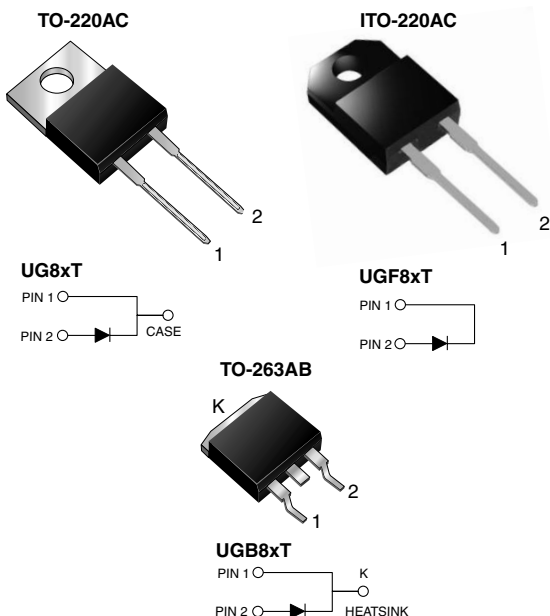


Ultrafast Rectifier



FEATURES

- Glass passivated chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- High forward surge capability
- Meets MSL level 1, per J-STD-020C, LF max peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 seconds (for TO-220AC & ITO-220AC package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, inverters, free-wheeling 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-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

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 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 $t = 1$ minute	V_{AC}	1500				V

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⁾	at 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	at $I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$	t_{rr}		20			ns
Maximum reverse recovery time	at $I_F = 8.0\text{ A}$, $V_R = 30\text{ V}$, $di/dt = 50\text{ A}/\mu\text{s}$, $I_{rr} = 10\% I_{RM}$ $T_j = 25\text{ }^{\circ}\text{C}$ $T_j = 100\text{ }^{\circ}\text{C}$	t_{rr}		30 50			ns
Maximum recovered stored charged	at $I_F = 8.0\text{ A}$, $V_R = 30\text{ V}$, $di/dt = 50\text{ A}/\mu\text{s}$ $T_j = 25\text{ }^{\circ}\text{C}$ $T_j = 100\text{ }^{\circ}\text{C}$	Q_{rr}		20 45			nC
Typical junction capacitance	at 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)

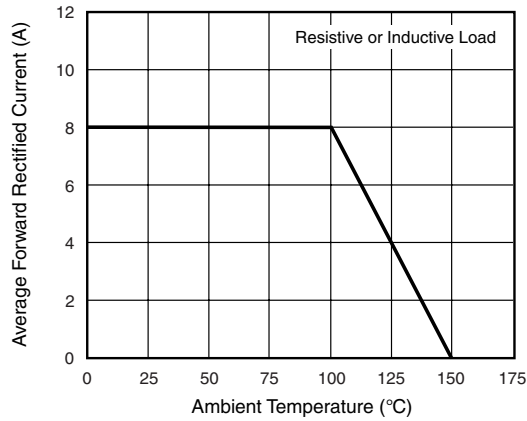


Figure 1. Maximum Forward Current Derating Curve

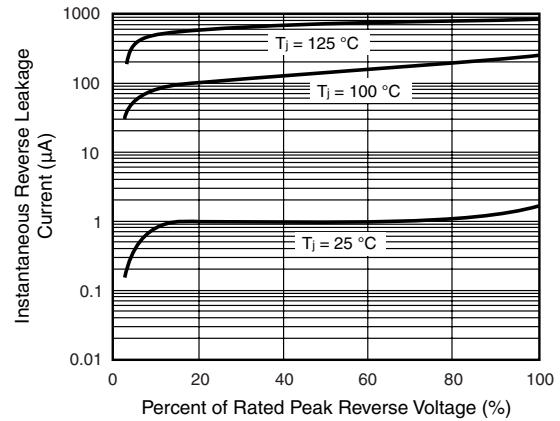


Figure 4. Typical Reverse Characteristics

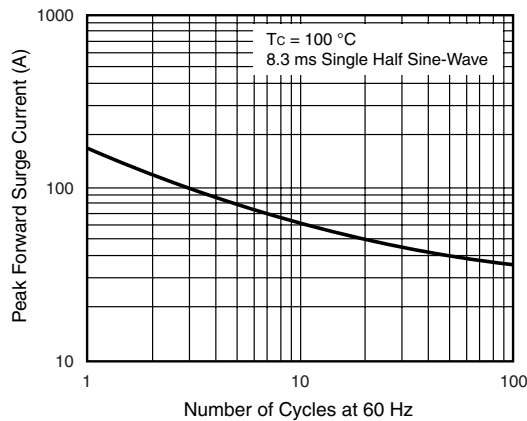


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

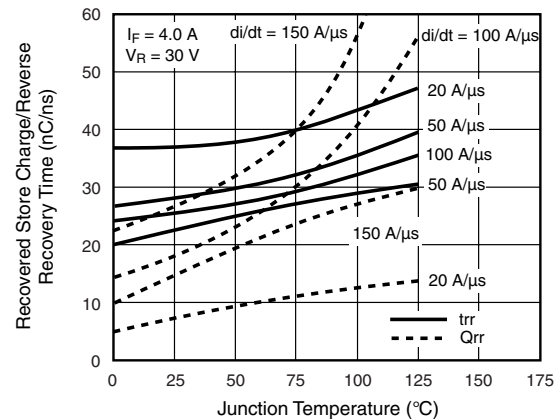


Figure 5. Reverse Switching Characteristics

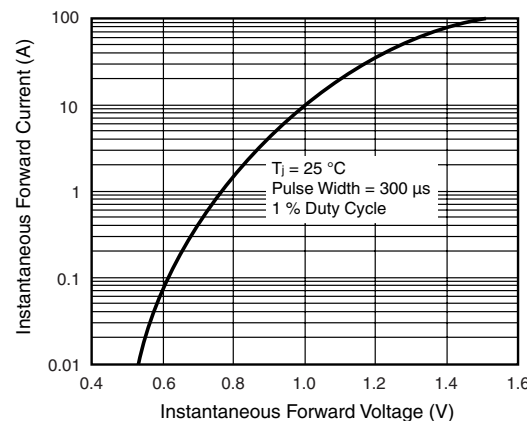


Figure 3. Typical Instantaneous Forward Characteristics

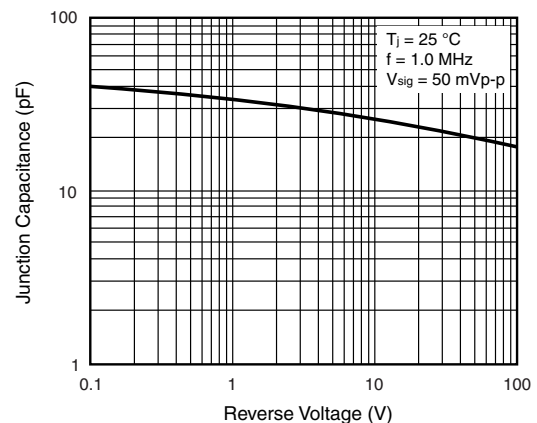


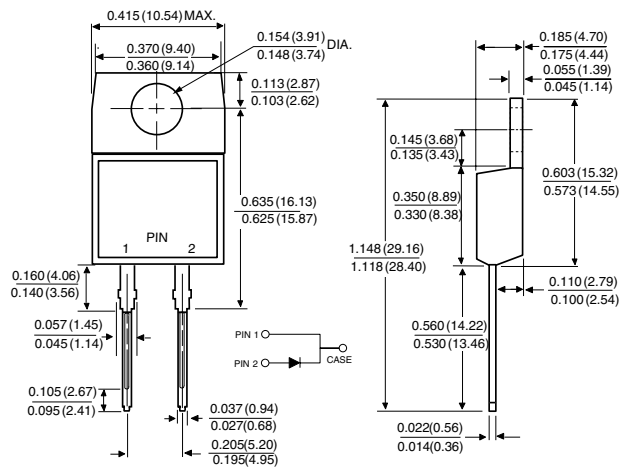
Figure 6. Typical Junction Capacitance

Vishay General Semiconductor

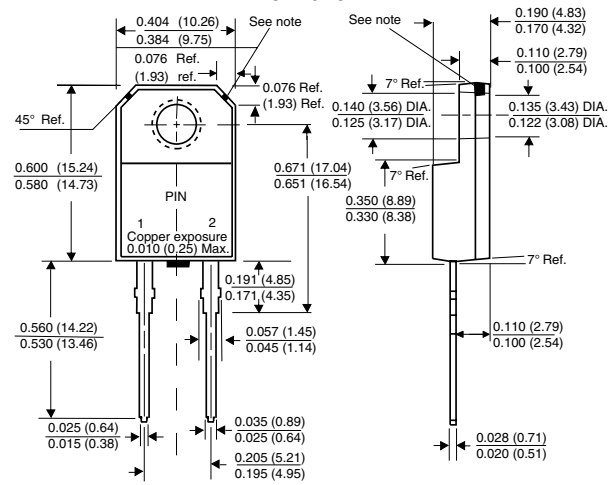


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AC

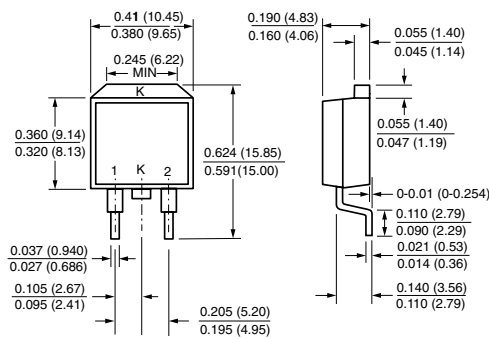


ITO-220AC

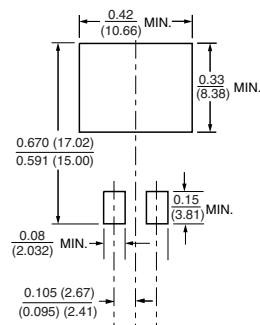


Note: Copper exposure is allowable for 0.005 (0.13) Max. from the body

TO-263AB



Mounting Pad Layout





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