Leiditech

LCE3416A

LCE N-Channel Enhancement Mode Power MOSFET

Description

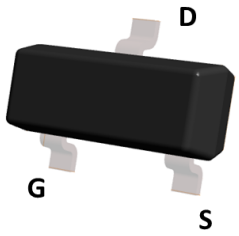
The LCE3416 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 1.8V. This device is suitable for use as a load switch or in PWM applications .It is ESD protested.

Product Summary

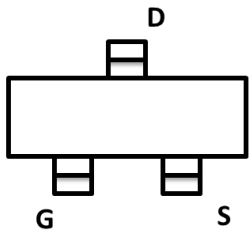
- V_{DS} 20V
- I_D 6.0A
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜18 mohm
- $R_{DS(ON)}$(at V_{GS}=2.5V) ＜22 mohm
- $R_{DS(ON)}$(at V_{GS}=1.8V) ＜39 mohm
- ESD Protected Up to 3.5KV (HBM)

Applications

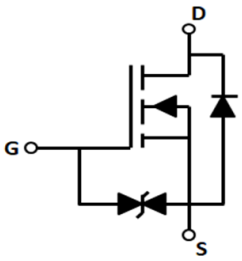
- PWM application
- Load switch



Top View



SOT-23



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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	20	V
Gate-source Voltage		V_{GS}	±12	V
Drain Current	T_A=25℃ @ Steady State	I_D	7.0	A
	T_A=70℃ @ Steady State		5.6	
Pulsed Drain Current [A]		I_{DM}	25	A
Total Power Dissipation @ T_A=25℃		P_D	1.3	W
Thermal Resistance Junction-to-Ambient @ Steady State		$R_{\theta JA}$	96	℃/ 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
LCE3416A	F2	8810.	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	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V,V_{GS}=0V,T_C=25℃			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±12V, V_{DS}=0V		2	±10	μA
		V_{GS}= ±8V, V_{DS}=0V		0.7	±1.5	μA
		V_{GS}= ±5V, V_{DS}=0V		100	±300	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=6.0A		13	18	mΩ
		V_{GS}= 2.5V, I_D=4.0A		17	22	
		V_{GS}= 1.8V, I_D=3.0A		27	39	
Diode Forward Voltage	V_{SD}	I_S=7.0A,V_{GS}=0V			1.2	V
Maximum Body-Diode Continuous Current	I_S				7.0	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=10V,V_{GS}=0V,f=1MHZ		980		pF
Output Capacitance	C_{oss}			225		
Reverse Transfer Capacitance	C_{rss}			120		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=4.5V,V_{DS}=10V,I_D=7.0A		8.1		nC
Gate Source Charge	Q_{gs}			2.4		
Gate Drain Charge	Q_{gd}			3		
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=4.5V,V_{DD}=10V, R_L=1.5Ω, R_{GEN}=3Ω		1.2		ns
Turn-on Rise Time	t_r			2.4		
Turn-off Delay Time	$t_{D(off)}$			22		
Turn-off Fall Time	t_f			7		

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

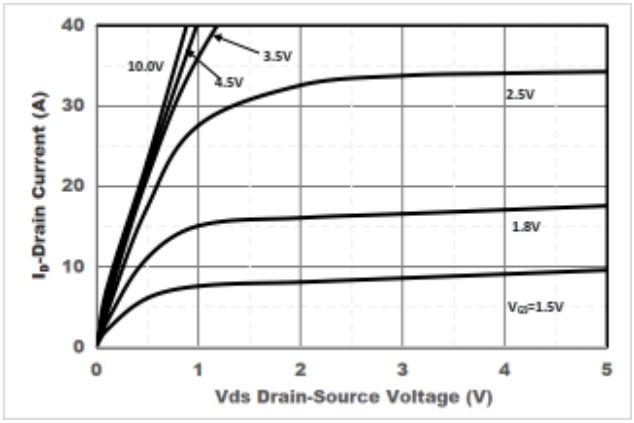


Figure1. Output Characteristics

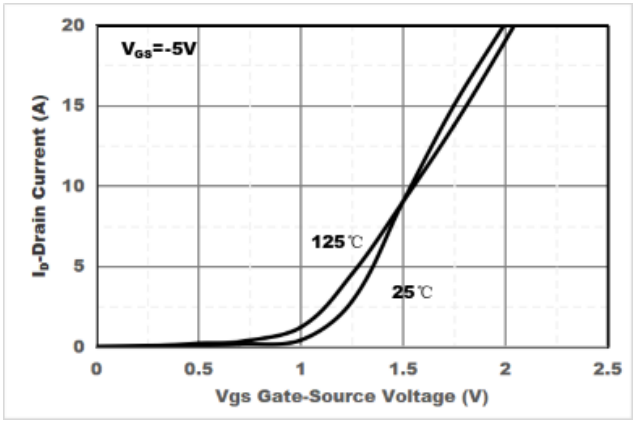


Figure2. Transfer Characteristics

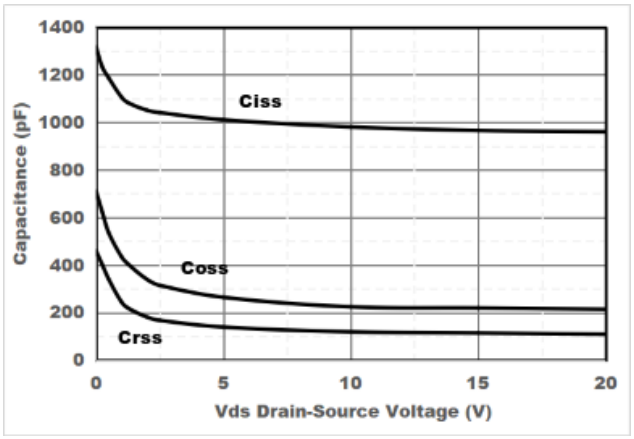


Figure3. Capacitance Characteristics

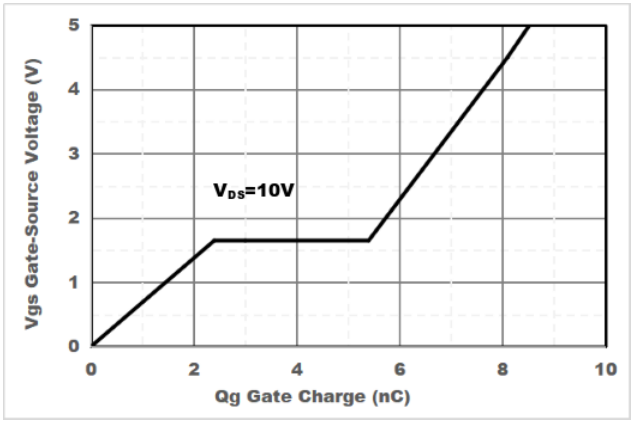


Figure4. Gate Charge

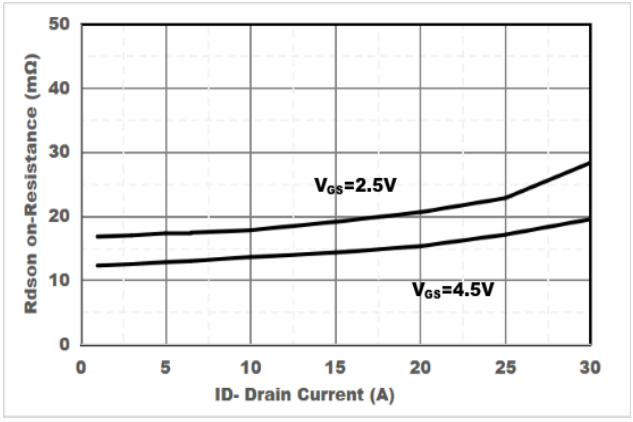


Figure5. Drain-Source on Resistance

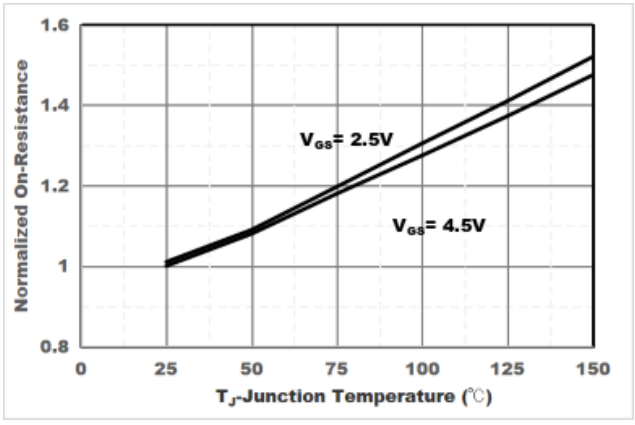


Figure6. Drain-Source on Resistance

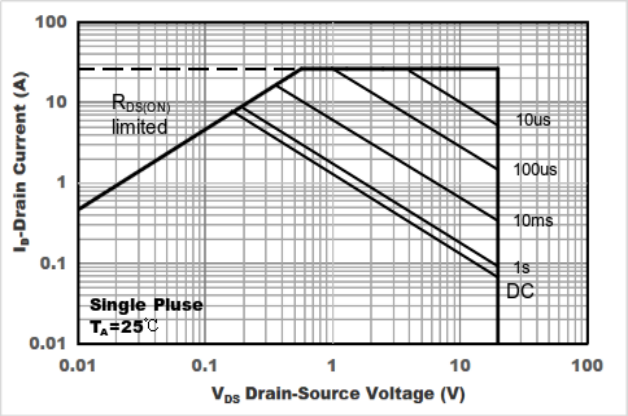


Figure7. Safe Operation Area

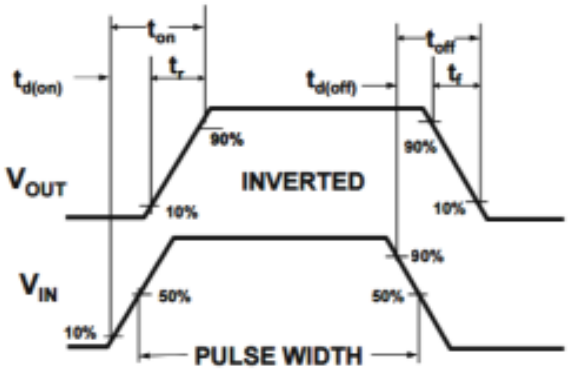
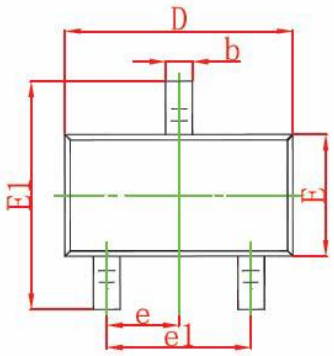
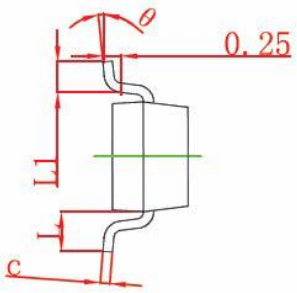
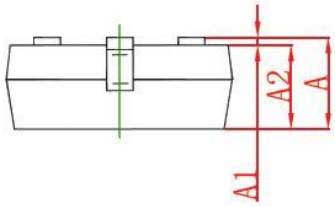


Figure8. Switching wave

■SOT-23 Package information

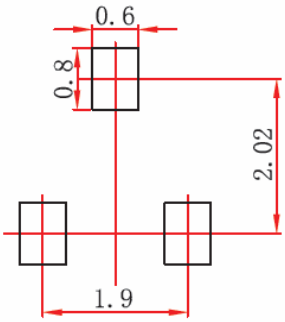






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 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