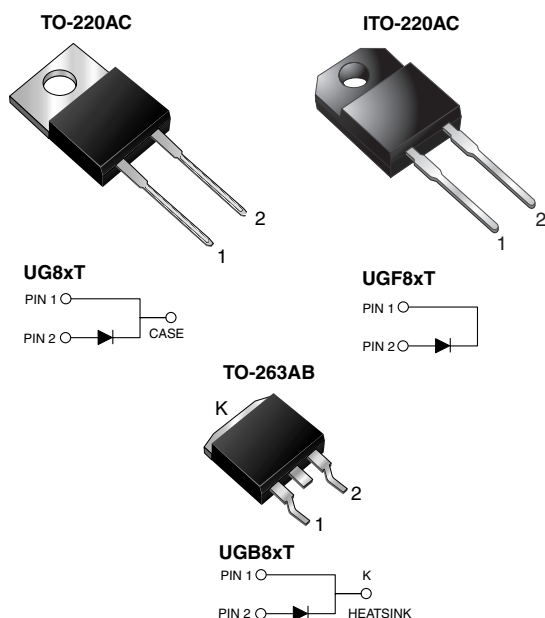


Ultrafast Rectifier



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 ($T_C = 25$ °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 $T_C = 100$ °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 $t = 1$ min	V_{AC}	1500				V

ELECTRICAL CHARACTERISTICS (T _C = 25 °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 °C	V _F	1.0 1.2 0.95				V
Maximum DC reverse current at rated DC blocking voltage		T _J = 25 °C T _J = 100 °C	I _R	10 300				μA
Maximum reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	20				ns
Maximum reverse recovery time	I _F = 8.0 A, V _R = 30 V, dI/dt = 50 A/μs, I _{rr} = 10 % I _{RM}	T _J = 25 °C T _J = 100 °C	t _{rr}	30 50				ns
Maximum recovered stored charged	I _F = 8.0 A, V _R = 30 V, dI/dt = 50 A/μs	T _J = 25 °C T _J = 100 °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

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

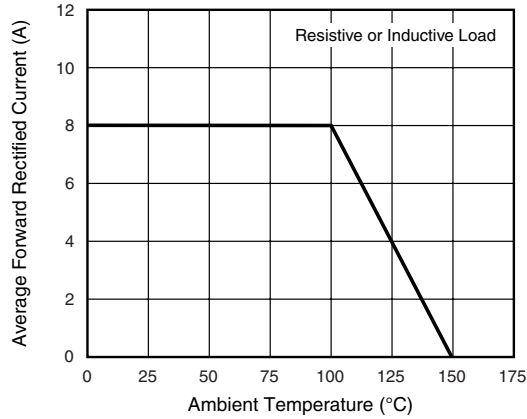


Figure 1. Maximum Forward Current Derating Curve

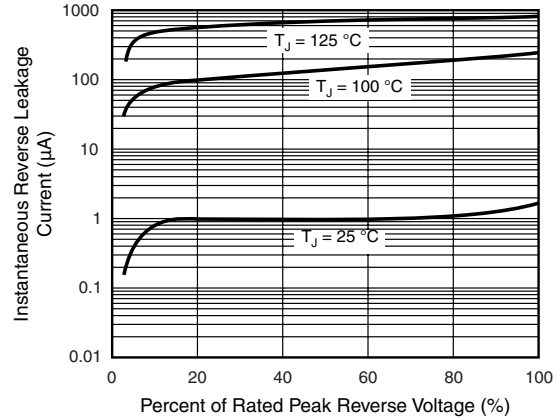


Figure 4. Typical Reverse Characteristics

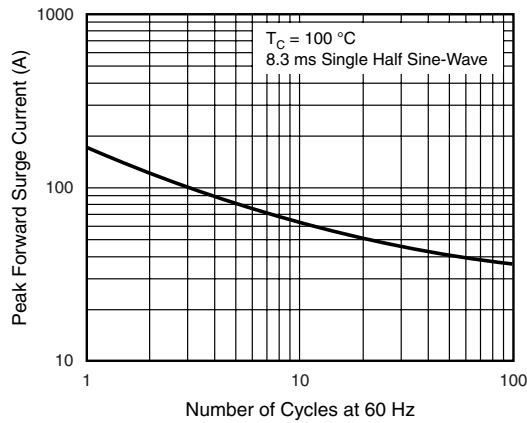


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

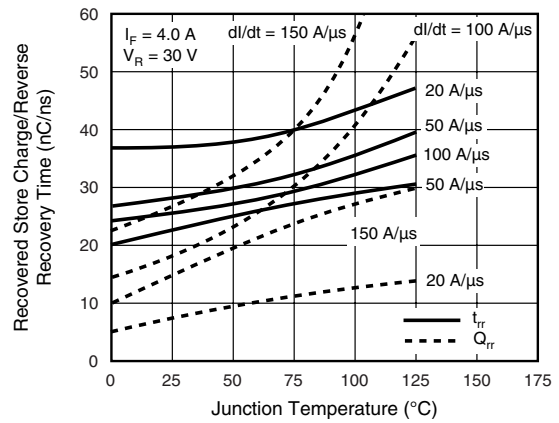


Figure 5. Reverse Switching Characteristics

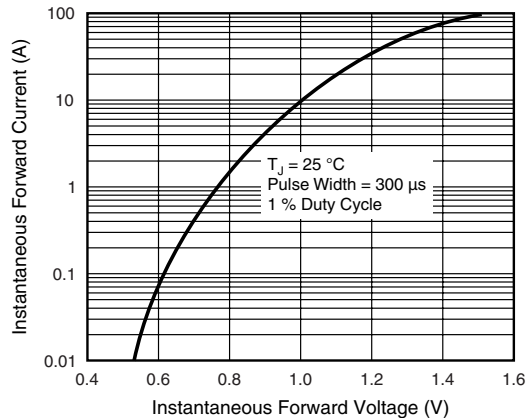


Figure 3. Typical Instantaneous Forward Characteristics

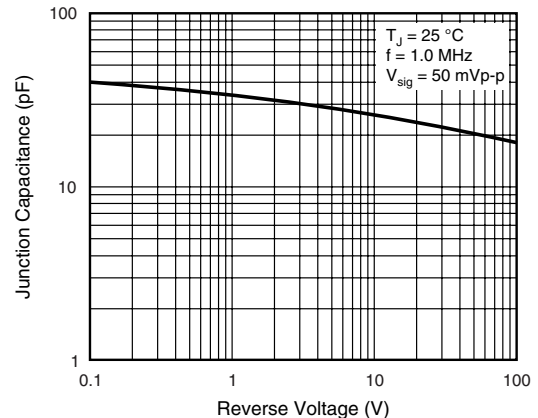
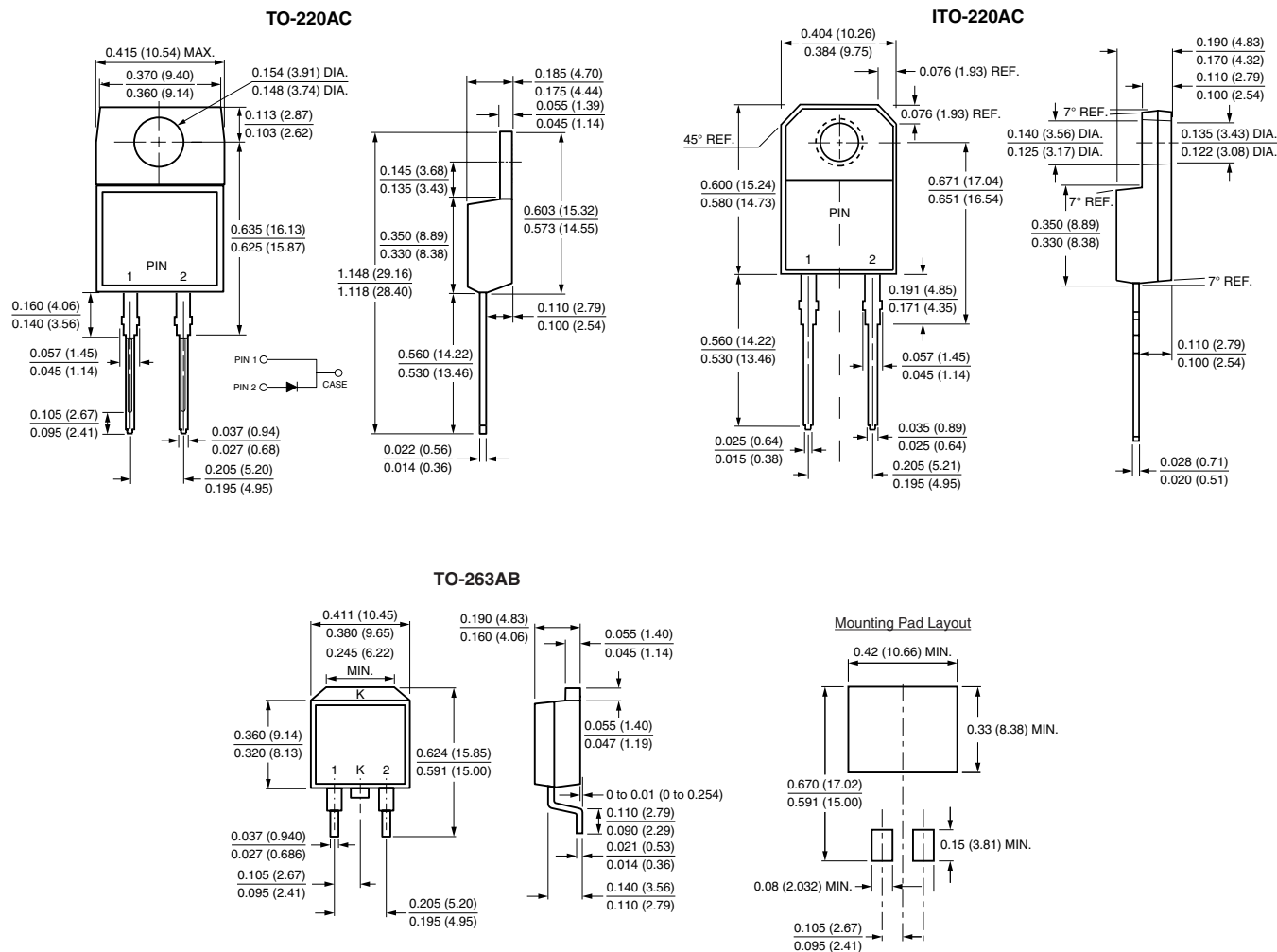


Figure 6. Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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