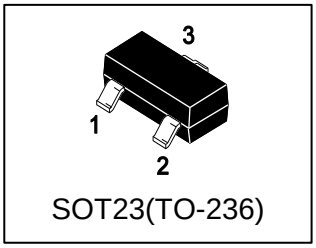
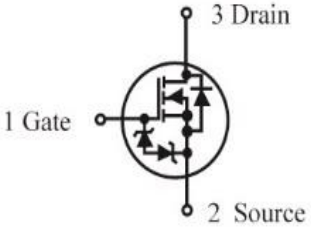
S-L2N7002SLT1G

Small Signal MOSFET
380 mA, 60V N–Channel SOT-23



SOT23(TO-236)



1. FEATURES

- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.
- ESD protected
- Low RDS(on)

2. APPLICATIONS

- Low side load switch
- Level shift circuits
- DC−DC converter
- Portable applications i.e. DSC, PDA, Cell Phone, etc.

3. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
S-L2N7002SLT1G	701	3000/Tape&Reel
S-L2N7002SLT3G	701	13000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25ºC)

Parameter		Symbol	Limits	Unit
Drain–Source Voltage		VDSS	60	V
Gate-Source Voltage		VGS	±20	V
Drain Current		ID		mA
– Steady State	TA = 25°C		320	
	TA = 85°C		230	
– t<5s	TA = 25°C		380	
	TA = 85°C		270	
Pulsed Drain Current (tp=10μs)		IDM	1.5	A
Source Current (Body Diode)		IS	300	mA

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Total Device Dissipation, FR−4 Board (Note 1) @ TA = 25ºC Derate above 25ºC	PD	281 2.2	mW mW/ºC
Thermal Resistance, Junction–to–Ambient(Note 1)	RΘJA	445	ºC/W
Lead Temperature for Soldering Purposes (1/8 " from case for 10 s)	TL	260	° C
Junction and Storage temperature	TJ,Tstg	−55~+150	° C
Gate−Source ESD Rating(HBM, Method 3015)	ESD	2000	V

1. 30.0mm×25.0mm×1.6mm(FR4), Copper foil thickness 35μm;

6. ELECTRICAL CHARACTERISTICS (Ta= 25ºC)

OFF CHARACTERISTICS

Characteristic		Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = 250μA)		VBRDSS	60	-	-	V
Drain−to−Source Breakdown Voltage Temperature Coefficient		VBRDSS/TJ	-	71	-	mV/° C
Zero Gate Voltage Drain Current	TJ = 25°C	IDSS	-	-	1.0	μA
(VGS = 0, VDS = 60 V)	TJ = 125°C				500	
(VGS = 0, VDS = 50 V)	TJ = 25°C		-	-	100	nA
Gate–Body Leakage Current, Forward (VGS = 20 V)		IGSSF	-	-	10	μA
Gate–Body Leakage Current, Reverse (VGS = - 20 V)		IGSSR	-	-	-10	μA

ON CHARACTERISTICS (Note 2)

	Symbol	Min.	Typ.	Max.	Unit
Gate Threshold Voltage (VDS = VGS, ID = 250μA)	VGS(th)	1.0	-	2.0	V
Negative Threshold Temperature Coefficient	VGS(TH)/TJ	-	4	-	mV/° C
Static Drain–Source On–State Resistance	RDS(on)				Ω
(VGS = 10 V, ID = 500 mA)		-	-	2.8	
(VGS = 4.5 V, ID = 200 mA)		-	-	3.2	
Forward Transconductance (VDS = 5.0 V, ID = 200 mA)	gfs	80	-	-	mS

DYNAMIC CHARACTERISTICS

		Symbol	Min.	Typ.	Max.	Unit
Input Capacitance (VDS = 25 V, VGS = 0, f = 1.0 MHz)		Ciss	-	-	35	pF
Output Capacitance (VDS = 25 V, VGS = 0, f = 1.0 MHz)		Coss	-	-	10	pF
Reverse Transfer Capacitance (VDS = 25 V, VGS = 0, f = 1.0 MHz)		Crss	-	-	5	pF
Total Gate Charge	VGS = 4.5 V, VDS = 10 V; ID= 500 mA	QG(TOT)	-	0.44	-	nC
Gate−to−Source Charge		QGS	-	0.2	-	
Gate−to−Drain Charge		QGD	-	0.1	-	

2.Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.

6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)(Con.)

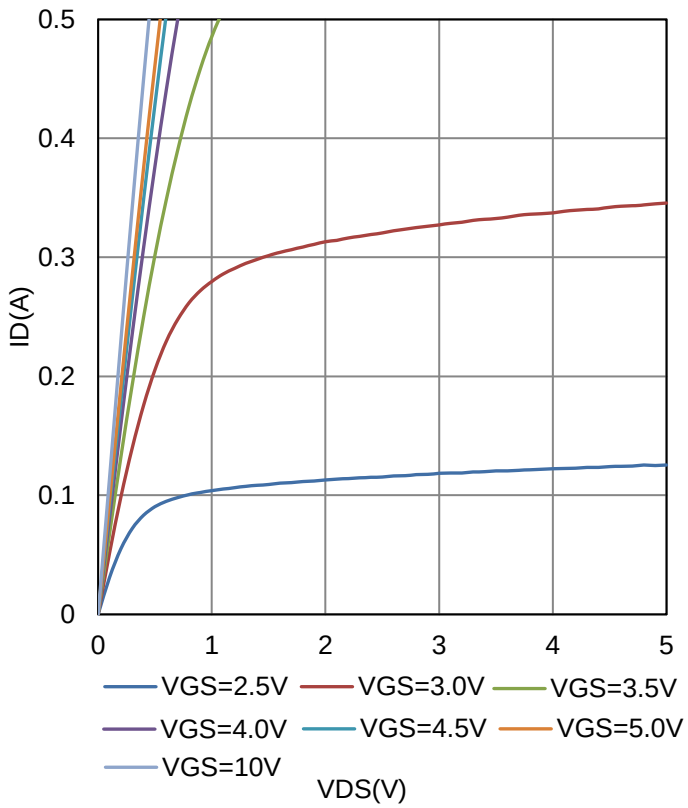
SWITCHING CHARACTERISTICS

Turn-On Delay Time	VDS = 30 V, VGEN = 10 V, ID = 500 mA,RG =25Ω ,RL =60Ω	td(on)	-	2.7	-	ns
Rise Time		tr	-	2.5	-	
Turn-Off Delay Time		td(off)	-	13	-	
Fall Time		tf	-	8	-	

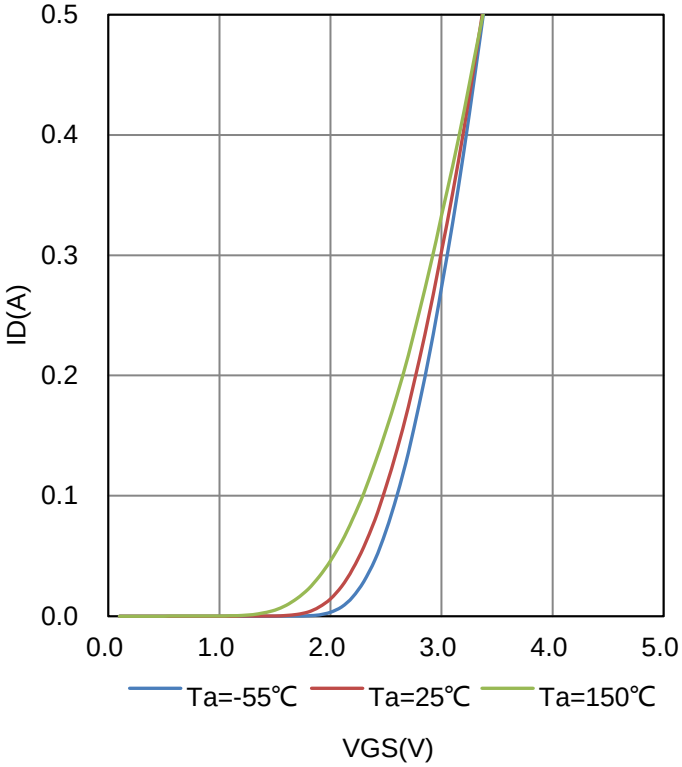
BODY–DRAIN DIODE RATINGS

Diode Forward On–Voltage (IS = 0.5A, VGS = 0 V)	VSD	-	0.85	-	V

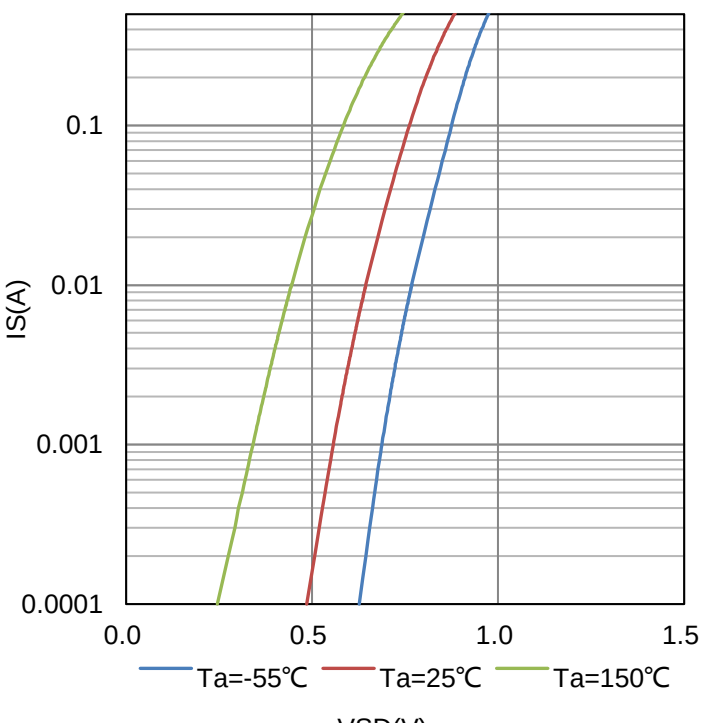
7. ELECTRICAL CHARACTERISTICS CURVES



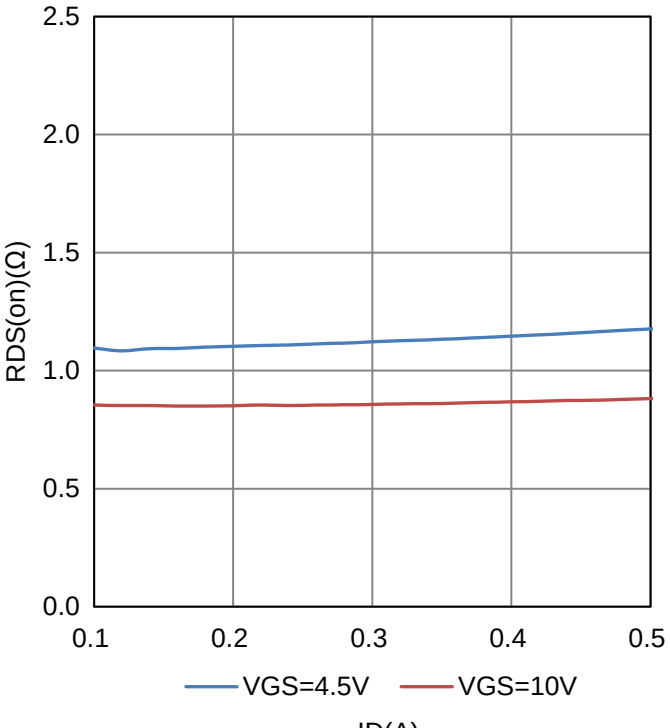
ID vs. VDS



ID vs. VGS

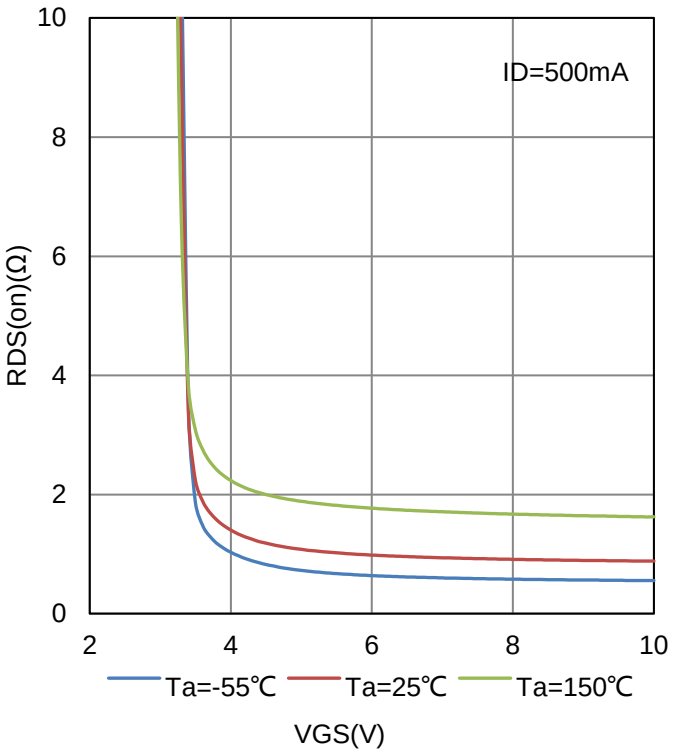


IS vs. VSD

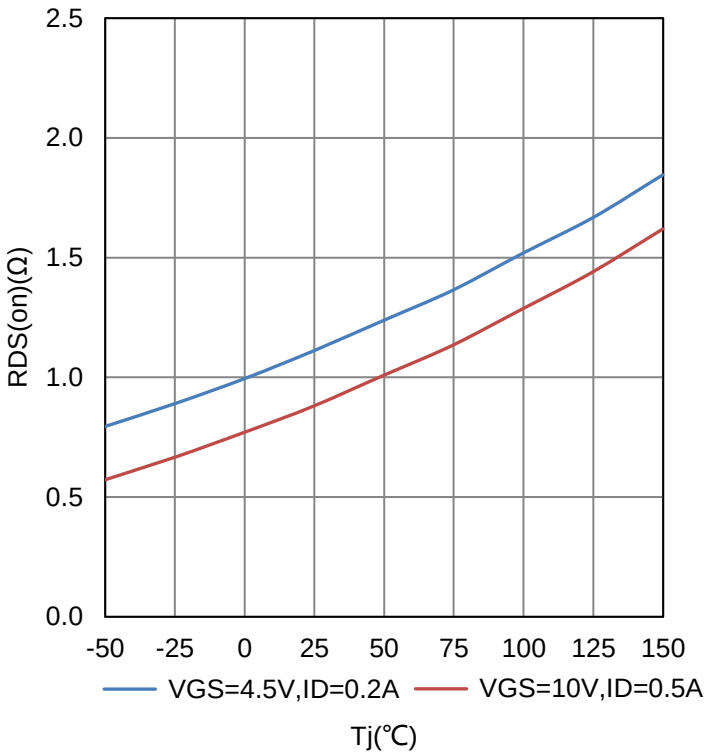


RDS(on) vs. ID

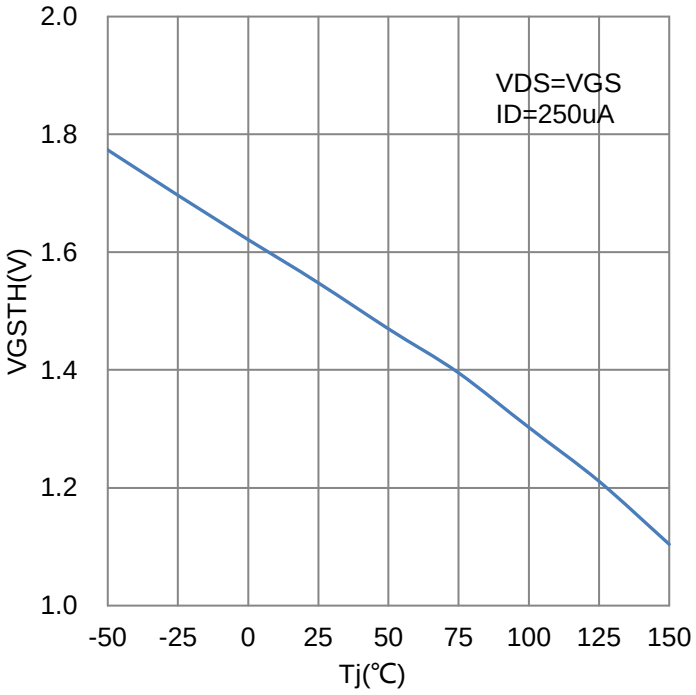
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



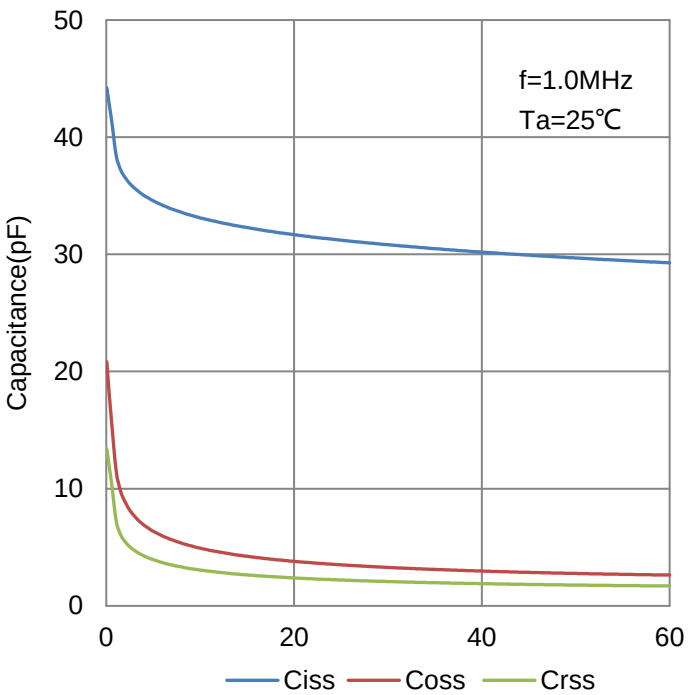
RDS(on) vs. VGS



RDS(on) vs. Tj

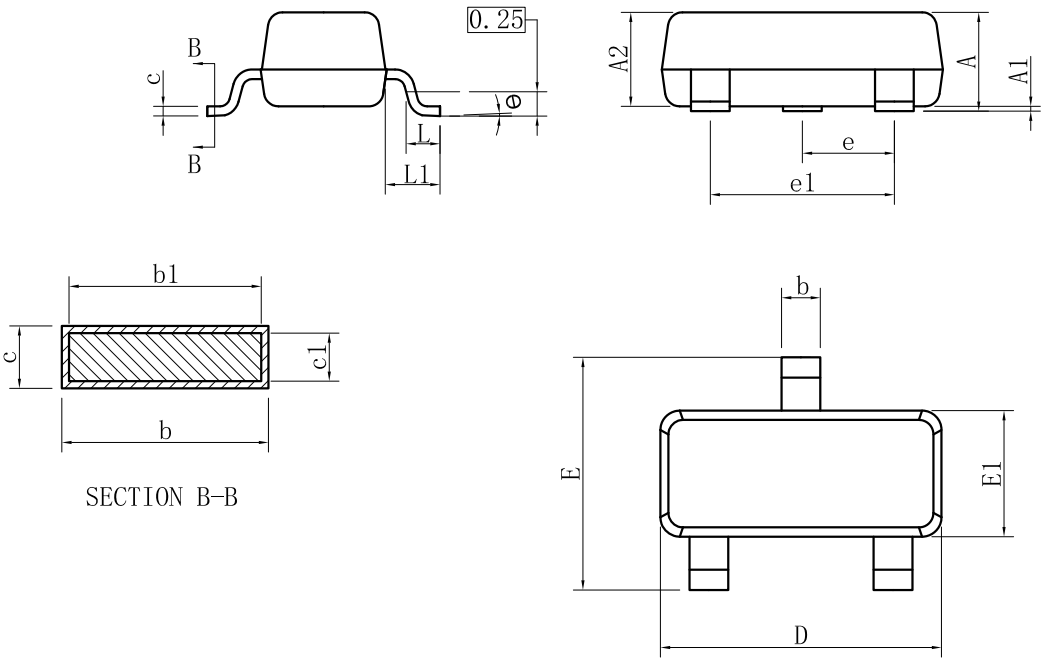


VGSTH vs. Tj



Capacitance

8.OUTLINE AND DIMENSIONS

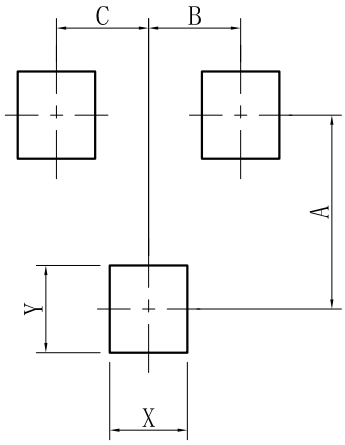


SOT23			
DIM	MIN	NOR	MAX
A	0.89	-	1.12
A1	0.01	-	0.10
A2	0.88	0.95	1.02
b	0.30	-	0.50
b1	0.30	0.40	0.45
c	0.08	-	0.20
c1	0.08	0.10	0.16
D	2.80	2.90	3.04
E	2.10	-	2.64
E1	1.20	1.30	1.40
e	0.95BSC		
e1	1.90BSC		
L	0.40	0.46	0.60
L1	0.54REF		
θ	0°	-	8°
All Dimensions in mm			

GENERAL NOTES

1. Top package surface finish Ra0.4±0.2um
2. Bottom package surface finish Ra0.7±0.2um
3. Side package surface finish Ra0.4±0.2um

9.SOLDERING FOOTPRINT



SOT-23	
DIM	(mm)
X	0.80
Y	0.90
A	2.00
B	0.95
C	0.95

DISCLAIMER

- Curve guarantee in the specification. The curve of test items with electric parameter is used as quality guarantee. The curve of test items without electric parameter is used as reference only.

- Before you use our Products for new Project, you are requested to carefully read this document and fully under--stand its contents. LRC shall not be in any way responsible or liable for failure, malfunction or accident arising from the use of any LRC’s Products against warning, caution or note contained in this document.

- All information contained in this document is current as of the issuing date and subject to change without any prior notice. Before purchasing or using LRC's Products,please confirm the latest information with a LRC sales represe--ntative.