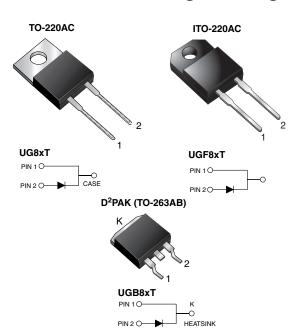


Vishay General Semiconductor

High Voltage Ultrafast Rectifier



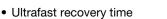
LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS					
I _{F(AV})	8.0 A				
V_{RRM}	500 V to 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, ITO-220AC, D ² 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 D²PAK (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 D²PAK (TO-263AB package))
- Material categorization: for definitions of compliance please see <u>www.vishav.com/doc?99912</u>

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: TO-220AC, ITO-220AC, D²PAK (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.

MAXIMUM RATINGS (T _C = 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 _{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		А		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	100		А		
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +150		°C		
Isolation voltage (ITO-220AB only) from terminals to heatsink t = 1 min	V _{AC}	1500		V		



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ELECTRICAL CHARACTERISTICS (T _C = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	UG8HT	UG8JT	UNIT	
Max. instantaneous forward voltage (1)	$I_F = 8 \text{ A}$ $T_J = 25 \text{ °C}$		V	1.75		V	
	I _F = 8 A	T _J = 125 °C	V _F	1.50		V	
Max. DC reverse current at V _{RWM}		T _J = 25 °C		30		μΑ	
		T _J = 100 °C	I _R	800		μA	
		T _J = 125 °C		4.0		mA	
Maria de la companya della companya della companya della companya de la companya della companya	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	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 _{rr}	50		ns	
Typical softness factor (t _b /t _a)	I _F = 8.0 A, dl/dt = 240	S	1.0		-		
Max. reverse recovery current	$I_F = 8.0 \text{ A}, \text{ dI/dt} = 64 \text{ A/}\mu\text{s}, V_R = 400 \text{ V}, T_C = 125 ^{\circ}\text{C}$		I _{RM}	5.5		Α	
	$I_F = 8.0 \text{ A}$, $dI/dt = 240 \text{ A/}\mu\text{s}$, $V_R = 400 \text{ V}$, $T_C = 125 ^{\circ}\text{C}$		I _{RM}	1	0	Α	
Peak forward recovery time	I _F = 8.0 A, dI/dt = 64 A	t _{fr}	50	00	ns		

Note

 $^{^{(1)}\,}$ Pulse test: 300 μs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T _C = 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 ² PAK (TO-263AB)	UGB8JT-E3/45	1.33	45	50/tube	Tube		
D ² 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 ² PAK (TO-263AB)	UGB8JTHE3_A/P (1)	1.33	Р	50/tube	Tube		
D ² PAK (TO-263AB)	UGB8JTHE3_A/I (1)	1.33	I	800/reel	Tape and reel		

Note

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



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RATINGS AND CHARACTERISTCS CURVES (T_A = 25 °C unless otherwise noted)

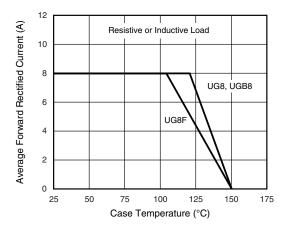


Fig. 1 - Max. Forward Current Derating Curve

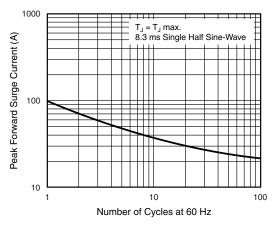


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current

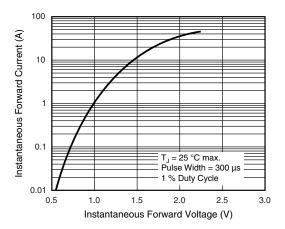


Fig. 3 - Typical Instantaneous Forward Characteristics

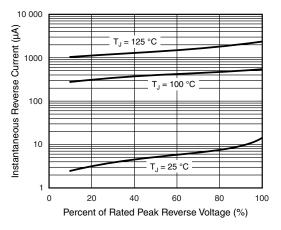


Fig. 4 - Typical Reverse Leakage Characteristics

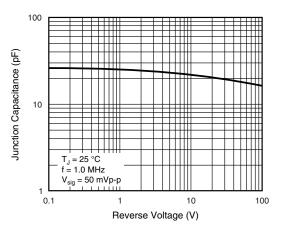


Fig. 5 - Typical Junction Capacitance

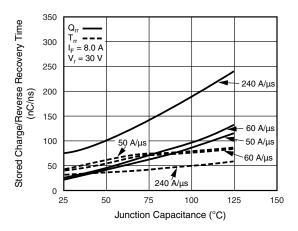
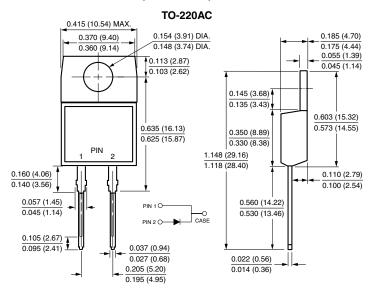


Fig. 6 - Reverse Switching Characteristics

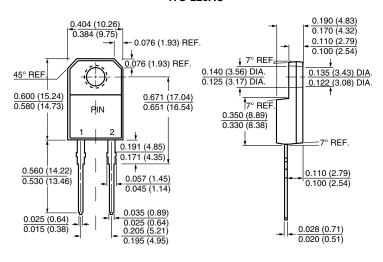


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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



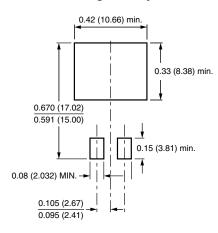
ITO-220AC



D²PAK (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) Κ 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





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