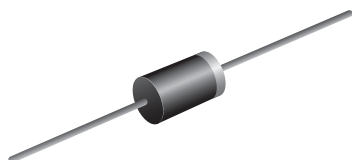




## Glass Passivated Junction Rectifier

SUPERECTIFIER®



GP20

## FEATURES

- Superectifier structure for high reliability application
- Cavity-free glass-passivated junction
- Low forward voltage drop
- Low leakage current,  $I_R$  less than 0.1  $\mu A$
- High forward surge capability
- Meets environmental standard MIL-S-19500
- Solder dip 275 °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 general purpose rectification of power supplies, inverters, converters and freewheeling diodes for both consumer and automotive applications.

## PRIMARY CHARACTERISTICS

|             |               |
|-------------|---------------|
| $I_{F(AV)}$ | 2.0 A         |
| $V_{RRM}$   | 50 V to 600 V |
| $I_{FSM}$   | 65 A          |
| $V_F$       | 1.2 V, 1.1 V  |
| $I_R$       | 5.0 $\mu A$   |
| $T_J$ max.  | 175 °C        |

## 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

MAXIMUM RATINGS ( $T_A = 25$  °C unless otherwise noted)

| PARAMETER                                                                                              | SYMBOL         | GP20A         | GP20B | GP20D | GP20G | GP20J | 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<br>0.375" (9.5 mm) lead length at $T_A = 55$ °C              | $I_{F(AV)}$    | 2.0           |       |       |       |       | A       |
| Peak forward surge current 8.3 ms single half sine wave<br>superimposed on rated load                  | $I_{FSM}$      | 65            |       |       |       |       | A       |
| Maximum full load reverse current, full cycle average,<br>0.375" (9.5 mm) lead length at $T_A = 55$ °C | $I_{R(AV)}$    | 100           |       |       |       |       | $\mu A$ |
| Operating junction and storage temperature range                                                       | $T_J, T_{STG}$ | - 65 to + 175 |       |       |       |       | °C      |

## GP20A thru GP20J

Vishay General Semiconductor

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

| PARAMETER                                               | TEST CONDITIONS                                                           | SYMBOL   | GP20A | GP20B | GP20D | GP20G | GP20J | UNIT          |
|---------------------------------------------------------|---------------------------------------------------------------------------|----------|-------|-------|-------|-------|-------|---------------|
| Maximum instantaneous forward voltage                   | 2.0 A                                                                     | $V_F$    | 1.2   |       | 1.1   |       |       | V             |
| Maximum DC reverse current at rated DC blocking voltage | $T_A = 25\text{ }^{\circ}\text{C}$                                        | $I_R$    |       |       | 5.0   |       |       | $\mu\text{A}$ |
| Typical reverse recovery time                           | $I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ ,<br>$I_{rr} = 0.25\text{ A}$ | $t_{rr}$ |       |       | 5.0   |       |       | $\mu\text{s}$ |
| Typical junction capacitance                            | 4.0 V, 1 MHz                                                              | $C_J$    |       |       | 40    |       |       | pF            |

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

| PARAMETER                  | SYMBOL                          | GP20A | GP20B | GP20D | GP20G | GP20J | UNIT |
|----------------------------|---------------------------------|-------|-------|-------|-------|-------|------|
| Typical thermal resistance | R <sub>θJA</sub> <sup>(1)</sup> | 25    |       |       |       |       | °C/W |
|                            | R <sub>θJL</sub> <sup>(1)</sup> | 10    |       |       |       |       |      |

**Note**

(1) Thermal resistance from junction to ambient and from junction to lead 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                    |
|----------------------------|-----------------|------------------------|---------------|----------------------------------|
| GP20J-E3/54                | 1.013           | 54                     | 1400          | 13" diameter paper tape and reel |
| GP20J-E3/73                | 1.013           | 73                     | 1000          | Ammo pack packaging              |
| GP20JHE3/54 <sup>(1)</sup> | 1.013           | 54                     | 1400          | 13" diameter paper tape and reel |
| GP20JHE3/73 <sup>(1)</sup> | 1.013           | 73                     | 1000          | Ammo pack packaging              |

**Note**

(1) AEC-Q101 qualified

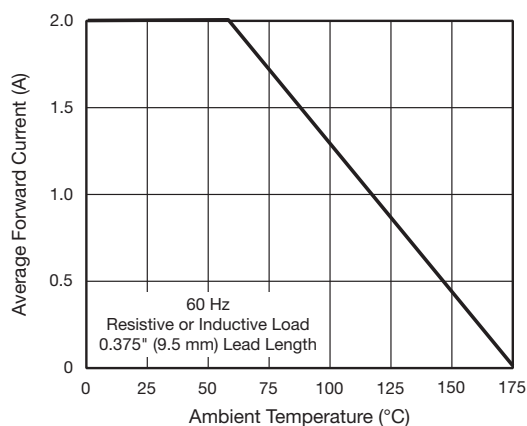
**RATINGS AND CHARACTERISTICS CURVES**( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

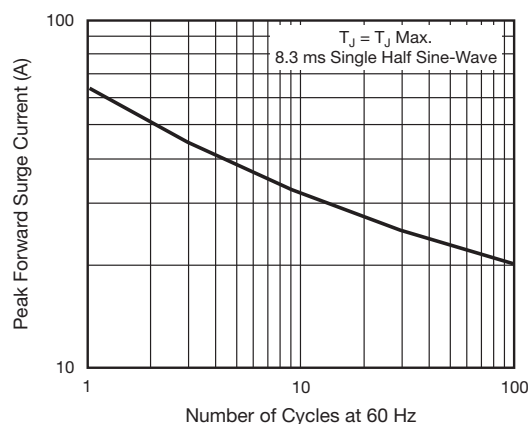


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current



# GP20A thru GP20J

Vishay General Semiconductor

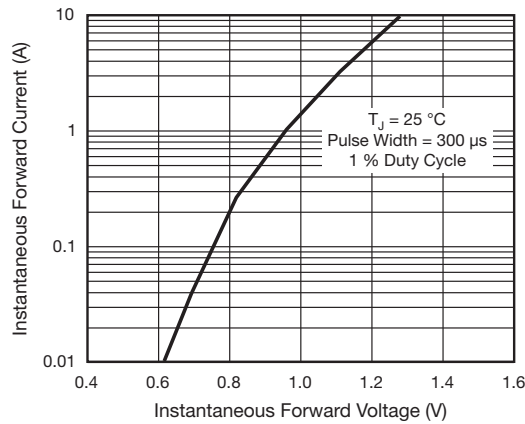


Fig. 3 - Typical Instantaneous Forward Characteristics

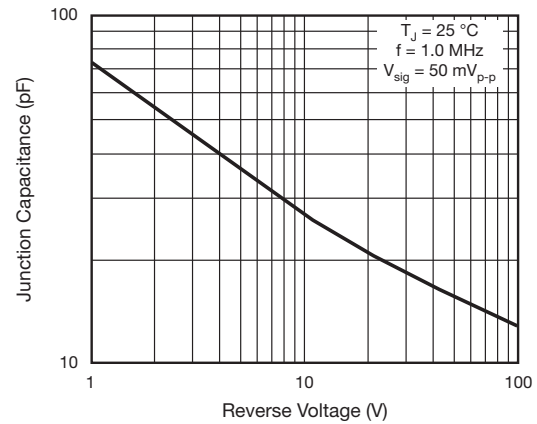


Fig. 5 - Typical Junction Capacitance

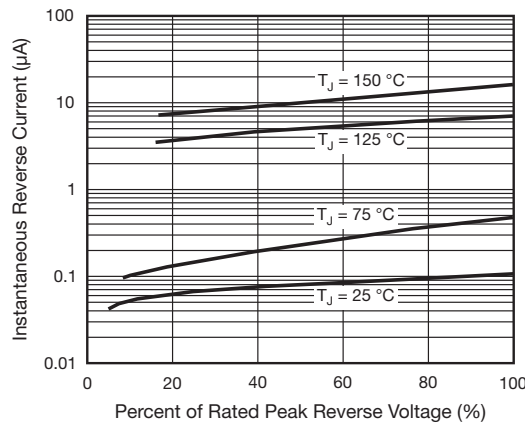


Fig. 4 - Typical Reverse Characteristics

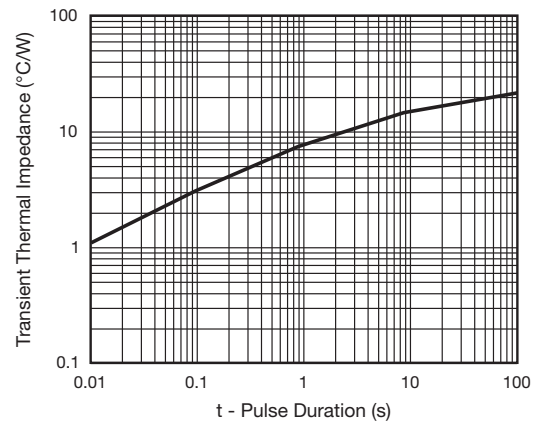
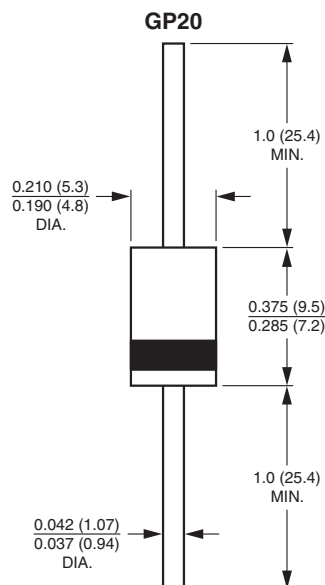


Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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