20V Dual N-Channel MOSFETs

Features

- 20V, 700mA, $R_{DS(ON)}$=400mΩ@V_{GS}=4.5V
- Fast switching
- Suit for 1.5V Gate Drive Applications
- Green Device Available
- SOT-563 package design

Product Description

LMN2730, 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.

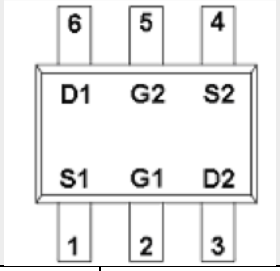
LMN2730 is well suited for high efficiency fast switching applications.

Applications

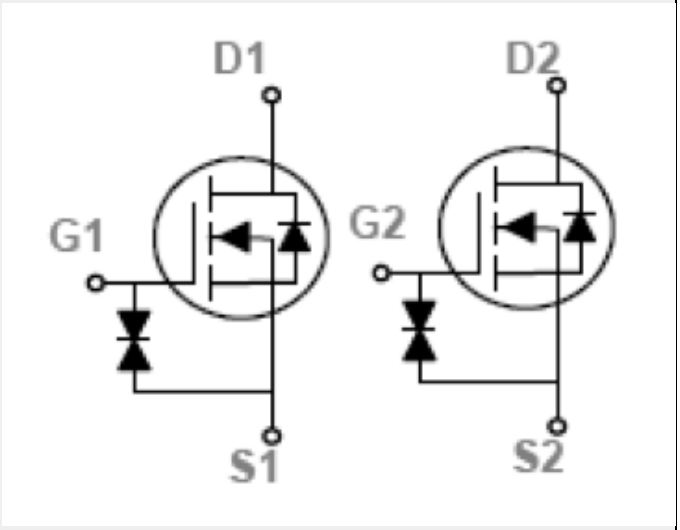
- Notebook
- Load Switch
- Networking
- Hand-Held Instruments

Pin Configuration

LMN2730EX7F (SOT-563)



PIN	Description
1	Source1
2	Gate1
3	Drain2
4	Source2
5	Gate2
6	Drain1



Ordering Information

LMN2730E	X7	F
LFC P/N	PKG code	Pb Free code

Marking Information

0	XW
Part Number	LFC code

Part Number	Package	Part Marking	Quantity
LMN2730EX7F	SOT-563	0XW	3000pcs

Absolute Maximum Ratings

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		20	V
V_{GS}	Gate-Source Voltage		±10	V
I_D	Continuous Drain Current (T_J=150℃)	T_A=25℃	0.7	A
		T_A=100℃	0.45	
I_{DM}	Pulsed Drain Current		3	A
P_D	Power Dissipation	T_A=25℃	0.32	W
T_J	Operating Junction Temperature Range		-55 to +150	℃
T_J	Storage Temperature Range		-55 to +150	℃
T_{STG}	Thermal Resistance-Junction to Ambient		400	℃/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	20			V
$V_{GS\ (th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	0.3		1.0	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±12V			±10	uA
I_{DSS}	Drain Current Leakage Current	V_{DS}=20V, V_{GS}=0V			1	uA
$I_{D(ON)}$	On-State Drain Current	V_G=V_D=0V, Force Current			0.7	A
I_{SM}	Pulsed Source Current				1.4	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=4.5V, I_D=0.5A		220	300	mΩ
		V_{GS}=2.5V, I_D=0.4A		280	450	
		V_{GS}=1.8V, I_D=0.2A		390	800	
		V_{GS}=1.5V, I_D=0.1A		540	1200	
V_{SD}	Diode Forward Voltage	I_S=0.5A, V_{GS}=0V		0.85	1	V
Dynamic						
Q_g	Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V, I_D=0.25A		0.73		nC
Q_{gs}	Gate-Source Charge			0.93		
Q_{gd}	Gate-Drain Charge			0.12		
C_{iss}	Input Capacitance	V_{DS}=16V, V_{GS}=0V, f=1MHz		60.7		pF
C_{oss}	Output Capacitance			9.7		
C_{rss}	Reverse Transfer Capacitance			5.4		
$t_{d(on)}$	Turn-On Time	V_{DD}=10V, I_D=0.2A, V_{GS}=4.5V, R_G=10Ω		5.1		ns
t_r				7.4		
$t_{d(off)}$	Turn-Off Time			26.7		
t_f				12.3		

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Typical Performance Characteristics

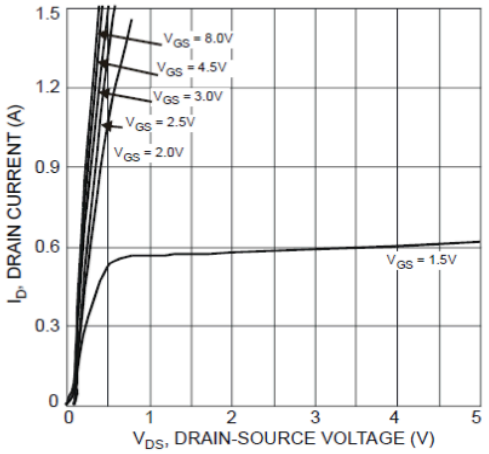

Fig. 1 Typical Output Characteristics

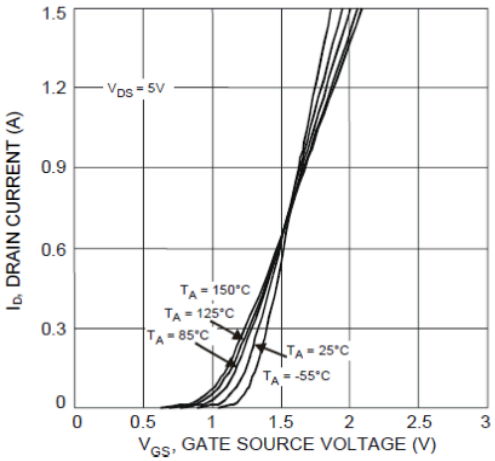

Fig. 2 Typical Transfer Characteristics

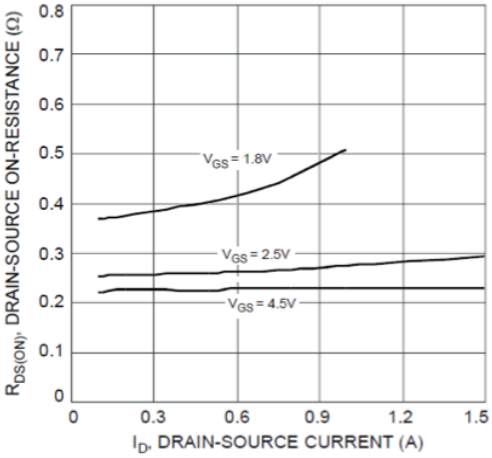

Fig. 3 Typical On-Resistance vs. I_D and V_{GS}

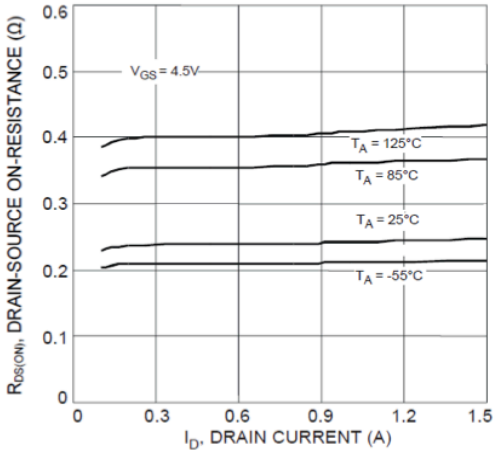

Fig. 4 Typical Drain-Source On-Resistance vs. I_D and T_J

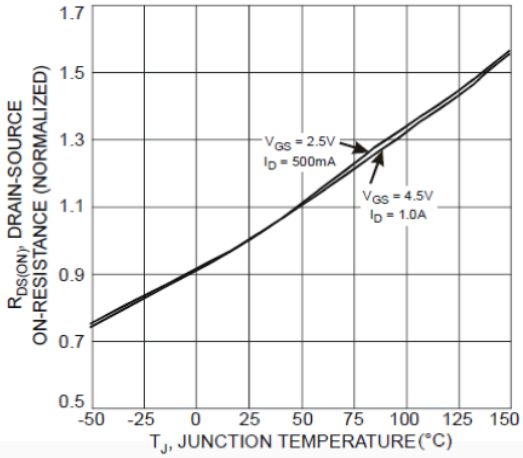

Fig. 5 On-Resistance Variation with T_J

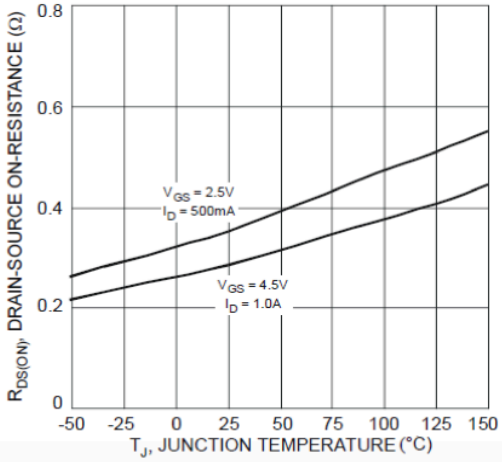

Fig. 6 On-Resistance Variation with T_J

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Typical Performance Characteristics (Cont.)

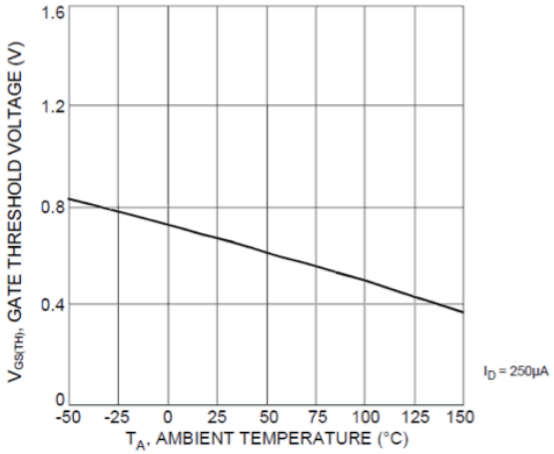

Fig. 7 Gate Threshold Variation vs. T_A

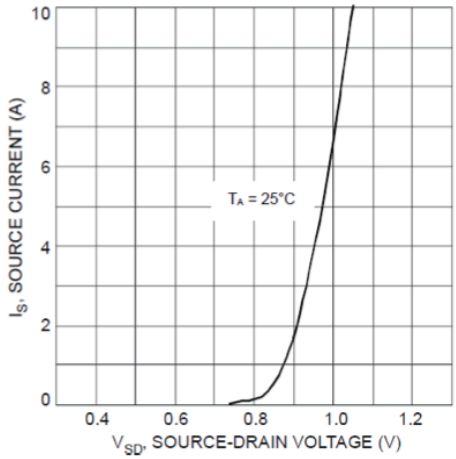

Fig. 8 Diode Forward Voltage vs. Current

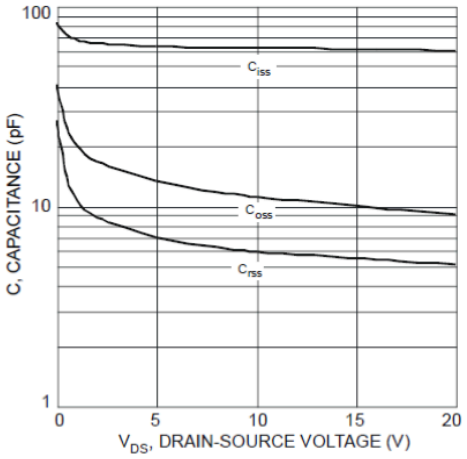

Fig. 9 Typical Capacitance

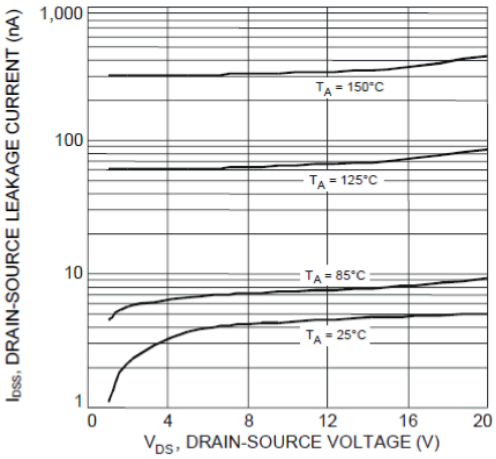

Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

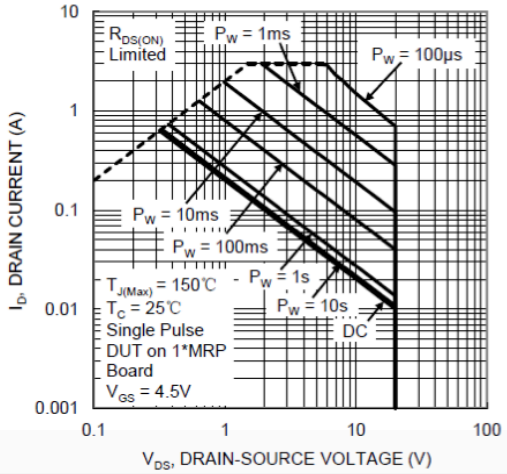

Fig. 11 Safe Operation Area

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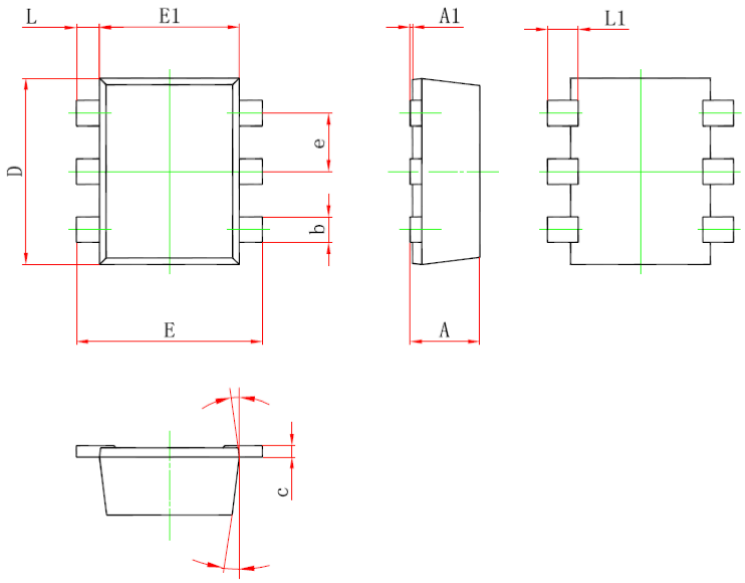
Package Dimension

SOT-563



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.525	0.600	0.021	0.035
A1	0.000	0.050	0.000	0.002
e	0.500 (BSC)		0.020 (BSC)	
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E	1.500	1.700	0.059	0.067
E1	1.100	1.300	0.043	0.051
L	0.100	0.300	0.004	0.012
L1	0.200	0.400	0.008	0.016

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