LMN4184 40V N-Channel MOSFET

Features

- 40V, 3.6A, $R_{DS(ON)}$=58mΩ@V_{GS}=10V
- Improved dv/dt capability
- Fast switching
- Green Device Available

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.

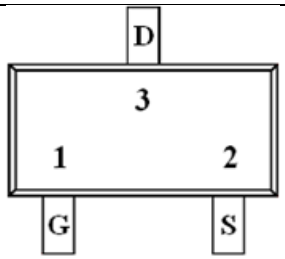
These devices are well suited for high efficiency fast switching applications.

Applications

- MB / VGA / Vcore
- Load Switch
- Hand-Held instrument

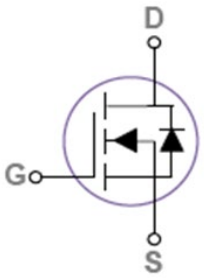
Pin Configuration

LMN4184JZF (SOT-23)



Transparent top view

Pin	Description
1	Gate
2	Source
3	Drain



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Ordering Information

Ordering Information					
Part Number	P/N	PKG code	Pb Free code	Package	Quantity
LMN4184JZF	LMN4184	JZ	F	SOT-23	3000 PCS

Marking Information

Marking Information		
Part Marking	Part Number	LFC code
S4XWM	S4	XWM

Absolute Maximum Ratings

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		40	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_A=25℃	3.6	A
		T_A=70℃	2.8	
I_{DM}	Pulsed Drain Current[1]		14	A
P_D	Power Dissipation (T_A=25℃)		1.2	W
	Power Dissipation (T_A=70℃)		0.8	W/°C
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		105	°C /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	40			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1	1.7	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}=40V, V_{GS}=0V			1	uA
I_S	Continuous Source Current	V_G=V_D=0V, Force Current			1	A
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V, I_D=3.6A		47	58	mΩ
		V_{GS}=4.5V, I_D=2.9A		61	76	
V_{SD}	Diode Forward Voltage	I_S=3A, V_{GS}=0V			1	V
Dynamic						
Q_g	Total Gate Charge[2,3]	V_{DS}=20V, V_{GS}=4.5V, I_D=3.6A		2.6		nC
Q_{gs}	Gate-Source Charge[2,3]			0.7		
Q_{gd}	Gate-Drain Charge[2,3]			1.4		
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz		266		pF
C_{oss}	Output Capacitance			49		
C_{rss}	Reverse Transfer Capacitance			29		
$t_{d(on)}$	Turn-On Time[2,3]	V_{DD}=20V, I_D=1A, V_{GS}=4.5V, R_G=6.8Ω		5.1		ns
t_r				5.4		
$t_{d(off)}$	Turn-Off Time[2,3]			6.4		
t_f				4.3		

Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width ≤300us, duty cycle ≤2%.
3. Essentially independent of operating temperature.

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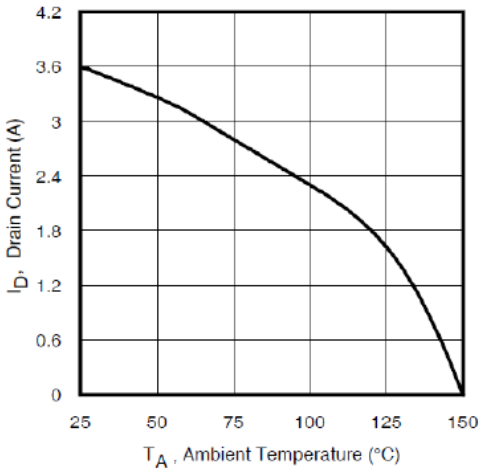
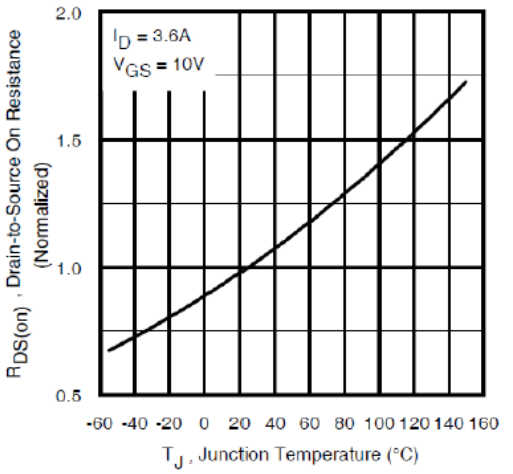
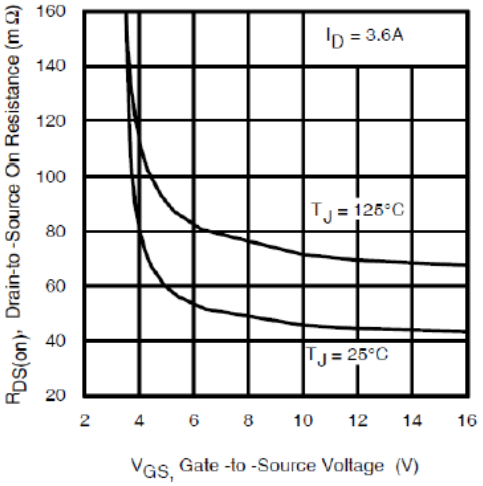
Typical Performance Characteristics



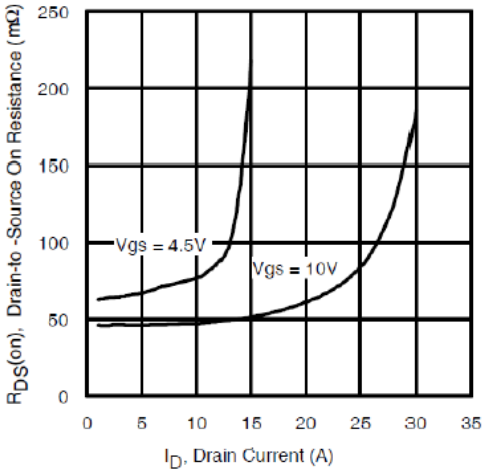
Drain Current Vs. Ambient Temperature



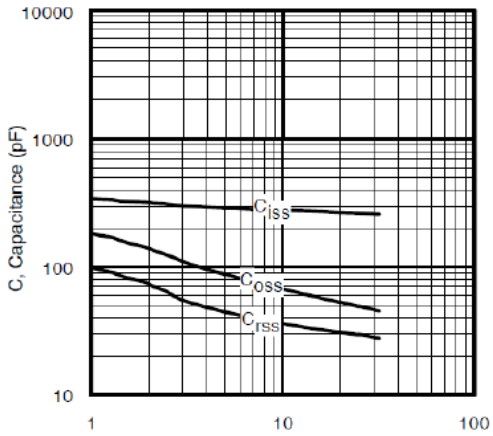
On-Resistance vs. Junction Temperature



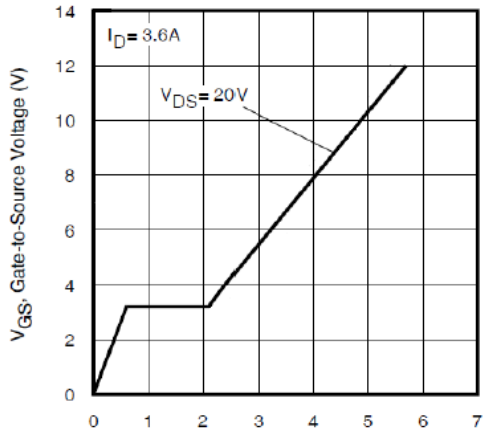
On-Resistance vs. Gate to source Voltage



On-Resistance vs. Drain Current



Capacitance



Gate Charge

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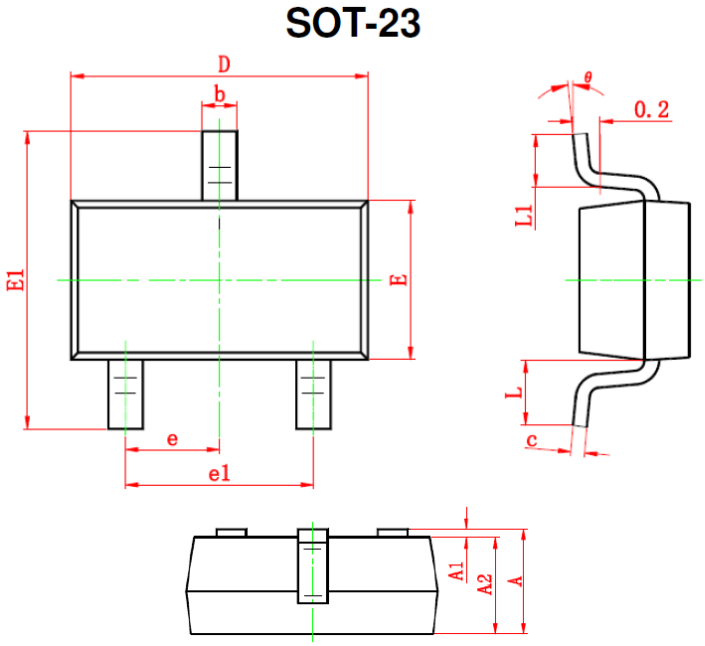
Package Dimension:



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	0.10
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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