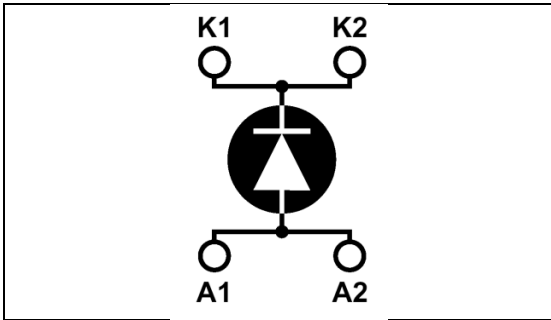


## Single diode Power Module

$V_{RRM} = 200V$   
 $I_F = 500A @ T_c = 80^\circ C$



### Application

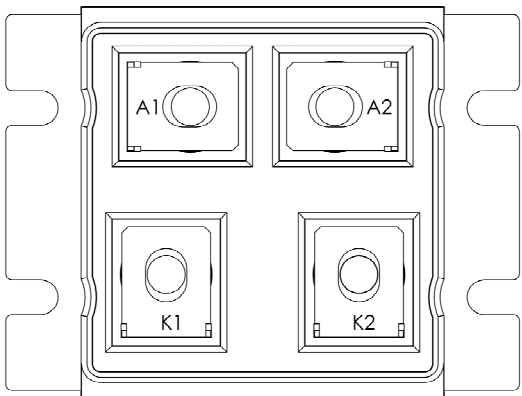
- Anti-Parallel diode
  - Switchmode Power Supply
  - Inverters
- Snubber diode
- Uninterruptible Power Supply (UPS)
- Induction heating
- Welding equipment
- High speed rectifiers
- Electric vehicles

### Features

- Ultra fast recovery times
- Soft recovery characteristics
- Very low stray inductance
- High blocking voltage
- High current
- Low leakage current

### Benefits

- Low losses
- Low noise switching
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- RoHS Compliant



All ratings @  $T_j = 25^\circ C$  unless otherwise specified

### Absolute maximum ratings

| Symbol       | Parameter                               | Max ratings                | Unit               |   |
|--------------|---|----------------------------|--------------------|---|
| $V_R$        | Maximum DC reverse Voltage              | 200                        | V                  |   |
| $V_{RRM}$    | Maximum Peak Repetitive Reverse Voltage |                            |                    |   |
| $I_{F(AV)}$  | Maximum Average Forward Current         | Duty cycle = 50%           | $T_c = 25^\circ C$ | A |
|              |   |                            | $T_c = 80^\circ C$ |   |
| $I_{F(RMS)}$ | RMS Forward Current                     | 1000                       |                    |   |
| $I_{FSM}$    | Non-Repetitive Forward Surge Current    | $T_j = 45^\circ C ; 8.3ms$ | 5000               |   |

**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)

**Electrical Characteristics**

| Symbol          | Characteristic                  | Test Conditions        | Min                    | Typ | Max | Unit |
|-----------------|---------------------------------|------------------------|------------------------|-----|-----|------|
| V <sub>F</sub>  | Diode Forward Voltage           | I <sub>F</sub> = 500A  |                        | 1   | 1.1 | V    |
|                 |                                 | I <sub>F</sub> = 1000A |                        | 1.4 |     |      |
|                 |                                 | I <sub>F</sub> = 500A  | T <sub>j</sub> = 125°C |     | 0.9 |      |
| I <sub>RM</sub> | Maximum Reverse Leakage Current | V <sub>R</sub> = 200V  |                        |     | 2.5 | mA   |
| C <sub>T</sub>  | Junction Capacitance            | V <sub>R</sub> = 200V  |                        | 2   |     | nF   |

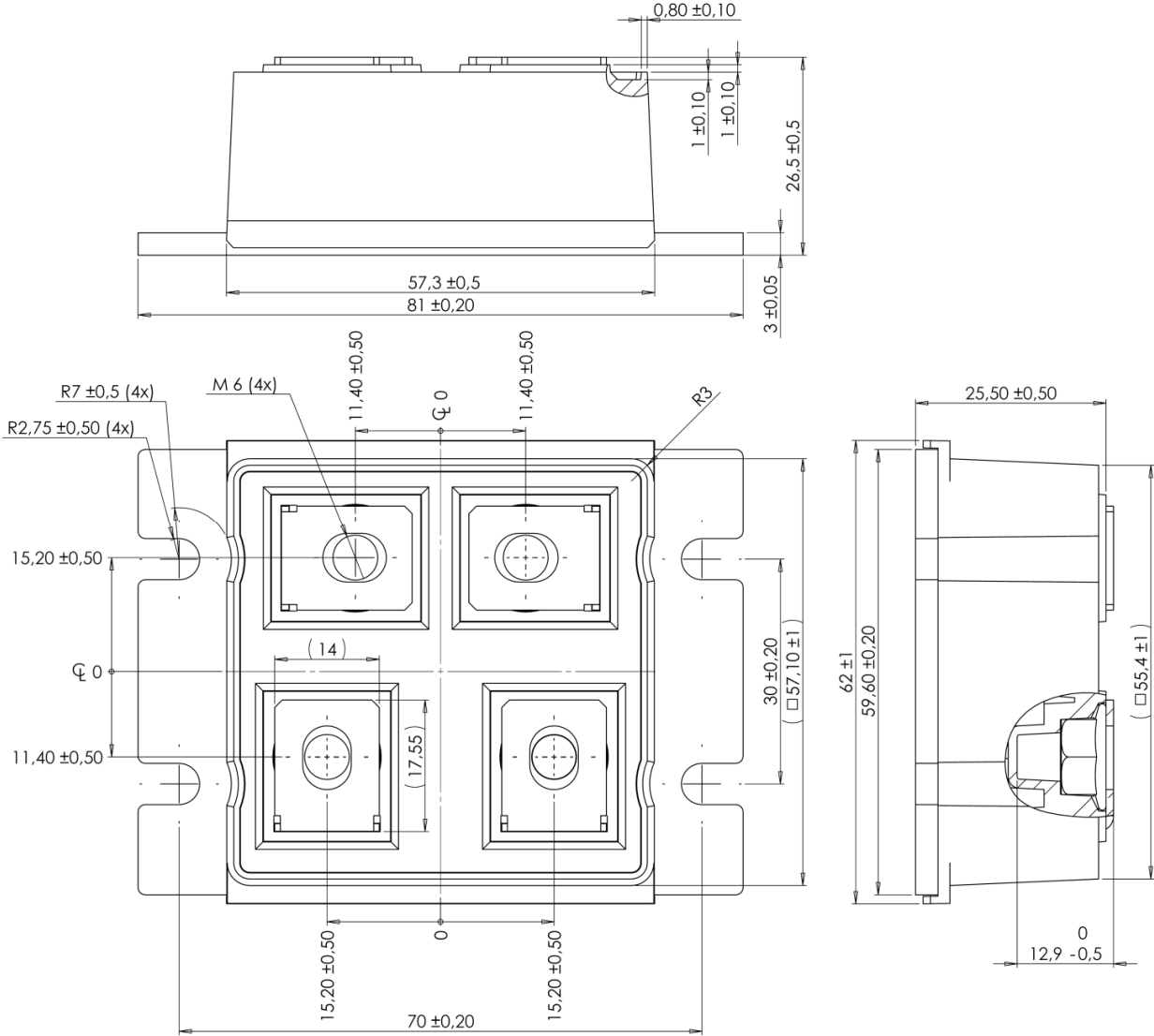
**Dynamic Characteristics**

| Symbol            | Characteristic                      | Test Conditions  | Min                    | Typ | Max  | Unit |    |
|-------------------|-------------------------------------|--|------------------------|-----|------|------|----|
| t <sub>RR</sub>   | Reverse Recovery Time               | I <sub>F</sub> = 500A<br>V <sub>R</sub> = 133V<br>di/dt=1000A/μs | T <sub>j</sub> = 25°C  |     | 60   |      | ns |
|                   |                                     |  | T <sub>j</sub> = 125°C |     | 110  |      |    |
| Q <sub>RR</sub>   | Reverse Recovery Charge             |  | T <sub>j</sub> = 25°C  |     | 1    |      | μC |
|                   |                                     |  | T <sub>j</sub> = 125°C |     | 4.2  |      |    |
| I <sub>RR</sub>   | Reverse Recovery Current            |  | T <sub>j</sub> = 25°C  |     | 30   |      | A  |
|                   |                                     |  | T <sub>j</sub> = 125°C |     | 75   |      |    |
| t <sub>RR</sub>   | Reverse Recovery Time               | I <sub>F</sub> = 500A<br>V <sub>R</sub> = 133V<br>di/dt=5000A/μs | T <sub>j</sub> = 125°C |     | 80   |      | ns |
| Q <sub>RR</sub>   | Reverse Recovery Charge             |  |                        |     | 9.9  |      | μC |
| I <sub>RR</sub>   | Reverse Recovery Current            |  |                        |     | 220  |      | A  |
| R <sub>thJC</sub> | Junction to Case Thermal Resistance |  |                        |     | 0.11 | °C/W |    |

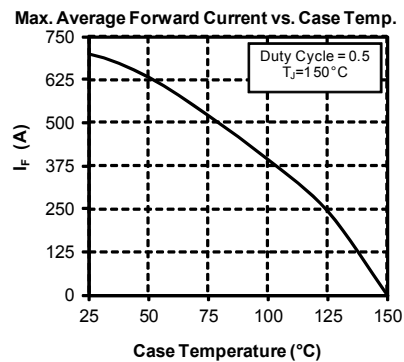
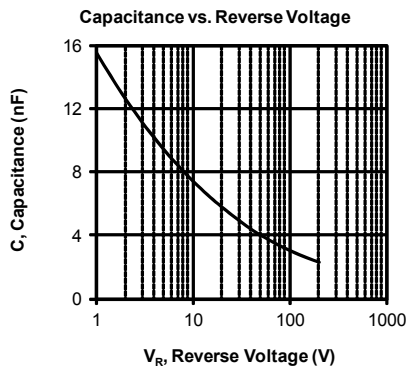
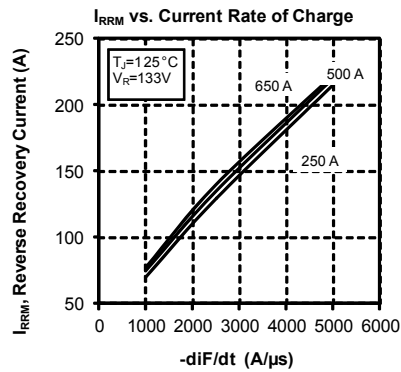
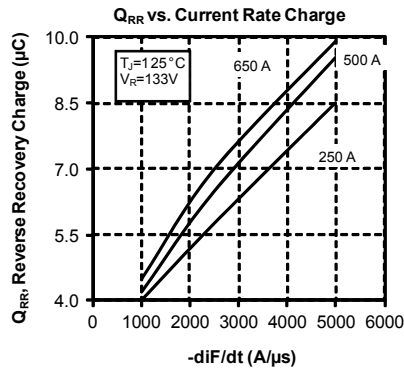
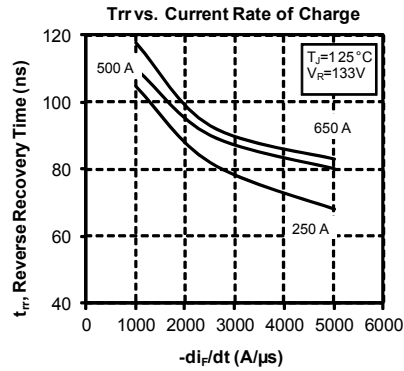
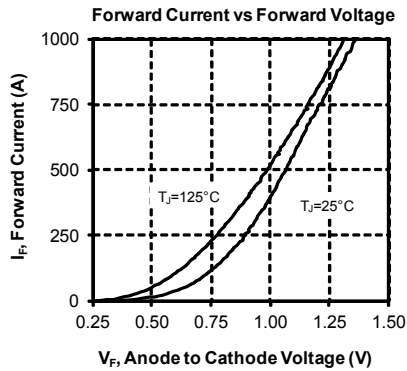
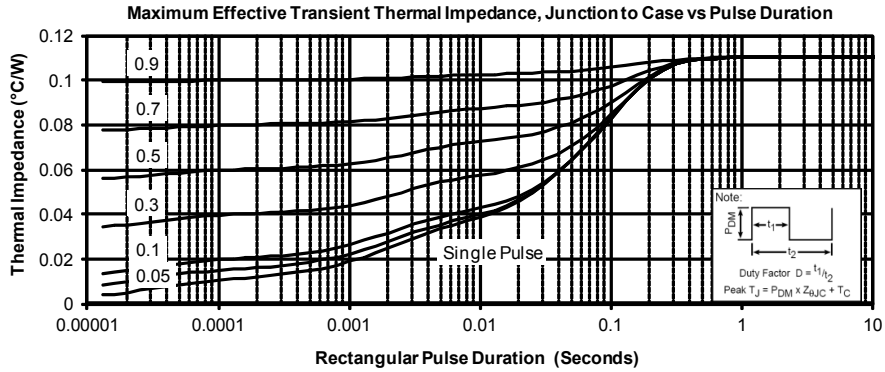
**Thermal and package characteristics**

| Symbol            | Characteristic  | Min           | Max                   | Unit |     |     |
|-------------------|---|---------------|-----------------------|------|-----|-----|
| V <sub>ISOL</sub> | RMS Isolation Voltage, any terminal to case t =1 min, 50/60Hz | 4000          |                       | V    |     |     |
| T <sub>J</sub>    | Operating junction temperature range                          | -40           | 150                   | °C   |     |     |
| T <sub>JOP</sub>  | Recommended junction temperature under switching conditions   | -40           | T <sub>Jmax</sub> -25 |      |     |     |
| T <sub>STG</sub>  | Storage Temperature Range                                     | -40           | 125                   |      |     |     |
| T <sub>C</sub>    | Operating Case Temperature                                    | -40           | 100                   |      |     |     |
| Torque            | Mounting torque   | To heatsink   | M5                    | 2.5  | 3.5 | N.m |
|                   |   | For terminals | M6                    | 3    | 4   |     |
| Wt                | Package Weight  |               |                       |      | 250 | g   |

**LP4 Package outline (dimensions in mm)**



## Typical Performance Curve



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