LMN1073KX7F 20V N-Channel Enhancement Mode MOSFET

Features

- 20V/0.5A, $R_{DS(ON)}$=300mΩ@VGS=4.5V
- 20V/0.4A, $R_{DS(ON)}$=450mΩ@VGS=2.5V
- 20V/0.2A, $R_{DS(ON)}$=800mΩ@VGS=1.8V
- 20V/0.1A, $R_{DS(ON)}$=1200mΩ@VGS=1.5V
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- ESD Protected
- SOT-523 package design

Product Description

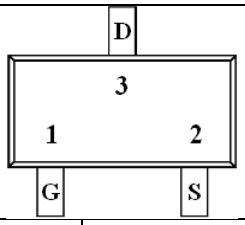
LMN1072 KX7F, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent RDS(ON), low gate charge. These devices are particularly suited for low voltage power management, such as smart phone and notebook computer, and low in-line power loss are needed in commercial industrial surface mount applications.

Applications

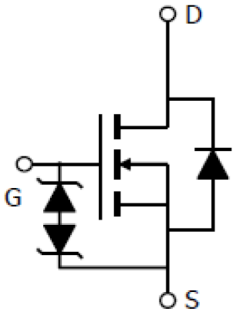
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Smart Phones, Pagers

Pin Configuration

LMN1072 KX5F (SOT-523)



PIN	Description
1	Gate
2	Source
3	Drain



Email:amy@lfc-semi.com www.lfc-semi.com

Ordering Information

Ordering Information					
Part Number	P/N	PKG code	Pb Free code	Package	Quantity
LMN1072KX7F	LMN1072K	X7	F	SOT-523	3000 PCS

Marking Information

Marking Information		
Part Marking	Part Number	LFC code
2W	2	WM

Absolute Maximum Ratings

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±10	V
I_D	Continuous Drain Current	T_A=25ºC	0.7	A
		T_A=70ºC	0.5	
I_{DM}	Pulsed Drain Current		1	A
I_S	Continuous Source Current (Diode Conduction)		0.3	A
P_D	Power Dissipation	T_A=25ºC	0.27	W
		T_A=70ºC	0.18	
T_J	Operating Junction Temperature		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		463	℃/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	20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, ID=250uA	0.3		1	
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±10V			±10	uA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=16V, V_{GS}=0V			1	uA
		V_{DS}=16V, V_{GS}=0V T_J=85ºC			30	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=4.5V, I_D=0.5A		210	300	mΩ
		V_{GS}=2.5V, I_D=0.4A		285	450	
		V_{GS}=1.8V, I_D=0.2A		430	800	
		V_{GS}=1.5V, I_D=0.1A		710	1200	
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=0.4A			1.2	S
V_{SD}	Diode Forward Voltage	I_S=0.5A, V_{GS}=0V			1.3	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, R_L=47Ω, 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

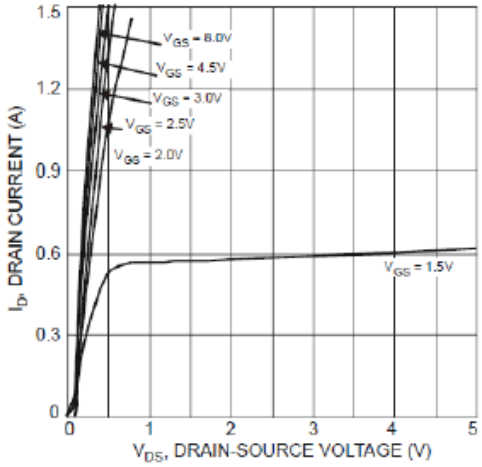

Fig. 1 Typical Output Characteristics

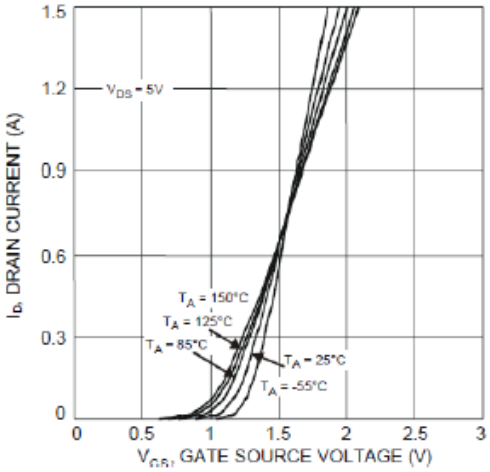

Fig. 2 Typical Transfer Characteristics

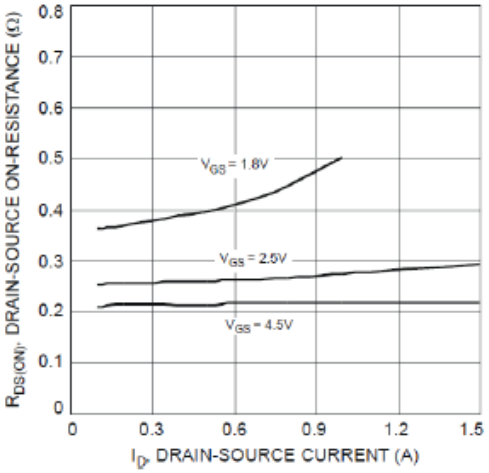

Fig. 3 Typical On-Resistance vs. I_D and V_{GS}

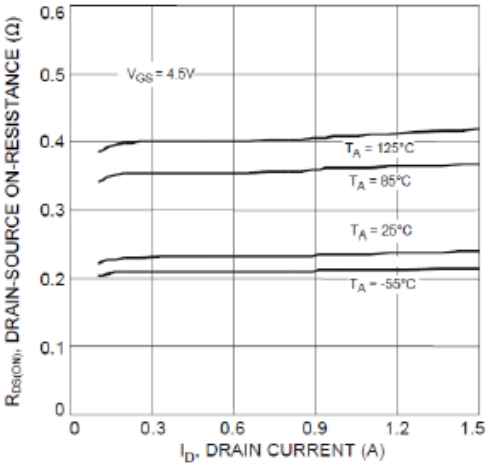

Fig. 4 Typical Drain-Source On-Resistance vs. I_D and T_J

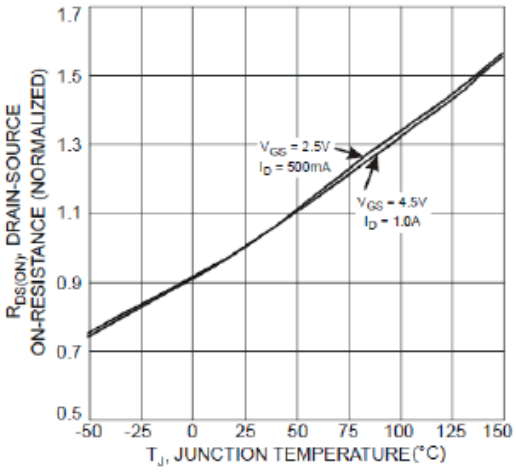

Fig. 5 On-Resistance Variation with T_J

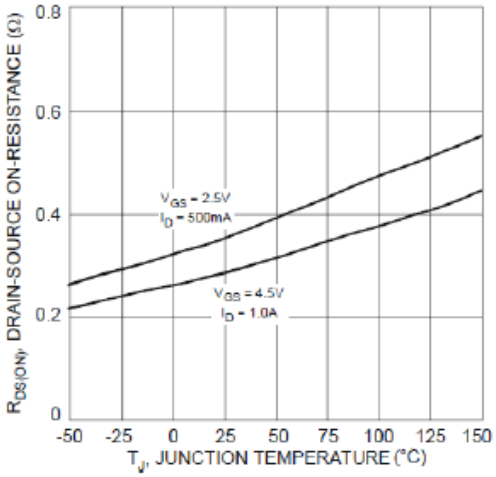

Fig. 6 On-Resistance Variation with T_J

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Typical Performance Characteristics(continue)

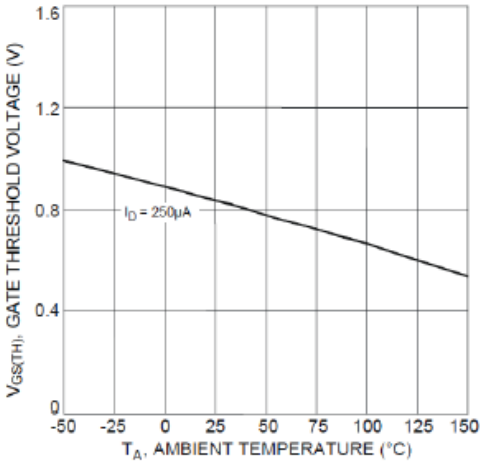

Fig. 7 Gate Threshold Variation vs. T_A

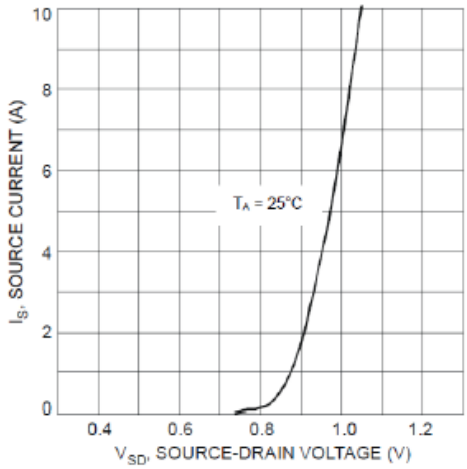

Fig. 8 Diode Forward Voltage vs. Current

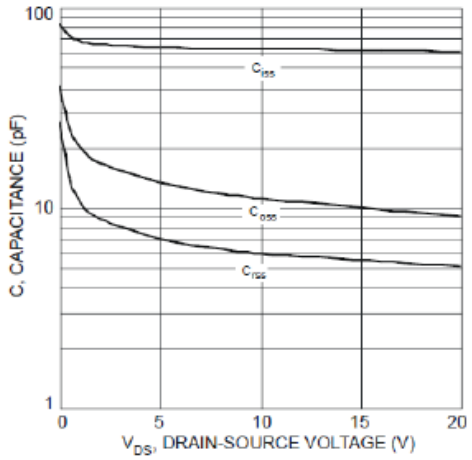

Fig. 9 Typical Capacitance

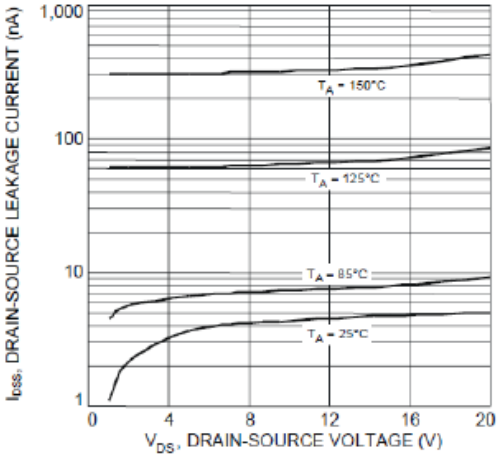

Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

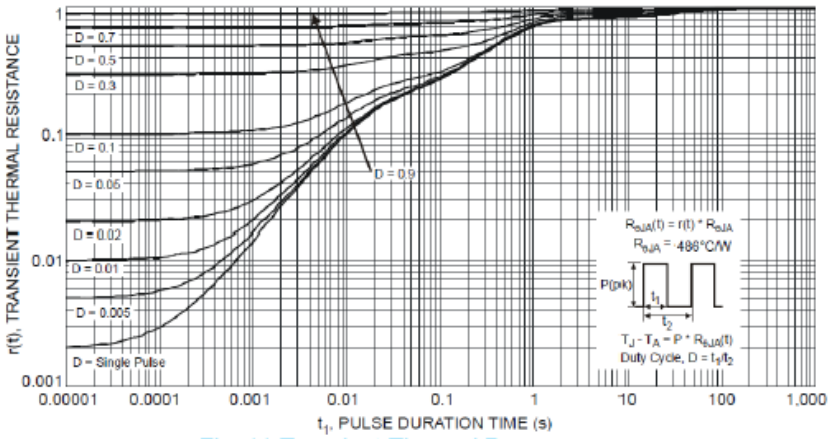

Fig. 11 Transient Thermal Response

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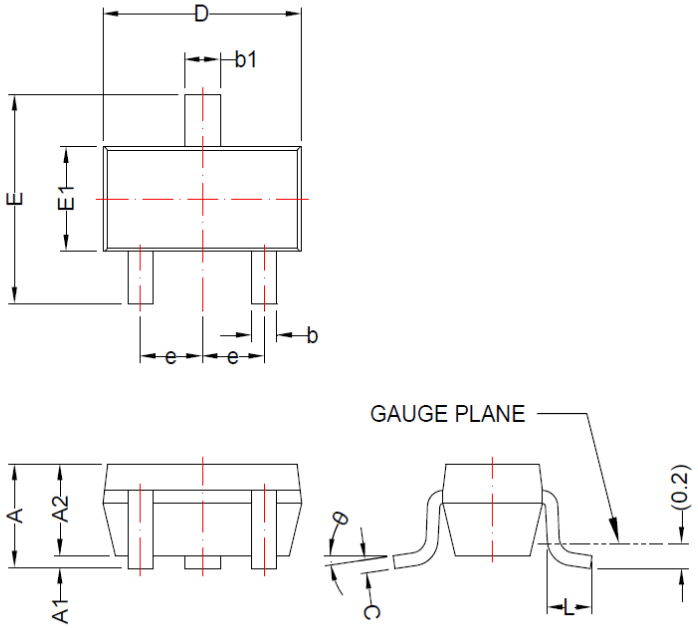
Package Dimension:

SOT-523



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.60	0.95	0.024	0.037
A1	0.00	0.10	0.000	0.004
A2	0.60	0.85	0.024	0.033
b	0.15	0.30	0.006	0.012
b1	0.25	0.40	0.010	0.016
c	0.08	0.25	0.003	0.010
D	1.40	1.80	0.055	0.071
E	1.40	1.80	0.055	0.071
E1	0.70	0.90	0.028	0.035
e	0.50BSC		0.020BSC	
L	0.26	0.46	0.010	0.018
θ	0°	8°	0°	8°

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