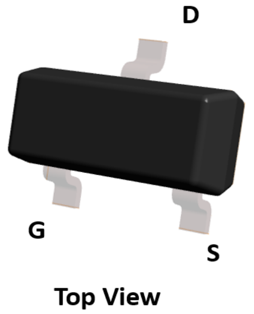
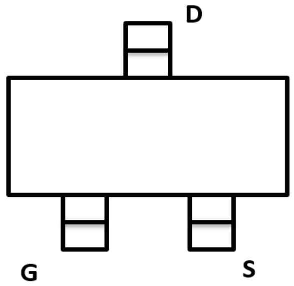
Leiditech

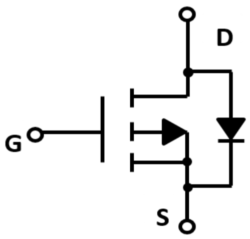
LCE2305A

P-Channel Enhancement Mode Power MOSFET





SOT-23



Product Summary

● V_{DS}	-15V
● I_D	-5.6A
● $R_{DS(ON)}$(at V_{GS}=-4.5V)	＜36.4 mohm
● $R_{DS(ON)}$(at V_{GS}=-2.5V)	＜53.0 mohm
● $R_{DS(ON)}$(at V_{GS}=-1.8V)	＜70.0 mohm

General Description

- Trench Power LV 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	Maximum	Unit
Drain-source Voltage		V_{DS}	-15	V
Gate-source Voltage		V_{GS}	±10	V
Drain Current	T_A=25℃ Steady State	I_D	-5.6	A
	T_A=70℃ Steady State		-4.5	
Pulsed Drain Current ^{A}		I_{DM}	-23	A
Total Power Dissipation @ T_A=25℃ Steady State		P_D	1.2	W
Thermal Resistance Junction-to-Ambient @ Steady State ^{B}		$R_{\theta JA}$	105	℃/ 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
LCE2305A	F2	2305.	3000	30000	120000	7” 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	-15			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-15V,V_{GS}=0V,T_C=25℃			-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±10V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=-250μA	-0.4	-0.62	-1.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= -4.5V, I_D=-5.6A		28	36.4	mΩ
		V_{GS}= -2.5V, I_D=-4A		35	53	
		V_{GS}= -1.8V, I_D=-3A		47	70	
Diode Forward Voltage	V_{SD}	I_S=-5.6A,V_{GS}=0V		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I_S				-5.6	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=-9V,V_{GS}=0V,f=1MHZ		790		pF
Output Capacitance	C_{oss}			130		
Reverse Transfer Capacitance	C_{rss}			85		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=-4.5V,V_{DS}=-9V,I_D=-5.6A		7.2		nC
Gate Source Charge	Q_{gs}			1.2		
Gate Drain Charge	Q_{gd}			1.6		
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-4.5V,V_{DD}=-9V, I_D=-1A, R_{GEN}=2.5Ω		15		ns
Turn-on Rise Time	t_r			63		
Turn-off Delay Time	$t_{D(off)}$			21		
Turn-off Fall Time	t_f			12		

A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

■ Typical Performance Characteristics

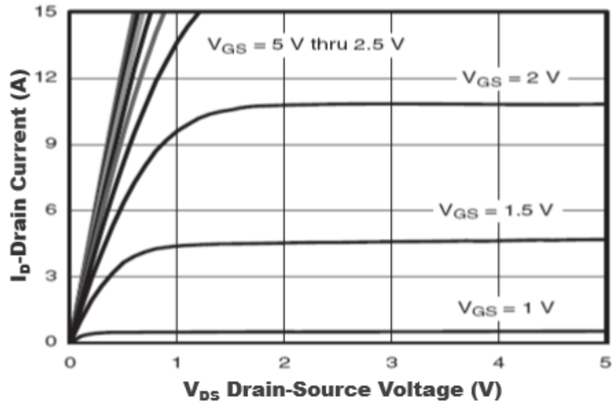


Figure1. Output Characteristics

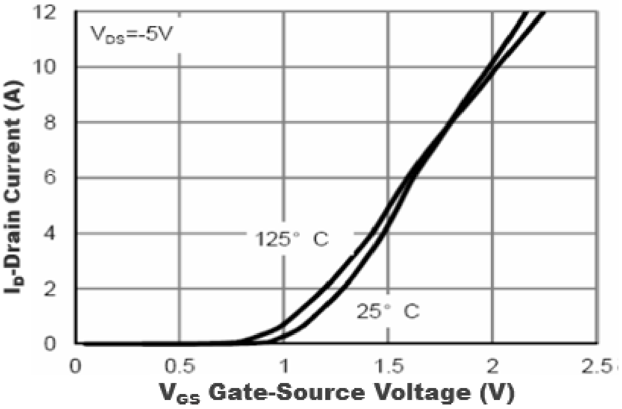


Figure2. Transfer Characteristics

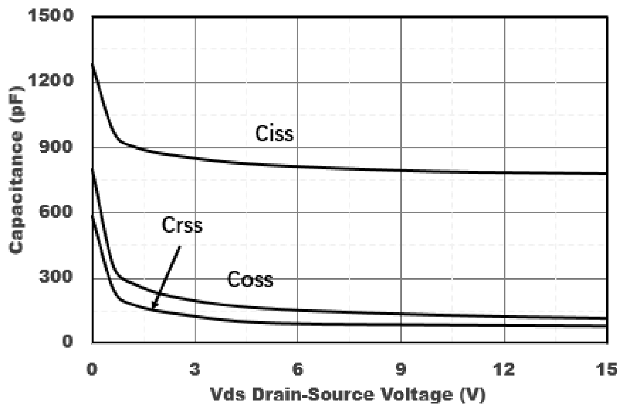


Figure3. Capacitance Characteristics

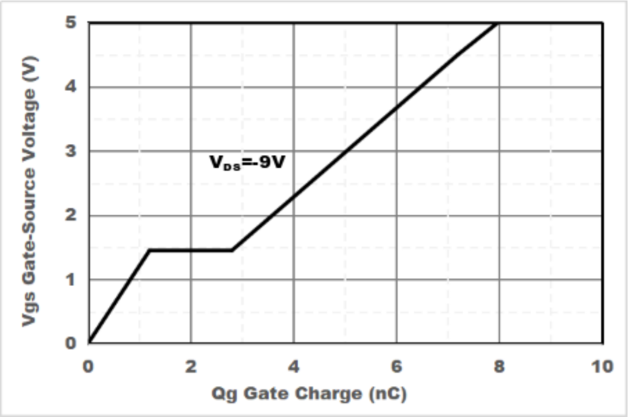


Figure4. Gate Charge

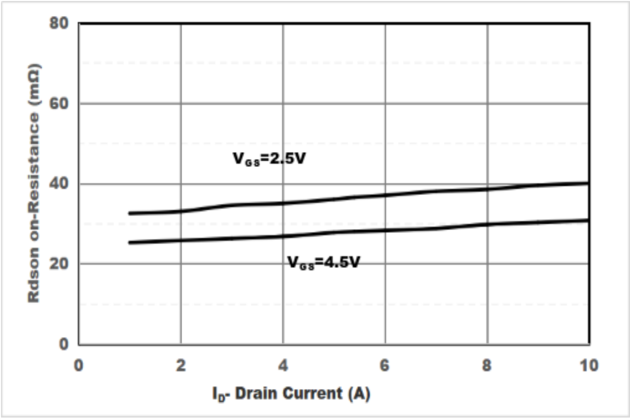


Figure5. Drain-Source on Resistance

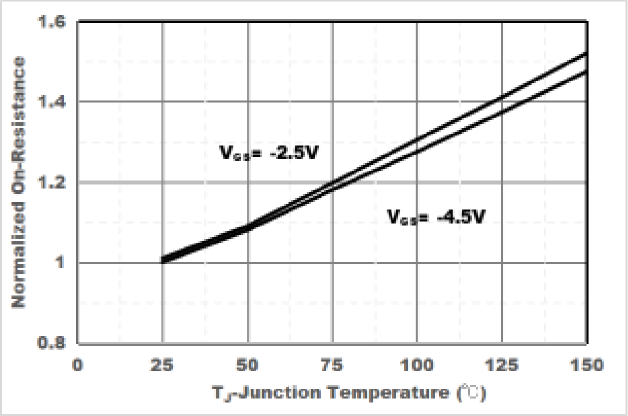


Figure6. Drain-Source on Resistance

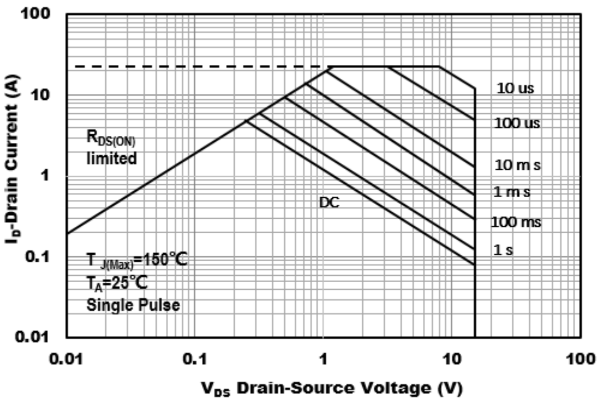


Figure7. Safe Operation Area

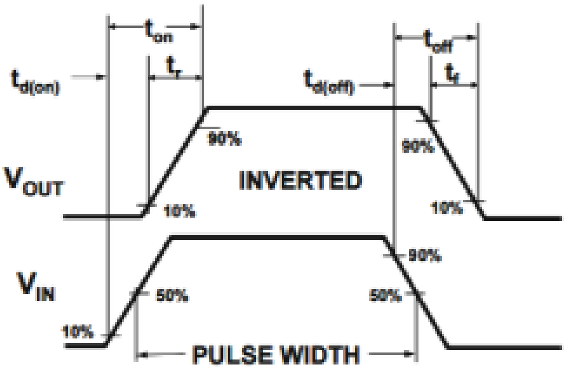
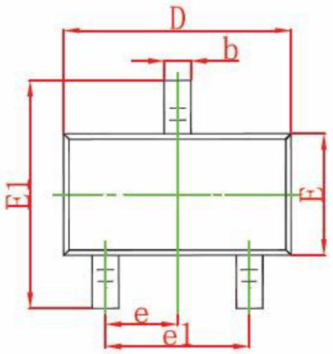
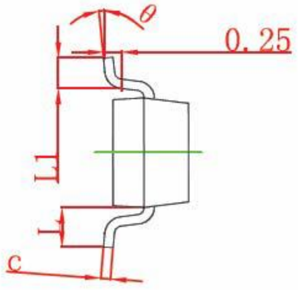
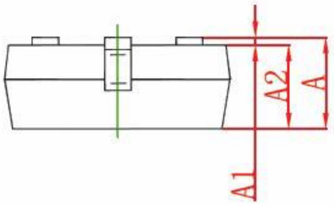


Figure8. Switching wave

■ SOT-23 Package information

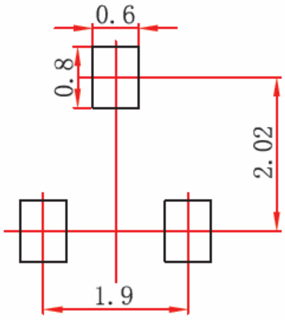






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

■ SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

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