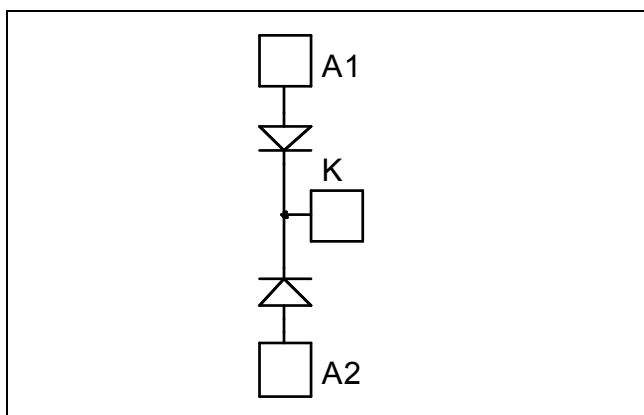


## Dual Common Cathode diodes Power Module

**$V_{RRM} = 600V$**   
 **$I_C = 400A @ T_c = 80^\circ C$**



### Application

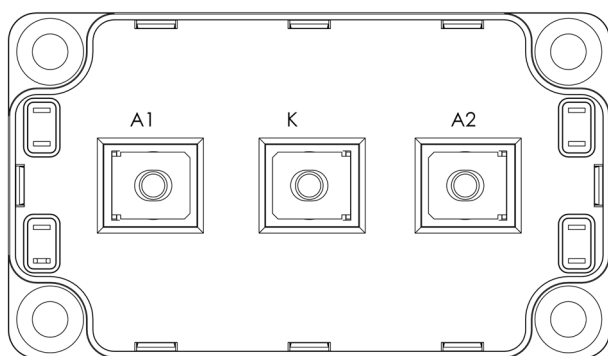
- Uninterruptible Power Supply (UPS)
- Induction heating
- Welding equipment
- High speed rectifiers

### Features

- Ultra fast recovery times
- Soft recovery characteristics
- High blocking voltage
- High current
- Low leakage current
- Very low stray inductance
  - Symmetrical design
  - M5 power connectors
- High level of integration

### Benefits

- Outstanding performance at high frequency operation
- Low losses
- Low noise switching
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- RoHS Compliant



### Absolute maximum ratings

| Symbol              | Parameter                               |                  |                       |      | Max ratings | Unit |
|---------------------|---|------------------|-----------------------|------|-------------|------|
| V <sub>R</sub>      | Maximum DC reverse Voltage              |                  |                       |      | 600         | V    |
| V <sub>RRM</sub>    | Maximum Peak Repetitive Reverse Voltage |                  |                       |      |             |      |
| I <sub>F(AV)</sub>  | Maximum Average Forward Current         | Duty cycle = 50% | T <sub>C</sub> = 25°C | 500  | A           |      |
|                     |   |                  | T <sub>C</sub> = 80°C | 400  |             |      |
| I <sub>F(RMS)</sub> | RMS Forward Current                     | Duty cycle = 50% | T <sub>C</sub> = 45°C | 500  |             |      |
| I <sub>FSM</sub>    | Non-Repetitive Forward Surge Current    | 8.3ms            | T <sub>C</sub> = 45°C | 3000 |             |      |



**CAUTION:** These Devices are sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed. See application note APT0502 on [www.microsemi.com](http://www.microsemi.com)

**All ratings @  $T_j = 25^\circ\text{C}$  unless otherwise specified**

**Electrical Characteristics**

| Symbol   | Characteristic                  | Test Conditions     |                           | Min | Typ | Max  | Unit          |
|----------|---------------------------------|---------------------|---------------------------|-----|-----|------|---------------|
| $V_F$    | Diode Forward Voltage           | $I_F = 400\text{A}$ |                           |     | 1.6 | 2.0  | V             |
|          |                                 | $I_F = 800\text{A}$ |                           |     | 2.0 |      |               |
|          |                                 | $I_F = 400\text{A}$ | $T_j = 125^\circ\text{C}$ |     | 1.3 |      |               |
| $I_{RM}$ | Maximum Reverse Leakage Current | $V_R = 600\text{V}$ | $T_j = 25^\circ\text{C}$  |     |     | 750  | $\mu\text{A}$ |
|          |                                 |                     | $T_j = 125^\circ\text{C}$ |     |     | 1000 |               |
| $C_T$    | Junction Capacitance            | $V_R = 600\text{V}$ |                           |     | 760 |      | pF            |

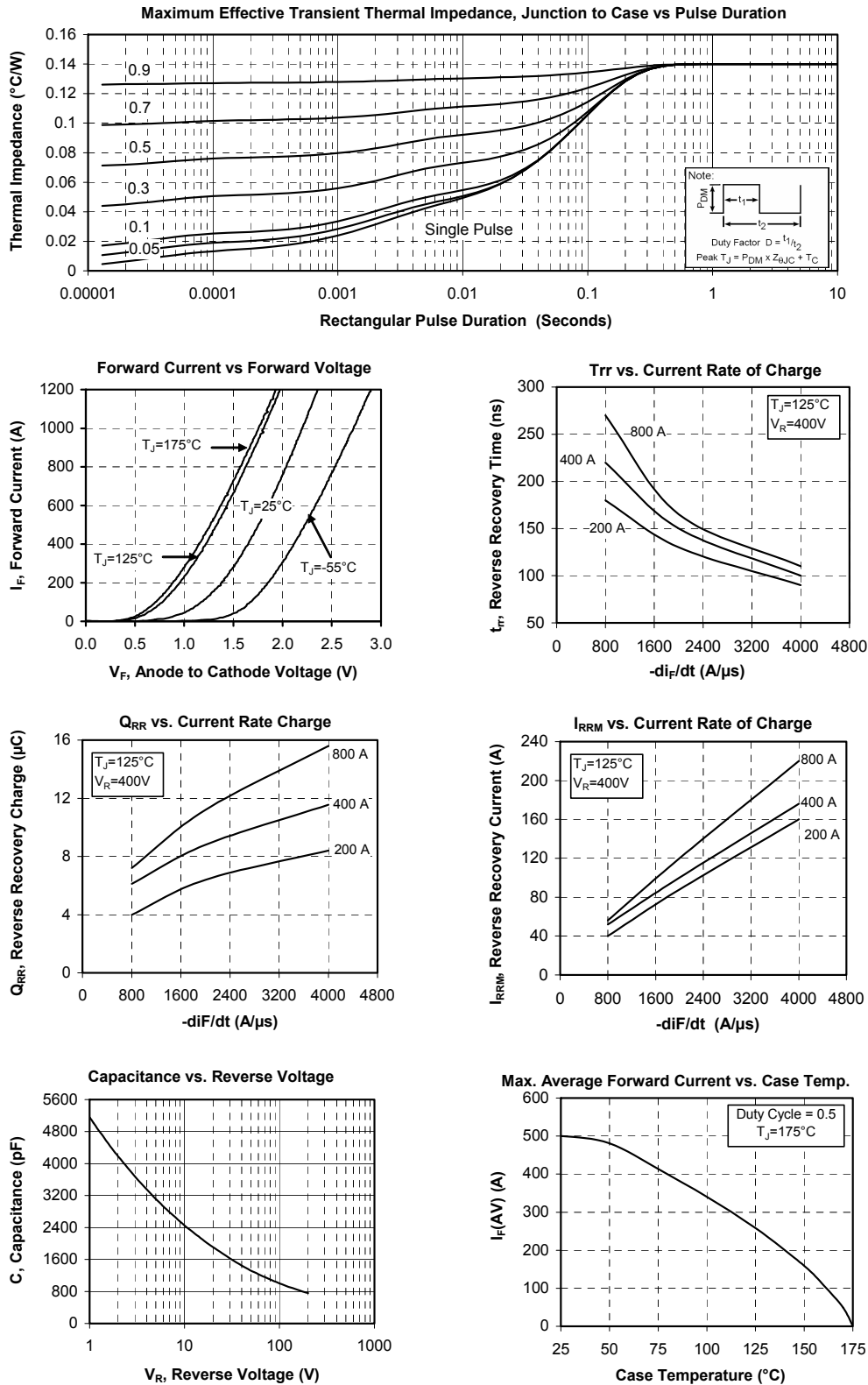
**Dynamic Characteristics**

| Symbol           | Characteristic           | Test Conditions  |                        | Min | Typ  | Max | Unit |
|------------------|--------------------------|--|------------------------|-----|------|-----|------|
| t <sub>rr</sub>  | Reverse Recovery Time    | I <sub>F</sub> =1A, V <sub>R</sub> =30V<br>di/dt = 400A/μs         | T <sub>j</sub> = 25°C  |     | 34   |     | ns   |
| t <sub>rr</sub>  | Reverse Recovery Time    | I <sub>F</sub> = 400A<br>V <sub>R</sub> = 400V<br>di/dt = 800A/μs  | T <sub>j</sub> = 25°C  |     | 160  |     | ns   |
|                  |                          |  | T <sub>j</sub> = 125°C |     | 220  |     |      |
| Q <sub>rr</sub>  | Reverse Recovery Charge  |  | T <sub>j</sub> = 25°C  |     | 1.16 |     | μC   |
|                  |                          |  | T <sub>j</sub> = 125°C |     | 6.12 |     |      |
| I <sub>RRM</sub> | Reverse Recovery Current |  | T <sub>j</sub> = 25°C  |     | 20   |     | A    |
|                  |                          |  | T <sub>j</sub> = 125°C |     | 52   |     |      |
| t <sub>rr</sub>  | Reverse Recovery Time    | I <sub>F</sub> = 400A<br>V <sub>R</sub> = 400V<br>di/dt = 4000A/μs | T <sub>j</sub> = 125°C |     | 100  |     | ns   |
| Q <sub>rr</sub>  | Reverse Recovery Charge  |  |                        |     | 11.6 |     | μC   |
| I <sub>RRM</sub> | Reverse Recovery Current |  |                        |     | 176  |     | A    |

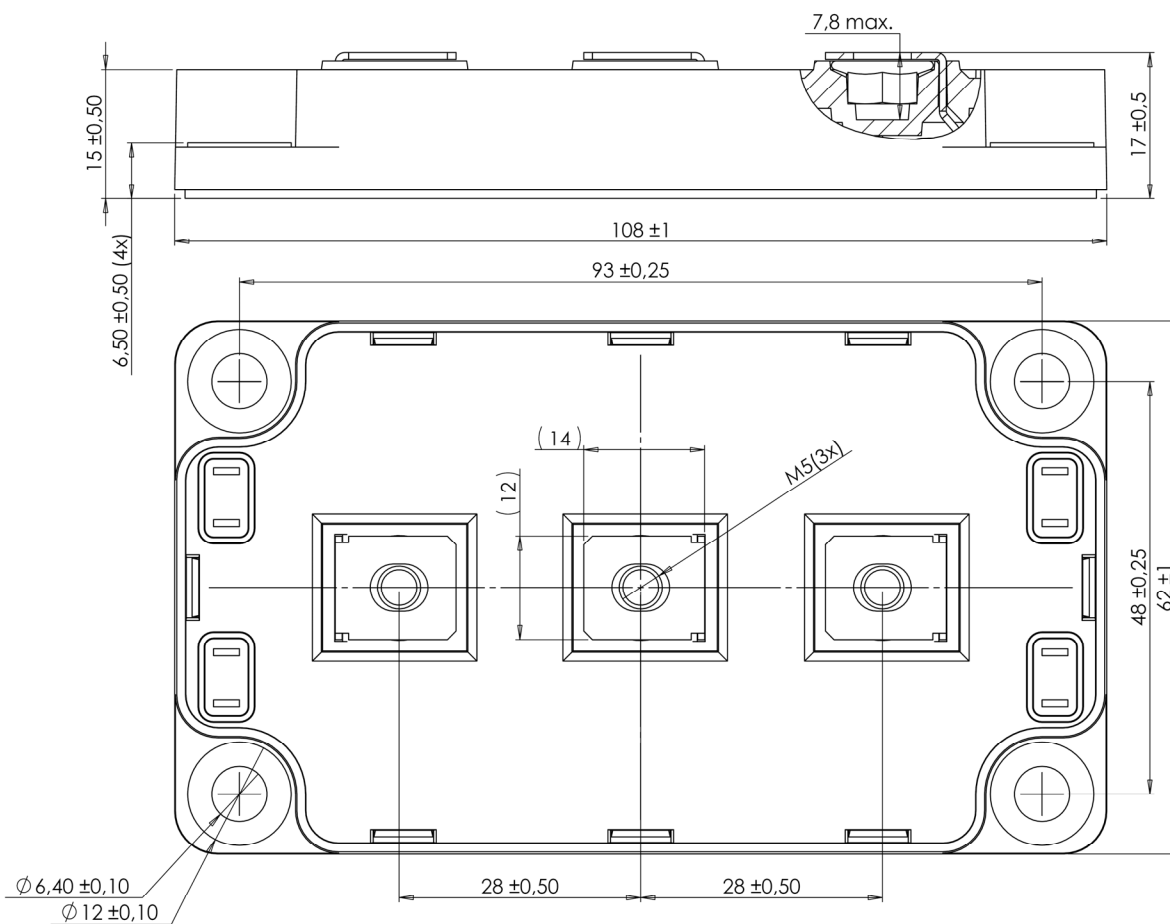
**Thermal and package characteristics**

| Symbol     | Characteristic   | Min           |    | Typ | Max  | Unit                      |
|------------|--|---------------|----|-----|------|---------------------------|
| $R_{thJC}$ | Junction to Case Thermal Resistance  |               |    |     | 0.14 | $^\circ\text{C}/\text{W}$ |
| $V_{ISOL}$ | RMS Isolation Voltage, any terminal to case $t = 1\text{ min}, 50/60\text{Hz}$ | 4000          |    |     |      | V                         |
| $T_J$      | Operating junction temperature range   | -40           |    |     | 175  | $^\circ\text{C}$          |
| $T_{STG}$  | Storage Temperature Range  | -40           |    |     | 125  |                           |
| $T_C$      | Operating Case Temperature   | -40           |    |     | 100  |                           |
| Torque     | Mounting torque  | To heatsink   | M6 | 3   | 5    | N.m                       |
|            |  | For terminals | M5 | 2   | 3.5  |                           |
| Wt         | Package Weight   |               |    |     | 300  | g                         |

## Typical Performance Curve



### SP6 Package outline (dimensions in mm)



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