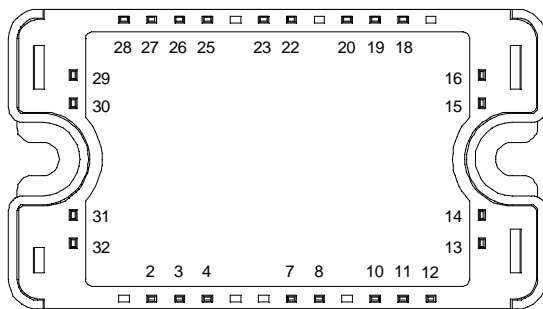
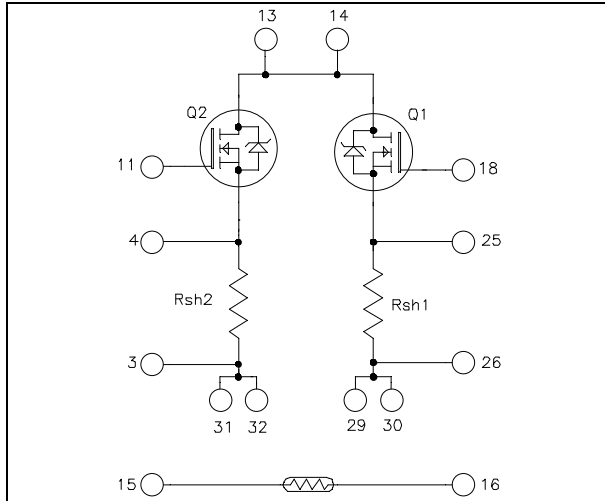


Linear MOSFET Power Module

$V_{DSS} = 100V$
 $R_{DSon} = 09m\Omega \text{ typ @ } T_j = 25^\circ C$
 $I_D = 154A^* @ T_c = 25^\circ C$



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	100	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	154*
		$T_c = 80^\circ C$	115*
I_{DM}	Pulsed Drain current	430	A
V_{GS}	Gate - Source Voltage	± 30	V
R_{DSon}	Drain - Source ON Resistance	10	$m\Omega$
P_D	Maximum Power Dissipation ①	$T_c = 25^\circ C$	480
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 67A @ $T_c=25^\circ C$ and 47A @ $T_c=80^\circ C$ to not exceed the shunt specification. In addition the current capability must be limited to 75A on pins 13/14 to not exceed current capability of the pins.

① 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 (per leg)

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0V, V_{DS} = 100V$ $T_j = 25^\circ\text{C}$			100	μA
		$V_{GS} = 0V, V_{DS} = 80V$ $T_j = 125^\circ\text{C}$			500	
$R_{DS(on)}$	Drain – Source on Resistance	$V_{GS} = 10V, I_D = 69.5A$		9	10	$\text{m}\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}, I_D = 2.5\text{mA}$	2		4	V
I_{GSS}	Gate – Source Leakage Current	$V_{GS} = \pm 30V, V_{DS} = 0V$			± 100	nA

Dynamic Characteristics (per leg)

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{iss}	Input Capacitance	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1\text{MHz}$		9875		pF
C_{oss}	Output Capacitance			3940		
C_{rss}	Reverse Transfer Capacitance			1470		

Shunt Electrical Characteristics (per leg)

Symbol	Characteristic	Min	Typ	Max	Unit
R_{sh}	Resistance value		4.4		$\text{m}\Omega$
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	$T_C = 25^\circ\text{C}$		67	A
		$T_C = 80^\circ\text{C}$		47	

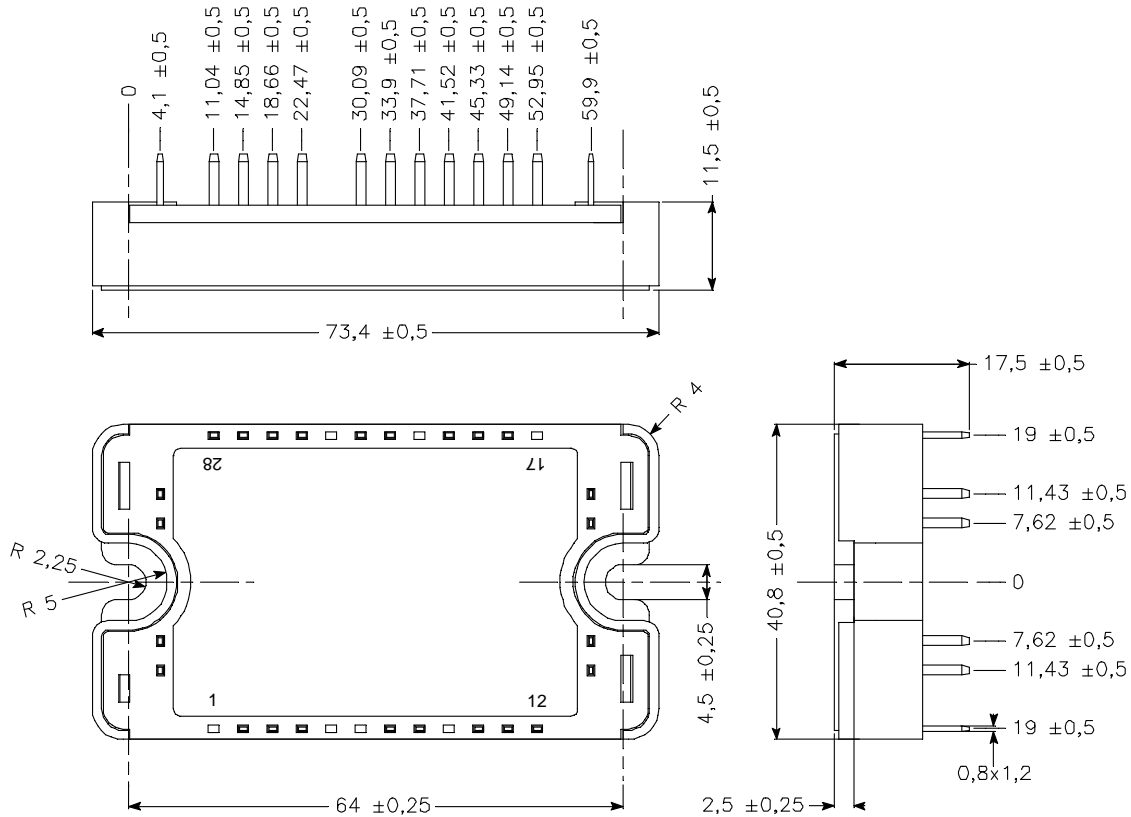
Temperature sensor PTC

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

Thermal and package characteristics

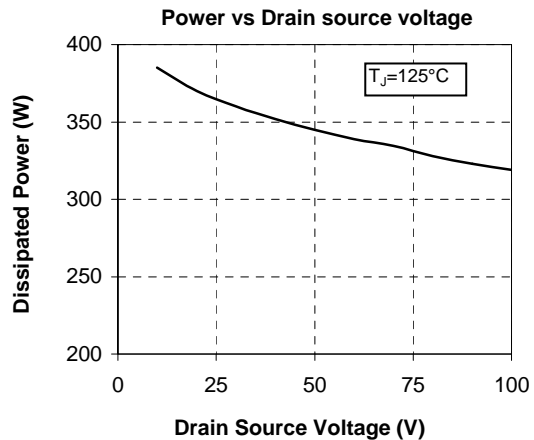
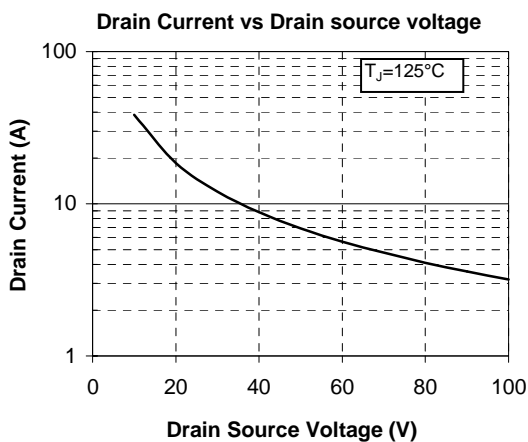
Symbol	Characteristic	Min	Typ	Max	Unit	
R_{thJC}	Junction to Case Thermal Resistance	MOSFET (per leg)		0.26	$^\circ\text{C}/\text{W}$	
V_{ISOL}	RMS Isolation Voltage, any terminal to case $t = 1\text{min}$, $I_{isol} < 1\text{mA}$, 50/60Hz	4000			V	
T_j	Operating junction temperature range	-40		150	$^\circ\text{C}$	
T_{STG}	Storage Temperature Range	-40		125		
T_C	Operating Case Temperature	-40		100		
Torque	Mounting torque	To heatsink	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

Typical Performance Curve (linear mode) (per leg)



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

Microsemi's products are covered by one or more of U.S. patents 4,895,810 5,045,903 5,089,434 5,182,234 5,019,522 5,262,336 6,503,786 5,256,583 4,748,103 5,283,202 5,231,474 5,434,095 5,528,058 6,939,743 7,352,045 5,283,201 5,801,417 5,648,283 7,196,634 6,664,594 7,157,886 6,939,743 7,342,262 and foreign patents. U.S. and Foreign patents pending. All Rights Reserved.