



## Power Silicon Rectifier Diodes, 35 A, 40 A, 60 A



DO-203AB (DO-5)

### DESCRIPTION/FEATURES

- Low leakage current series
- Good surge current capability up to 1000 A
- Can be supplied to meet stringent military, aerospace, and other high reliability requirements
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



RoHS  
COMPLIANT

| PRODUCT SUMMARY       |                  |
|-----------------------|------------------|
| $I_{F(AV)}$           | 35 A, 40 A, 60 A |
| Package               | DO-203AB (DO-5)  |
| Circuit configuration | Single diode     |

| MAJOR RATINGS AND CHARACTERISTICS |                 |                          |                            |                          |                          |                   |
|-----------------------------------|-----------------|--------------------------|----------------------------|--------------------------|--------------------------|-------------------|
| PARAMETER                         | TEST CONDITIONS | 1N1183                   | 1N3765                     | 1N1183A                  | 1N2128A                  | UNITS             |
| $I_{F(AV)}$                       |                 | 35 <sup>(1)</sup>        | 35 <sup>(1)</sup>          | 40 <sup>(1)</sup>        | 60 <sup>(1)</sup>        | A                 |
|                                   | $T_C$           | 140 <sup>(1)</sup>       | 140 <sup>(1)</sup>         | 150 <sup>(1)</sup>       | 140 <sup>(1)</sup>       | °C                |
| $I_{FSM}$                         | 50 Hz           | 480                      | 380                        | 765                      | 860                      | A                 |
|                                   | 60 Hz           | 500 <sup>(1)</sup>       | 400 <sup>(1)</sup>         | 800 <sup>(1)</sup>       | 900 <sup>(1)</sup>       |                   |
| $I^2t$                            | 50 Hz           | 1140                     | 730                        | 2900                     | 3700                     | A <sup>2</sup> s  |
|                                   | 60 Hz           | 1040                     | 670                        | 2650                     | 3400                     |                   |
| $I^2\sqrt{t}$                     |                 | 16 100                   | 10 300                     | 41 000                   | 52 500                   | A <sup>2</sup> √s |
| $V_{RRM}$                         | Range           | 50 to 600 <sup>(1)</sup> | 700 to 1000 <sup>(1)</sup> | 50 to 600 <sup>(1)</sup> | 50 to 600 <sup>(1)</sup> | V                 |
| $T_J$                             |                 | -65 to 200               | -65 to 200                 | -65 to 200               | -65 to 200               | °C                |

### Note

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

## ELECTRICAL SPECIFICATIONS

| VOLTAGE RATINGS |            |            | $V_{RRM}$ , MAXIMUM REPETITIVE<br>PEAK REVERSE VOLTAGE<br>( $T_J = -65\text{ °C TO }200\text{ °C}^{(2)}$ )<br>V | $V_{RM}$ , MAXIMUM DIRECT<br>REVERSE VOLTAGE<br>( $T_J = -65\text{ °C TO }200\text{ °C}^{(2)}$ )<br>V |
|-----------------|------------|------------|---|---|
| TYPE NUMBER     |            |            |   |   |
| VS-1N1183       | VS-1N1183A | VS-1N2128A | 50 <sup>(1)</sup>   | 50 <sup>(1)</sup>   |
| VS-1N1184       | VS-1N1184A | VS-1N2129A | 100 <sup>(1)</sup>  | 100 <sup>(1)</sup>  |
| VS-1N1185       | VS-1N1185A | VS-1N2130A | 150 <sup>(1)</sup>  | 150 <sup>(1)</sup>  |
| VS-1N1186       | VS-1N1186A | VS-1N2131A | 200 <sup>(1)</sup>  | 200 <sup>(1)</sup>  |
| VS-1N1187       | VS-1N1187A | VS-1N2133A | 300 <sup>(1)</sup>  | 300 <sup>(1)</sup>  |
| VS-1N1188       | VS-1N1188A | VS-1N2135A | 400 <sup>(1)</sup>  | 400 <sup>(1)</sup>  |
| VS-1N1189       | VS-1N1189A | VS-1N2137A | 500 <sup>(1)</sup>  | 500 <sup>(1)</sup>  |
| VS-1N1190       | VS-1N1190A | VS-1N2138A | 600 <sup>(1)</sup>  | 600 <sup>(1)</sup>  |
| VS-1N3765       |            |            | 700 <sup>(1)</sup>  | 700 <sup>(1)</sup>  |
| VS-1N3766       |            |            | 800 <sup>(1)</sup>  | 800 <sup>(1)</sup>  |
| VS-1N3767       |            |            | 900 <sup>(1)</sup>  | 900 <sup>(1)</sup>  |
| VS-1N3768       |            |            | 1000 <sup>(1)</sup>   | 1000 <sup>(1)</sup>   |

### Notes

• Basic type number indicates cathode to case. For anode to case, add "R" to part number, e.g., 1N1188R, 1N3766R, 1N1186RA, 1N2135RA

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

<sup>(2)</sup> For 1N1183 Series and 1N3765 Series  $T_C = -65\text{ °C to }190\text{ °C}$



| FORWARD CONDUCTION   |                              |  |   |   |                    |                    |                    |                   |    |
|--|------------------------------|--|---|---|--------------------|--------------------|--------------------|-------------------|----|
| PARAMETER  | SYMBOL                       | TEST CONDITIONS                                      |   | 1N1183  | 1N3765             | 1N1183A            | 1N2128A            | UNITS             |    |
| Maximum average forward current at case temperature                  | $I_{F(AV)}$                  | 1-phase operation, 180° sinusoidal conduction        |   | 35 <sup>(1)</sup>                               | 35 <sup>(1)</sup>  | 40 <sup>(1)</sup>  | 60 <sup>(1)</sup>  | A                 |    |
|  |                              |  |   | 140 <sup>(1)</sup>                              | 140 <sup>(1)</sup> | 150 <sup>(1)</sup> | 140 <sup>(1)</sup> | °C                |    |
| Maximum peak one cycle non-repetitive surge current                  | $I_{FSM}$                    | Half cycle 50 Hz sine wave or 6 ms rectangular pulse | Following any rated load condition and with rated $V_{RRM}$ applied                           | 480   | 380                | 765                | 860                | A                 |    |
|  |                              | Half cycle 60 Hz sine wave or 5 ms rectangular pulse |   | 500 <sup>(1)</sup>                              | 400 <sup>(1)</sup> | 800 <sup>(1)</sup> | 900 <sup>(1)</sup> |                   |    |
|  |                              | Half cycle 50 Hz sine wave or 6 ms rectangular pulse | Following any rated load condition and with $\frac{1}{2} V_{RRM}$ applied following surge = 0 | 570   | 455                | 910                | 1000               |                   |    |
|  |                              | Half cycle 60 Hz sine wave or 5 ms rectangular pulse |   | 595   | 475                | 950                | 1050               |                   |    |
| Maximum $I^2t$ for fusing  | $I^2t$                       | t = 10 ms  | With rated $V_{RRM}$ applied following surge, initial $T_J = T_J$ maximum                     | 1140  | 730                | 2900               | 3700               | A <sup>2</sup> s  |    |
|  |                              | t = 8.3 ms   |   | 1040  | 670                | 2650               | 3400               |                   |    |
| Maximum $I^2t$ for individual device fusing                          |                              | t = 10 ms  | With $V_{RRM} = 0$ following surge, initial $T_J = T_J$ maximum                               | 1610  | 1030               | 4150               | 5250               |                   |    |
|  |                              | t = 8.3 ms   |   | 1470  | 940                | 3750               | 4750               |                   |    |
| Maximum $I^2\sqrt{t}$ for individual device fusing                   | $I^2\sqrt{t}$ <sup>(2)</sup> | t = 0.1 to 10 ms, $V_{RRM} = 0$ following surge      |   | 16 100  | 10 300             | 41 500             | 52 500             | A <sup>2</sup> √s |    |
| Maximum peak forward voltage at maximum forward current ( $I_{FM}$ ) | $V_{FM}$                     | $T_J = 25$ °C  |   | 1.7 <sup>(1)</sup>                              | 1.8 <sup>(1)</sup> | 1.3 <sup>(1)</sup> | 1.3 <sup>(1)</sup> | V                 |    |
|  |                              |  |   | 110   | 110                | 126                | 188                | A                 |    |
| Maximum average reverse current                                      | $I_{R(AV)}$                  | Maximum rated $I_{F(AV)}$ and $T_C$                  |   | $V_{RRM} = 700$                                 | -                  | 5.0 <sup>(1)</sup> | -                  | -                 | mA |
|  |                              |  |   | $V_{RRM} = 800$                                 | -                  | 4.0 <sup>(1)</sup> | -                  | -                 |    |
|  |                              |  |   | $V_{RRM} = 900$                                 | -                  | 3.0 <sup>(1)</sup> | -                  | -                 |    |
|  |                              |  |   | $V_{RRM} = 1000$                                | -                  | 2.0 <sup>(1)</sup> | -                  | -                 |    |
|  |                              |  |   | Maximum rated $I_{F(AV)}$ , $V_{RRM}$ and $T_C$ | 10 <sup>(1)</sup>  | -                  | 2.5 <sup>(1)</sup> | 10 <sup>(1)</sup> |    |

**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   | 1N1183                     | 1N3765 | 1N1183A            | 1N2128A             | UNITS               |
| Maximum operating case temperature range              | $T_C$      |   | - 65 to 190 <sup>(1)</sup> |        | - 65 to 200        |                     | °C                  |
| Maximum storage temperature range                     | $T_{Stg}$  |   | - 65 to 175 <sup>(1)</sup> |        | - 65 to 200        |                     |                     |
| Maximum internal thermal resistance, junction to case | $R_{thJC}$ | DC operation  | 1.00 <sup>(1)</sup>        |        | 1.1 <sup>(1)</sup> | 0.65 <sup>(1)</sup> | °C/W                |
| Thermal resistance, case to sink                      | $R_{thCS}$ | Mounting surface, smooth, flat and greased                  | 0.25                       |        |                    |                     |                     |
| Maximum allowable mounting torque (+ 0 %, - 10 %)     |            | Not lubricated thread, tightening on nut <sup>(2)</sup>     |                            |        | 3.4 (30)           |                     | N · m<br>(lbf · in) |
|   |            | 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)           |                     |                     |
| Approximate weight                                    |            |   |                            |        | 17                 |                     | g                   |
|   |            |   |                            |        | 0.6                |                     | oz.                 |
| Case style  |            | JEDEC®  | DO-203AB (DO-5)            |        |                    |                     |                     |

**Notes**

- (1) JEDEC registered values®
- (2) Recommended for pass-through holes
- (3) Recommended for holed threaded heatsinks

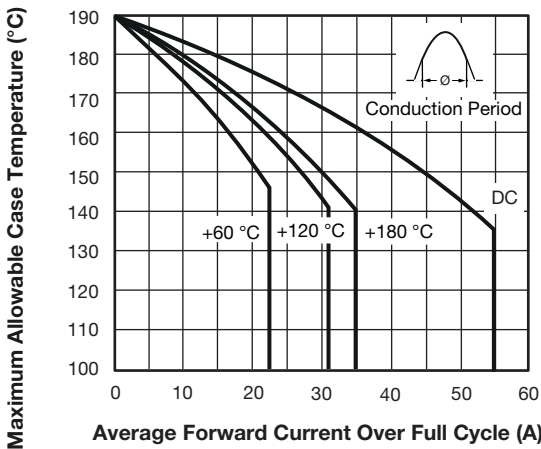


Fig. 1 - Maximum Allowable Case Temperature vs. Average Forward Current, 1N1183 and 1N3765 Series

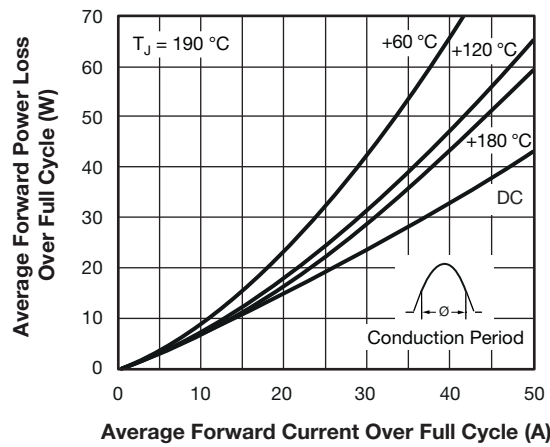


Fig. 2 - Typical Low Level Forward Power Loss vs. Average Forward Current (Sinusoidal Current Waveform), 1N1183 and 1N3765 Series

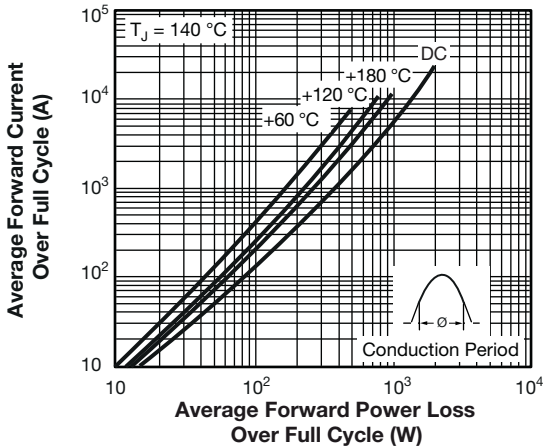


Fig. 3 - Typical High Level Forward Power Loss vs. Average Forward Current (Sinusoidal Current Waveform), 1N1183 and 1N3765 Series

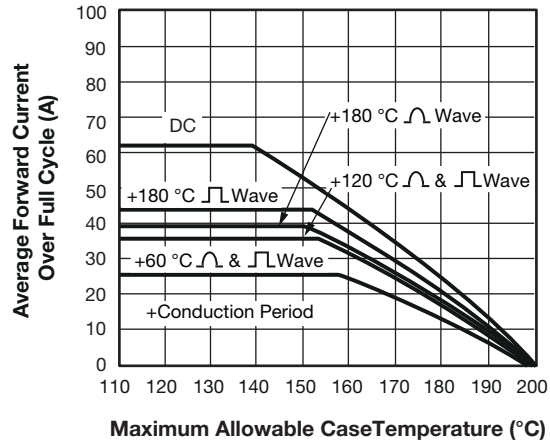


Fig. 6 - Average Forward Current vs. Maximum Allowable Case Temperature, 1N1183A Series

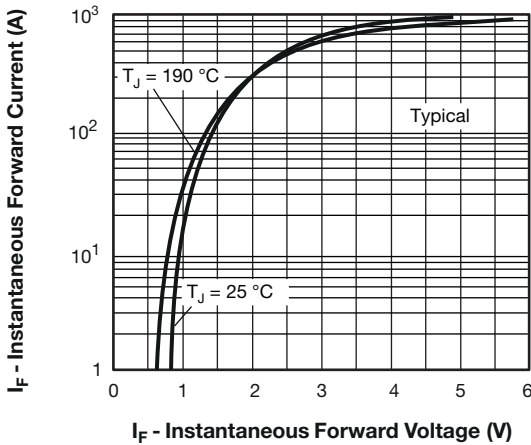


Fig. 4 - Typical Forward Voltage vs. Forward Current, 1N1183 and 1N3765 Series

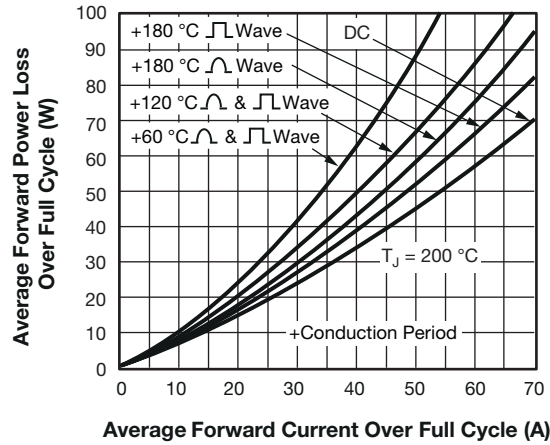


Fig. 7 - Maximum Low Level Forward Power Loss vs. Average Forward Current, 1N1183A Series

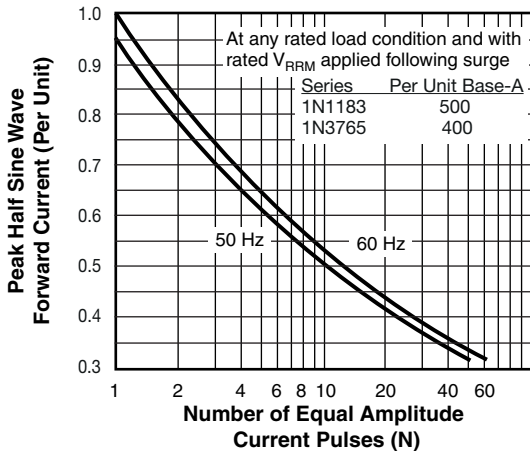


Fig. 5 - Maximum Non-Repetitive Surge Current vs. Number of Current Pulses, 1N1183 and 1N3765 Series

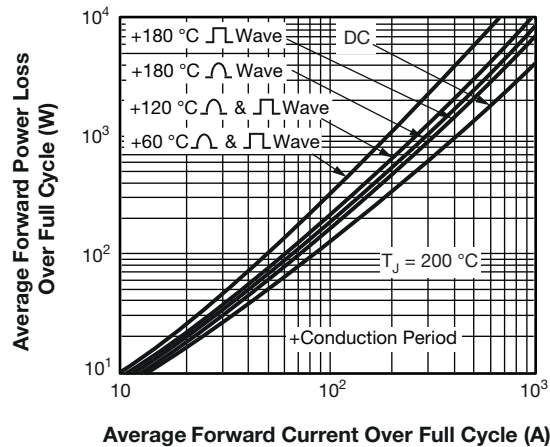


Fig. 8 - Maximum High Level Forward Power Loss vs. Average Forward Current, 1N1183A Series

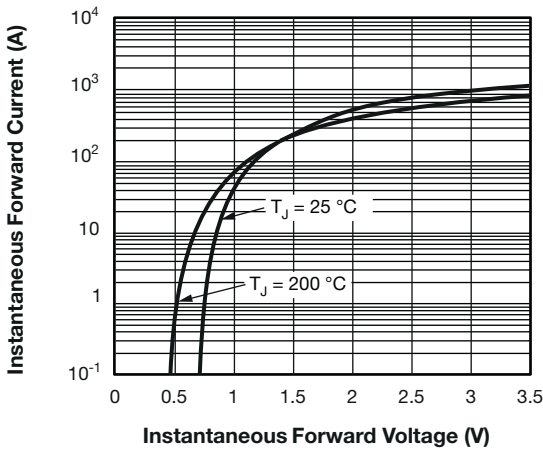


Fig. 9 - Maximum Forward Voltage vs. Forward Current, 1N1183A Series

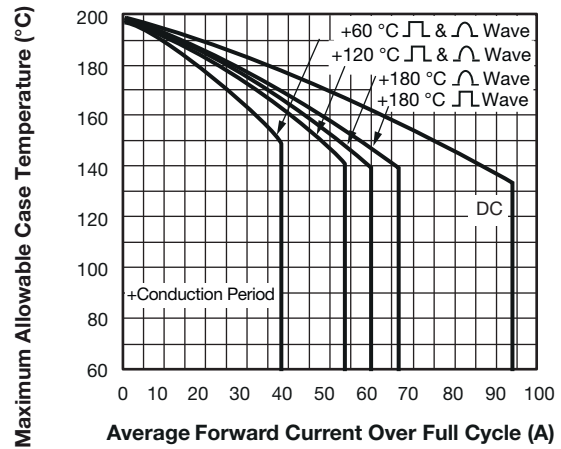


Fig. 12 - Maximum Allowable Case Temperature vs. Average Forward Current, 1N2128A Series

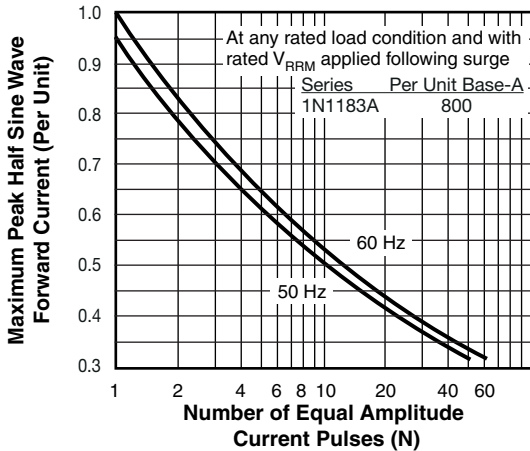


Fig. 10 - Maximum Non-Repetitive Surge Current vs. Number of Current Pulses, 1N1183A Series

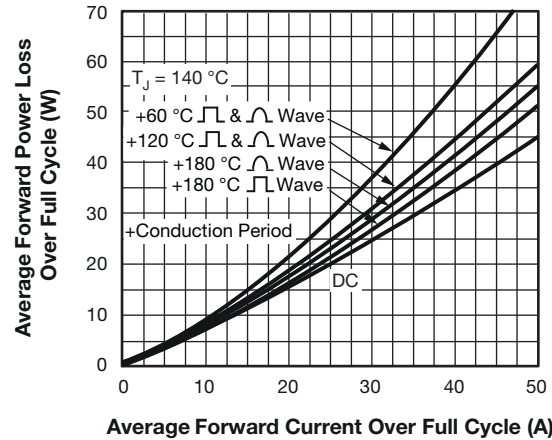


Fig. 13 - Maximum Low Level Forward Power Loss vs. Average Forward Current, 1N2128A Series

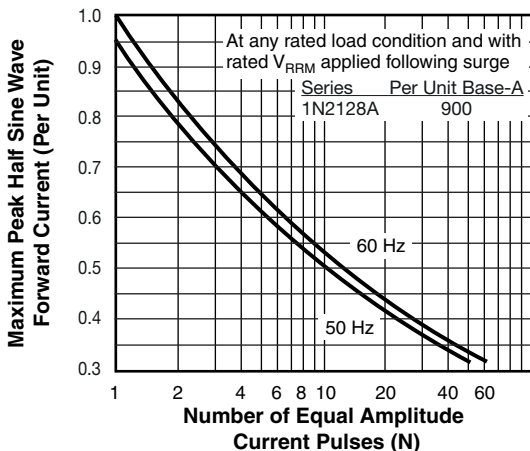


Fig. 11 - Maximum Non-Repetitive Surge Current vs. Number of Current Pulses, 1N2128A Series

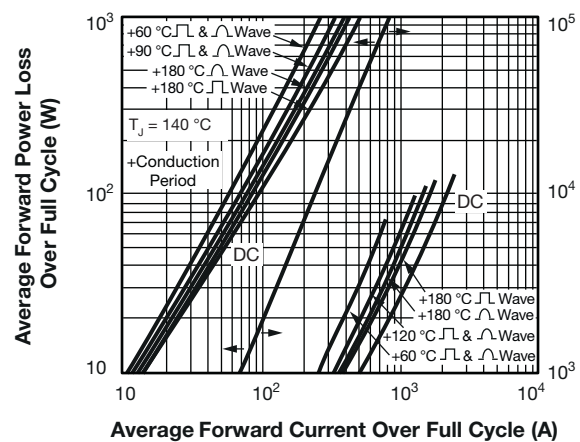


Fig. 14 - Maximum High Level Forward Power Loss vs. Average Forward Current, 1N2128A Series

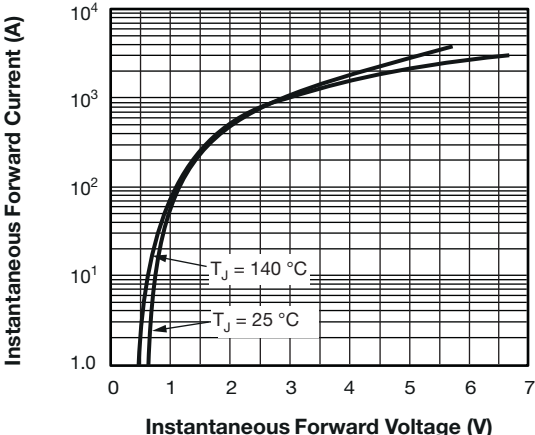
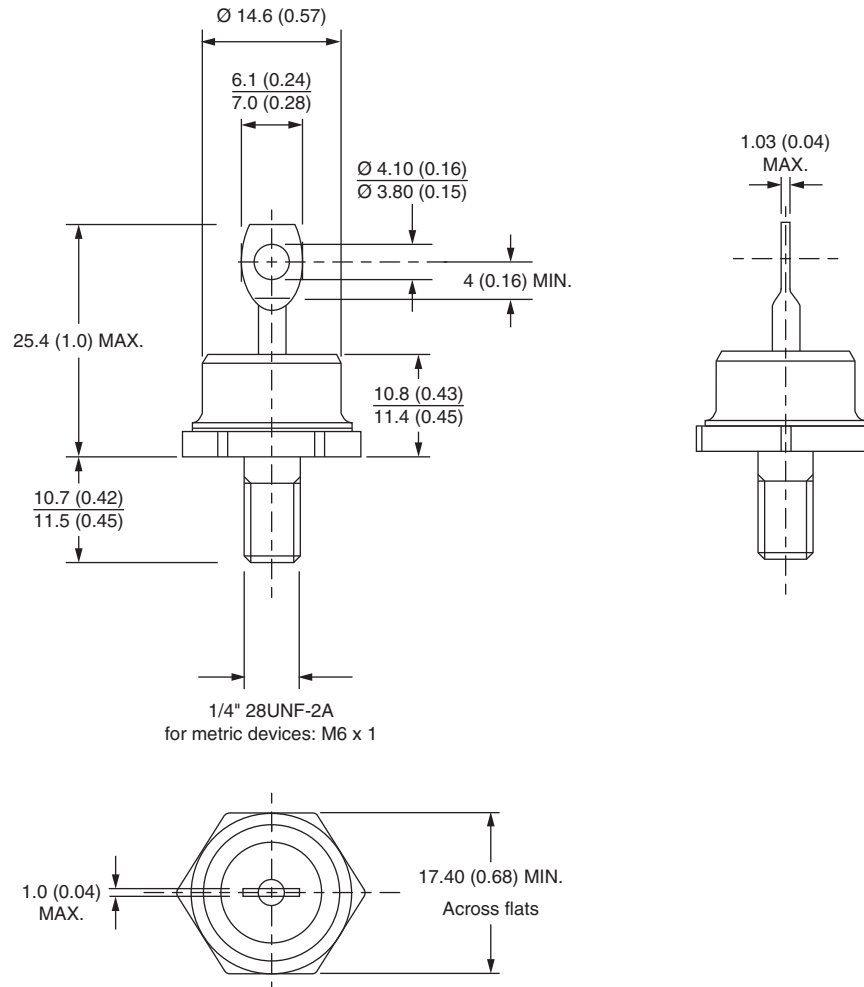


Fig. 15 - Maximum Forward Voltage vs. Forward Current, 1N2128A Series

| LINKS TO RELATED DOCUMENTS |  |
|----------------------------|--|
| Dimensions                 | <a href="http://www.vishay.com/doc?95360">www.vishay.com/doc?95360</a> |

## DO-203AB (DO-5) for 1N1183, 1N3765, 1N1183A, 1N2128A, 1N3208 Series

**DIMENSIONS** in millimeters (inches)





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- Консультации по применению компонента;
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- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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