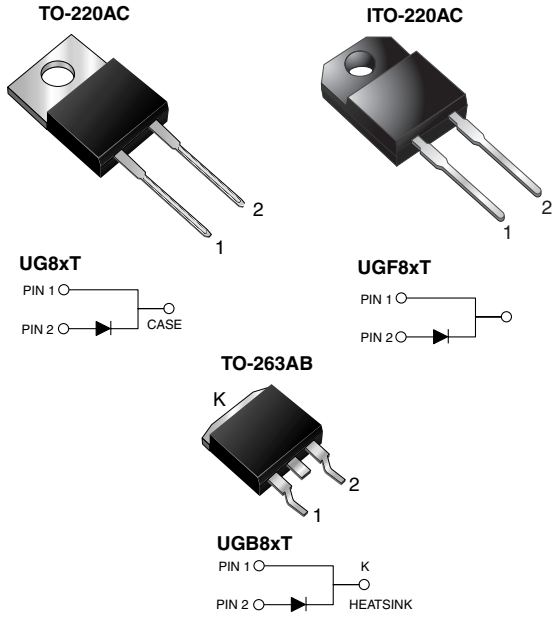
High Voltage Ultrafast Rectifier



FEATURES

- Glass passivated chip junction
- Ultrafast recovery time
- 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 and high frequency power factor correction 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	
$I_{F(AV)}$	8 A
V_{RRM}	500 V, 600 V
I_{FSM}	100 A
t_{rr}	25 ns
t_{fr}	500 ns
V_F	1.5 V
T_J max.	150 °C

MAXIMUM RATINGS (T_C = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	UG8HT	UG8JT	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	$I_{F(AV)}$	8.0		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	100		A
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 150		°C
Isolation voltage (ITO-220AB only) from terminals to heatsink t = 1 min	V_{AC}	1500		V

ELECTRICAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**UG8HT**	**UG8JT**	**UNIT**
Maximum instantaneous forward voltage (1)	I_F = 8 A I_F = 8 A	T_J = 25 °C T_J = 125 °C	V_F	1.75 1.50		V
Maximum DC reverse current at V_{RWM}		T_J = 25 °C T_J = 100 °C T_J = 125 °C	I_R	30 800 4.0		µA µA mA
Maximum reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	25		ns
	I_F = 1.0 A, dI/dt = 50 A/µs, V_R = 30 V, I_{rr} = 0.1 I_{RM}		t_{rr}	50		ns
Typical softness factor (t_b/t_a)	I_F = 8.0 A, dI/dt = 240 A/µs, V_R = 400 V, I_{rr} = 0.1 I_{RM}		S	1.0		-
Maximum reverse recovery current	I_F = 8.0 A, dI/dt = 64 A/µs, V_R = 400 V, T_C = 125 °C		I_{RM}	5.5		A
	I_F = 8.0 A, dI/dt = 240 A/µs, V_R = 400 V, T_C = 125 °C		I_{RM}	10		A
Peak forward recovery time	I_F = 8.0 A, dI/dt = 64 A/µs, V_F = 1.1 x $V_{F\ max.}$		t_{fr}	500		ns

Note:

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)					
PARAMETER	**SYMBOL**	**UG8**	**UGF**	**UGB8**	**UNIT**
Typical thermal resistance from junction to case	$R_{\theta JC}$	2.2	5.0	2.2	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AC	UG8JT-E3/45	1.80	45	50/tube	Tube
ITO-220AC	UGF8JT-E3/45	1.95	45	50/tube	Tube
TO-263AB	UGB8JT-E3/45	1.33	45	50/tube	Tube
TO-263AB	UGB8JT-E3/81	1.33	81	800/reel	Tape and reel
TO-220AC	UG8JTHE3/45 (1)	1.80	45	50/tube	Tube
ITO-220AC	UGF8JTHE3/45 (1)	1.95	45	50/tube	Tube
TO-263AB	UGB8JTHE3/45 (1)	1.33	45	50/tube	Tube
TO-263AB	UGB8JTHE3/81 (1)	1.33	81	800/reel	Tape and reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

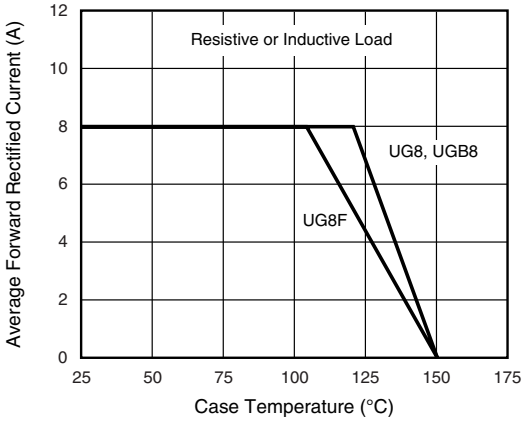


Figure 1. Maximum Forward Current Derating Curve

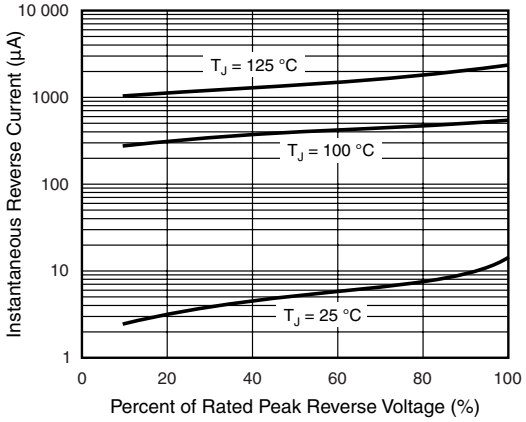


Figure 4. Typical Reverse Leakage Characteristics

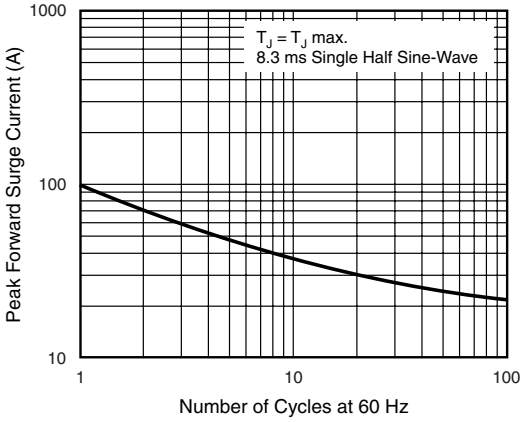


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

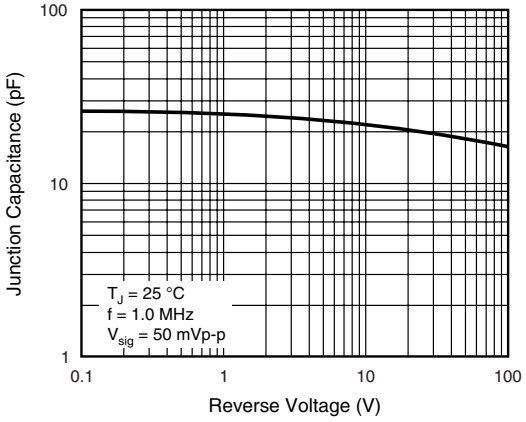


Figure 5. Typical Junction Capacitance

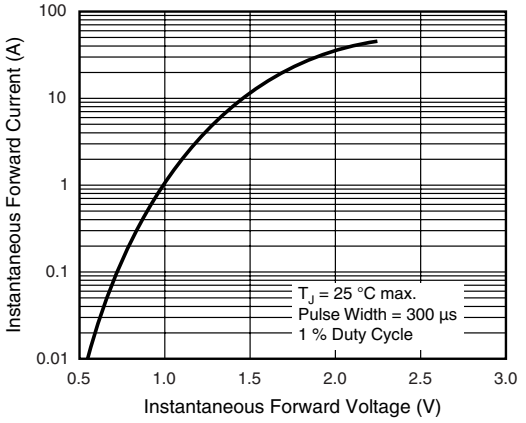


Figure 3. Typical Instantaneous Forward Characteristics

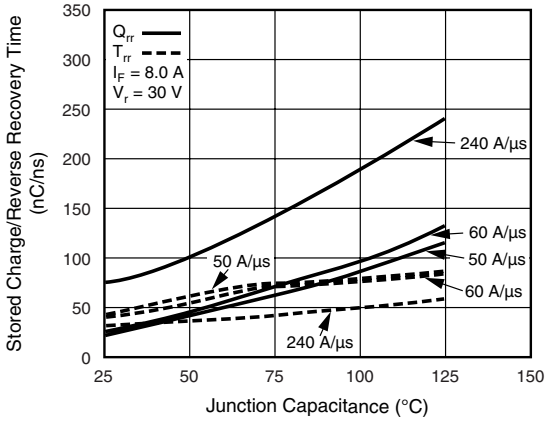
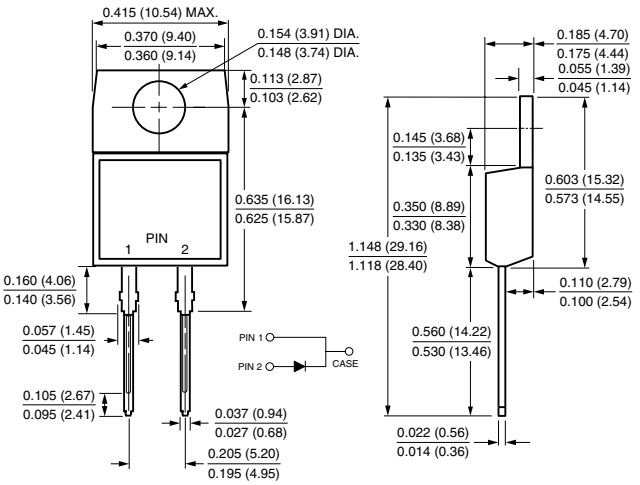


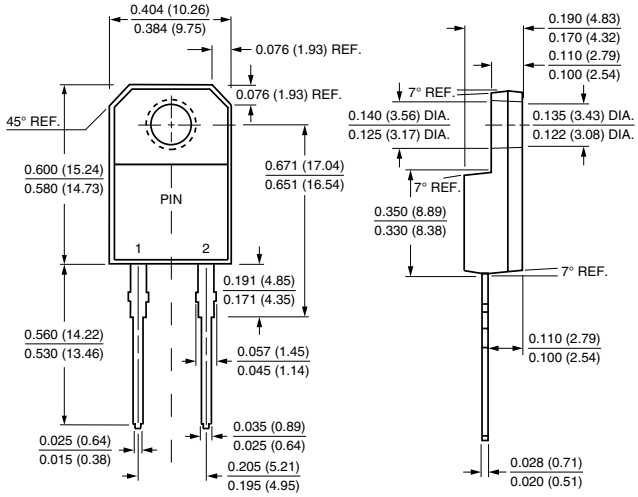
Figure 6. Reverse Switching Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

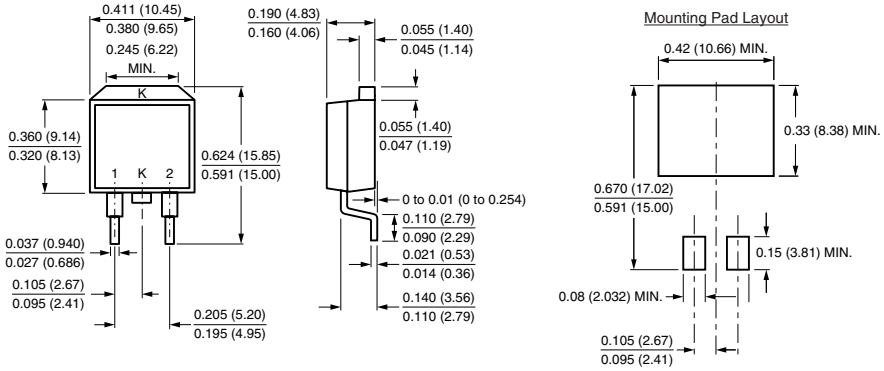
TO-220AC



ITO-220AC



TO-263AB



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