LMN1072KJZF 20V N-Channel Enhancement Mode MOSFET

Features

- 20V/0.5A, $R_{DS(ON)}$=300mΩ@V_{GS}=4.5V
- 20V/0.4A, $R_{DS(ON)}$=450mΩ@V_{GS}=2.5V
- 20V/0.2A, $R_{DS(ON)}$=700mΩ@V_{GS}=1.8V
- 20V/0.1A, $R_{DS(ON)}$=1200mΩ@V_{GS}=1.5V
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- ESD Protected
- SOT-23 package design

Product Description

LMN1072KJZF, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

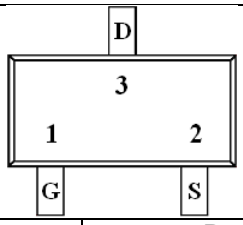
These devices are particularly suited for low voltage power management, such as smart phone and notebook computer, and low in-line power loss are needed in commercial industrial surface mount applications.

Applications

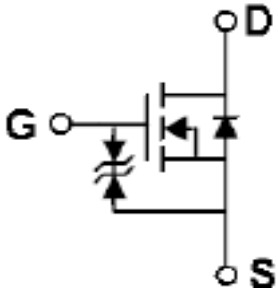
- Power Management in Notebook
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

Pin Configuration

LMN1072KJZF (SOT-23)



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
LMN1072KJZF	LMN1072K	JZ	F	SOT-23	3000 PCS

Marking Information

Marking Information		
Part Marking	Part Number	LFC code
2XW	2	XW

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_J=150℃)	0.8	A
I_{DM}	Pulsed Drain Current	3.0	A
I_S	Continuous Source Current (Diode Conduction)	0.3	A
P_D	Power Dissipation	0.45	W
T_J	Operating Junction Temperature	-55 to +150	℃
T_{STG}	Storage Temperature Range	-55 to +150	℃

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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	0.6	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	
$I_{D(ON)}$	On-State Drain Current	V_{DS}≧4.5V, V_{GS}=5V	0.7			A
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=4.5V, ID=0.5A		200	300	mΩ
		V_{GS}=2.5V, ID=0.4A		270	450	
		V_{GS}=1.8V, ID=0.2A		390	700	
		V_{GS}=1.5V, ID=0.1A		570	1200	
g_{FS}	Forward Transconductance	V_{DS}=10V, ID=0.4A		1		S
V_{SD}	Diode Forward Voltage	I_S=0.15A, V_{GS}=0V		0.8	1.2	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

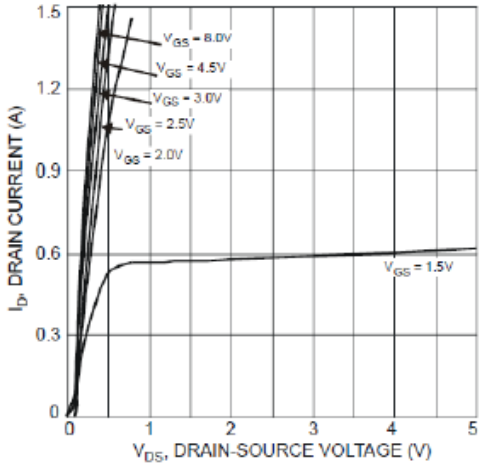

Fig. 1 Typical Output Characteristics

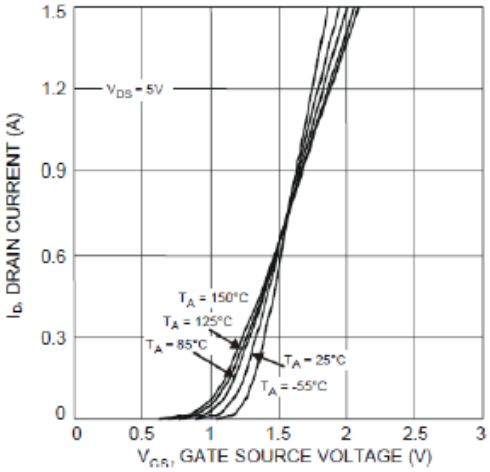

Fig. 2 Typical Transfer Characteristics

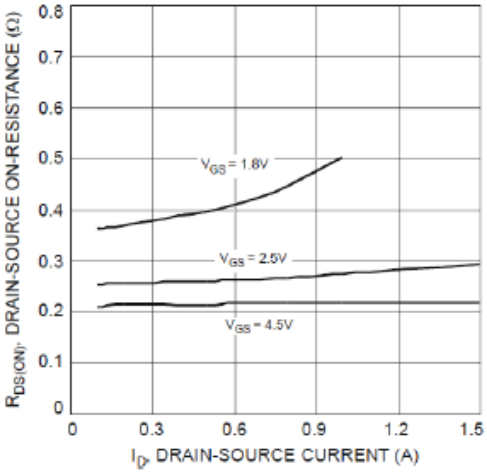

Fig. 3 Typical On-Resistance vs. I_D and V_{GS}

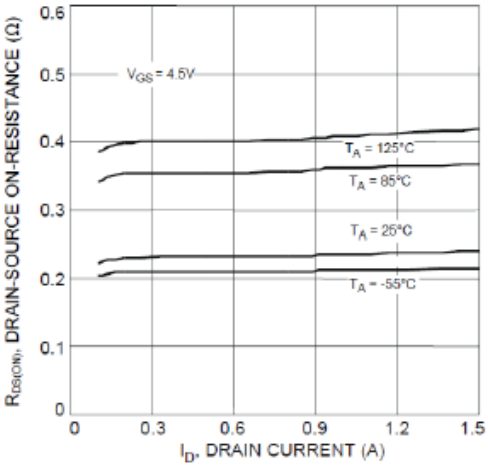

Fig. 4 Typical Drain-Source On-Resistance vs. I_D and T_J

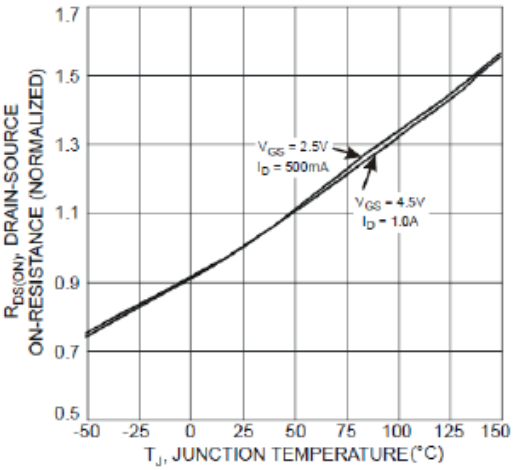

Fig. 5 On-Resistance Variation with T_J

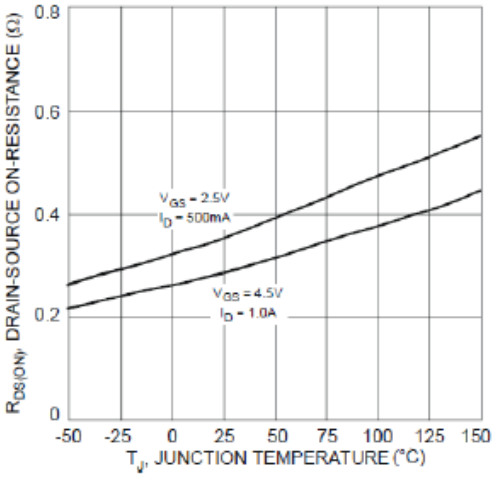

Fig. 6 On-Resistance Variation with T_J

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Typical Performance Characteristics(continue)

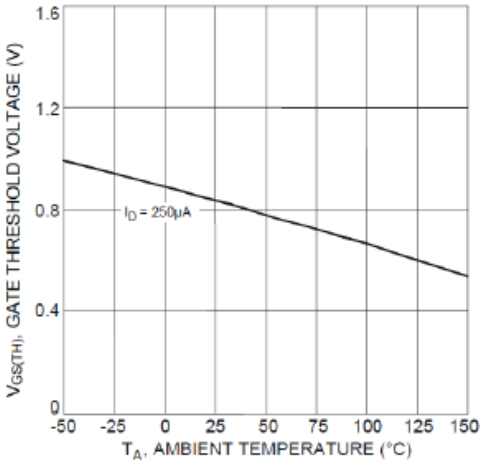

Fig. 7 Gate Threshold Variation vs. T_A

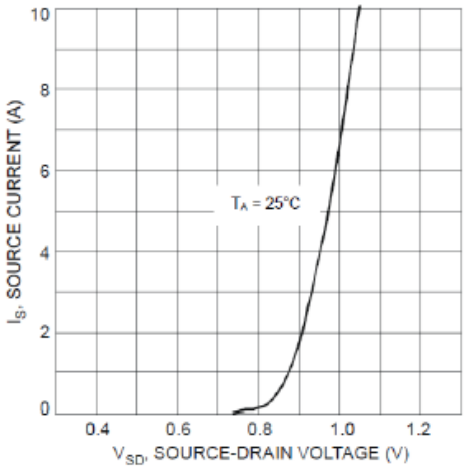

Fig. 8 Diode Forward Voltage vs. Current

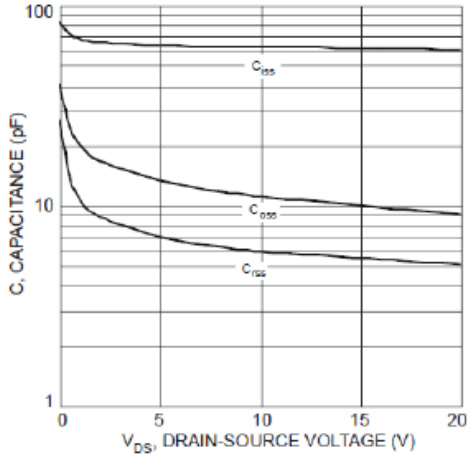

Fig. 9 Typical Capacitance

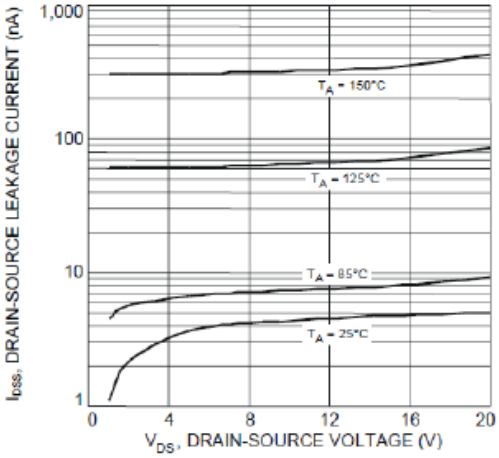

Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

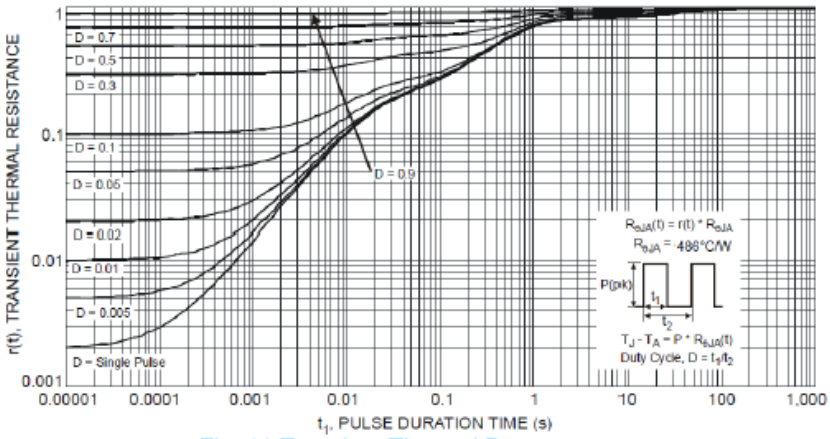

Fig. 11 Transient Thermal Response

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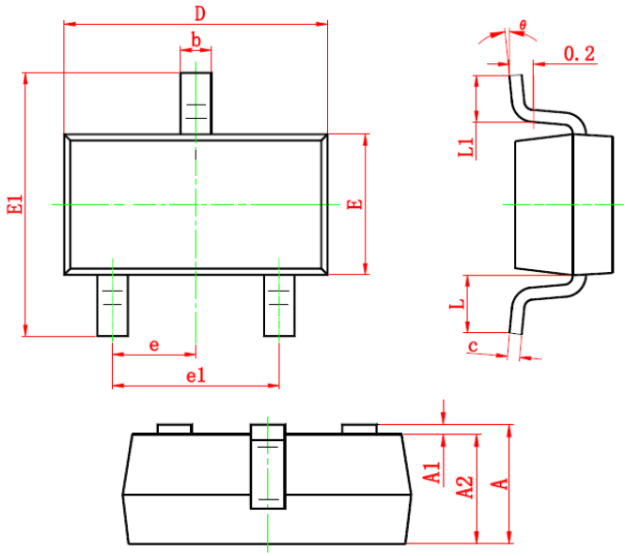
Package Dimension:

SOT-23



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.140	0.035	0.045
A1	0.000	0.140	0.000	0.006
A2	-	1.000	-	0.039
b	0.300	0.500	0.012	0.020
c	0.070	0.130	0.003	0.005
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

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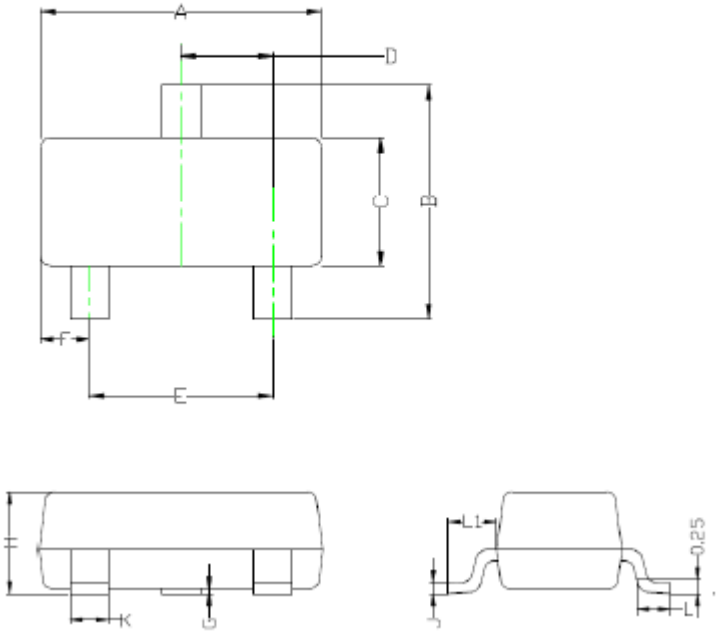

Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	2.80	3.04	0.110	0.120
B	2.10	2.64	0.083	0.104
C	1.20	1.40	0.047	0.055
D	0.89	1.03	0.035	0.041
E	1.78	2.05	0.070	0.081
F	0.45	0.60	0.018	0.024
G	0.013	0.100	0.001	0.004
H	0.900	1.110	0.035	0.044
J	0.085	0.180	0.003	0.007
K	0.370	0.510	0.015	0.020
L	0.300	0.500	0.012	0.020
L1	0.500	0.600	0.020	0.024

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