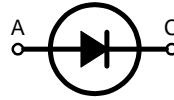


# Rectifier Diode Avalanche Diode

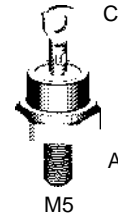
**$V_{RRM} = 800-1800\text{ V}$**   
 **$I_{F(RMS)} = 18\text{ A}$**   
 **$I_{F(AV)M} = 11\text{ A}$**

| $V_{RSM}$<br>V | $V_{(BR)min}$ ①<br>V | $V_{RRM}$<br>V | Standard<br>Types | Avalanche<br>Types |
|----------------|----------------------|----------------|-------------------|--------------------|
| 900            |                      | 800            | DS9-08F           |                    |
| 1300           | 1300                 | 1200           | DS9-12F           | DSA 9-12F          |
| 1700           | 1750                 | 1600           |                   | DSA 9-16F          |
| 1900           | 1950                 | 1800           |                   | DSA 9-18F          |

① Only for Avalanche Diodes



DO-203 AA



A = Anode C = Cathode

| Symbol       | Test Conditions   | Maximum Ratings                                     |  |
|--------------|---|---|--|
| $I_{F(RMS)}$ | $T_{VJ} = T_{VJM}$  | 18  | A  |
| $I_{F(AV)M}$ | $T_{case} = 150^{\circ}\text{C}; 180^{\circ}\text{ sine}$ | 11  | A  |
| $P_{RSM}$    | DSA types, $T_{VJ} = T_{VJM}, t_p = 10\ \mu\text{s}$      | 4.5   | kW   |
| $I_{FSM}$    | $T_{VJ} = 45^{\circ}\text{C}; V_R = 0$                    | t = 10 ms (50 Hz), sine<br>t = 8.3 ms (60 Hz), sine | 250 A<br>265 A                               |
|              | $T_{VJ} = T_{VJM}; V_R = 0$                               | t = 10 ms (50 Hz), sine<br>t = 8.3 ms (60 Hz), sine | 200 A<br>220 A                               |
| $I^2t$       | $T_{VJ} = 45^{\circ}\text{C}; V_R = 0$                    | t = 10 ms (50 Hz), sine<br>t = 8.3 ms (60 Hz), sine | 310 A <sup>2</sup> s<br>295 A <sup>2</sup> s |
|              | $T_{VJ} = T_{VJM}; V_R = 0$                               | t = 10 ms (50 Hz), sine<br>t = 8.3 ms (60 Hz), sine | 200 A <sup>2</sup> s<br>190 A <sup>2</sup> s |
| $T_{VJ}$     |   | -40...+180  | °C   |
| $T_{VJM}$    |   | 180   | °C   |
| $T_{stg}$    |   | -40...+180  | °C   |
| $M_d$        | Mounting torque   | 2.2-2.8   | Nm   |
|              |   | 19-25   | lb.in.                                       |
| Weight       |   | 5   | g  |

### Features

- International standard package, JEDEC DO-203 AA
- Planar glassivated chips

### Applications

- Supplies for DC power equipment
- DC supply for PWM inverter
- Field supply for DC motors
- Battery DC power supplies

### Advantages

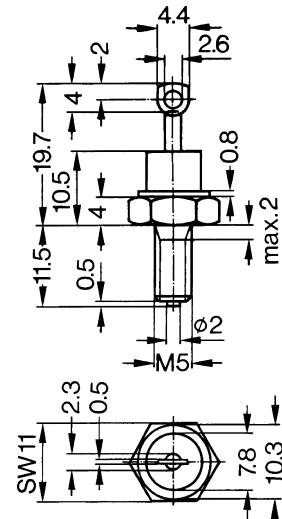
- Space and weight savings
- Simple mounting
- Improved temperature and power cycling
- Reduced protection circuits

| Symbol     | Test Conditions                                  | Characteristic Values |                  |
|------------|--|-----------------------|------------------|
| $I_R$      | $T_{VJ} = T_{VJM}; V_R = V_{RRM}$                | ≤ 3                   | mA               |
| $V_F$      | $I_F = 36\text{ A}; T_{VJ} = 25^{\circ}\text{C}$ | ≤ 1.4                 | V                |
| $V_{T0}$   | For power-loss calculations only                 | 0.85                  | V                |
| $r_T$      | $T_{VJ} = T_{VJM}$                               | 15                    | mΩ               |
| $R_{thJC}$ | DC current                                       | 2.0                   | K/W              |
|            | 180° sine  | 2.17                  | K/W              |
| $R_{thJH}$ | DC current                                       | 3.0                   | K/W              |
| $d_s$      | Creepage distance on surface                     | 2.0                   | mm               |
| $d_A$      | Strike distance through air                      | 2.0                   | mm               |
| $a$        | Max. allowable acceleration                      | 100                   | m/s <sup>2</sup> |

Data according to IEC 60747

IXYS reserves the right to change limits, test conditions and dimensions

Dimensions in mm (1 mm = 0.0394")



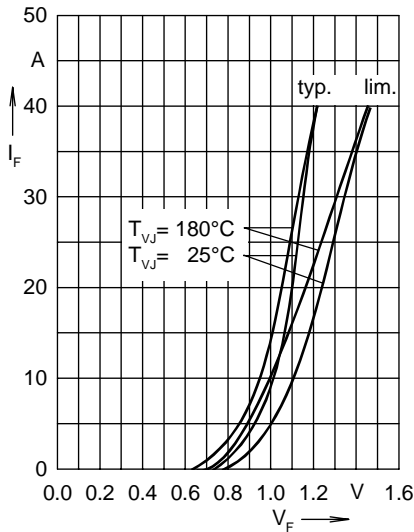


Fig. 1 Forward characteristics

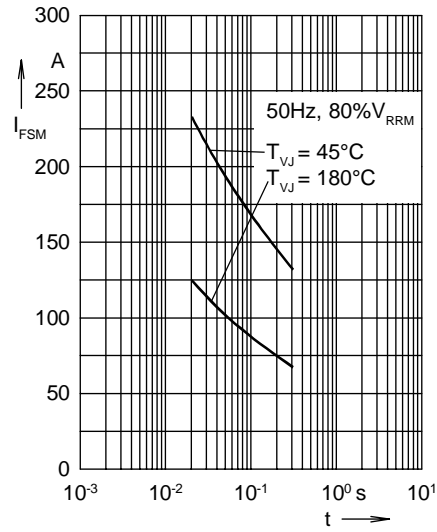


Fig. 2 Surge overload current  
 $I_{FSM}$ : crest value,  $t$ : duration

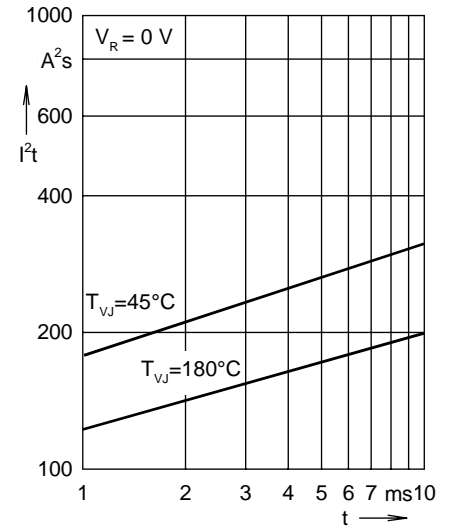


Fig. 3  $I^2t$  versus time (1-10 ms)

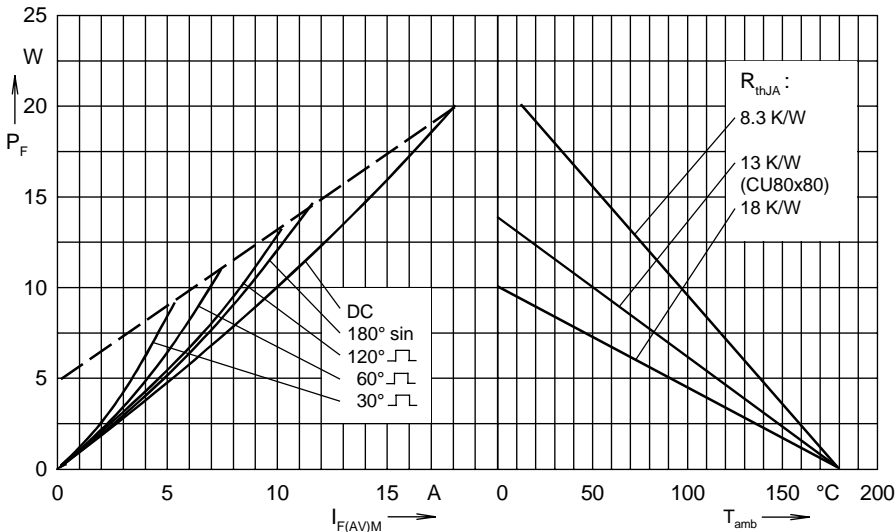


Fig. 4 Power dissipation versus forward current and ambient temperature

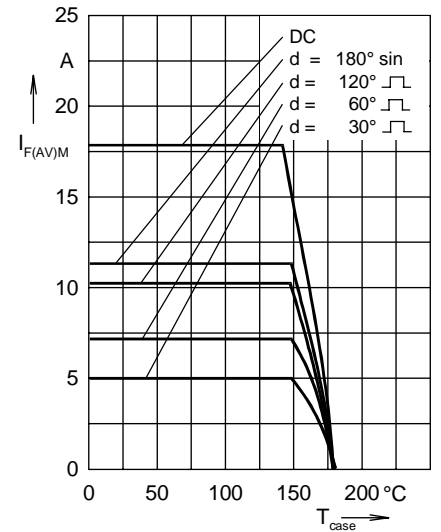


Fig. 5 Max. forward current at case temperature

$R_{thJH}$  for various conduction angles  $d$ :

| $d$  | $R_{thJH}$ (K/W) |
|------|------------------|
| DC   | 3.0              |
| 180° | 3.35             |
| 120° | 3.56             |
| 60°  | 4.0              |
| 30°  | 4.64             |

Constants for  $Z_{thJH}$  calculation:

| $i$ | $R_{thi}$ (K/W) | $t_i$ (s) |
|-----|-----------------|-----------|
| 1   | 0.095           | 0.00032   |
| 2   | 0.515           | 0.0102    |
| 3   | 1.39            | 0.360     |
| 4   | 1.0             | 2.30      |

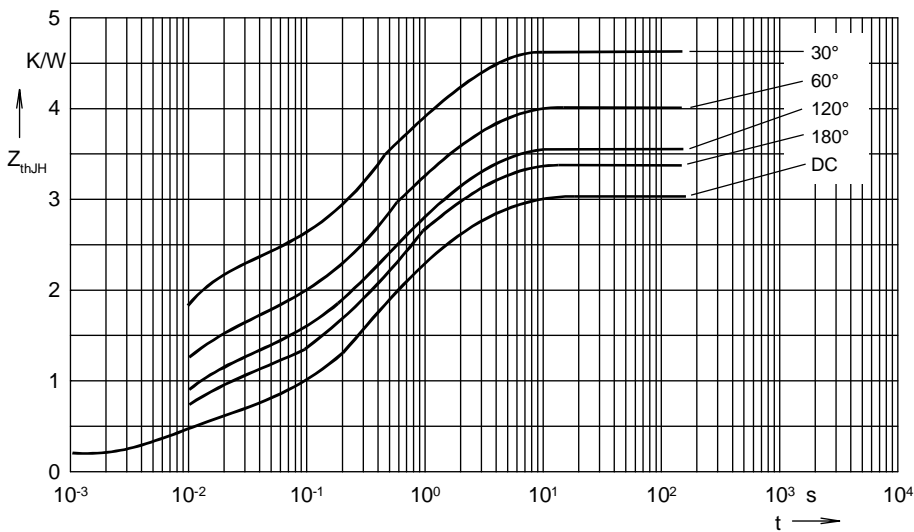


Fig. 6 Transient thermal impedance junction to heatsink