20V N-Channel Enhancement Mode MOSFET

Features

- 20V/0.95A, $R_{DS(ON)}$=380mΩ@V_{GS}=4.5V
- 20V/0.75A, $R_{DS(ON)}$=450mΩ@V_{GS}=2.5V
- 20V/0.65A, $R_{DS(ON)}$=800mΩ@V_{GS}=1.8V
- 20V/0.65A, $R_{DS(ON)}$=1000mΩ@V_{GS}=1.5V
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- ESD Protected
- SOT-723 package design

Product Description

LMN1072K, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

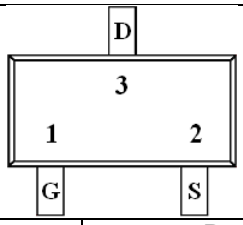
These devices are particularly suited for low voltage power management, such as smart phone and notebook computer, and low in-line power loss are needed in commercial industrial surface mount applications.

Applications

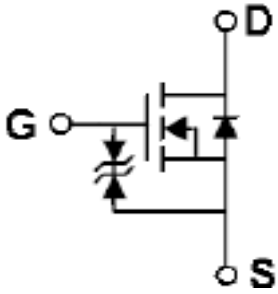
- Power Management in Notebook
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

Pin Configuration

LMN1072KAF (SOT-723)



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
LMN1072KAF	LMN1072K	A	F	SOT-723	8000 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	±12	V
I_D	Continuous Drain Current (T_J=150℃)	0.95	A
I_{DM}	Pulsed Drain Current	4.0	A
I_S	Continuous Source Current (Diode Conduction)	0.3	A
P_D	Power Dissipation	0.15	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	0.35		1	
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±12V			30	uA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V			1	uA
		V_{DS}=20V, V_{GS}=0V T_J=55ºC			5	
$I_{D(ON)}$	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=0.95A		260	380	mΩ
		V_{GS}=2.5V, ID=0.75A		320	450	
		V_{GS}=1.8V, ID=0.65A		420	800	
		V_{GS}=1.5V, ID=0.65A		500	1000	
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=0.5A		1	2	nC
Q_{gs}	Gate-Source Charge			0.26		
Q_{gd}	Gate-Drain Charge			0.2		
C_{iss}	Input Capacitance	V_{DS}=10V, V_{GS}=0V, f=1MHz		38.2	75	pF
C_{oss}	Output Capacitance			14.4	28	
C_{rss}	Reverse Transfer Capacitance			6	12	
$t_{d(on)}$	Turn-On Time	V_{DD}=10V, R_L=10Ω, I_D=0.5A, V_{GS}=4.5V, R_G=10Ω		5	10	ns
t_r				3.5	7	
$t_{d(off)}$	Turn-Off Time			14	28	
t_f				6	12	

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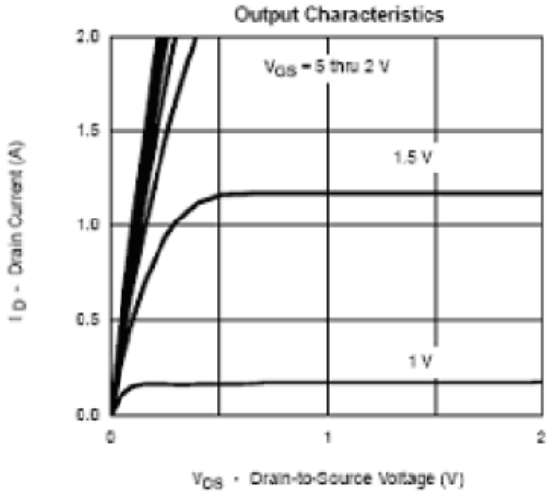
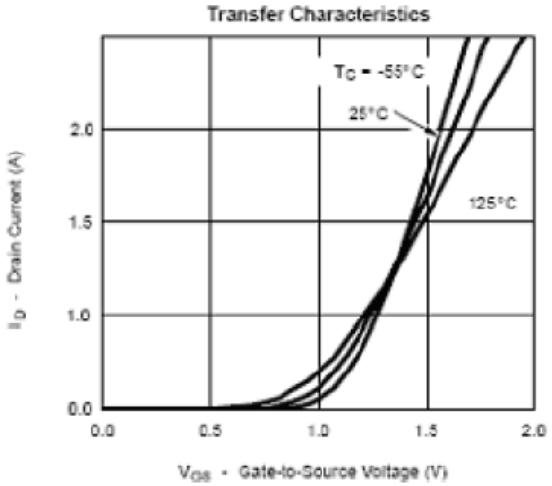
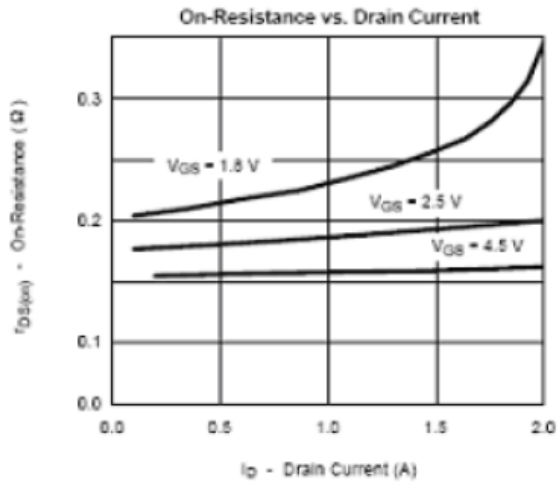
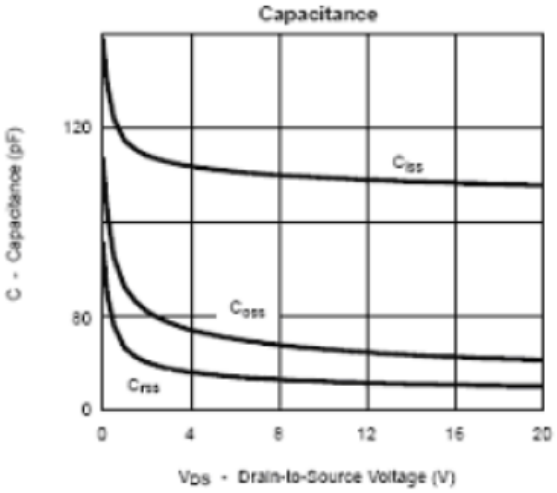
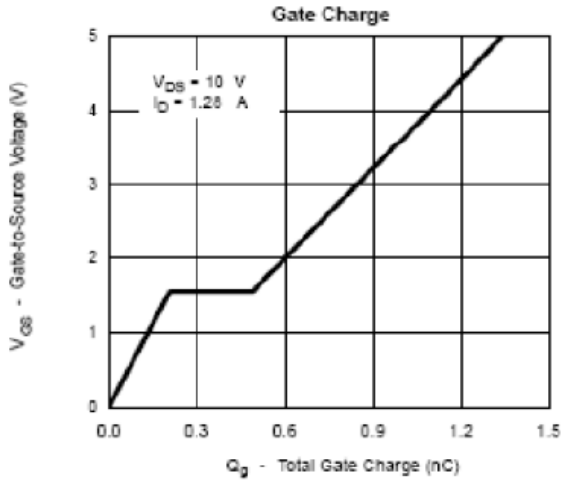
Typical Performance Characteristics

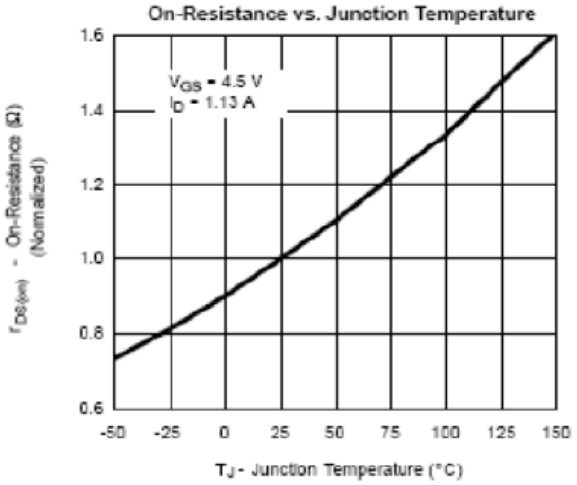












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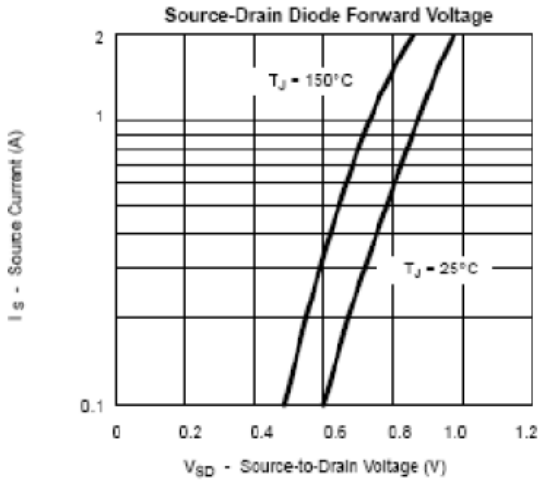
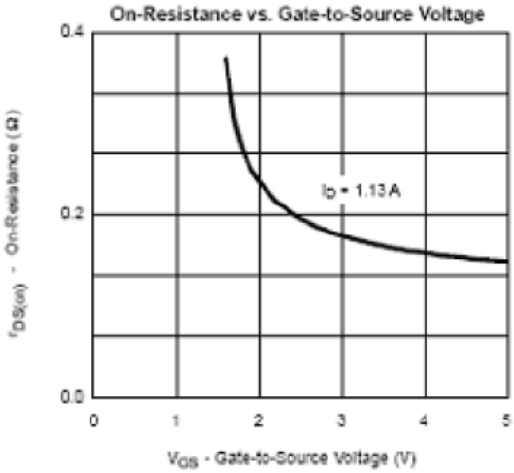
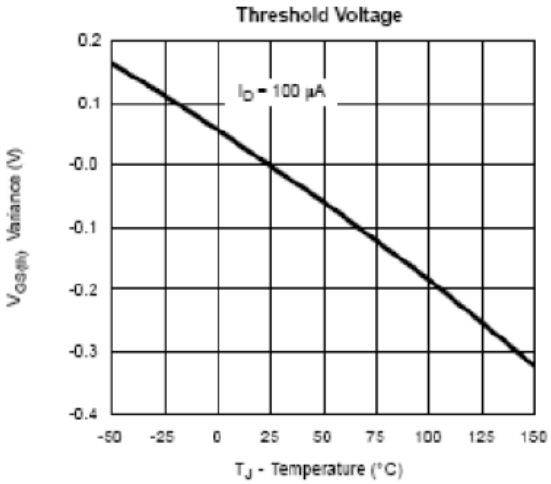
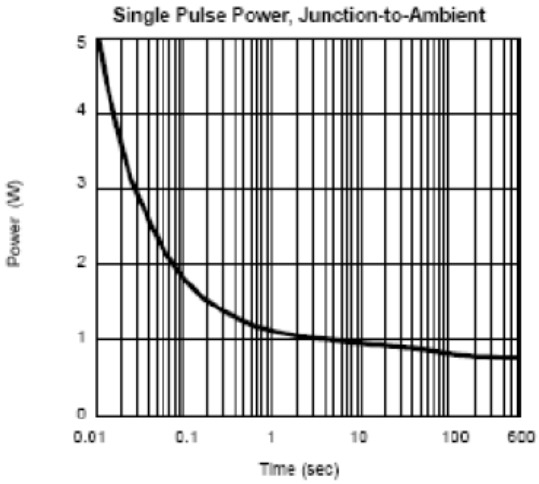
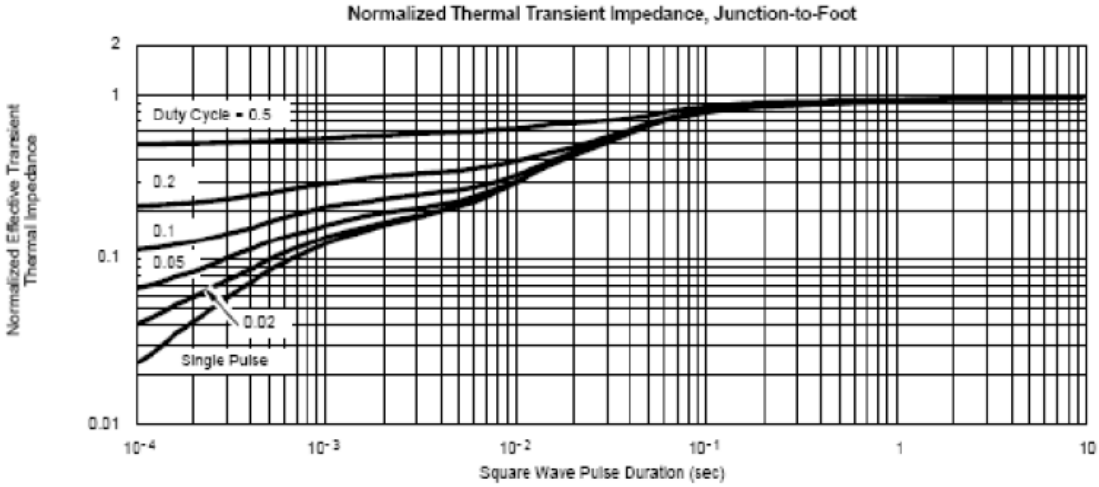
Typical Performance Characteristics(continue)











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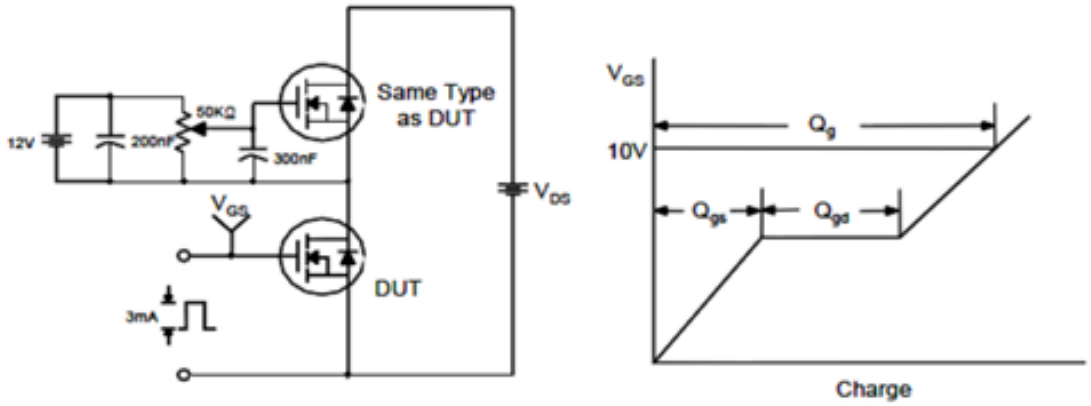
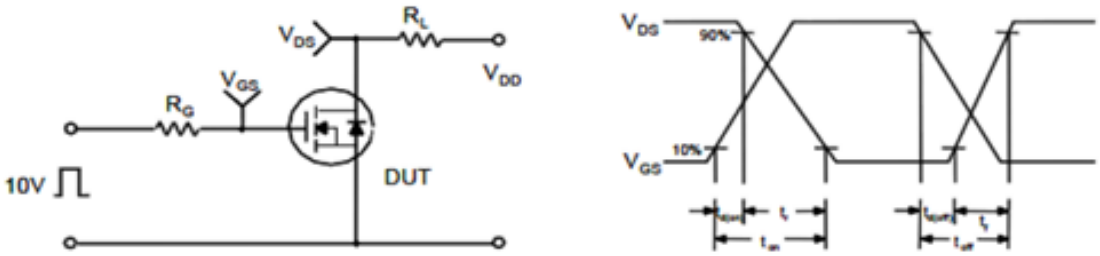
Typical Performance Characteristics(continue)

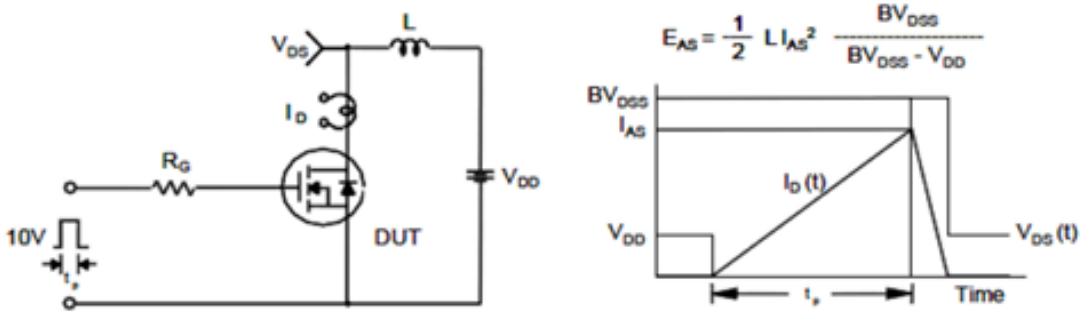
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



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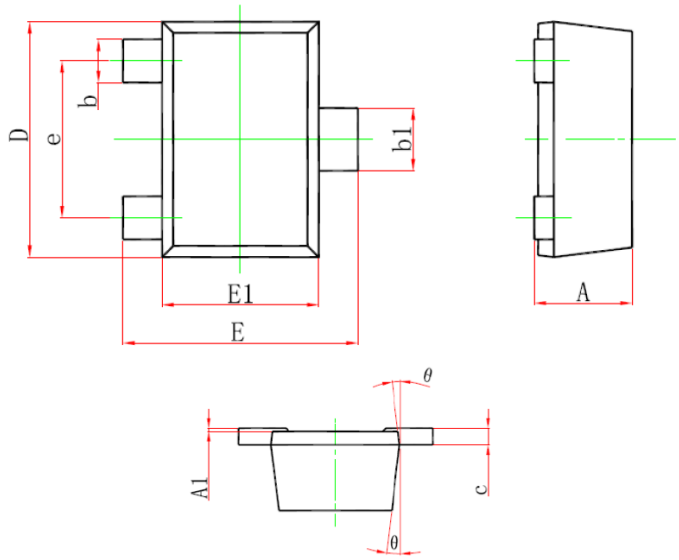
Package Dimension:

SOT-723



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	-	0.500	-	0.020
A1	0.000	0.050	0.000	0.002
b	0.170	0.270	0.007	0.011
b1	0.270	0.370	0.011	0.015
c	-	0.150	-	0.008
D	1.150	1.250	0.045	0.049
E	1.150	1.250	0.045	0.049
E1	0.750	0.850	0.030	0033
e	0.800TYP		0.031TYP	
θ	7°REF		7°REF	

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