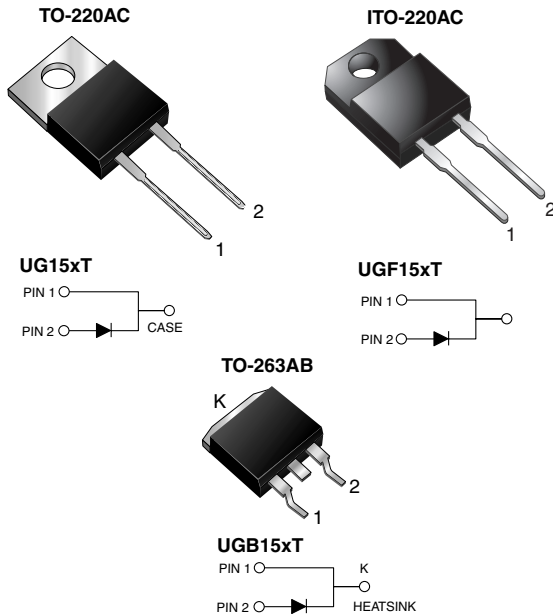


High Voltage Ultrafast Rectifier



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-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, 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-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

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

MAXIMUM RATINGS ($T_C = 25$ °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 (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

ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	UG15HT	UG15JT	UNIT
Maximum instantaneous forward voltage ⁽¹⁾	$I_F = 15\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$ $T_J = 125\text{ }^\circ\text{C}$	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		μA mA
Maximum 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
Maximum 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		-
Maximum reverse recovery current	$I_F = 15\text{ A}, dI/dt = 120\text{ A}/\mu\text{s}, V_R = 400\text{ V}, T_C = 125\text{ }^\circ\text{C}$		I_{RM}	9.0		A
Peak forward recovery time	$I_F = 15\text{ A}, dI/dt = 120\text{ A}/\mu\text{s}, V_F = 1.1 \times V_{F\text{ max.}}$		t_{fr}	500		ns

THERMAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ 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 μs pulse width, 1 % duty cycle

ORDERING INFORMATION (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	UG15JT-E3/45 ⁽¹⁾	1.85	45	50/tube	Tube
ITO-220AC	UGF15JT-E3/45 ⁽¹⁾	1.98	45	50/tube	Tube
TO-263AB	UGB15JT-E3/45 ⁽¹⁾	1.35	45	50/tube	Tube
TO-263AB	UGB15JT-E3/81 ⁽¹⁾	1.35	81	800/reel	Tape and reel

Note:

(1) Automotive grade AEC-Q101 qualified



RATINGS AND CHARACTERISTICS CURVES

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

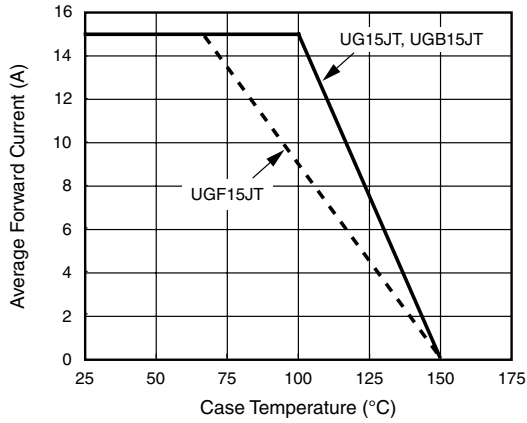


Figure 1. Forward Current Derating Curve

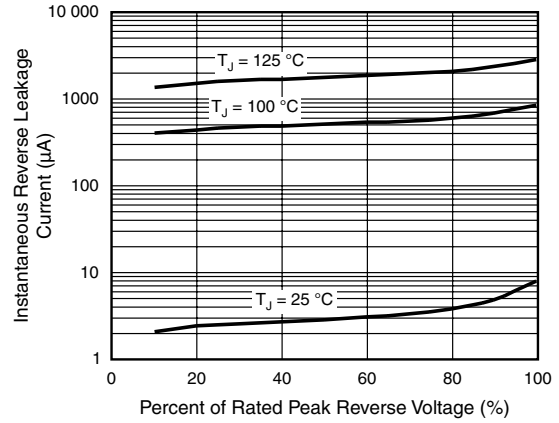


Figure 4. Typical Reverse Leakage Characteristics

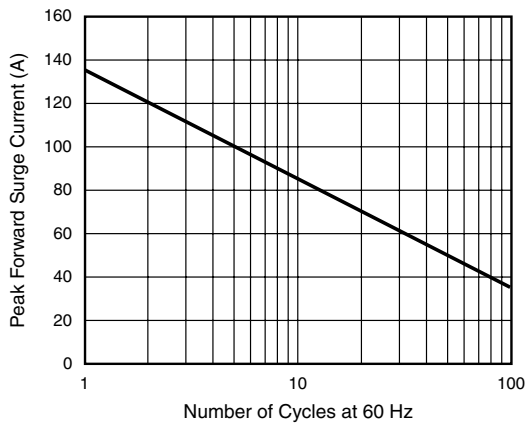


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

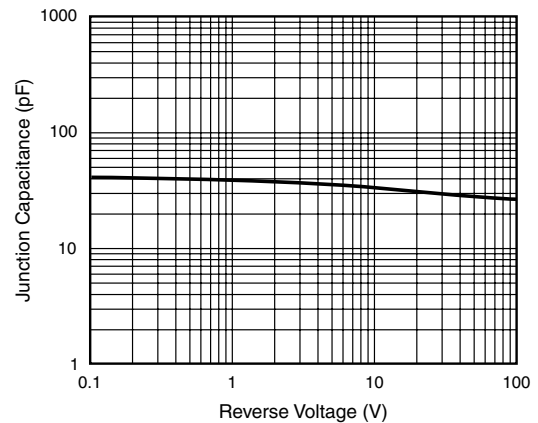


Figure 5. Typical Junction Capacitance

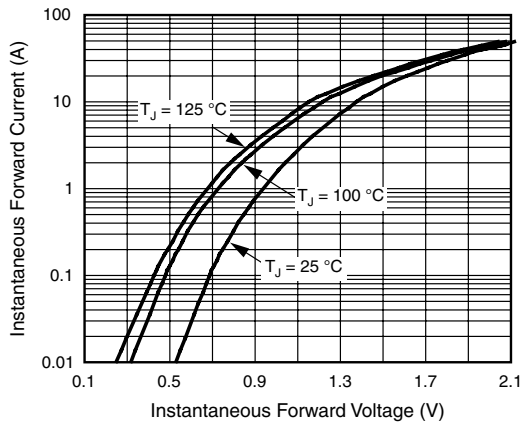


Figure 3. Typical Instantaneous Forward Characteristics

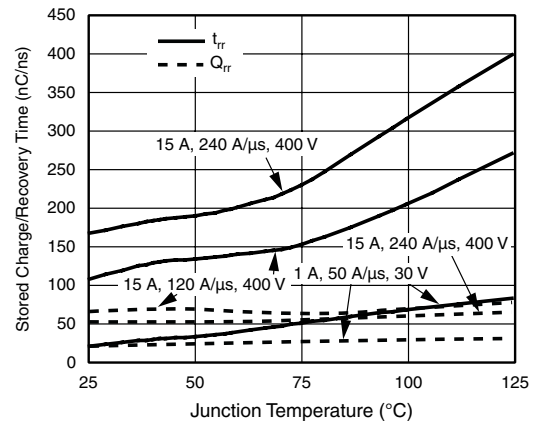
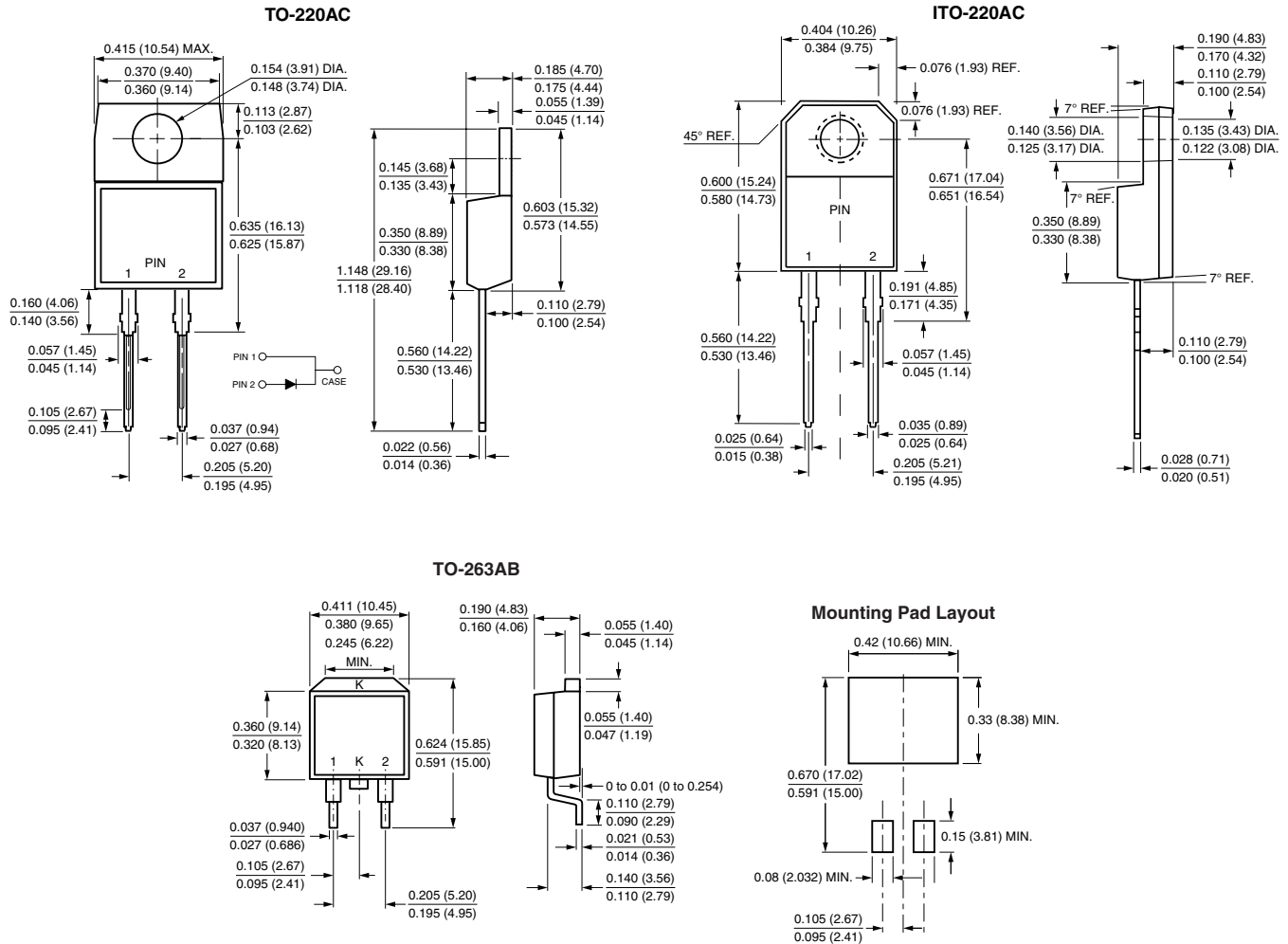


Figure 6. Reverse Switching Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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