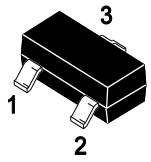
LNTR4003NLT1G
S-LNTR4003NLT1G

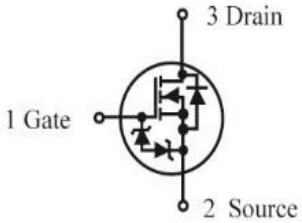
30 V, 0.56 A, Single, N−Channel,
Gate ESD Protection, SOT-23



SOT23(TO-236AB)

1. FEATURES

- Low gate voltage threshold(VGS(th))to facilitate drive circuit design
- Low gate charge for fast switching
- ESD protected gate
- Minimum breakdown voltage rating of 30 V
- 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.



2. APPLICATIONS

- Level shifters
- Level switches
- Low side load switches
- Portable applications

3. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LNTR4003NLT1G	TR8	3000/Tape&Reel
LNTR4003NLT3G	TR8	10000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25ºC)

Parameter		Symbol	Limits	Unit
Drain–Source Voltage		VDSS	30	V
Gate–to–Source Voltage – Continuous		VGS	±20	V
Current (Note 1) Steady State	TA = 25°C	ID	0.5	A
	TA = 85°C		0.37	
Continuous Drain Current (Note 1) t<10s	TA = 25°C		0.56	
	TA = 85°C		0.4	
Pulsed Drain Current(tp=10μs)		IDM	1.7	A
Continuous Source Current (Body Diode)		IS	1	A
Maximum Power Dissipation(Note 1) Steady State t<5s		PD	 0.69 0.83	W
Junction and Storage temperature		TJ,Tstg	−55～+150	°C
Maximum Temperature for Soldering Purposes		TL	260	°C

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Thermal Resistance, Junction–to–Ambient	RΘJA		ºC/W
Steady State(Note 1)		180	
t < 10s(Note 1)		150	

6. ELECTRICAL CHARACTERISTICS (Ta= 25ºC)

OFF CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = 100μA)	V(BR)DSS	30	-	-	V
Drain−to−Source Breakdown Voltage Temperature Coefficient	V(BR)DSS/ TJ	-	40	-	mV/°C
Zero Gate Voltage Drain Current (VDS=30V, VGS=0V)	IDSS	-	-	1.0	μA
Gate–Body Leakage Current, Forward (VDS = 0 V, VGS = ±10 V)	IGSS	-	-	±1.0	μA

ON CHARACTERISTICS (Note 2)

Gate Threshold Voltage (VDS = VGS, ID = 250μA)	VGS(th)	0.8	-	1.6	V
Negative Threshold Temperature Coefficient	VGS(TH)/TJ	-	3.4	-	mV/°C
Static Drain–Source On–State Resistance	RDS(on)				Ω
(VGS = 4.0 V, ID = 10 mA)		-	1	1.5	
(VGS = 2.5 V, ID = 10 mA)		-	1.5	2	
Forward Transconductance (VDS = 3.0 V, ID = 10 mA)	gfs	-	0.33	-	S

DYNAMIC CHARACTERISTICS

Input Capacitance (VGS = 0 V, f = 1.0MHz,VDS= 5 V)	Ciss	-	41	-	pF
Output Capacitance (VGS = 0 V, f = 1.0MHz,VDS= 5 V)	Coss	-	12	-	pF
Reverse Transfer Capacitance (VGS = 0 V, f = 1.0MHz,VDS= 5 V)	Crss	-	8.1	-	pF

SWITCHING CHARACTERISTICS

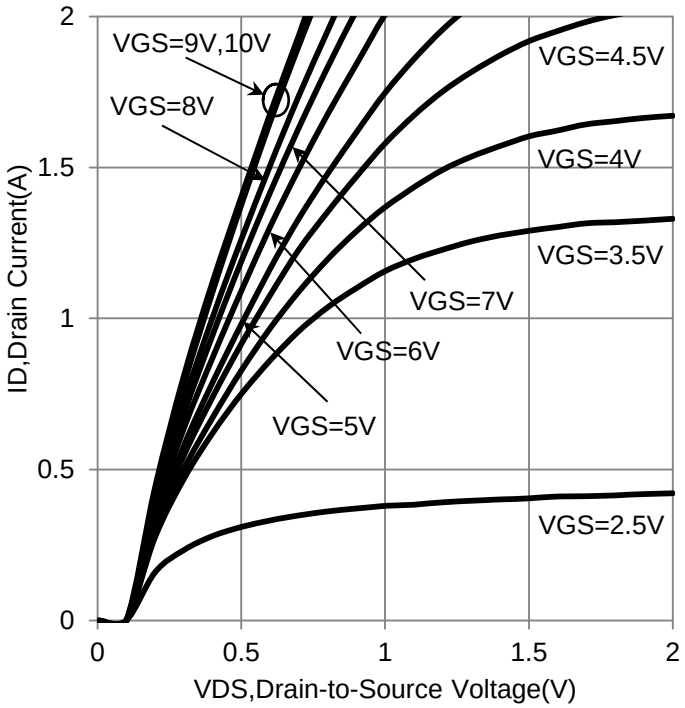
Turn-On Delay Time	(VGS = 4.5 V, VDD = 5.0 V, ID = 0.1 A, RG = 50Ω)	td(on)	-	16.7	-	ns
Rise Time		tr	-	47.9	-	
Turn-Off Delay Time		td(off)	-	65.1	-	
Fall Time		tf	-	64.2	-	

SOURCE–DRAIN DIODE CHARACTERISTICS

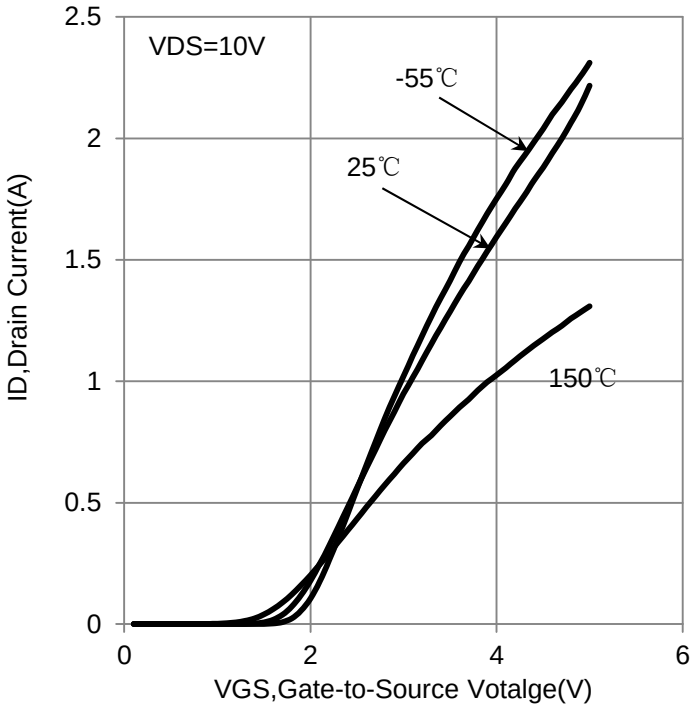
Forward Voltage (VGS = 0 V, ISD = 10 mA)	VSD	-	0.65	0.7	V
Reverse Recovery Time (VGS = 0 V,dIS/dt = 8A/μs,IS = 10 mA)	trr	-	14	-	ns

1. Surface−mounted on FR4 board using 1 in sq pad size (Cu area = 1.127 in sq [1 oz] including traces).
2. Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.

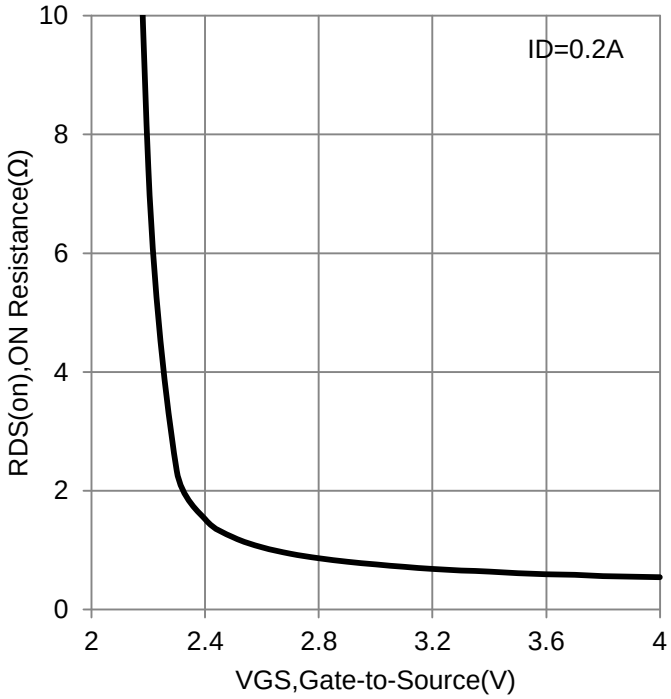
7. ELECTRICAL CHARACTERISTICS CURVES



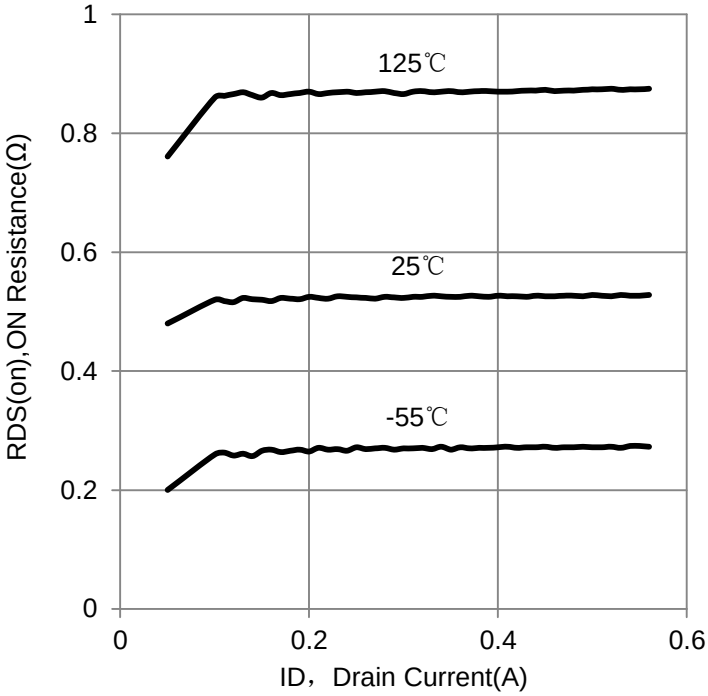
On-Region Characteristics



Transfer Characteristics

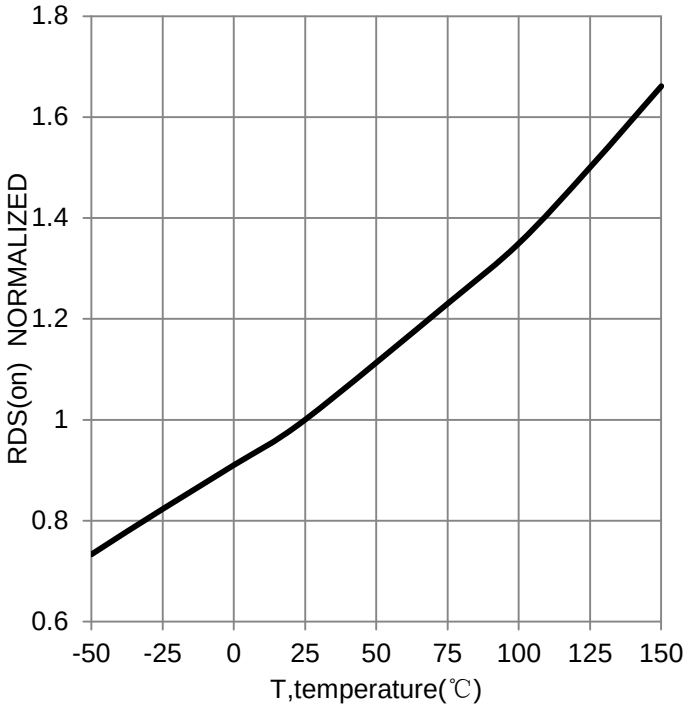


RDS(on) vs. VGS

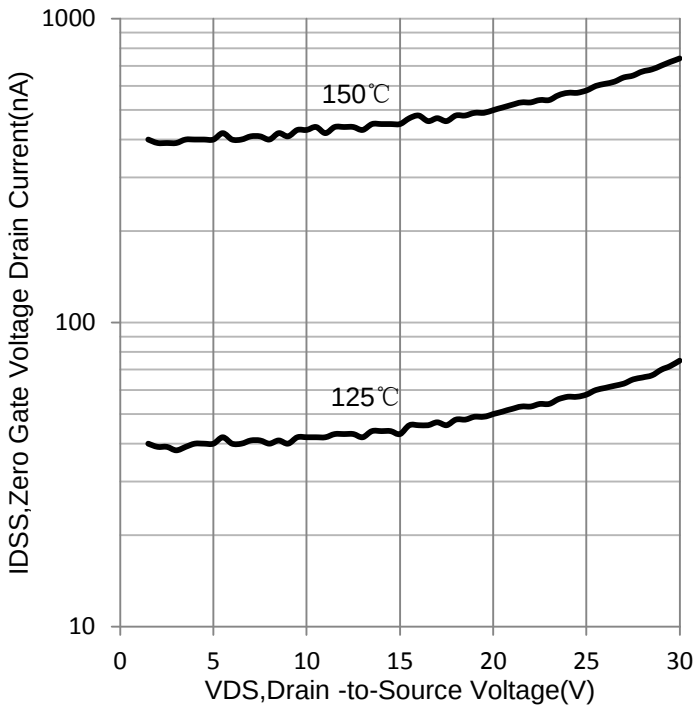


RDS(on) vs. ID

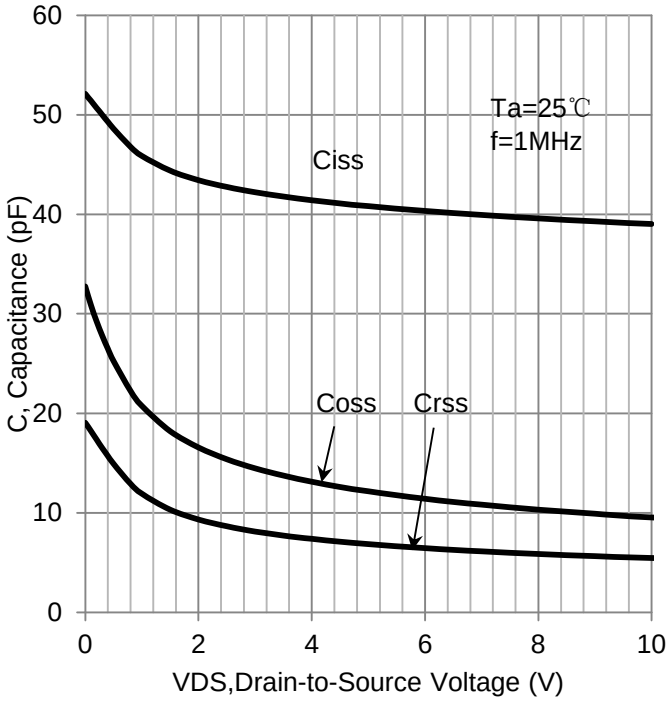
7. ELECTRICAL CHARACTERISTICS CURVES（Con.）



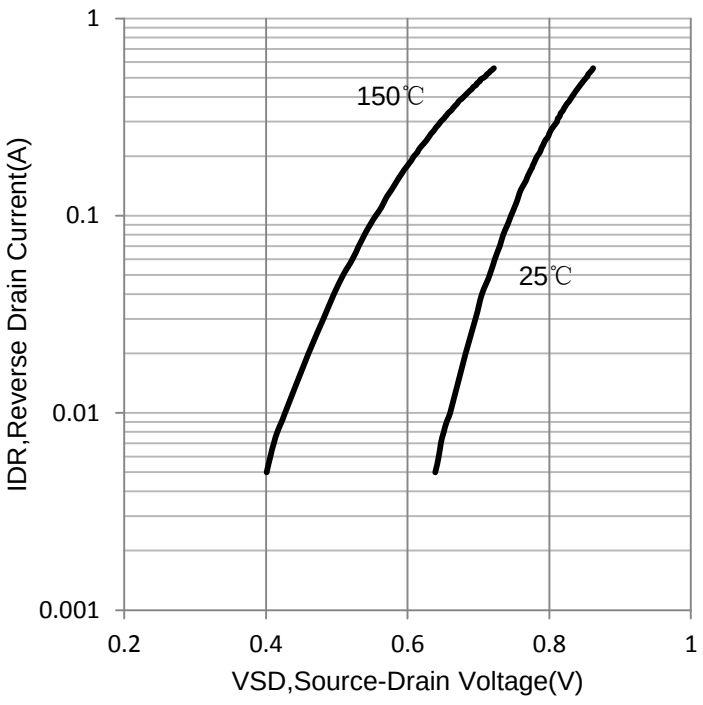
RDS(on) vs. Temperature



IDSS vs. VDS

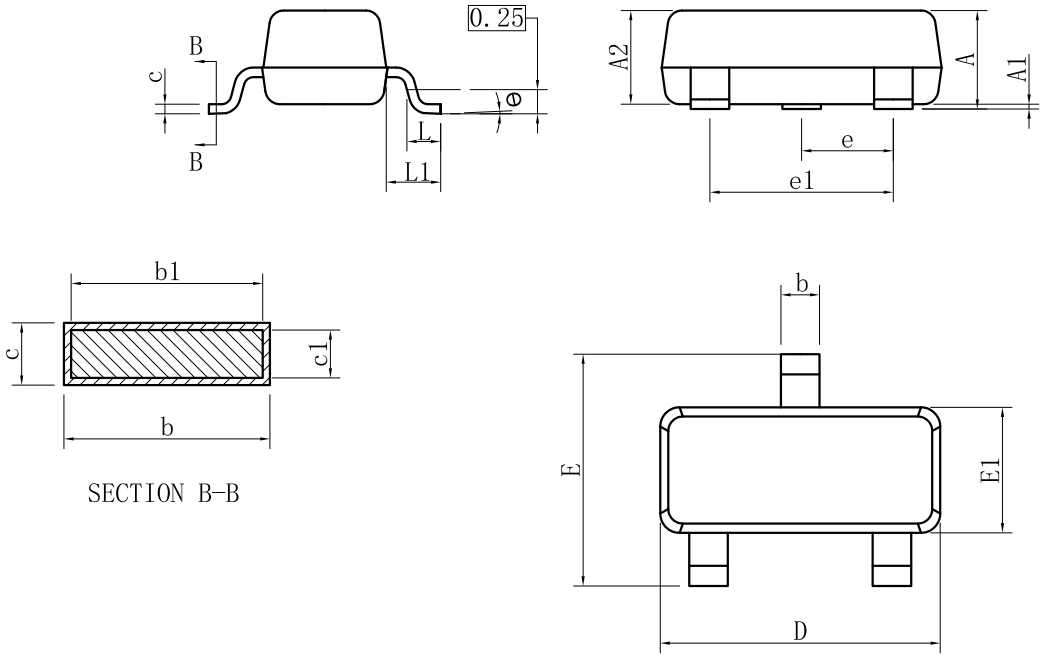


Capacitance Variation



Diode Forward Characteristics

8.OUTLINE AND DIMENSIONS

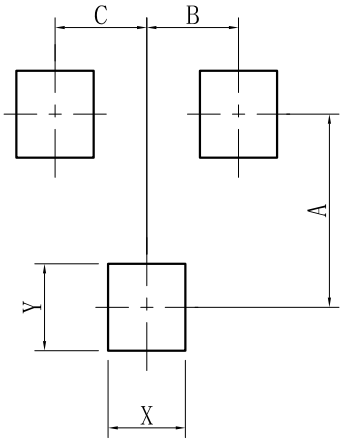


SOT23			
DIM	MIN	NOR	MAX
A	0.89	-	1.12
A1	0.01	-	0.10
A2	0.88	0.95	1.02
b	0.30	-	0.50
b1	0.30	0.40	0.45
c	0.08	-	0.20
c1	0.08	0.10	0.16
D	2.80	2.90	3.04
E	2.10	-	2.64
E1	1.20	1.30	1.40
e	0.95BSC		
e1	1.90BSC		
L	0.40	0.46	0.60
L1	0.54REF		
θ	0°	-	8°
All Dimensions in mm			

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



SOT23	
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.