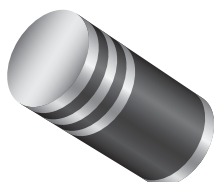


## Surface Mount Schottky Barrier Rectifier



DO-213AB

### FEATURES

- MELF Schottky rectifier
- Ideal for automated placement
- Guardring for overvoltage protection
- Low power losses, high efficiency
- Low forward voltage drop
- High surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 250 °C
- AEC-Q101 qualified
- 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-213AB

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

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

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Two bands indicate cathode end 1<sup>st</sup> band denotes device type 2<sup>nd</sup> band denotes voltage type

| PRIMARY CHARACTERISTICS |                |
|-------------------------|----------------|
| $I_{F(AV)}$             | 1.0 A          |
| $V_{RRM}$               | 20 V to 60 V   |
| $I_{FSM}$               | 30 A           |
| $V_F$                   | 0.50 V, 0.70 V |
| $T_J$ max.              | 125 °C, 150 °C |

| MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)                    |                    |               |          |          |               |          |      |
|------------------------------------------------------------------------------------|--------------------|---------------|----------|----------|---------------|----------|------|
| PARAMETER                                                                          | SYMBOL             | BYM13-20      | BYM13-30 | BYM13-40 | BYM13-50      | BYM13-60 | UNIT |
| DENOTES SCHOTTKY DEVICES: 1 <sup>st</sup> BAND IS ORANGE                           |                    | SGL41-20      | SGL41-30 | SGL41-40 | SGL41-50      | SGL41-60 |      |
| Polarity color bands (2 <sup>nd</sup> band) voltage type                           |                    | Gray          | Red      | Orange   | Yellow        | Green    |      |
| Maximum repetitive peak reverse voltage                                            | V <sub>RRM</sub>   | 20            | 30       | 40       | 50            | 60       | V    |
| Maximum RMS voltage                                                                | V <sub>RMS</sub>   | 14            | 21       | 28       | 35            | 42       | V    |
| Maximum DC blocking voltage                                                        | V <sub>DC</sub>    | 20            | 30       | 40       | 50            | 60       | V    |
| Maximum average forward rectified current (fig. 1)                                 | I <sub>F(AV)</sub> | 1.0           |          |          |               |          | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I <sub>FSM</sub>   | 30            |          |          |               |          | A    |
| Voltage rate of change (rated V <sub>R</sub> )                                     | dV/dt              | 10 000        |          |          |               |          | V/μs |
| Operating junction temperature range                                               | T <sub>J</sub>     | - 55 to + 125 |          |          | - 55 to + 150 |          | °C   |
| Storage temperature range                                                          | T <sub>STG</sub>   | - 55 to + 150 |          |          |               |          | °C   |



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                 |                         |                |          |          |          |          |          |      |
|----------------------------------------------------------------------------|-----------------|-------------------------|----------------|----------|----------|----------|----------|----------|------|
| PARAMETER                                                                  | TEST CONDITIONS |                         | SYMBOL         | BYM13-20 | BYM13-30 | BYM13-40 | BYM13-50 | BYM13-60 | UNIT |
|                                                                            |                 |                         |                | SGL41-20 | SGL41-30 | SGL41-40 | SGL41-50 | SGL41-60 |      |
| Maximum instantaneous forward voltage <sup>(1)</sup>                       | 1.0 A           |                         | V <sub>F</sub> | 0.50     |          |          | 0.70     |          | V    |
| Maximum reverse current at rated DC blocking voltage <sup>(1)</sup>        |                 | T <sub>A</sub> = 25 °C  | I <sub>R</sub> | 0.5      |          |          |          |          | mA   |
|                                                                            |                 | T <sub>A</sub> = 100 °C |                | 10       |          | 5.0      |          |          |      |
| Typical junction capacitance                                               | 4.0 V, 1.0 MHz  |                         | C <sub>J</sub> | 110      |          |          | 80       |          | pF   |

**Note**

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

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                  |          |          |          |          |          |      |  |
|-------------------------------------------------------------------------|------------------|----------|----------|----------|----------|----------|------|--|
| PARAMETER                                                               | SYMBOL           | BYM13-20 | BYM13-30 | BYM13-40 | BYM13-50 | BYM13-60 | UNIT |  |
|                                                                         |                  | SGL41-20 | SGL41-30 | SGL41-40 | SGL41-50 | SGL41-60 |      |  |
| Maximum thermal resistance <sup>(1)</sup>                               | R <sub>θJA</sub> | 75       |          |          |          |          | °C/W |  |
|                                                                         | R <sub>θJT</sub> | 30       |          |          |          |          |      |  |

**Note**

<sup>(1)</sup> Thermal resistance junction to terminal, 0.24" x 0.24" (6.0 mm x 6.0 mm) copper pads to each terminal

| ORDERING INFORMATION (Example) |                 |                        |               |                                    |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| SGL41-40-E3/96                 | 0.137           | 96                     | 1500          | 7" diameter plastic tape and reel  |
| SGL41-40-E3/97                 | 0.137           | 97                     | 5000          | 13" diameter plastic tape and reel |
| BYM13-40-E3/96                 | 0.137           | 96                     | 1500          | 7" diameter plastic tape and reel  |
| BYM13-40-E3/97                 | 0.137           | 97                     | 5000          | 13" diameter plastic tape and reel |
| SGL41-40HE3/96 <sup>(1)</sup>  | 0.137           | 96                     | 1500          | 7" diameter plastic tape and reel  |
| SGL41-40HE3/97 <sup>(1)</sup>  | 0.137           | 97                     | 5000          | 13" diameter plastic tape and reel |
| BYM13-40HE3/96 <sup>(1)</sup>  | 0.137           | 96                     | 1500          | 7" diameter plastic tape and reel  |
| BYM13-40HE3/97 <sup>(1)</sup>  | 0.137           | 97                     | 5000          | 13" diameter plastic tape and reel |

**Note**

<sup>(1)</sup> AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES**

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

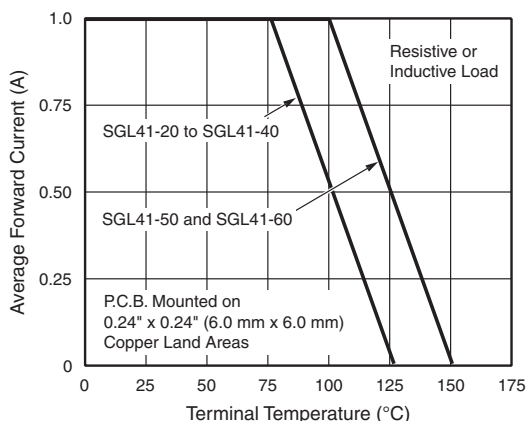


Fig. 1 - Forward Current Derating Curve

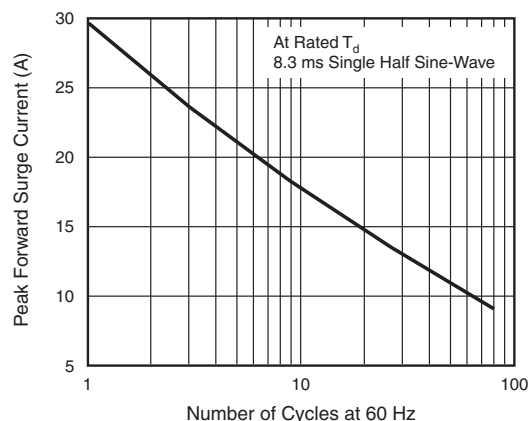


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

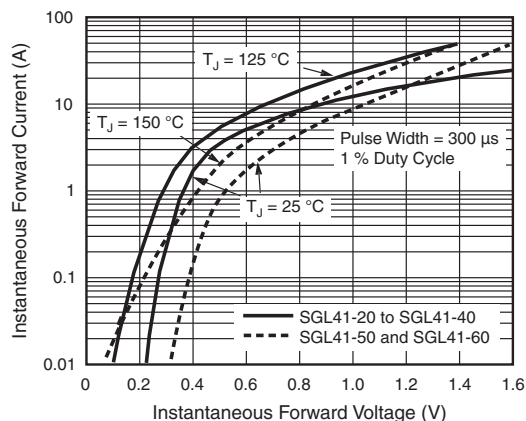


Fig. 3 - Typical Instantaneous Forward Characteristics

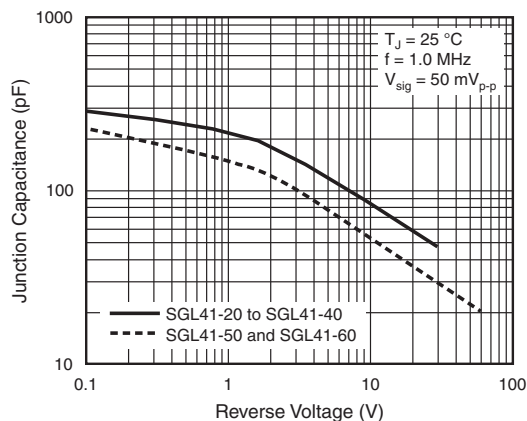


Fig. 4 - Typical Junction Capacitance

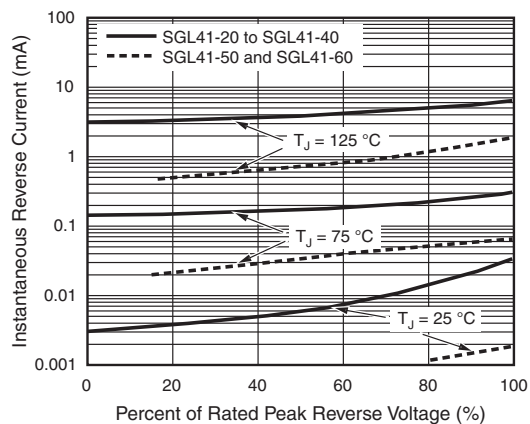
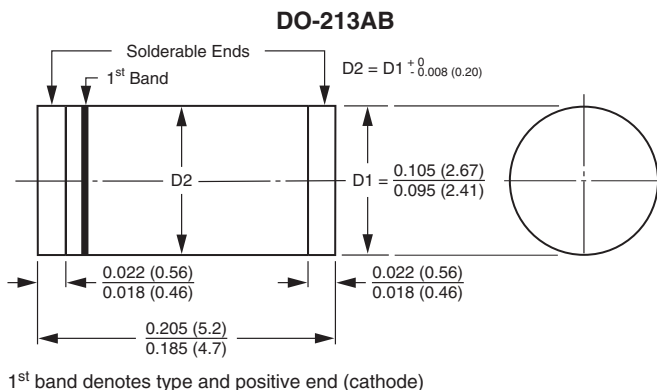
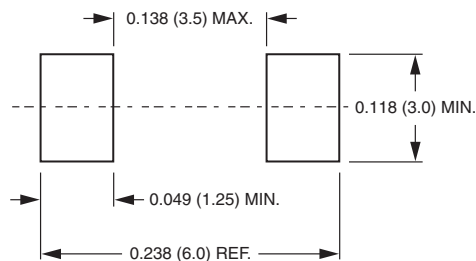


Fig. 2 - Typical Reverse Characteristics

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



## Mounting Pad Layout





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