

# **Surface Mount Glass Passivated Junction Rectifier**

### SUPERECTIFIER®



**DO-213AB** 

| PRIMARY CHARACTERISTICS             |                                |  |  |  |  |  |  |
|-------------------------------------|--------------------------------|--|--|--|--|--|--|
| I <sub>F(AV)</sub>                  | 1.0 A                          |  |  |  |  |  |  |
| V <sub>RRM</sub> (BYM10-xxx, GL41x) | 50 V to 1000 V, 50 V to 1600 V |  |  |  |  |  |  |
| I <sub>FSM</sub>                    | 30 A                           |  |  |  |  |  |  |
| I <sub>R</sub>                      | 10 μA                          |  |  |  |  |  |  |
| E <sub>AS</sub>                     | 5 mJ                           |  |  |  |  |  |  |
| V <sub>F</sub>                      | 1.1 V, 1.2 V                   |  |  |  |  |  |  |
| T <sub>J</sub> max.                 | 175 °C                         |  |  |  |  |  |  |
| Package                             | DO-213AB                       |  |  |  |  |  |  |
| Diode variations                    | Single die                     |  |  |  |  |  |  |

#### **FEATURES**

• Superectifier structure for high reliability condition



- · Ideal for automated placement
- Low forward voltage drop
- Low for ward voltage at
- Low leakage current
- High forward 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 <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

### TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes for consumer, automotive and telecommunication.

#### **MECHANICAL DATA**

Case: DO-213AB, molded epoxy over glass body
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 and 2<sup>nd</sup> band denotes repetitive peak reverse voltage rating

| MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)  |                                   |              |               |               |               |               |               |                |       |       |      |
|--|-----------------------------------|--------------|---------------|---------------|---------------|---------------|---------------|----------------|-------|-------|------|
| PARAMETER  | SYMBOL                            | BYM<br>10-50 | BYM<br>10-100 | BYM<br>10-200 | BYM<br>10-400 | BYM<br>10-600 | BYM<br>10-800 | BYM<br>10-1000 |       |       | UNIT |
| STANDARD RECOVERY<br>DEVICE: 1 <sup>ST</sup> BAND IS WHITE   |                                   | GL41A        | GL41B         | GL41D         | GL41G         | GL41J         | GL41K         | GL41M          | GL41T | GL41Y | UNII |
| Polarity color bands (2 <sup>nd</sup> band)  |                                   | Gray         | Red           | Orange        | Yellow        | Green         | Blue          | Violet         | White | Brown |      |
| Max. repetitive peak reverse voltage   | $V_{RRM}$                         | 50           | 100           | 200           | 400           | 600           | 800           | 1000           | 1300  | 1600  | V    |
| Max. RMS voltage   | V <sub>RMS</sub>                  | 35           | 70            | 140           | 280           | 420           | 560           | 700            | 910   | 1120  | V    |
| Max. DC blocking voltage   | $V_{DC}$                          | 50           | 100           | 200           | 400           | 600           | 800           | 1000           | 1300  | 1600  | V    |
| Max. average forward rectified current (fig. 1)  | I <sub>F(AV)</sub>                |              | 1.0           |               |               |               |               |                |       | Α     |      |
| Peak forward surge current 8.3 ms single half sine-wave  | I <sub>FSM</sub>                  |              | 30            |               |               |               |               |                |       | Α     |      |
| Max. full load reverse current full cycle average at T <sub>A</sub> = 75 °C                                    | I <sub>R(AV)</sub>                |              | 30            |               |               |               |               |                |       | μΑ    |      |
| Non-repetitive peak reverse<br>avalanche energy at T <sub>J</sub> = 25 °C,<br>I <sub>AS</sub> = 1 A, L = 10 mH | E <sub>AS</sub>                   | 5 -          |               |               |               |               |               |                | mJ    |       |      |
| Operating junction and storage temperature range   | T <sub>J</sub> , T <sub>STG</sub> |              |               |               | -             | 65 to + 17    | 75            |                |       |       | °C   |



| <b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted) |                         |                |              |               |               |               |               |               |                |       |       |      |
|---|-------------------------|----------------|--------------|---------------|---------------|---------------|---------------|---------------|----------------|-------|-------|------|
| PARAMETER TEST CONDITIONS   |                         | SYMBOL         | BYM<br>10-50 | BYM<br>10-100 | BYM<br>10-200 | BYM<br>10-400 | BYM<br>10-600 | BYM<br>10-800 | BYM<br>10-1000 |       |       | UNIT |
|   | CONDITIONS              |                | GL41A        | GL41B         | GL41D         | GL41G         | GL41J         | GL41K         | GL41M          | GL41T | GL41Y |      |
| Max.<br>instantaneous<br>forward voltage  | 1.0 A                   | V <sub>F</sub> |              | 1.1           |               |               |               | 1.2           |                |       |       | V    |
| Max. DC   | T <sub>A</sub> = 25 °C  |                |              | 10            |               |               |               |               |                |       |       |      |
| reverse current at rated DC blocking voltage                                      | T <sub>A</sub> = 125 °C | I <sub>R</sub> |              | 50            |               |               |               |               |                | μΑ    |       |      |
| Typical junction capacitance  | 4.0 V, 1 MHz            | CJ             |              | 8.0           |               |               |               |               |                | pF    |       |      |

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                       |              |               |               |               |               |               |                |       |       |      |
|---|-----------------------|--------------|---------------|---------------|---------------|---------------|---------------|----------------|-------|-------|------|
| PARAMETER   | SYMBOL                | BYM<br>10-50 | BYM<br>10-100 | BYM<br>10-200 | BYM<br>10-400 | BYM<br>10-600 | BYM<br>10-800 | BYM<br>10-1000 |       |       | UNIT |
|   |                       | GL41A        | GL41B         | GL41D         | GL41G         | GL41J         | GL41K         | GL41M          | GL41T | GL41Y |      |
| Typical thermal registance  | R <sub>0</sub> JA (1) |              | 75            |               |               |               |               |                |       |       | °C/W |
| Typical thermal resistance $R_{\theta JT}^{(2)}$ 30                     |                       |              |               |               |               | C/VV          |               |                |       |       |      |

### Notes

<sup>(2)</sup> Thermal resistance from 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                      |  |  |  |  |  |
| BYM10-600-E3/96                | 0.114           | 96                     | 1500          | 7" diameter plastic tape and reel  |  |  |  |  |  |
| BYM10-600-E3/97                | 0.114           | 97                     | 5000          | 13" diameter plastic tape and reel |  |  |  |  |  |
| GL41J-E3/96                    | 0.114           | 96                     | 1500          | 7" diameter plastic tape and reel  |  |  |  |  |  |
| GL41J-E3/97                    | 0.114           | 97                     | 5000          | 13" diameter plastic tape and reel |  |  |  |  |  |
| BYM10-600HE3/96 (1)            | 0.114           | 96                     | 1500          | 7" diameter plastic tape and reel  |  |  |  |  |  |
| BYM10-600HE3/97 (1)            | 0.114           | 97                     | 5000          | 13" diameter plastic tape and reel |  |  |  |  |  |
| GL41JHE3/96 (1)                | 0.114           | 96                     | 1500          | 7" diameter plastic tape and reel  |  |  |  |  |  |
| GL41JHE3/97 (1)                | 0.114           | 97                     | 5000          | 13" diameter plastic tape and reel |  |  |  |  |  |

## Note

(1) AEC-Q101 qualified

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



## RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)

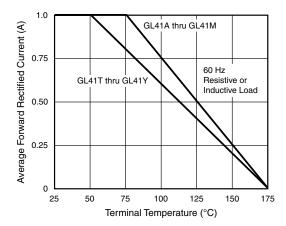


Fig. 1 - Forward Current Derating Curve

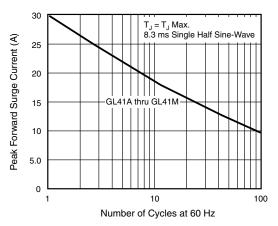


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current

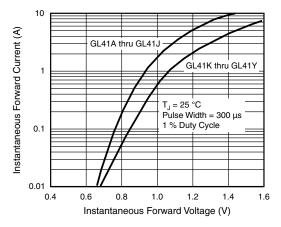


Fig. 3 - Typical Instantaneous Forward Characteristics

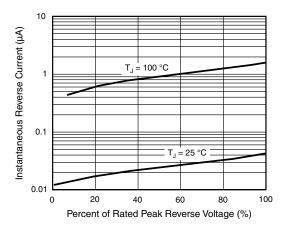


Fig. 4 - Typical Reverse Characteristics

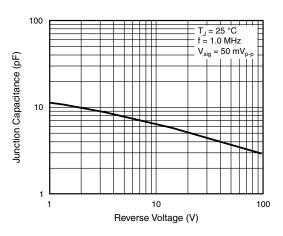


Fig. 5 - Typical Junction Capacitance

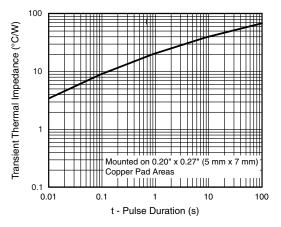


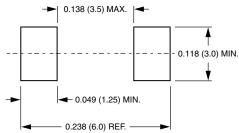
Fig. 6 - Typical Transient Thermal Impedance



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

# Solderable Ends D2 = D1 \* 0.008 (0.20) D1 = 0.105 (2.67) D1 = 0.0022 (0.56) 0.018 (0.46) 0.205 (5.2) 0.185 (4.7)

## Mounting Pad Layout



1<sup>st</sup> band denotes type and positive end (cathode)

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