LMNBSS139TFF 60V N-Channel MOSFET

Features

- 60V, 0.2A, $R_{DS(ON)}$=2.5Ω@V_{GS}=4.5V
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green Device Available
- ESD Protected: 1500V

Product Description

These N-Channel enhancement mode power field effect transistors 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.

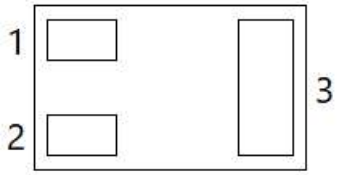
These devices are well suited for high efficiency fast switching applications.

Applications

- Notebook
- Load Switch
- LED applications

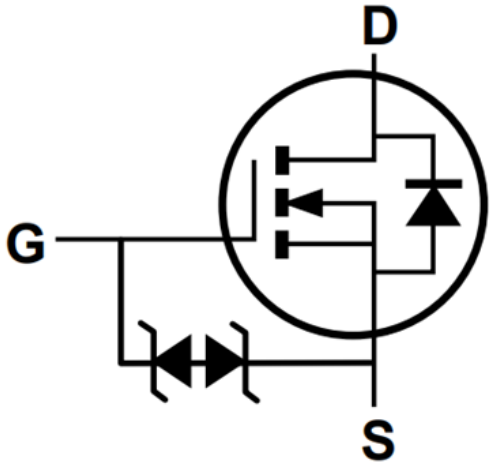
Pin Configuration

LMNBSS139TFF (DFN1006-3L)



Transparent Top View

Pin	Description
1	Gate
2	Source
3	Drain



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Ordering Information

Part Number	P/N	PKG Code	Pb Free Code	Package	Quantity Reel
LMNBSS139TFF	LMNBSS139	TF	F	DFN1006-3L	10000 pcs

Marking Information

Part Marking	Part Number	LFC code
J2 WM	J2	WM

Absolute Maximum Ratings

(T_A=25ºC Unless otherwise noted)

Symbol	Parameter	Limits	Unit
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current(T_A=25ºC)	0.33	A
I_{DM}	Pulsed Drain Current	0.8	A
P_D	Power Dissipation(T_A=25ºC)	0.36	W
T_J	Operating Junction Temperature Range	-55 to +150	ºC
T_{STG}	Storage Temperature Range	-55 to +150	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	350	ºC/W

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Electrical Characteristics

(T_A=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	60			V
$V_{GS\ (th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	0.8		1.5	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±10	uA
I_{DSS}	Drain-Source Leakage Current	V_{DS}=25V, V_{GS}=0V			0.1	uA
		V_{DS}=50V, V_{GS}=0V			0.5	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V, I_D=0.5A			1.5	Ω
		V_{GS}=4.5V, I_D=0.2A			2.5	
		V_{GS}=2.5V, I_D=0.1A			4.1	
g_{FS}	Forward Transconductance	V_{DS}=25V, I_D=0.2A	0.1			S
Dynamic						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz		22.8		pF
C_{oss}	Output Capacitance			3.5		
C_{rss}	Reverse Transfer Capacitance			2.9		
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=30V, I_D=0.5A, V_{GS}=10V, R_G=25Ω		3.8		ns
$t_{d(off)}$	Turn-Off Delay Time			19		

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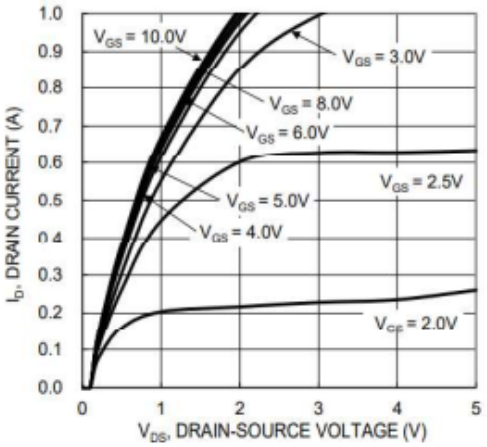
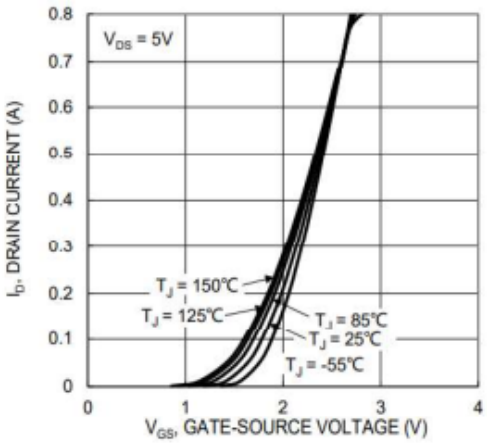
Typical Performance Characteristics



Typical Output Characteristic



Typical Transfer Characteristic

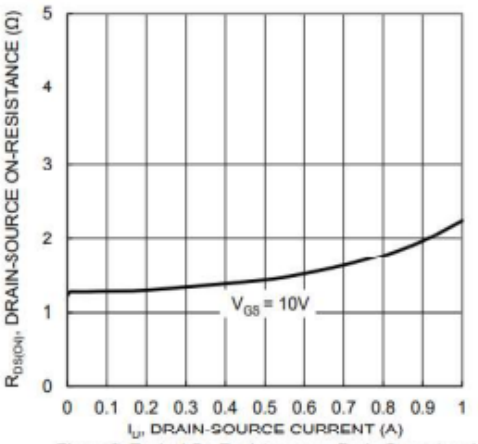


Figure 3. Typical On-Resistance vs. Drain Current and

Typical On-Resistance vs. Drain Current and Gate Voltage

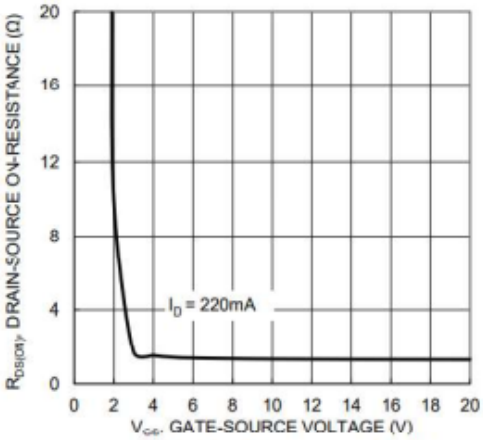
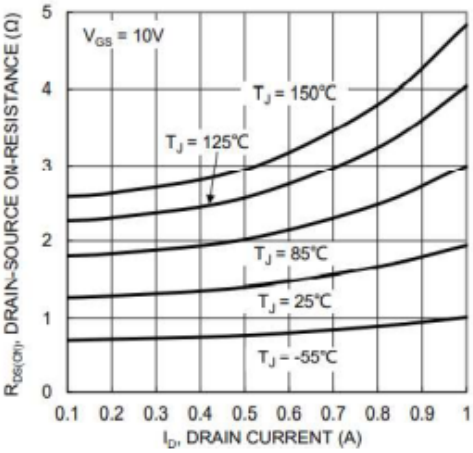
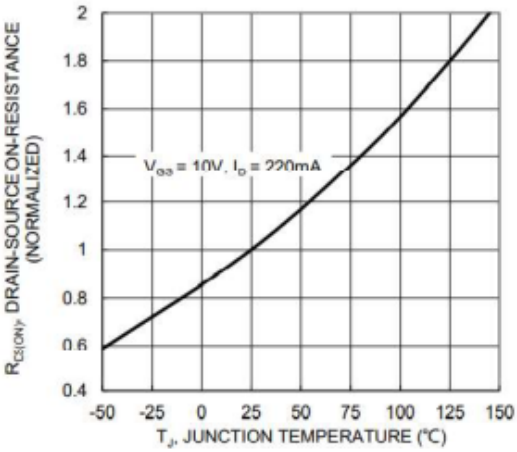


Figure 4. Typical Transfer Characteristic

Typical Transfer Characteristic



Typical On-Resistance vs. Drain and Junction Temperature



On-Resistance Variation with Junction Temperature

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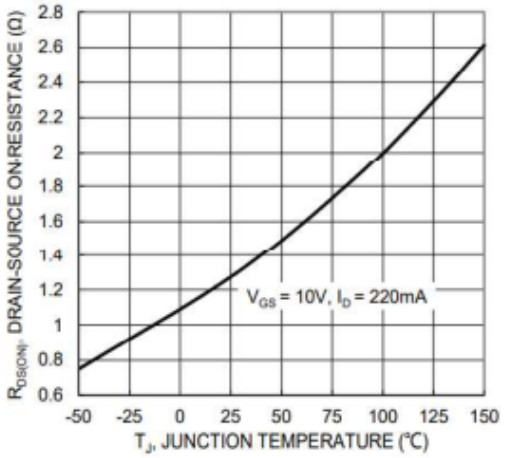
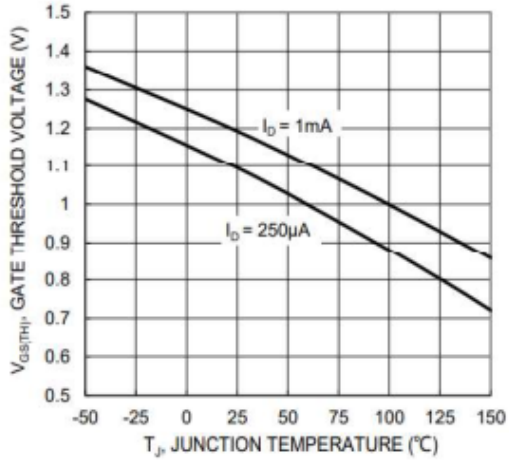
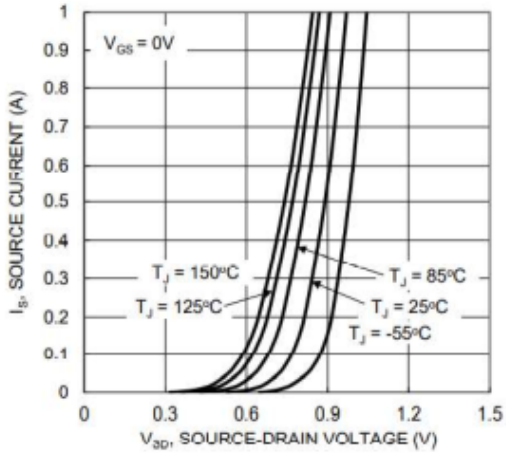
Typical Performance Characteristics (continue.)



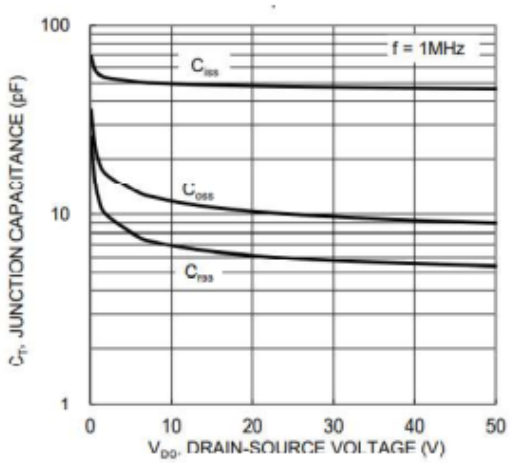
On-Resistance Variation with Junction Temperature



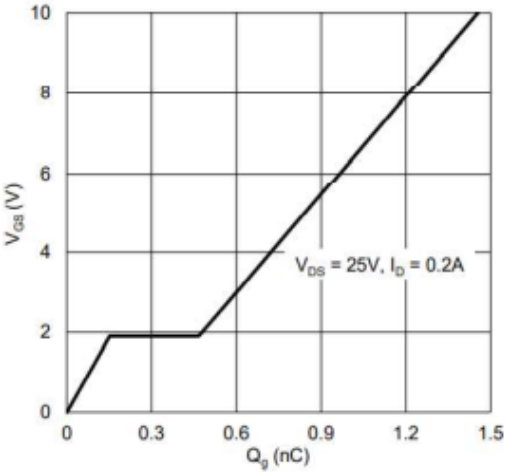
Gate Threshold Variation vs. Junction Temperature



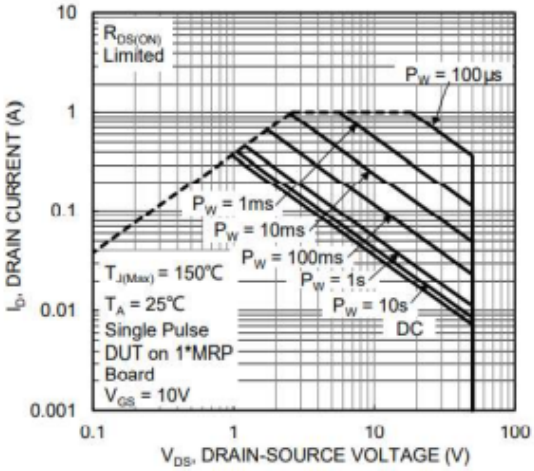
Diode Forward Voltage vs. Current



Typical Junction Capacitance



Gate Charge



Safe Operation Area

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Typical Performance Characteristics (continue.)

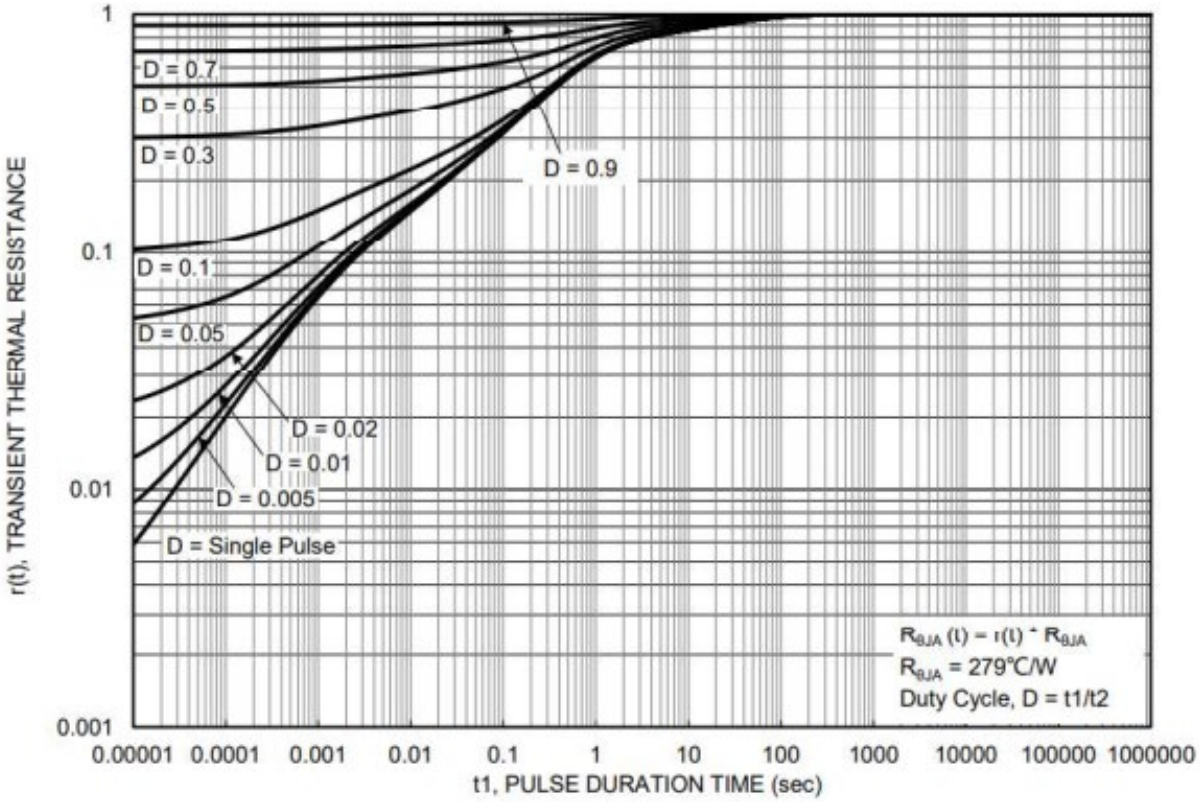

Figure13 Transient Thermal Resistance

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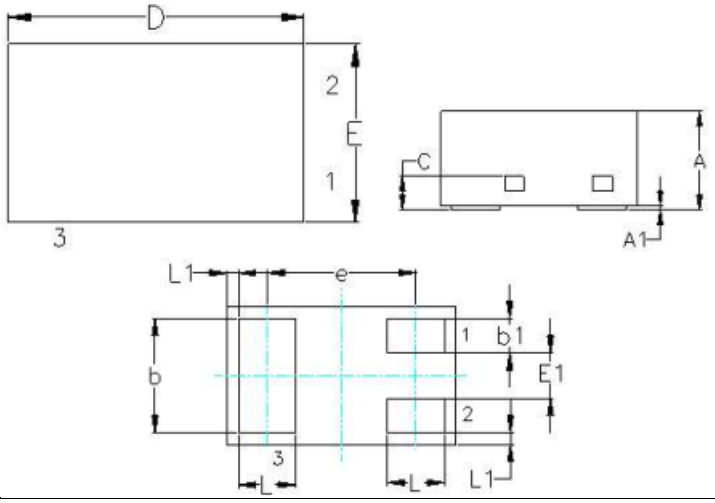
Package Dimension

DFN1006-3L



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.450	0.550	0.018	0.022
A1	0.000	0.050	0.000	0.002
b	0.450	0.550	0.018	0.022
b1	0.100	0.200	0.004	0.008
C	0.120	0.180	0.005	0.007
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.022	0.026
E1	0.150	0.250	0.006	0.010
e	0.650 BSC		0.026 BSC	
L	0.200	0.300	0.008	0.012
L1	0.050 REF		0.002 REF	

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