

LMN7002KAF 60V N-Channel Enhancement Mode MOSFET

Features

- 60V/0.5A, $R_{DS(ON)} = 3.0\Omega @ V_{GS} = 10V$
- 60V/0.2A, $R_{DS(ON)} = 4.0\Omega @ V_{GS} = 4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-723 package design

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

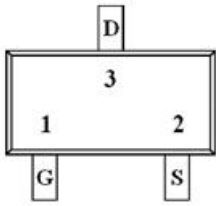
Product Description

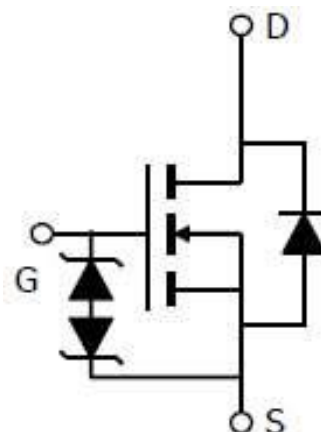
LMN7002K, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

Applications

- Drivers: Relays, Solenoids, Lamps, Hammers, Display, Memories, Transistors, etc.
- High saturation current capability.
- Direct Logic-Level Interface: TTL/CMOS
- Battery Operated Systems
- Solid-State Relays

Pin Configuration

LMN7002KAF (SOT-723)	
 Top Views	
Pin	Description
1	Gate
2	Source
3	Drain



Ordering Information

Part Number	P/N	PKG Code	Pb Free Code	Package	Quantity Reel
LMN7002KAF	LMN7002K	A	F	SOT-723	8000 pcs

Marking Information

Part Marking
RK

Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V _{DSS}	Drain-Source Voltage		60	V
V _{GSS}	Gate-Source Voltage - Continuous		±20	V
I _D	Continuous Drain Current	T _A =25°C	0.15	A
		T _A =70°C	0.13	
P _D	Power Dissipation	T _A =25°C	0.16	W
		T _A =70°C	0.10	
T _J	Operating Junction Temperature Range		-55 to +150	°C
T _{STG}	Storage Temperature Range		-55 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient		833	°C/W

Electrical Characteristics

(T_A=25°C Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	60			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.0		2.0	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			10	uA
		V _{DS} =0V, V _{GS} =±10V			200	nA
		V _{DS} =0V, V _{GS} =±5V			100	nA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =48V, V _{GS} =0V			1	uA
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =0.5A		1.3	3	Ω
		V _{GS} =4.5V, I _D =0.2A		1.4	4	
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =0.2A		0.97	1.5	V
Q _{rr}	Recovered Charge	V _{GS} =0V, I _S =0.3A, V _R =25V, dI/dt=-100A/us		30		nC
t _{rr}	Reverse Recovery Time	V _{GS} =0V, I _S =0.3A, V _R =25V, dI/dt=-100A/us		30		ns
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz		30		pF
C _{oss}	Output Capacitance			8		
C _{rss}	Reverse Transfer Capacitance			5		
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _D =0.25A		500		pC
Q _{gs}	Gate-Source Charge			100		
Q _{gd}	Gate-Drain Charge			150		
t _{d(on)}	Turn-On Time	V _{DD} =30V, I _D =0.2A, V _{GS} =4.5V, R _L = 150Ω, R _G =10Ω		10	20	ns
T _r				35	50	
t _{d(off)}	Turn-Off Time			20	30	
T _f				40	60	

Typical Performance Characteristics

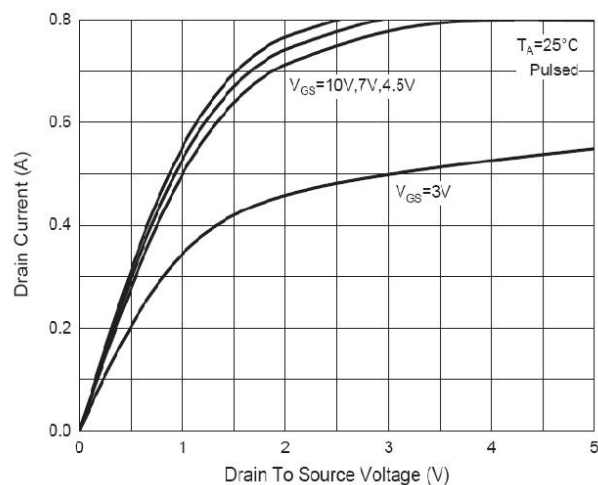


Fig.1 Typical Output Characteristics

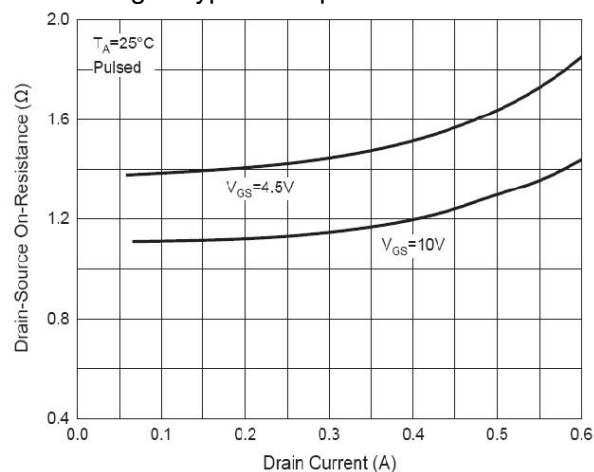


Fig.3 Typical On-Resistance vs. I_D and V_{GS}

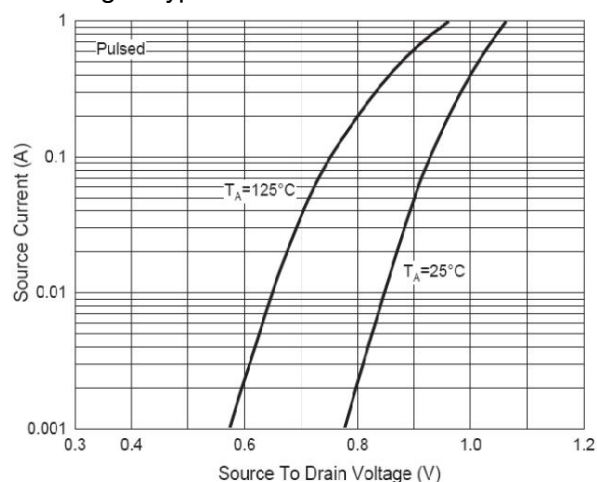


Fig.5 Diode Forward Voltage vs. Current

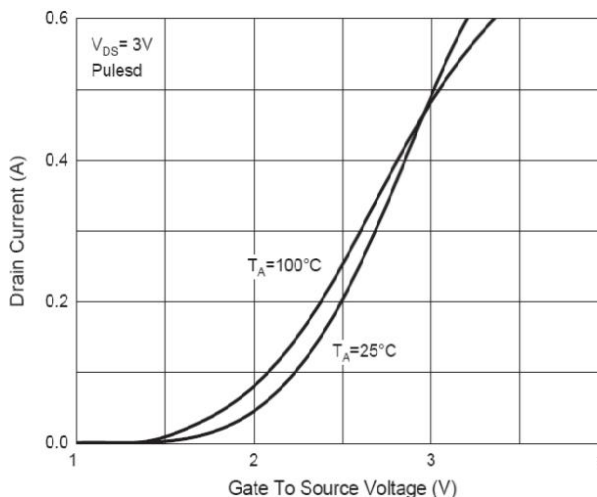


Fig.2 Typical Transfer Characteristics

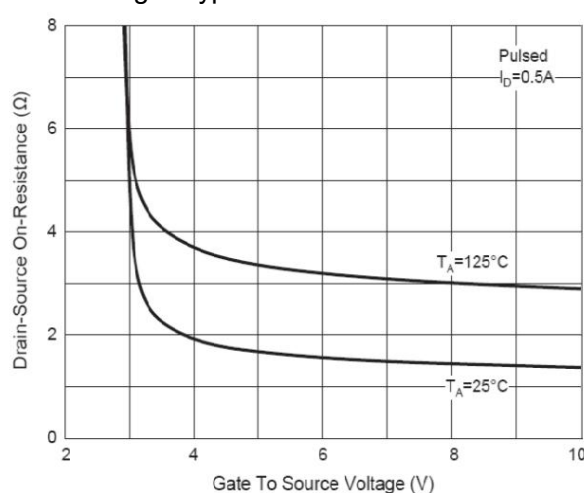


Fig.4 Typical Transfer Characteristic

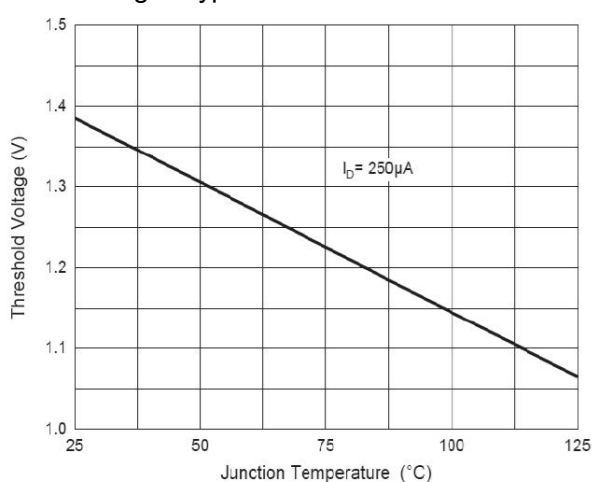
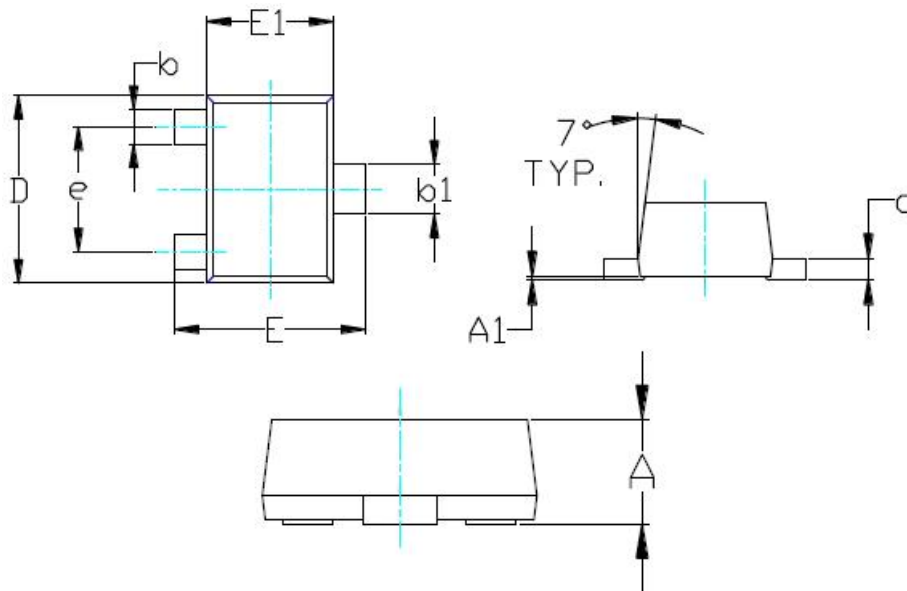


Fig.6 Gate Threshold Variation vs. T_J

Package Dimension
SOT-723


Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.430	0.500	0.017	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	0.080	0.150	0.003	0.006
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	0.033
e	0.800 TYP		0.031 TYP	
θ	7° REF		7° REF	