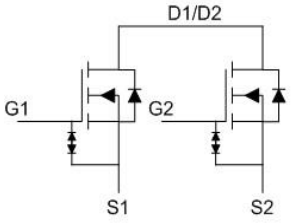
Leiditech

LM4D8809

20 V N+N-Channel Enhancement Mode MOSFET

General Description

The LM4D8809 is the highest performance trench N-ch MOSFETs with extreme high cell density, which provide excellent RDSON and gate charge for most of the small power switching and load switch applications. The meet the RoHS and Product requirement with full function reliability approved.



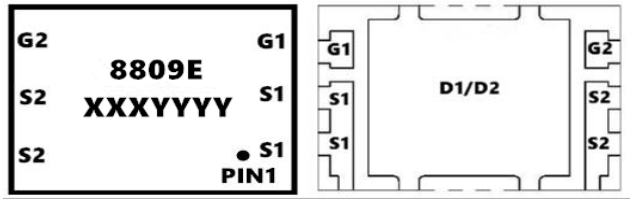
General Features

V_{DS} = 20V I_D = 9.5A

$R_{DS(ON)}$ < 9mΩ @ V_{GS}=4.5V

$R_{DS(ON)}$ < 13.5mΩ @ V_{GS}=2.5V

ESD=2KV HBM

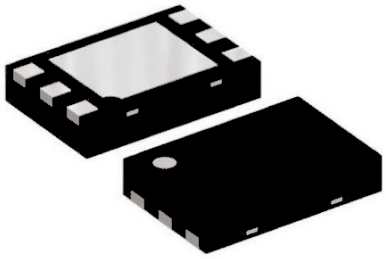


Application

Battery protection

Load switch

Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
LM4D8809	DFN2*3-6	8809E	3000

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_A=25°C	Continuous Drain Current, V_{GS} @ 4.5V[1]	9.5	A
I_D@T_A=70°C	Continuous Drain Current, V_{GS} @ 4.5V[1]	7.6	A
I_{DM}	Pulsed Drain Current[2]	60	A
P_D@T_A=25°C	Total Power Dissipation[1]	1.56	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1] (t ≤10s)	80	°C/W

N-Channel Electrical Characteristics (T_J=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=4.5V , I_D=5A	6.3	7.8	9	mΩ
		V_{GS}=4.0V , I_D=5A	6.5	8.0	9.5	
		V_{GS}=3.7V , I_D=5A	6.7	8.2	10	
		V_{GS}=3.1V , I_D=5A	7.1	8.7	11.2	
		V_{GS}=2.5V , I_D=5A	8.0	10.5	13.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.45	---	1.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=16V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=16V , V_{GS}=0V , T_J=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±12V , V_{DS}=0V	---	---	±10	uA
gfs	Forward Transconductance	V_{DS}=5V , I_D=5.5A	---	38	---	S
Q_g	Total Gate Charge (4.5V)	V_{DS}=15V , V_{GS}=4.5V , I_D=5.5A	---	22	---	nC
Q_{gs}	Gate-Source Charge		---	3.1	---	
Q_{gd}	Gate-Drain Charge		---	8.2	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=4.5V , R_G=6 I_D=5.5A	---	10	---	ns
T_r	Rise Time		---	39.5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	65	---	
T_f	Fall Time		---	30	---	
C_{iss}	Input Capacitance	V_{DS}=10V , V_{GS}=0V , f=1MHz	---	1647	---	pF
C_{oss}	Output Capacitance		---	170	---	
C_{rss}	Reverse Transfer Capacitance		---	148	---	
I_S	Continuous Source Current[1]	V_G=V_D=0V , Force Current	---	---	9.5	A
I_{SM}	Pulsed Source Current[2]		---	---	60	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=9.5A , T_J=25℃	---	---	1.2	V

Note :

1 .The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper, t ≤10s.

2.The data tested by pulsed , pulse width ≦ 10us , duty cycle ≦ 1%

Typical Characteristics

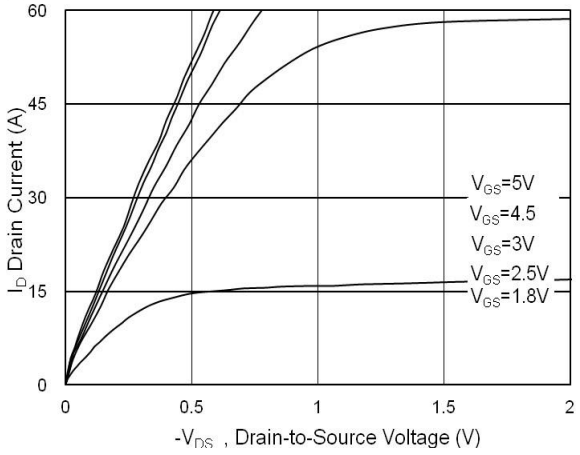


Fig.1 Typical Output Characteristics

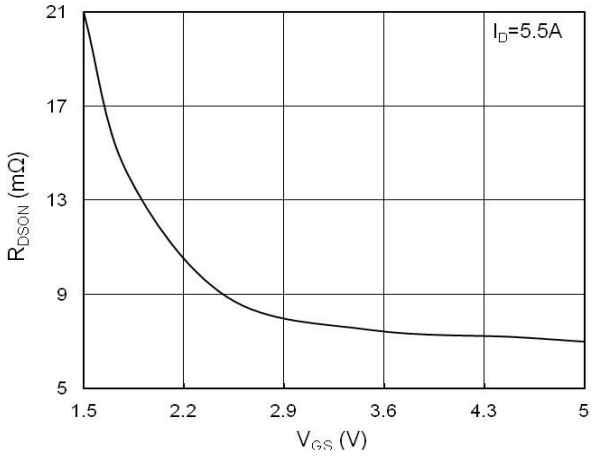


Fig.2 On-Resistance vs. Gate-Source

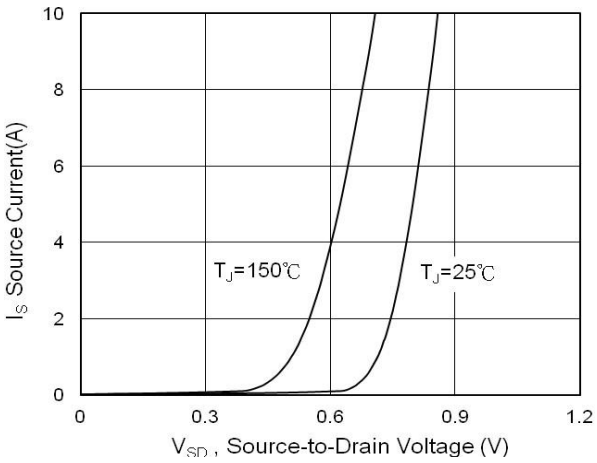


Fig.3 Forward Characteristics Of Reverse

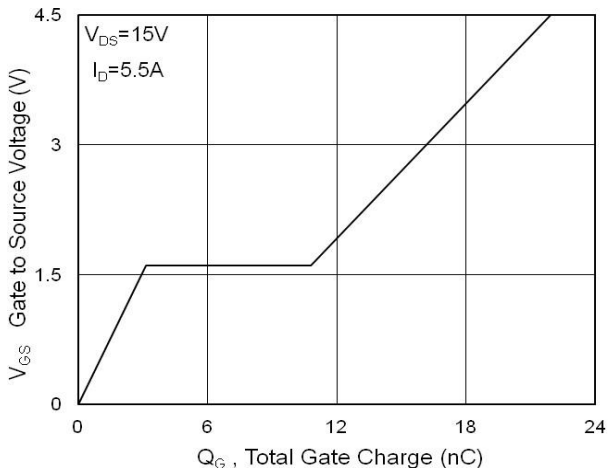


Fig.4 Gate-Charge Characteristics

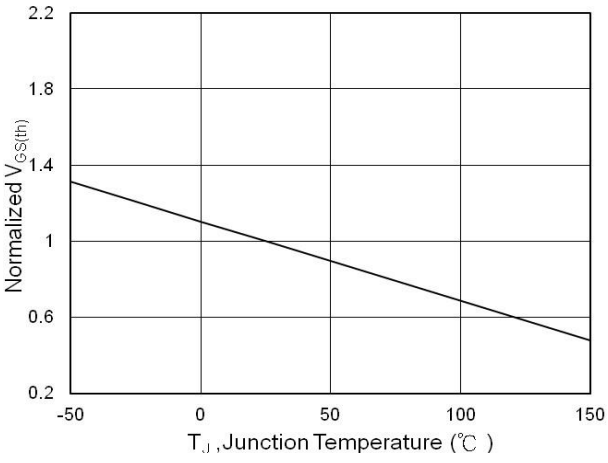


Fig.5 $V_{GS(th)}$ vs. T_J

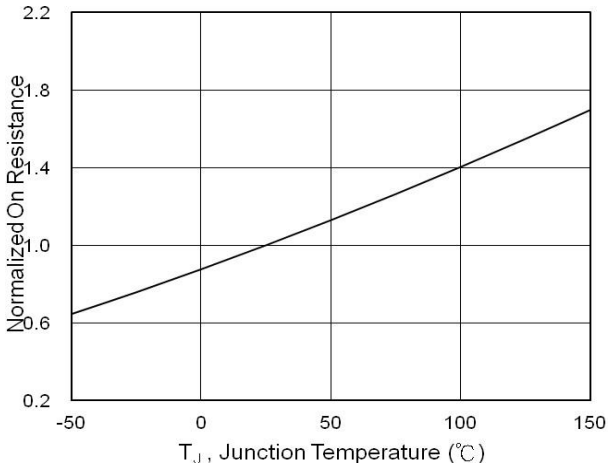


Fig.6 Normalized R_{DSON} vs. T_J

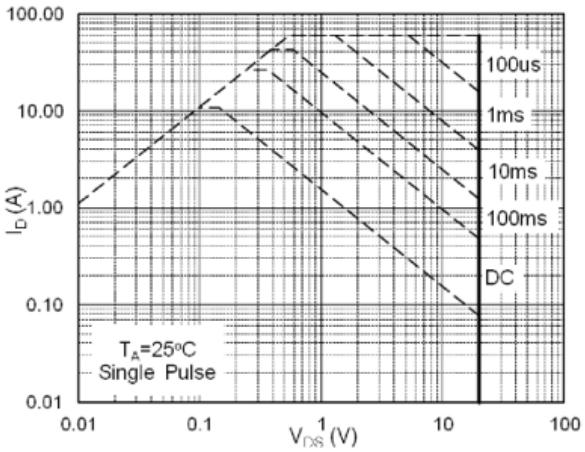


Fig.8Safe Operating Area

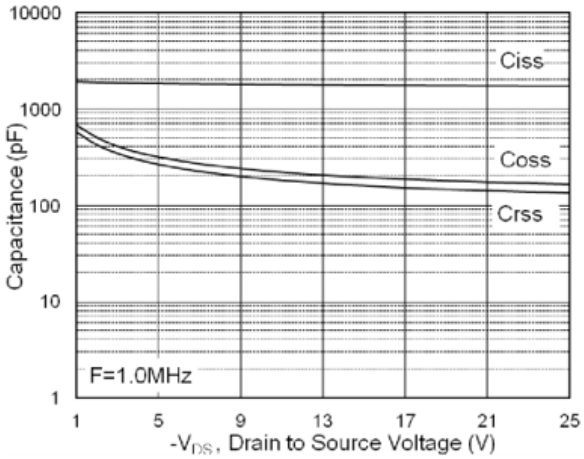


Fig.7Capacitance

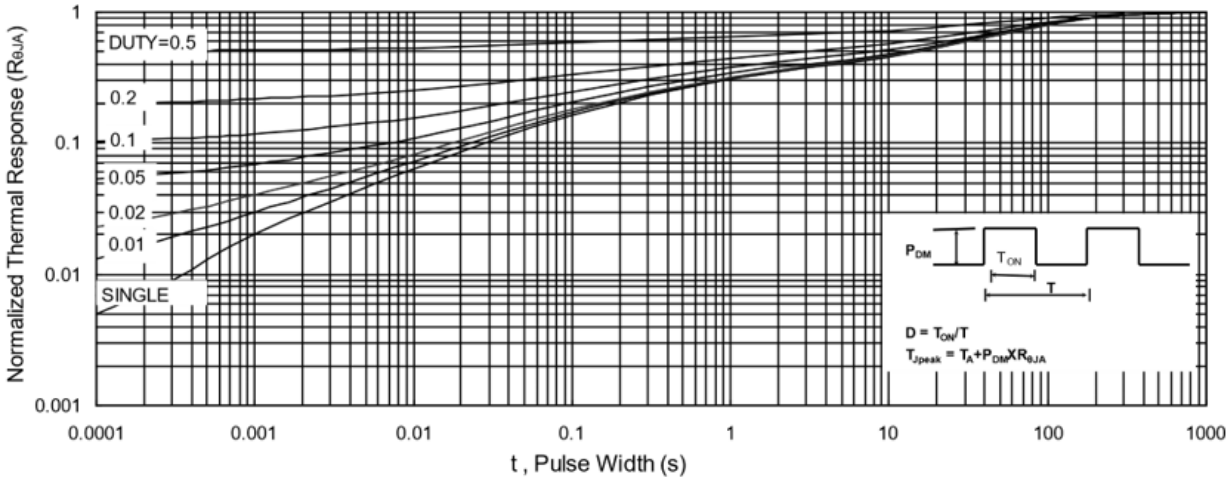


Fig.9 Normalized Maximum Transient Thermal Impedance

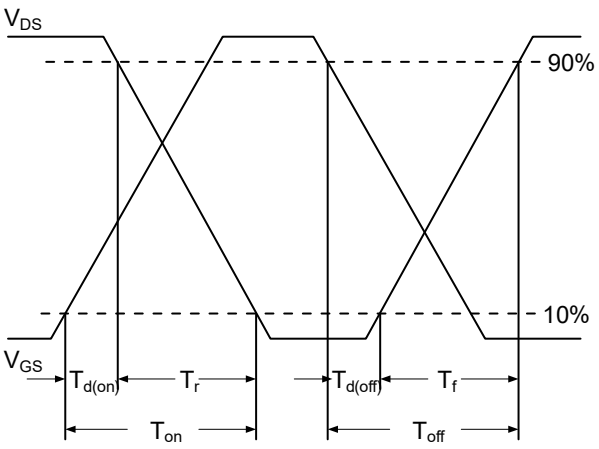


Fig.10 Switching Time Waveform

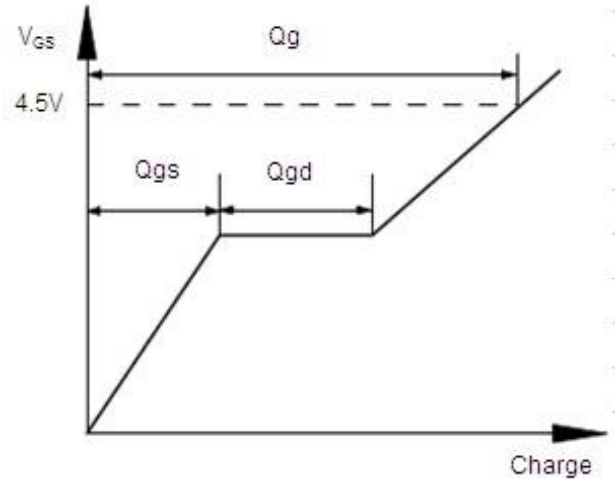
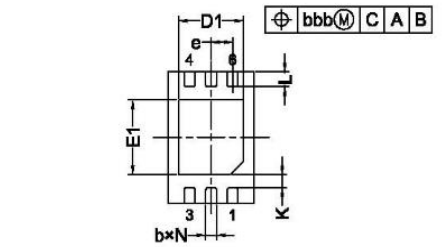
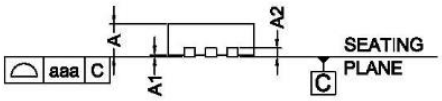


Fig.11 Gate Charge Waveform

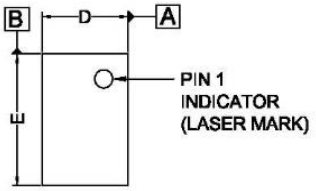
PACK DFN2*3-6



BOTTOM VIEW



SIDE VIEW



TOP VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	TYP	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2		0.203	
b	0.20	0.25	0.30
D	1.95	2.00	2.05
D1	1.45	1.50	1.55
E	2.95	3.00	3.05
E1	1.65	1.70	1.75
e		0.50BSC	
L	0.30	0.35	0.40
K		0.20MIN	
N		6	
aaa		0.08	
bbb		0.10	

NOTES:
1.CONTROLLING DIMENSIONS ARE IN MILLIMETERS(ANGLES IN DEGREES).
2. COPLANARITY APPLIES TO THE EXPOSED PAD AS THE TERMINALS.

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