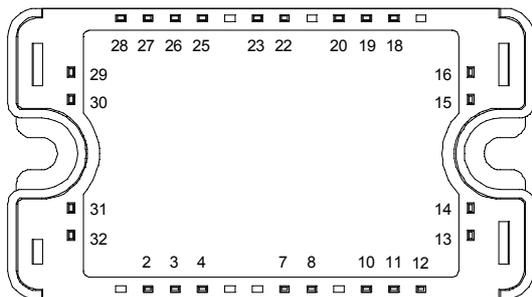
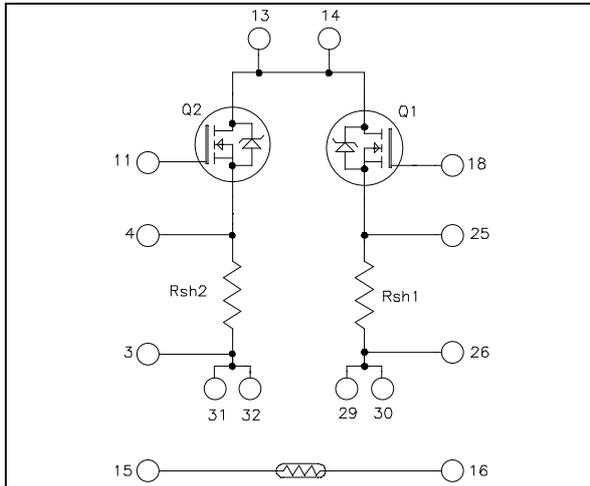


## Linear MOSFET Power Module

$V_{DSS} = 500V$   
 $R_{DSon} = 90m\Omega \text{ typ @ } T_j = 25^\circ C$   
 $I_D = 52A^* \text{ @ } T_c = 25^\circ C$



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	500	V
$I_D$	Continuous Drain Current	$T_c = 25^\circ C$	52*
		$T_c = 80^\circ C$	39*
$I_{DM}$	Pulsed Drain current	200	A
$V_{GS}$	Gate - Source Voltage	$\pm 30$	V
$R_{DSon}$	Drain - Source ON Resistance	108	$m\Omega$
$P_D$	Maximum Power Dissipation ❶	$T_c = 25^\circ C$	568
$I_{AR}$	Avalanche current (repetitive and non repetitive)	52	A
$E_{AR}$	Repetitive Avalanche Energy	50	mJ
$E_{AS}$	Single Pulse Avalanche Energy	3000	

\* Output current must be limited to 31A @  $T_c=25^\circ C$  and 22A @  $T_c=80^\circ C$  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 <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = 500V ; V <sub>GS</sub> = 0V    T <sub>j</sub> = 25°C			25	μA
		V <sub>DS</sub> = 400V ; V <sub>GS</sub> = 0V    T <sub>j</sub> = 125°C			250	
R <sub>DS(on)</sub>	Drain – Source on Resistance	V <sub>GS</sub> = 10V, I <sub>D</sub> = 26A		90	108	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> = V <sub>DS</sub> ; I <sub>D</sub> = 2.5mA	2		4	V
I <sub>GSS</sub>	Gate – Source Leakage Current	V <sub>GS</sub> = ±30 V			±100	nA

**Dynamic Characteristics** (per leg)

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0V		7600		pF
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> = 25V		1280		
C <sub>rss</sub>	Reverse Transfer Capacitance	f = 1MHz		620		

**Shunt Electrical Characteristics** (per leg)

Symbol	Characteristic	Min	Typ	Max	Unit
R <sub>sh</sub>	Resistance value		20		mΩ
T <sub>sh</sub>	Tolerance		2		%
P <sub>sh</sub>	Load capacity	T <sub>C</sub> =25°C		20	W
		T <sub>C</sub> =80°C		10	
I <sub>sh</sub>	Current capacity	T <sub>C</sub> =25°C		31	A
		T <sub>C</sub> =80°C		22	

**Temperature sensor PTC**

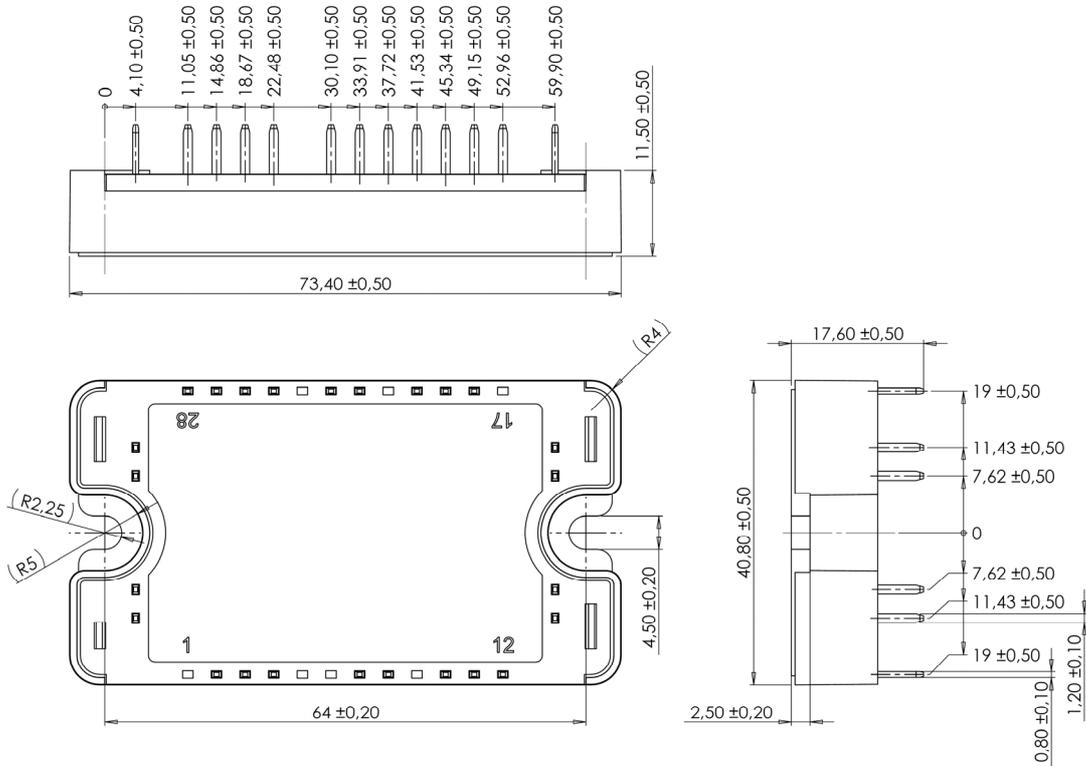
Symbol	Characteristic	Min	Typ	Max	Unit	
R <sub>25</sub>	Resistance @ 25°C	1980		2020	Ω	
R <sub>100</sub> /R <sub>25</sub>	Resistance ratio	Tamb=100°C & 25°C	1.676	1.696	1.716	
R <sub>-55</sub> /R <sub>25</sub>	Resistance ratio	Tamb=-55°C & 25°C	0.48	0.49	0.50	
B	Temperature coefficient		7900		ppm/K	

**Thermal and package characteristics**

Symbol	Characteristic	Min	Typ	Max	Unit	
R <sub>thJC</sub>	Junction to Case Thermal Resistance	MOSFET (per leg)		0.22	°C/W	
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>STG</sub>	Storage Temperature Range	-40		125		
T <sub>C</sub>	Operating Case Temperature	-40		100		
Torque	Mounting torque	To heatsink	M4	2	3	N.m
Wt	Package Weight				110	g

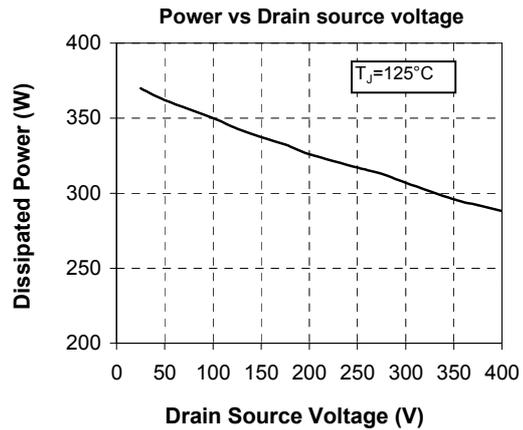
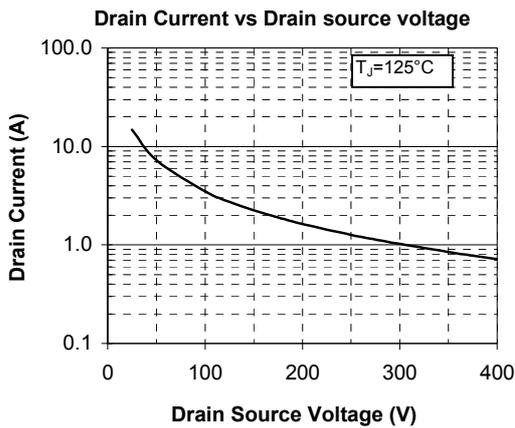


**SP3 Package outline (dimensions in mm)**



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)**





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