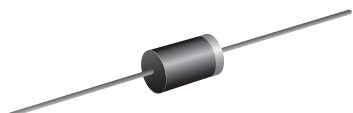


## Schottky Barrier Plastic Rectifier



DO-204AL (DO-41)

### FEATURES

- Guardring for overvoltage protection
- Very small conduction losses
- Extremely fast switching
- Low forward voltage drop
- High frequency operation
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: For definitions of compliance please see [www.vishay.com/doc299912](http://www.vishay.com/doc299912)


RoHS  
COMPLIANT

### TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

### MECHANICAL DATA

**Case:** DO-204AL (DO-41)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, 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 the cathode end

### PRIMARY CHARACTERISTICS

|                  |                        |
|------------------|------------------------|
| $I_{F(AV)}$      | 1.0 A                  |
| $V_{RRM}$        | 20 V, 30 V, 40 V       |
| $I_{FSM}$        | 25 A                   |
| $V_F$            | 0.45 V, 0.55 V, 0.60 V |
| $T_J$ max.       | 125 °C                 |
| Package          | DO-204AL               |
| Diode variations | Single                 |

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

| PARAMETER                                                                                 | SYMBOL         | 1N5817        | 1N5818 | 1N5819 | UNIT       |
|-------------------------------------------------------------------------------------------|----------------|---------------|--------|--------|------------|
| Maximum repetitive peak reverse voltage                                                   | $V_{RRM}$      | 20            | 30     | 40     | V          |
| Maximum RMS voltage                                                                       | $V_{RMS}$      | 14            | 21     | 28     | V          |
| Maximum DC blocking voltage                                                               | $V_{DC}$       | 20            | 30     | 40     | V          |
| Maximum non-repetitive peak reverse voltage                                               | $V_{RSM}$      | 24            | 36     | 48     | V          |
| Maximum average forward rectified current at 0.375" (9.5 mm) lead length at $T_L = 90$ °C | $I_{F(AV)}$    | 1.0           |        |        | A          |
| Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load       | $I_{FSM}$      | 25            |        |        | A          |
| Voltage rate of change (rated $V_R$ )                                                     | $dV/dt$        | 10 000        |        |        | V/ $\mu$ s |
| Operating junction and storage temperature range                                          | $T_J, T_{STG}$ | - 65 to + 125 |        |        | °C         |

### ELECTRICAL CHARACTERISTICS ( $T_A = 25$ °C unless otherwise noted)

| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                 |                         |                               |        |        |        |      |
|----------------------------------------------------------------------------|-----------------|-------------------------|-------------------------------|--------|--------|--------|------|
| PARAMETER                                                                  | TEST CONDITIONS |                         | SYMBOL                        | 1N5817 | 1N5818 | 1N5819 | UNIT |
| Maximum instantaneous forward voltage                                      | 1.0             |                         | V <sub>F</sub> <sup>(1)</sup> | 0.450  | 0.550  | 0.600  | V    |
| Maximum instantaneous forward voltage                                      | 3.1             |                         | V <sub>F</sub> <sup>(1)</sup> | 0.750  | 0.875  | 0.900  | V    |
| Maximum average reverse current at rated DC blocking voltage               |                 | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(1)</sup> | 1.0    |        |        | mA   |
|                                                                            |                 | T <sub>A</sub> = 100 °C |                               | 10     |        |        |      |
| Typical junction capacitance                                               | 4.0 V, 1.0 MHz  |                         | C <sub>J</sub>                | 125    | 110    |        | pF   |

#### Note

<sup>(1)</sup> Pulse test: 300  $\mu$ s pulse width, 1 % duty cycle

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

| PARAMETER                  | SYMBOL                | 1N5817 | 1N5818 | 1N5819 | UNIT |
|----------------------------|-----------------------|--------|--------|--------|------|
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 50     |        |        | °C/W |
|                            | $R_{\theta JL}^{(1)}$ | 15     |        |        |      |

**Note**

<sup>(1)</sup> Thermal resistance from junction to lead vertical PCB mounted, 0.375" (9.5 mm) lead length with 1.5" x 1.5" (38 mm x 38 mm) copper pads

**ORDERING INFORMATION** (Example)

| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |
|---------------|-----------------|------------------------|---------------|----------------------------------|
| 1N5819-E3/54  | 0.332           | 54                     | 5500          | 13" diameter paper tape and reel |
| 1N5819-E3/73  | 0.332           | 73                     | 3000          | Ammo pack packaging              |

**RATINGS AND CHARACTERISTICS CURVES**

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

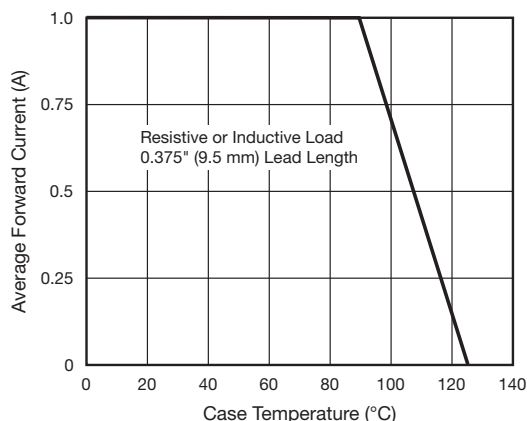


Fig. 1 - Forward Current Derating Curve

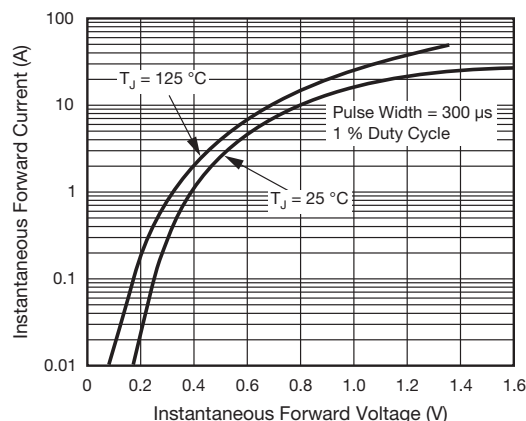


Fig. 3 - Typical Instantaneous Forward Characteristics

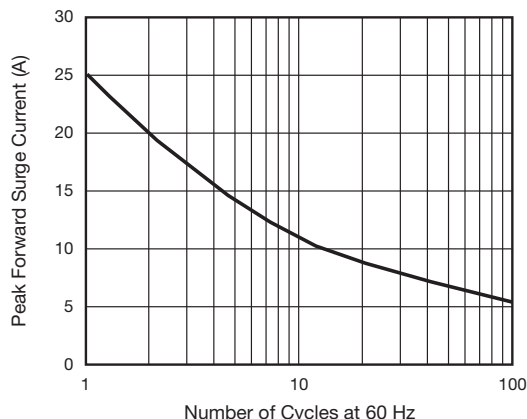


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

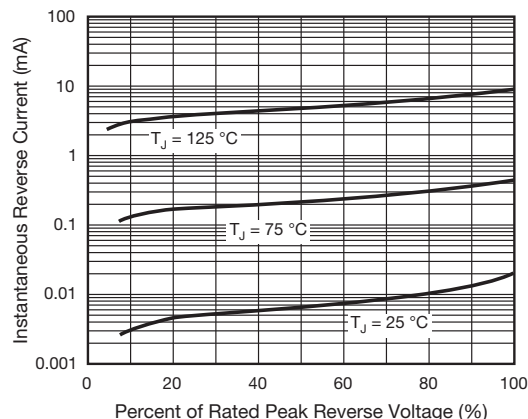


Fig. 4 - Typical Reverse Characteristics

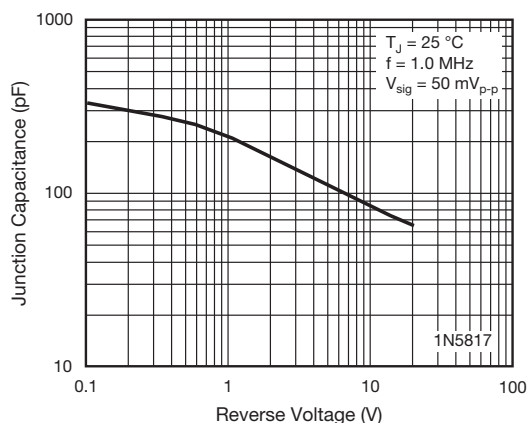


Fig. 5 - Typical Junction Capacitance

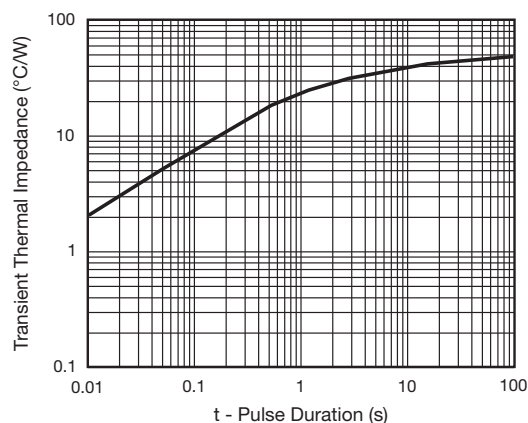


Fig. 7 - Typical Transient Thermal Impedance

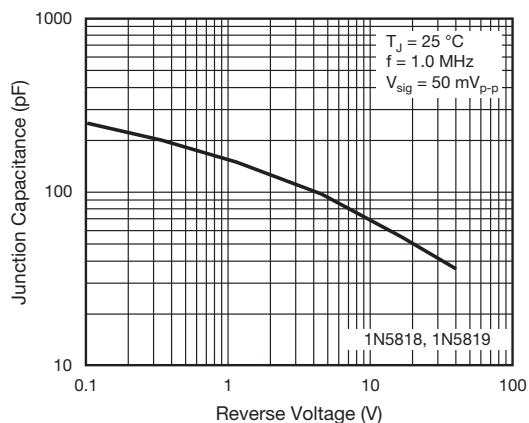
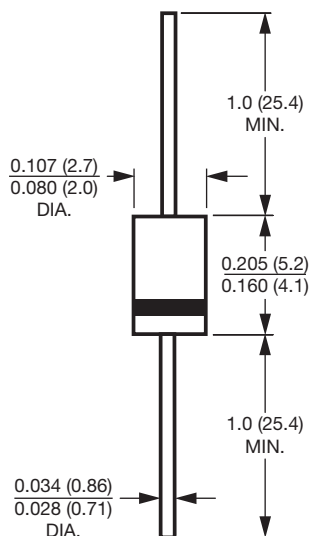


Fig. 6 - Typical Junction Capacitance

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

#### DO-204AL (DO-41)





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