LMN3320XF 30V N-Channel MOSFETs

Features

- Low $R_{DS(ON)}$
- DFN5x6-8L package
- RoHS Compliant and Halogen Free

Product Description

LMN1072 3320XF is an N-channel enhancement mode power MOSFET uses trench DMOS technology.

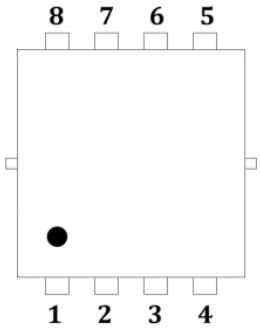
It has been especially tailored to minimize on-state resistance and provides a superior switching performance that is well suited for high efficiency fast switching applications.

Applications

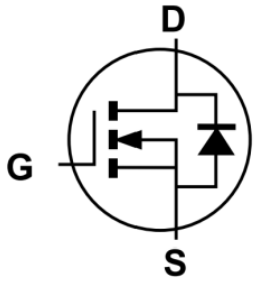
- Power Management Application
- DC-DC Converter
- Power Load Switch

Pin Configuration

LMN3320XF (DFN5x6-8L)



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
LMN3320XF	LMN3320	X	F	DFN5x6-8L	3000 PCS

Marking Information

Marking Information				
Part Marking	Package Code	Green Level:	Product Code:	LFC Code
332012	X	F	3320	

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[4]	T_A=25ºC	85	A
		T_A=100ºC	66	
I_{DM}	Pulsed Drain Current[2]		240	A
E_{AS}	Avalanche Energy, Single pulse [3]		144	mJ
P_D	Power Dissipation	T_A=25ºC	73	W
		T_A=100ºC	29	
T_J	Operating Junction Temperature		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{\theta JC}$	Thermal Resistance-Junction to Case		1.7	℃/W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient[1]		62	℃/W

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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	1.2	1.6	2.5	V
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=20A		2.0	2.6	mΩ
		V_{GS}=4.5V, I_D=15A		2.7	3.8	mΩ
g_{FS}	Forward Transconductance	V_{DS}=10V, I_D=5A		24		S
V_{SD}	Diode Forward Voltage	I_S=1A, V_{GS}=0V			1	V
I_S	Continuous Source Current	V_G=V_D=0V, Force Current			73	A
Dynamic						
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=10V, I_D=15A		112		nC
Q_{gs}	Gate-Source Charge			13.8		nC
Q_{gd}	Gate-Drain Charge			23.5		nC
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz		4345		pF
C_{oss}	Output Capacitance			340		pF
C_{rss}	Reverse Transfer Capacitance			225		pF
$t_{d(on)}$	Turn-On Time	V_{DD}=15V, I_D=1A, V_{GS}=10V, R_G=3.3Ω		20.1		ns
t_r				6.3		ns
$t_{d(off)}$	Turn-Off Time			124.6		ns
t_f				15.8		ns
R_g	Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz		1.7		Ω

NOTE:

1. Device mounted on FR4 board with 1 inch^2, 2 oz. Cu.
2. Pulse width ≦ 300us , duty cycle ≦ 2%
3. The test condition is VDD=20V, V_{GS}=10V, L=0.5mH, I_{AS}=24A
4. The maximum current rating is package limited

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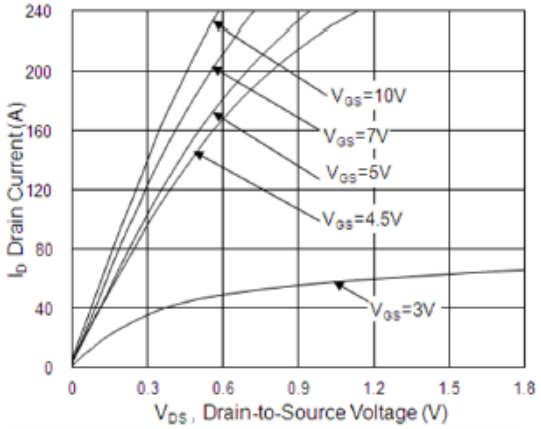
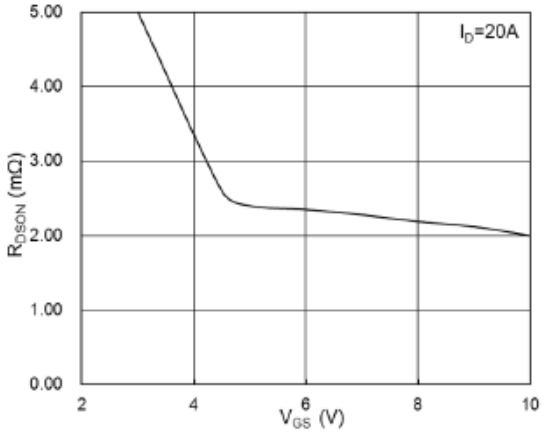
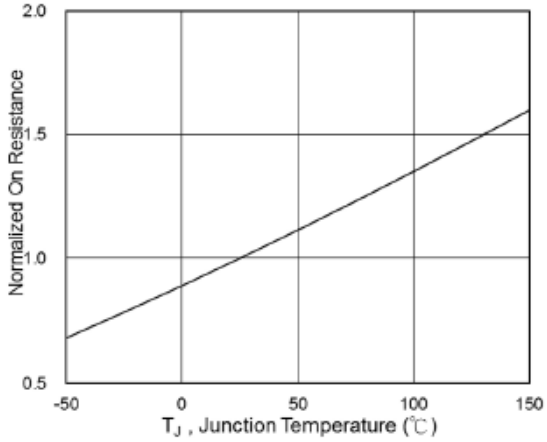
Typical Performance Characteristics



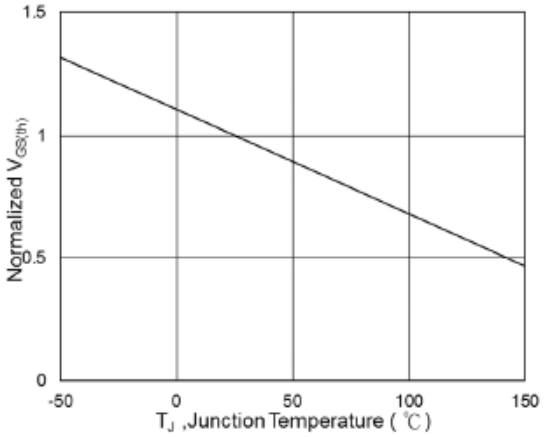
Output Characteristics



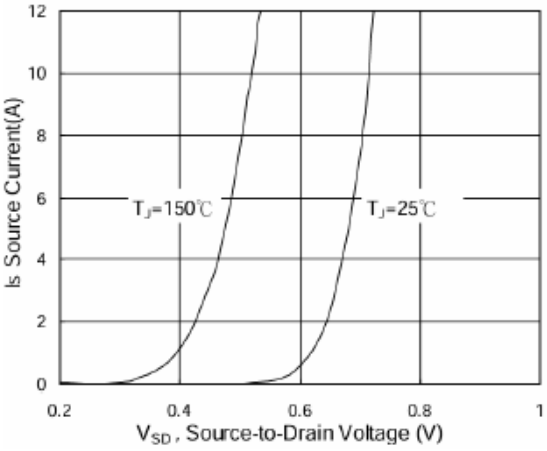
On-Resistance vs. Gate-Source Voltage



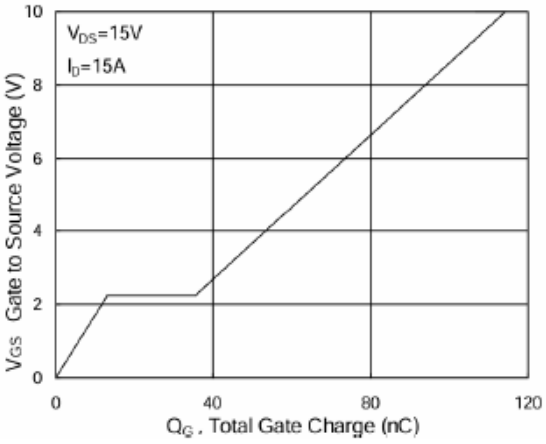
Normalized On-Resistance vs. Temperature



Normalized $V_{GS(th)}$ vs. Temperature



Diode Characteristics



Gate Charge Characteristics

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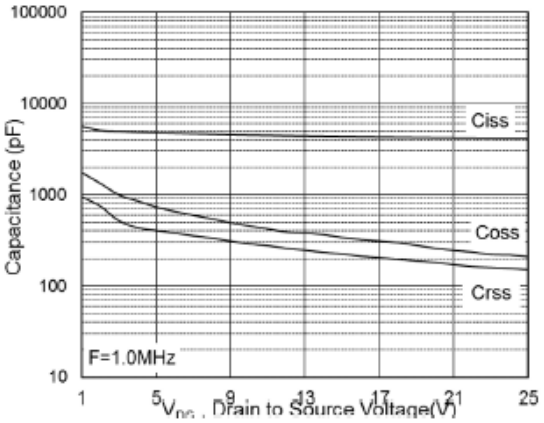
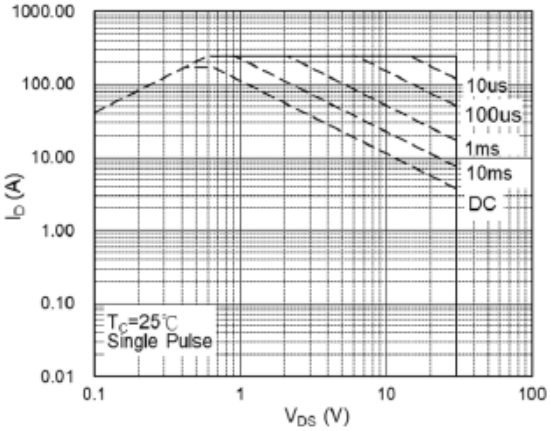
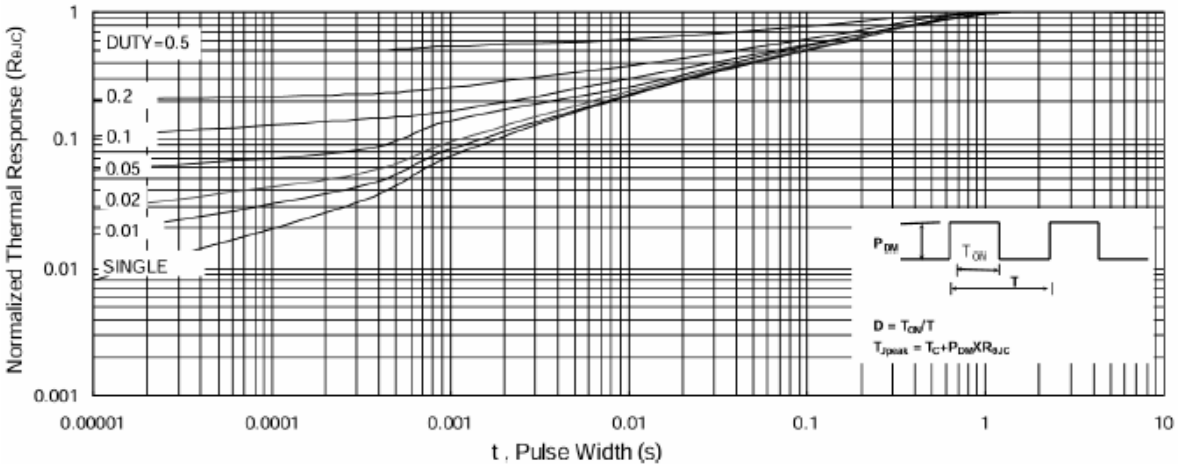
Typical Performance Characteristics(continue)



Capacitance Characteristics



Safe Operating Area



Normalized Maximum Transient Thermal Impedance

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Package Dimension:

DFN5x6-8L

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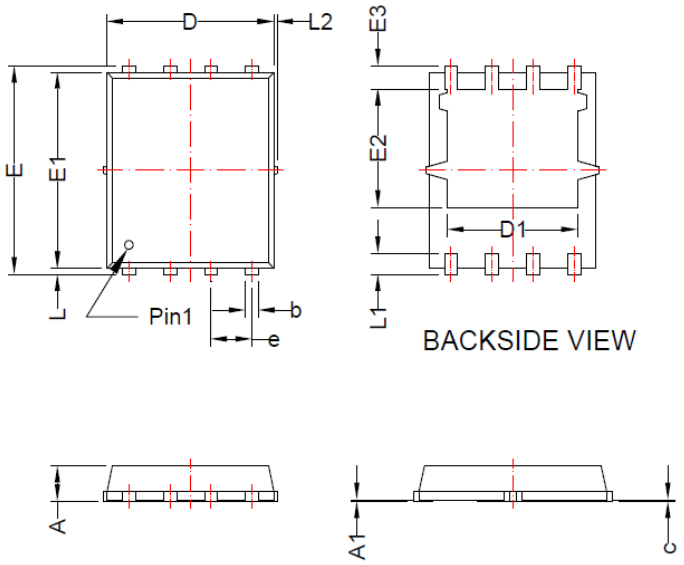
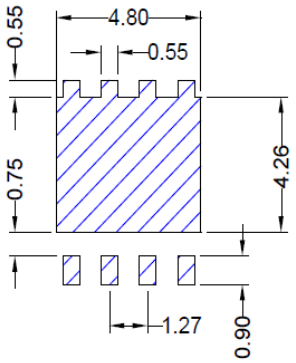


Recommended Land Pattern



Dimensions				
Symbol	**Millimeters**		**Inches**	
	Min	Max	Min	Max
A	0.80	1.20	0.031	0.047
A1	0.00	0.05	0.000	0.002
b	0.25	0.51	0.010	0.020
c	0.20	0.35	0.008	0.014
D	4.90	5.40	0.193	0.213
D1	3.40	4.60	0.134	0.181
E	5.90	6.20	0.232	0.244
E1	5.40	5.90	0.213	0.232
E2	3.20	3.80	0.126	0.150
E3	0.40	0.80	0.016	0.031
e	1.27BSC		0.050BSC	
L	0.10	0.25	0.004	0.010
L1	0.45	0.75	0.018	0.030
L2	-	0.15	-	0.006

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