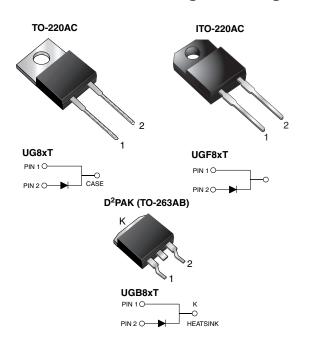


Vishay General Semiconductor

# **High Voltage Ultrafast Rectifier**



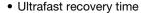
### **LINKS TO ADDITIONAL RESOURCES**



PRIMARY CHARACTERISTICS					
I <sub>F(AV</sub> )	8.0 A				
$V_{RRM}$	500 V to 600 V				
I <sub>FSM</sub>	100 A				
t <sub>rr</sub>	25 ns				
t <sub>fr</sub>	500 ns				
$V_F$ at $I_F = 8 A$	1.5 V				
T <sub>J</sub> max.	150 °C				
Package	TO-220AC, ITO-220AC, D <sup>2</sup> PAK (TO-263AB)				
Circuit configuration	Single				

### **FEATURES**

- Power pack
- · Glass passivated chip junction



- · Soft recovery characteristics
- · Low switching losses, high efficiency
- · High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for D<sup>2</sup>PAK (TO-263AB package))
- Solder dip 275 °C max., 10 s per JESD 22-B106 (for TO-220AC and ITO-220AC package)
- AEC-Q101 qualified available
  - -Automotive ordering code: base P/NHE3 (for ITO-220AC and D<sup>2</sup>PAK (TO-263AB package))
- Material categorization: for definitions of compliance please see <a href="https://www.vishav.com/doc?99912"><u>www.vishav.com/doc?99912</u></a>

### **TYPICAL APPLICATIONS**

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

### **MECHANICAL DATA**

**Case:** TO-220AC, ITO-220AC, D<sup>2</sup>PAK (TO-263AB) Molding compound meets UL 94V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade Base P/NHE3\_X - RoHS-compliant and AEC-Q101 qualified ("\_X" denotes revision code e.g. A, B,....)

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

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs max.

<b>MAXIMUM RATINGS</b> (T <sub>C</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	UG8HT	UG8JT	UNIT		
Max. repetitive peak reverse voltage	$V_{RRM}$	500	600	V		
Max. working reverse voltage	V <sub>RWM</sub>	400	480	V		
Max. RMS voltage	V <sub>RMS</sub>	350	420	V		
Max. DC blocking voltage	$V_{DC}$	500	600	V		
Max. average forward rectified current	I <sub>F(AV)</sub>	8.0		А		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	100		А		
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150		°C		
Isolation voltage (ITO-220AB only) from terminals to heatsink t = 1 min	V <sub>AC</sub>	1500		V		



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>C</sub> = 25 °C unless otherwise noted)							
PARAMETER	TEST (	SYMBOL	UG8HT	UG8JT	UNIT		
Max. instantaneous forward voltage (1)	$I_F = 8 \text{ A}$ $T_J = 25 ^{\circ}\text{C}$		V	1.75		V	
	I <sub>F</sub> = 8 A	T <sub>J</sub> = 125 °C	V <sub>F</sub>	1.50		V	
		T <sub>J</sub> = 25 °C		30		μΑ	
Max. DC reverse current at $V_{\text{RWM}}$		T <sub>J</sub> = 100 °C	I <sub>R</sub>	800		μA	
		T <sub>J</sub> = 125 °C		4.0		mA	
Maria de la companya della companya della companya della companya de la companya della companya	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	
Max. reverse recovery time	$I_F = 1.0 \text{ A}, \text{ dI/dt} = 50 \text{ A/}\mu\text{s}, \text{ V}_R = 30 \text{ V}, \text{ I}_{rr} = 0.1 \text{ I}_{RM}$		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	S	1.0		-		
Mariana	$I_F = 8.0 \text{ A}, \text{ dI/dt} = 64 \text{ A/}\mu\text{s}, V_R = 400 \text{ V}, T_C = 125 ^{\circ}\text{C}$		I <sub>RM</sub>	5.5		Α	
Max. reverse recovery current	I <sub>F</sub> = 8.0 A, dl/dt = 240 A/µs, V <sub>R</sub> = 400 V, T <sub>C</sub> = 125 °C		I <sub>RM</sub>	1	0	Α	
Peak forward recovery time	I <sub>F</sub> = 8.0 A, dI/dt = 64 A	t <sub>fr</sub>	50	00	ns		

#### Note

 $<sup>^{(1)}\,</sup>$  Pulse test: 300  $\mu s$  pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	UG8	UGF	UGB8	UNIT
Typical thermal resistance from junction to case	$R_{\theta JC}$	2.2	5.0	2.2	°C/W

ORDERING INFORMATION (Example)							
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
TO-220AC	UG8JT-E3/45	1.80	45	50/tube	Tube		
ITO-220AC	UGF8JT-E3/45	1.95	45	50/tube	Tube		
D <sup>2</sup> PAK (TO-263AB)	UGB8JT-E3/45	1.33	45	50/tube	Tube		
D <sup>2</sup> PAK (TO-263AB)	UGB8JT-E3/81	1.33	81	800/reel	Tape and reel		
ITO-220AC	UGF8JTHE3_A/P (1)	1.95	Р	50/tube	Tube		
D <sup>2</sup> PAK (TO-263AB)	UGB8JTHE3_A/P (1)	1.33	Р	50/tube	Tube		
D <sup>2</sup> PAK (TO-263AB)	UGB8JTHE3_A/I (1)	1.33	I	800/reel	Tape and reel		

#### Note

<sup>(1)</sup> AEC-Q101 qualified available in ITO-220 and D2PAK (TO-263AB) package



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

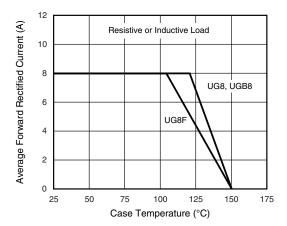


Fig. 1 - Max. Forward Current Derating Curve

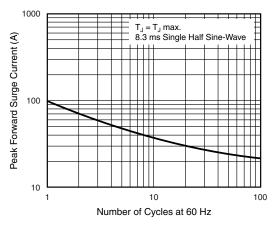


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current

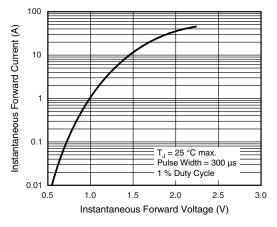


Fig. 3 - Typical Instantaneous Forward Characteristics

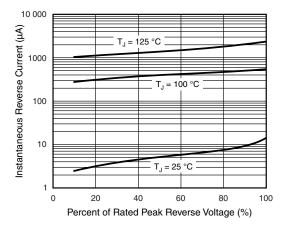


Fig. 4 - Typical Reverse Leakage Characteristics

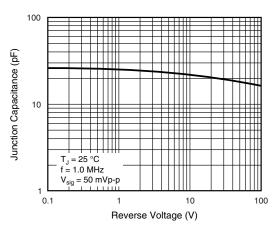


Fig. 5 - Typical Junction Capacitance

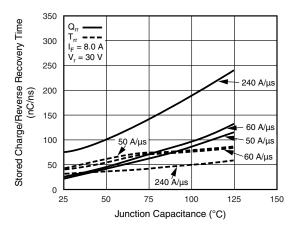
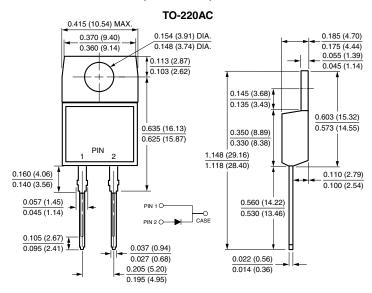


Fig. 6 - Reverse Switching Characteristics

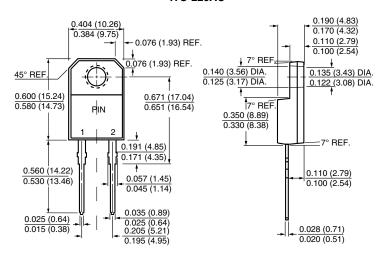


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## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



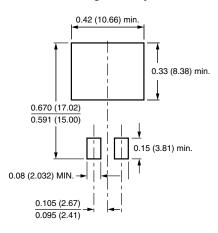
### ITO-220AC



## D<sup>2</sup>PAK (TO-263AB)

#### 0.411 (10.45) 0.190 (4.83) 0.380 (9.65) 0.160 (4.06) 0.055 (1.40) 0.245 (6.22) 0.045 (1.14) MIN 0.055 (1.40) 0.360 (9.14) 0.047 (1.19) 0.320 (8.13) 0.624 (15.85) K 0.591 (15.00) - 0 to 0.01 (0 to 0.254) 0.110 (2.79) 0.090 (2.29) 0.037 (0.940) 0.021 (0.53) 0.027 (0.686) 0.014 (0.36) 0.105 (2.67) 0.140 (3.56) 0.095 (2.41) 0.205 (5.20) 0.110 (2.79) 0.195 (4.95)

## **Mounting Pad Layout**





## **Legal Disclaimer Notice**

Vishay

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