

## Schottky Barrier Plastic Rectifier


**DO-201AD**

| PRIMARY CHARACTERISTICS |                           |
|-------------------------|---------------------------|
| $I_{F(AV)}$             | 3.0 A                     |
| $V_{RRM}$               | 20 V, 30 V, 40 V          |
| $I_{FSM}$               | 80 A                      |
| $V_F$                   | 0.475 V, 0.500 V, 0.525 V |
| $T_J$ max.              | 125 °C                    |
| Package                 | DO-201AD                  |
| Circuit configuration   | Single                    |

### FEATURES

- Guardring for overvoltage protection
- Very small conduction losses
- Extremely fast switching
- Low forward voltage drop
- High forward surge capability
- 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/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** DO-201AD

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

| MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)                                   |                |             |        |        |      |
|--|----------------|-------------|--------|--------|------|
| PARAMETER  | SYMBOL         | 1N5820      | 1N5821 | 1N5822 | 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    |
| 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 $T_L = 95\text{ °C}$ | $I_{F(AV)}$    | 3.0         |        |        | A    |
| Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load              | $I_{FSM}$      | 80          |        |        | A    |
| Operating junction and storage temperature range   | $T_J, T_{STG}$ | -65 to +125 |        |        | °C   |

| ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ °C}$ unless otherwise noted) |                       |             |        |        |        |      |
|---|-----------------------|-------------|--------|--------|--------|------|
| PARAMETER   | TEST CONDITIONS       | SYMBOL      | 1N5820 | 1N5821 | 1N5822 | UNIT |
| Maximum instantaneous forward voltage                                     | 3.0                   | $V_F^{(1)}$ | 0.475  | 0.500  | 0.525  | V    |
| Maximum instantaneous forward voltage                                     | 9.4                   | $V_F^{(1)}$ | 0.850  | 0.900  | 0.950  | V    |
| Maximum average reverse current at rated DC blocking voltage              | $T_A = 25\text{ °C}$  | $I_R^{(1)}$ | 2.0    |        |        | mA   |
|   | $T_A = 100\text{ °C}$ |             | 20     |        |        |      |

#### 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                         | 1N5820 | 1N5821 | 1N5822 | UNIT               |
| Typical thermal resistance   | $R_{\theta JA}$ <sup>(1)</sup> | 40     |        |        | $^\circ\text{C/W}$ |
|  | $R_{\theta JL}$ <sup>(1)</sup> | 10     |        |        |                    |

**Note**

<sup>(1)</sup> Thermal resistance from junction to lead vertical PCB mounted, 0.500" (12.7 mm) lead length with 2.5" x 2.5" (63.5 mm x 63.5 mm) copper pad

| ORDERING INFORMATION (Example) |                 |                        |               |                                  |
|--------------------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |
| 1N5820-E3/54                   | 1.08            | 54                     | 1400          | 13" diameter paper tape and reel |
| 1N5820-E3/73                   | 1.08            | 73                     | 1000          | Ammo pack packaging              |

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

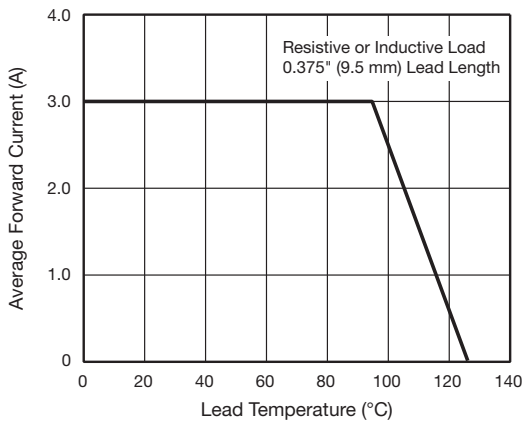


Fig. 1 - Forward Current Derating Curve

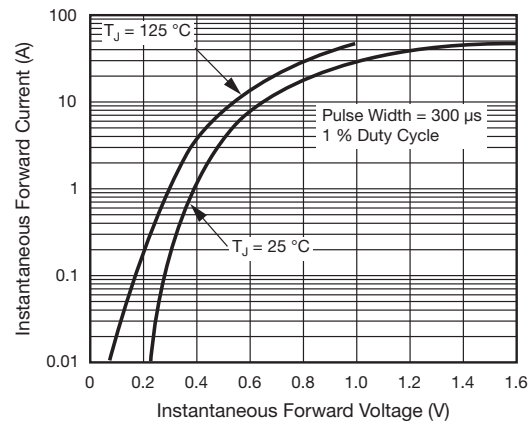


Fig. 3 - Typical Instantaneous Forward Characteristics

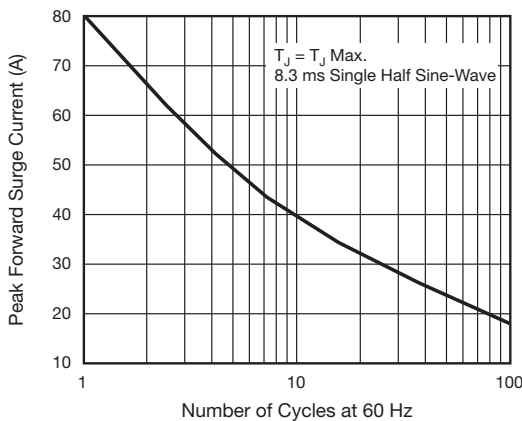


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

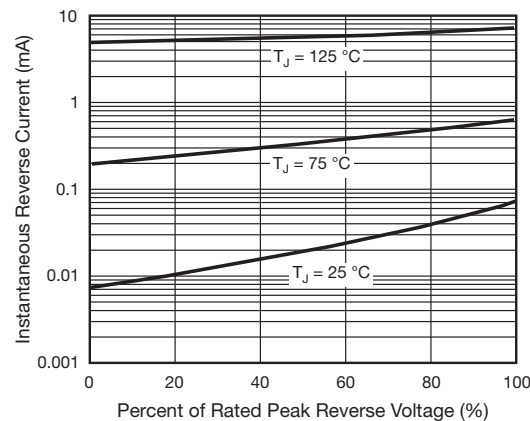


Fig. 4 - Typical Reverse Characteristics

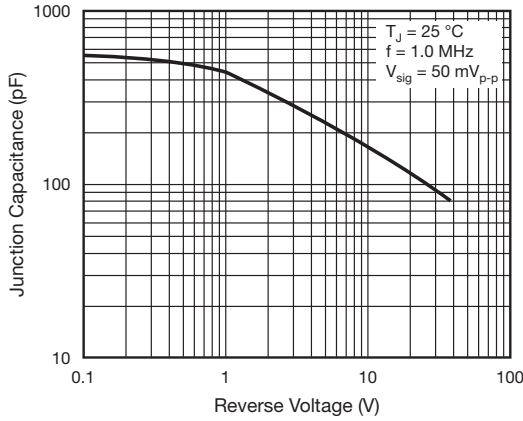


Fig. 5 - Typical Junction Capacitance

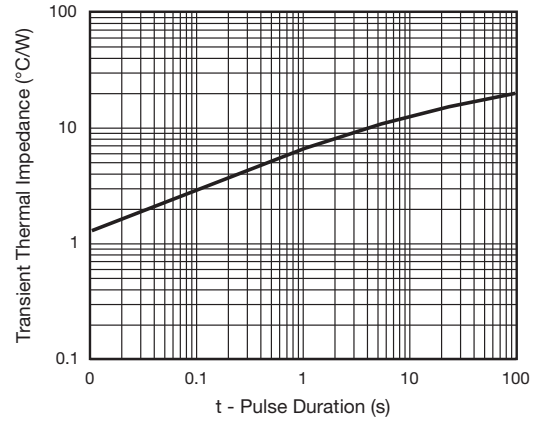
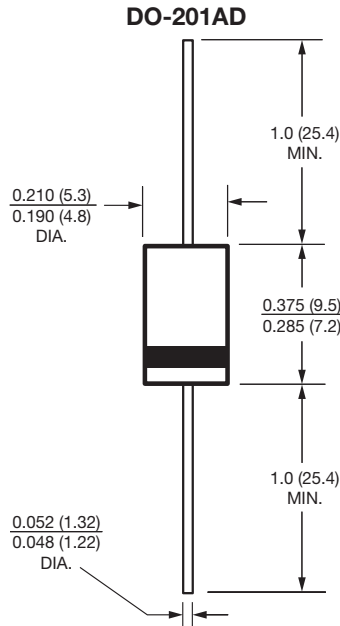


Fig. 6 - Typical Transient Thermal Impedance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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