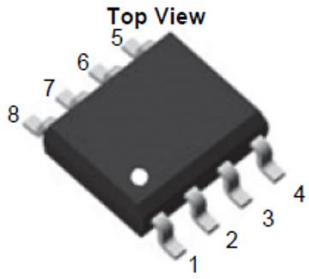
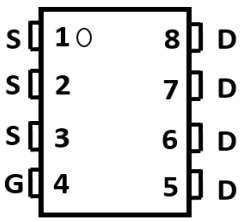
Leiditech

LMS4438A

N-Channel Enhancement Mode Power MOSFET





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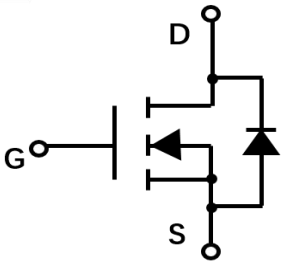


Product Summary

- V_{DS} 60V
- I_D 8.2A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜22 mohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜34 mohm

General Description

- Trench Power MV MOSFET technology
- High density cell design for Low $R_{DS(ON)}$
- High Speed switching

Applications

- Battery protection
- Load switch
- Power management

■ Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	60	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current [A]	T_A=25℃	I_D	8.2	A
	T_A=70℃		6.6	
Pulsed Drain Current [B]		I_{DM}	39	A
Total Power Dissipation	T_A=25℃	P_D	3.1	W
	T_A=70℃		2	
Thermal Resistance Junction-to-Ambient	t≤ 10s	$R_{\theta JA}$	40	℃/ W
	Steady-State		75	
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	30	℃/ W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
LMS4438A	F2	Q4438	4000	8000	64000	13“ reel

■ Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=8.2		14.5	22	mΩ
		V_{GS}= 4.5V, I_D=7.6		17	34	
Diode Forward Voltage	V_{SD}	I_S=8.2V_{GS}=0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I_S				8.2	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V,f=1MHZ		1550		pF
Output Capacitance	C_{oss}			191		
Reverse Transfer Capacitance	C_{rss}			133		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=30V,I_D=8.2A		48		nC
Gate-Source Charge	Q_{gs}			7		
Gate-Drain Charge	Q_{gd}			10		
Reverse Recovery Chrage	Q_{rr}	I_F=8.2A, di/dt=100A/us		48		
Reverse Recovery Time	t_{rr}			41		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V,V_{DD}=30V,R_L=3.5Ω R_{GEN}=3Ω		10		
Turn-on Rise Time	t_r			5		
Turn-off Delay Time	$t_{D(off)}$			30		
Turn-off fall Time	t_f			8		

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

B. Repetitive rating, pulse width limited by junction temperature.

■ Typical Performance Characteristics

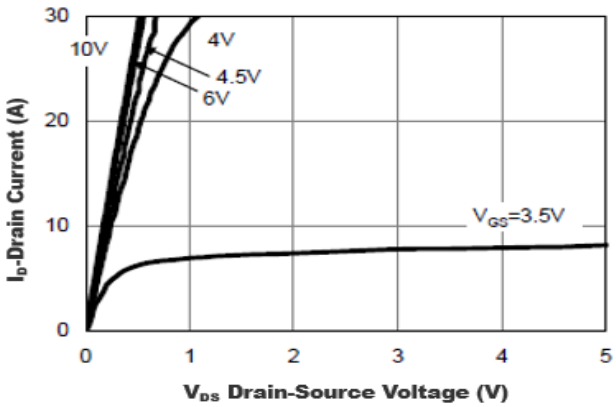


Figure1. Output Characteristics

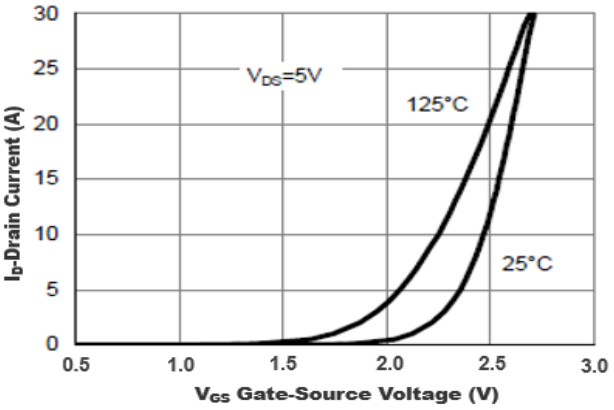


Figure2. Transfer Characteristics

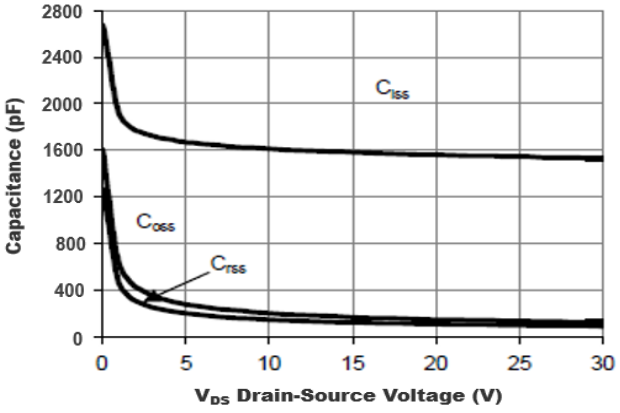


Figure3. Capacitance Characteristics

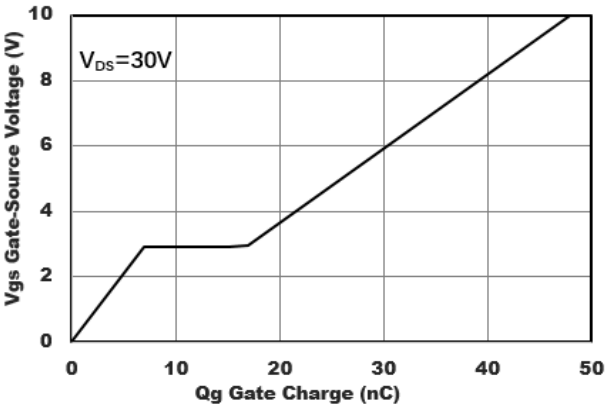


Figure4. Gate Charge

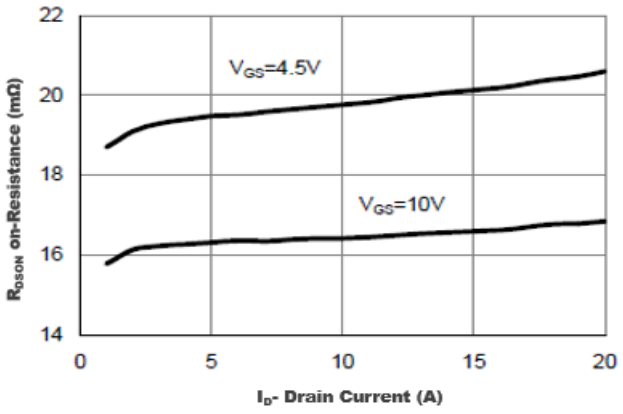


Figure5. Drain-Source on Resistance

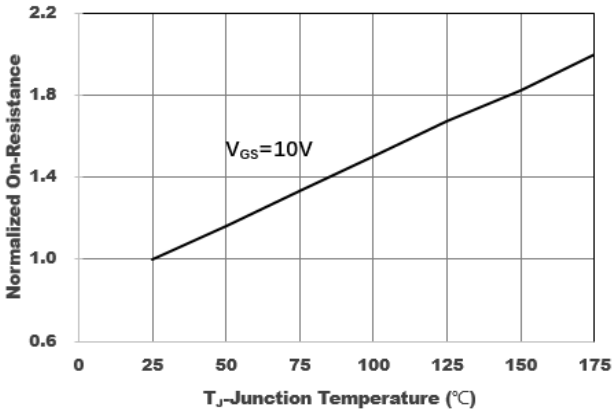


Figure6. Drain-Source on Resistance

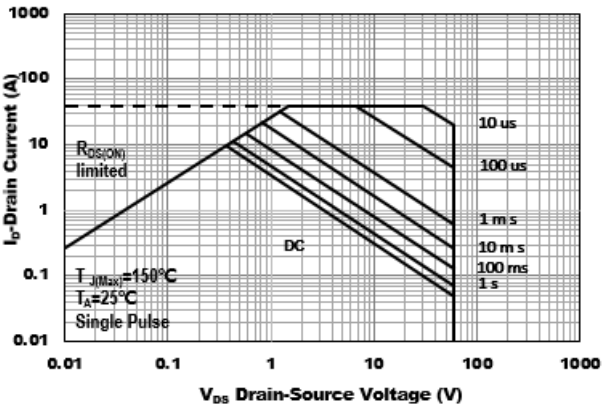


Figure7. Safe Operation Area

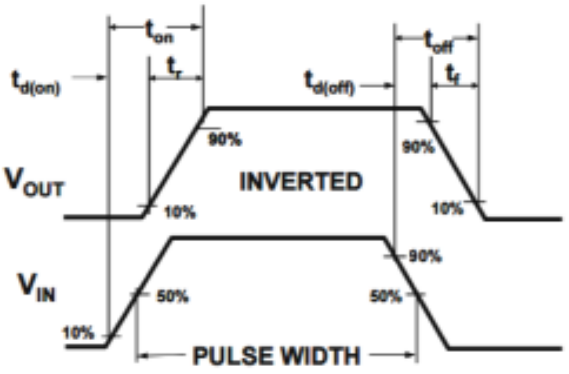
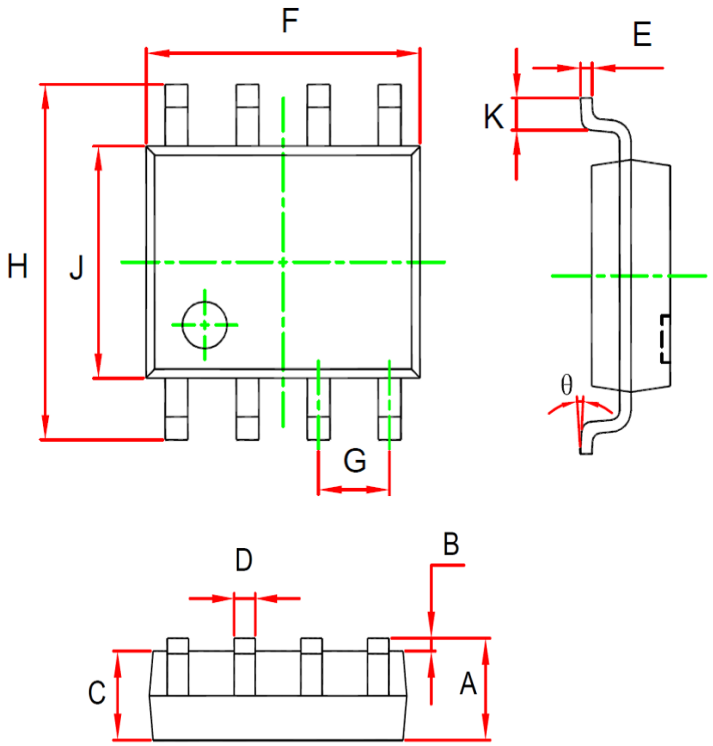


Figure8. Switching wave



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.053	0.069	1.350	1.750	
B	0.004	0.010	0.100	0.250	
C	0.053	0.061	1.350	1.550	
D	0.013	0.020	0.330	0.510	
E	0.007	0.010	0.170	0.250	
F	0.189	0.197	4.800	5.000	
G	0.050 (BSC)		1.270 (BSC)		
H	0.228	0.244	5.800	6.200	
J	0.150	0.157	3.800	4.000	
K	0.016	0.050	0.400	1.270	
θ	0°	8°	0°	8°	

Shanghai Leiditech Electronic Co.,Ltd
Email: sale1@leiditech.com
Tel : +86- 021 50828806
Fax : +86- 021 50477059