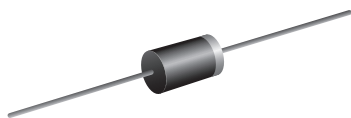


# Glass Passivated Junction Fast Switching Rectifier

**SUPERECTIFIER®**



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

## FEATURES

- Superrectifier structure for high reliability condition
- Cavity-free glass-passivated junction
- 24 mils lead wire diameter
- Fast switching for high efficiency
- Low leakage current
- 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

- High voltage rectification
- Snubber circuit of camera flash

## MECHANICAL DATA

**Case:** DO-204AL, molded epoxy over glass body  
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 cathode end

| PRIMARY CHARACTERISTICS |                  |
|-------------------------|------------------|
| $I_{F(AV)}$             | 0.5 A            |
| $V_{RRM}$               | 1400 V, 1600 V   |
| $I_{FSM}$               | 20 A             |
| $t_{rr}$                | 500 ns           |
| $V_F$                   | 2.4 V            |
| $I_R$                   | 5.0 $\mu$ A      |
| $T_J$ max.              | 175 °C           |
| Package                 | DO-204AL (DO-41) |
| Diode variation         | Single die       |

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                                |                |             |           |      |
|----------------------------------------------------------------------------------------|----------------|-------------|-----------|------|
| PARAMETER                                                                              | SYMBOL         | BY520-14E   | BY520-16E | UNIT |
| Maximum repetitive peak reverse voltage                                                | $V_{RRM}$      | 1400        | 1600      | V    |
| Maximum RMS voltage                                                                    | $V_{RMS}$      | 980         | 1120      | V    |
| Maximum DC blocking voltage                                                            | $V_{DC}$       | 1400        | 1600      | V    |
| Maximum average forward rectified current 0.375" (9.5 mm) lead length at $T_A = 55$ °C | $I_{F(AV)}$    | 0.5         |           | A    |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated           | $I_{FSM}$      | 20          |           | A    |
| Operating junction and storage temperature range                                       | $T_J, T_{STG}$ | -65 to +175 |           | °C   |



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                                                          |                         |                               |           |           |      |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------|-------------------------------|-----------|-----------|------|
| PARAMETER                                                                  | TEST CONDITIONS                                                          |                         | SYMBOL                        | BY520-14E | BY520-16E | UNIT |
| Maximum instantaneous forward voltage                                      | I <sub>F</sub> = 0.5 A                                                   | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 2.4       |           | V    |
| Maximum reverse current                                                    | V <sub>R</sub> = V <sub>RRM</sub>                                        | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 5.0       |           | μA   |
|                                                                            |                                                                          | T <sub>A</sub> = 125 °C |                               | 50        |           |      |
| Maximum reverse recovery time                                              | I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A |                         | t <sub>rr</sub>               | 500       |           | ns   |

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 40\text{ ms}$ 

| THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                       |           |           |                      |
|--------------------------------------------------------------------------------------|-----------------------|-----------|-----------|----------------------|
| PARAMETER                                                                            | SYMBOL                | BY520-14E | BY520-16E | UNIT                 |
| Typical thermal resistance                                                           | $R_{\theta JA}^{(1)}$ | 65        |           | $^{\circ}\text{C/W}$ |
|                                                                                      | $R_{\theta JL}^{(1)}$ | 30        |           |                      |

**Note**

(1) Thermal resistance from junction to ambient and from junction to lead at 0.375" (9.5 mm) lead length, PCB mounted

| ORDERING INFORMATION (Example) |                 |                        |               |                                  |
|--------------------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |
| BY520-14E-E3/54                | 0.24            | 54                     | 5500          | 13" diameter paper tape and reel |

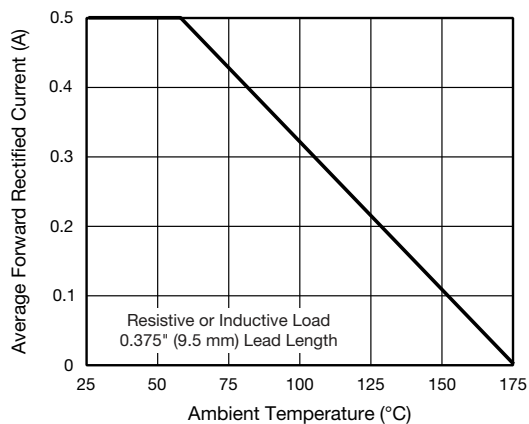
**RATINGS AND CHARACTERISTICS CURVES ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)**

Fig. 1 - Forward Current Derating Curve

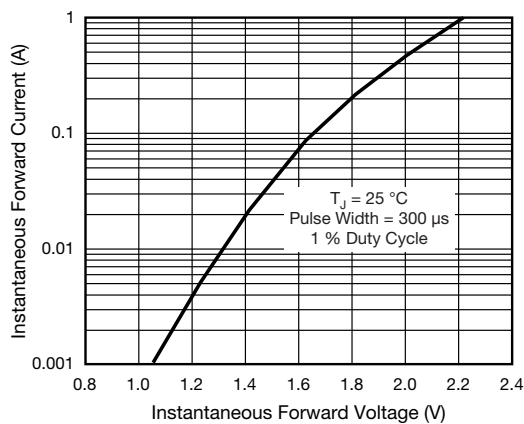


Fig. 2 - Typical Instantaneous Forward Characteristics

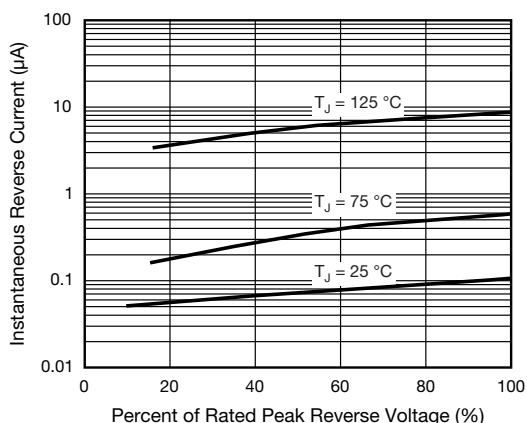


Fig. 3 - Typical Reverse Characteristics

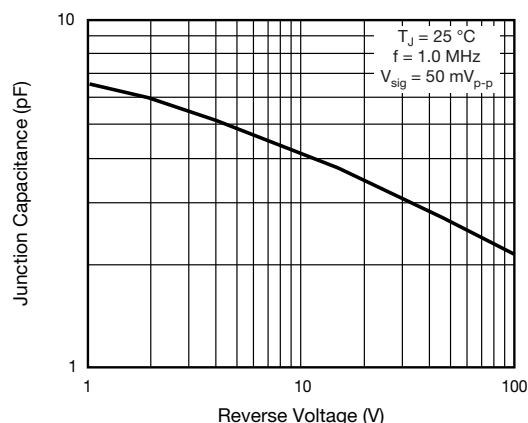
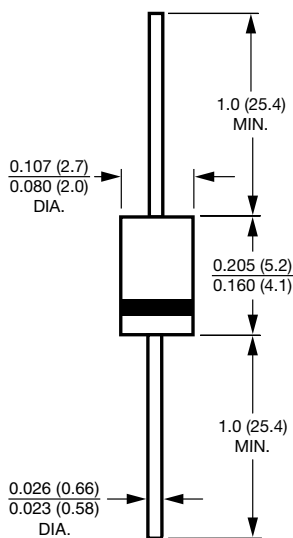


Fig. 4 - Typical Junction Capacitance

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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





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