

LN4501LT1G-HW

20 V, 3.2 A, Single N-Channel, SOT-23

1. FEATURES

- Leading planar technology for low gate charge / fast switching
- 2.5 V rated for low voltage gate drive
- SOT-23 surface mount for small footprint
- We declare that the material of product compliance with RoHS requirements and Halogen Free.

2. APPLICATIONS

- Load/Power switch for portables
- Load/Power switch for computing
- DC-DC conversion

3. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LN4501LT1G-HW	N45	3000/Tape&Reel
LN4501LT3G-HW	N45	10000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25°C)

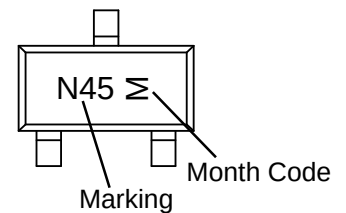
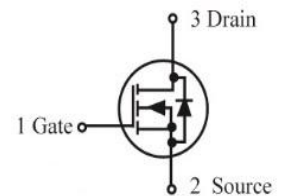
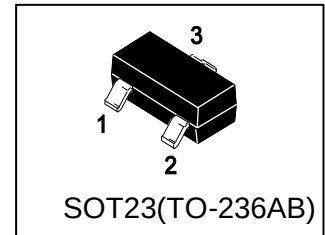
Parameter		Symbol	Limits	Unit
Drain-Source Voltage		VDSS	20	V
Gate-to-Source Voltage		VGS	±12	V
Continuous Drain Current (Note 1) Steady State	TA = 25°C	ID	3.2	A
	TA = 85°C		2.4	A
Steady State Power Dissipation (Note 1)		PD	1.25	W
Pulsed Drain Current (tp = 10 μs)		IDM	10	A
Operating and Storage Temperature Range		TJ/Tstg	-55~+150	°C

5. THERMAL CHARACTERISTICS

Parameter		Symbol	Limits	Unit
Thermal Resistance, Junction-to-Ambient	(Note 1)	RθJA	100	°C/W
	(Note 2)		300	°C/W

Note:1.Surface mounted on "1.5 x 1.5" FR4 board using 1 sq in pad, 2 oz Cu.

2.Surface-mounted on FR4 board using the minimum recommended pad size.



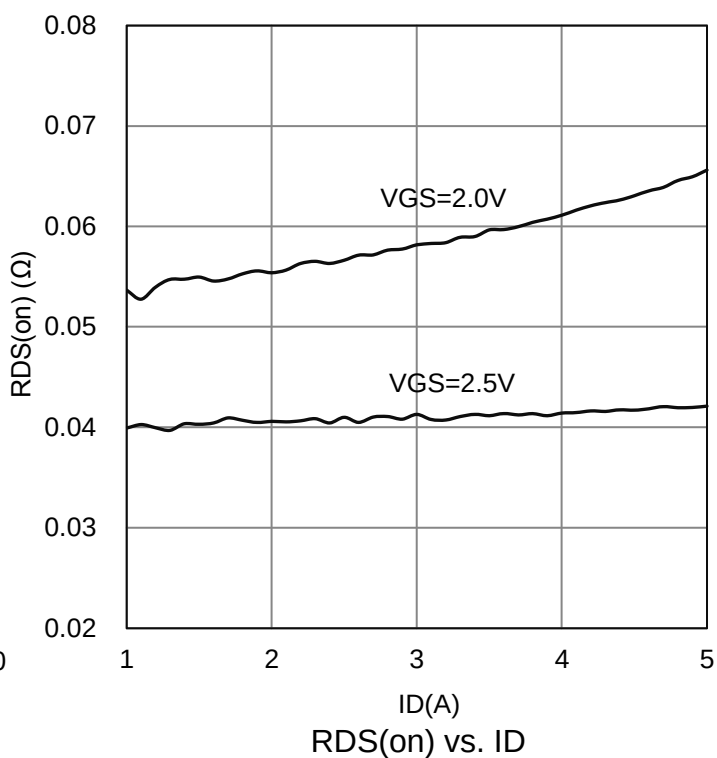
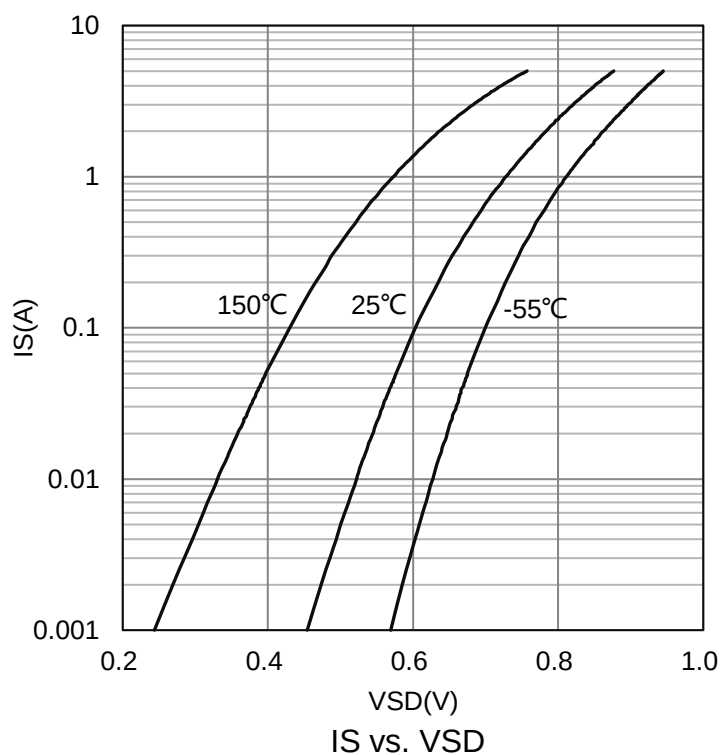
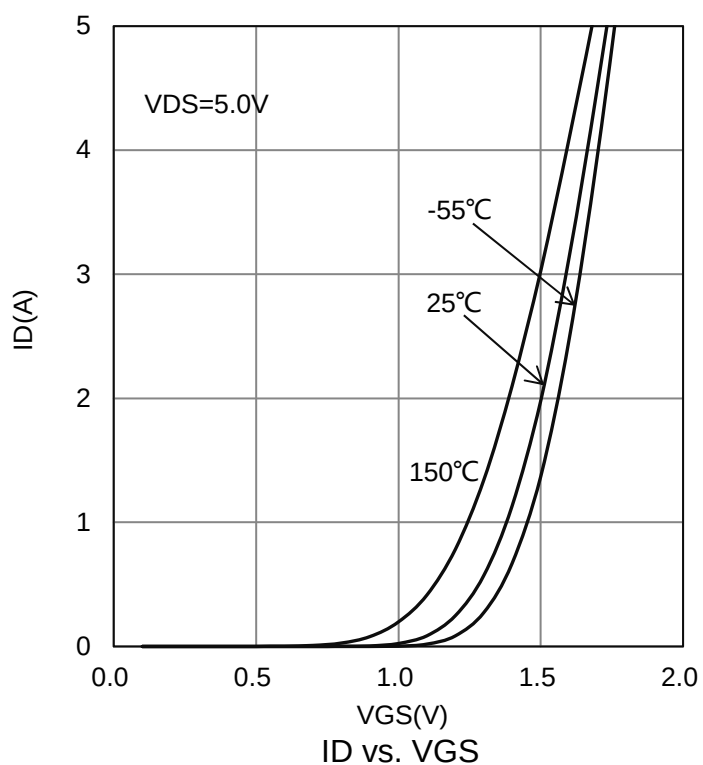
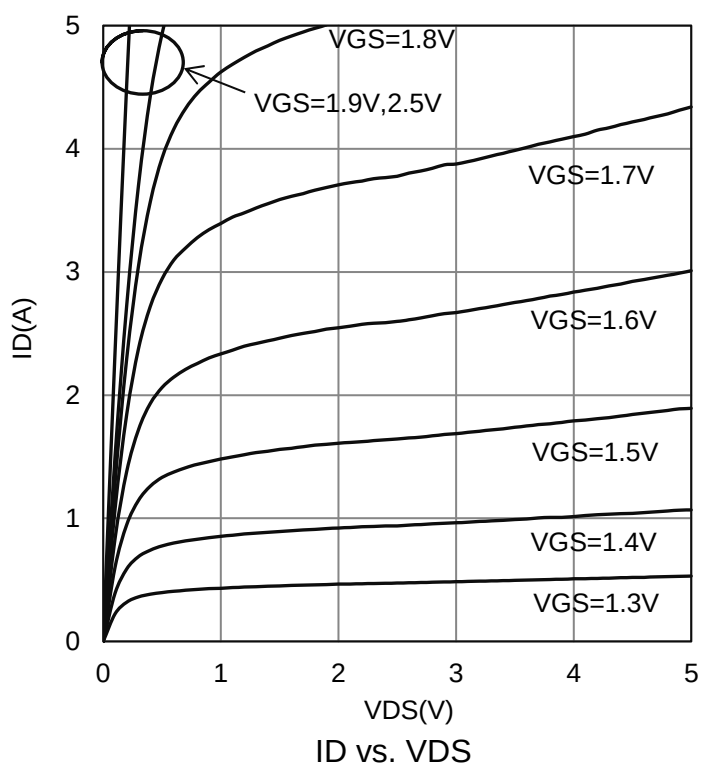
6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Static					
Drain-Source Breakdown Voltage(Note 4) (VGS = 0, ID = 250μA)	V(BR)DSS	20	24.5	-	V
Zero Gate Voltage Drain Current (VDS=16V, VGS=0V, TJ = 25°C)	IDSS	-	-	1.5	μA
(VDS=16V, VGS=0V, TJ = 85°C)		-	-	10	
Gate-Body Leakage Current (VDS = 0 V, VGS = ±12 V)	IGSS	-	-	±100	nA
Gate Threshold Voltage(Note 3,4) (VDS = VGS, ID = 250μA)	VGS(th)	0.6	0.76	1.2	V
Static Drain-Source On-State Resistance (VGS = 4.5 V, ID = 3.6 A)	RDS(on)	-	31	50	mΩ
(VGS = 2.5 V, ID = 3.1 A)		-	43	65	
Forward Voltage (VGS = 0 V, ISD = 1.6 A)	VSD	0.4	0.8	1.2	V
Dynamic					
Total Gate Charge	(VDS = 10 V, VGS = 4.5 V, ID = 3.6 A)	Qg	2.4	4.1	6
Gate-Source Charge		Qgs	0.35	0.6	1
Gate-Drain Charge		Qgd	0.7	1.3	2
Input Capacitance (VGS = 0 V, f = 1.0MHz, VDS= 10 V)	Ciss	230	390	585	pF
Output Capacitance (VGS = 0 V, f = 1.0MHz, VDS= 10 V)	Coss	31	52	78	pF
Reverse Transfer Capacitance (VGS = 0 V, f = 1.0MHz, VDS= 10 V)	Crss	27	45	68	pF
Turn-On Delay Time	(VGS = 4.5 V, VDS =10V ID = 3.6 A, RG = 6.0Ω)	td(on)	3.8	6.5	10
Rise Time		tr	7	12	18
Turn-Off Delay Time		td(off)	7	12	18
Fall Time		tf	1.8	3	4.6
Gate-Resistance (VGS = 0 V, VDS=0V, f=1MHz)	Rg	-	4.8	-	Ω
Reverse Recovery Time (IF=0.5A, di/dt=17A/μs)	trr	-	11	-	ns
Reverse Recovery Charge (IF=0.5A, di/dt=17A/μs)	Qrr	-	0.15	-	nC
Continuous Current(Note 1)	IS	-	-	1.6	A
Plused Current(Note 1)	ISM	-	-	10	A

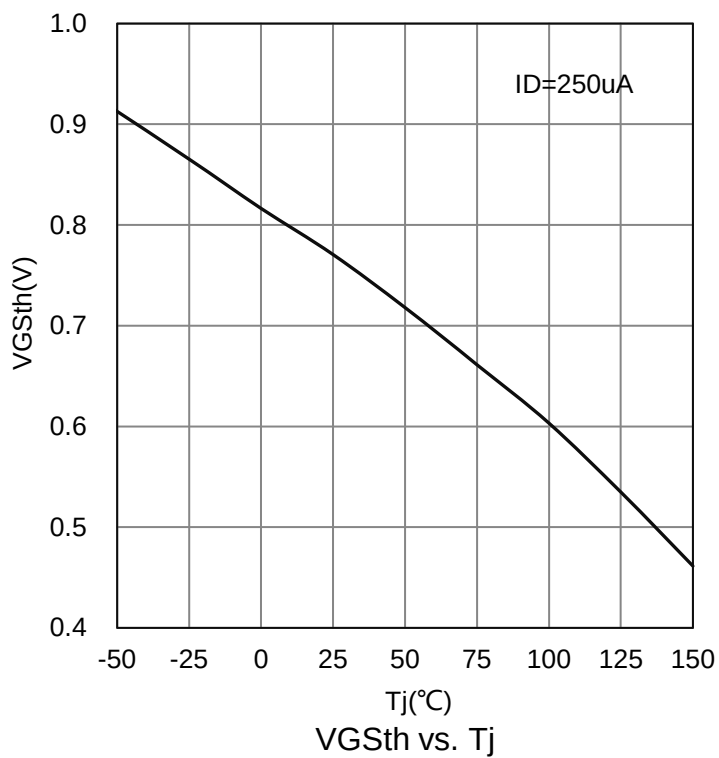
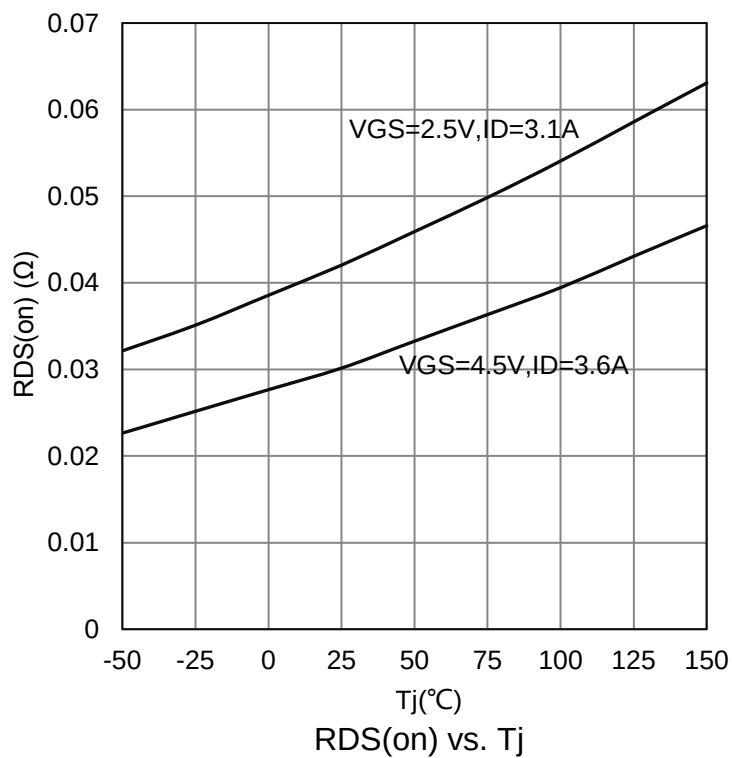
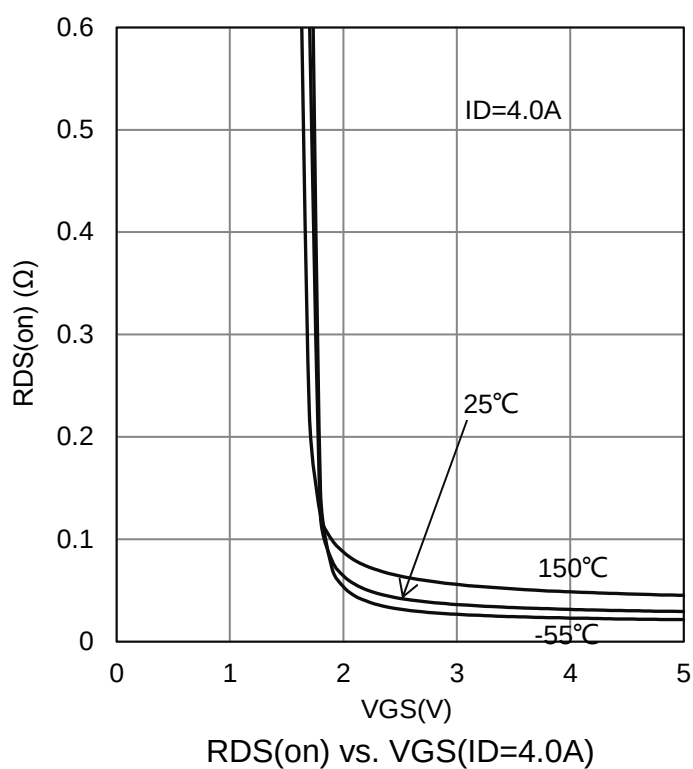
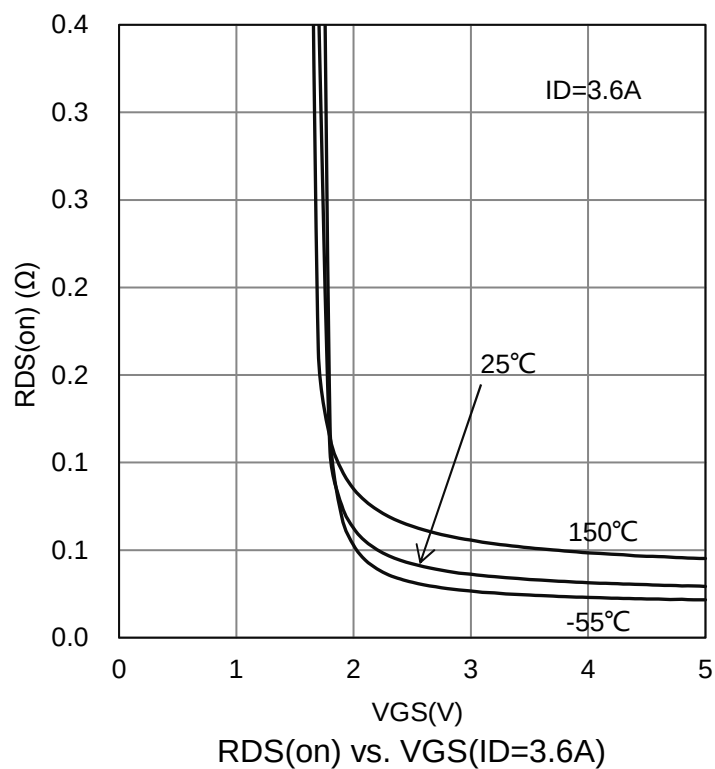
3.High doses of X-RAY can have a serious impact on the VGS(th) of MOSFET,causing the threshold voltage to drift negatively due to radiation.Users need to assess risks in advance when there is X-ray radiation in production and application scenarios.

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

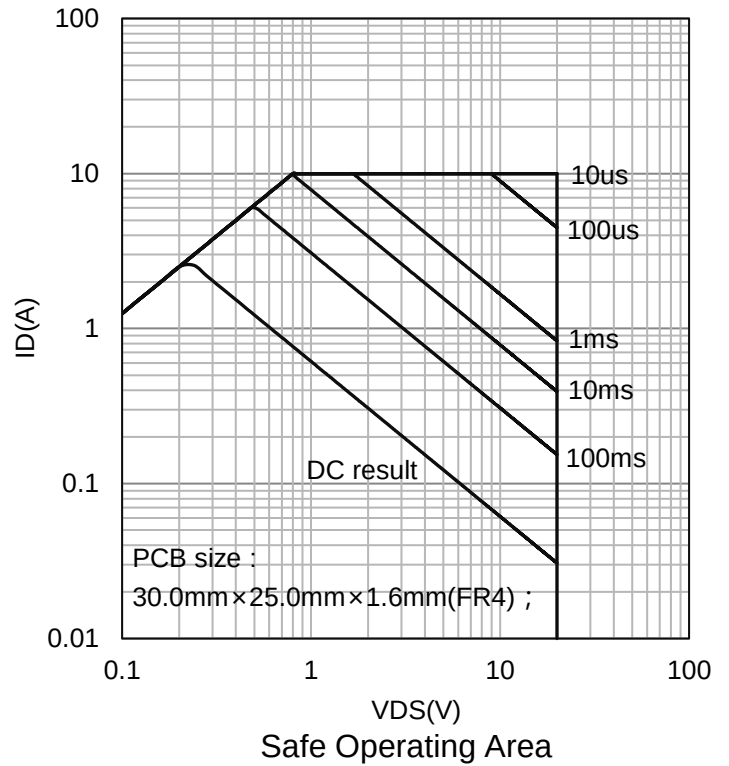
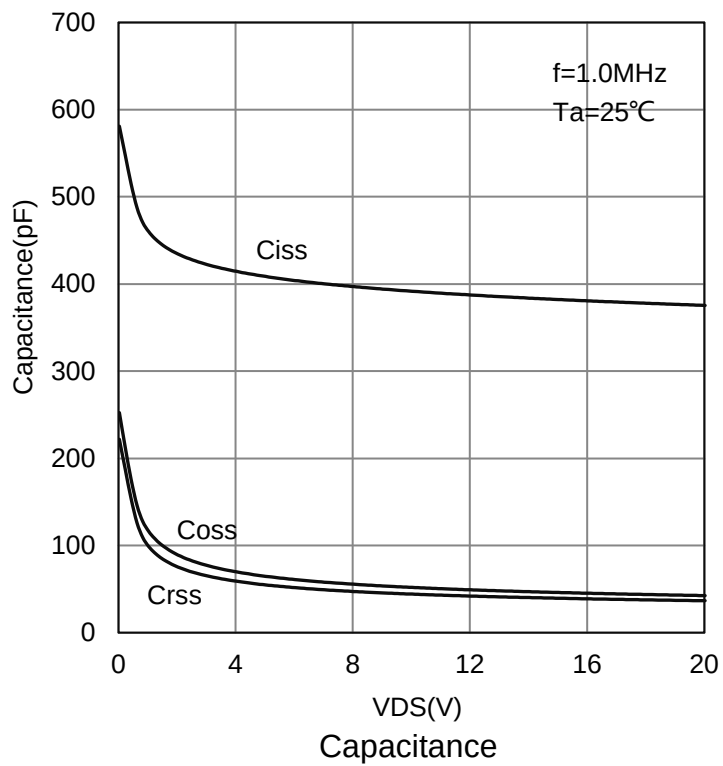
7. ELECTRICAL CHARACTERISTICS CURVES



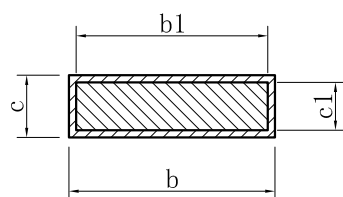
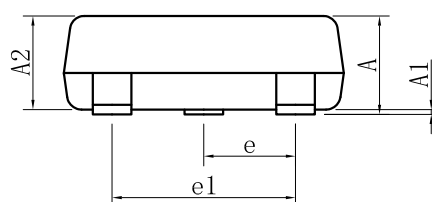
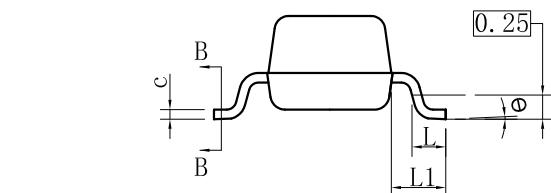
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



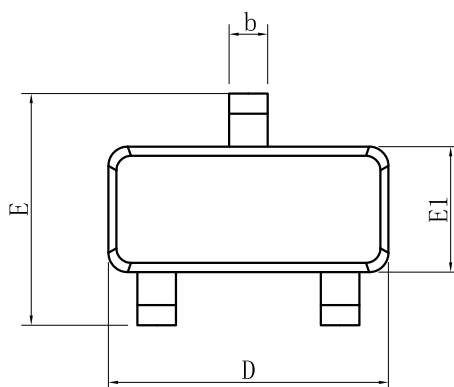
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



8. OUTLINE AND DIMENSIONS



SECTION B-B

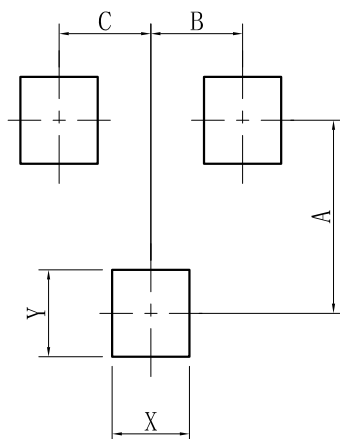


SOT23			
DIM	MIN	NOR	MAX
A	0.89	—	1.12
A1	0.01	—	0.10
A2	0.88	0.95	1.02
b	0.30	—	0.50
b1	0.30	0.40	0.45
c	0.08	—	0.20
c1	0.08	0.10	0.16
D	2.80	2.90	3.04
E	2.10	—	2.64
E1	1.20	1.30	1.40
e	0.95BSC		
e1	1.90BSC		
L	0.40	0.46	0.60
L1	0.54REF		
θ	0°	—	8°
All Dimensions in mm			

GENERAL NOTES

1. Top package surface finish $Ra0.4 \pm 0.2\mu m$
2. Bottom package surface finish $Ra0.7 \pm 0.2\mu m$
3. Side package surface finish $Ra0.4 \pm 0.2\mu m$

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.
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