

## High Voltage Ultrafast Rectifier



### FEATURES

- Power pack
- Glass passivated pellet chip junction
- Ultrafast recovery time
- Soft recovery characteristics
- Low switching losses, high efficiency
- High forward surge capability
- Solder dip 275 °C max., 10 s per JESD 22-B106
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** TO-220AC

Molding compound meets UL 94V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs max.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	8.0 A
$V_{RRM}$	500 V, 600 V
$I_{FSM}$	100 A
$t_{rr}$	25 ns
$t_{fr}$	500 ns
$V_F$ at $I_F = 8$ A	1.5 V
$T_J$ max.	150 °C
Package	TO-220AC
Diode variation	Single die

MAXIMUM RATINGS ( $T_C = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	UGE8HT	UGE8JT	UNIT
Max. repetitive peak reverse voltage	$V_{RRM}$	500	600	V
Max. working reverse voltage	$V_{RWM}$	400	480	V
Max. RMS voltage	$V_{RMS}$	350	420	V
Max. DC blocking voltage	$V_{DC}$	500	600	V
Max. 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



ELECTRICAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	UGE8HT	UGE8JT	UNIT
Max. instantaneous forward voltage (1)	I <sub>F</sub> = 8 A	T <sub>J</sub> = 25 °C	V <sub>F</sub>	1.75		V
	I <sub>F</sub> = 8 A	T <sub>J</sub> = 125 °C		1.50		
Max. DC reverse current at V <sub>RWM</sub>	T <sub>J</sub> = 25 °C		I <sub>R</sub>	30		μA
	T <sub>J</sub> = 100 °C			800		μA
	T <sub>J</sub> = 125 °C			4.0		mA
Max. reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	25		ns
	I <sub>F</sub> = 1.0 A, dI/dt = 50 A/μs, V <sub>R</sub> = 30 V, I <sub>rr</sub> = 0.1 I <sub>RM</sub>		t <sub>rr</sub>	50		ns
Typical softness factor (t <sub>b</sub> /t <sub>a</sub> )	I <sub>F</sub> = 8.0 A, dI/dt = 240 A/μs, V <sub>R</sub> = 400 V, I <sub>rr</sub> = 0.1 I <sub>RM</sub>		S	1.0		-
Max. reverse recovery current	I <sub>F</sub> = 8.0 A, dI/dt = 64 A/μs, V <sub>R</sub> = 400 V, T <sub>C</sub> = 125 °C		I <sub>RM</sub>	5.5		A
	I <sub>F</sub> = 8.0 A, dI/dt = 240 A/μs, V <sub>R</sub> = 400 V, T <sub>C</sub> = 125 °C		I <sub>RM</sub>	10		A
Peak forward recovery time	I <sub>F</sub> = 8.0 A, dI/dt = 64 A/μs, V <sub>F</sub> = 1.1 x V <sub>Fmax</sub>		t <sub>fr</sub>	500		ns

**Note**

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

THERMAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	UGE8HT	UGE8JT	UNIT
Typical thermal resistance from junction to case	R <sub>θJC</sub>	2.2		°C/W

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	UGE8HT-E3/45	1.80	45	50/tube	Tube

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)**

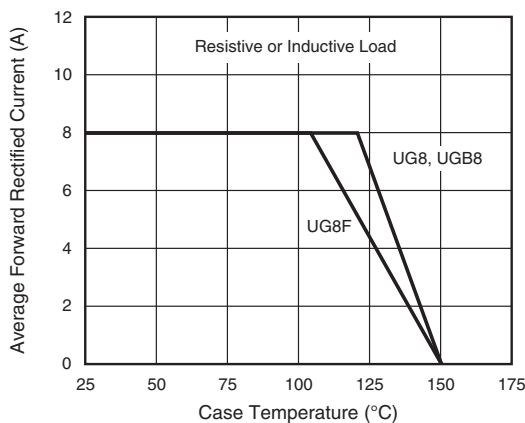


Fig. 1 - Max. Forward Current Derating Curve

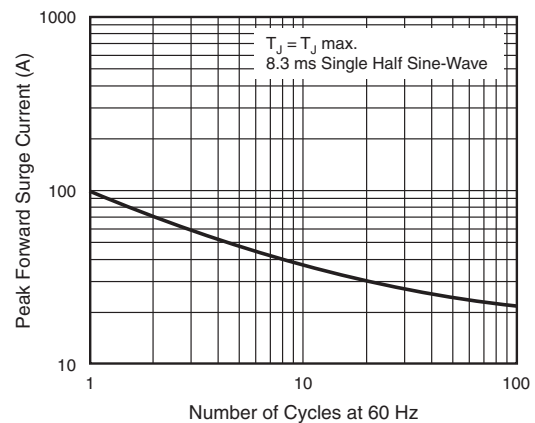


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current

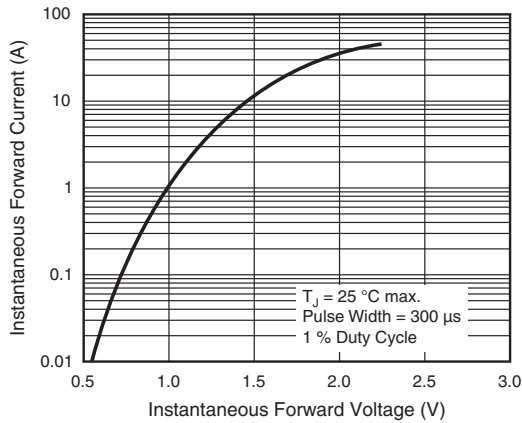


Fig. 3 - Typical Instantaneous Forward Characteristics

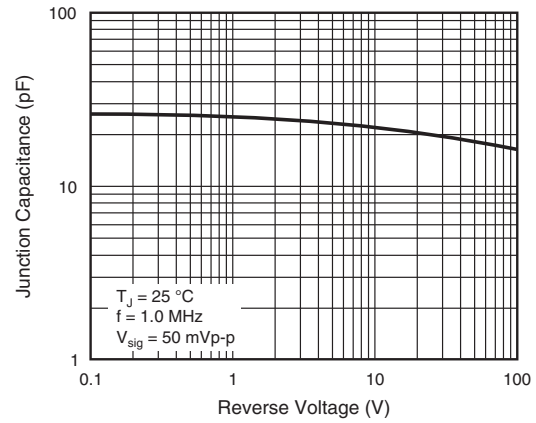


Fig. 5 - Typical Junction Capacitance

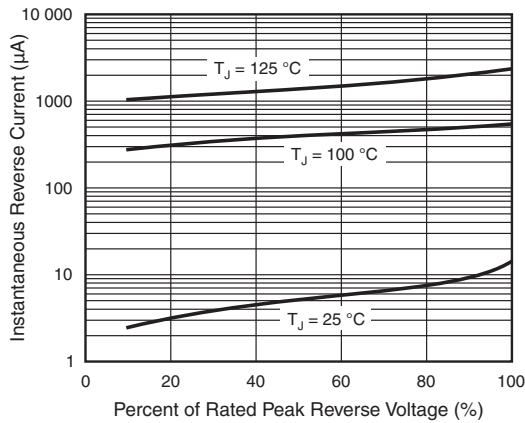


Fig. 4 - Typical Reverse Leakage Characteristics

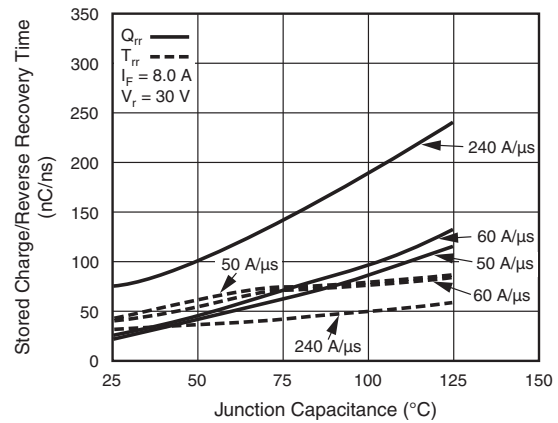
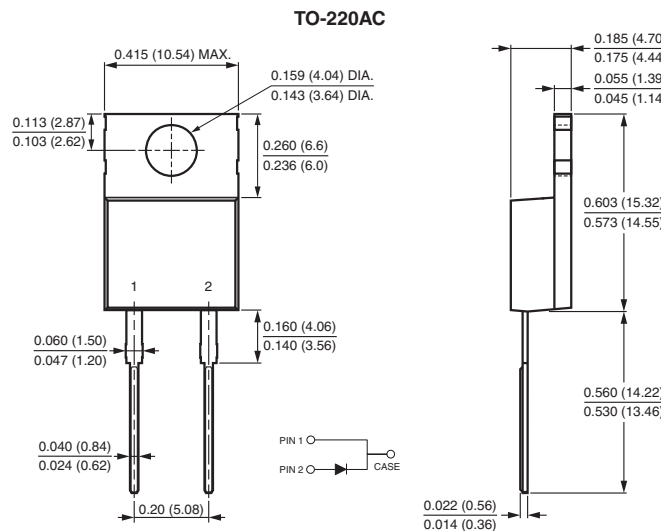


Fig. 6 - Reverse Switching Characteristics

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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