

N-Channel 60V Enhancement Mode

General Description

The G1L9N06 is the N-Channel logic enhancement mode power field effect transistors. These are particularly suited for low voltage application such as notebook computer power management and other battery powered circuits here high-side switching and low in-line power loss are needed in a very small outline surface mount package

Features

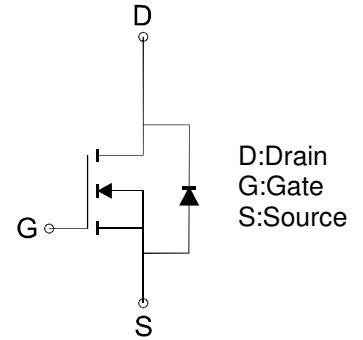
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- Qualified according to AEC-Q101
- Moisture Sensitivity Level 1 per J-STD-020
- Marking: 9N06
- Weight: 0.02 g
- RoHS Compliant



Application

- DC to DC converter
- Battery Powered System
- Load switch

$B_{VDSS}=60V$
 $R_{DS(ON)} \leq 9.0m\Omega @ V_{GS}=10V$
 $R_{DS(ON)} \leq 13.3m\Omega @ V_{GS}=4.5V$
 $I_D=28A$



N-Channel MOSFET

(DFN 3 x 3)

Top View



Absolute Maximum Ratings ($T_A=25^\circ C$ Unless Otherwise Noted)

PARAMETER	SYMBOL	VALUE	UNIT
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	28	A
Pulsed Drain Current	I_{DM}	112	A
Maximum Power Dissipation	P_D	18	W
Single Pulse Avalanche Energy ²	E_{AS}	100	mJ
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 ~ +150	$^\circ C$

Thermal Characteristics

PARAMETER	SYMBOL	TYP	UNIT
Thermal Resistance Junction-to-Case ¹	R_{thJc}	7	$^\circ C/W$

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Electrical Characteristics (T_A =25°C Unless Otherwise Specified)

PARAMETER	TEST CONDITION	SYMBOL	MIN	TYP	MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	BV _{DSS}	60	--	--	V
Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	V _{GS(th)}	1	--	3	V
Gate-Source Leakage	V _{DS} =0V, V _{GS} =±20V	I _{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V _{DS} =48V, V _{GS} =0V	I _{DSS}	--	--	1	uA
Drain-Source On-Resistance	V _{GS} =10V, I _D =17A	R _{DS(ON)}	--	--	9.0	mΩ
	V _{GS} =4.5V, I _D =15A		--	--	13.3	
DYNAMIC						
Total Gate Charge	V _{GS} =4.5V, V _{DS} =30V, I _D =17A	Q _g	--	31.1	--	nC
Gate-Source Charge		Q _{gs}	--	13.7	--	
Gate-Drain Charge		Q _{gd}	--	9.5	--	
Input Capacitance	V _{GS} =0V, V _{DS} =30V, F=1MHz	C _{iss}	--	4068.3	--	pF
Output Capacitance		C _{oss}	--	161.9	--	
Reverse Transfer Capacitance		C _{rss}	--	104.7	--	
Turn-On Delay Time	V _{GS} = 10V, V _{DS} = 30V, R _G = 3Ω, R _G = 1.75Ω	t _{d(on)}	--	21.4	--	nS
Turn-On Rise Time		t _r	--	53.8	--	
Turn-Off Delay Time		t _{d(off)}	--	68.0	--	
Turn-Off Fall Time		t _f	--	11.0	--	
Source-Drain Diode						
Diode Forward voltage	I _{SD} =1A, V _{GS} =0V	V _{SD}	--	0.7	1	V

Notes:

- (1). The device mounted on Aluminum substrate PC board with additional Cu heatsink (75mm x 75mm x 5mm)
- (2). E_{AS} of 100 mJ is based on starting T_j=25°C , L=0.3 mH
- (3). LiteON Semiconductor reserves the right to improve product design, functions and reliability without notice.

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FIG.1- On-Region Characteristics

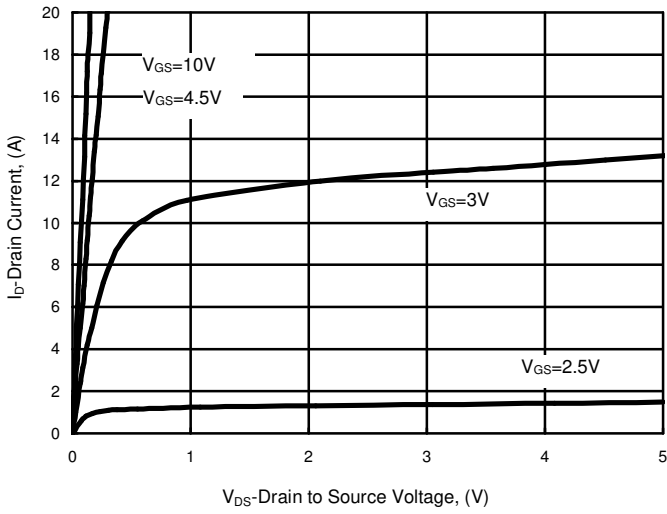


FIG.2- Transfer Characteristics

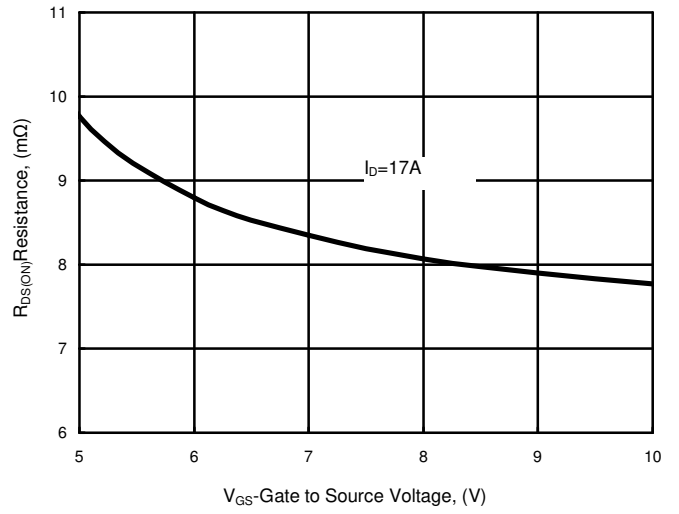


FIG.3- On-Resistance Characteristics

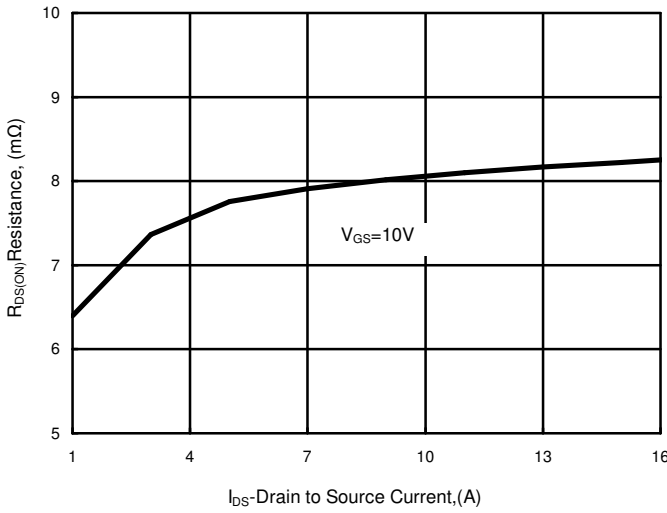


FIG.4- Source - Drain Diode Forward

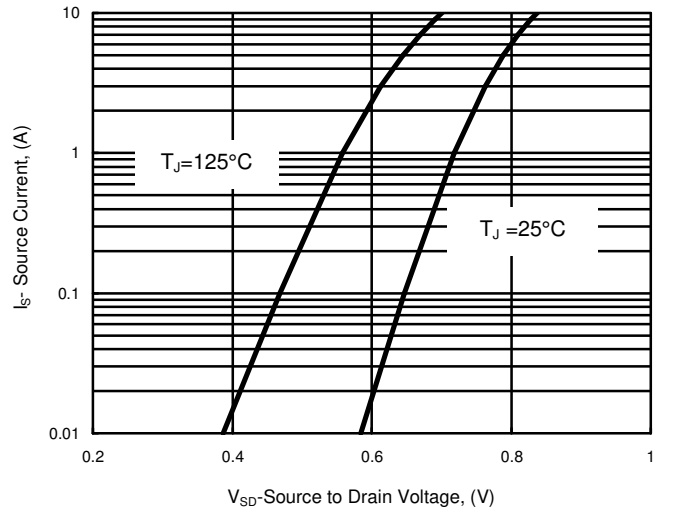


FIG.5- On-Resistance VS Junction Temp

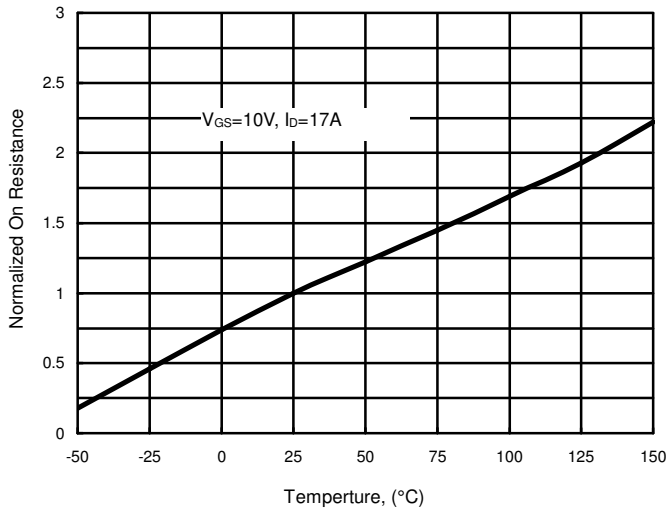
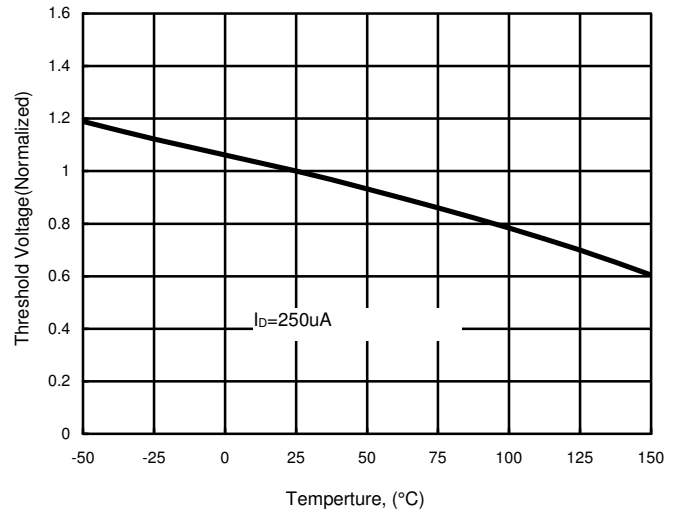


FIG.6- Threshold VS Junction Temp



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FIG.7- Drain Current

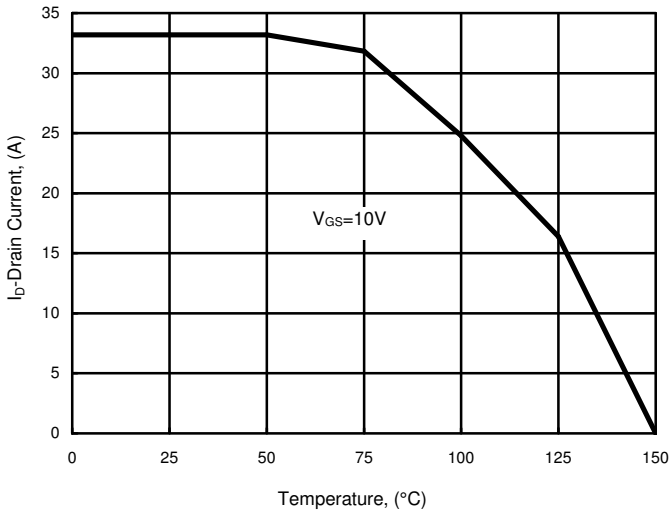


FIG.8- Power Dissipation

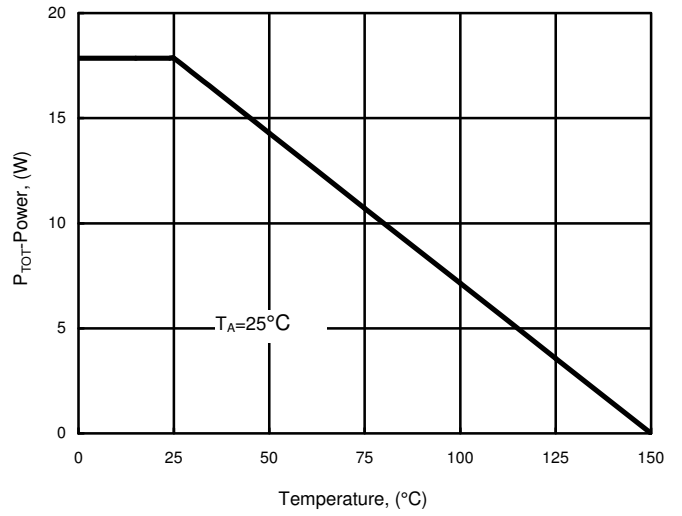


FIG.9- Gate Charge

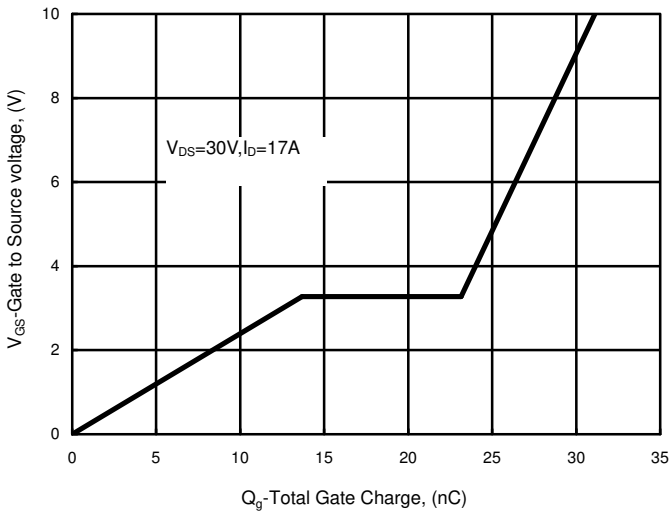
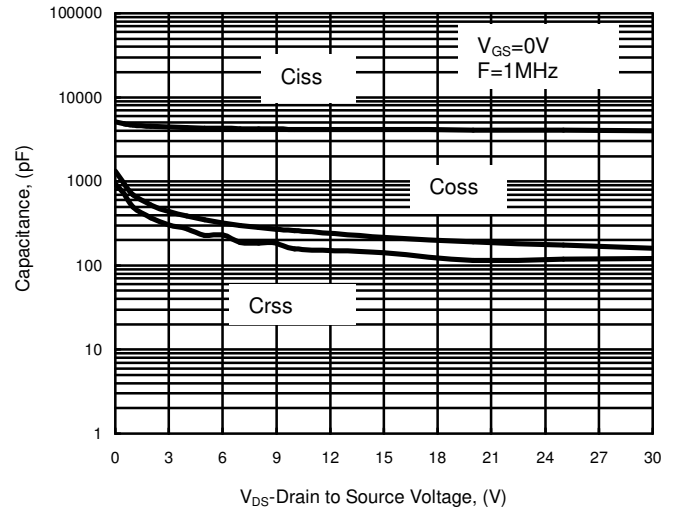


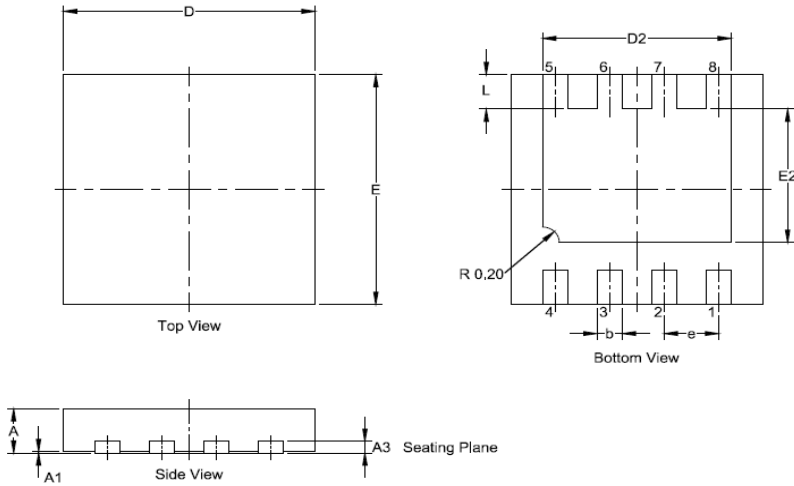
FIG.10- Capacitance



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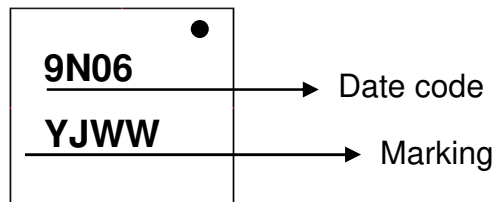
Package Outline Dimension

DFN3030



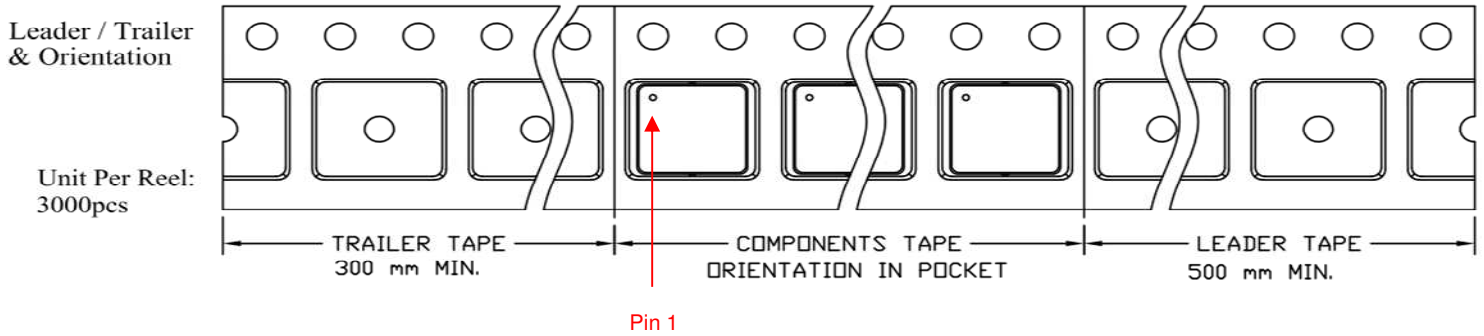
DFN3030			
DIM	MIN	MAX	TYP
A	0.525	0.625	0.575
A1	0.00	0.05	0.02
A3	--	--	0.15
b	0.25	0.35	0.30
D	2.90	3.10	3.00
D2	2.15	2.35	2.25
e	--	--	0.65
E	2.90	3.10	3.00
E2	1.64	1.84	1.74
L	0.30	0.60	0.45
All Dimensions in millimeter			

Marking information



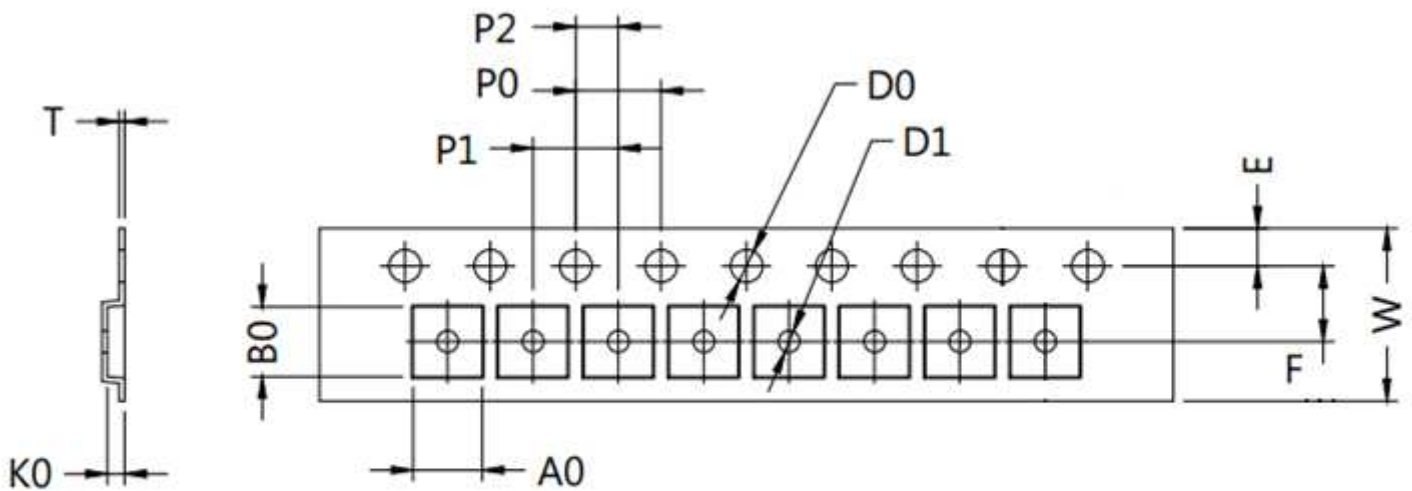
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Packaging Information



DEVICE	Q'TY/REEL (PCS)	REEL DIA. (mm)	BOX SIZE (mm)	Q'TY/BOX (PCS)	CARTON SIZE (mm)	Q'TY/CARTON (PCS)
G1L9N06	3000	330	207x206x208	45K	438X224X227	90K

Embossed Carrier Dimensions Information



TAPE SIZE	D0	D1	P0	P1	P2	E	UNIT
8mm	1.5+0.1	1.0±0.05	4.0±0.1	4.0±0.1	2.0±0.05	1.75±0.1	mm
	A0	B0	W	K0	T	F	
	3.23±0.05	3.23±0.05	8.0+0.3/-0.1	0.805±0.05	0.25±0.05	3.5±0.05	

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