



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
- RoHS compliant



RoHS
COMPLIANT

PRODUCT SUMMARY

| | |
|-------------|----------------|
| $I_{F(AV)}$ | 35 A/40 A/60 A |
|-------------|----------------|

MAJOR RATINGS AND CHARACTERISTICS

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

Note

⁽¹⁾ JEDEC registered values

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS

| TYPE NUMBER ⁽³⁾ | | | V_{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V | V_{RM} , MAXIMUM DIRECT REVERSE VOLTAGE V |
|----------------------------|---------|---------|---|---|
| | | | $T_J = -65\text{ °C TO }200\text{ °C} \text{ }^{(2)}$ | $T_J = -65\text{ °C TO }200\text{ °C} \text{ }^{(2)}$ |
| 1N1183 | 1N1183A | 1N2128A | 50 ⁽¹⁾ | 50 ⁽¹⁾ |
| 1N1184 | 1N1184A | 1N2129A | 100 ⁽¹⁾ | 100 ⁽¹⁾ |
| 1N1185 | 1N1185A | 1N2130A | 150 ⁽¹⁾ | 150 ⁽¹⁾ |
| 1N1186 | 1N1186A | 1N2131A | 200 ⁽¹⁾ | 200 ⁽¹⁾ |
| 1N1187 | 1N1187A | 1N2133A | 300 ⁽¹⁾ | 300 ⁽¹⁾ |
| 1N1188 | 1N1188A | 1N2135A | 400 ⁽¹⁾ | 400 ⁽¹⁾ |
| 1N1189 | 1N1189A | 1N2137A | 500 ⁽¹⁾ | 500 ⁽¹⁾ |
| 1N1190 | 1N1190A | 1N2138A | 600 ⁽¹⁾ | 600 ⁽¹⁾ |
| 1N3765 | | | 700 ⁽¹⁾ | 700 ⁽¹⁾ |
| 1N3766 | | | 800 ⁽¹⁾ | 800 ⁽¹⁾ |
| 1N3767 | | | 900 ⁽¹⁾ | 900 ⁽¹⁾ |
| 1N3768 | | | 1000 ⁽¹⁾ | 1000 ⁽¹⁾ |

Notes

⁽¹⁾ JEDEC registered values

⁽²⁾ For 1N1183 Series and 1N3765 Series $T_C = -65$ to 190 °C

⁽³⁾ Basic part number indicates cathode to case. For anode to case, add "R" to part number, i.e., 1N1188R, 1N3766R, 1N1186RA, 1N2135RA

1N1183, 1N3765, 1N1183A, 1N2128A Series



Vishay High Power Products Power Silicon Rectifier Diodes,
35 A/40 A/60 A

| 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 ⁽¹⁾ | 35 ⁽¹⁾ | 40 ⁽¹⁾ | 60 ⁽¹⁾ | A | |
| | | | | 140 ⁽¹⁾ | 140 ⁽¹⁾ | 150 ⁽¹⁾ | 140 ⁽¹⁾ | °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 | |
| | | | | 500 ⁽¹⁾ | 400 ⁽¹⁾ | 800 ⁽¹⁾ | 900 ⁽¹⁾ | | |
| | | Half cycle 60 Hz sine wave or 5 ms rectangular pulse | Following any rated load condition and with $\frac{1}{2} V_{RRM}$ applied following surge = 0 | 570 | 455 | 910 | 1000 | | |
| | | | | 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 ² s | |
| | | t = 8.3 ms | | 1040 | 670 | 2650 | 3400 | | |
| Maximum I^2t for individual device fusing | I^2t | 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 | $I^2\sqrt{t}$ ⁽²⁾ | t = 0.1 to 10 ms, $V_{RRM} = 0$ following surge | | 16 100 | 10 300 | 41 500 | 52 500 | A ² √s | |
| Maximum peak forward voltage at maximum forward current (I_{FM}) | V_{FM} | $T_J = 25$ °C | | 1.7 ⁽¹⁾ | 1.8 ⁽¹⁾ | 1.3 ⁽¹⁾ | 1.3 ⁽¹⁾ | V | |
| | | | | 110 | 110 | 126 | 188 | A | |
| Maximum average reverse current | $I_{R(AV)}$ | $V_{RRM} = 700$ | Maximum rated $I_{F(AV)}$ and T_C | - | 5.0 ⁽¹⁾ | - | - | mA | |
| | | | | $V_{RRM} = 800$ | - | 4.0 ⁽¹⁾ | - | | - |
| | | | | $V_{RRM} = 900$ | - | 3.0 ⁽¹⁾ | - | | - |
| | | | | $V_{RRM} = 1000$ | - | 2.0 ⁽¹⁾ | - | | - |
| | | Maximum rated $I_{F(AV)}$, V_{RRM} and T_C | 10 ⁽¹⁾ | - | 2.5 ⁽¹⁾ | 10 ⁽¹⁾ | | | |

Notes

⁽¹⁾ JEDEC registered values

⁽²⁾ I^2t for time $t_x = I^2\sqrt{t} \times \sqrt{t_x}$



1N1183, 1N3765, 1N1183A, 1N2128A Series

Power Silicon Rectifier Diodes, Vishay High Power Products
35 A/40 A/60 A

| THERMAL AND MECHANICAL SPECIFICATIONS | | | | | | | |
|---|------------|--|----------------------------|--------|--------------------|---------------------|---------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | 1N1183 | 1N3765 | 1N1183A | 1N2128A | UNITS |
| Maximum operating case temperature range | T_C | | - 65 to 190 ⁽¹⁾ | | - 65 to 200 | | °C |
| Maximum storage temperature range | T_{Stg} | | - 65 to 175 ⁽¹⁾ | | - 65 to 200 | | |
| Maximum internal thermal resistance, junction to case | R_{thJC} | DC operation | 1.00 ⁽¹⁾ | | 1.1 ⁽¹⁾ | 0.65 ⁽¹⁾ | °C/W |
| Thermal resistance, case to sink | R_{thCS} | Mounting surface, smooth, flat and greased | 0.25 | | | | |
| Mounting torque | minimum | Non-lubricated threads | 2.3 (20) | | | | N · m (lbf · in) |
| | maximum | | 3.4 (30) | | | | |
| Approximate weight | | | 17 | | | | g |
| | | | 0.6 | | | | oz. |
| Case style | | JEDEC | DO-203AB (DO-5) | | | | |

Note

⁽¹⁾ JEDEC registered values

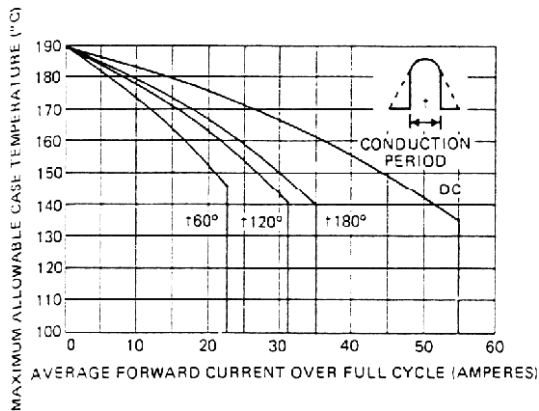


Fig. 1 - Maximum Allowable Case Temperature vs. Average Forward Current, 1N1183 and 1N3765 Series

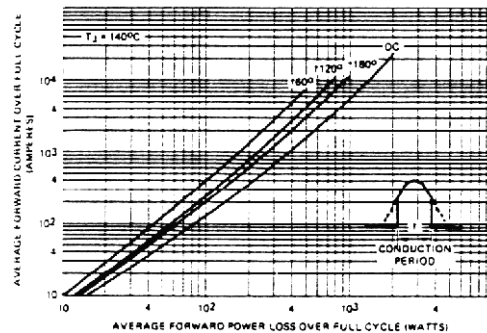


Fig. 3 - Typical High Level Forward Power Loss vs. Average Forward Current (Sinusoidal Current Waveform), 1N1183 and 1N3765 Series

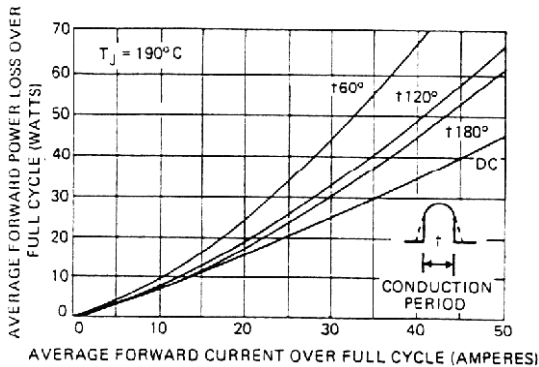


Fig. 2 - Typical Low Level Forward Power Loss vs. Average Forward Current (Sinusoidal Current Waveform), 1N1183 and 1N3765 Series

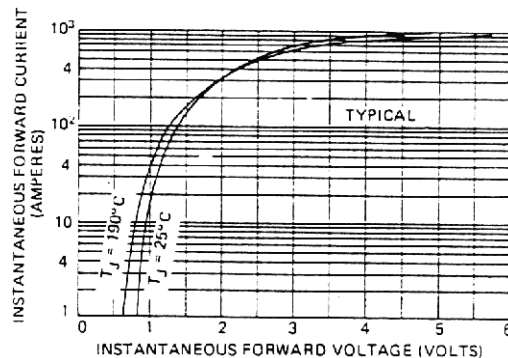


Fig. 4 - Typical Forward Voltage vs. Forward Current, 1N1183 and 1N3765 Series

1N1183, 1N3765, 1N1183A, 1N2128A Series



Vishay High Power Products Power Silicon Rectifier Diodes,
35 A/40 A/60 A

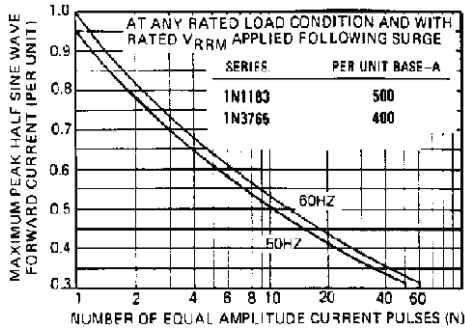


Fig. 5 - Maximum Non-Repetitive Surge Current vs. Number of Current Pulses, 1N1183 and 1N3765 Series

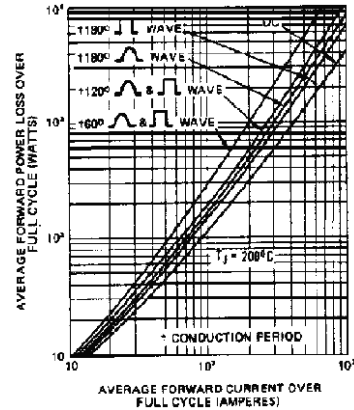


Fig. 8 - Maximum High Level Forward Power Loss vs. Average Forward Current, 1N1183A Series

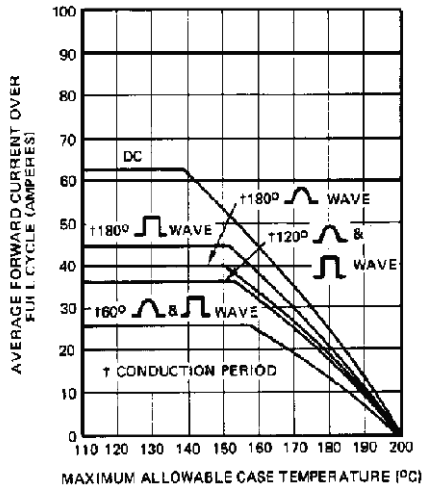


Fig. 6 - Average Forward Current vs. Maximum Allowable Case Temperature, 1N1183A Series

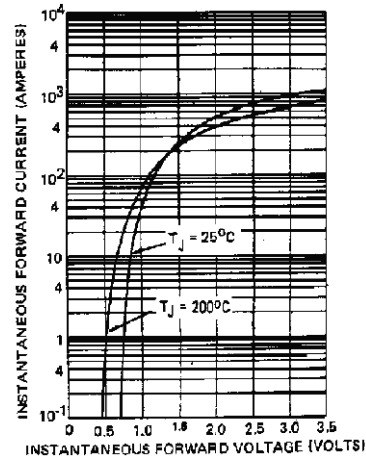


Fig. 9 - Maximum Forward Voltage vs. Forward Current, 1N1183A Series

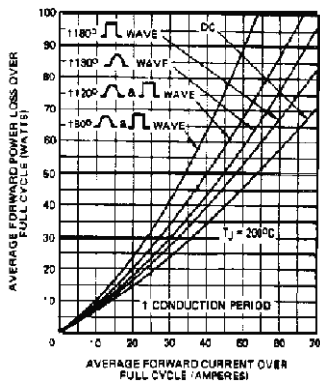


Fig. 7 - Maximum Low Level Forward Power Loss vs. Average Forward Current, 1N1183A Series

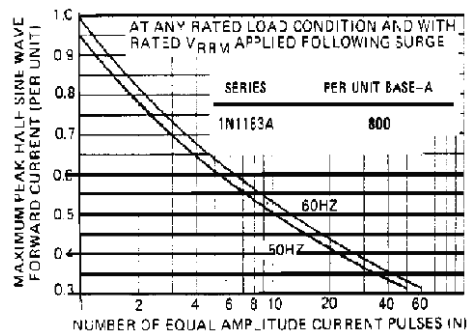


Fig. 10 - Maximum Non-Repetitive Surge Current vs. Number of Current Pulses, 1N1183A Series



1N1183, 1N3765, 1N1183A, 1N2128A Series

Power Silicon Rectifier Diodes, Vishay High Power Products
35 A/40 A/60 A

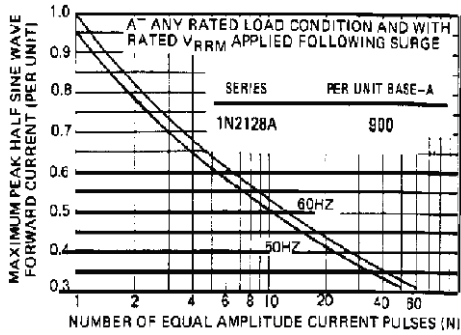


Fig. 11 - Maximum Non-Repetitive Surge Current vs. Number of Current Pulses, 1N2128A Series

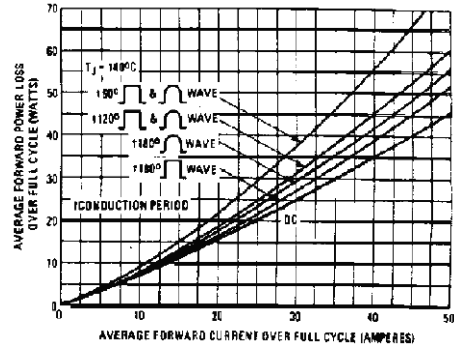


Fig. 13 - Maximum Low Level Forward Power Loss vs. Average Forward Current, 1N2128A Series

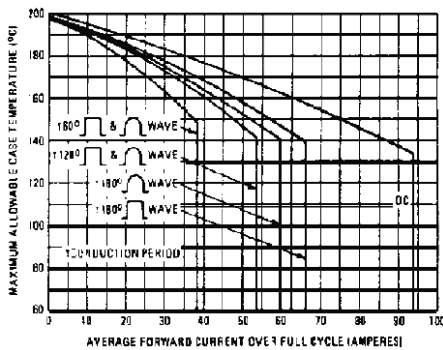


Fig. 12 - Maximum Allowable Case Temperature vs. Average Forward Current, 1N2128A Series

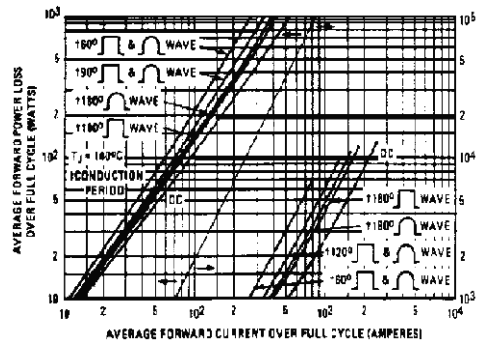


Fig. 14 - Maximum High Level Forward Power Loss vs. Average Forward Current, 1N2128A Series

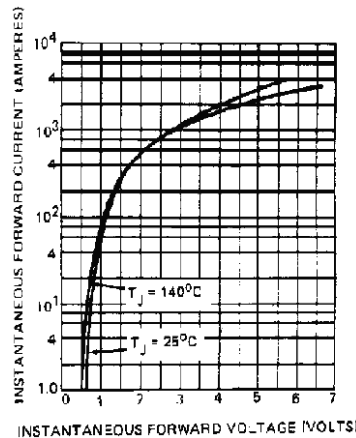


Fig. 15 - Maximum Forward Voltage vs. Forward Current, 1N2128A Series

LINKS TO RELATED DOCUMENTS

Dimensions

<http://www.vishay.com/doc?95360>



Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.