LMN6184JZF 60V N-Channel MOSFET

Features

- 60V, 2.8A, $R_{DS(ON)}$=92mΩ@VGS=10V
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed.
- Green Device Available
- SOT-23 package design

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.

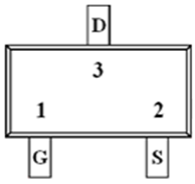
These devices are well suited for high efficiency fast switching applications.

Applications

- Motor Drive
- Power Tools
- LED Lighting

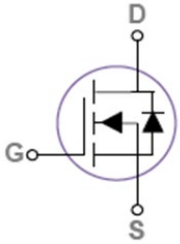
Pin Configuration

LMN6184JZF (SOT-23)



Transparent top view

Pin	Description
1	Gate
2	Drain
3	Source



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Ordering Information

Ordering Information					
Part Number	P/N	PKG code	Pb Free code	Package	Quantity
LMN6184JZF	LMN6184	JZ	F	SOT-23	3000 PCS

Marking Information

Marking Information		
Part Marking	Part Number	LFC code
S3XWM	S3	XWM

Absolute Maximum Ratings

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current[1]	T_A=25℃	2.8	A
		T_A=70℃	2.2	
I_{DM}	Pulsed Drain Current		10	A
P_D	Power Dissipation	T_A=25℃	1.4	W
		T_A=70℃	0.9	
T_J	Operating Junction Temperature		-55 to +150	°C
T_{STG}	Storage Temperature Range		-55 to +150	°C
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient[1]		90	°C /W

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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	60			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1		3	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}=0V			1	uA
		V_{DS}=48V, V_{GS}=0V, T_J=125℃			10	
I_S	Continuous Source Current	V_G=V_D=0V, Force Current			6.1	A
I_{SM}	Pulsed Source Current				24.4	
$R_{DS(on)}$	Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=3A		85	92	mΩ
		V_{GS}=4.5V, I_D=2A		90	100	
g_{FS}	Forward Transconductance	V_{DS}=10V, I_D=3A		3.6		S
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_S=1A			1.2	V
trr	Reverse Recovery Time	I_S=3A, V_{GS}=0V dI/dt=100A/μs		25		nS
Qrr	Reverse Recovery Charge			26		nC
Dynamic						
Q_g	Total Gate Charge	V_{DS}=48V, V_{GS}=4.5V, I_D=3A		6		nC
Q_{gs}	Gate-Source Charge			1.6		
Q_{gd}	Gate-Drain Charge			3		
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz		490		pF
C_{oss}	Output Capacitance			55		
C_{rss}	Reverse Transfer Capacitance			40		
$t_{d(on)}$	Turn-On Time[2]	V_{DD}=30V, I_D=1A, V_{GS}=4.5V, R_G=6.8Ω		6		ns
t_r				5		
$t_{d(off)}$	Turn-Off Time[2]			16		
t_f				3		

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Typical Performance Characteristics

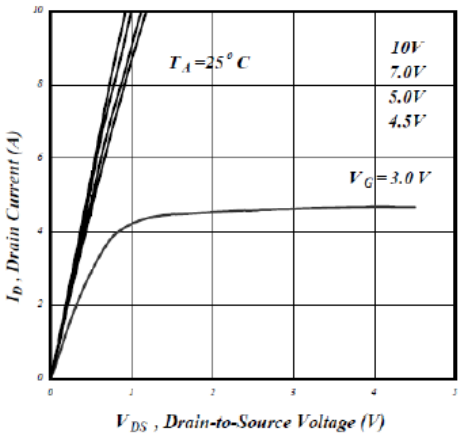

Fig 1. Typical Output Characteristics

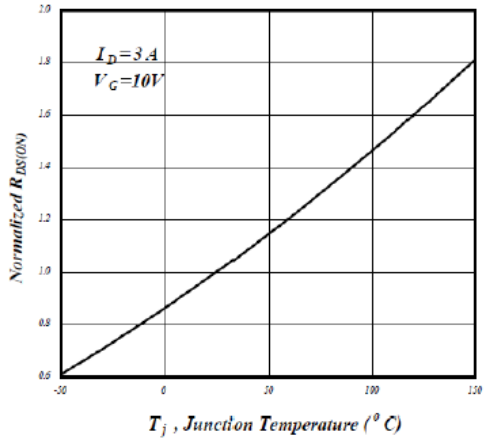

Fig. 2 On-Resistance Variation with T_J

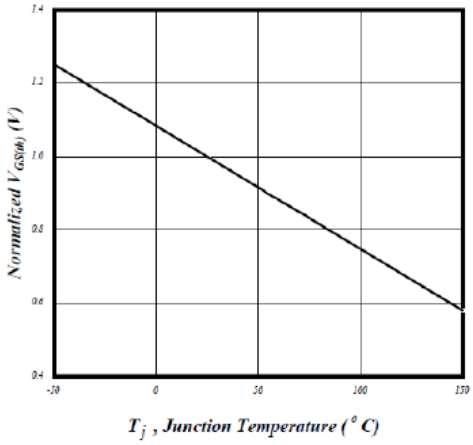

Fig. 3 Gate Threshold Variation vs. T_J

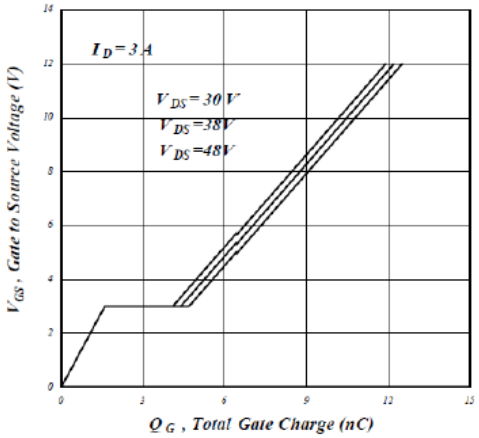

Fig. 4 Gate Charge Waveform

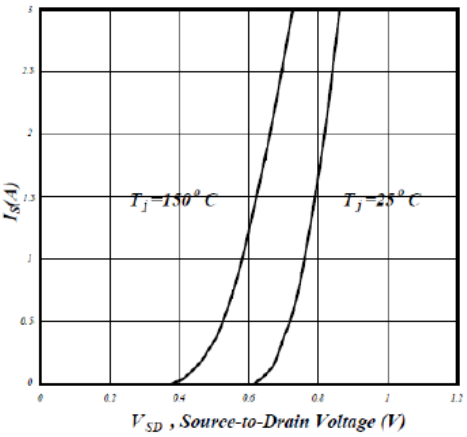

Fig. 5 Diode Forward Voltage vs. Current

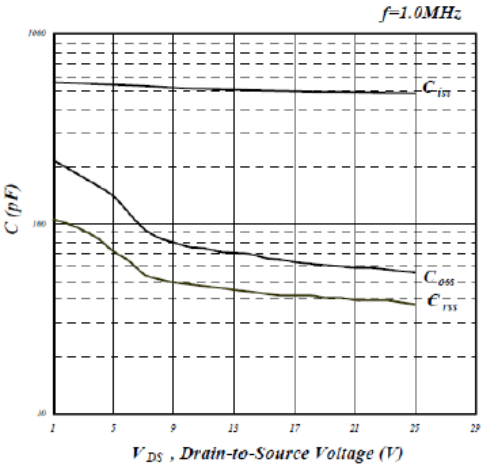

Fig. 6 Typical Capacitance

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Typical Performance Characteristics

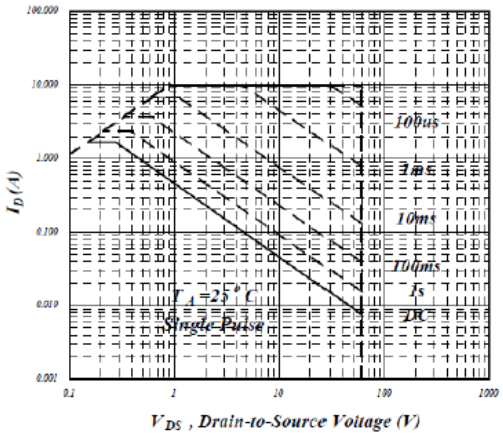

Fig. 7 Maximum Safe Operation Area

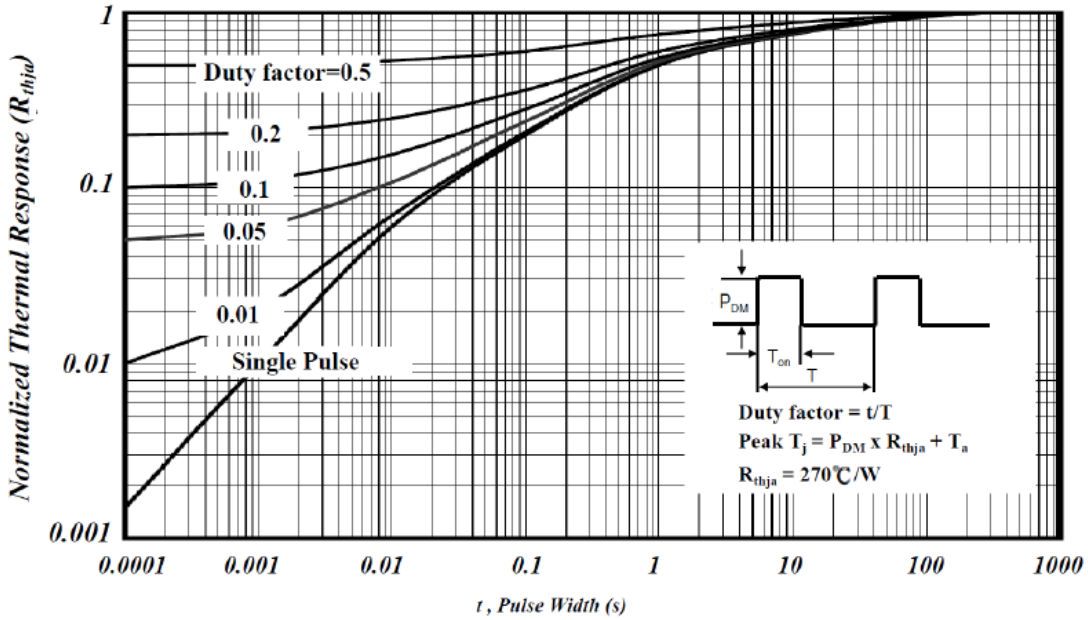

Fig. 11 Transient Thermal Response

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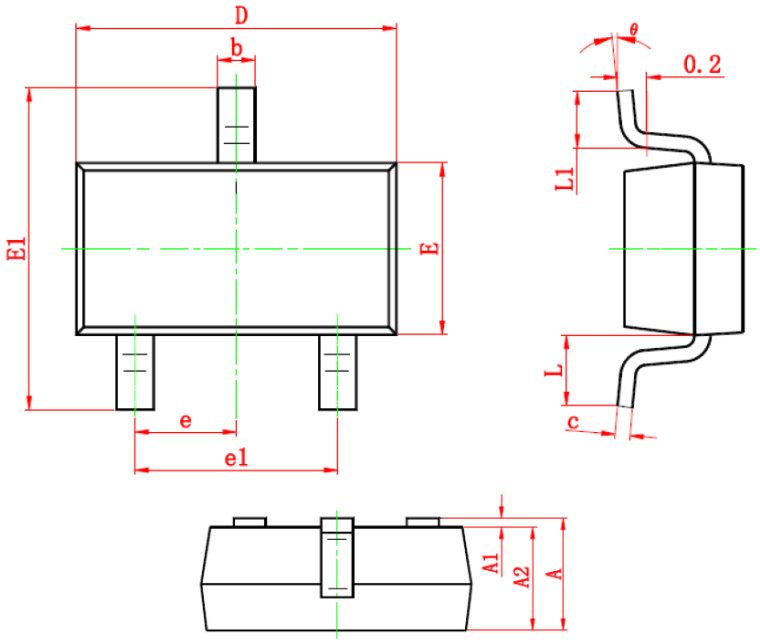
Package Dimension:

SOT-23



Dimensions				
Symbol	**Millimeters**		**Inches**	
	Min	Max	Min	Max
A	0.90	1.20	0.035	0.043
A1	0.00	0.10	0.000	0.004
A2	0.90	1.10	0.035	0.039
b	0.30	0.50	0.012	0.020
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.95 TYP		0.037 TYP	
e1	1.80	2.00	0.071	0.079
L	0.55 REF		0.022 REF	
L1	0.30	0.50	0.012	0.020
θ	0°	8°	0°	8°

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