



## A1N:260.XXH

### VOLTAGE RATINGS

| Part Number | V <sub>RRM</sub> , V <sub>R</sub> (V)<br>Max. rep. peak reverse voltage |                             | V <sub>RSM</sub> , V <sub>R</sub> (V) Max. non-<br>rep. peak reverse voltage |
|-------------|-------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------|
|             | T <sub>J</sub> = 0 to 125°C                                             | T <sub>J</sub> = -40 to 0°C | T <sub>J</sub> = 25 to 125°C                                                 |
| A1N:260.02H | 200                                                                     | 200                         | 300                                                                          |
| A1N:260.04H | 400                                                                     | 400                         | 500                                                                          |
| A1N:260.06H | 600                                                                     | 600                         | 700                                                                          |
| A1N:260.08H | 800                                                                     | 800                         | 900                                                                          |
| A1N:260.10H | 1000                                                                    | 1000                        | 1100                                                                         |
| A1N:260.12H | 1200                                                                    | 1200                        | 1300                                                                         |
| A1N:260.14H | 1400                                                                    | 1330                        | 1500                                                                         |
| A1N:260.16H | 1600                                                                    | 1520                        | 1700                                                                         |

This datasheet applies to:

**Metric thread: A1N:260.XXH**

**Inch thread: A2N:260.XXH**

### MAXIMUM ALLOWABLE RATINGS

| PARAMETER                                                                       | VALUE      | UNITS                            | NOTES                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------|------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T <sub>J</sub> Junction Temperature                                             | -40 to 125 | °C                               | -                                                                                                                                                                                                              |
| T <sub>stg</sub> Storage Temperature                                            | -40 to 150 | °C                               | -                                                                                                                                                                                                              |
| I <sub>T(AV)</sub> Max. Av. current<br>@ Max. T <sub>C</sub>                    | 260        | A                                | 180° half sine wave                                                                                                                                                                                            |
|                                                                                 | 85         | °C                               |                                                                                                                                                                                                                |
| I <sub>T(RMS)</sub> Nom. RMS current                                            | 410        | A                                | -                                                                                                                                                                                                              |
| I <sub>TSM</sub> Max. Peak non-rep. surge current                               | 8.98       | kA                               | 50 Hz half cycle sine wave Initial T <sub>J</sub> = 125°C, rated V <sub>RRM</sub> applied after surge.                                                                                                         |
|                                                                                 | 9.79       |                                  | 60 Hz half cycle sine wave                                                                                                                                                                                     |
|                                                                                 | 10.37      |                                  | 50 Hz half cycle sine wave Initial T <sub>J</sub> = 125°C, no voltage applied after surge.                                                                                                                     |
|                                                                                 | 11.30      |                                  | 60 Hz half cycle sine wave                                                                                                                                                                                     |
| I <sup>2</sup> t Max. I <sup>2</sup> t capability                               | 345.78     | kA <sup>2</sup> s                | t = 10ms Initial T <sub>J</sub> = 125°C, rated V <sub>RRM</sub> applied after surge.                                                                                                                           |
|                                                                                 | 376.90     |                                  | t = 8.3 ms                                                                                                                                                                                                     |
|                                                                                 | 488.00     |                                  | t = 10ms Initial T <sub>J</sub> = 125°C, no voltage applied after surge.                                                                                                                                       |
|                                                                                 | 532.00     |                                  | t = 8.3 ms                                                                                                                                                                                                     |
| I <sup>2</sup> t <sup>1/2</sup> Max. I <sup>2</sup> t <sup>1/2</sup> capability | 5820       | kA <sup>2</sup> s <sup>1/2</sup> | Initial T <sub>J</sub> = 125°C, no voltage applied after surge.<br>I <sup>2</sup> t for time t <sub>x</sub> = I <sup>2</sup> t <sup>1/2</sup> * t <sub>x</sub> <sup>1/2</sup> . (0.1 < t <sub>x</sub> < 10ms). |
| di/dt Max. Non-repetitive rate-of-rise current                                  | 800        | A/ s                             | T <sub>J</sub> = 125°C, V <sub>D</sub> = V <sub>DRM</sub> , I <sub>TM</sub> = 1600A. Gate pulse: 20V, 20 , 10 s, 0.5 s rise time, Max. repetitive di/dt is approximately 40% of non-repetitive value.          |
| P <sub>GM</sub> Max. Peak gate power                                            | 10         | W                                | tp < 5 ms                                                                                                                                                                                                      |
| P <sub>G(AV)</sub> Max. Av. gate power                                          | 2          | W                                | -                                                                                                                                                                                                              |
| +I <sub>GM</sub> Max. Peak gate current                                         | 150        | mA                               | tp < 5 ms                                                                                                                                                                                                      |
| -V <sub>GM</sub> Max. Peak negative gate voltage                                | 2          | V                                | -                                                                                                                                                                                                              |
| F Mounting Force                                                                | 50         | N.m                              | Non lubricated threads                                                                                                                                                                                         |



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### CHARACTERISTICS

| PARAMETER                                              | MIN.             | TYP.       | MAX.  | UNITS              | TEST CONDITIONS                                                                                                                                                     |
|--------------------------------------------------------|------------------|------------|-------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $V_{TM}$ peak on-state voltage                         | ---              | ---        | 1.45  | V                  | Initial $T_J = 25^\circ\text{C}$ , 50-60Hz half sine, $I_{peak} = 817\text{A}$ .                                                                                    |
| $V_{T(To)}$ Threshold voltage                          | ---              | ---        | 0.856 | V                  | $T_J = 125^\circ\text{C}$<br>Av. power = $V_{T(To)} * I_{T(AV)} + r_T * [I_{T(RMS)}]^2$ , 180° Half Sine.                                                           |
| $r_T$ Slope resistance                                 | ---              | ---        | 0.63  | m                  | Use low values for $I_{TM} < \text{rated } I_{T(AV)}$                                                                                                               |
| $I_L$ Latching current                                 | ---              | ---        | 400   | mA                 | $T_C = 125^\circ\text{C}$ , 12V anode. Gate pulse: 10V, 20 , 100 s.                                                                                                 |
| $I_H$ Holding current                                  | ---              | ---        | 500   | mA                 | $T_C = 25^\circ\text{C}$ , 12V anode. Initial $I_T = 15\text{A}$ .                                                                                                  |
| $t_d$ Delay time                                       | ---              | 0.7        | 1     | s                  | $T_C = 25^\circ\text{C}$ , $V_D = V_{DRM}$ , 50A resistive load. Gate pulse: 10V, 20 , 10 s, 1 s rise time.                                                         |
| $t_q$ Turn-off time                                    | ---              | ---        | 100   | s                  | $T_J = 125^\circ\text{C}$ , $I_{TM} = 550\text{A}$ , $di/dt = 40\text{A/s}$ , $V_R = 50\text{V}$ . $dv/dt = 20\text{V/s}$ lin. to rated $V_{DRM}$ . Gate: 0V, 100 . |
| $dv/dt$ Critical rate-of-rise of off-state voltage     | ---              | ---        | 1000  | V/ s               | $T_J = 125^\circ\text{C}$ , Exp. To 67% $V_{DRM}$ , gate open.                                                                                                      |
| $I_{RM}$ , $I_{DM}$ Peak reverse and off-state current | ---              | 20         | 40    | mA                 | $T_J = 125^\circ\text{C}$ , Rated $V_{RRM}$ and $V_{DRM}$ , gate open.                                                                                              |
| $I_{GT}$ DC gate current to trigger                    | ---              | ---        | 360   | mA                 | $T_C = -40^\circ\text{C}$                                                                                                                                           |
|                                                        | ---              | ---        | 180   |                    | $T_C = 25^\circ\text{C}$                                                                                                                                            |
| $V_{GT}$ DC gate voltage to trigger                    | 6                | ---        | ---   | V                  | $T_C = -40^\circ\text{C}$                                                                                                                                           |
|                                                        | 3                | ---        | ---   |                    | $T_C = 25^\circ\text{C}$                                                                                                                                            |
| $V_{GD}$ DC gate voltage not to trigger                | ---              | ---        | 0.3   | V                  | $T_C = 25^\circ\text{C}$ , Max. Value which will not trigger with rated $V_{DRM}$ anode.                                                                            |
| $R_{thJC}$ Thermal resistance, junction-to-case        | ---              | ---        | 0.115 | $^\circ\text{C/W}$ | DC operation, single side cooled.                                                                                                                                   |
|                                                        | ---              | ---        | 0.126 | $^\circ\text{C/W}$ | 180° sine wave, single side cooled.                                                                                                                                 |
|                                                        | ---              | ---        | 0.128 | $^\circ\text{C/W}$ | 120° rectangular wave, single side cooled.                                                                                                                          |
| $R_{thCS}$ Thermal resistance, case-to-sink            | ---              | ---        | 0.04  | $^\circ\text{C/W}$ | Mtg. Surface smooth, flat and greased. Single side cooled.                                                                                                          |
| wt Weight                                              | ---              | 535(19.76) | ---   | g(oz.)             | ---                                                                                                                                                                 |
| Case Style                                             | TO-209AE(TO-118) |            |       | JEDEC              | ---                                                                                                                                                                 |

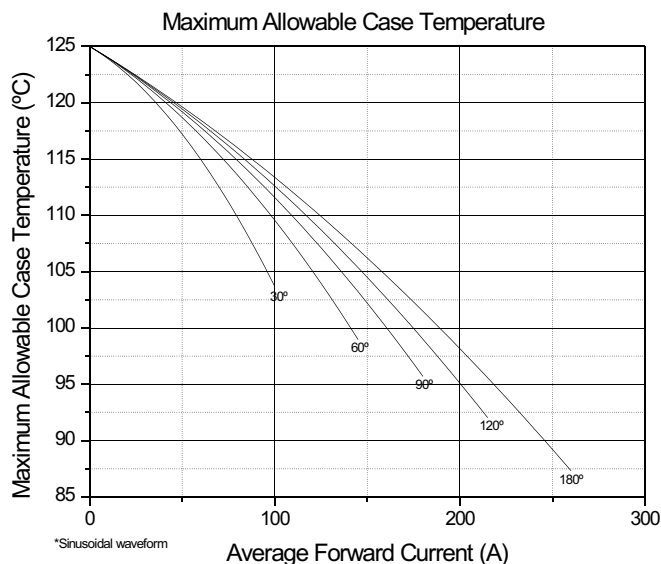


Fig. 1 - Current Ratings Characteristics

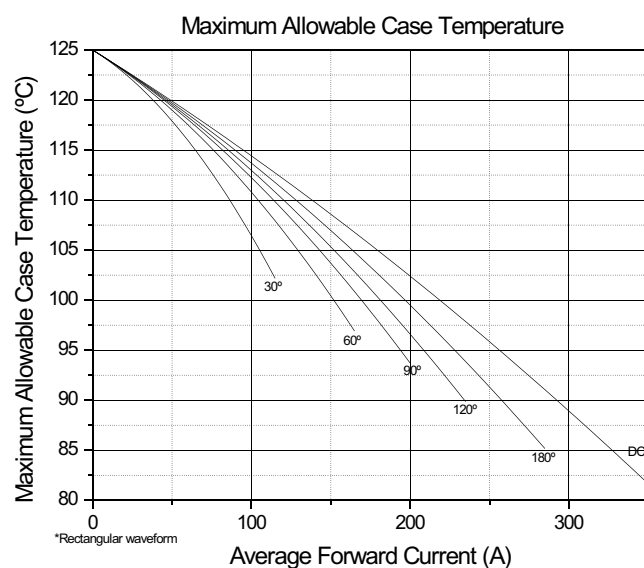


Fig. 2 - Current Ratings Characteristics



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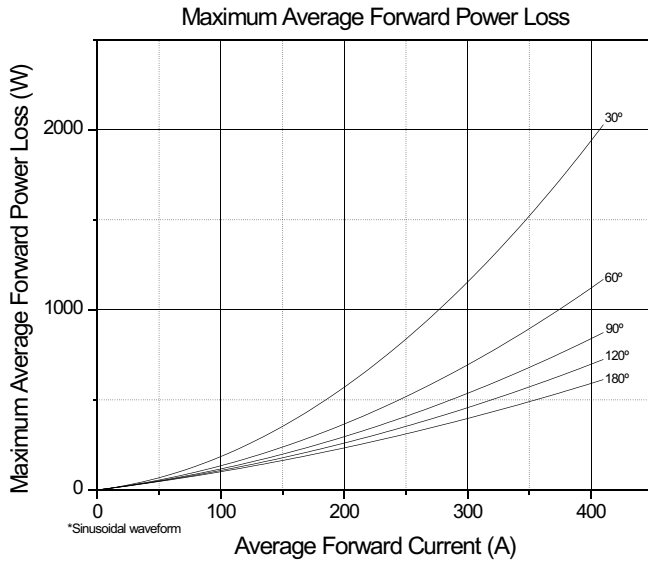


Fig. 3 - Forward Power Loss Characteristics

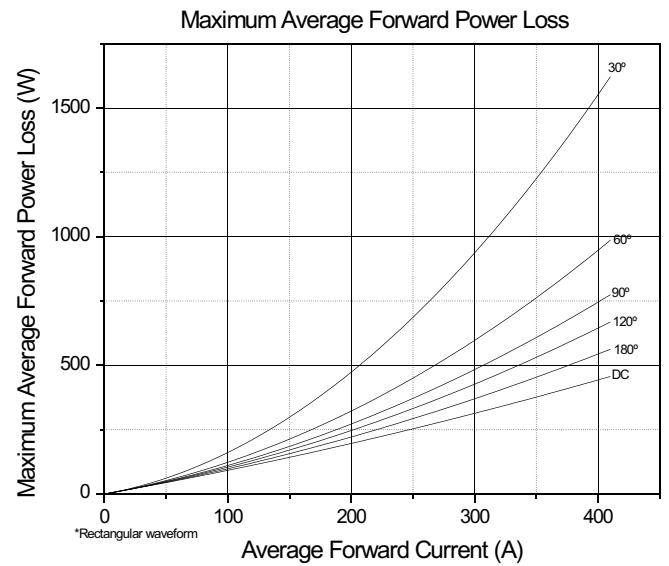


Fig. 4 - Forward Power Loss Characteristics

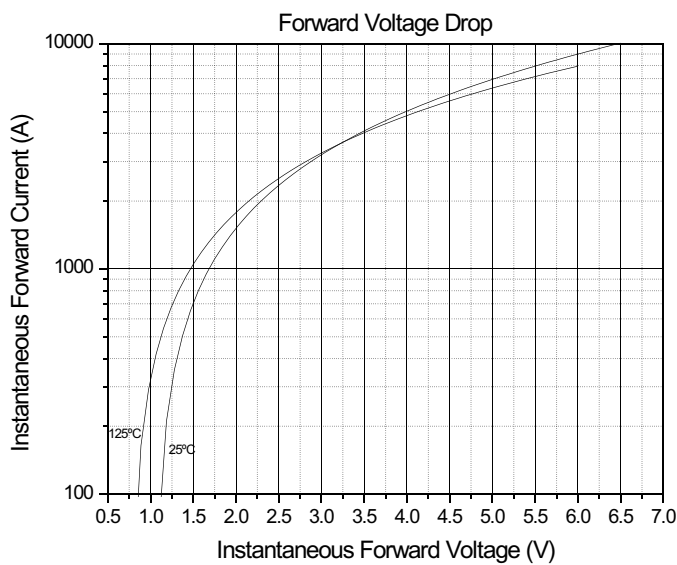


Fig. 5 - Forward Voltage Drop Characteristics

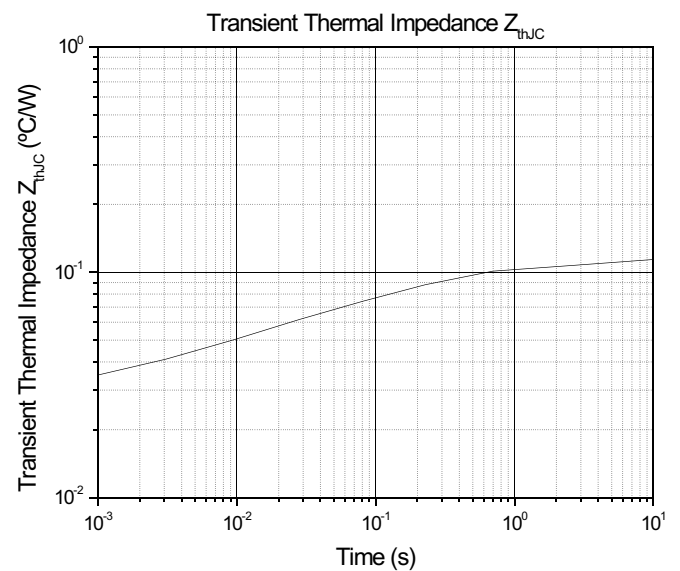


Fig. 6 - Transient Thermal Impedance Characteristics

