

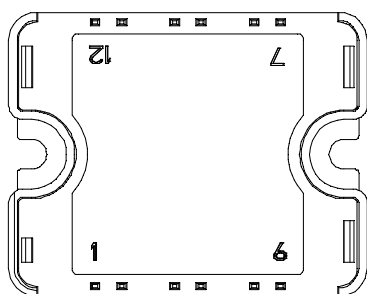
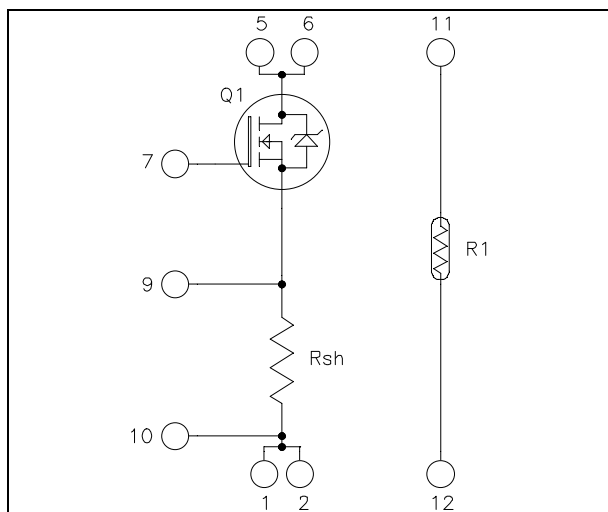
APTML60U12R020T1AG

Linear MOSFET Power Module

$$V_{DSS} = 600V$$

$$R_{DSon} = 125m\Omega \text{ typ @ } T_j = 25^\circ C$$

$$I_D = 45A^* \text{ @ } T_c = 25^\circ C$$



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	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	A
V_{GS}	Gate - Source Voltage	± 30	V
R_{DSon}	Drain - Source ON Resistance	130	m Ω
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	$V_{DS} = 600\text{V}$; $V_{GS} = 0\text{V}$ $T_j = 25^\circ\text{C}$			25	μA
		$V_{DS} = 480\text{V}$; $V_{GS} = 0\text{V}$ $T_j = 125^\circ\text{C}$			250	
$R_{DS(on)}$	Drain – Source on Resistance	$V_{GS} = 10\text{V}$, $I_D = 22.5\text{A}$		125	130	$\text{m}\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}$, $I_D = 2.5\text{mA}$	2		4	V
I_{GSS}	Gate – Source Leakage Current	$V_{GS} = \pm 30\text{V}$			± 100	nA

Dynamic Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}$		7600		pF
C_{oss}	Output Capacitance	$V_{DS} = 25\text{V}$		1280		
C_{rss}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		620		

Shunt Electrical Characteristics

Symbol	Characteristic	Min	Typ	Max	Unit
R_{sh}	Resistance value		20		$\text{m}\Omega$
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	$T_C = 25^\circ\text{C}$		31	A
		$T_C = 80^\circ\text{C}$		22	

Temperature sensor PTC

Symbol	Characteristic	Min	Typ	Max	Unit
R_{25}	Resistance @ 25°C	1980		2020	Ω
R_{100}/R_{25}	Resistance ratio	$T_{amb} = 100^\circ\text{C} \text{ \& } 25^\circ\text{C}$	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 _{thJC}	Junction to Case Thermal Resistance		MOSFET			0.22	°C/W
V _{ISOL}	RMS Isolation Voltage, any terminal to case t =1 min, I isol<1mA, 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	2.5		4.7	N.m
Wt	Package Weight					80	g

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