LSR2N10 100V N-Channel MOSFET

Features

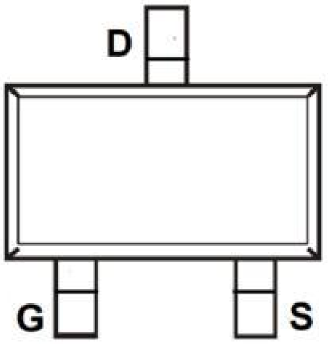
- Advanced SGT MOS technology
- Low Thermal Resistance
- Fast Switching Speed
- Halogen-Free & Lead-Free

Applications

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

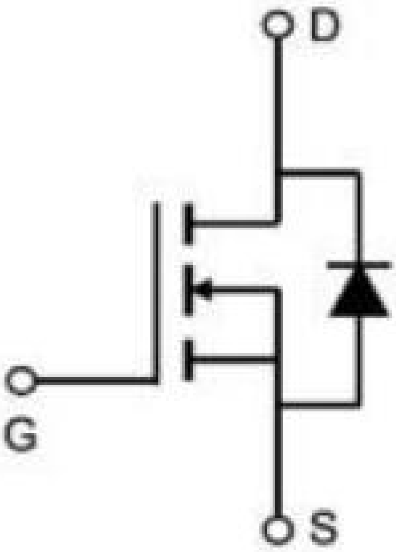
Pin Configuration

LSR2N10(SOT-23)



Top View

Pin	Description
1	Gate
2	Source
3	Drain



Marking Information

Part Marking	Part Number
0102	0102

Absolute Maximum Ratings

(T_A=25ºC Unless otherwise noted)

Symbol	Parameter	Typical	Unit
V_{DSS}	Drain-Source Voltage	100	V
V_{GSS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current[1]	1.75	A
I_{DM}	Pulsed Drain Current[2]	8.6	A
P_D	Power Dissipation[1]	1.25	W
T_J	Operating Junction Temperature Range	-55 to +150	ºC
T_{STG}	Storage Temperature Range	-55 to +150	ºC
$R_{\theta JC}$	Thermal Resistance-Junction to Lead	19.7	ºC/W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient[1]	100	ºC/W

Note:
1. For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
2. Repetitive rating 25mm x 25mm FR4 PCB, D = 0.02, 300us pulse width limited by maximum junction temperature.

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	100			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1	1.6	2.5	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V, V_{GS}=0V			1	uA
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V, I_D=2A		220	286	mΩ
		V_{GS}=4.5V, I_D=1A		235	330	
Dynamic						
g_{fs}	Forward Transconductance	V_{DS}=15V, I_D=3.2A		5		S
C_{iss}	Input Capacitance	V_{DS}=50V, V_{GS}=5V, f=1MHz		405		pF
C_{oss}	Output Capacitance			28.2		
C_{rss}	Reverse Transfer Capacitance			14.2		
Q_g	Total Gate Charge	V_{DS}=50V, V_{GS}=10V, I_D=1.2A		7.7		nC
Q_{gs}	Gate-Source Charge			1.8		
Q_{gd}	Gate-Drain Charge			2.1		
$t_{d(on)}$	Turn-On Time	V_{DS}=30V, V_{GS}=10V, I_D=1.2A, RG=6Ω		3.4		ns
T_r				2.2		
$t_{d(off)}$	Turn-Off Time			8		
T_f				3.2		
Body-Diode						
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS}=0V, I_S=3.2A			0.95	V
t_{rr}	Body Diode Reverse Recovery Time	I_S=3.2A, di/dt=100A/us		27		ns
Q_{rr}	Body Diode Reverse Recovery Charge	I_S=3.2A, di/dt=100A/us		32		nC

Typical Performance Characteristics

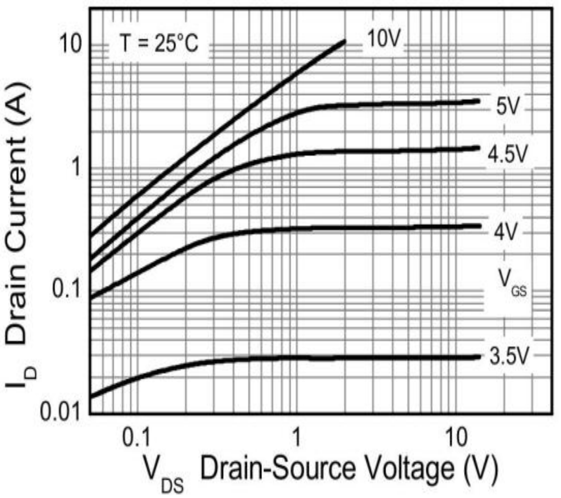


Fig.1 Typical Output Characteristics(25℃)

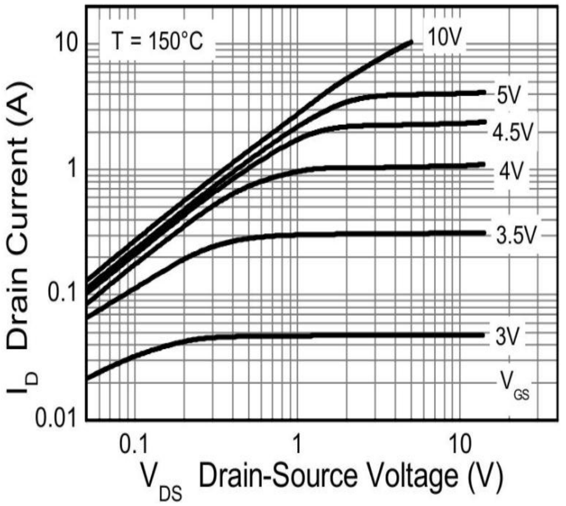


Fig.2 Typical Output Characteristics(150℃)

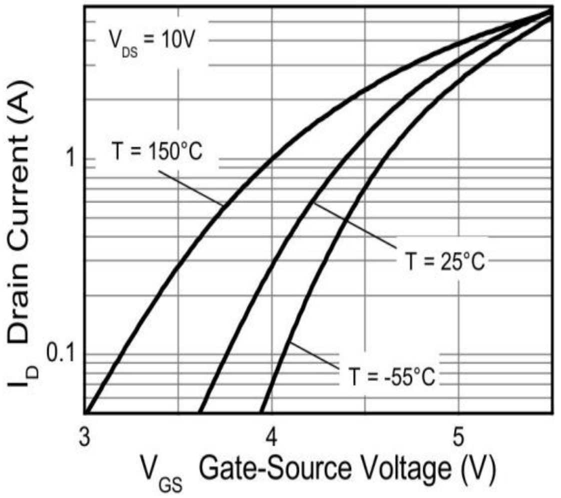


Fig.3 Typical Transfer Characteristics

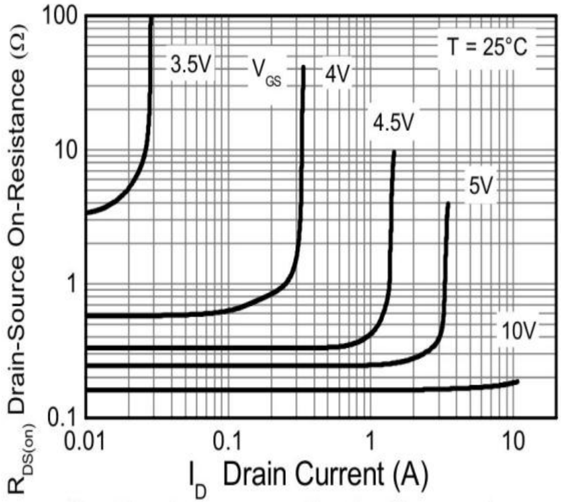


Fig.4 On-Resistance vs. Drain Current

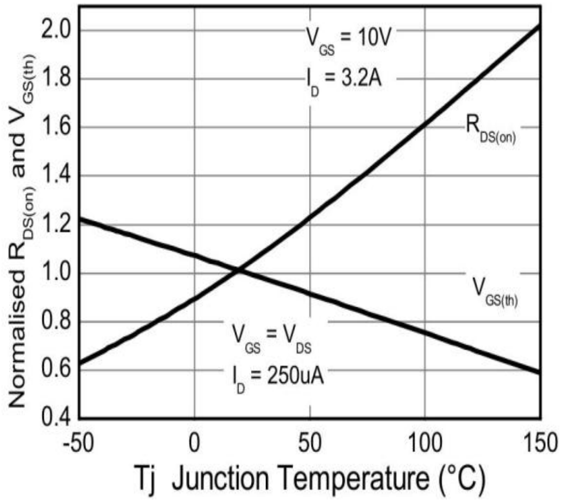


Fig.5 Normalised Curves vs. Junction Temperature

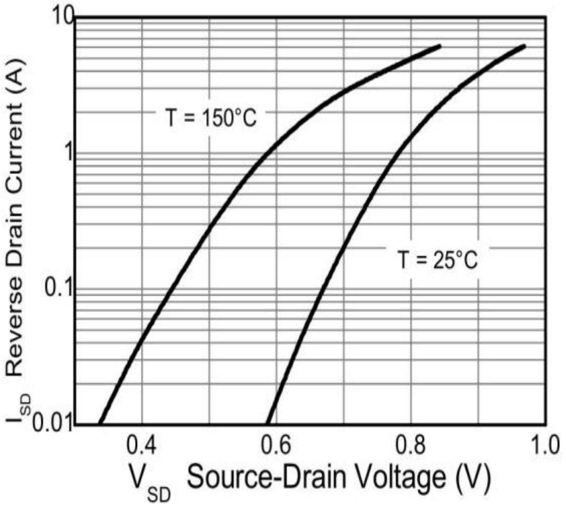


Fig.6 Source-Drain Diode Forward Voltage

Typical Performance Characteristics

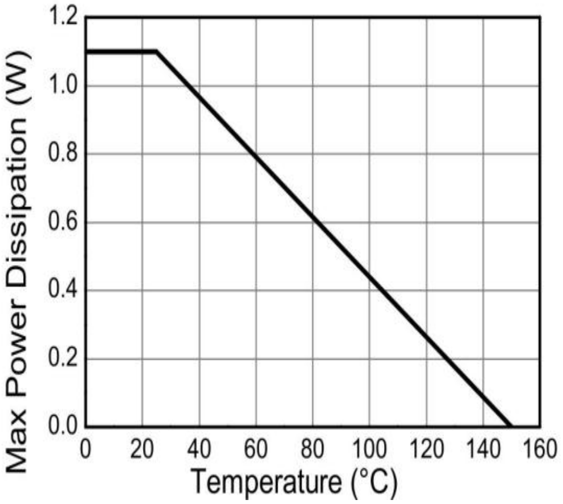


Fig.7 Maximum P_D vs. Case Temperature

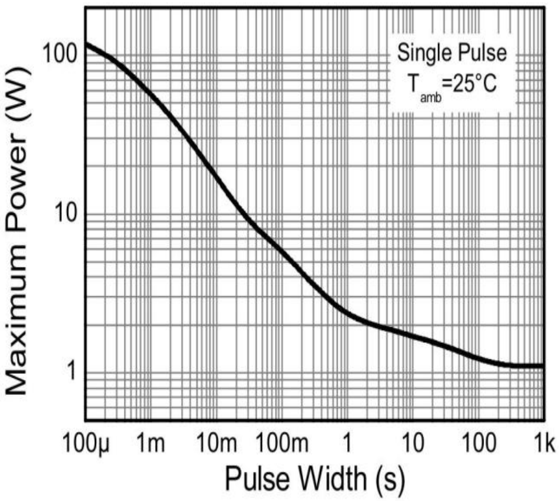


Fig.8 Pulse Power Dissipation

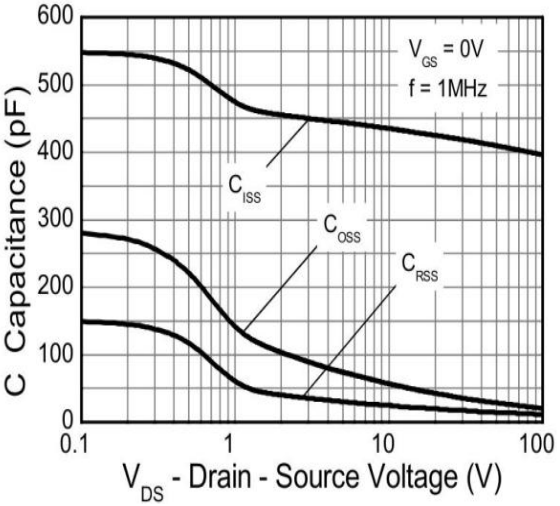


Fig.9 Capacitance Characteristics

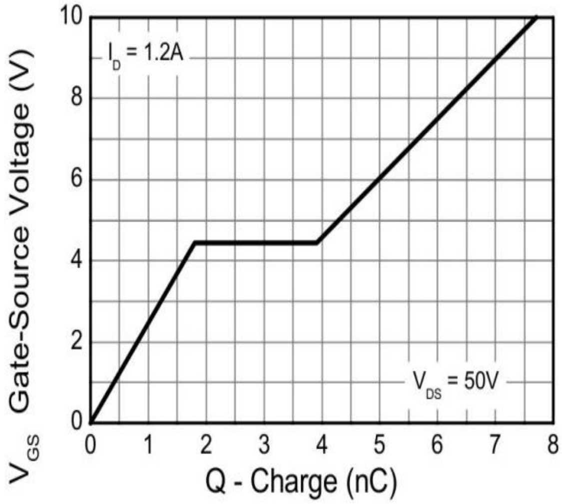


Fig.10 Typical Gate Charge vs. Gate-Source Voltage

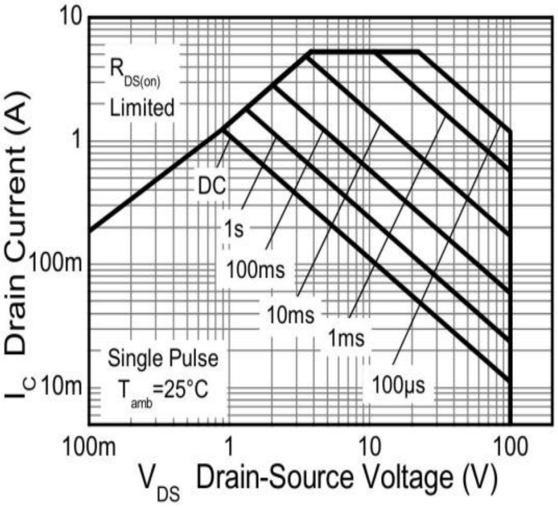


Fig.11 Safe Operating Area

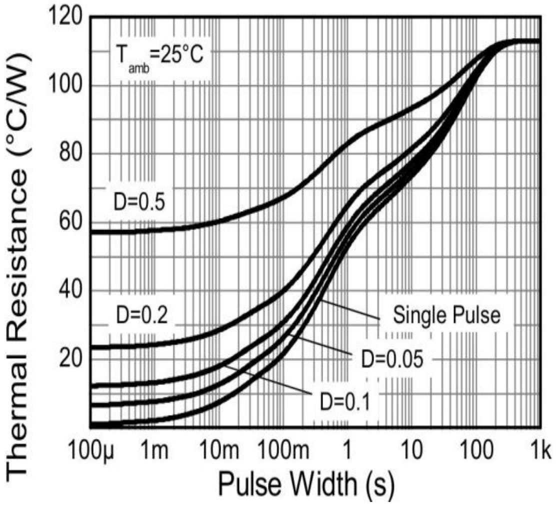
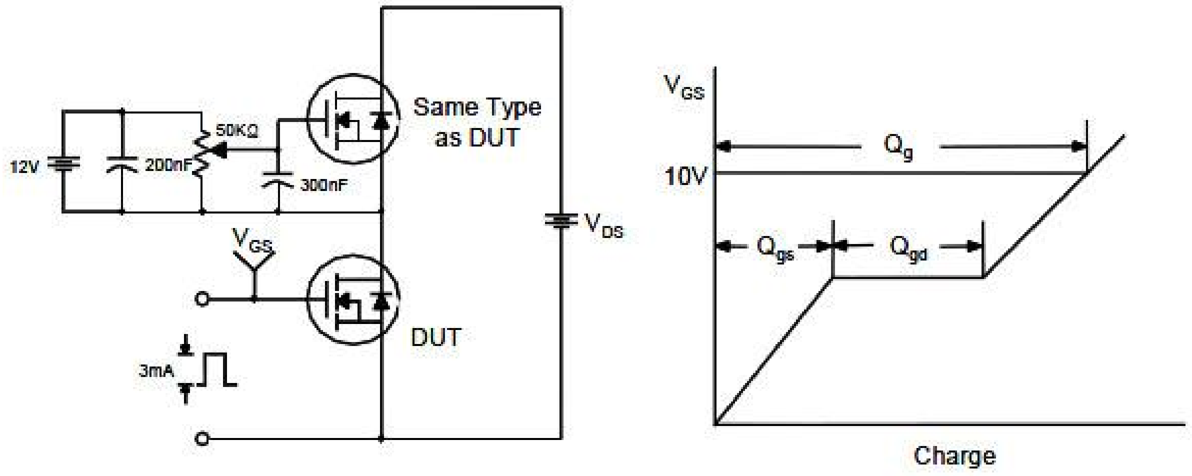


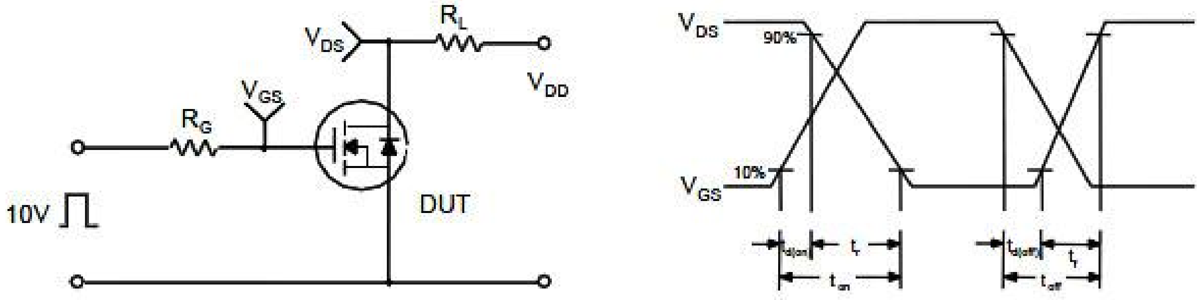
Fig.12 Transient Thermal Impedance

Typical Characteristics

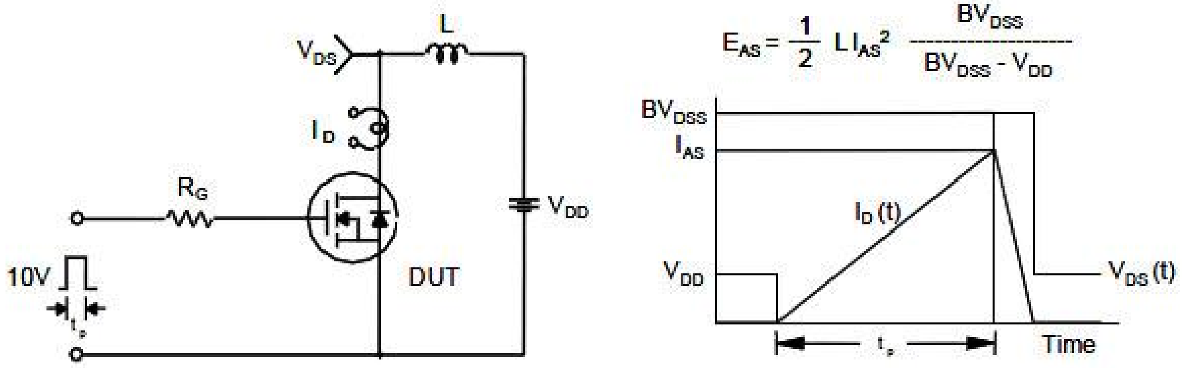
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

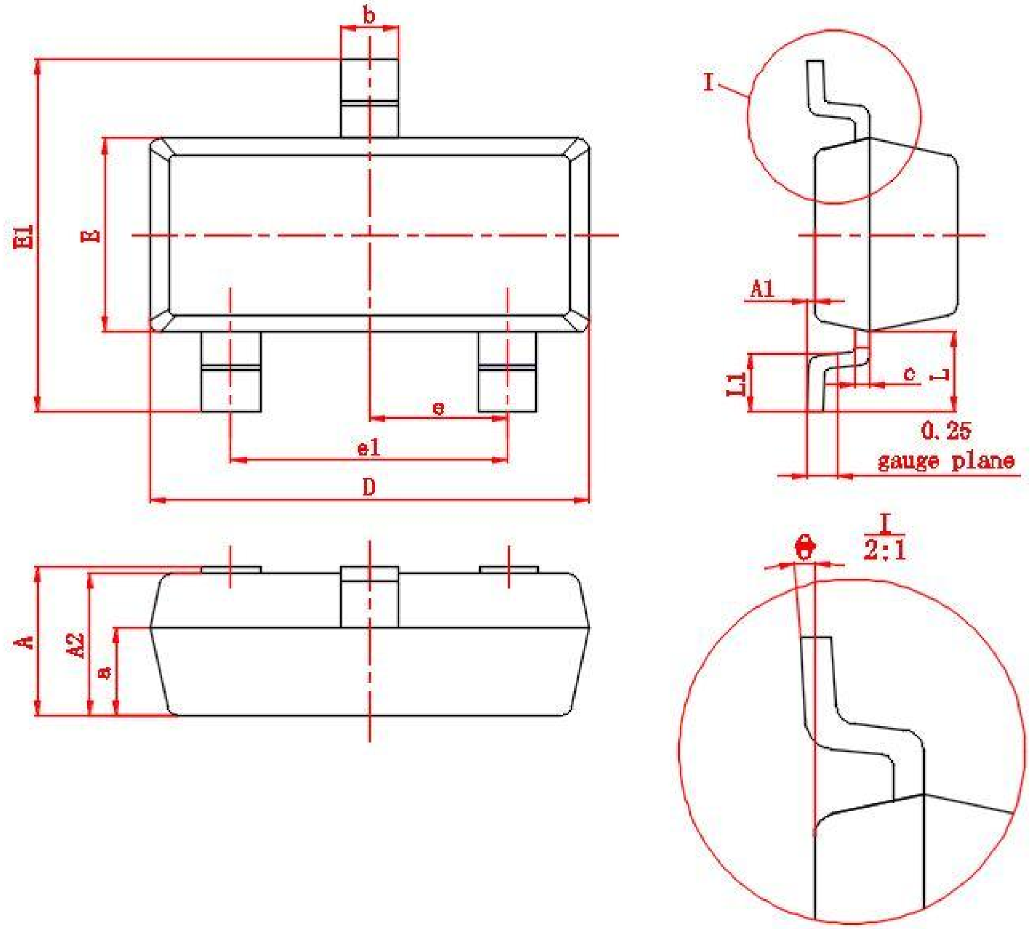


Unclamped Inductive Switching Test Circuit & Waveforms



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°