

## Glass Passivated Junction Fast Switching Rectifier


**Case Style GP20**

\*Glass-plastic encapsulation technique is covered by Patent No. 3,996,602, brazed-lead assembly by Patent No. 3,930,306

### 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  $0.2 \mu A$
- High forward surge capability
- Meets environmental standard MIL-S-19500
- Solder dip  $260^\circ C$ , 40 s
- Component in accordance to RoHS 2002/95/EC and 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

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:** 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
$I_R$	$5.0 \mu A$
$T_J$ max.	$175^\circ C$

### MAXIMUM RATINGS ( $T_A = 25^\circ C$ 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 $T_A = 55^\circ C$	$I_{F(AV)}$	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 $T_A = 55^\circ C$	$I_{R(AV)}$	100						$\mu A$
Operating junction and storage temperature range	$T_J, T_{STG}$	- 65 to + 175						$^\circ C$



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)									
PARAMETER	TEST CONDITIONS		SYMBOL	RGP20A	RGP20B	RGP20D	RGP20G	RGP20J	UNIT
Maximum instantaneous forward voltage	2.0 A		V <sub>F</sub>			1.3			V
Maximum DC reverse current at rated DC blocking voltage		T <sub>A</sub> = 25 °C T <sub>A</sub> = 125 °C	I <sub>R</sub>			5.0 100			μA
Maximum 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>		150			250	ns
Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>			35			pF

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)								
PARAMETER	SYMBOL	RGP20A	RGP20B	RGP20D	RGP20G	RGP20J	UNIT	
Typical thermal resistance <sup>(1)</sup>	R <sub>θJA</sub>			22			°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 <sup>(1)</sup>	1.013	54	1400	13" diameter paper tape and reel
RGP20JHE3/73 <sup>(1)</sup>	1.013	73	1000	Ammo pack packaging

**Note:**

(1) Automotive grade AEC Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

(T<sub>A</sub> = 25 °C unless otherwise noted)

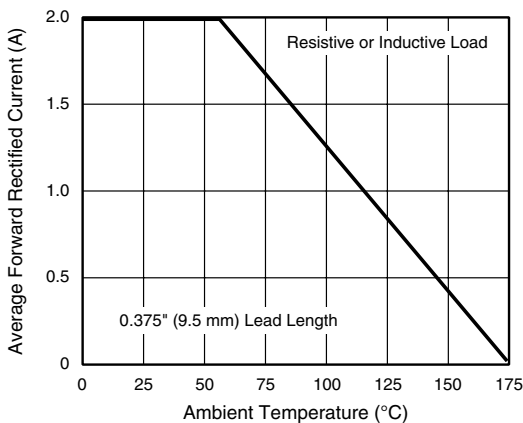


Figure 1. Forward Current Derating Curve

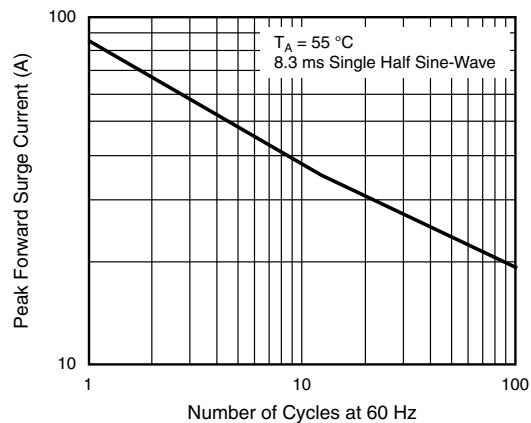


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

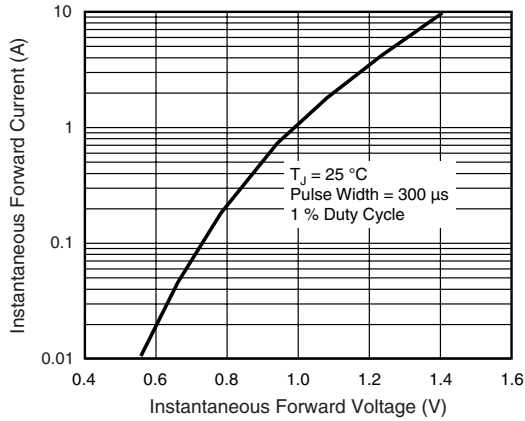


Figure 3. Typical Instantaneous Forward Characteristics

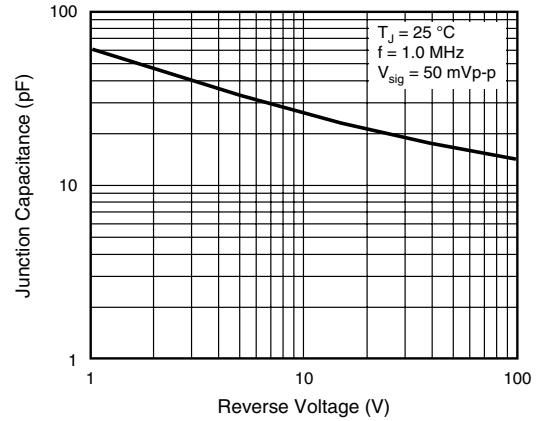


Figure 5. Typical Junction Capacitance

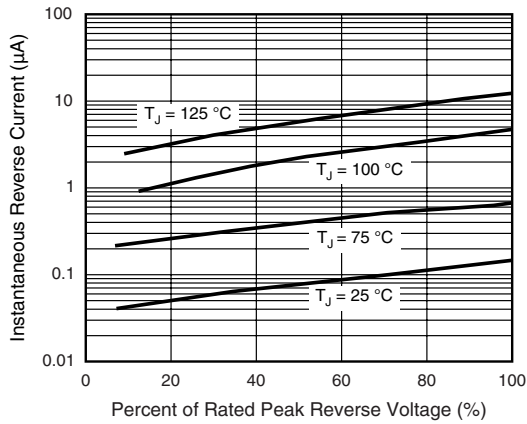


Figure 4. Typical Reverse Characteristics

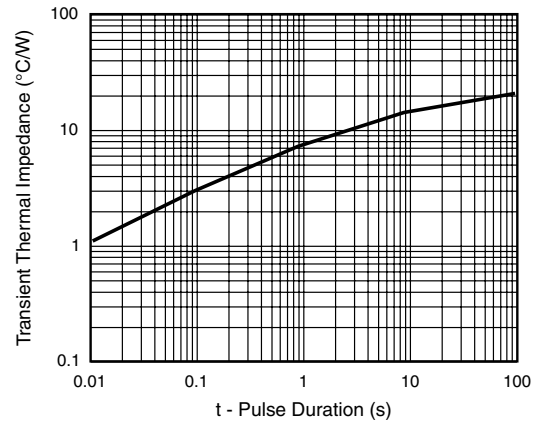
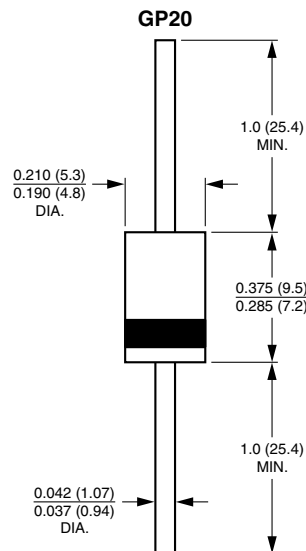


Figure 6. Typical Transient Thermal Impedance

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





## Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.