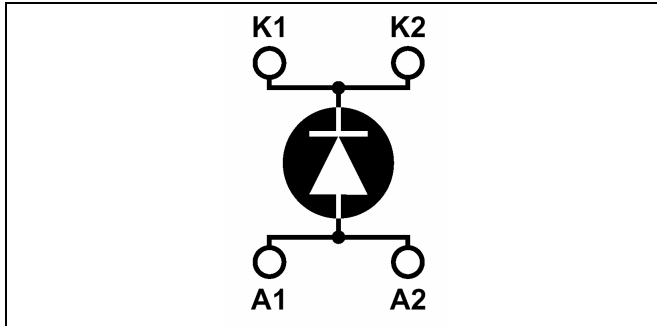


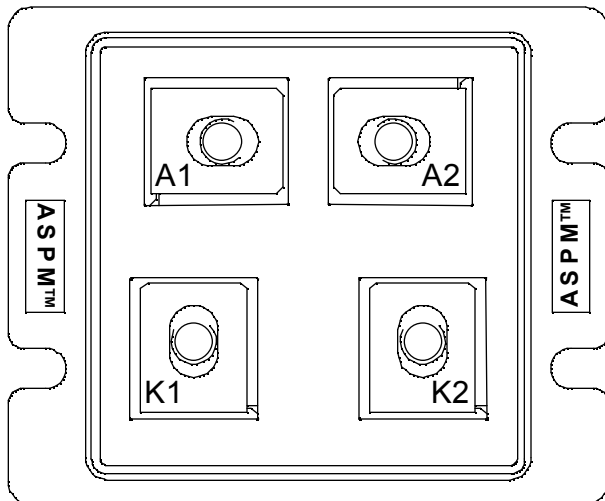
Single diode Power Module

$V_{CES} = 400V$
 $I_C = 500A @ T_c = 80^\circ C$



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

Absolute maximum ratings

| Symbol | Parameter | Max ratings | Unit |
|--------------|---|--------------------|------|
| V_R | Maximum DC reverse Voltage | 400 | V |
| V_{RRM} | Maximum Peak Repetitive Reverse Voltage | | |
| $I_{F(AV)}$ | Maximum Average Forward Current | Duty cycle = 50% | A |
| | | $T_c = 25^\circ C$ | |
| | | $T_c = 80^\circ C$ | 500 |
| $I_{F(RMS)}$ | RMS Forward Current | 850 | |
| I_{FSM} | Non-Repetitive Forward Surge Current | $T_j = 25^\circ C$ | 5000 |

CAUTION: These Devices are sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed. See application note APT0502 on 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 | $I_F = 500\text{A}$ | | | | 1.5 | V |
| | | $I_F = 1000\text{A}$ | | | 1.5 | | |
| | | $I_F = 500\text{A}$ | $T_j = 150^\circ\text{C}$ | | | 1.3 | |
| I_{RM} | Maximum Reverse Leakage Current | $V_R = 400\text{V}$ | $T_j = 25^\circ\text{C}$ | | | 2500 | μA |
| | | | $T_j = 150^\circ\text{C}$ | | | 5000 | |
| C_T | Junction Capacitance | $V_R = 200\text{V}$ | | | 800 | | pF |

Dynamic Characteristics

| Symbol | Characteristic | Test Conditions | | Min | Typ | Max | Unit |
|-------------|----------------------------------|--|---------------------------|-----|------|------|------------------------|
| t_{rr1} | Reverse Recovery Time | $I_F = 1\text{A}, V_R = 30\text{V}$ $di/dt = 15\text{A}/\mu\text{s}$ | $T_j = 25^\circ\text{C}$ | | | 50 | ns |
| t_{rr2} | | | $T_j = 25^\circ\text{C}$ | | | 120 | |
| t_{rr3} | | | $T_j = 100^\circ\text{C}$ | | | 260 | |
| t_{fr1} | Forward Recovery Time | $I_F = 500\text{A}$ $V_R = 240\text{V}$ $di/dt = 1000\text{A}/\mu\text{s}$ | $T_j = 25^\circ\text{C}$ | | 210 | | ns |
| t_{fr2} | | | $T_j = 100^\circ\text{C}$ | | 220 | | |
| I_{RRM1} | Reverse Recovery Current | | $T_j = 25^\circ\text{C}$ | | | 50 | A |
| I_{RRM2} | | | $T_j = 100^\circ\text{C}$ | | | 120 | |
| Q_{rr1} | Reverse Recovery Charge | | $T_j = 25^\circ\text{C}$ | | | 3 | μC |
| Q_{rr2} | | | $T_j = 100^\circ\text{C}$ | | | 15.6 | |
| V_{fr1} | Forward Recovery Voltage | | $T_j = 25^\circ\text{C}$ | | 19 | | V |
| V_{fr2} | | | $T_j = 100^\circ\text{C}$ | | 19 | | |
| $d_{IM/dt}$ | Rate of Fall of Recovery Current | | $T_j = 25^\circ\text{C}$ | | 1200 | | $\text{A}/\mu\text{s}$ |
| | | | $T_j = 100^\circ\text{C}$ | | 1800 | | |

Thermal and package characteristics

| Symbol | Characteristic | Min | Typ | Max | Unit | |
|------------|--|---------------|-----|------|---------------------------|-----|
| R_{thJC} | Junction to Case Thermal Resistance | | | 0.08 | $^\circ\text{C}/\text{W}$ | |
| V_{ISOL} | RMS Isolation Voltage, any terminal to case $t = 1\text{ min}, I_{isol} < 1\text{mA}, 50/60\text{Hz}$ | 2500 | | | V | |
| T_j | Operating junction temperature range | -40 | | 150 | $^\circ\text{C}$ | |
| T_{STG} | Storage Temperature Range | -40 | | 125 | | |
| T_C | 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 | |

