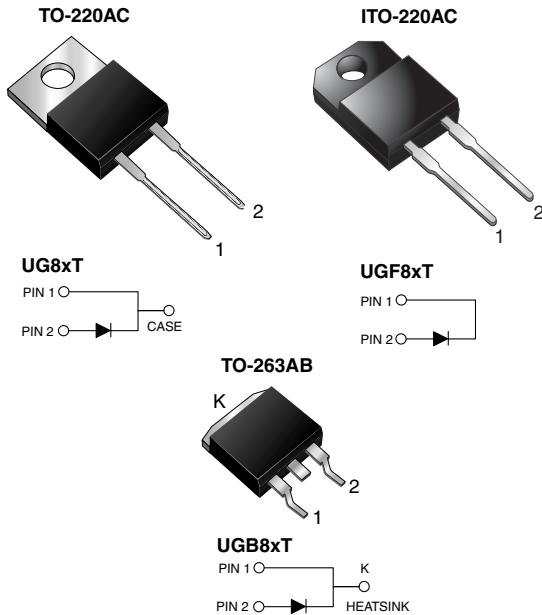


Ultrafast Rectifier



FEATURES

- Glass passivated chip junction
- Ultrafast recovery time
- 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 frequency rectifier of switching mode power supplies, inverters, freewheeling diodes, dc-to-dc converters, and other power switching 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

$I_{F(AV)}$	8.0 A
V_{RRM}	50 V to 200 V
I_{FSM}	150 A
t_{rr}	20 ns
V_F	0.95 V
$T_J \text{ max.}$	150 °C

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

PARAMETER	SYMBOL	UG8AT	UG8BT	UG8CT	UG8DT	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	150	200	V
Maximum RMS voltage	V_{RMS}	35	70	105	140	V
Maximum DC blocking voltage	V_{DC}	50	100	150	200	V
Maximum average forward rectified current at $T_C = 100 \text{ °C}$	$I_{F(AV)}$	8.0				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	150				A
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 150				°C
Isolation voltage (ITO-220AC only) from terminals to heatsink $t = 1 \text{ min}$	V_{AC}	1500				V

UG(F,B)8AT thru UG(F,B)8DT

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ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)								
PARAMETER	TEST CONDITIONS		SYMBOL	UG8AT	UG8BT	UG8CT	UG8DT	UNIT
Maximum instantaneous forward voltage ⁽¹⁾	8.0 A 20.0 A 5.0 A	$T_J = 150\text{ }^\circ\text{C}$	V_F		1.0 1.2 0.95			V
Maximum DC reverse current at rated DC blocking voltage		$T_J = 25\text{ }^\circ\text{C}$ $T_J = 100\text{ }^\circ\text{C}$	I_R		10 300			μA
Maximum reverse recovery time	$I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$		t_{rr}		20			ns
Maximum reverse recovery time	$I_F = 8.0\text{ A}, V_R = 30\text{ V},$ $dI/dt = 50\text{ A}/\mu\text{s},$ $I_{rr} = 10\% I_{RM}$	$T_J = 25\text{ }^\circ\text{C}$ $T_J = 100\text{ }^\circ\text{C}$	t_{rr}		30 50			ns
Maximum recovered stored charged	$I_F = 8.0\text{ A}, V_R = 30\text{ V},$ $dI/dt = 50\text{ A}/\mu\text{s}$	$T_J = 25\text{ }^\circ\text{C}$ $T_J = 100\text{ }^\circ\text{C}$	Q_{rr}		20 45			nC
Typical junction capacitance	4.0 V, 1 MHz		C_J		45			pF

THERMAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	UG8AT	UGF8AT	UGB8AT	UNIT
Typical thermal resistance from junction to case	$R_{\theta JC}$	4.0	5.0	4.0	$^\circ\text{C}/\text{W}$

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	UG8DT-E3/45	1.80	45	50/tube	Tube
ITO-220AC	UGF8DT-E3/45	1.95	45	50/tube	Tube
TO-263AB	UGB8DT-E3/45	1.33	45	50/tube	Tube
TO-263AB	UGB8DT-E3/81	1.33	81	800/reel	Tape reel
TO-220AC	UG8DTHE3/45 ⁽¹⁾	1.80	45	50/tube	Tube
ITO-220AC	UGF8DTHE3/45 ⁽¹⁾	1.95	45	50/tube	Tube
TO-263AB	UGB8DTHE3/45 ⁽¹⁾	1.33	45	50/tube	Tube
TO-263AB	UGB8DTHE3/81 ⁽¹⁾	1.33	81	800/reel	Tape reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

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

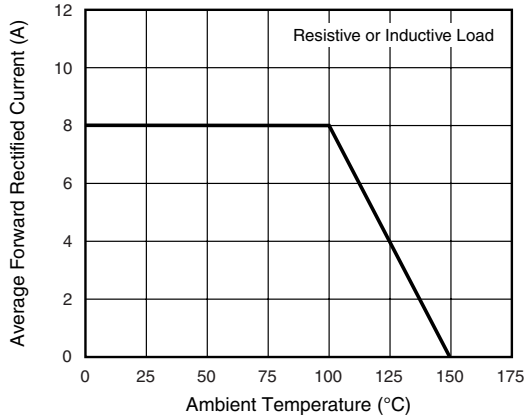


Figure 1. Maximum Forward Current Derating Curve

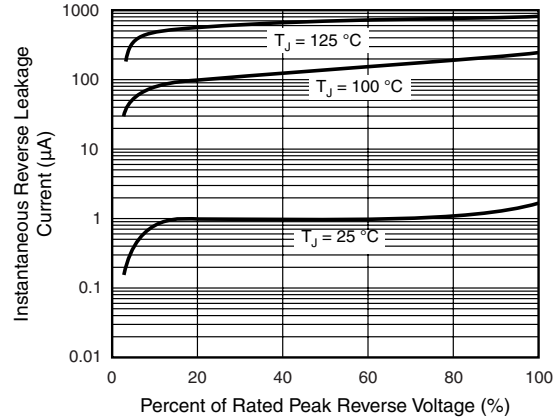


Figure 4. Typical Reverse Characteristics

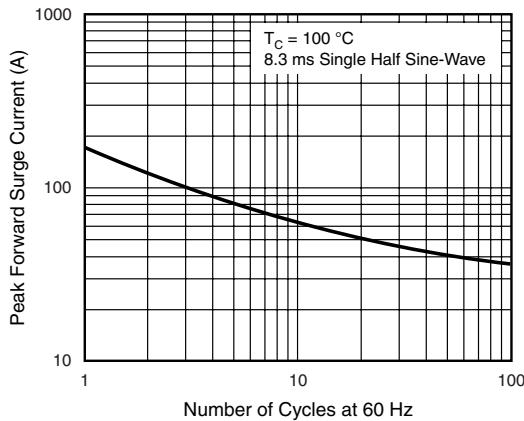


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

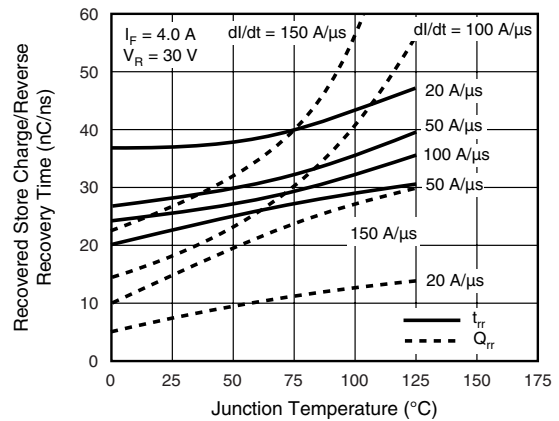


Figure 5. Reverse Switching Characteristics

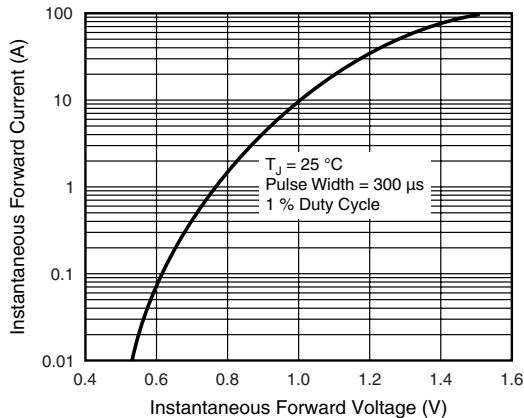


Figure 3. Typical Instantaneous Forward Characteristics

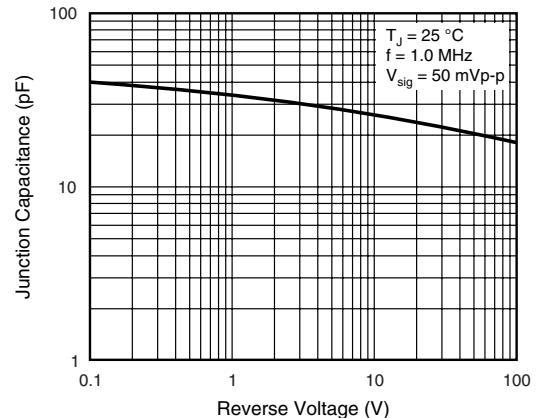


Figure 6. Typical Junction Capacitance

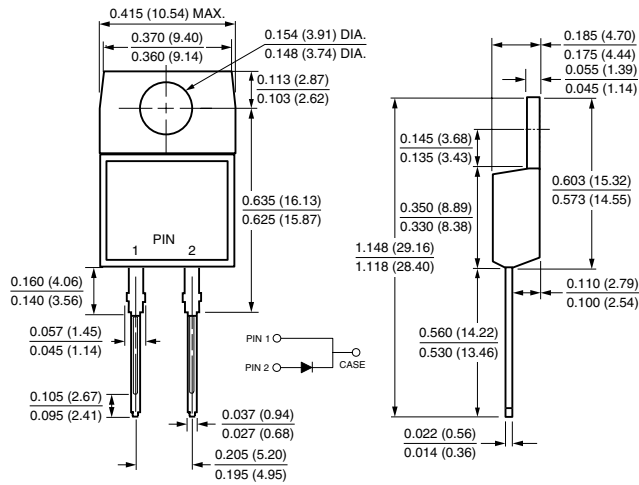
UG(F,B)8AT thru UG(F,B)8DT

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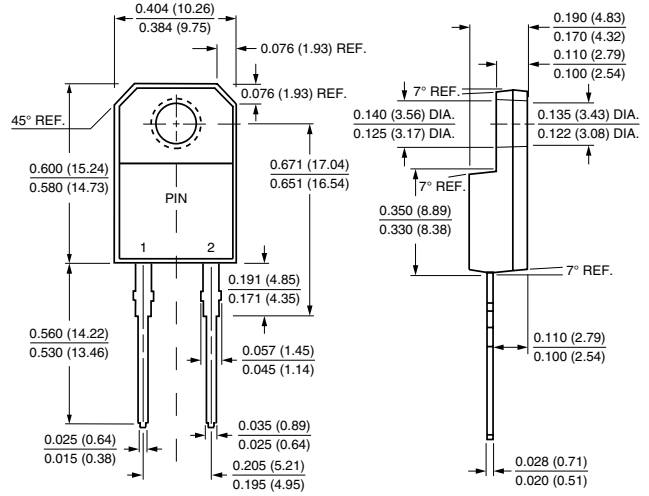


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

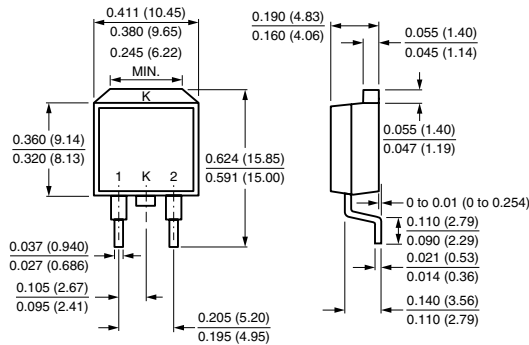
TO-220AC



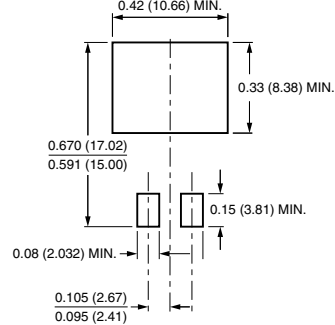
ITO-220AC



TO-263AB



Mounting Pad Layout





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