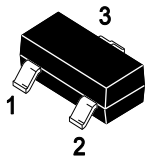
L2N7002SLT1G
S-L2N7002SLT1G

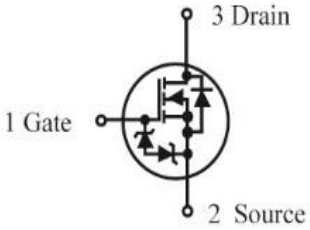
Small Signal MOSFET
380 mAmps, 60 Volts N–Channel SOT-23

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)



SOT23(TO-236)



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
L2N7002SLT1G	701	3000/Tape&Reel
L2N7002SLT3G	701	10000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25ºC)

Parameter		Symbol	Limits	Unit
Drain–Source Voltage		VDSS	60	Vdc
Gate-Source Voltage		VGS	±20	Vdc
Drain Current		ID		mAdc
– 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(Note 1) – Steady State – t<5s	PD	 300 420	mW
Junction−to−Ambient(Note 1) – Steady State – t<5s	RΘJA	 417 300	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

6. ELECTRICAL CHARACTERISTICS (Ta= 25ºC)

OFF CHARACTERISTICS

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

ON CHARACTERISTICS (Note 2)

Gate Threshold Voltage (VDS = VGS, ID = 250μAdc)	VGS(th)	1.0	-	2.0	Vdc
Negative Threshold Temperature Coefficient	VGS(TH)/TJ	-	4	-	mV/° C
Static Drain–Source On–State Resistance	RDS(on)				Ω
(VGS = 10 Vdc, ID = 500 mAdc)		-	-	2.8	
(VGS = 4.5 Vdc, ID = 200 mAdc)		-	-	3.2	
Forward Transconductance (VDS = 5.0 Vdc, ID = 200 mAdc)	gfs	80	-	-	mS

DYNAMIC CHARACTERISTICS

Input Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz)	Ciss	-	21	-	pF
Output Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz)	Coss	-	12	-	pF
Reverse Transfer Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz)	Crss	-	0.35	-	pF
Total Gate Charge	QG(TOT)	-	0.44	-	nC
Gate−to−Source Charge	QGS	-	0.2	-	
Gate−to−Drain Charge	QGD	-	0.1	-	

VGS = 4.5 V, VDS = 10 V; ID= 500 mA

1. FR–4 = 1.0×0.75×0.062 in.

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

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

SWITCHING CHARACTERISTICS

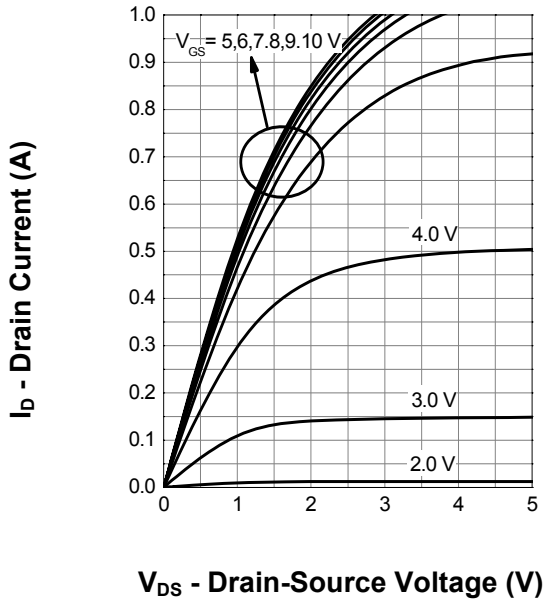
Turn-On Delay Time	VDS = 30 V, VGEN = 10 V, ID = 500 mA,RG =25Ω ,RL =60Ω	td(on)	-	2.7	-	ns
Rise Time		tr	-	2.5	-	
Turn-Off Delay Time		td(off)	-	13	-	
Fall Time		tf	-	8	-	

BODY–DRAIN DIODE RATINGS

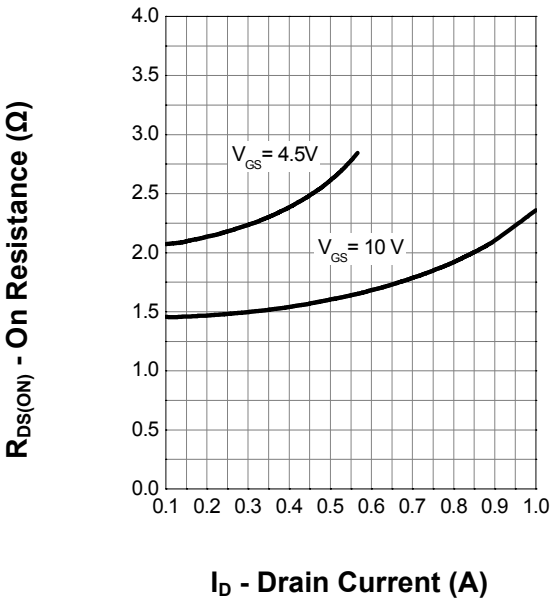
Diode Forward On–Voltage (IS = 0.5A, VGS = 0 V)	VSD	-	0.85	-	Vdc

7. ELRCTRICAL CHARACTERISTICS CURVES

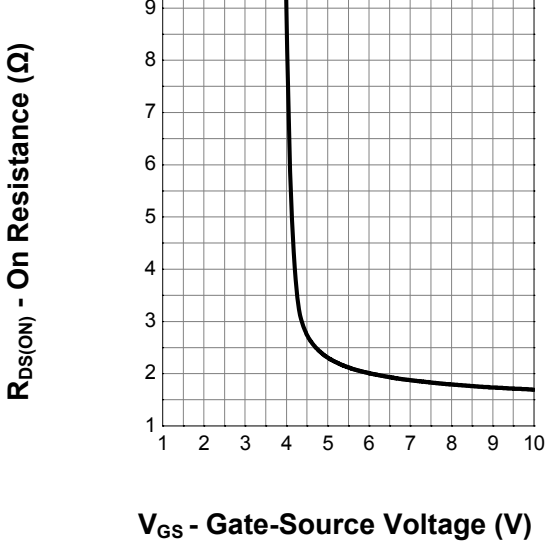
Output Characteristics



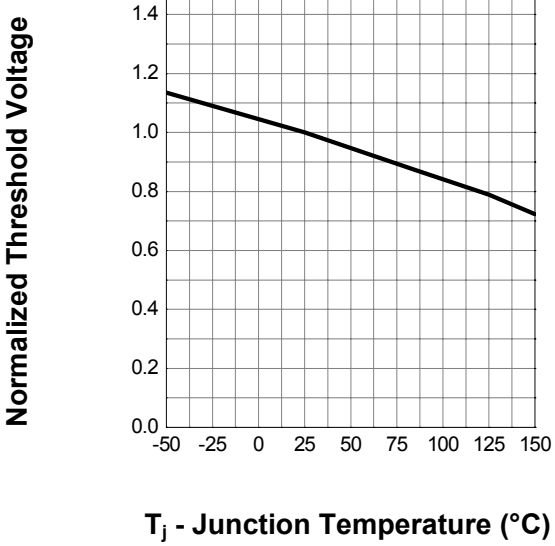
Drain-Source On Resistance



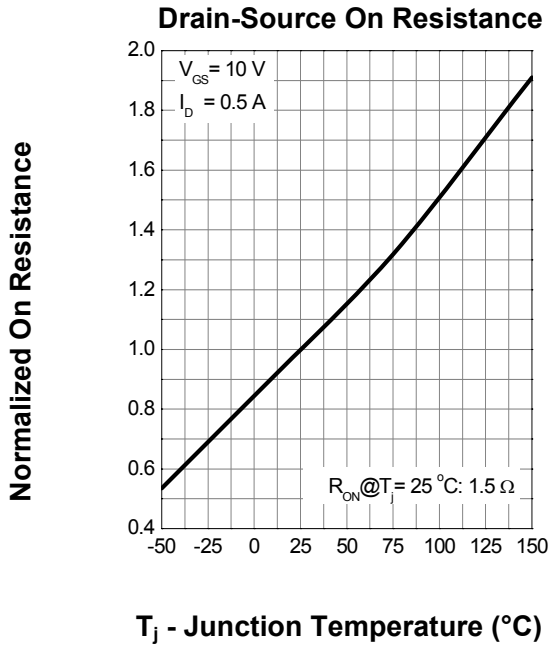
Transfer Characteristics

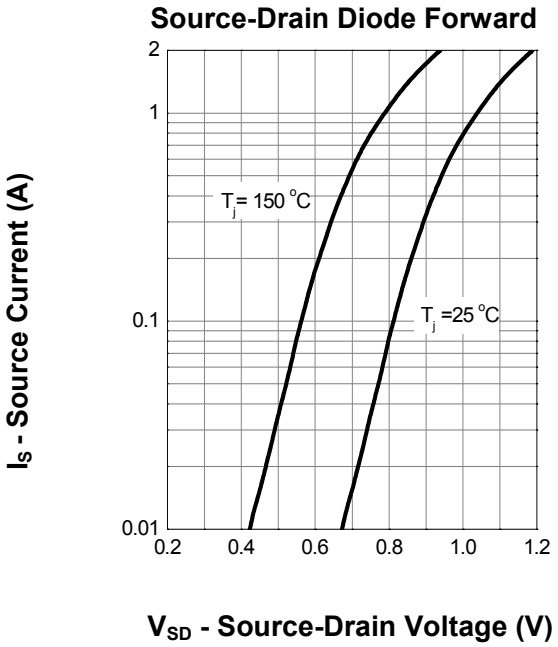


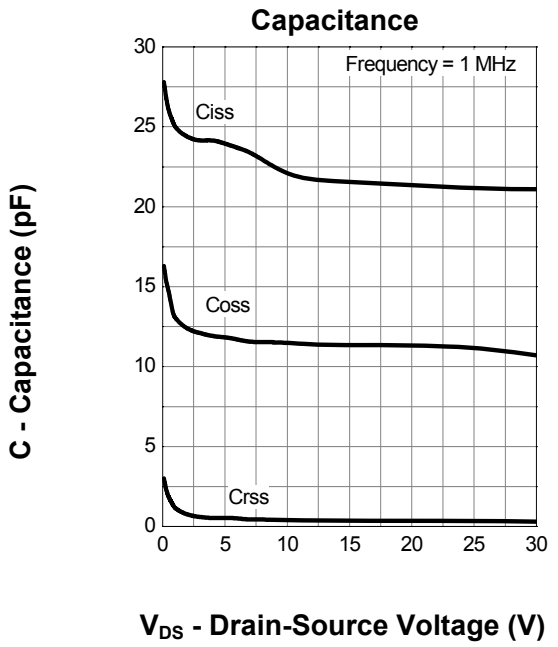
Gate Threshold Voltage

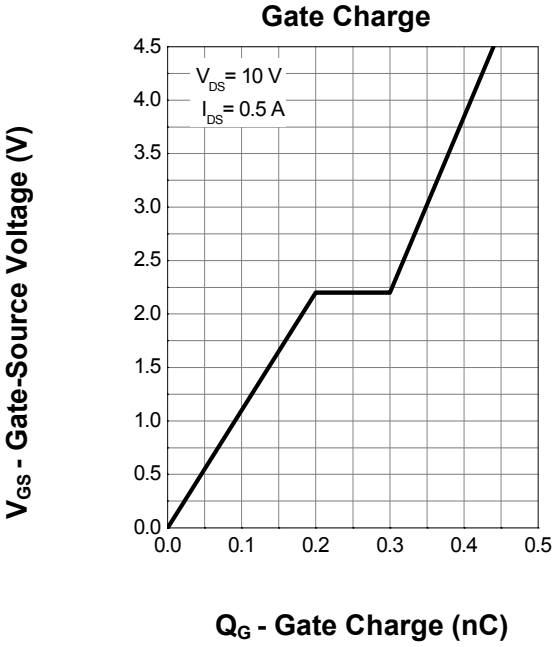


7. ELRCTRICAL CHARACTERISTICS CURVES(Con.)



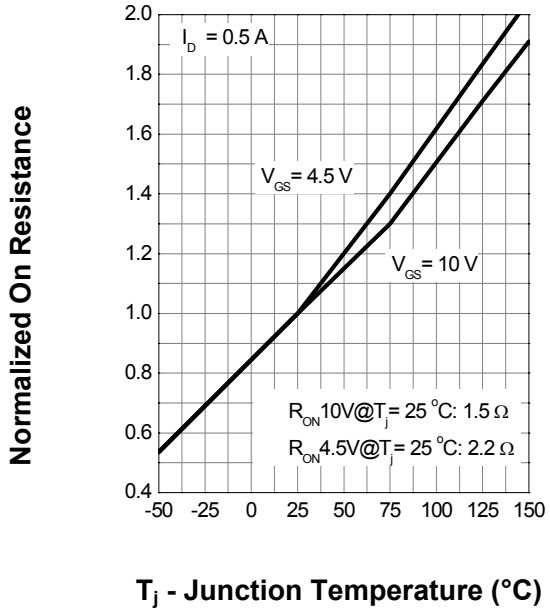




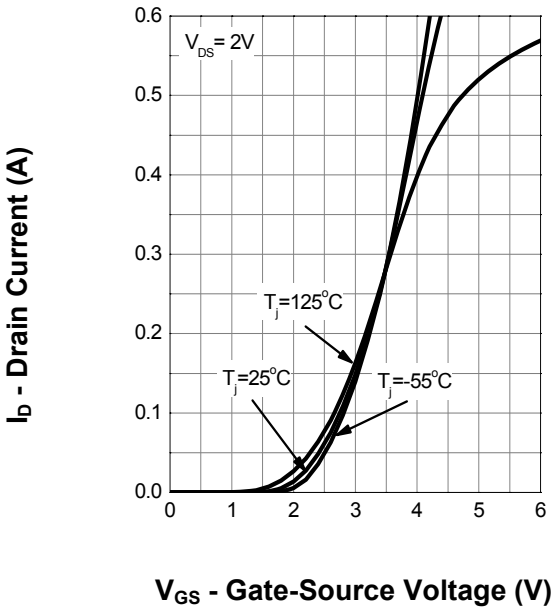


7. ELRCTRICAL CHARACTERISTICS CURVES(Con.)

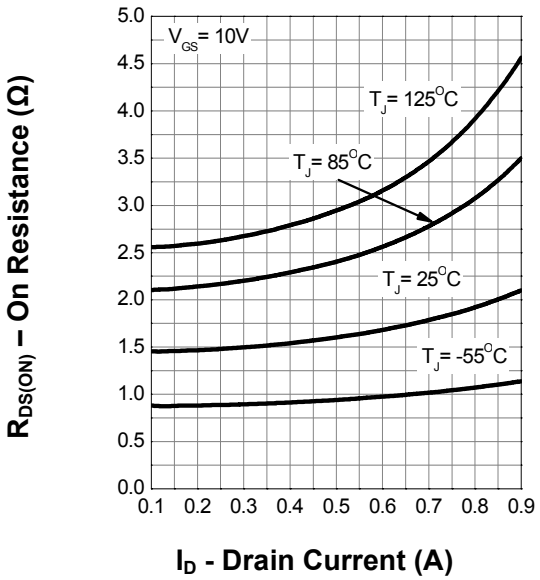
Drain-Source On Resistance



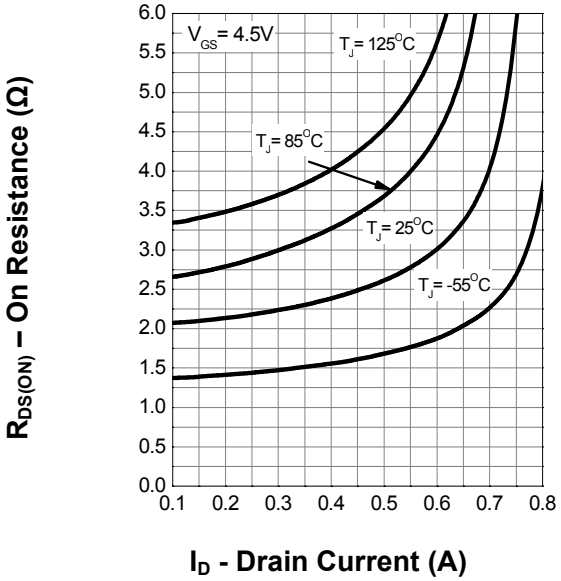
Transfer Characteristics



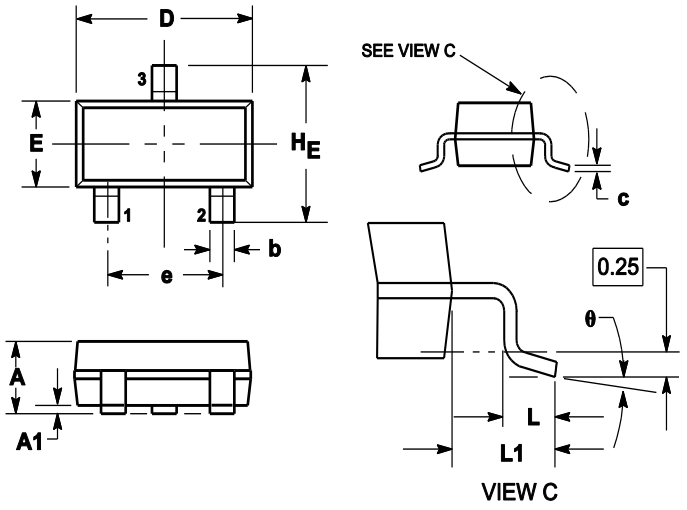
Drain-Source On Resistance



Drain-Source On Resistance



8.OUTLINE AND DIMENSIONS



Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1	1.11	0.035	0.04	0.044
A1	0.01	0.06	0.1	0.001	0.002	0.004
b	0.37	0.44	0.5	0.015	0.018	0.02
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.9	3.04	0.11	0.114	0.12
E	1.20	1.3	1.4	0.047	0.051	0.055
e	1.78	1.9	2.04	0.07	0.075	0.081
L	0.10	0.2	0.3	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
H_E	2.10	2.4	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

9.SOLDERING FOOTPRINT