3/45 ( <sup>1</sup> )	1.35	45	50/tube	Tube
TO-263AB	UGB15JTHER3/81 ( <sup>1</sup> )	1.35	81	800/reel	Tape and reel

**Note**

(<sup>1</sup>) AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

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

**Fig. 4 - Typical Reverse Leakage Characteristics**

**Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current**

**Fig. 5 - Typical Junction Capacitance**

**Fig. 3 - Typical Instantaneous Forward Characteristics**

**Fig. 6 - Reverse Switching Characteristics**

**PACKAGE OUTLINE DIMENSION** in inches (millimeters)

**TO-220AC**

**ITO-220AC**

**TO-263AB**

**Mounting Pad Layout**


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