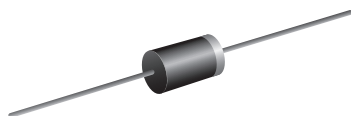




## Glass Passivated Ultrafast Plastic Rectifier

SUPERECTIFIER®



DO-41 (DO-204AL)

### FEATURES

- Superrectifier 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
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



RoHS  
COMPLIANT

### 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-41 (DO-204AL) |
| Circuit configuration | Single           |

### 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-41 (DO-204AL), molded plastic over glass body  
Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant and commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** color band denotes cathode end

### MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ 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 $T_L = 85\text{ °C}$ (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

<sup>(1)</sup> Peak reverse energy measured with 8/20  $\mu$ 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 $\mu\text{A}$                                                              | $V_{BR}$  | 600   | V                |
| Maximum instantaneous forward voltage                   | 1.0 A                                                                          | $V_F$     | 2.5   | V                |
|                                                         |                                                                                |           | 1.3   |                  |
| Maximum DC reverse current at rated DC blocking voltage |                                                                                | $I_R$     | 5.0   | $\mu\text{A}$    |
|                                                         |                                                                                |           | 150   |                  |
| Max. reverse recovery time                              | $I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $t_{rr} = 0.25\text{ A}$         | $t_{rr}$  | 30    | ns               |
| Maximum junction capacitance                            | 4.0 V, 1 MHz                                                                   | $C_J$     | 45    | pF               |
| Maximum reverse recovery current slope                  | $I_F = 1\text{ A}$ , $V_R = 30\text{ V}$ , $dI_F/dt = -1\text{ A}/\mu\text{s}$ | $dI_F/dt$ | 7.0   | A/ $\mu\text{s}$ |

**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-E3/54 | 0.339           | 54                     | 5500          | 13" diameter paper tape and reel |
| SBYV26C-E3/73 | 0.339           | 73                     | 3000          | Ammo pack packaging              |

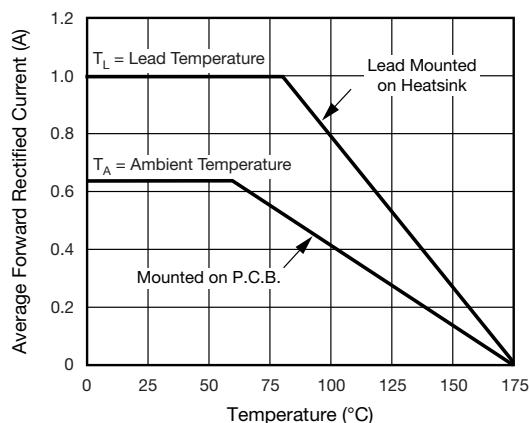
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

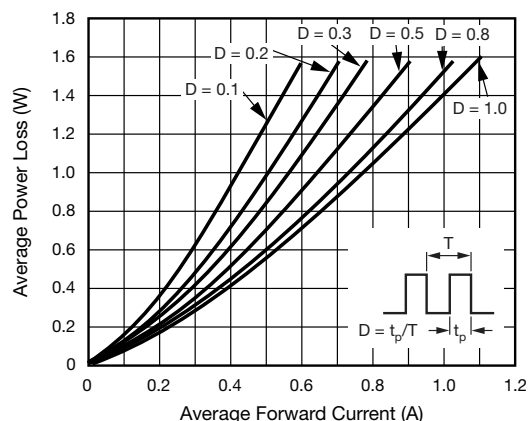


Fig. 2 - Forward Power Loss Characteristics

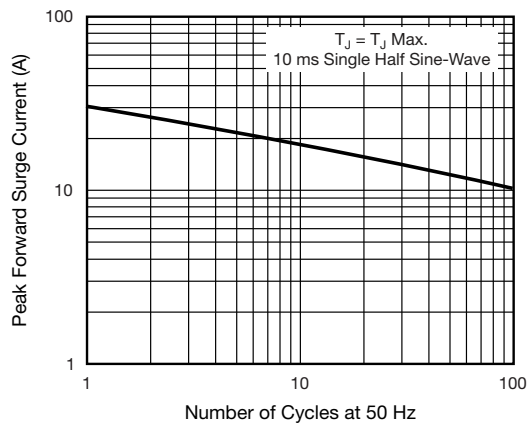


Fig. 3 - Maximum Non-Repetitive Peak Forward Surge Current

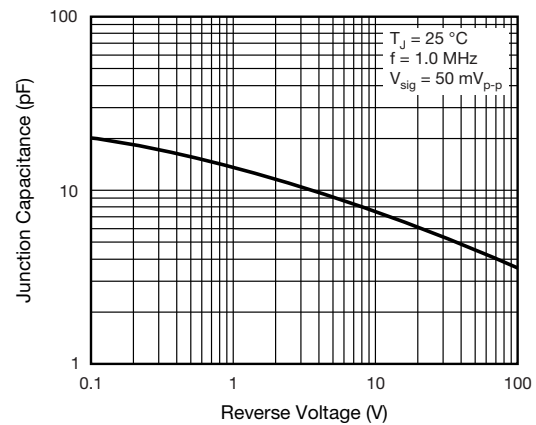


Fig. 6 - Typical Junction Capacitance

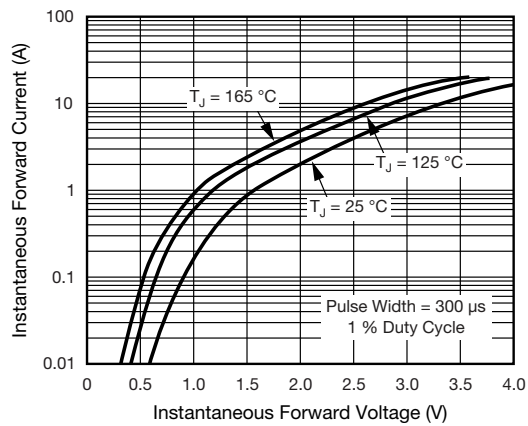


Fig. 4 - Typical Instantaneous Forward Characteristics

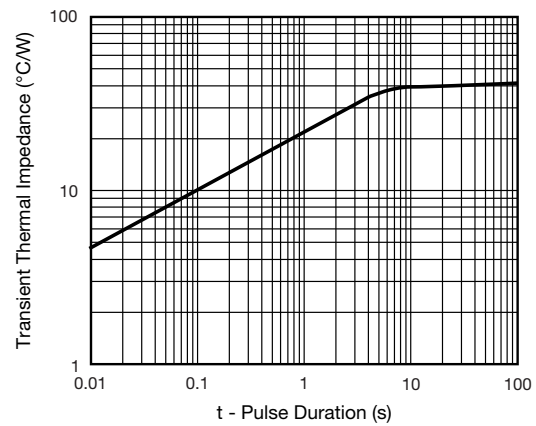


Fig. 7 - Typical Transient Thermal Impedance

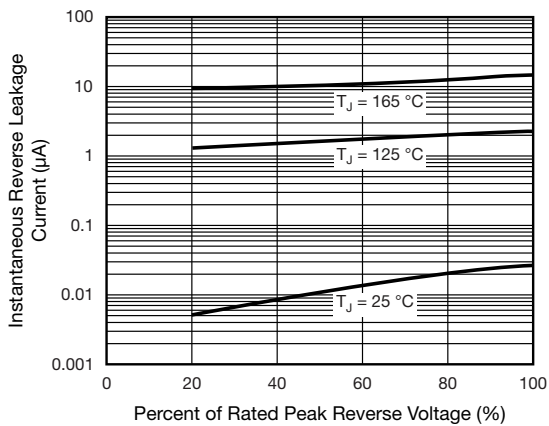
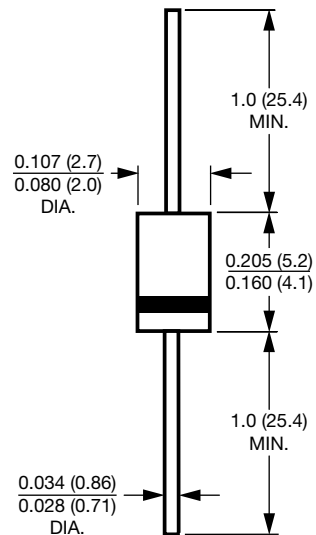


Fig. 5 - Typical Reverse Leakage Characteristics

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)**DO-41 (DO-204AL)**



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