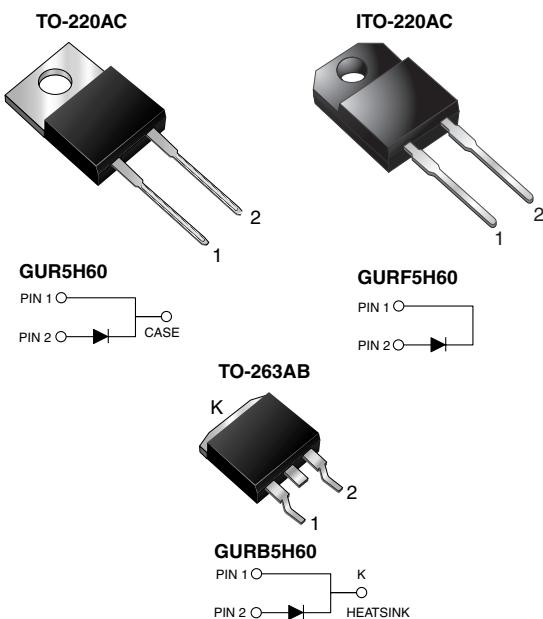


## Ultrafast Rectifier



### 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 voltage and high frequency power factor corrector, freewheeling diodes and secondary dc-to-dc rectification 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	
$I_{F(AV)}$	5.0 A
$V_{RRM}$	600 V
$I_{FSM}$	90 A
$t_{rr}$	30 ns
$V_F$	1.6 V
$T_J$ max.	150 °C

MAXIMUM RATINGS ( $T_C = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	600	V
Maximum working reverse voltage	$V_{RWM}$	480	V
Maximum RMS voltage	$V_{RMS}$	420	V
Maximum DC blocking voltage	$V_{DC}$	600	V
Maximum average forward rectified current	$I_{F(AV)}$	5	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	90	A
Reverse energy	$E_R$	10	mJ
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150	°C
Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1$ min	$V_{AC}$	1500	V

# GUR5H60, GURF5H60 & GURB5H60

Vishay General Semiconductor



## ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	$I_F = 5\text{ A}$	$T_J = 25^\circ\text{C}$ $T_J = 150^\circ\text{C}$	$V_F$	1.8 1.6	V
Maximum DC reverse current	$V_{RWM}$	$T_J = 25^\circ\text{C}$ $T_J = 150^\circ\text{C}$	$I_R$	20 400	$\mu\text{A}$
Maximum reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$		$t_{rr}$	30	ns

**Note:**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

## THERMAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	GUR	GURF	GURB	UNIT
Typical thermal resistance from junction to case	$R_{\theta JC}$	2.0	3.0	2.0	$^\circ\text{C/W}$

## ORDERING INFORMATION (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	GUR5H60-E3/45	1.80	45	50/tube	Tube
ITO-220AC	GURF5H60-E3/45	1.95	45	50/tube	Tube
TO-263AB	GURB5H60-E3/45	1.33	45	50/tube	Tube
TO-263AB	GURB5H60-E3/81	1.33	81	800/reel	Tape and reel
TO-220AC	GUR5H60HE3/45 <sup>(1)</sup>	1.80	45	50/tube	Tube
ITO-220AC	GURF5H60HE3/45 <sup>(1)</sup>	1.95	45	50/tube	Tube
TO-263AB	GURB5H60HE3/45 <sup>(1)</sup>	1.33	45	50/tube	Tube
TO-263AB	GURB5H60HE3/81 <sup>(1)</sup>	1.33	81	800/reel	Tape and reel

**Note:**

(1) Automotive grade AEC Q101 qualified

### RATINGS AND CHARACTERISTICS CURVES

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

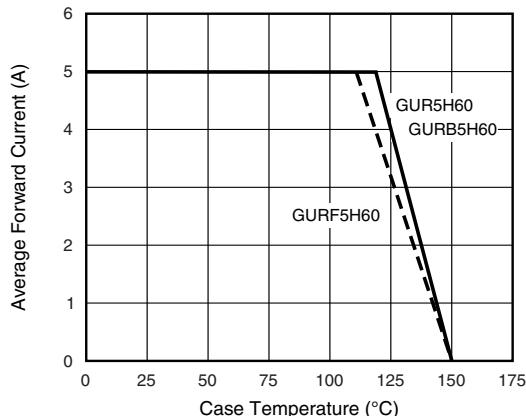


Figure 1. Forward Current Derating Curve

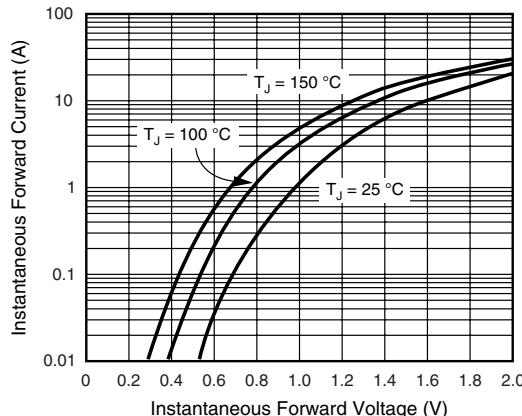


Figure 4. Typical Forward Voltage

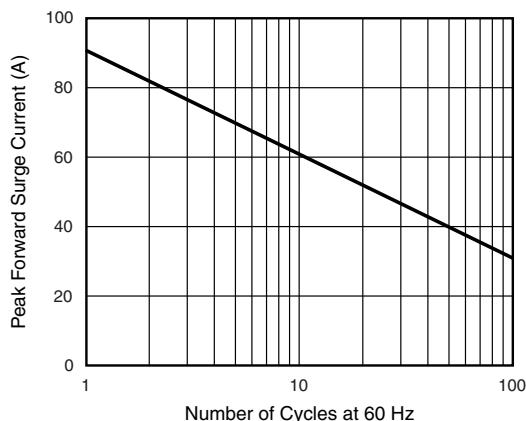


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

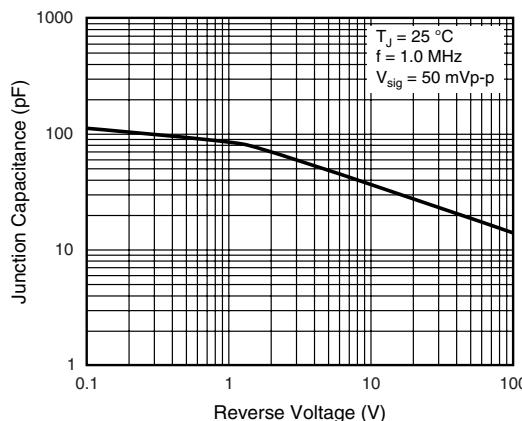


Figure 5. Typical Junction Capacitance

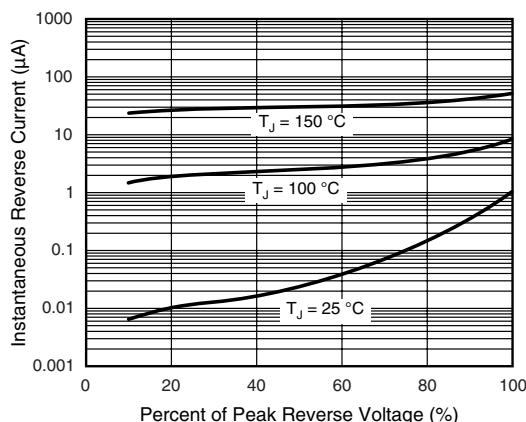
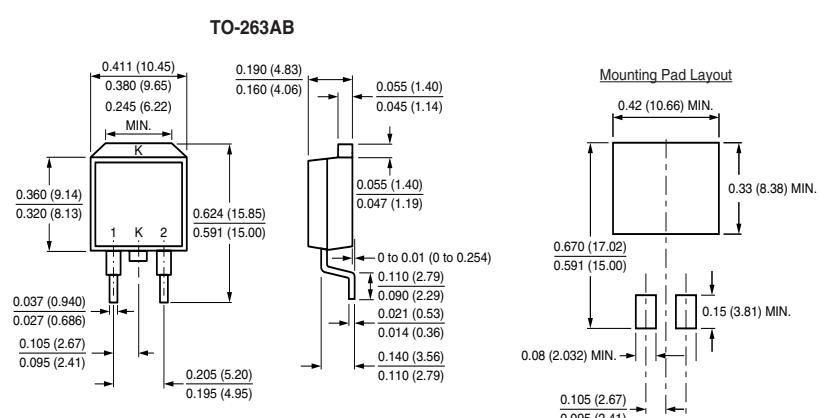
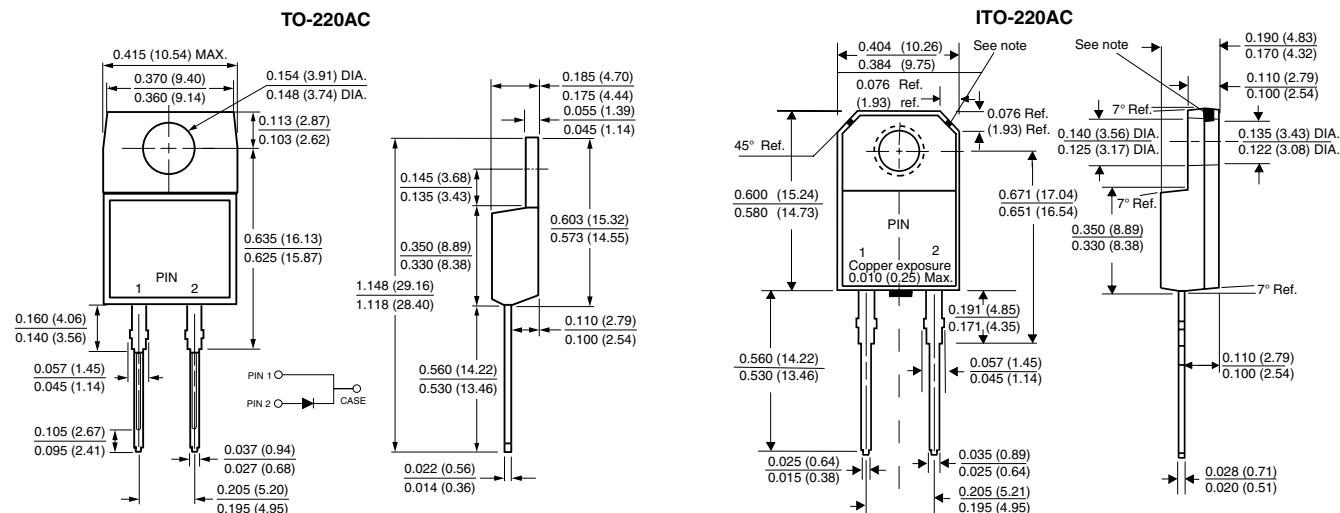


Figure 3. Typical Reverse Current

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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