

Vishay General Semiconductor

COMPLIANT

HALOGEN

FREE

Miniature Ultrafast Plastic Rectifier



| PRIMARY CHARACTERISTICS | | | | | | |
|-------------------------|---------------------------|--|--|--|--|--|
| I _{F(AV)} | 4.0 A | | | | | |
| V _{RRM} | 50 V, 100 V, 150 V, 200 V | | | | | |
| I _{FSM} | I _{FSM} 150 A | | | | | |
| t _{rr} | 20 ns | | | | | |
| V _F | 0.95 V | | | | | |
| T _J max. | 150 °C | | | | | |
| Package | DO-201AD | | | | | |
| Circuit configuration | Single | | | | | |

FEATURES

- Glass passivated pellet chip junction
- Ultrafast reverse recovery time
- Low forward voltage drop
- · Low switching losses, high efficiency
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see <u>www.vishav.com/doc?99912</u>

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer and telecommunication.

MECHANICAL DATA

Case: DO-201AD

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Terminals: matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

E3 and M3 suffix meets JESD 201 class 1A whisker test

Polarity: color band denotes cathode end

| MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted) | | | | | | | |
|--|-----------------------------------|-------------|------|------|------|------|--|
| PARAMETER | SYMBOL | UG4A | UG4B | UG4C | UG4D | UNIT | |
| Maximum repetitive peak reverse voltage | V _{RRM} | 50 | 100 | 150 | 200 | | |
| Maximum RMS voltage | V _{RMS} | 35 | 70 | 105 | 140 | V | |
| Maximum DC blocking voltage | V_{DC} | 50 | 100 | 150 | 200 | | |
| Maximum average forward rectified current (fig. 1) | I _{F(AV)} | 4.0 | | | | | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I _{FSM} | 150 | | | | А | |
| Operating junction and storage temperature range | T _J , T _{STG} | -55 to +150 | | | | °C | |

| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | | |
|---|--|-------------------------------|-------------------|------|----|--|--|--|
| PARAMETER | TEST CONDITIONS | SYMBOL | VALUE | UNIT | | | | |
| Maximum instantaneous forward voltage | $I_F = 4.0 \text{ A}$ | V _F ⁽¹⁾ | 0.95 | V | | | | |
| Maximum DC reverse current | Maximum DC reverse current T _A = 25 °C | | | 5.0 | μΑ | | | |
| at rated DC blocking voltage | | T _A = 100 °C | I _R | 300 | | | | |
| Maximum reverse recovery time | $I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$ | t _{rr} | 20 | | | | | |
| Typical reverse recovery time | I_F = 4.0 A, dI/dt = 50 A/ μs , V_R = 30 V, I_{rr} = 10 % I_{RM} | T _J = 25 °C | - t _{rr} | 30 | ns | | | |
| | | T _J = 100 °C | | 50 | | | | |
| Typical stored charge | $I_F = 4.0 \text{ A}, \text{ dI/dt} = 50 \text{ A/}\mu\text{s}, V_B = 30 \text{ V},$ | T _J = 25 °C | 0 | 15 | nC | | | |
| | I _{rr} = 10 % I _{RM} | T _J = 100 °C | Q_{rr} | 30 | | | | |
| Typical junction capacitance | 4.0 V, 1 MHz | CJ | 20 | pF | | | | |

Note

 $^{(1)}\,$ Pulse test: 300 μs pulse width, 1 % duty cycle



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| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | |
|---|----------------------|------|------|------|------|------|
| PARAMETER | SYMBOL | UG4A | UG4B | UG4C | UG4D | UNIT |
| Typical thermal resistance | R _{0JA} (1) | 25 | | | | °C/W |

Note

 $^{^{(2)}}$ Thermal resistance from junction to ambient at 0.375" (9.5 mm) lead length

| ORDERING INFORMATION (Example) | | | | | | | |
|--------------------------------|-----------------|------------------------|---------------|----------------------------------|--|--|--|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE | | | |
| UG4D-E3/54 | 1.138 | 54 | 1400 | 13" diameter paper tape and reel | | | |
| UG4D-E3/73 | 1.138 | 73 | 1000 | Ammo pack packaging | | | |
| UG4D-M3/54 | 1.138 | 54 | 1400 | 13" diameter paper tape and reel | | | |
| UG4D-M3/73 | 1.138 | 73 | 1000 | Ammo pack packaging | | | |

RATINGS AND CHARACTERISTICS CURVES ($T_A = 25$ °C unless otherwise noted)

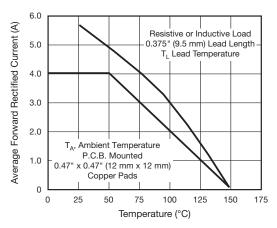


Fig. 1 - Forward Current Derating Curves

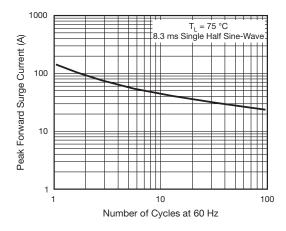


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

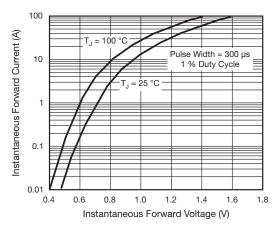


Fig. 3 - Typical Instantaneous Forward Characteristics

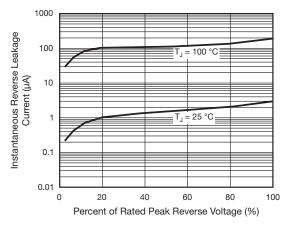


Fig. 4 - Typical Reverse Leakage Characteristics





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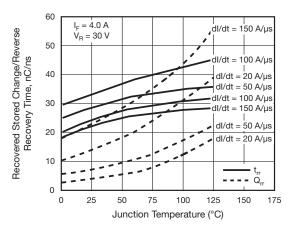


Fig. 5 - Reverse Switching Characteristics

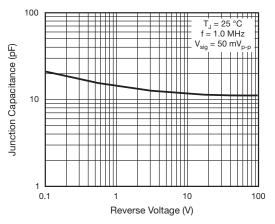
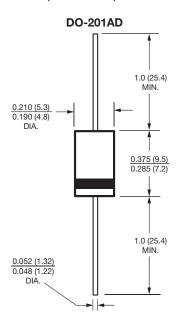


Fig. 6 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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