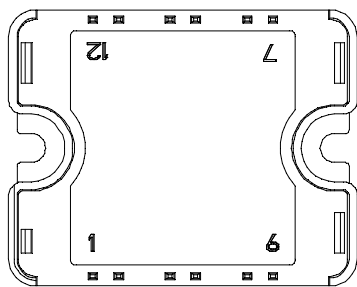
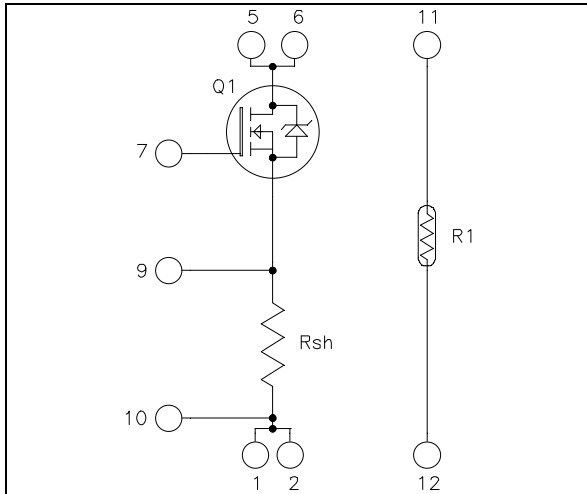


Linear MOSFET Power Module

$V_{DSS} = 600V$
 $R_{DSon} = 125m\Omega$ typ @ $T_j = 25^\circ C$
 $I_D = 45A^*$ @ $T_c = 25^\circ C$



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	600	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	45*
		$T_c = 80^\circ C$	33*
I_{DM}	Pulsed Drain current	172	
V_{GS}	Gate - Source Voltage	± 30	V
R_{DSon}	Drain - Source ON Resistance	150	$m\Omega$
P_D	Maximum Power Dissipation ❶	$T_c = 25^\circ C$	568
I_{AR}	Avalanche current (repetitive and non repetitive)	45	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

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} = 600V ; V _{GS} = 0V T _j = 25°C			25	μA
		V _{DS} = 480V ; V _{GS} = 0V T _j = 125°C			250	
R _{DS(on)}	Drain – Source on Resistance	V _{GS} = 10V, I _D = 22.5A		125	150	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		7600		pF
C _{oss}	Output Capacitance	V _{DS} = 25V		1280		
C _{rss}	Reverse Transfer Capacitance	f = 1MHz		620		

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	

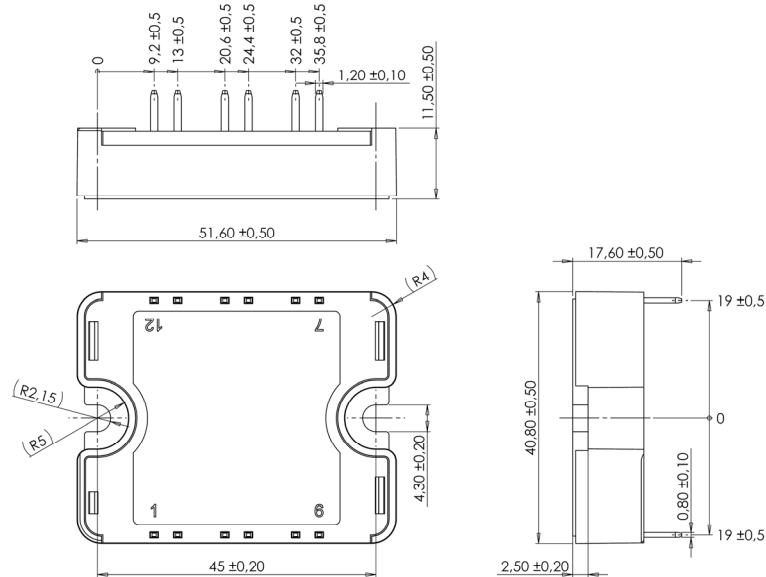
Temperature sensor PTC

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

Thermal and package characteristics

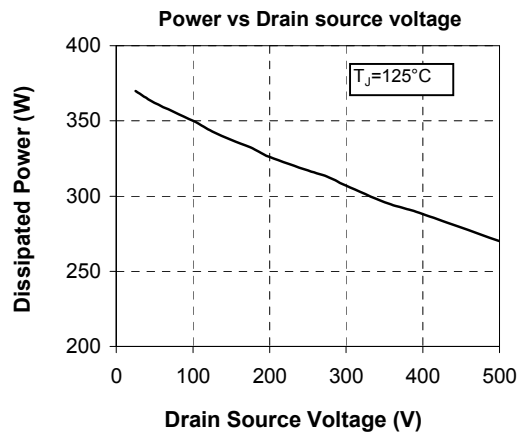
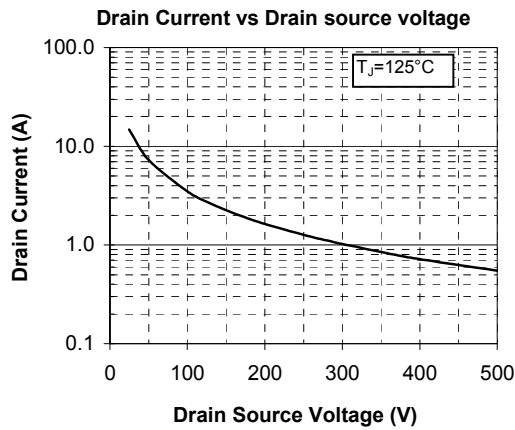
Symbol	Characteristic	Min	Typ	Max	Unit	
R _{thJC}	Junction to Case Thermal Resistance	MOSFET		0.22	°C/W	
V _{ISOL}	RMS Isolation Voltage, any terminal to case t = 1 min, 50/60Hz		4000		V	
T _j	Operating junction temperature range		-40	150	°C	
T _{STG}	Storage Temperature Range		-40	125		
T _C	Operating 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

Typical Performance Curve (linear mode)



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