



## Glass Passivated Junction Fast Switching Rectifier



### FEATURES

- Superrectifier structure for high reliability condition
- Cavity-free glass-passivated junction
- Fast switching for high efficiency
- Low leakage current, typical  $I_R$  less than  $0.2 \mu\text{A}$
- High forward surge capability
- Meets environmental standard MIL-S-19500
- Solder dip  $275^\circ\text{C}$  max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



RoHS  
COMPLIANT

### TYPICAL APPLICATIONS

For use in fast switching rectification of power supply, inverters, converters and freewheeling diodes for consumer, automotive and telecommunication.

### MECHANICAL DATA

**Case:** GP20, molded epoxy over glass body  
Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS compliant, commercial grade  
Base P/NHE3 - RoHS compliant, AEC-Q101 qualified

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102  
E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Color band denotes cathode end

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2.0 A
$V_{RRM}$	50 V to 600 V
$I_{FSM}$	80 A
$t_{rr}$	150 ns, 250 ns
$V_F$	1.3 V
$I_R$	$5.0 \mu\text{A}$
$T_J$ max.	$175^\circ\text{C}$

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

PARAMETER	SYMBOL	RGP20A	RGP20B	RGP20D	RGP20G	RGP20J	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	50	100	200	400	600	V
Maximum RMS voltage	$V_{RMS}$	35	70	140	280	420	V
Maximum DC blocking voltage	$V_{DC}$	50	100	200	400	600	V
Maximum average forward rectified current 0.375" (9.5 mm) lead length at $T_A = 55^\circ\text{C}$	$I_{F(AV)}$	2.0					A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	80					A
Maximum full load reverse current, full cycle average, 0.375" (9.5 mm) lead length at $T_A = 55^\circ\text{C}$	$I_{R(AV)}$	100					$\mu\text{A}$
Operating junction and storage temperature range	$T_J, T_{STG}$	- 65 to + 175					$^\circ\text{C}$

# RGP20A thru RGP20J



Vishay General Semiconductor

ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)									
PARAMETER	TEST CONDITIONS	SYMBOL	RGP20A	RGP20B	RGP20D	RGP20G	RGP20J	UNIT	
Maximum instantaneous forward voltage	2.0 A	$V_F$	1.3						V
Maximum DC reverse current at rated DC blocking voltage	$T_A = 25\text{ }^\circ\text{C}$	$I_R$	5.0						$\mu\text{A}$
	$T_A = 125\text{ }^\circ\text{C}$		100						
Maximum reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$	$t_{rr}$	150				250		ns
Typical junction capacitance	4.0 V, 1 MHz	$C_J$	35						pF

THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)								
PARAMETER	SYMBOL	RGP20A	RGP20B	RGP20D	RGP20G	RGP20J	UNIT	
Typical thermal resistance	$R_{\theta JA}^{(1)}$	22						$^\circ\text{C/W}$

**Note**

(1) Thermal resistance from junction to ambient at 0.375" (9.5 mm) lead length, P.C.B. mounted

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
RGP20J-E3/54	1.013	54	1400	13" diameter paper tape and reel
RGP20J-E3/73	1.013	73	1000	Ammo pack packaging
RGP20JHE3/54 (1)	1.013	54	1400	13" diameter paper tape and reel
RGP20JHE3/73 (1)	1.013	73	1000	Ammo pack packaging

**Note**

(1) AEC-Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

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

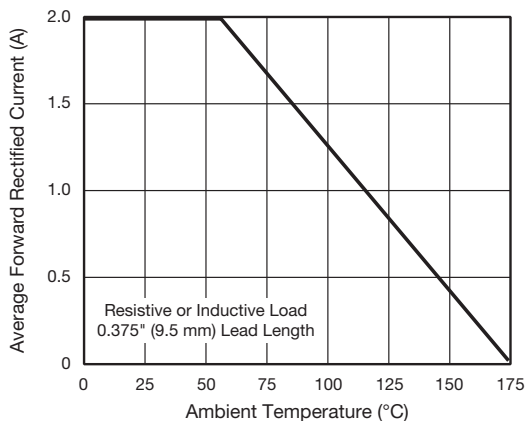


Fig. 1 - Forward Current Derating Curve

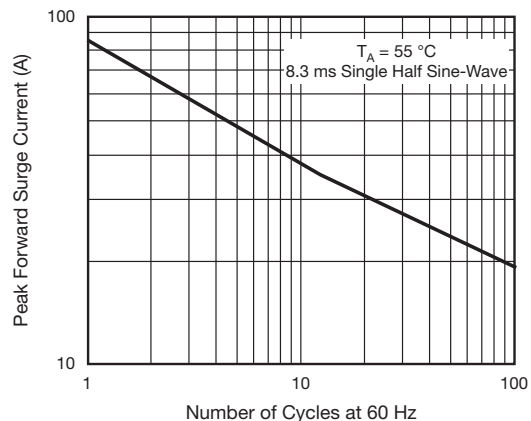


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current



# RGP20A thru RGP20J

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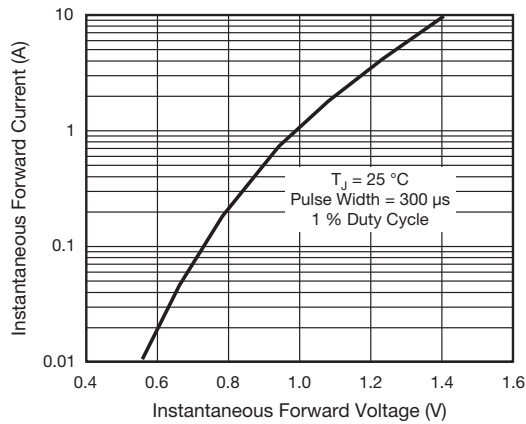


Fig. 3 - Typical Instantaneous Forward Characteristics

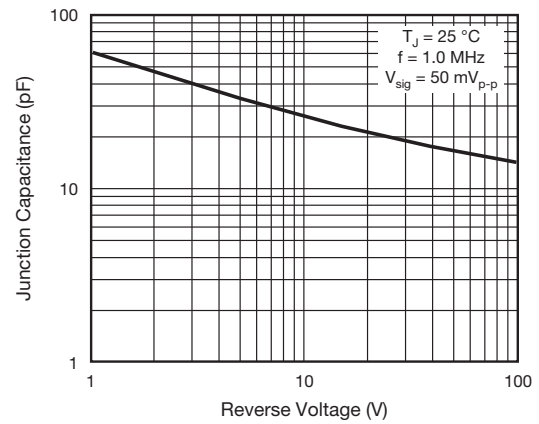


Fig. 5 - Typical Junction Capacitance

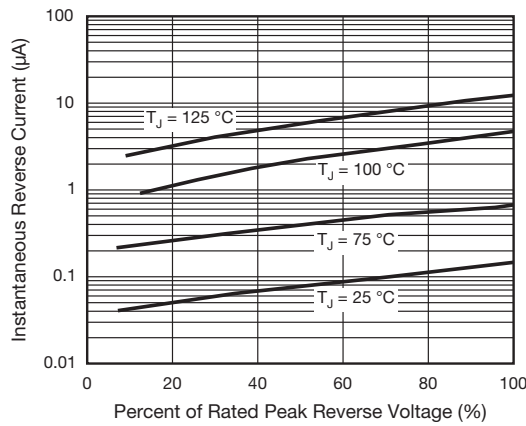


Fig. 4 - Typical Reverse Characteristics

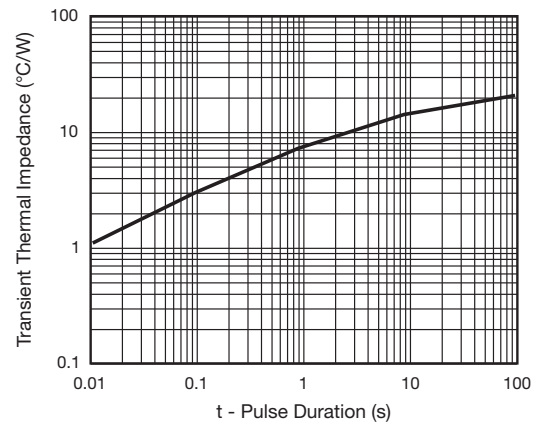
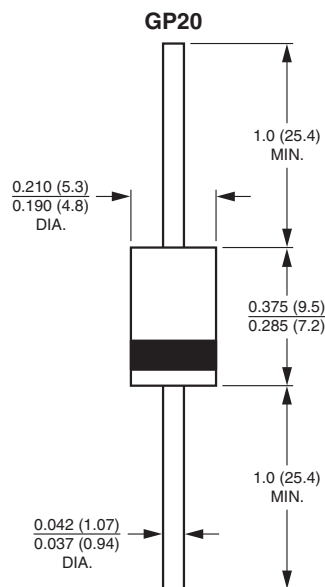


Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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