

# Rectifier Diode Avalanche Diode

$$V_{RRM} = 800-1800 \text{ V}$$

$$I_{F(RMS)} = 160 \text{ A}$$

$$I_{F(AV)M} = 110 \text{ A}$$

| $V_{RSM}$<br>V | $V_{(BR)min}$ ①<br>V | $V_{RRM}$<br>V | Anode<br>on stud | Cathode<br>on stud |
|----------------|----------------------|----------------|------------------|--------------------|
| 900            | -                    | 800            | DS 75-08B        | DSI 75-08B         |
| 1300           | -                    | 1200           | DS 75-12B        | DSI 75-12B         |
| 1300           | 1300                 | 1200           | DSA 75-12B       | DSAI 75-12B        |
| 1700           | 1760                 | 1600           | DSA 75-16B       | DSAI 75-16B        |
| 1900           | 1950                 | 1800           | DSA 75-18B       | DSAI 75-18B        |

① Only for Avalanche Diodes

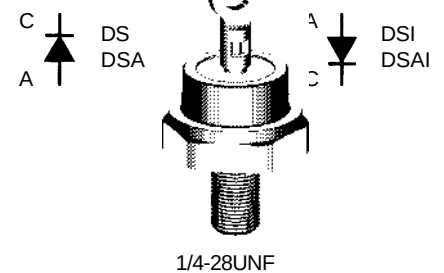
| Symbol       | Test Conditions                                            | Maximum Ratings                    |                       |
|--------------|------------------------------------------------------------|------------------------------------|-----------------------|
| $I_{F(RMS)}$ | $T_{VJ} = T_{VJM}$                                         | 160                                | A                     |
| $I_{F(AV)M}$ | $T_{case} = 100^{\circ}\text{C}; 180^{\circ} \text{ sine}$ | 110                                | A                     |
| $P_{RSM}$    | DSA(I) types, $T_{VJ} = T_{VJM}, t_p = 10 \mu\text{s}$     | 20                                 | kW                    |
| $I_{FSM}$    | $T_{VJ} = 45^{\circ}\text{C};$<br>$V_R = 0$                | $t = 10 \text{ ms (50 Hz), sine}$  | 1400 A                |
|              |                                                            | $t = 8.3 \text{ ms (60 Hz), sine}$ | 1500 A                |
|              | $T_{VJ} = T_{VJM}$<br>$V_R = 0$                            | $t = 10 \text{ ms (50 Hz), sine}$  | 1250 A                |
|              |                                                            | $t = 8.3 \text{ ms (60 Hz), sine}$ | 1310 A                |
| $I^2t$       | $T_{VJ} = 45^{\circ}\text{C}$<br>$V_R = 0$                 | $t = 10 \text{ ms (50 Hz), sine}$  | 9800 A <sup>2</sup> s |
|              |                                                            | $t = 8.3 \text{ ms (60 Hz), sine}$ | 9450 A <sup>2</sup> s |
|              | $T_{VJ} = T_{VJM}$<br>$V_R = 0$                            | $t = 10 \text{ ms (50 Hz), sine}$  | 7820 A <sup>2</sup> s |
|              |                                                            | $t = 8.3 \text{ ms (60 Hz), sine}$ | 7210 A <sup>2</sup> s |
| $T_{VJ}$     |                                                            | -40...+180                         | °C                    |
| $T_{VJM}$    |                                                            | 180                                | °C                    |
| $T_{stg}$    |                                                            | -40...+180                         | °C                    |
| $M_d$        | Mounting torque                                            | 2.4-4.5                            | Nm                    |
|              |                                                            | 21-40                              | lb.in.                |
| Weight       |                                                            | 21                                 | g                     |

| Symbol     | Test Conditions                                    | Characteristic Values |                  |
|------------|----------------------------------------------------|-----------------------|------------------|
| $I_R$      | $T_{VJ} = T_{VJM}; V_R = V_{RRM}$                  | ≤ 6                   | mA               |
| $V_F$      | $I_F = 150 \text{ A}; T_{VJ} = 25^{\circ}\text{C}$ | ≤ 1.17                | V                |
| $V_{T0}$   | For power-loss calculations only                   | 0.75                  | V                |
| $r_T$      | $T_{VJ} = T_{VJM}$                                 | 2                     | mΩ               |
| $R_{thJC}$ | DC current                                         | 0.5                   | K/W              |
| $R_{thJH}$ | DC current                                         | 0.9                   | K/W              |
| $d_s$      | Creepage distance on surface                       | 4.05                  | mm               |
| $d_A$      | Strike distance through air                        | 3.9                   | 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

DO-203 AB



A = Anode C = Cathode

## Features

- International standard package, JEDEC DO-203 AB (DO-5)
- Planar glassivated chips

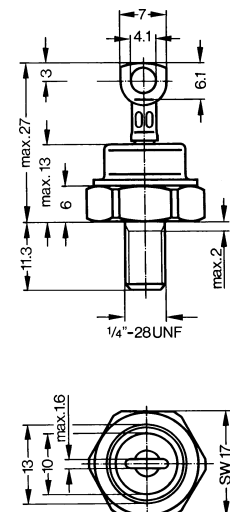
## Applications

- High power rectifiers
- Field supply for DC motors
- Power supplies

## Advantages

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

## Dimensions in mm (1 mm = 0.0394")



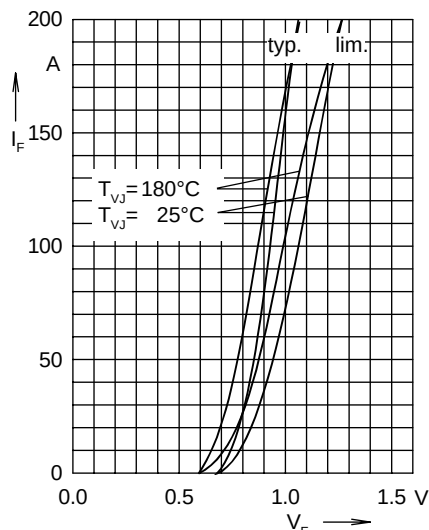


Fig. 1 Forward characteristics

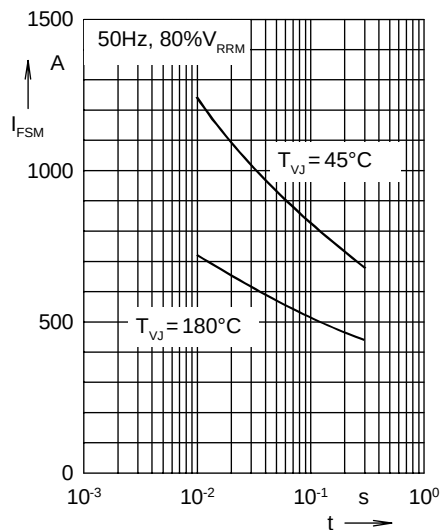


Fig. 2 Surge overload current  
 $I_{FSM}$ : crest value,  $t$ : duration

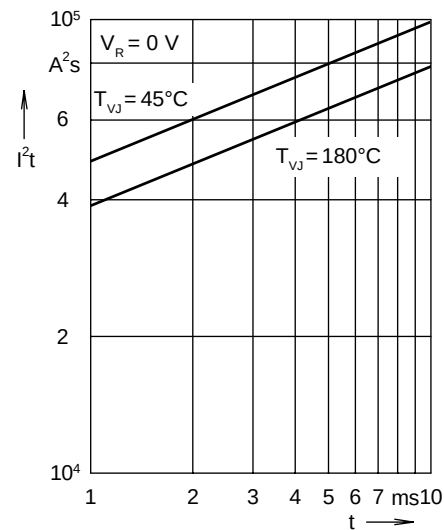


Fig. 3  $I^2t$  versus time (1-10 ms)

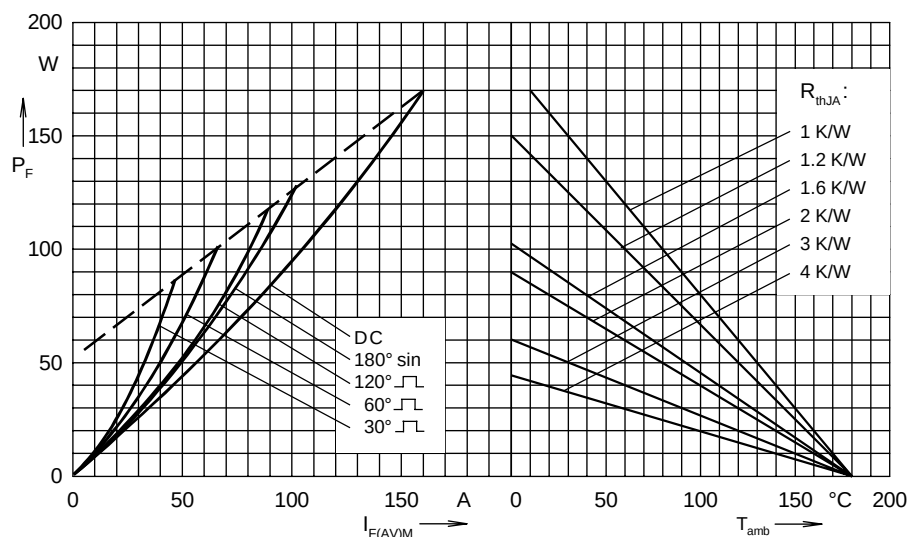


Fig. 4 Power dissipation versus forward current and ambient temperature

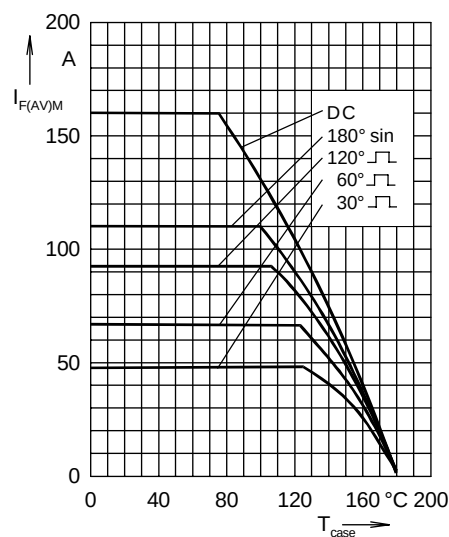


Fig. 5 Max. forward current at case temperature

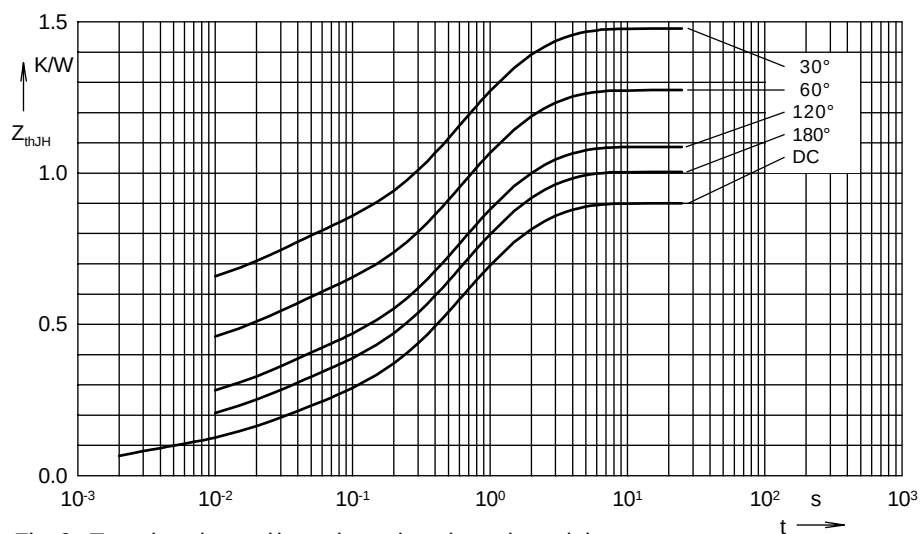


Fig. 6 Transient thermal impedance junction to heatsink

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

| $d$  | $R_{thJH}$ (K/W) |
|------|------------------|
| DC   | 0.900            |
| 180° | 1.028            |
| 120° | 1.085            |
| 60°  | 1.272            |
| 30°  | 1.476            |

Constants for  $Z_{thJH}$  calculation:

| $i$ | $R_{thi}$ (K/W) | $t_i$ (s) |
|-----|-----------------|-----------|
| 1   | 0.0731          | 0.0015    |
| 2   | 0.1234          | 0.0237    |
| 3   | 0.4035          | 0.4838    |
| 4   | 0.3000          | 1.5       |