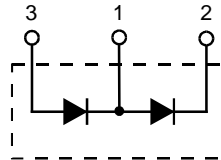
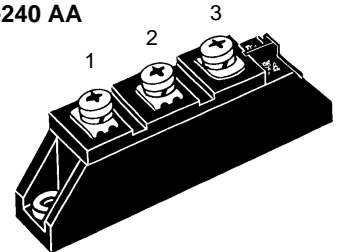


Diode Modules

$I_{FRMS} = 2 \times 180 \text{ A}$
 $I_{FAVM} = 2 \times 120 \text{ A}$
 $V_{RRM} = 800\text{-}2200 \text{ V}$

| V_{RSM} V | V_{RRM} V | Type |
|----------------|----------------|---------------|
| 900 | 800 | MDD 95-08N1 B |
| 1300 | 1200 | MDD 95-12N1 B |
| 1500 | 1400 | MDD 95-14N1 B |
| 1700 | 1600 | MDD 95-16N1 B |
| 1900 | 1800 | MDD 95-18N1 B |
| 2100 | 2000 | MDD 95-20N1 B |
| 2300 | 2200 | MDD 95-22N1 B |


TO-240 AA


| Symbol | Test Conditions | Maximum Ratings | |
|---------------|---|--------------------------|-------------------------|
| I_{FRMS} | $T_{VJ} = T_{VJM}$ | 180 | A |
| I_{FAVM} | $T_C = 105^\circ\text{C}; 180^\circ$ sine | 120 | A |
| I_{FSM} | $T_{VJ} = 45^\circ\text{C}; V_R = 0$ | t = 10 ms (50 Hz), sine | 2800 A |
| | | t = 8.3 ms (60 Hz), sine | 3300 A |
| | $T_{VJ} = T_{VJM}; V_R = 0$ | t = 10 ms (50 Hz), sine | 2500 A |
| | | t = 8.3 ms (60 Hz), sine | 2750 A |
| $\int i^2 dt$ | $T_{VJ} = 45^\circ\text{C}; V_R = 0$ | t = 10 ms (50 Hz), sine | 39 200 A ² s |
| | | t = 8.3 ms (60 Hz), sine | 45 000 A ² s |
| | $T_{VJ} = T_{VJM}; V_R = 0$ | t = 10 ms (50 Hz), sine | 31 200 A ² s |
| | | t = 8.3 ms (60 Hz), sine | 31 300 A ² s |
| T_{VJ} | | -40...+150 | °C |
| T_{VJM} | | 150 | °C |
| T_{stg} | | -40...+125 | °C |
| V_{ISOL} | 50/60 Hz, RMS | t = 1 min | 3000 V~ |
| | $I_{ISOL} \leq 1 \text{ mA}$ | t = 1 s | 3600 V~ |
| M_d | Mounting torque (M5) | 2.5-4/22-35 | Nm/lb.in. |
| | Terminal connection torque (M5) | 2.5-4/22-35 | Nm/lb.in. |
| Weight | Typical including screws | 90 | g |

Features

- International standard package JEDEC TO-240 AA
- Direct copper bonded Al₂O₃ -ceramic base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered, E 72873

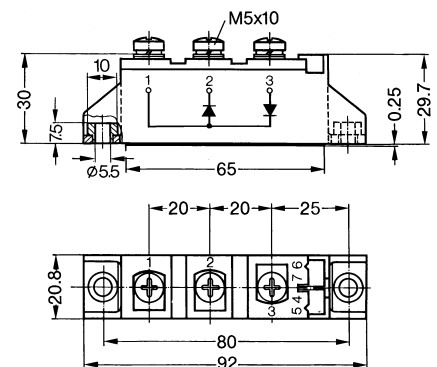
Applications

- 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 | $T_{VJ} = T_{VJM}; V_R = V_{RRM}$ | 15 | mA | |
| V_F | $I_F = 300 \text{ A}; T_{VJ} = 25^\circ\text{C}$ | 1.43 | V | |
| V_{T0} | For power-loss calculations only | 0.75 | V | |
| r_T | $T_{VJ} = T_{VJM}$ | 1.95 | mΩ | |
| Q_S | $T_{VJ} = 125^\circ\text{C}; I_F = 50 \text{ A}, -di/dt = 6 \text{ A}/\mu\text{s}$ | 170 | μC | |
| I_{RM} | | 45 | A | |
| R_{thJC} | per diode; DC current per module | } other values see Fig. 6/7 | 0.26 | K/W |
| | | | 0.13 | K/W |
| R_{thJK} | per diode; DC current per module | } | 0.46 | K/W |
| | | | 0.23 | K/W |
| d_s | Creepage distance on surface | 12.7 | mm | |
| d_A | Strike distance through air | 9.6 | mm | |
| a | Maximum allowable acceleration | 50 | m/s ² | |

Dimensions in mm (1 mm = 0.0394")


Data according to IEC 60747 and refer to a single diode unless otherwise stated. IXYS reserves the right to change limits, test conditions and dimensions

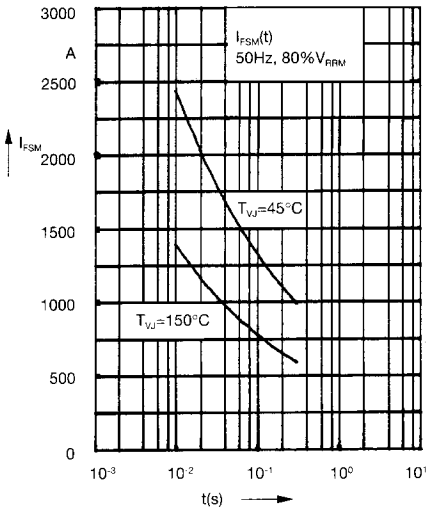


Fig. 1 Surge overload current
 I_{FSM} : Crest value, t: duration

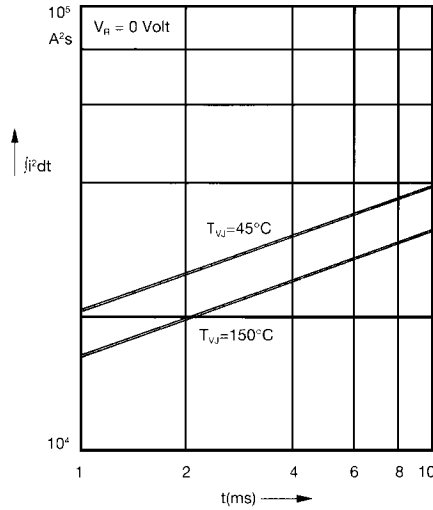


Fig. 2 $\int i^2 dt$ versus time (1-10 ms)

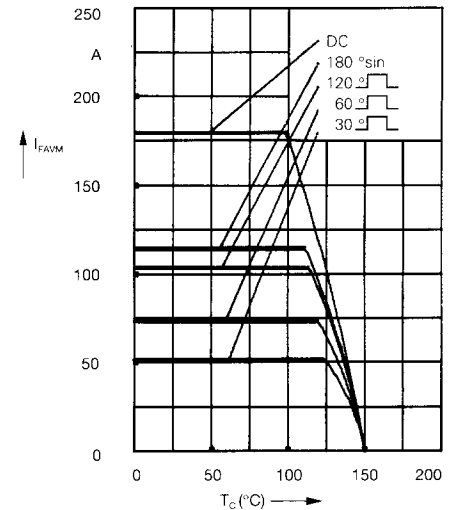


Fig. 2a Maximum forward current at case temperature

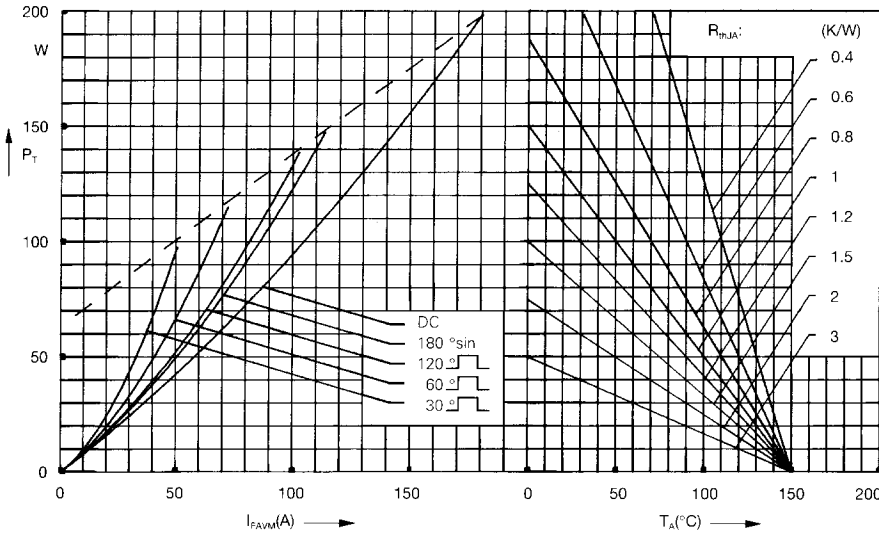


Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

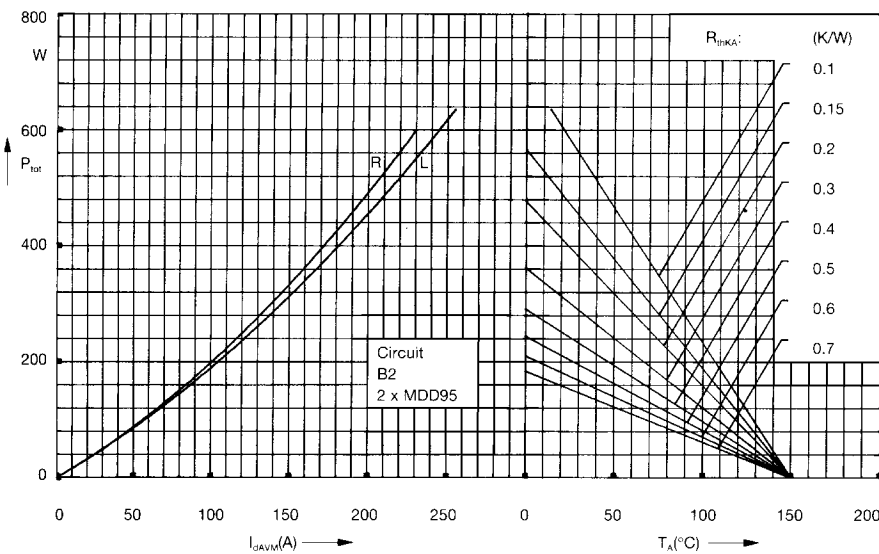


Fig. 4 Single phase rectifier bridge:
 Power dissipation versus direct output current and ambient temperature
 R = resistive load
 L = inductive load

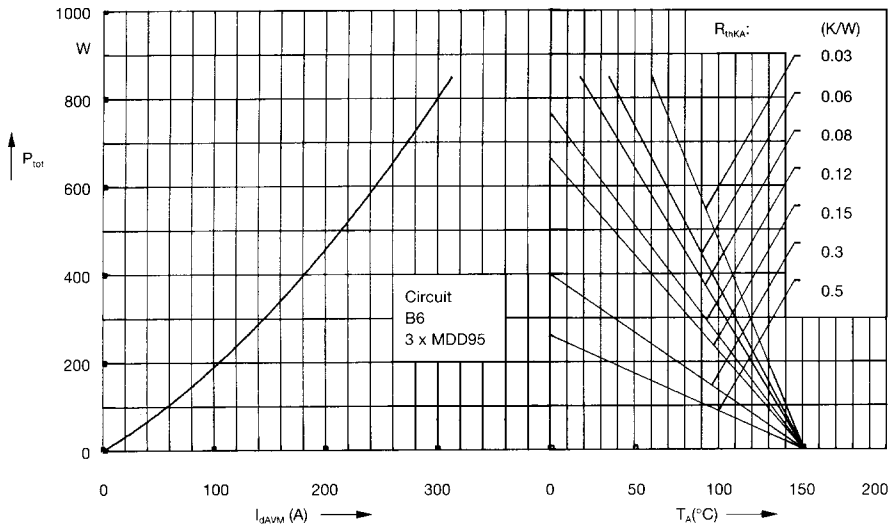


Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

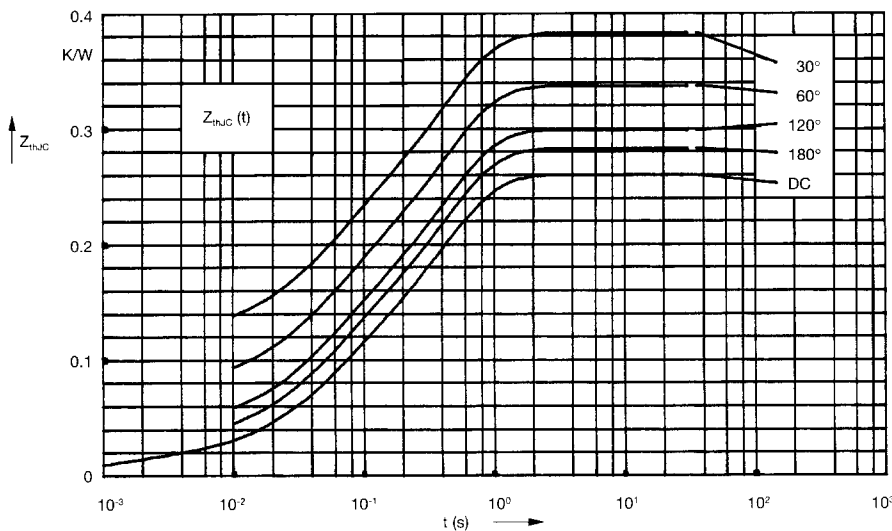


Fig. 6 Transient thermal impedance junction to case (per diode)

R_{thJC} for various conduction angles d:

| d | R_{thJC} (K/W) |
|------|------------------|
| DC | 0.26 |
| 180° | 0.28 |
| 120° | 0.30 |
| 60° | 0.34 |
| 30° | 0.38 |

Constants for Z_{thJC} calculation:

| i | R_{thi} (K/W) | t_i (s) |
|---|-----------------|-----------|
| 1 | 0.013 | 0.0012 |
| 2 | 0.072 | 0.047 |
| 3 | 0.175 | 0.394 |

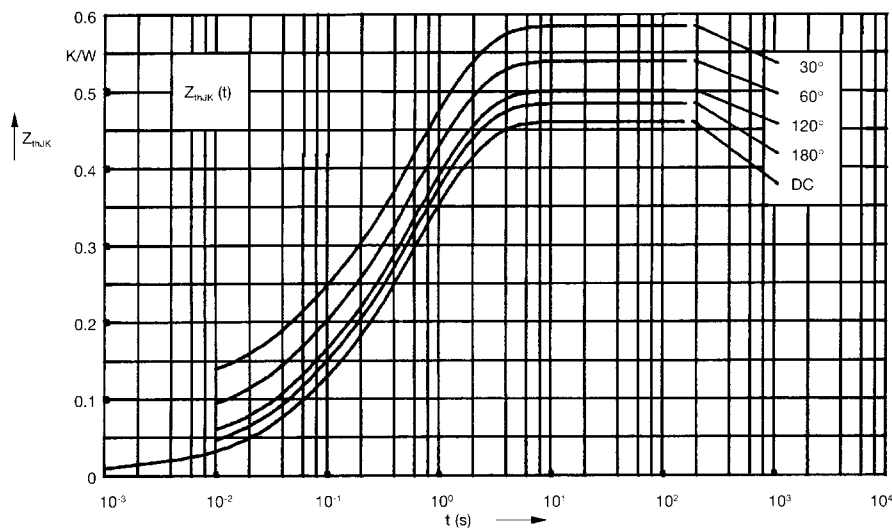


Fig. 7 Transient thermal impedance junction to heatsink (per diode)

R_{thJK} for various conduction angles d:

| d | R_{thJK} (K/W) |
|------|------------------|
| DC | 0.46 |
| 180° | 0.48 |
| 120° | 0.50 |
| 60° | 0.54 |
| 30° | 0.58 |

Constants for Z_{thJK} calculation:

| i | R_{thi} (K/W) | t_i (s) |
|---|-----------------|-----------|
| 1 | 0.013 | 0.0012 |
| 2 | 0.072 | 0.047 |
| 3 | 0.175 | 0.394 |
| 4 | 0.2 | 1.32 |