LMNNBSS139T Dual N-Channel Enhancement Mode MOSFET

Features

- 60V,0.2A, $R_{DS(ON)}$＜2.5Ω@V_{GS}=4.5V
- Improved dv/dt Capability
- Fast Switching
- Green Device Available
- SOT-363 Package Design
- ESD Protected : 1500V

Product Description

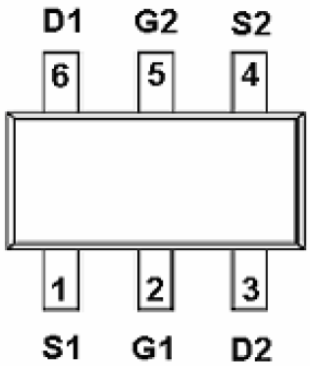
These Dual N-Channel Enhancement Mode Power Field Effect Transistors are Using Trench DMOS Technology. This Advanced Technology has been Especially Tailored to Minimize on-state Resistance, Provide Superior Switching Performance, and Withstand high Energy Pulse in the Avalanche and Commutation mode.
These Devices are well Suited for High Efficiency Fast Switching Applications.

Applications

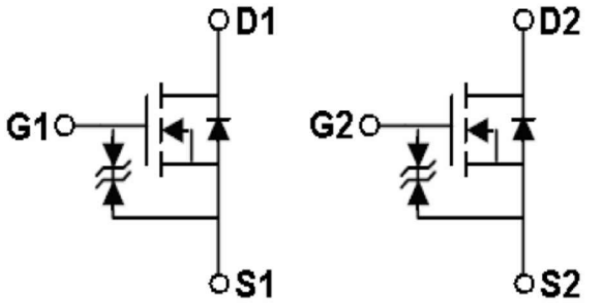
- Notebook
- Load Switch
- LED Applications

Pin Configuration

LMNNBSS139TX6F (SOT-363)



PIN	Description
1	Source 1
2	Gate 1
3	Drain 2
4	Source 2
5	Gate 2
6	Drain 1



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Ordering Information

Ordering Information					
Part Number	P/N	PKG code	Pb Free code	Package	Quantity
LMNNBSS139TX6F	LMNNBSS139T	X6	F	SOT-363	3000PCS

Marking Information

Marking Information	
Part Number	LFC code
J2	WM

Absolute Maximum Ratings

(T_A=25ºC Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		60	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_A=25℃	0.2	A
I_{DM}	Pulsed Drain Current[1]		0.8	A
P_D	Power Dissipation	T_A=25℃	0.225	W
		(Derate above 25℃)	0.0018	
T_J	Operating Junction Temperature		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		556	℃/W
TL	Maximum Lead Temperature for Soldering Purpose, for 10 Seconds		260	℃

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Electrical Characteristics

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
$V_{(BR)DSS}$	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_{GSSF}	Gate Leakage Current，Forward	V_{DS}=0V, V_{GS}=20V			10	uA
I_{GSSR}	Gate Leakage Current，Reverse	V_{DS}=0V, V_{GS}=-20V			-10	uA
I_{DSS}	Zero Gate Voltage Drain 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}=4.5V, I_D=200mA			2.5	Ω
		V_{GS}=2.5V, I_D=100mA			4	
g_{FS}	Forward Transconductance[1]	V_{DS}=25V, I_D=0.2A	100			mS
Dynamic						
Q_g	Total Gate Charge	V_{DS}=25V, V_{GS}=4.5V, I_D=0.2A		0.6		nC
Q_{gs}	Gate-Source Charge			0.22		
Q_{gd}	Gate-Drain Charge			0.2		
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1.0MHz		28.8		pF
C_{oss}	Output Capacitance			3.8		
C_{rss}	Reverse Transfer Capacitance			2.9		
$t_{d(on)}$	Turn-On Time	V_{DS}=25V, V_{GS}=10V, R_G=25Ω, I_D=0.2A		3.8		ns
t_r				7.5		
$t_{d(off)}$	Turn-Off Time			19		
t_f				15		

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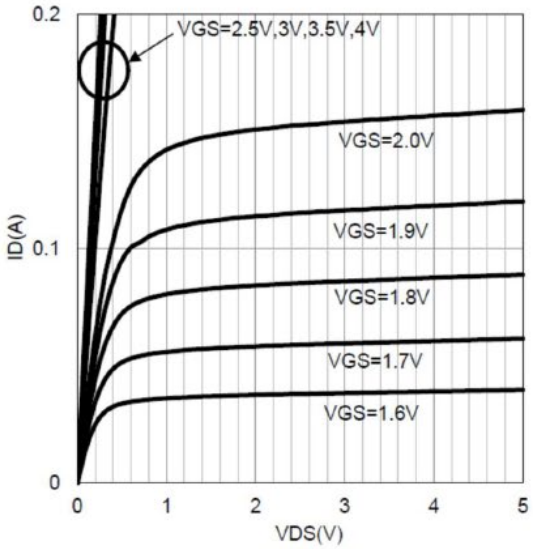
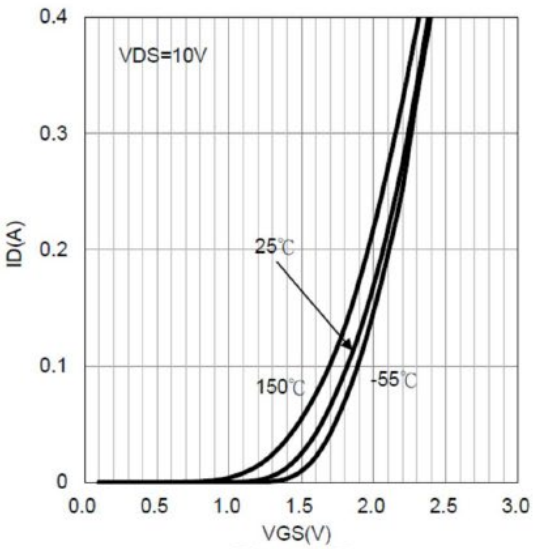
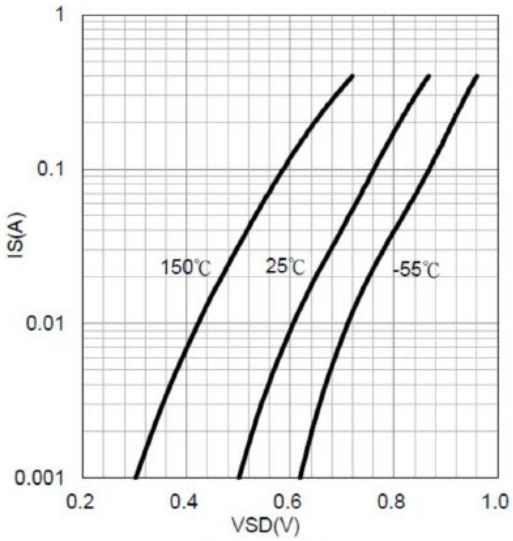
Typical Performance Characteristics



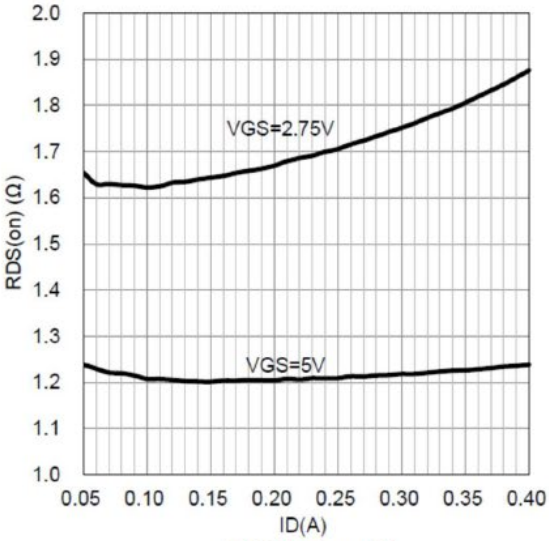
ID vs. VDS



ID vs. VGS



IS vs. VSD



RDS(on) vs. ID

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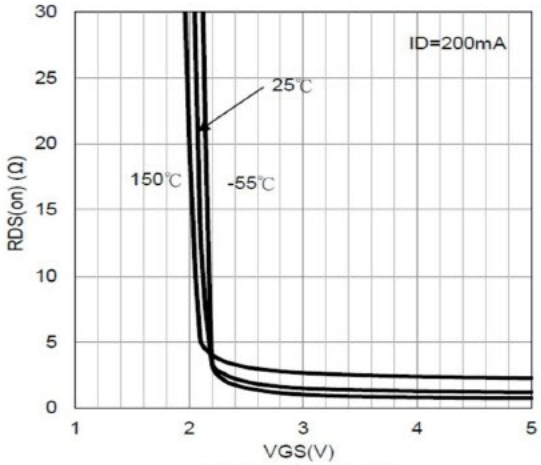
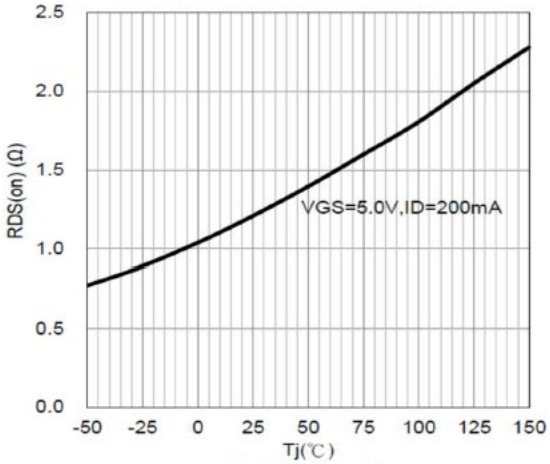
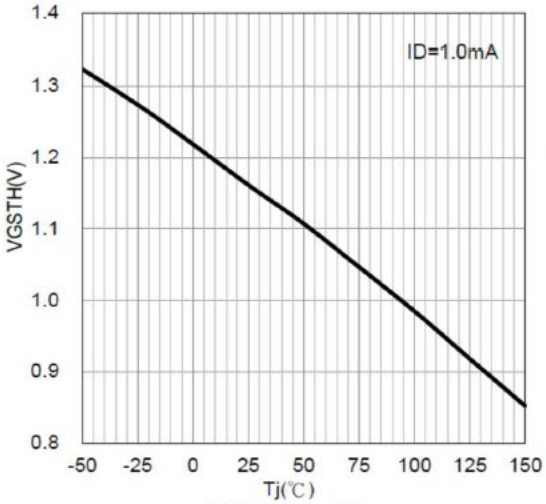
Typical Performance Characteristics(continue)



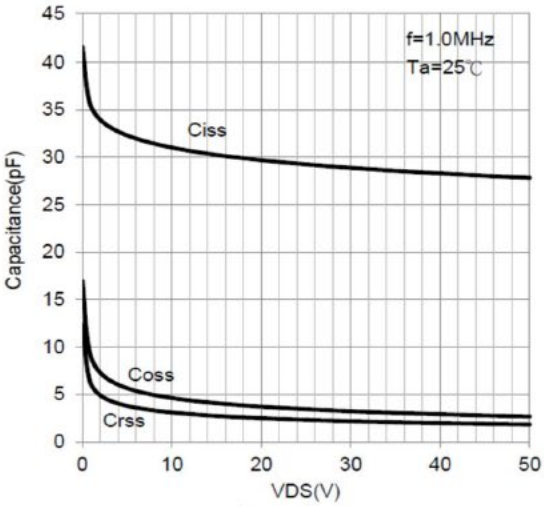
RDS(on) vs. VGS



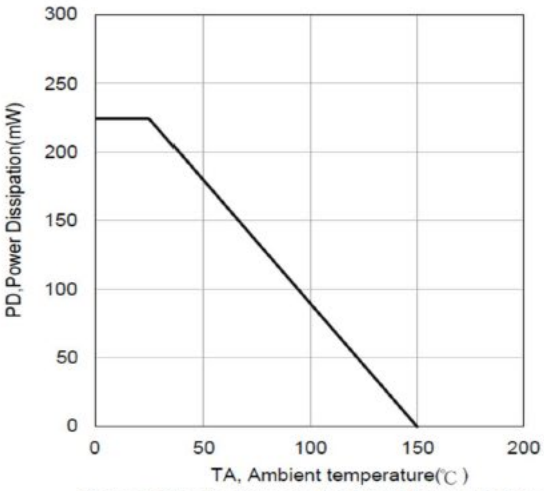
RDS(on) vs. Tj



VGSTH vs. Tj



Capacitance



Power Dissipation vs Ambient temperature

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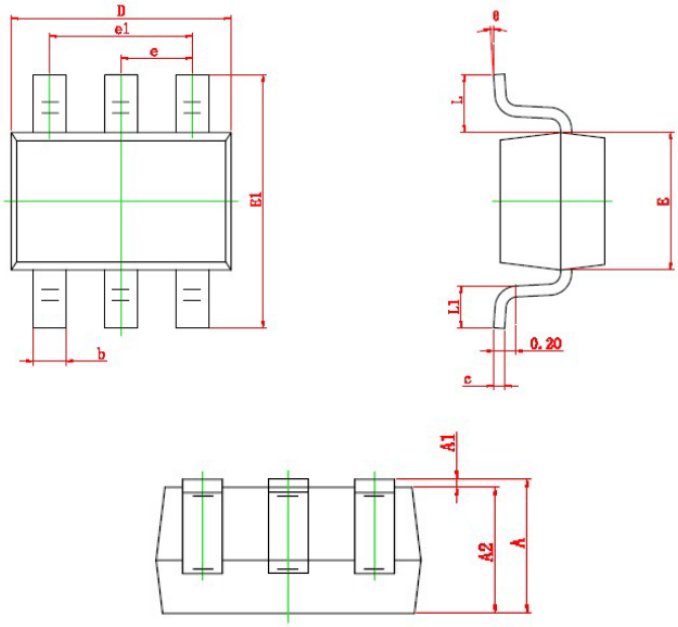
Package Dimension:

SOT-363



Dimensions				
Symbol	**Millimeters**		**Inches**	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 TYP		0.021 TYP	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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