LSR2SK3018 N-Channel Enhancement Mode MOSFET

Features

- Advanced Trench MOS technology
- Low Threshold Voltage
- Fast Switching Speed
- Halogen-Free & Lead-Free
- ESD Protected up to 2.5KV (HBM)

Applications

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

Pin Configuration

LSR2SK3018(SOT-323)

Pin	Description
1	Gate
2	Source
3	Drain

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Marking Information

Part Marking	Part Number
KN	KN

Absolute Maximum Ratings

(T_A=25ºC Unless otherwise noted)

Symbol	Parameter	Typical	Unit
V_{DSS}	Drain-Source Voltage	30	V
V_{GSS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current	0.38	A
I_{DM}	Pulsed Drain Current[1]	1.2	A
P_D	Power Dissipation	0.42	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]	301	ºC/W

Note:
1. Pulse Test: Pulse Width ≦ 300us, Duty Cycle ≦ 2%, Limited by $T_{J(MAX)}$.
2. Device mounted on single sided FR-4 substrate PC board, 2oz copper.

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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	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	0.4		1.5	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±12V			±10	uA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V, V_{GS}=0V			1	uA
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V, I_D=0.25A		1.6	2.8	Ω
Dynamic						
R_g	Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz		79.9		Ω
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=0.115A	80			mS
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz		23.2		pF
C_{oss}	Output Capacitance			3		
C_{rss}	Reverse Transfer Capacitance			2.2		
Q_g	Total Gate Charge	V_{DS}=30V, V_{GS}=10V, I_D=0.15A		0.9		nC
Q_{gs}	Gate-Source Charge			0.1		
Q_{gd}	Gate-Drain Charge			0.2		
$t_{d(on)}$	Turn-On Time	V_{DS}=30V, V_{GS}=10V, I_D=0.115A, R_g=25Ω		2.3		ns
T_r				3.9		
$t_{d(off)}$	Turn-Off Time			11.4		
T_f				16.7		
Body-Diode						
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS}=0V, I_S=0.115A			1.2	V

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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 On-Resistance vs. Junction Temperature

Fig.6 Forward Characteristics of Body Diode

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Typical Performance Characteristics

Fig.7 $V_{GS(th)}$ vs. Junction Temperature

Fig.8 Capacitance Characteristics

Fig.9 Typical Gate Charge vs. Gate-Source Voltage

Fig.10 Safe Operating Area

Fig.11 Transient Thermal Impedance

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Typical Characteristics

Gate Charge Test Circuit & Waveform

Resistive Switching Test Circuit & Waveforms

Unclamped Inductive Switching Test Circuit & Waveforms

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Package Dimension(Units:mm)

SOT-323

Symbol	Min	Max	Symbol	Min	Max
A	0.90	1.10	**e**	0.65 BSC	
A1	0	0.10	**e1**	1.20	1.40
A2	0.90	1.00	**b**	0.25	0.35
a	0.45 BSC		**c**	0.08	0.15
D	2.00	2.20	**L**	0.525 BSC	
E	1.15	1.35	**L1**	0.26	0.46
E1	2.15	2.45	**θ**	0°	8°

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