LSR2N7002K N-Channel Enhancement Mode MOSFET

Features

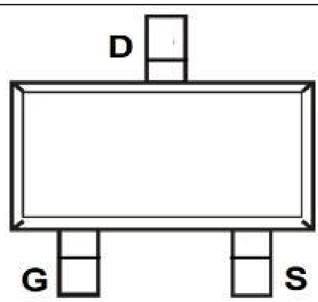
- Advanced Trench MOS technology
- Low Threshold Voltage
- Fast Switching Speed
- Halogen-Free & Lead-Free
- ESD Protected up to 2KV (HBM)

Applications

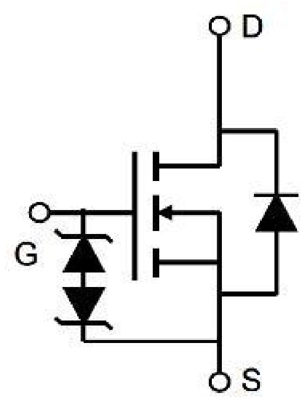
- Load Switch for Portable Devices
- Voltage controlled small signal switch

Pin Configuration

LSR2N7002K(SOT-23)



Pin	Description
1	Gate
2	Source
3	Drain



Marking Information

Part Marking	Part Number
72K	72K

Absolute Maximum Ratings

(T_A=25ºC Unless otherwise noted)

Symbol	Parameter	Typical	Unit
V_{DSS}	Drain-Source Voltage	60	V
V_{GSS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current	0.34	A
I_{DM}	Pulsed Drain Current[1]	1.2	A
P_D	Power Dissipation	1.25	W
T_J	Operating Junction Temperature Range	-50 to +150	ºC
T_{STG}	Storage Temperature Range	-50 to +150	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient[2]	100	ºC/W

Note:
1. Pulse Test: Pulse Width ≦ 100us, Duty Cycle ≦ 1%, Limited by $T_{J(MAX)}$.
2. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.

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	60			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1.1		2.1	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±10	uA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}=0V			1	uA
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V, I_D=0.5A			3	Ω
Dynamic						
R_g	Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz		2		Ω
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=0.2A		80		S
C_{iss}	Input Capacitance	V_{DS}=30V, V_{GS}=0V, f=1MHz		31		pF
C_{oss}	Output Capacitance			11		
C_{rss}	Reverse Transfer Capacitance			3		
Q_g	Total Gate Charge	V_{DS}=48V, V_{GS}=10V, I_D=0.5A		7		nC
Q_{gs}	Gate-Source Charge			1.4		
Q_{gd}	Gate-Drain Charge			2.5		
$t_{d(on)}$	Turn-On Time	V_{DS}=30V, V_{GS}=10V, I_D=0.5A, R_g=3.3Ω		6		ns
T_r				15		
$t_{d(off)}$	Turn-Off Time			29		
T_f				9		
Body-Diode						
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS}=0V, I_S=1A		0.85	1.5	V
t_{rr}	Body Diode Reverse Recovery Time	I_s=24A, di/dt=100A/us		30		nS
Q_{rr}	Body Diode Reverse Recovery Charge	I_s=24A, di/dt=100A/us		30		nC

Typical Performance Characteristics

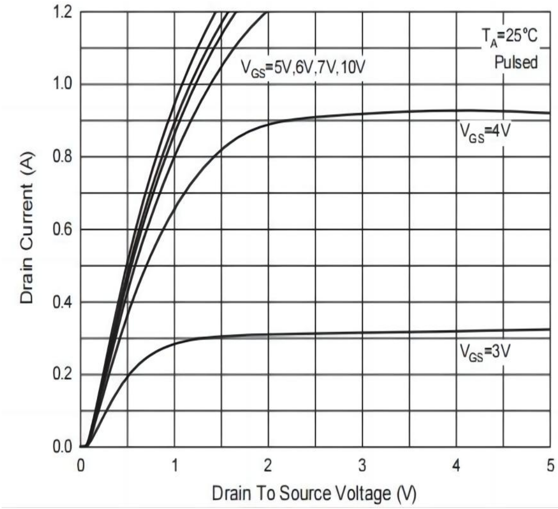


Fig.1 Typical Output Characteristics

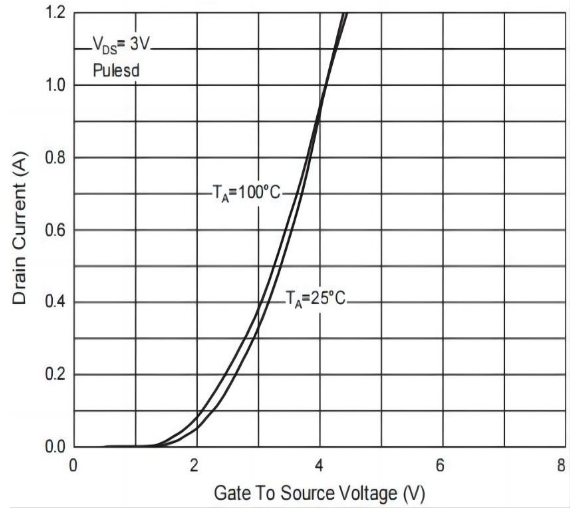


Fig.2 Typical Transfer Characteristics

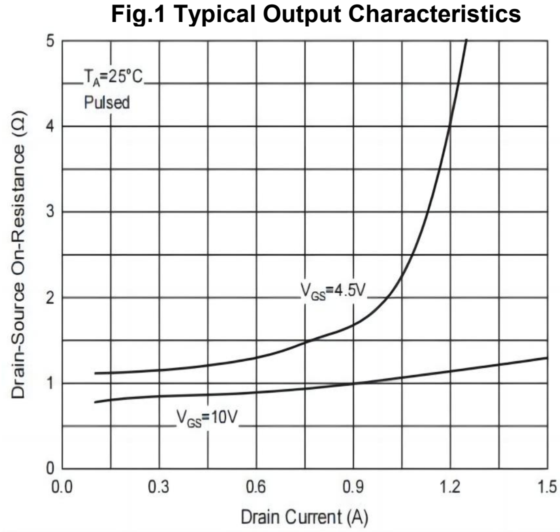


Fig.3 On-Resistance vs. Drain Current

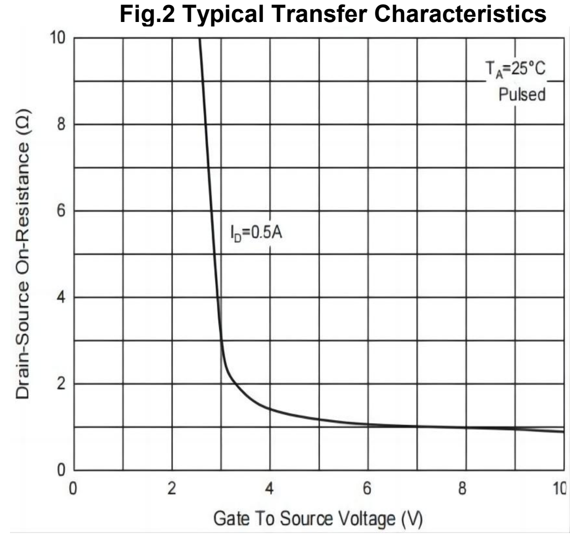


Fig.4 On-Resistance vs. Gate-Source Voltage

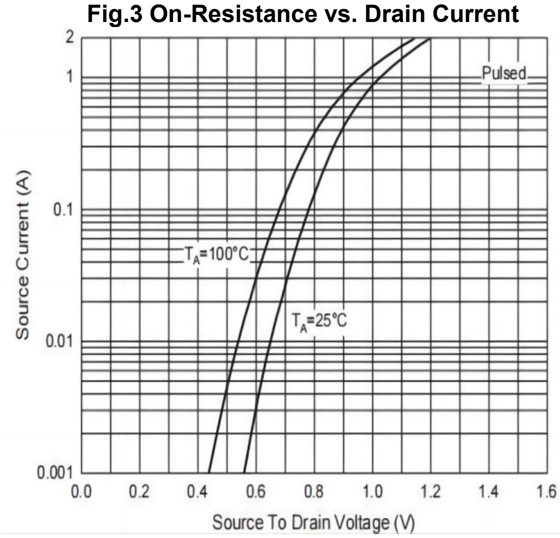


Fig.5 Source Current vs. Source-Drain Voltage

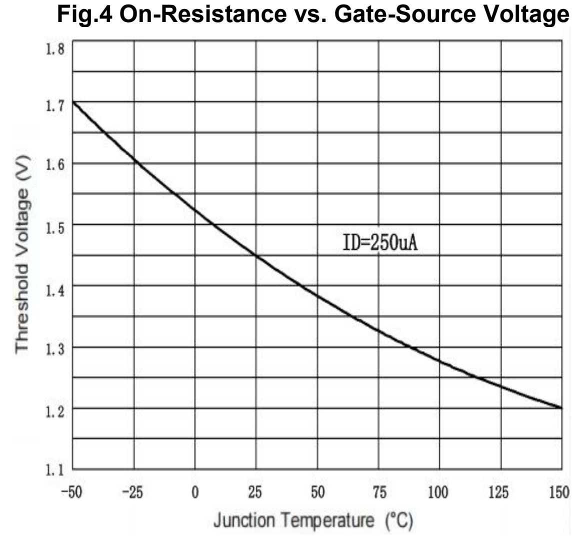


Fig.6 $V_{GS(th)}$ vs. Junction Temperature

Typical Performance Characteristics

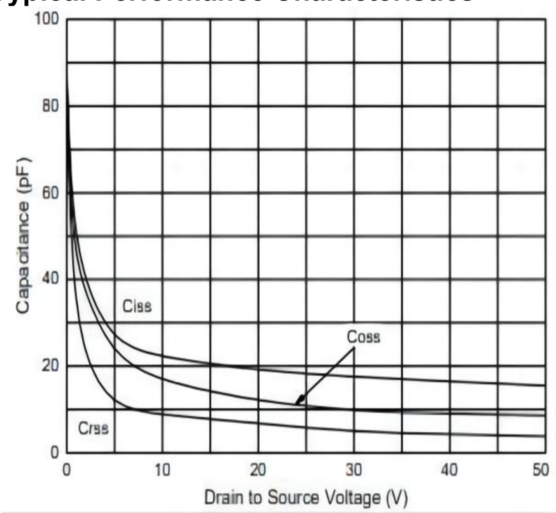
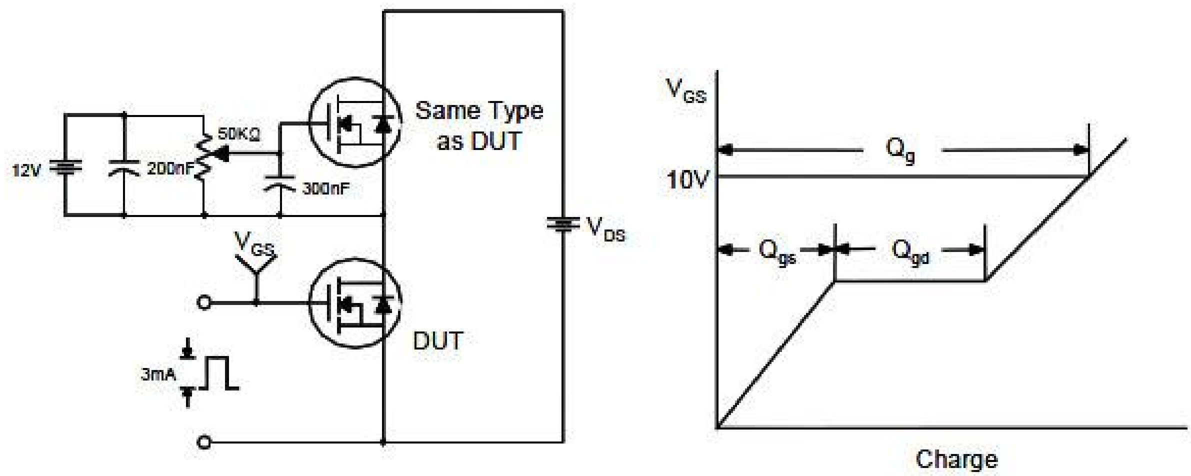


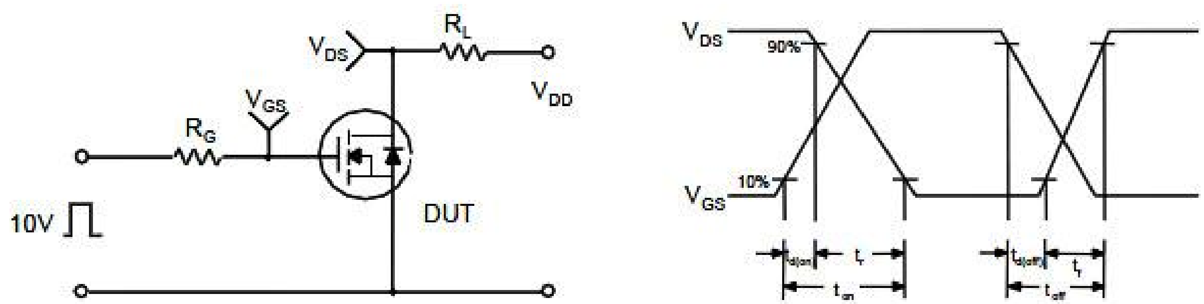
Fig.7 Capacitance Characteristics

Typical Characteristics

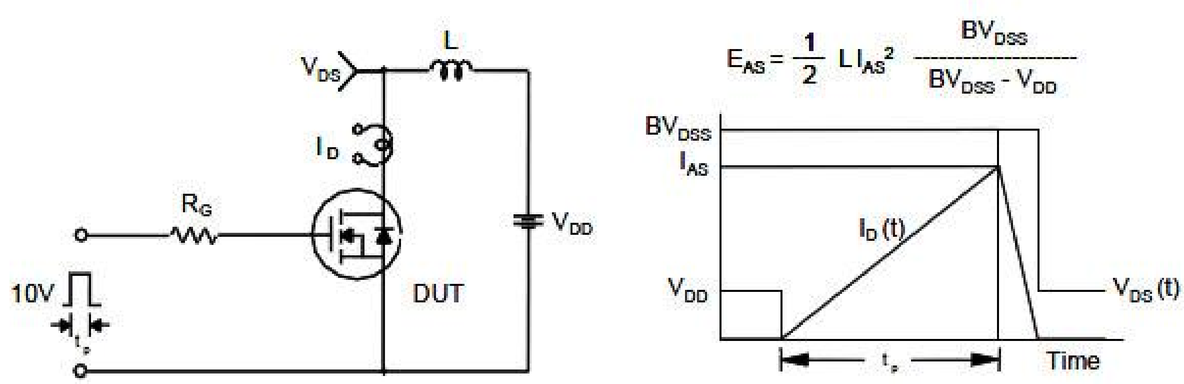
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

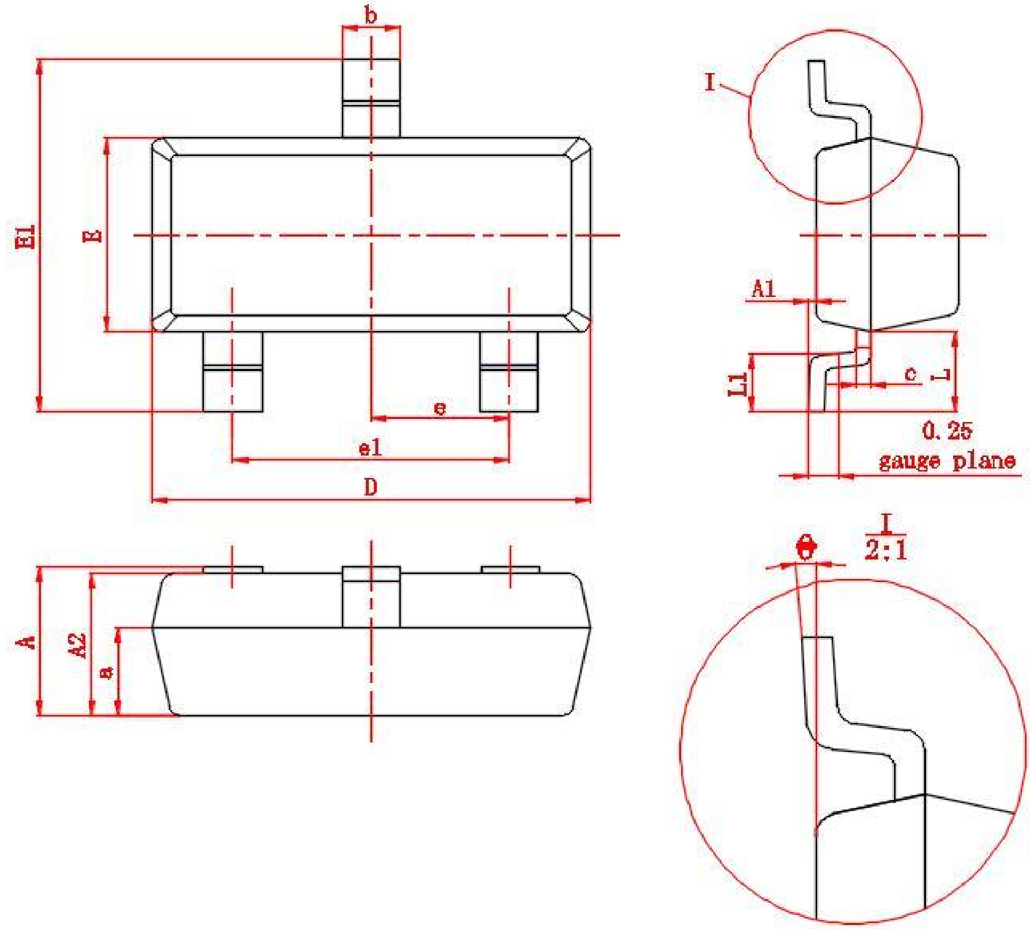


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension(Units:mm)

SOT-23



Symbol	Min	Max	Symbol	Min	Max
A	0.90	1.15	**e**	0.95 BSC	
A1	0	0.10	**e1**	1.80	2.00
A2	0.90	1.05	**b**	0.30	0.50
a	0.60 BSC		**c**	0.08	0.15
D	2.80	3.00	**L**	0.55 BSC	
E	1.20	1.40	**L1**	0.30	0.50
E1	2.25	2.55	**θ**	0°	8°