LMN3368ADF 30V N-Channel Enhancement Mode MOSFETs

Features

- $R_{DS(ON)}$ =6mΩ @ V_{GS}=10V
- $R_{DS(ON)}$ =9.8mΩ @ V_{GS}=4.5V
- TO-252 Package

Product Description

The N-Channel enhancement mode power field effect transistor is 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.

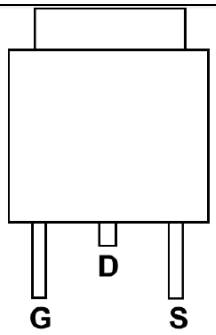
The device is well suited for high efficiency fast switching applications.

Applications

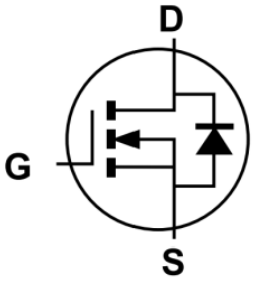
- MB / VGA / Vcore
- POL Applications
- SMPS

Pin Configuration

LMN3368ADF (TO-252)



PIN	Description
1	Gate
2	Drain
3	Source



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Ordering Information

Part Number	Part Marking	Package	Quantity
LMN3368ADF	3368ADF	TO-252	2500 PCS

Marking Information

Part Marking	Package Code	Green Level:	Product Code:
3368ADF	1 is D for TO-252	2 is F for RoHS Compliant and Halogen Free	LMN3368ADF

Absolute Maximum Ratings

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current[1]	T_A=25ºC	60	A
		T_A=100ºC	40	
I_{DM}	Pulsed Drain Current[2]		180	A
I_{AS}	Single Pulse Avalanche Current, L = 0.5mH [3]		12	A
E_{AS}	Single Pulse Avalanche Energy, L = 0.5mH [3]		72	mJ
P_D	Power Dissipation[1]	T_A=25ºC	40	W
		T_A=100ºC	16	
T_J	Operating Junction Temperature		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{\theta JC}$	Thermal Resistance-Junction to Case		3	℃/W

Note:
1. The maximum current rating is limited by P_D.
2. Repetitive Rating: Pulse width limited by maximum junction temperature.
3. EAS ratings are based on low frequency and duty cycles to keep T_J = +25°C.
4. The data tested by surface mounted on a 1 inch2 FR-4 board with 2oz copper.

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Electrical Characteristics

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
BV_{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	1.2		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	V_{GS}=10V, I_D=15A		4.2	6	mΩ
		V_{GS}=4.5V, I_D=10A		5.6	9.8	
V_{SD}	Diode Forward Voltage	I_S=20A, V_{GS}=0V			1.2	V
Dynamic						
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=10V, I_D=15A		39		nC
Q_{gs}	Gate-Source Charge			7.6		
Q_{gd}	Gate-Drain Charge			7.2		
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz		2295		pF
C_{oss}	Output Capacitance			267		
C_{rss}	Reverse Transfer Capacitance			210		
$t_{d(on)}$	Turn-On Time	V_{DD}=15V, I_D=15A, V_{GS}=10V, R_G=3.3Ω		7.8		ns
t_r				15		
$t_{d(off)}$	Turn-Off Time			37		
t_f				11		
Rg	Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz		1.7		Ω

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Typical Performance Characteristics

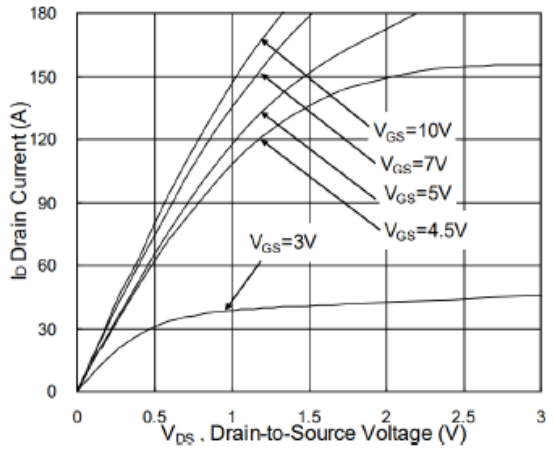

Figure 1. Typical Output Characteristics

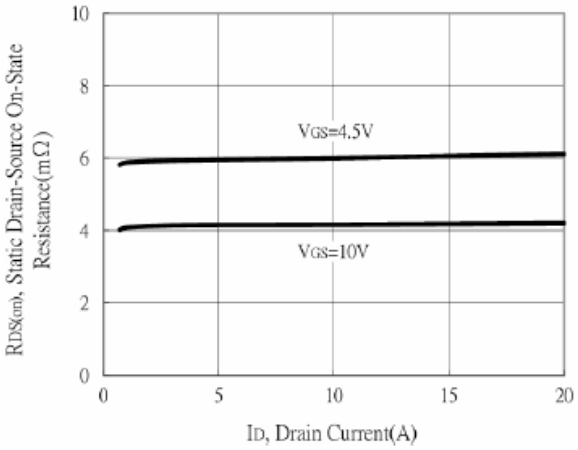

Figure 2. Drain-Source On-State resistance vs Drain Current

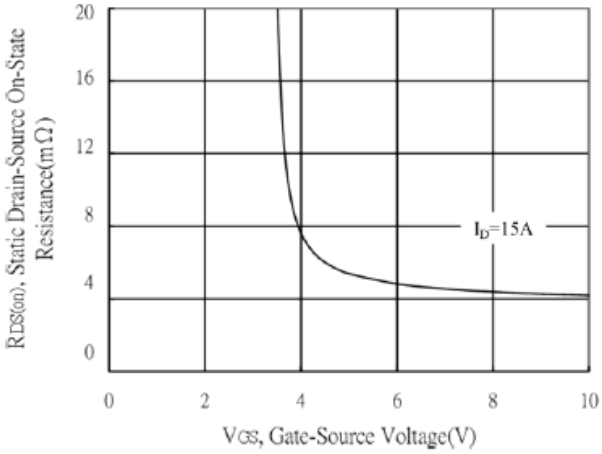

Figure 3. Drain-Source On-State Resistance vs Gate-Source Voltage

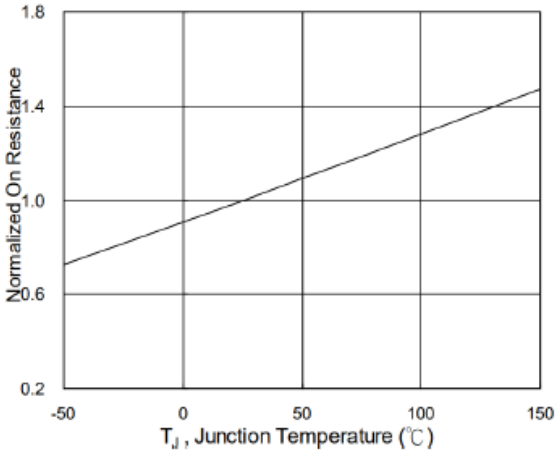

Figure 4. Drain-Source On-State Resistance vs Junction Temperature

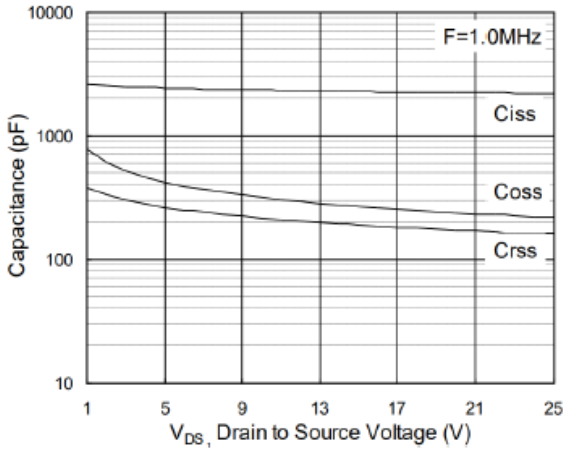

Figure 5. Capacitance vs Drain-to-Source Voltage

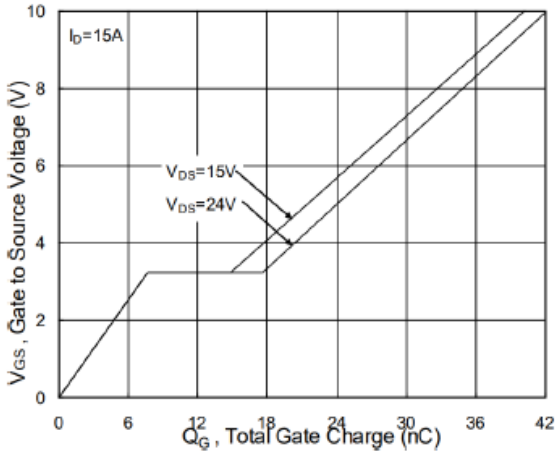

Figure 6. Gate Charge

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Typical Performance Characteristics(continue)

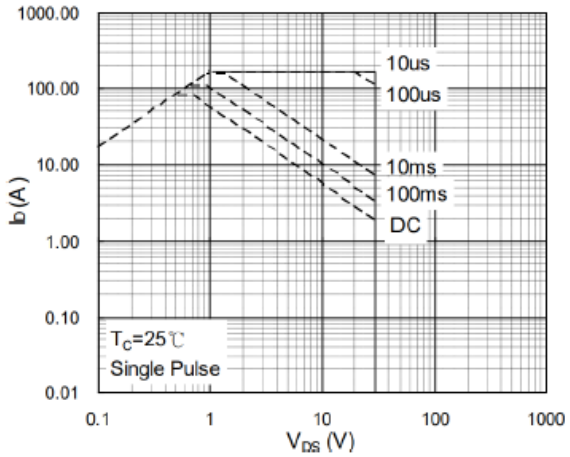

Figure 7. Maximum Safe Operating Area

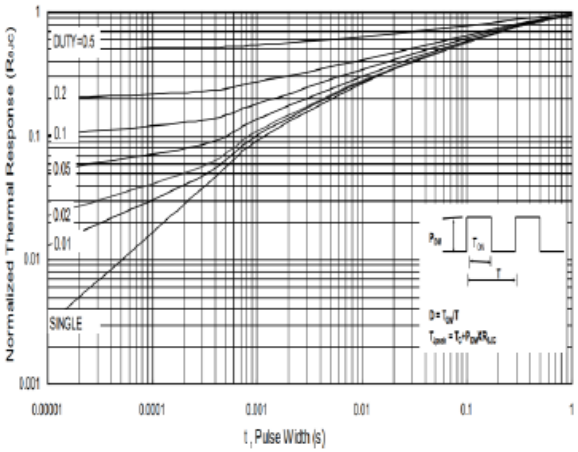

Figure 8. Normalized Transient Thermal Resistance

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Package Dimension:

TO-252

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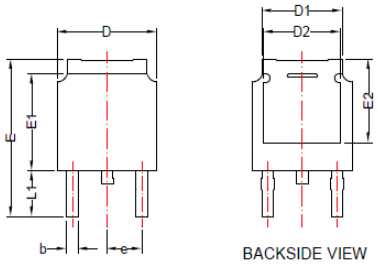
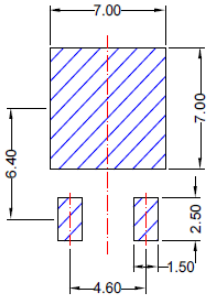
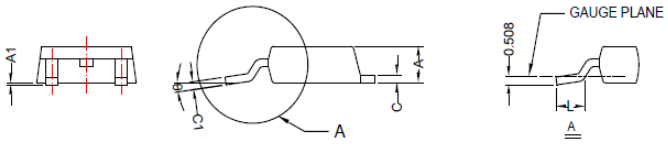


Recommended Land Pattern





Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	2.18	2.40	0.086	0.094
A1	0.00	0.15	0.000	0.006
b	0.64	0.90	0.025	0.035
c	0.40	0.89	0.016	0.035
c1	0.40	0.61	0.016	0.024
D	6.35	6.73	0.250	0.265
D1	4.95	5.46	0.195	0.215
D2	4.32	-	0.170	-
E	9.40	10.41	0.370	0.410
E1	5.97	6.22	0.235	0.245
E2	4.95	-	0.195	-
e	2.286BSC		0.090BSC	
L	1.40	1.77	0.055	0.070
L1	2.67	3.07	0.105	0.121
θ	0°	8°	0°	8°

NOTE:
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.

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