

Glass Passivated Junction Fast Switching Rectifier



FEATURES

- Superectifier structure for high reliability condition
- Cavity-free glass-passivated junction
- Fast switching for high efficiency
- Low leakage current
- 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
- Halogen-free according to IEC 61249-2-21 definition



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: DO-204AL, 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 | |
|-------------------------|------------------------|
| $I_{F(AV)}$ | 1.0 A |
| V_{RRM} | 50 V to 1000 V |
| I_{FSM} | 30 A |
| t_{tr} | 150 ns, 250 ns, 500 ns |
| I_R | 5.0 μ A |
| V_F | 1.3 V |
| T_J max. | 175 °C |

| MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | | | | |
|--|----------------|---------------|--------|--------|--------|--------|--------|--------|------------------|
| PARAMETER | SYMBOL | RGP10A | RGP10B | RGP10D | RGP10G | RGP10J | RGP10K | RGP10M | UNIT |
| Maximum repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Maximum RMS voltage | V_{RMS} | 35 | 70 | 140 | 280 | 420 | 560 | 700 | V |
| Maximum DC blocking voltage | V_{DC} | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Maximum average forward rectified current 0.375" (9.5 mm) lead length at $T_A = 55\text{ }^\circ\text{C}$ | $I_{F(AV)}$ | 1.0 | | | | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 30 | | | | | | | A |
| Maximum full load reverse current, full cycle average 0.375" (9.5 mm) lead length $T_A = 55\text{ }^\circ\text{C}$ | $I_{R(AV)}$ | 100 | | | | | | | μ A |
| Operating junction and storage temperature range | T_J, T_{STG} | - 65 to + 175 | | | | | | | $^\circ\text{C}$ |

RGP10A thru RGP10M

Vishay General Semiconductor



| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | | | | | |
|--|--|-----------------|--------|--------|--------|--------|--------|--------|--------|------|----|
| PARAMETER | TEST CONDITIONS | SYMBOL | RGP10A | RGP10B | RGP10D | RGP10G | RGP10J | RGP10K | RGP10M | UNIT | |
| Maximum instantaneous forward voltage | 1.0 A | V _F | 1.3 | | | | | | | | V |
| Maximum DC reverse current at rated DC blocking voltage | T _A = 25 °C | I _R | 5.0 | | | | | | | | μA |
| | T _A = 150 °C | | 200 | | | | | | | | |
| Maximum reverse recovery time | I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A | t _{rr} | | 150 | | | 250 | | 500 | ns | |
| Typical junction capacitance | 4.0 V, 1 MHz | C _J | 15 | | | | | | | | pF |

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | | | | |
|---|---------------------------------|--------|--------|--------|--------|--------|--------|--------|------|------|
| PARAMETER | SYMBOL | RGP10A | RGP10B | RGP10D | RGP10G | RGP10J | RGP10K | RGP10M | UNIT | |
| Typical thermal resistance | R _{θJA} ⁽¹⁾ | 55 | | | | | | | | °C/W |

Note

⁽¹⁾ Thermal resistance from junction to ambient at 0.375" (9.5 mm) lead length, PCB mounted

| ORDERING INFORMATION (Example) | | | | |
|--------------------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| RGP10J-E3/54 | 0.336 | 54 | 5500 | 13" diameter paper tape and reel |
| RGP10J-E3/73 | 0.336 | 73 | 3000 | Ammo pack packaging |
| RGP10JHE3/54 ⁽¹⁾ | 0.336 | 54 | 5500 | 13" diameter paper tape and reel |
| RGP10JHE3/73 ⁽¹⁾ | 0.336 | 73 | 3000 | Ammo pack packaging |

Note

⁽¹⁾ AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)



Fig. 1 - Forward Current Derating Curve



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



Fig. 3 - Typical Instantaneous Forward Characteristics



Fig. 5 - Typical Junction Capacitance



Fig. 4 - Typical Reverse Characteristics



Fig. 6 - Typical Transient Thermal Impedance

PACKAGING OUTLINE DIMENSIONS in inches (millimeters)

DO-204AL (DO-41)



Note

- Lead diameter is $\frac{0.026 (0.66)}{0.023 (0.58)}$ for suffix "E" part numbers



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