
LMN22N10DF 100V N-Channel MOSFET

Features

- 100V,40A, $R_{DS(ON)} = 24m\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available
- TO-252-2L package design

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

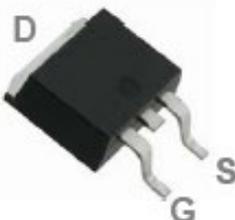
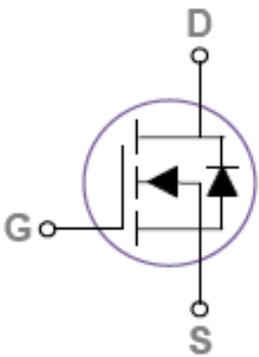
Product Description

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.

Applications

- Networking
- Load Switch
- LED applications

Pin Configuration

LMN22N10DF (TO-252-2L)	
	
Description	
Gate	
Source	
Drain	

Ordering Information

Part Number	P/N	PKG Code	Pb Free Code	Package	Quantity Reel
LMN22N10DF	LMN22N10	D	F	TO-252-2L	2500 pcs

Marking Information

Part Marking	Part Number	LFC code
22N10D XWMMMM	22N10D	XWMMMM

Absolute Maximum Ratings

 ($T_C=25^\circ\text{C}$ Unless otherwise noted)

Symbol	Parameter	Typical	Unit
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current ¹	$T_C=25^\circ\text{C}$	40
		$T_C=70^\circ\text{C}$	22
I_{DM}	Pulsed Drain Current ²	75	A
EAS	Single Pulse Avalanche Energy ³	81	mJ
I_{AS}	Single Pulse Avalanche Current	18	A
P_D	Power Dissipation $T_C=25^\circ\text{C}$	62.5	W
T_J	Operating Junction Temperature Range	-50 to +150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-50 to +150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	50	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case	2	$^\circ\text{C/W}$

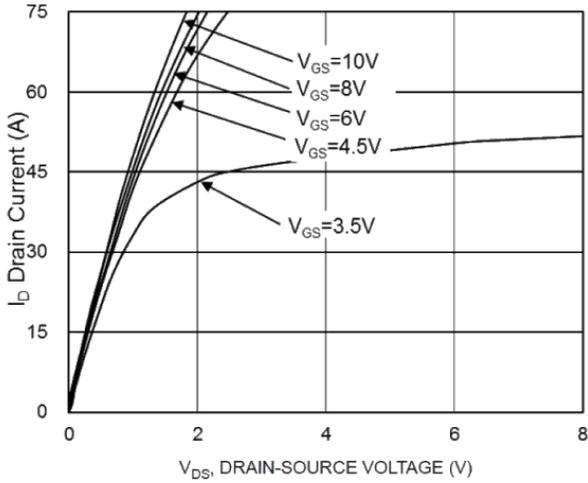
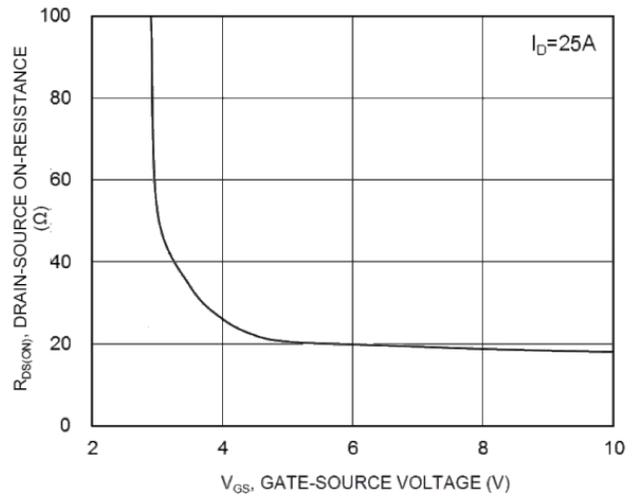
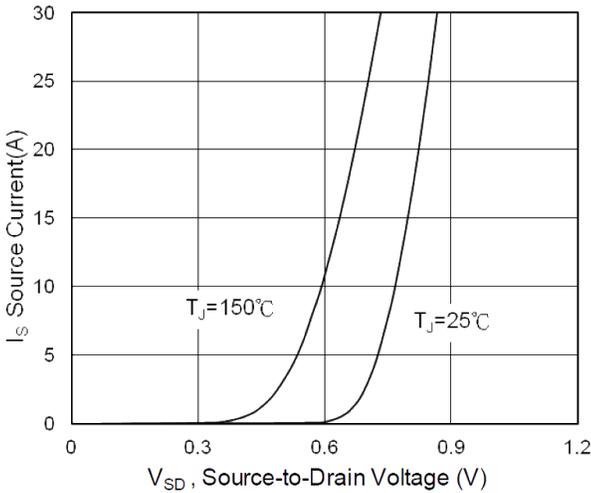
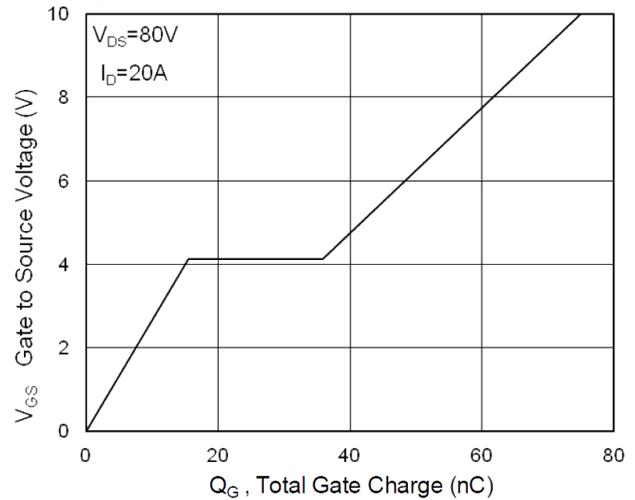
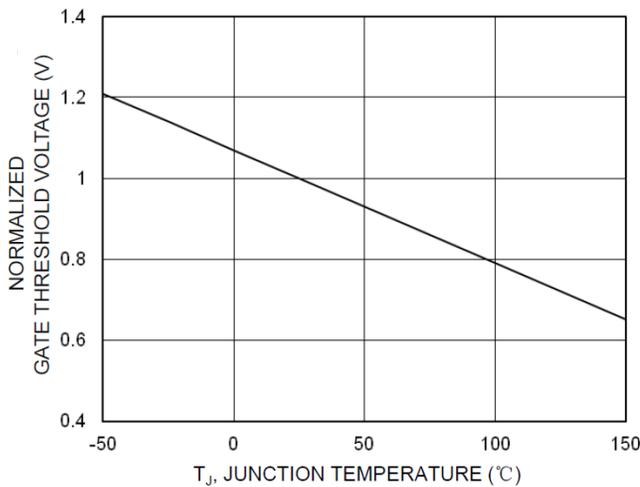
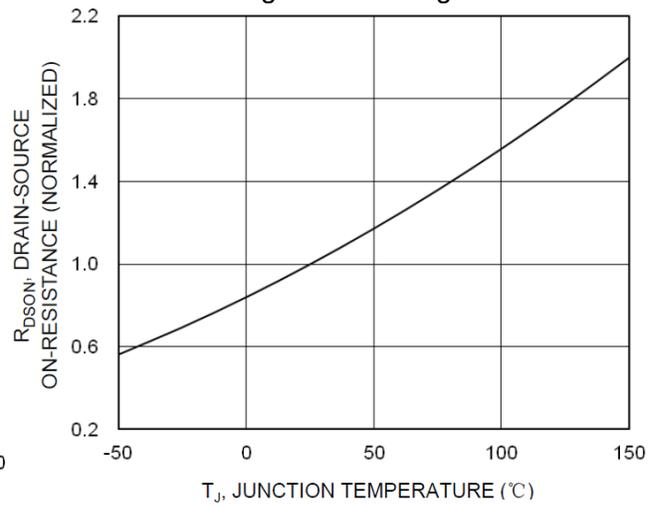
Electrical Characteristics

 (T_J=25°C Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	100			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	2	3	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V			1	uA
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			40	A
R _{DS(on)}	Drain-Source On-Resistance ²	V _{GS} =10V, I _D =25A		18	24	mΩ
		V _{GS} =4.5V, I _D =6A		19	38	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =3A		14		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A			1	V
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz		4708		pF
C _{oss}	Output Capacitance			326		
C _{rss}	Reverse Transfer Capacitance			247		
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz		1.6		Ω
Q _g	Total Gate Charge	V _{DS} =80V, V _{GS} =10V, I _D =20A		36		nC
Q _{gs}	Gate-Source Charge			5		
Q _{gd}	Gate-Drain Charge			10		
t _{d(on)}	Turn-On Time	V _{DD} =40V, I _D =20A, V _{GS} =10V, R _G =3.3Ω		11.5		ns
T _r				29		
t _{d(off)}	Turn-Off Time			42		
T _f				18		

Note:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
3. The EAS data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.5mH, I_D=18A.

Typical Performance Characteristics

Fig.1 Typical Output Characteristics

Fig.2 Typical Transfer Characteristics

Fig.3 Diode Forward Voltage vs. Current

Fig.4 Gate Charge

Fig.5 Gate Threshold Variation vs. T_J

Fig.6 On-Resistance Variation with T_J

Typical Performance Characteristics (continue.)

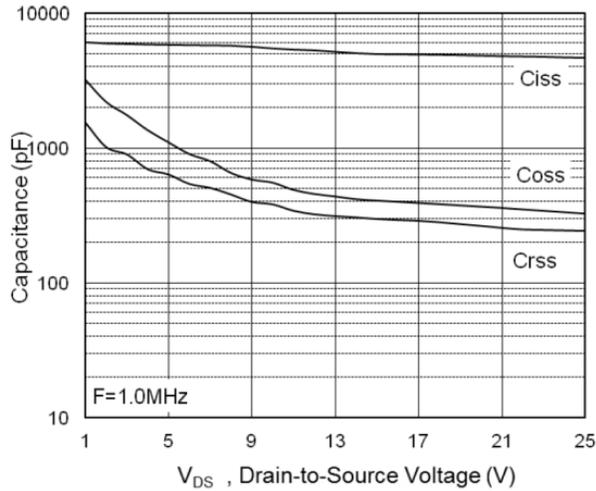


Fig.7 Typical Capacitance

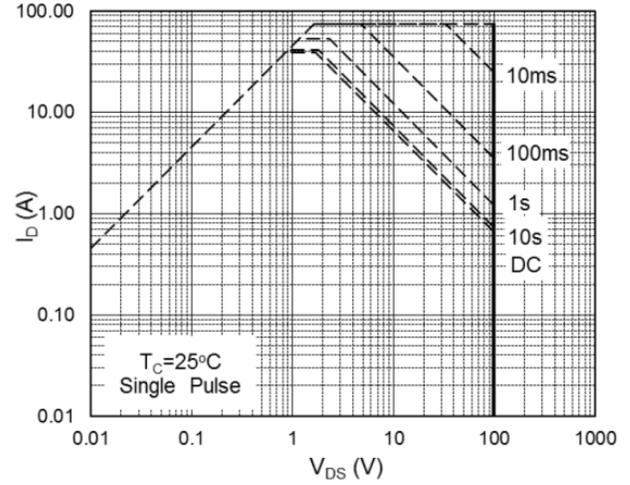


Fig.8 Safe Operating Area

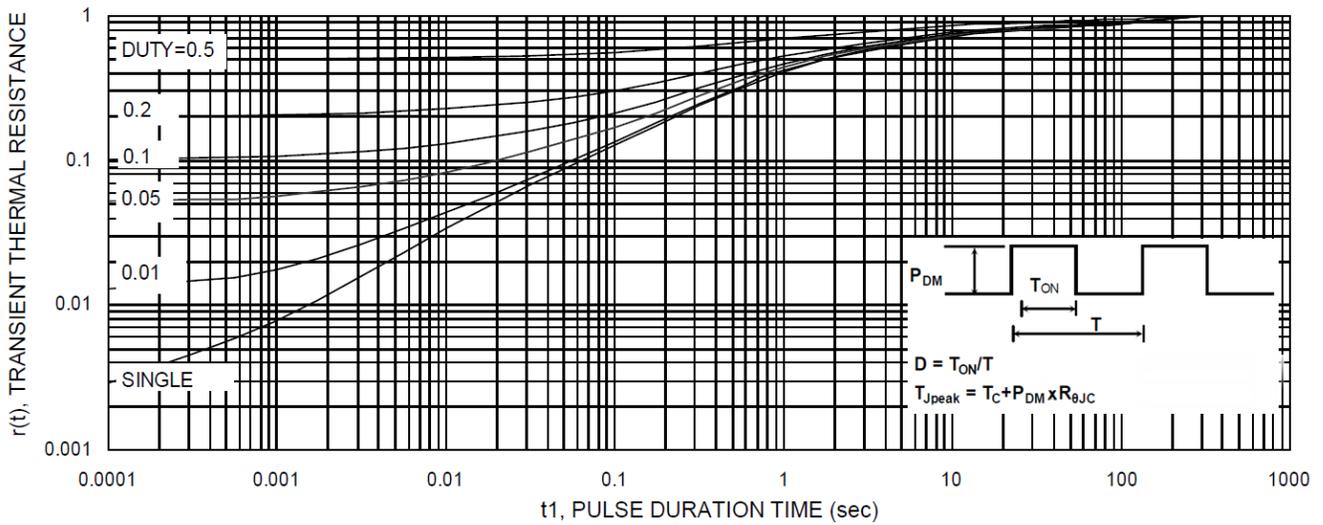
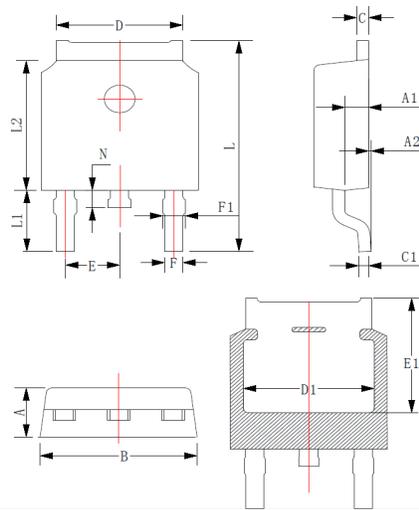


Fig.9 Transient Thermal Response

Package Dimension
TO-252-2L


Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	2.200	2.400	0.087	0.094
A1	0.910	1.110	0.036	0.043
A2	-	0.250	-	0.010
B	6.500	6.700	0.256	0.264
C	0.400	0.600	0.016	0.023
C1	0.400	0.600	0.016	0.023
D	5.150	5.450	0.203	0.214
D1	5.100	5.400	0.200	0.212
E	2.200	2.400	0.087	0.094
E1	4.950	5.350	0.195	0.210
F	0.660	0.860	0.026	0.034
F1	0.700	0.950	0.028	0.037
L	9.700	10.100	0.382	0.397
L1	2.670	3.070	0.105	0.121
L2	6.000	6.200	0.236	0.244
N	0.600	1.000	0.024	0.039