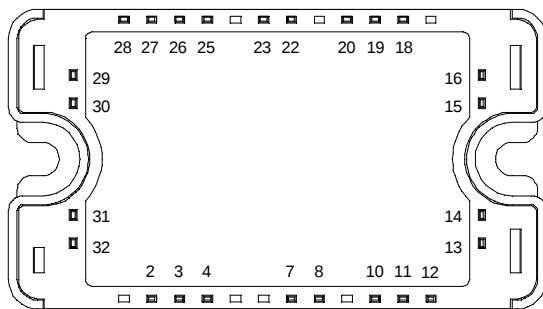
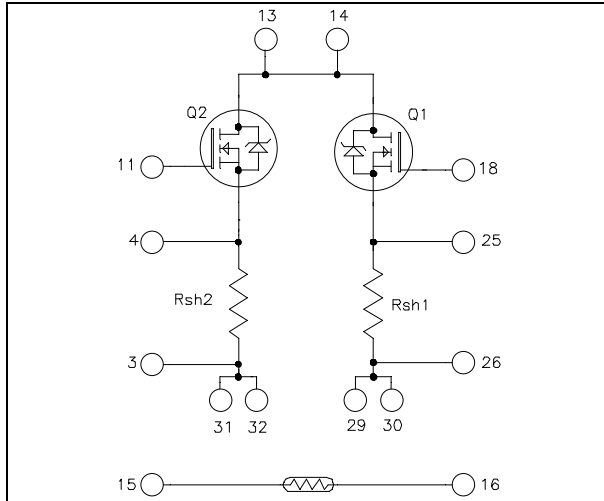


## Linear MOSFET Power Module

$$V_{DSS} = 200V$$

$$R_{DSon} = 18m\Omega \text{ typ @ } T_j = 25^\circ C$$

$$I_D = 109A^* \text{ @ } T_c = 25^\circ C$$



Pins 13/14 ; 29/30 ; 31/32 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 (per leg)

| Symbol     | Parameter                                         | Max ratings                                             | Unit       |
|------------|---------------------------------------------------|---------------------------------------------------------|------------|
| $V_{DSS}$  | Drain - Source Breakdown Voltage                  | 200                                                     | V          |
| $I_D$      | Continuous Drain Current                          | $T_c = 25^\circ C$<br>109*<br>$T_c = 80^\circ C$<br>81* | A          |
| $I_{DM}$   | Pulsed Drain current                              | 400                                                     |            |
| $V_{GS}$   | Gate - Source Voltage                             | $\pm 30$                                                | V          |
| $R_{DSon}$ | Drain - Source ON Resistance                      | 19                                                      | m $\Omega$ |
| $P_D$      | Maximum Power Dissipation ❶                       | $T_c = 25^\circ C$<br>480                               | W          |
| $I_{AR}$   | Avalanche current (repetitive and non repetitive) | 100                                                     | A          |
| $E_{AR}$   | Repetitive Avalanche Energy                       | 50                                                      | mJ         |
| $E_{AS}$   | Single Pulse Avalanche Energy                     | 3000                                                    |            |

\* Output current per leg must be limited to 44A @  $T_c=25^\circ C$  and 31A @  $T_c=80^\circ C$  to not exceed the shunt specification.

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](http://www.microsemi.com)

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

**Electrical Characteristics (per leg)**

| Symbol       | Characteristic                  | Test Conditions                                                      | Min | Typ | Max       | Unit             |
|--------------|---------------------------------|----------------------------------------------------------------------|-----|-----|-----------|------------------|
| $I_{DSS}$    | Zero Gate Voltage Drain Current | $V_{DS} = 200\text{V}; V_{GS} = 0\text{V}$ $T_j = 25^\circ\text{C}$  |     |     | 25        | $\mu\text{A}$    |
|              |                                 | $V_{DS} = 160\text{V}; V_{GS} = 0\text{V}$ $T_j = 125^\circ\text{C}$ |     |     | 250       |                  |
| $R_{DS(on)}$ | Drain – Source on Resistance    | $V_{GS} = 10\text{V}, I_D = 50\text{A}$                              |     | 18  | 19        | $\text{m}\Omega$ |
| $V_{GS(th)}$ | Gate Threshold Voltage          | $V_{GS} = V_{DS}, I_D = 2.5\text{mA}$                                | 2   |     | 4         | V                |
| $I_{GSS}$    | Gate – Source Leakage Current   | $V_{GS} = \pm 30\text{V}$                                            |     |     | $\pm 100$ | nA               |

**Dynamic Characteristics (per leg)**

| Symbol    | Characteristic               | Test Conditions                                                    | Min | Typ  | Max | Unit        |
|-----------|------------------------------|--------------------------------------------------------------------|-----|------|-----|-------------|
| $C_{iss}$ | Input Capacitance            | $V_{GS} = 0\text{V}$<br>$V_{DS} = 25\text{V}$<br>$f = 1\text{MHz}$ |     | 9880 |     | $\text{pF}$ |
| $C_{oss}$ | Output Capacitance           |                                                                    |     | 2320 |     |             |
| $C_{rss}$ | Reverse Transfer Capacitance |                                                                    |     | 700  |     |             |

**Shunt Electrical Characteristics (per leg)**

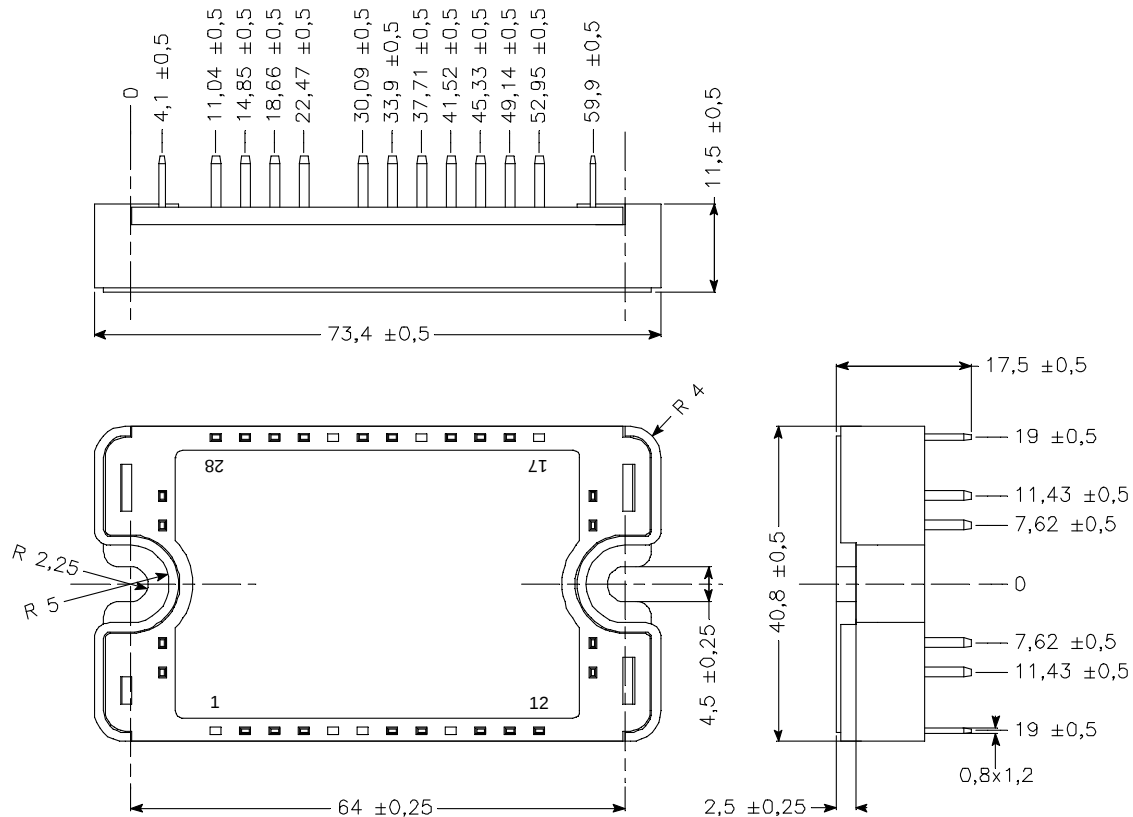
| Symbol   | Characteristic   | Min                      | Typ | Max | Unit             |
|----------|------------------|--------------------------|-----|-----|------------------|
| $R_{sh}$ | Resistance value |                          | 10  |     | $\text{m}\Omega$ |
| $T_{sh}$ | Tolerance        |                          | 2   |     | %                |
| $P_{sh}$ | Load capacity    | $T_C = 25^\circ\text{C}$ |     | 20  | W                |
|          |                  | $T_C = 80^\circ\text{C}$ |     | 10  |                  |
| $I_{sh}$ | Current capacity | $T_C = 25^\circ\text{C}$ |     | 44  | A                |
|          |                  | $T_C = 80^\circ\text{C}$ |     | 31  |                  |

**Temperature sensor PTC**

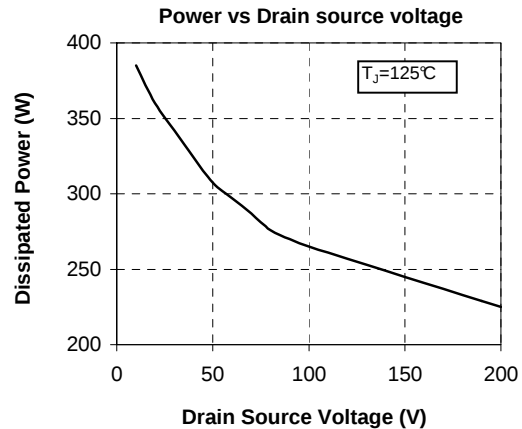
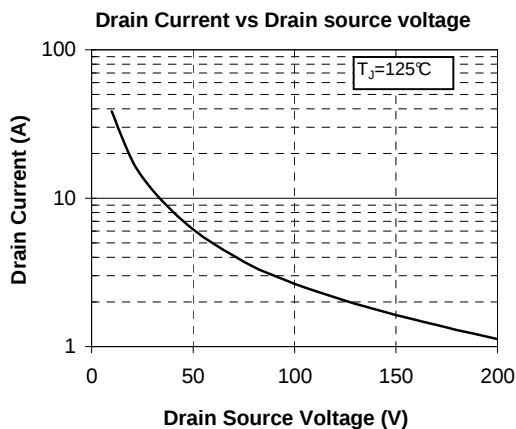
| Symbol           | Characteristic                  | Min                                                        | Typ   | Max   | Unit     |
|------------------|---------------------------------|------------------------------------------------------------|-------|-------|----------|
| $R_{25}$         | Resistance @ $25^\circ\text{C}$ | 1980                                                       |       | 2020  | $\Omega$ |
| $R_{100}/R_{25}$ | Resistance ratio                | $T_{amb} = 100^\circ\text{C} \text{ \& } 25^\circ\text{C}$ | 1.676 | 1.696 | 1.716    |
| $R_{55}/R_{25}$  | Resistance ratio                | $T_{amb} = -55^\circ\text{C} \text{ \& } 25^\circ\text{C}$ | 0.48  | 0.49  | 0.50     |
| B                | Temperature coefficient         |                                                            | 7900  |       | ppm/K    |

**Thermal and package characteristics**

| Symbol            | Characteristic                                                            |             |                  | Min  | Typ | Max  | Unit |
|-------------------|---------------------------------------------------------------------------|-------------|------------------|------|-----|------|------|
| R <sub>thJC</sub> | Junction to Case Thermal Resistance                                       |             | MOSFET (per leg) |      |     | 0.26 | °C/W |
| V <sub>ISOL</sub> | RMS Isolation Voltage, any terminal to case t =1 min, I isol<1mA, 50/60Hz |             |                  | 4000 |     |      | V    |
| T <sub>J</sub>    | Operating junction temperature range                                      |             |                  | -40  |     | 150  | °C   |
| T <sub>STG</sub>  | Storage Temperature Range                                                 |             |                  | -40  |     | 125  |      |
| T <sub>C</sub>    | Operating Case Temperature                                                |             |                  | -40  |     | 100  |      |
| Torque            | Mounting torque                                                           | To heatsink | M4               | 2.5  |     | 4.7  | N.m  |
| Wt                | Package Weight                                                            |             |                  |      |     | 110  | g    |

**SP3 Package outline (dimensions in mm)**


See application note 1901 - Mounting Instructions for SP3 Power Modules on [www.microsemi.com](http://www.microsemi.com)

**Typical Performance Curve (linear mode) (per leg)**


Microsemi reserves the right to change, without notice, the specifications and information contained herein

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