

### Stud-Mounted Silicon Rectifier Diodes, 15 A



DO-203AB (DO-5)

#### DESCRIPTION/FEATURES

- Low thermal impedance
- High case temperature
- Excellent reliability
- Maximum design flexibility
- Can be made to meet stringent military, aerospace and other high reliability requirements
- Compliant to RoHS directive 2002/95/EC



**RoHS**  
COMPLIANT

#### PRODUCT SUMMARY

|             |      |
|-------------|------|
| $I_{F(AV)}$ | 15 A |
|-------------|------|

#### MAJOR RATINGS AND CHARACTERISTICS

| PARAMETER     | TEST CONDITIONS | VALUES             | UNITS             |
|---------------|-----------------|--------------------|-------------------|
| $I_{F(AV)}$   |                 | 15 <sup>(1)</sup>  | A                 |
|               | $T_C$           | 150 <sup>(1)</sup> | °C                |
| $I_{FSM}$     | 50 Hz           | 239                | A                 |
|               | 60 Hz           | 250 <sup>(1)</sup> |                   |
| $I^2t$        | 50 Hz           | 286                | A <sup>2</sup> s  |
|               | 60 Hz           | 260                |                   |
| $I^2\sqrt{t}$ |                 | 3870               | A <sup>2</sup> √s |
| $V_{RRM}$     | Range           | 50 to 600          | V                 |
| $T_J$         |                 | - 65 to 175        | °C                |

#### Note

<sup>(1)</sup> JEDEC registered values

#### ELECTRICAL SPECIFICATIONS

##### VOLTAGE RATINGS

| TYPE NUMBER | $V_{RRM}$ , MAXIMUM REPETITIVE PEAK<br>REVERSE VOLTAGE<br>( $T_J = - 65\text{ °C TO }175\text{ °C}$ )<br>V | $V_{RM}$ , MAXIMUM DIRECT<br>REVERSE VOLTAGE<br>( $T_J = - 65\text{ °C TO }175\text{ °C}$ )<br>V |
|-------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 1N3208      | 50 <sup>(1)</sup>                                                                                          | 50 <sup>(1)</sup>                                                                                |
| 1N3209      | 100 <sup>(1)</sup>                                                                                         | 100 <sup>(1)</sup>                                                                               |
| 1N3210      | 200 <sup>(1)</sup>                                                                                         | 200 <sup>(1)</sup>                                                                               |
| 1N3211      | 300 <sup>(1)</sup>                                                                                         | 300 <sup>(1)</sup>                                                                               |
| 1N3212      | 400 <sup>(1)</sup>                                                                                         | 400 <sup>(1)</sup>                                                                               |
| 1N3213      | 500 <sup>(1)</sup>                                                                                         | 500 <sup>(1)</sup>                                                                               |
| 1N3214      | 600 <sup>(1)</sup>                                                                                         | 600 <sup>(1)</sup>                                                                               |

#### Notes

<sup>(1)</sup> JEDEC registered values

- Basic type number indicates cathode to case. For anode to case, add "R" to part number, e.g. 1N3208R, 1N3209R

| FORWARD CONDUCTION                                     |                                  |                                                                  |                                                                                          |                    |                   |  |
|--------------------------------------------------------|----------------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------|-------------------|--|
| PARAMETER                                              | SYMBOL                           | TEST CONDITIONS                                                  |                                                                                          | VALUES             | UNITS             |  |
| Maximum average forward current at case temperature    | I <sub>F(AV)</sub>               | 180° sinusoidal conduction                                       |                                                                                          | 15 <sup>(1)</sup>  | A                 |  |
|                                                        |                                  |                                                                  |                                                                                          | 150 <sup>(1)</sup> | °C                |  |
| Maximum peak one cycle non-repetitive surge current    | I <sub>FSM</sub>                 | Half cycle 50 Hz sine wave or 6 ms rectangular pulse             | Following any rated load condition and with rated V <sub>RRM</sub> applied               | 239                | A                 |  |
|                                                        |                                  | Half cycle 60 Hz sine wave or 5 ms rectangular pulse             |                                                                                          | 250 <sup>(1)</sup> |                   |  |
|                                                        |                                  | Half cycle 50 Hz sine wave or 6 ms rectangular pulse             | Following any rated load condition and with V <sub>RRM</sub> applied following surge = 0 | 284                |                   |  |
|                                                        |                                  | Half cycle 60 Hz sine wave or 5 ms rectangular pulse             |                                                                                          | 297                |                   |  |
| Maximum I <sup>2</sup> t for fusing                    | I <sup>2</sup> t                 | t = 10 ms                                                        | With rated V <sub>RRM</sub> applied following surge, initial T <sub>J</sub> = 150 °C     | 286                | A <sup>2</sup> s  |  |
|                                                        |                                  | t = 8.3 ms                                                       |                                                                                          | 260                |                   |  |
| Maximum I <sup>2</sup> t for individual device fusing  |                                  | t = 10 ms                                                        | With V <sub>RRM</sub> = 0 following surge, initial T <sub>J</sub> = 150 °C               | 403                |                   |  |
|                                                        |                                  | t = 8.3 ms                                                       |                                                                                          | 368                |                   |  |
| Maximum I <sup>2</sup> √t for individual device fusing | I <sup>2</sup> √t <sup>(2)</sup> | t = 0.1 ms to 10 ms, V <sub>RRM</sub> = 0 following surge        |                                                                                          | 3870               | A <sup>2</sup> √s |  |
| Maximum forward voltage drop                           | V <sub>FM</sub>                  | I <sub>F(AV)</sub> = 15 A (47.1 A peak), T <sub>C</sub> = 150 °C |                                                                                          | 1.5 <sup>(1)</sup> | V                 |  |
| Maximum average reverse current                        | I <sub>R(AV)</sub>               | Maximum rated I <sub>F(AV)</sub> and T <sub>C</sub> = 150 °C     |                                                                                          | 10 <sup>(1)</sup>  | mA                |  |

**Notes**<sup>(1)</sup> JEDEC registered values<sup>(2)</sup>  $I^2t$  for time  $t_x = I^2\sqrt{t} \times \sqrt{t_x}$ 

| THERMAL AND MECHANICAL SPECIFICATIONS                    |                                   |                                                             |                            |       |
|----------------------------------------------------------|-----------------------------------|-------------------------------------------------------------|----------------------------|-------|
| PARAMETER                                                | SYMBOL                            | TEST CONDITIONS                                             | VALUES                     | UNITS |
| Maximum junction operating and storage temperature range | T <sub>J</sub> , T <sub>Stg</sub> |                                                             | - 65 to 175 <sup>(1)</sup> | °C    |
| Maximum internal thermal resistance, junction to case    | R <sub>thJC</sub>                 | DC operation                                                | 0.65                       | °C/W  |
| Thermal resistance, case to sink                         | R <sub>thCS</sub>                 | Mounting surface, smooth, flat and greased                  | 0.25                       |       |
| Maximum allowable mounting torque<br>(+ 0 %, - 10 %)     |                                   | Not lubricated thread, tightening on nut <sup>(2)</sup>     | 3.4 (30)                   |       |
|                                                          |                                   | Lubricated thread, tightening on nut <sup>(2)</sup>         | 2.3 (20)                   |       |
|                                                          |                                   | Not lubricated thread, tightening on hexagon <sup>(3)</sup> | 4.2 (37)                   |       |
|                                                          |                                   | Lubricated thread, tightening on hexagon <sup>(3)</sup>     | 3.2 (28)                   |       |
| Weight                                                   |                                   |                                                             | 28.5                       | g     |
|                                                          |                                   |                                                             | 1                          | oz.   |
| Case style                                               |                                   | JEDEC                                                       | DO-203AB (DO-5)            |       |

**Notes**<sup>(1)</sup> JEDEC registered values<sup>(2)</sup> Recommended for pass-through holes<sup>(3)</sup> Recommended for holed threaded heatsinks

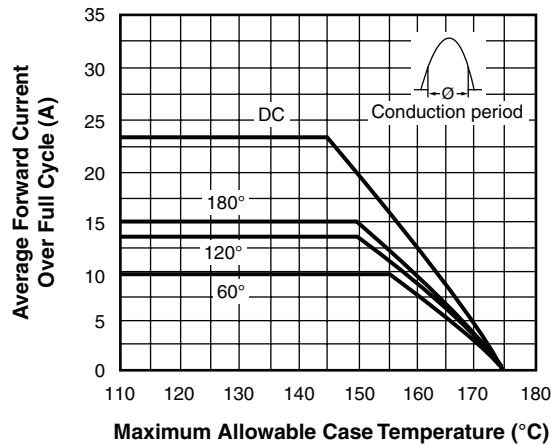


Fig. 1 - Average Forward Current vs. Maximum Allowable Case Temperature

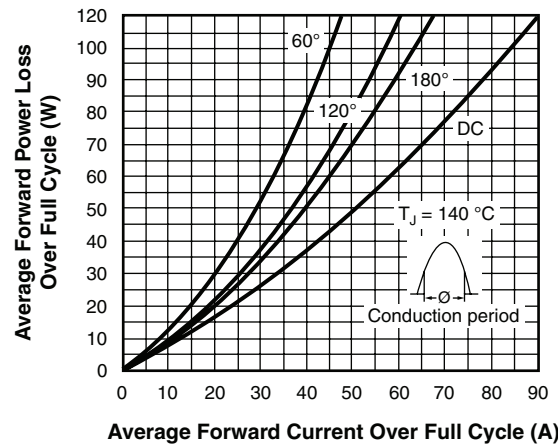


Fig. 3 - Maximum Low Level Forward Power Loss vs. Average Forward Current

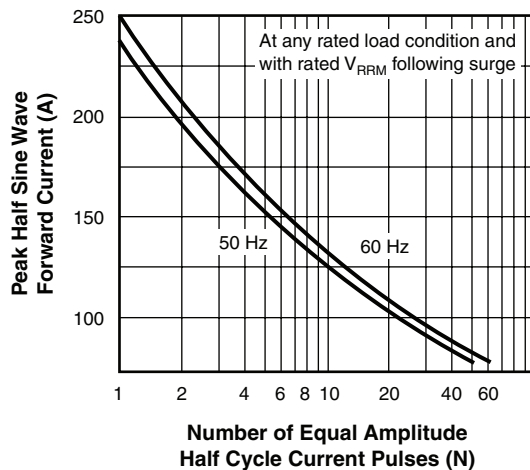


Fig. 2 - Maximum Non-Repetitive Surge Current vs. Number of Current Pulses

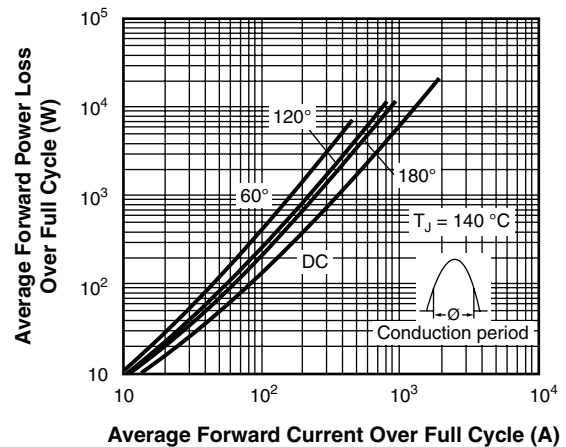


Fig. 4 - Maximum High Level Forward Power Loss vs. Average Forward Current

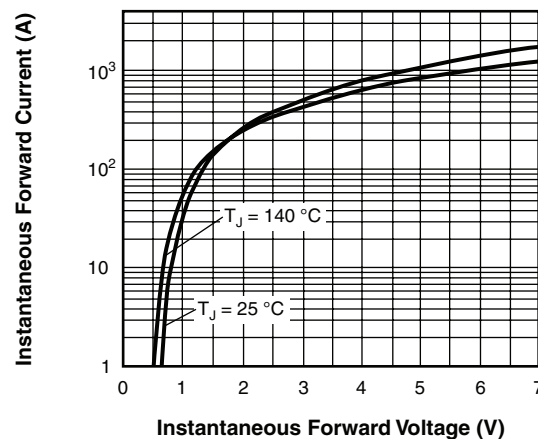


Fig. 5 - Maximum Forward Voltage vs. Forward Current

### LINKS TO RELATED DOCUMENTS

Dimensions

[www.vishay.com/doc?95360](http://www.vishay.com/doc?95360)



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