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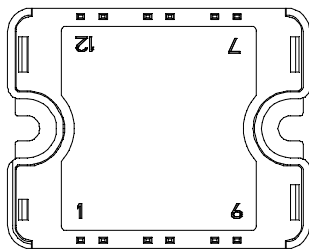
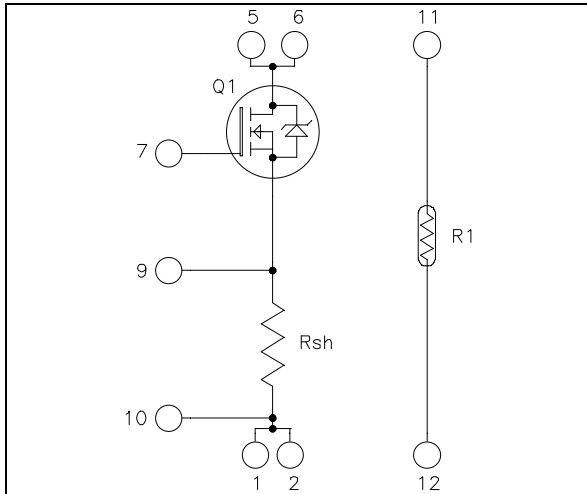
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Linear MOSFET Power Module

$V_{DSS} = 1000V$
 $R_{DSon} = 600m\Omega \text{ typ @ } T_j = 25^\circ C$
 $I_D = 20A \text{ @ } T_c = 25^\circ C$



Pins 1/2 ; 5/6 must be shorted together

Application

- Electronic load dedicated to power supplies and battery discharge testing

Features

- Linear MOSFET
- Very low stray inductance
- Internal thermistor for temperature monitoring
- High level of integration
- AlN substrate for improved thermal performance

Benefits

- Direct mounting to heatsink (isolated package)
- easy series and parallels combinations for power and voltage improvements
- Low junction to case thermal resistance
- Solderable terminals both for power and signal for easy PCB mounting
- Low profile
- RoHS Compliant

Absolute maximum ratings

| Symbol | Parameter | Max ratings | Unit |
|------------|----------------------------------|--------------------|------------|
| V_{DSS} | Drain - Source Breakdown Voltage | 1000 | V |
| I_D | Continuous Drain Current | $T_c = 25^\circ C$ | 20 |
| | | $T_c = 80^\circ C$ | 14 |
| I_{DM} | Pulsed Drain current | 74 | A |
| V_{GS} | Gate - Source Voltage | ± 30 | V |
| R_{DSon} | Drain - Source ON Resistance | 720 | m Ω |
| P_D | Maximum Power Dissipation ❶ | $T_c = 25^\circ C$ | 520 |
| | | | W |

❶ In saturation mode

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 | |
|---------------------|---------------------------------|--|------------------------|-----|-----|------|----|
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} = 1000V ; V _{GS} = 0V | T _j = 25°C | | | 250 | μA |
| | | V _{DS} = 800V ; V _{GS} = 0V | T _j = 125°C | | | 1000 | |
| R _{DS(on)} | Drain – Source on Resistance | V _{GS} = 10V, I _D = 10A | | | 600 | 720 | mΩ |
| V _{GS(th)} | Gate Threshold Voltage | V _{GS} = V _{DS} ; I _D = 2.5mA | | 2 | | 4 | V |
| I _{GSS} | Gate – Source Leakage Current | V _{GS} = ±30 V | | | | ±100 | nA |

Dynamic Characteristics

| Symbol | Characteristic | Test Conditions | Min | Typ | Max | Unit |
|------------------|------------------------------|-----------------------|-----|------|-----|------|
| C _{iss} | Input Capacitance | V _{GS} = 0V | | 6000 | | pF |
| C _{oss} | Output Capacitance | V _{DS} = 25V | | 775 | | |
| C _{rss} | Reverse Transfer Capacitance | f = 1MHz | | 285 | | |

Shunt Electrical Characteristics

| Symbol | Characteristic | Min | Typ | Max | Unit |
|-----------------|------------------|----------------------|-----|-----|------|
| R _{sh} | Resistance value | | 20 | | mΩ |
| T _{sh} | Tolerance | | 2 | | % |
| P _{sh} | Load capacity | T _C =25°C | | 20 | W |
| | | T _C =80°C | | 10 | |
| I _{sh} | Current capacity | T _C =25°C | | 31 | A |
| | | T _C =80°C | | 22 | |

Temperature sensor PTC

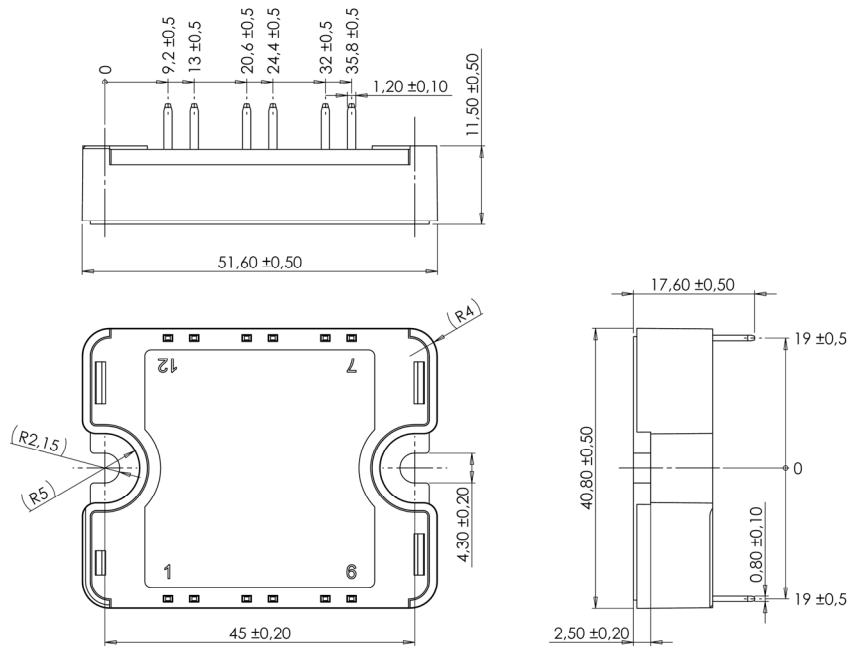
| Symbol | Characteristic | Min | Typ | Max | Unit | |
|-----------------------------------|-------------------------|-------------------|-------|-------|-------|--|
| R ₂₅ | Resistance @ 25°C | 1980 | | 2020 | Ω | |
| R ₁₀₀ /R ₂₅ | Resistance ratio | Tamb=100°C & 25°C | 1.676 | 1.696 | 1.716 | |
| R ₋₅₅ /R ₂₅ | Resistance ratio | Tamb=-55°C & 25°C | 0.48 | 0.49 | 0.50 | |
| B | Temperature coefficient | | 7900 | | ppm/K | |

Thermal and package characteristics

| Symbol | Characteristic | Min | Typ | Max | Unit | |
|-------------------|--|-------------|-----|------|------|-----|
| R _{thJC} | Junction to Case Thermal Resistance | MOSFET | | 0.24 | °C/W | |
| V _{ISOL} | RMS Isolation Voltage, any terminal to case t=1 min, 50/60Hz | 4000 | | | V | |
| T _J | Operating junction temperature range | -40 | | 150 | °C | |
| T _{STG} | Storage Temperature Range | -40 | | 125 | | |
| T _C | Operating Case Temperature | -40 | | 100 | | |
| Torque | Mounting torque | To heatsink | M4 | 2 | 3 | N.m |
| Wt | Package Weight | | | 80 | | g |



SP1 Package outline (dimensions in mm)



See application note 1904 - Mounting Instructions for SP1 Power Modules on www.microsemi.com

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