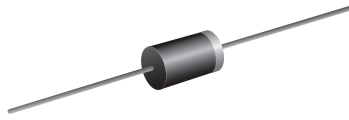


Glass Passivated Ultrafast Rectifier

SUPERECTIFIER®

DO-204AL (DO-41)

FEATURES

- Superectifier structure for high reliability condition
- Cavity-free glass-passivated junction
- Ideal for printed circuit boards
- Ultrafast reverse recovery time
- Low forward voltage drop
- Low leakage current
- Low switching losses, high efficiency
- High forward surge capability
- Meets environmental standard MIL-S-19500
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
 COMPLIANT
 HALOGEN
FREE

PRIMARY CHARACTERISTICS

| | |
|------------------|------------------|
| $I_{F(AV)}$ | 1.0 A |
| V_{RRM} | 600 V |
| I_{FSM} | 30 A |
| t_{rr} | 30 ns |
| V_F | 1.3 V |
| T_J max. | 175 °C |
| Package | DO-204AL (DO-41) |
| Diode variations | Single die |

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-204AL, molded plastic over glass body
 Molding compound meets UL 94 V-0 flammability rating
 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

M3 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 | VALUE | UNIT |
|---|-----------------|-------------|------|
| Maximum repetitive peak reverse voltage | V_{RRM} | 600 | V |
| Maximum RMS voltage | V_{RMS} | 420 | V |
| Maximum DC blocking voltage | V_{DC} | 600 | V |
| Maximum average forward rectified current 0.375" (9.5 mm) lead length at $T_L = 85$ °C (fig. 1) | $I_{F(AV)}$ | 1.0 | A |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 30 | A |
| Non repetitive peak reverse energy | $E_{RSM}^{(1)}$ | 5.0 | mJ |
| Operating junction and storage temperature range | T_J, T_{STG} | -65 to +175 | °C |

Note

⁽¹⁾ Peak reverse energy measured with 8/20 μ s surge

| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | |
|--|--|-----------------------------------|----------|-------|------------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | VALUE | UNIT |
| Minimum avalanche breakdown voltage | 100 μA | | V_{BR} | 600 | V |
| Maximum instantaneous forward voltage | 1.0 A | $T_J = 25\text{ }^\circ\text{C}$ | V_F | 2.5 | V |
| | | $T_J = 175\text{ }^\circ\text{C}$ | | 1.3 | |
| Maximum DC reverse current at rated DC blocking voltage | | $T_A = 25\text{ }^\circ\text{C}$ | I_R | 5.0 | μA |
| | | $T_A = 165\text{ }^\circ\text{C}$ | | 150 | |
| Max. reverse recovery time | $I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$ | | t_{rr} | 30 | ns |
| Maximum junction capacitance | 4.0 V, 1 MHz | | C_J | 45 | pF |
| Maximum reverse recovery current slope | $I_F = 1\text{ A}$, $V_R = 30\text{ V}$, $di/dt = -1\text{ A}/\mu\text{s}$ | | di/dt | 7.0 | A/ μs |

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | |
|---|-----------------------|-------|---------------------------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 70 | $^\circ\text{C}/\text{W}$ |
| | $R_{\theta JL}^{(2)}$ | 16 | |

Notes

- (1) Thermal resistance from junction to ambient at 0.375" (9.5 mm) lead length, mounted on PCB with 0.5" x 0.5" (12 mm x 12 mm) copper pads
- (2) Thermal resistance from junction to lead at 0.375" (9.5 mm) lead length with both leads attached to heatsink

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| SBYV26C-M3/54 | 0.339 | 54 | 5500 | 13" diameter paper tape and reel |
| SBYV26C-M3/73 | 0.339 | 73 | 3000 | Ammo pack packaging |

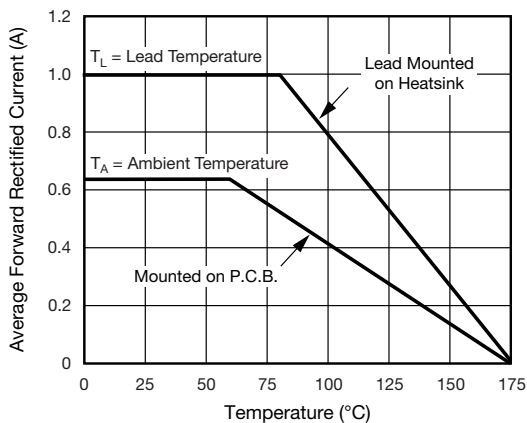
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

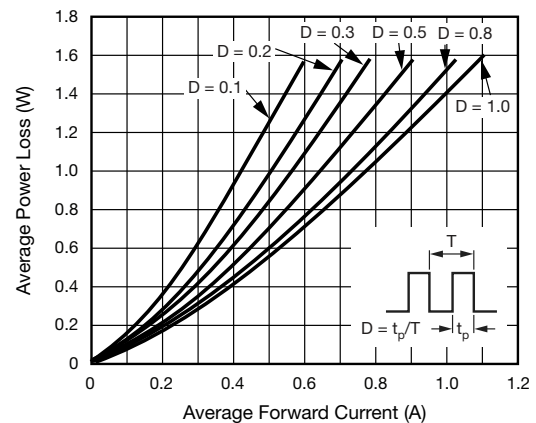


Fig. 2 - Forward Power Loss Characteristics

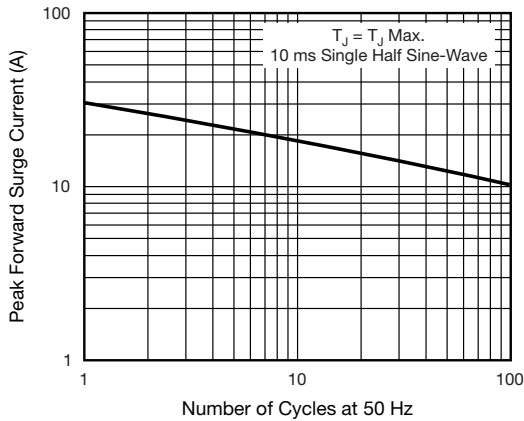


Fig. 3 - Maximum Non-Repetitive Peak Forward Surge Current

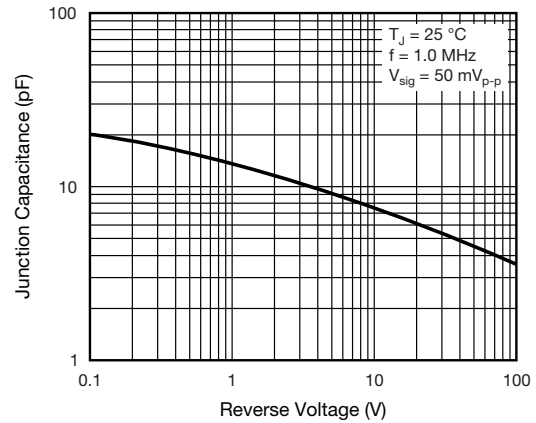


Fig. 6 - Typical Junction Capacitance

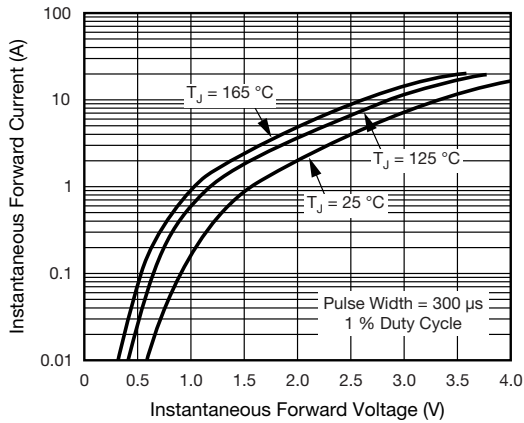


Fig. 4 - Typical Instantaneous Forward Characteristics

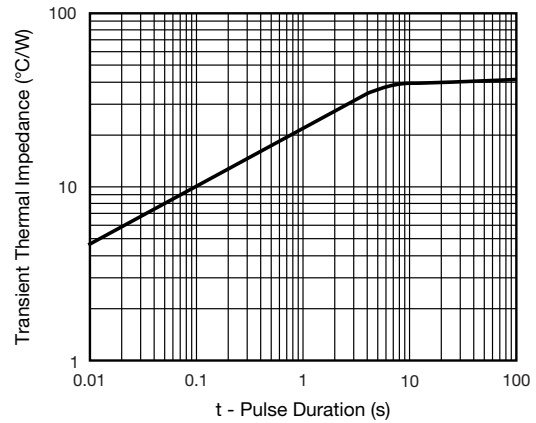


Fig. 7 - Typical Transient Thermal Impedance

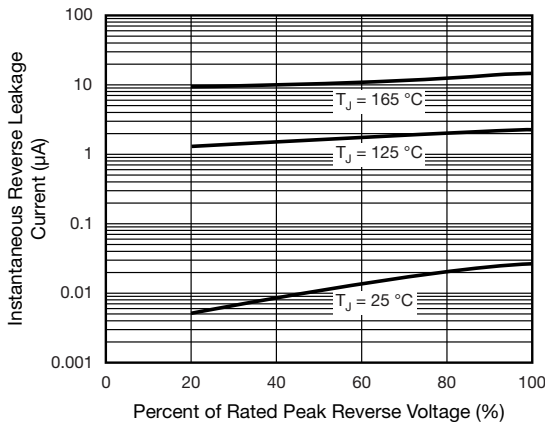
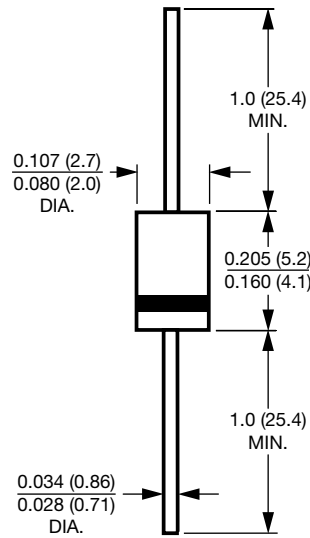


Fig. 5 - Typical Reverse Leakage Characteristics



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-204AL (DO-41)





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