CHIPLINK DUAL N-Channel Enhancement Mode Power MOSFET

Description

The LX8205A combines advanced trench technology to provide excellent $R_{DS(ON)}$. This device is suitable for use as battery protection or a load switch application.

Features

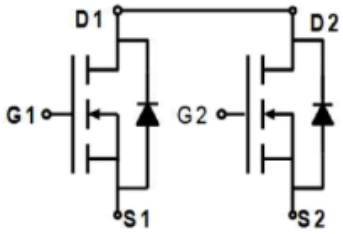
- V_{DS}=20V, I_D=5A
  $R_{DS(ON)}$ <29mΩ@V_{GS}=4.5V
  $R_{DS(ON)}$ <34mΩ@V_{GS}=2.5V
- High power and current handing capability
- Common drain configuration for design simplicity
- Termination is Lead-free and RoHS Compliant

RoHS COMPLIANT

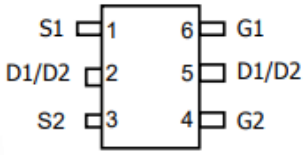
Applications

- Battery protection switch
- Load switch

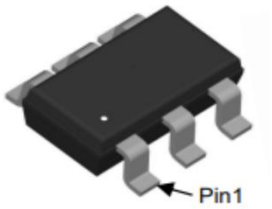
Schematic Diagram



Pin Assignment



SOT23-6 Package



Maximum Ratings(T_A=25℃ unless otherwise noted)

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±8	V
Continuous Drain Current	I_D	6	A
Pulsed Drain Current[B]	I_{DM}	20	A
Maximum Power Dissipation[A]	P_D	1.25	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	℃

Thermal Characteristic

Thermal Resistance, Junction to Ambient	R_{QJA}	100	℃/W

Electrical Characteristics (T_A=25℃unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	20			V
Gate-Threshold Voltage	$V_{th(GS)}$	V_{DS}= V_{GS}, I_D=250 uA	0.45	0.6	1	V
Gate-body Leakage	IGSS	V_{DS}=0V, V_{GS}=±8V			±100	nA
Zero Gate Voltage Drain Current	IDSS	V_{DS}=20V, V_{GS}=0V			1	uA
Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} =4.5V, I_D =2.5A		20	25	mΩ
		V_{GS} =2.5V, I_D =2.0A		25	35	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D =1.0A		18		s
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{GS} =0V, F=1MHz		418		pF
Output Capacitance	C_{oss}			82		
Reverse Transfer Capacitance	C_{rss}			70		
Switching Capacitance						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 10V, R_L=2.9Ω V_{GS} = 4.5V, R_{GEN}=3Ω		4.2		nS
Turn-on Rise Time	t_r			19.8		nS
Turn-off Delay Time	$t_{d(off)}$			22.6		nS
Turn-off Fall Time	t_f			20		nS
Total Gate Charge	Q_g	V_{DS} = 10V, I_D=2A, V_{GS} =4.5V		10.5		nC
Gate-Source Charge	Q_{gs}			5		nC
Gate-Drain Charge	Q_{gd}			2.5		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS} =0V, I_D=5A			1.2	V
Diode Forward Current	Is				5.0	A

Notes:

A. The Power dissipation P_D is based on $T_{J(MAX)}$=150℃, using≤10s junction-to ambient thermal resistance.

B. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150℃.Ratings are based on low frequency and duty cycles to keep initial T_J=25℃.

C. The Static characteristics in Figures are obtained using 〈300 μs pulses, duty cycle 2% max.

Typical Electrical and Thermal Characteristics

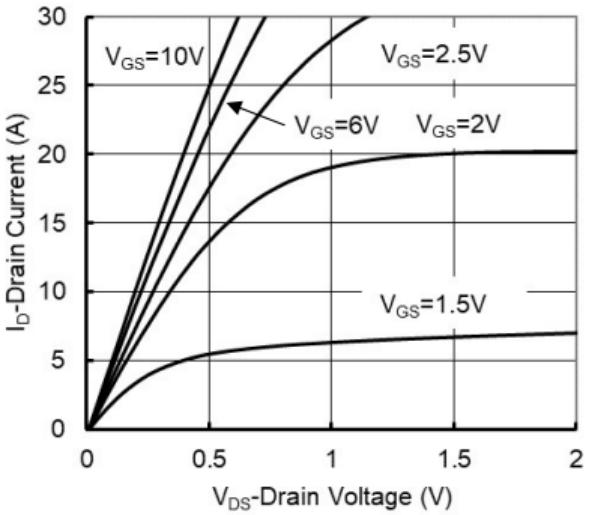


Figure1. Output Characteristics

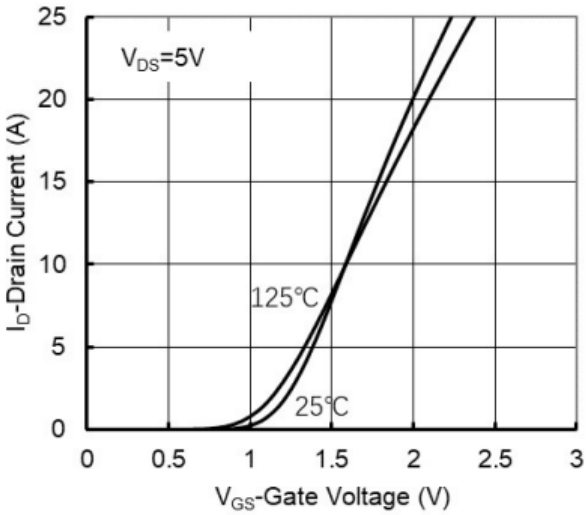


Figure2. Transfer Characteristics

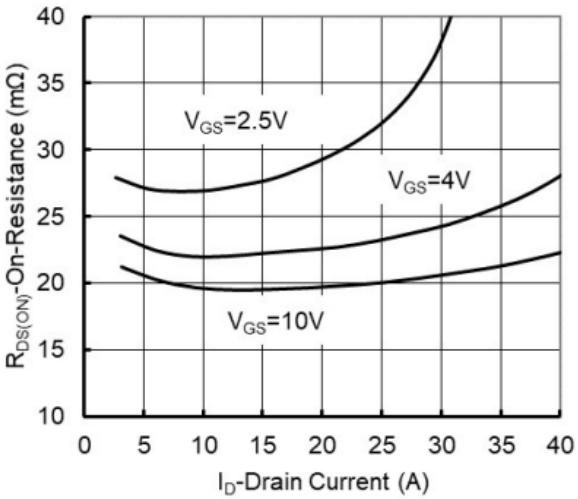


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

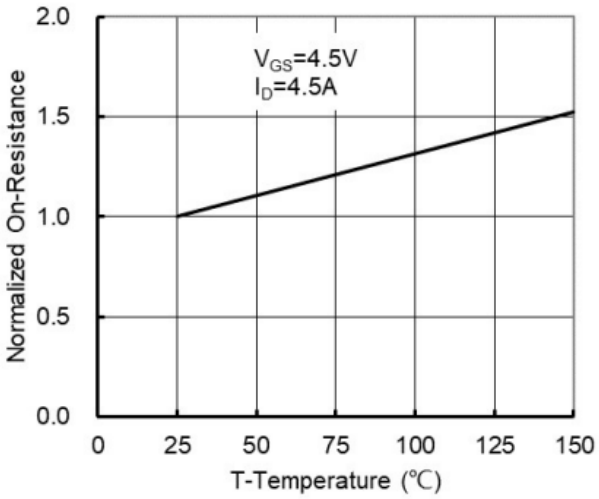


Figure 4: On-Resistance vs. Junction Temperature

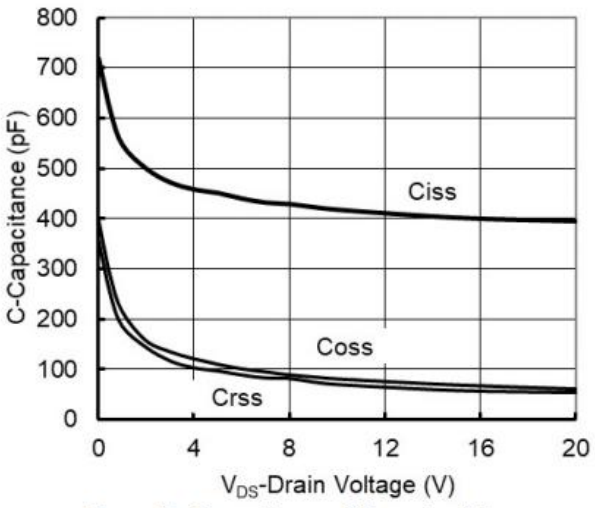


Figure5. Capacitance Characteristics

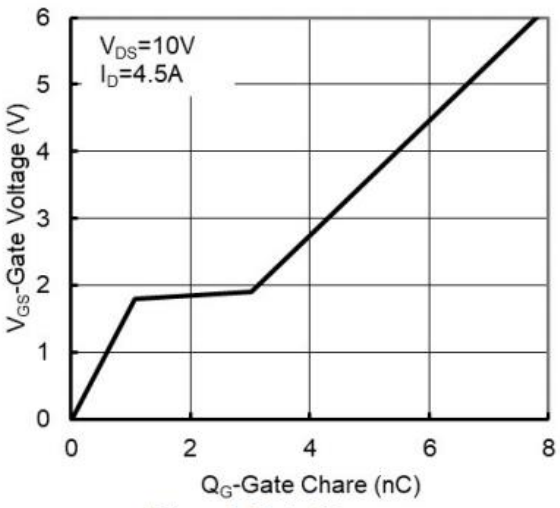


Figure6. Gate Charge

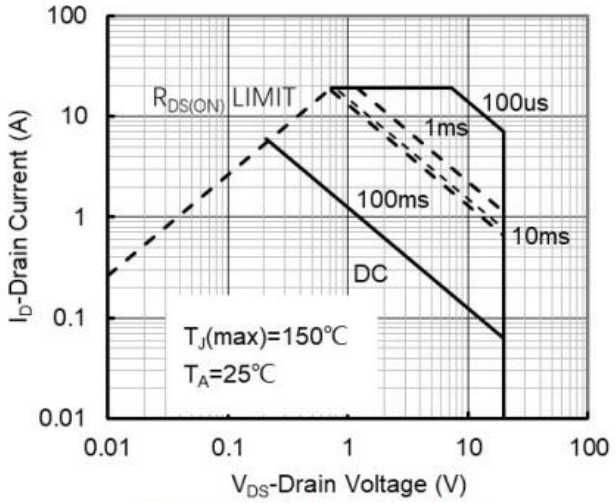


Figure7. Safe Operation Area

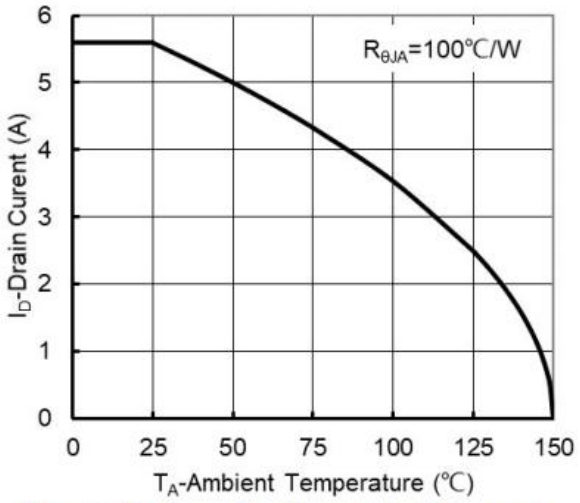


Figure8. Maximum Continuous Drain Current vs Ambient Temperature

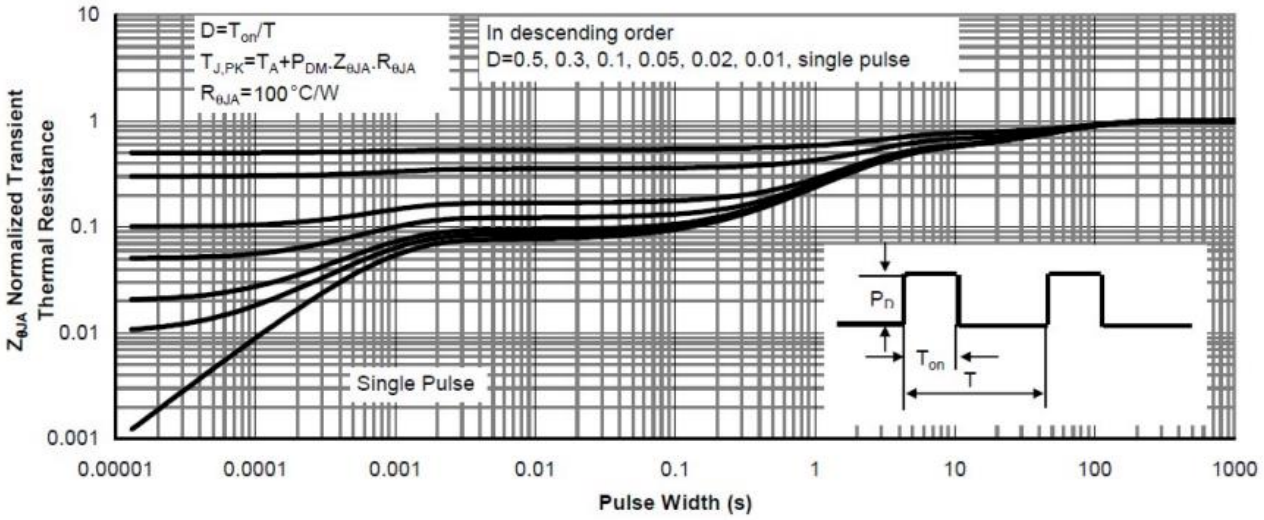
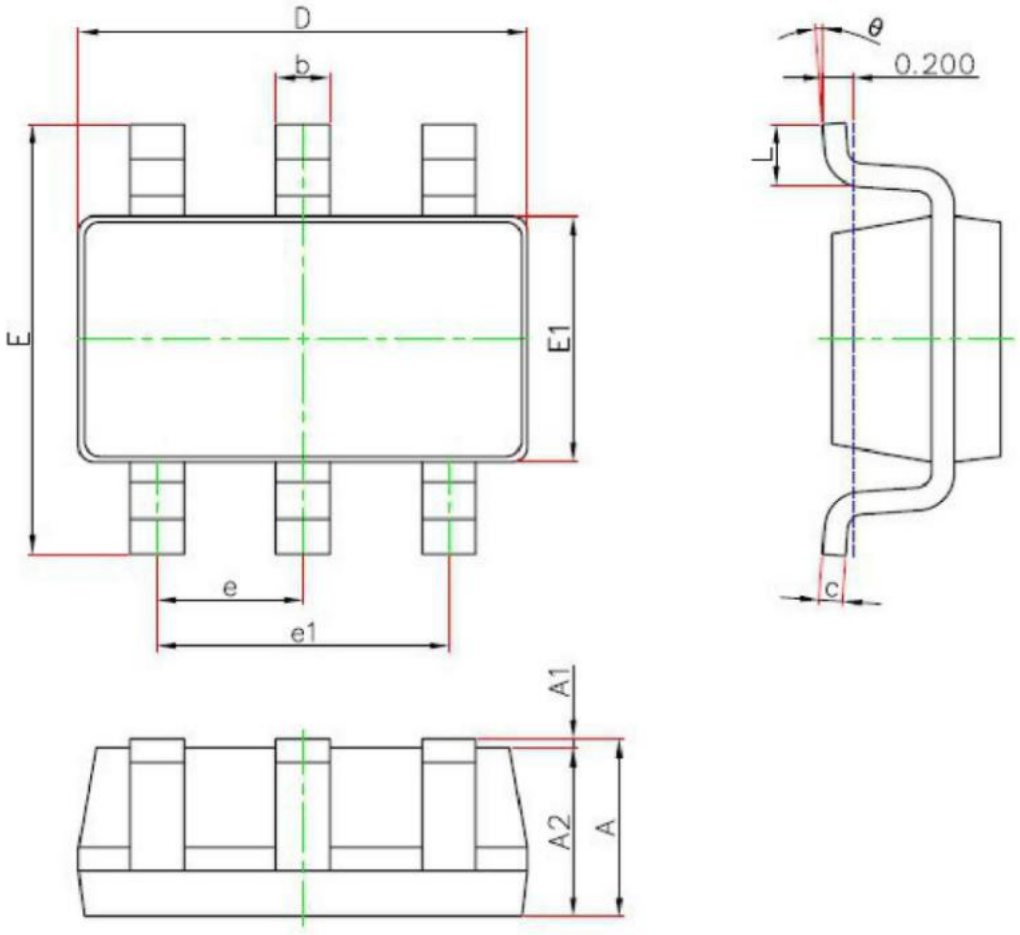


Figure9. Normalized Maximum Transient Thermal Impedance

SOT23-6 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

THIS PRODUCT HAS BEEN DESIGNED AND QUALIFIED FOR THE CONSUMER MARKET. APPLICATIONS OR USES AS CRITIAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS ARE NOT AUTHORIZED.

CHIPLINK DOES NOT ASSUME ANY LIABILITY ARISING OUT OF SUCH APPLICATIONS OR USES OF ITS PRODUCTS.

THIS DOCUMENT SUPERSEDES AND REPLACES ALL INFORMATION PREVIOUSLY SUPPLIED.

CHIPLINK RESERVES THE RIGHT TO IMPROVE PRODUCT DESIGN, FUNCTIONS AND RELIABILITY WITHOUT NOTICE.