LMN3106ZF 30V N-Channel MOSFETs

Features

- 30V,54A, $R_{DS(ON)}$<6mΩ@V_{GS}=10V
- High Power and current handing capability
- Lead Free and Green Devices Available
- DFN3x3-8L package design

Product Description

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

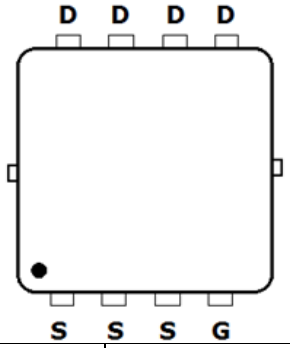
These devices are well suited for high efficiency fast switching applications.

Applications

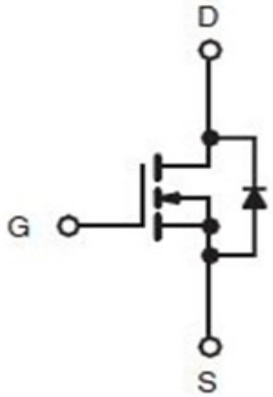
- MB / VGA / Vcore
- POL Applications
- SMPS 2nd SR

Pin Configuration

LMN3106ZF (DFN3x3-8L)



PIN	Description
1, 2 & 3	Source
4	Gate
5, 6, 7 & 8	Drain



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Ordering Information

Ordering Information					
Part Number	P/N	PKG code	Pb Free code	Package	Quantity
LMN3106ZF	LMN3106	Z	F	DFN3x3-8L	5000 PCS

Marking Information

Marking Information		
Part Marking	Part Number	LFC code
3106AZF XWMMMM	3106AZF	XWMMMM

Absolute Maximum Ratings

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C=25ºC[1]	54	A
		T_C=70ºC	43	
I_{DM}	Pulsed Drain Current[2]		80	A
E_{AS}	Avalanche Energy, Single pulse [3]		25	mJ
P_D	Power Dissipation	T_C=25ºC	26.6	W
		T_C=70ºC	17.1	
T_J	Operating Junction Temperature		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{\theta JC}$	Thermal Resistance-Junction to Case		4.7	℃/W

Note:
1. The maximum current rating is package limited.
2. Repetitive Rating: Pulse width limited by maximum junction temperature.
3. EAS condition: TJ=25℃, V_{DS}=30V, V_{GS}=10V, R_G=25Ω, L=0.5mH, Ipeak=24A.

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Electrical Characteristics

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, ID=250uA	1.0		2.5	
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V, V_{GS}=0V			1	uA
$R_{DS(on)}$	Drain-Source On-Resistance[3]	V_{GS}=10V, I_D=20A		4.8	6	mΩ
		V_{GS}=4.5V, I_D=10A		6.9	9	
V_{SD}	Diode Forward Voltage[3]	I_S=2A, V_{GS}=0V			1	V
Gate charge characteristics						
Q_g	Total Gate Charge[3,4]	V_{DS}=15V, I_D=9A		16.7		nC
Q_{gs}	Gate-Source Charge[3,4]			2.2		
Q_{gd}	Gate-Drain Charge[3,4]			3.5		
Dynamic characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz		1155		pF
C_{oss}	Output Capacitance			456		
C_{rss}	Reverse Transfer Capacitance			72		
$t_{d(on)}$	Turn-On Time	V_{DD}=15V, I_D=9A, V_{GS}=10V, R_G=3Ω		3.5		ns
t_r	Rise Time			5.5		
$t_{d(off)}$	Turn-Off Time			13.5		
t_f	Fall Time			4.6		

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Typical Performance Characteristics

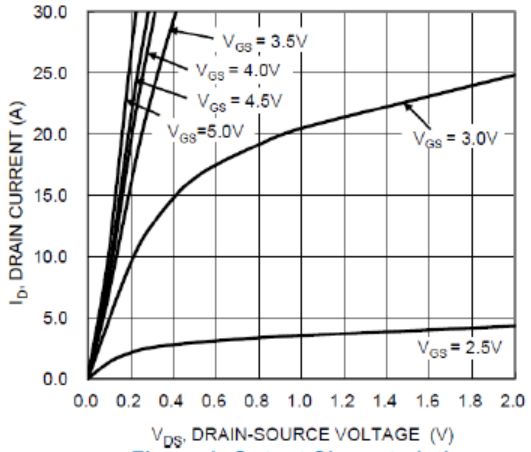

Figure 1. Output Characteristics

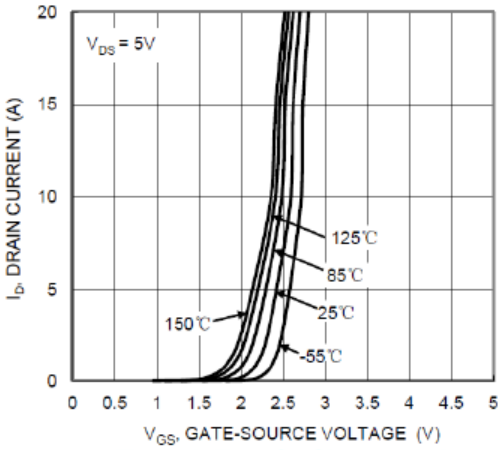

Figure 2. Transfer Characteristics

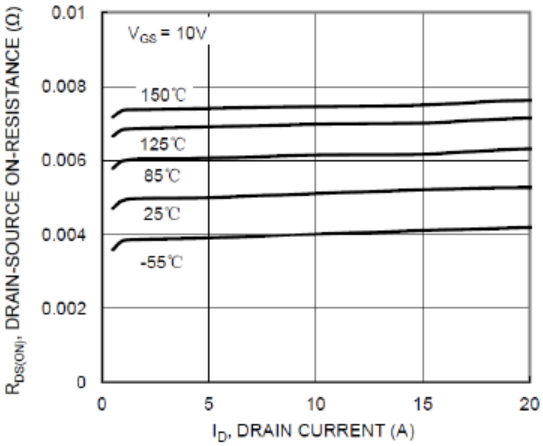

Figure 3. On-Resistance vs. Drain Current

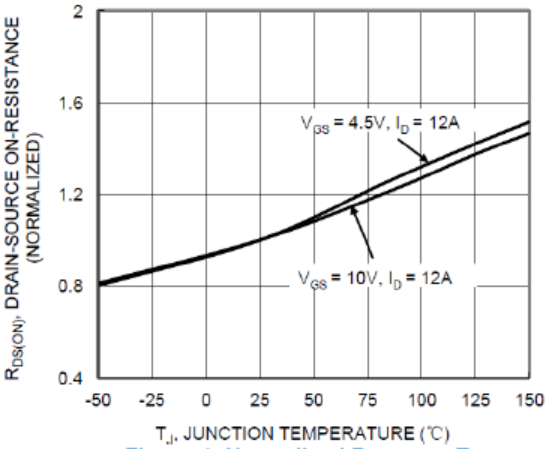

Figure 4. Normalized R_{DSON} vs. T_J

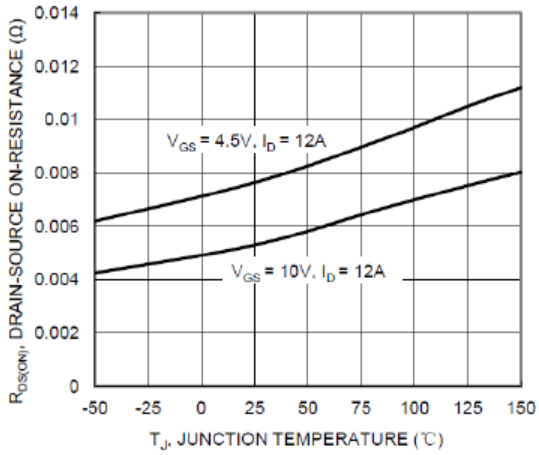

Figure 5. On-Resistance Variation with Temperature

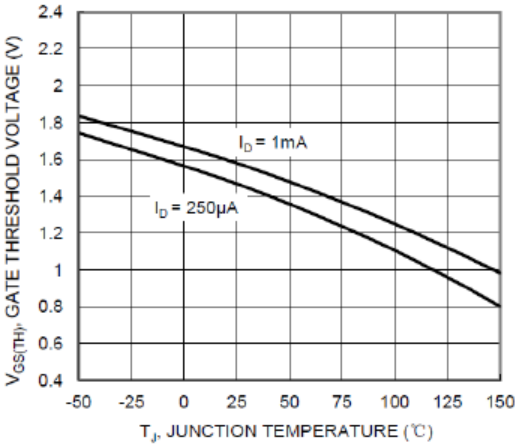

Figure 6. Gate Threshold Variation vs. T_J

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Typical Performance Characteristics(continue)

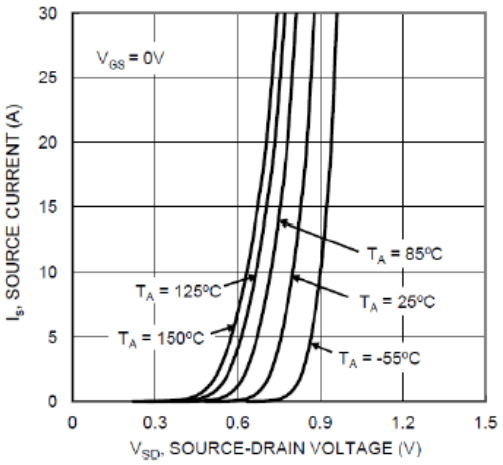

Figure 7. Diode Forward Voltage vs. Current

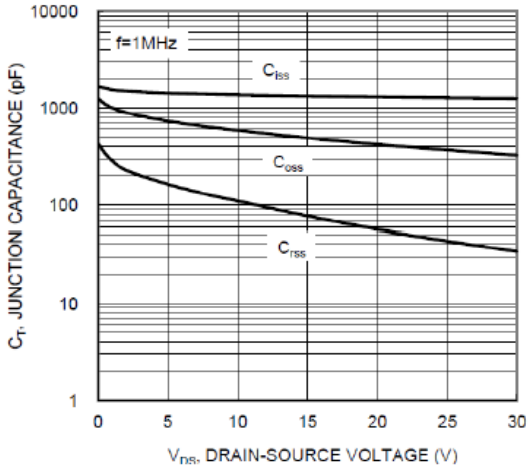

Figure 8. Capacitance

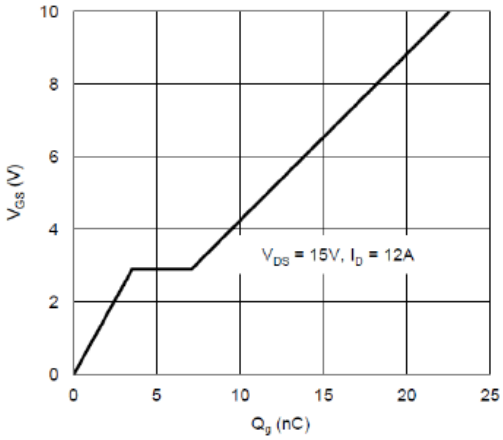

Figure 9. Gate Charge Waveform

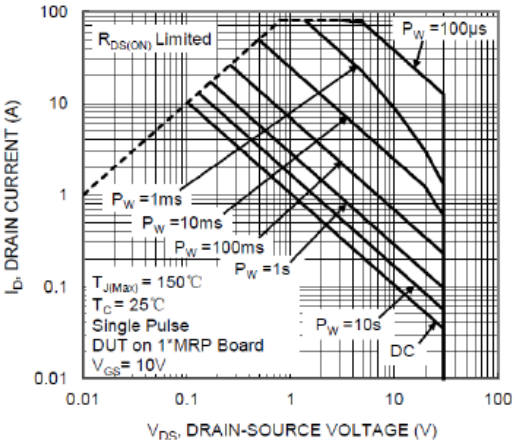

Figure 10. Maximum Safe Operating Area

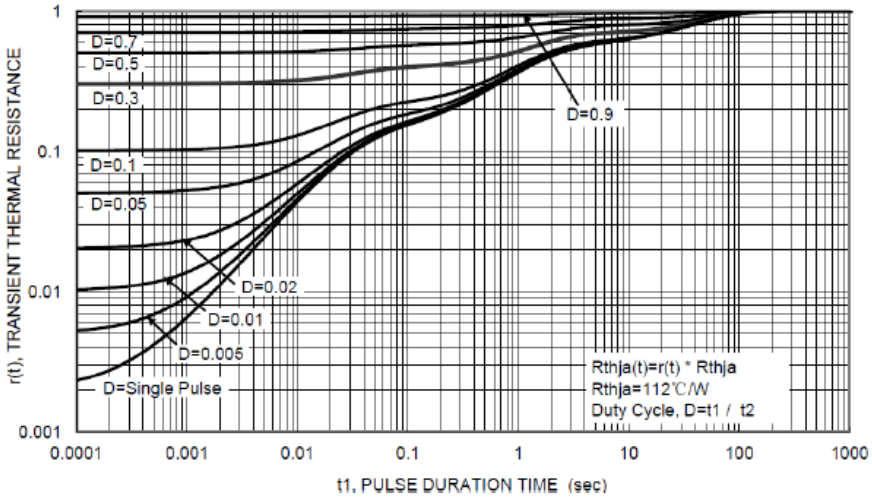

Figure 11. Normalized Transient Thermal Resistance

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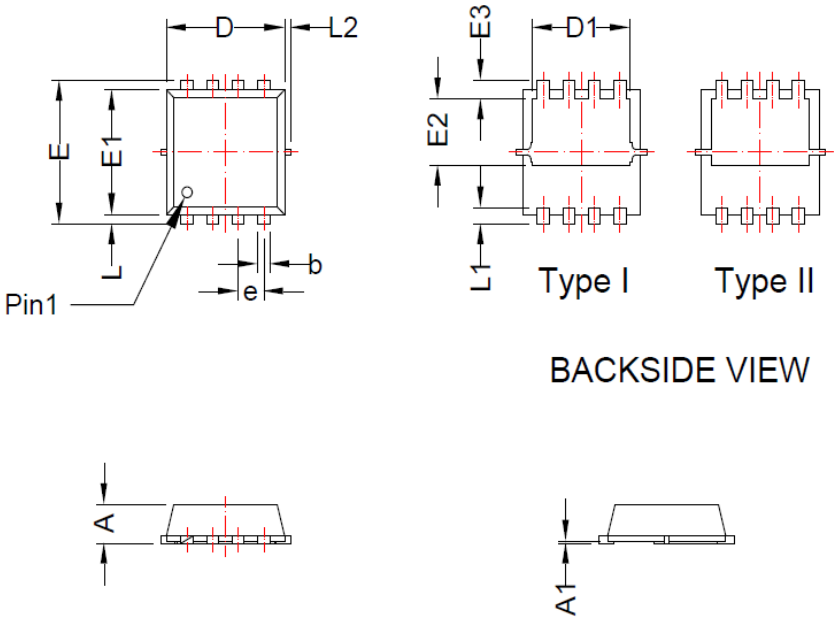
Package Dimension:

DFN3X3-8L



DIMENSION D AND E1 DOES NOT INCLUDE MOLD FLASH,PROTRUSIONS OR GATE BURRS.MOLD FLASH,PROTRUSIONS OR GATE BURRS SHALL HOT EXCEED 0.5mm PER INTERLEAD FLASH OR PROTRUSIOB SHALL NOT EXCEED 0.5mm PER SIDE.

Dimensions				
Symbol	**Millimeters**		**Inches**	
	Min	Max	Min	Max
A	0.70	0.90	0.028	0.035
A1	0.00	0.05	0.000	0.002
b	0.24	0.37	0.009	0.015
c	0.10	0.25	0.004	0.010
D	2.90	3.25	0.114	0.128
D1	2.35	2.60	0.093	0.102
E	3.05	3.45	0.120	0.136
E1	2.90	3.20	0.114	0.126
E2	1.35	2.00	0.053	0.079
E3	0.30	0.60	0.012	0.024
e	0.65BSC		0.026BSC	
L	0.02	0.2	0.001	0.008
L1	0.28	0.5	0.011	0.020
L2	-	0.15	-	0.006

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