

## SCD5101

### Power Rectifier Diodes

#### Features

- Full blocking capability over wide temperature range
- Very low thermal resistance
- High Forward current capability
- Very low threshold voltage and slope resistance

#### Key Parameters

|             |           |
|-------------|-----------|
| $V_{RRM}$   | = 600V    |
| $I_{F(AV)}$ | = 5101A   |
| $I_{FSM}$   | = 53000A  |
| $V_{F(TO)}$ | = 0.70V   |
| $r_F$       | = 0.049mΩ |

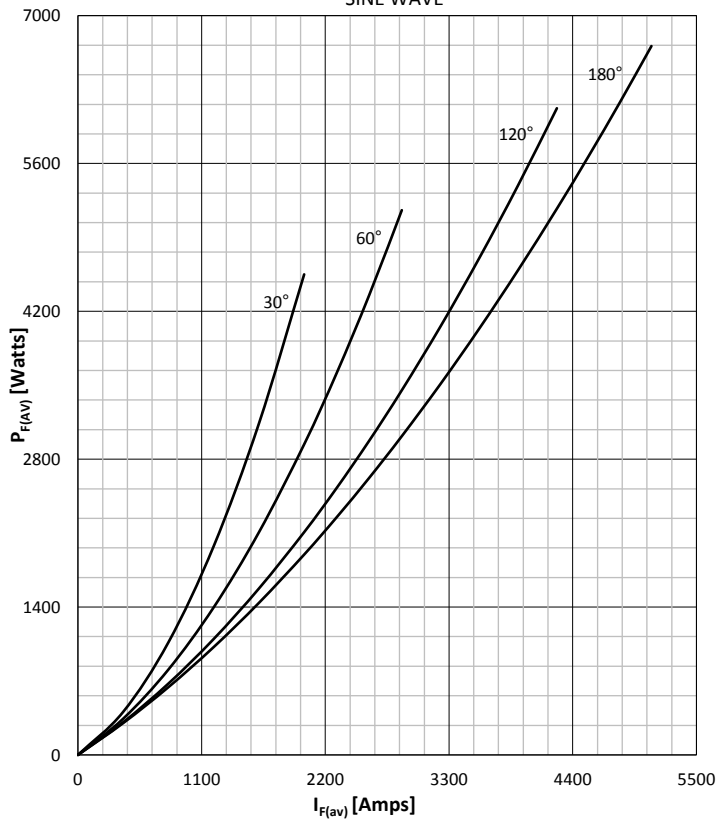
#### Applications

- Uncontrolled Rectifiers
- Welding

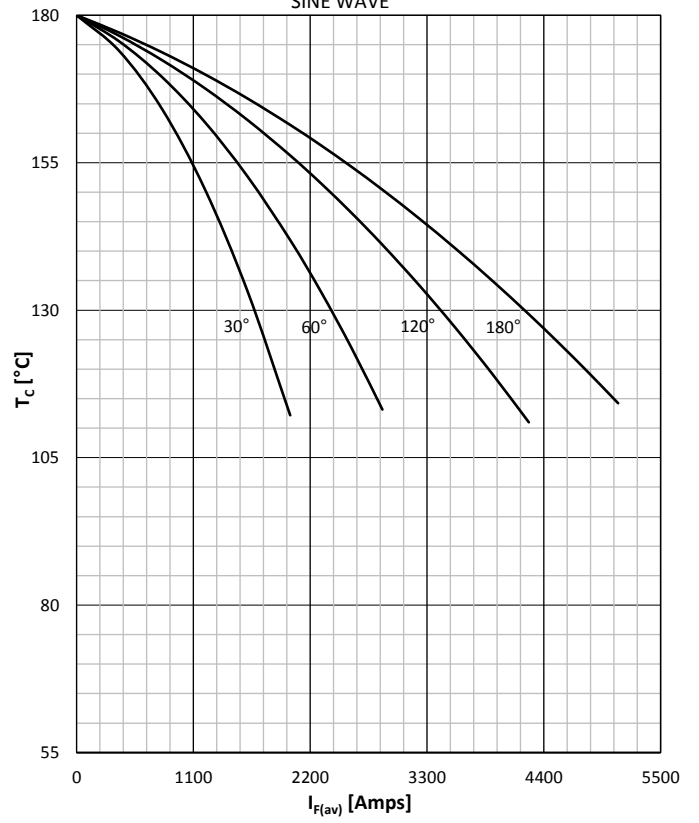
| Symbol            | Characteristic                      | Conditions  | T <sub>j</sub> [°C] | Value                   | Unit             |
|-------------------|-------------------------------------|---|---------------------|-------------------------|------------------|
| <b>BLOCKING</b>   |                                     |   |                     |                         |                  |
| $V_{RRM}$         | Repetitive peak reverse voltage     |   | 180                 | 600                     | V                |
| $V_{RSM}$         | Non-repetitive peak reverse voltage |   | 180                 | 700                     | V                |
| $I_{RRM}$         | Repetitive peak reverse current     | $V = V_{RRM}$   | 180                 | 200                     | mA               |
| <b>CONDUCTING</b> |                                     |   |                     |                         |                  |
| $I_{F(AV)}$       | Mean forward current                | 180° sin, 50 Hz, T <sub>c</sub> = 114°C, double side cooled |                     | 5101                    | A                |
| $I_{FRMS}$        | RMS current                         |   |                     | 8007                    | A                |
| $I_{FSM}$         | Surge forward current               | Sine wave, 10 ms<br>Without reverse voltage                 | 25                  | 53000                   | A                |
|                   |                                     |   | 180                 | 51000                   | A                |
| $I^2t$            | $I^2t$                              | Sine wave, 10 ms<br>Without reverse voltage                 | 25                  | 14045 x 10 <sup>3</sup> | A <sup>2</sup> s |
|                   |                                     |   | 180                 | 13005 x 10 <sup>3</sup> | A <sup>2</sup> s |
| $V_F$             | Forward voltage                     | On-state current = 8000A                                    | 180                 | 1.10                    | V                |
| $V_{F(TO)}$       | Threshold voltage                   |   | 180                 | 0.70                    | V                |
| $r_F$             | Forward slope resistance            |   | 180                 | 0.049                   | mΩ               |
| <b>MOUNTING</b>   |                                     |   |                     |                         |                  |
| $R_{th(j-c)}$     | Thermal impedance, sin 180°         | Junction to case, double side cooled                        |                     | 0.0098                  | °C/W             |
| $R_{th(c-h)}$     | Thermal impedance                   | Case to heatsink, double side cooled                        |                     | 0.004                   | °C/W             |
| $T_j$             | Max. junction temperature           |   |                     | 180                     | °C               |
| $T_{stg}$         | Storage temperature                 |   |                     | -40 ... 180             | °C               |
| $M$               | Clamping force                      |   |                     | 35 - 45                 | KN               |
| $W$               | Weight (Approx.)                    |   |                     | 100                     | gm               |

**DISSIPATION CHARACTERISTICS**

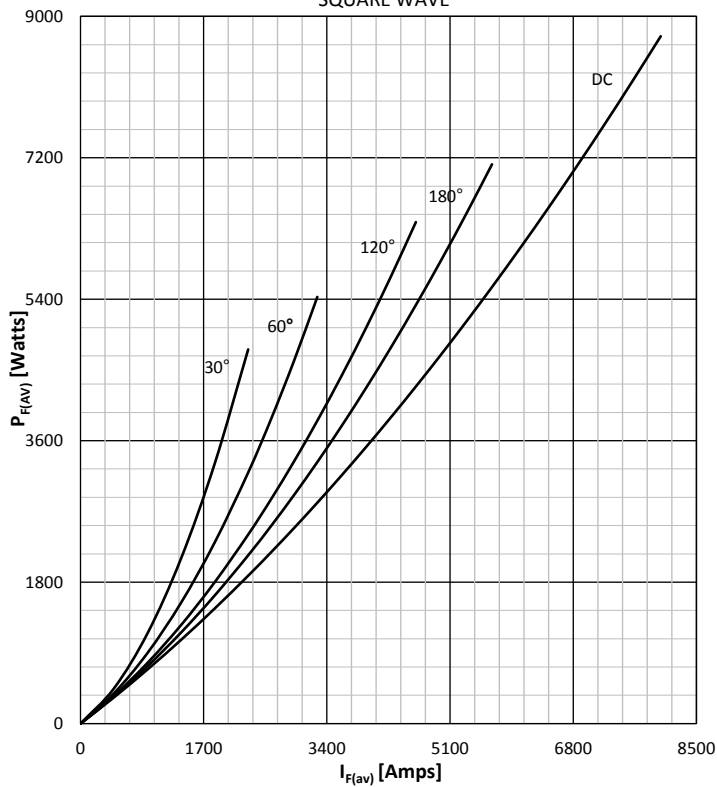
SINE WAVE


**FORWARD CURRENT DERATING CURVE**

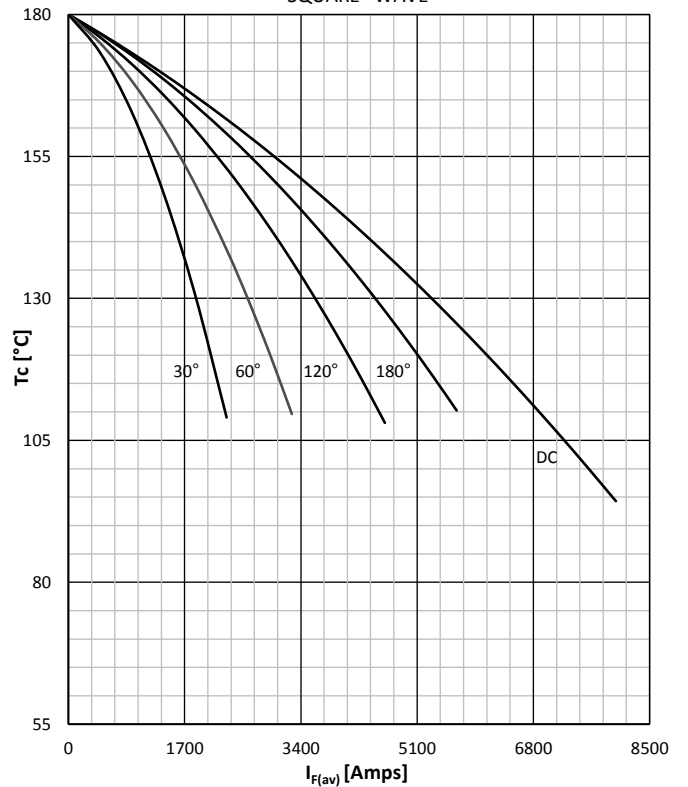
SINE WAVE

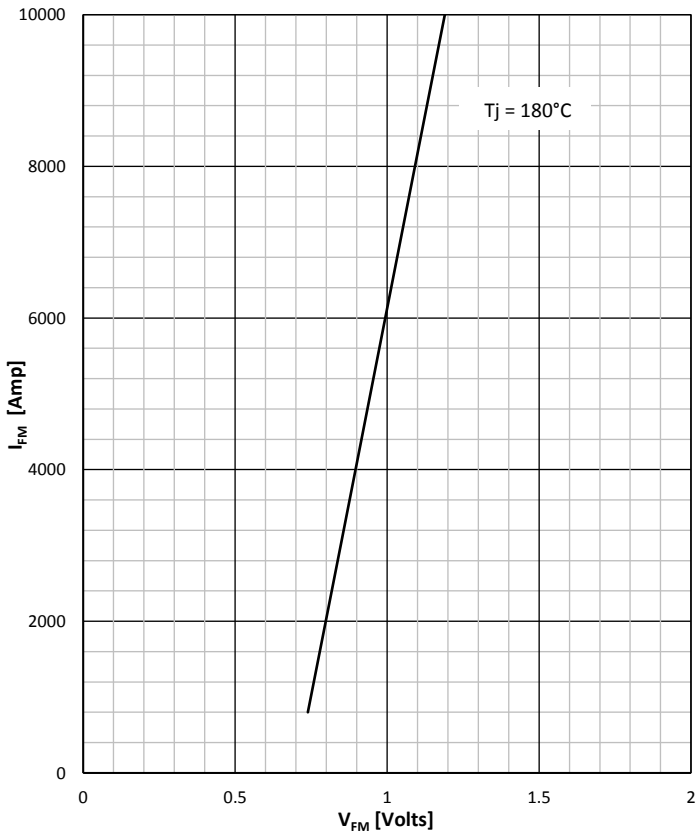
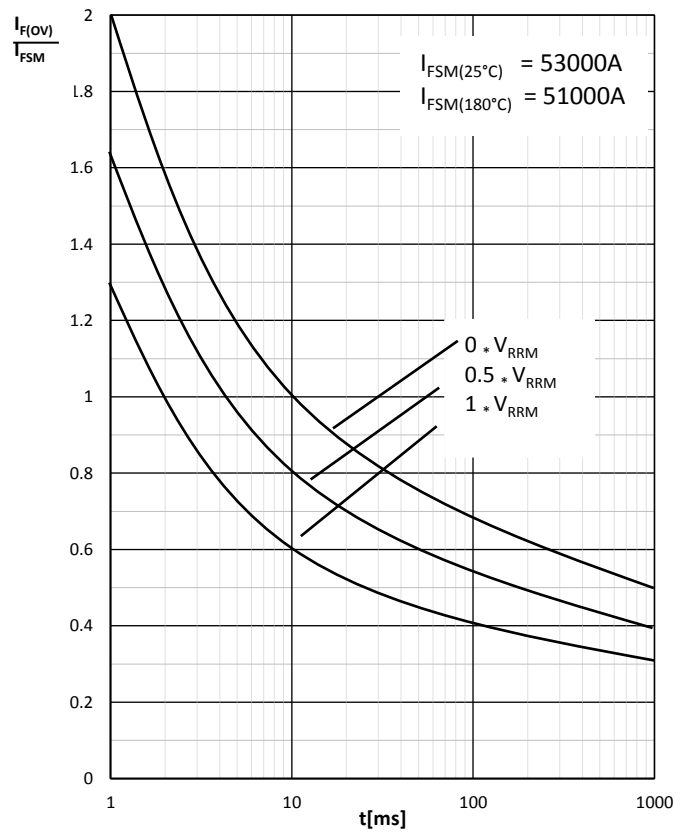

**DISSIPATION CHARACTERISTICS**

SQUARE WAVE


**FORWARD CURRENT DERATING CURVE**

SQUARE WAVE



**FORWARD CHARACTERISTIC**

**SURGE CHARACTERISTICS**

**TRANSIENT THERMAL IMPEDANCE**
