

Ultrafast Rectifiers

Major Ratings and Characteristics

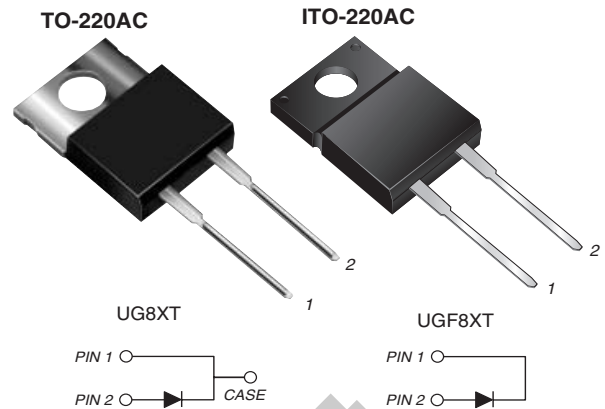
$I_{F(AV)}$	8 A
V_{RRM}	500, 600 V
t_{rr}	25 ns
t_{fr}	500 ns
V_F	1.5 V

Features

- Glass passivated chip junction
- Soft recovery characteristics
- High efficiency, low switching losses
- Meets MSL level 1, per J-STD-020C

Typical Applications

For use in high voltage and high frequency power factor correction application



Mechanical Data

Case: JEDEC TO-220AC, ITO-220AC

Terminals: Matte tin plated (E3 Suffix) leads, solderable per J-STD-002B and MIL-STD-750, Method 2026

Mounting Torque: 10 in-lbs Maximum

Epoxy meets UL-94V-0 Flammability rating

Maximum Ratings

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

Parameter	Test condition	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 (JEDEC Method) at $T_C = 100^\circ\text{C}$	I_{FSM}	100		A
Operating junction and storage temperature range		T_J, T_{STG}	-55 to +150		$^\circ\text{C}$
RMS Isolation voltage (UGF types only) from terminals to heatsink	with $t = 1.0$ second, $RH \leq 30\%$	V_{ISOL}	4500 ⁽¹⁾ 3500 ⁽²⁾ 1500 ⁽³⁾		V

Electrical Characteristics

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

Parameter	Test condition	Symbol	UG8HT	UG8JT	Unit
Maximum instantaneous forward voltage ⁽⁴⁾	$I_F = 8\text{ A}$, $T_J = 25\text{ }^{\circ}\text{C}$ $I_F = 8\text{ A}$, $T_J = 125\text{ }^{\circ}\text{C}$	V_F	1.75 1.50		V
Maximum DC reverse current at V_{RWM}	$T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 100\text{ }^{\circ}\text{C}$ $T_J = 125\text{ }^{\circ}\text{C}$	I_R	30 800 4.0		μA μA 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}	25		ns
	at $I_F = 1.0\text{ A}$, $di/dt = 50\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1\text{ I}_{RM}$	t_{rr}	50		ns
Typical softness factor (t_b/t_a)	$I_F = 8.0\text{ A}$, $di/dt = 240\text{ A}/\mu\text{s}$, $V_R = 400\text{ V}$, $I_{rr} = 0.1\text{ I}_{RM}$	S	1.0		-
Maximum reverse recovery current	at $I_F = 8.0\text{ A}$, $di/dt = 64\text{ A}/\mu\text{s}$, $V_R = 400\text{ V}$, $T_C = 125\text{ }^{\circ}\text{C}$	I_{RM}	5.5		A
	at $I_F = 8.0\text{ A}$, $di/dt = 240\text{ A}/\mu\text{s}$, $V_R = 400\text{ V}$, $T_C = 125\text{ }^{\circ}\text{C}$	I_{RM}	10		A
Peak forward recovery time	at $I_F = 8.0\text{ A}$, $di/dt = 64\text{ A}/\mu\text{s}$, $V_F = 1.1\text{ V}_{F\text{ max}}$	t_{fr}	500		ns

Notes:

- (1) Clip mounting (on case), where lead does not overlap heatsink with 0.110" offset
- (2) Clip mounting (on case), where leads do overlap heatsink
- (3) Screw mounting with 4-40 screw, where washer diameter is $\leq 4.9\text{ mm}$ (0.19")
- (4) Pulse test: 300 μs pulse width, 1 % duty cycle

Thermal Characteristics

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

Parameter	Test condition	Symbol	UG8	UGF8	Unit
Typical thermal resistance from junction to case		$R_{\theta JC}$	2.2	5.0	$^{\circ}\text{C}/\text{W}$

Ratings and Characteristics Curves

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

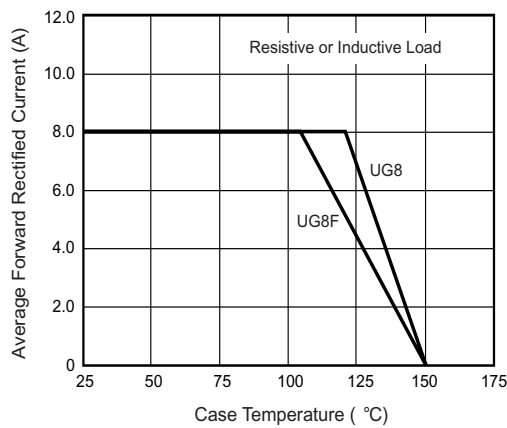


Figure 1. Maximum Forward Current Derating Curve

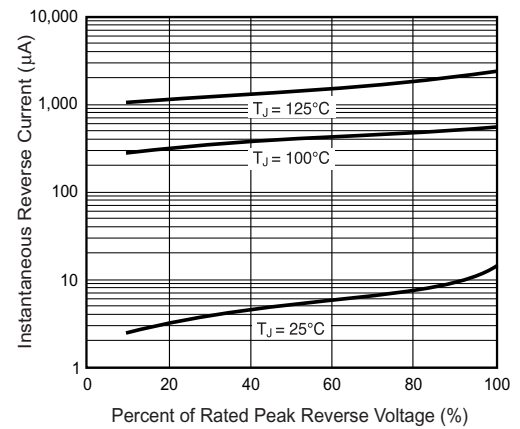


Figure 4. Typical Reverse Leakage Characteristics

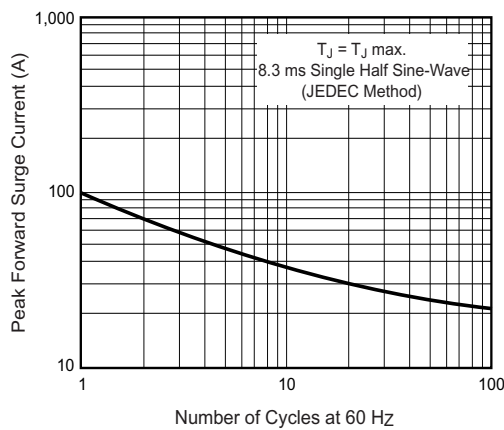


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

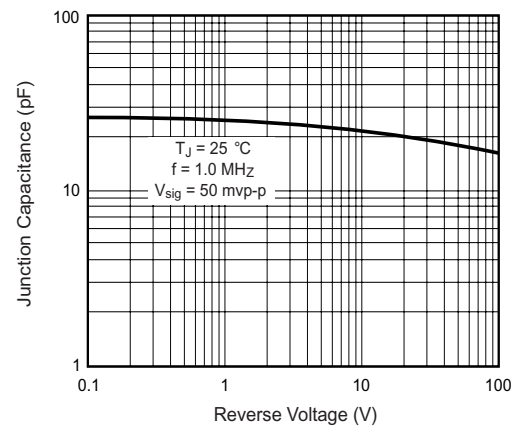


Figure 5. Typical Junction Capacitance

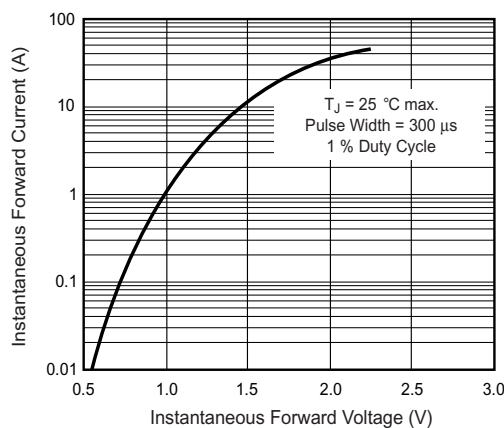


Figure 3. Typical Instantaneous Forward Characteristics

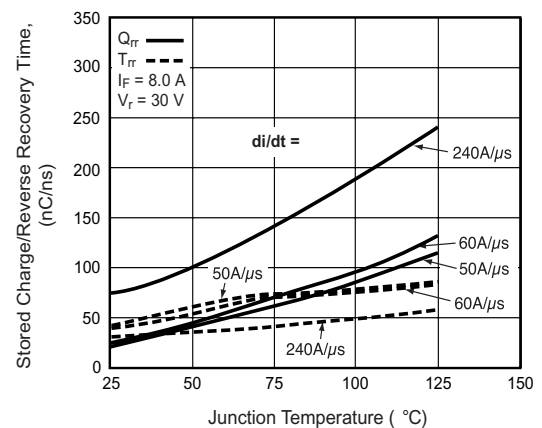
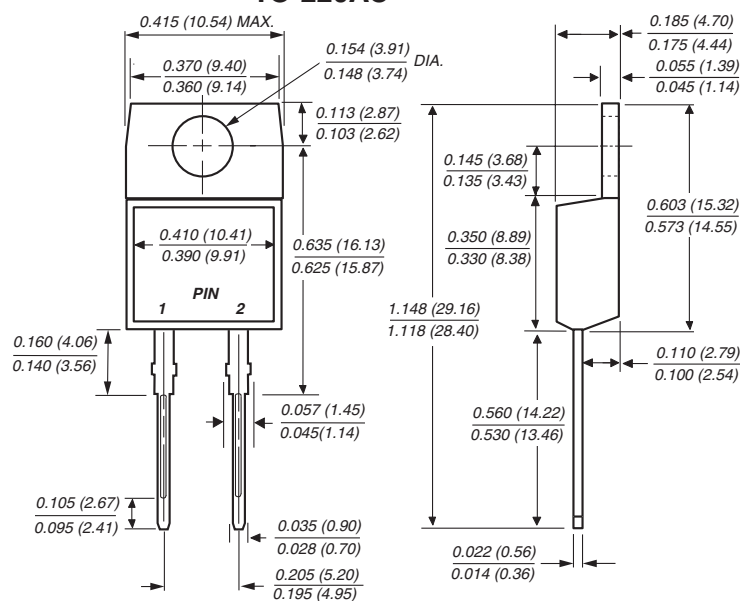


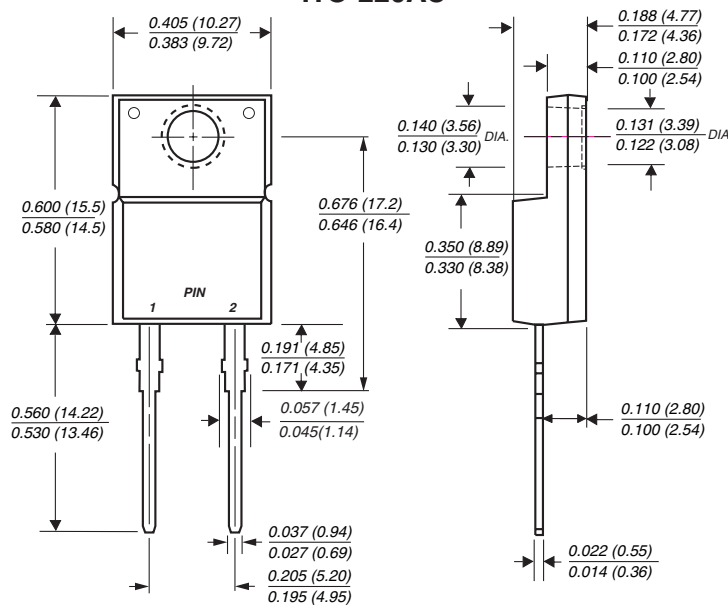
Figure 6. Reverse Switching Characteristics

Dimensions in Inches and (millimeters)

TO-220AC



ITO-220AC





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