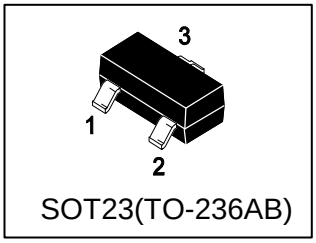
LN4501LT1G
S-LN4501LT1G

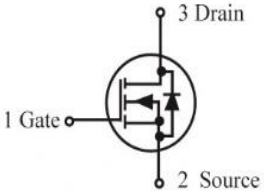
20 V, 3.2 A, Single N−Channel,SOT−23



SOT23(TO-236AB)

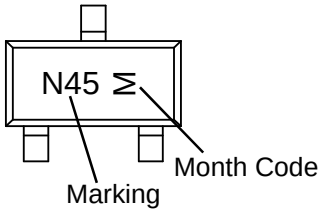
1. FEATURES

- 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.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.



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	N45	3000/Tape&Reel
LN4501LT3G	N45	10000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25ºC)

Parameter	Symbol	Limits	Unit
Drain–Source Voltage	VDSS	20	V
Gate–to–Source Voltage – Continuous	VGS	±12	V
Drain Current – Continuous TA = 25°C – Pulsed	 ID IDM	 3.2 10	A
Avalanche Current	IAS	7	A
Avalanche energy(L=0.1mH)	EAS	2.5	mJ

5. THERMAL CHARACTERISTICS

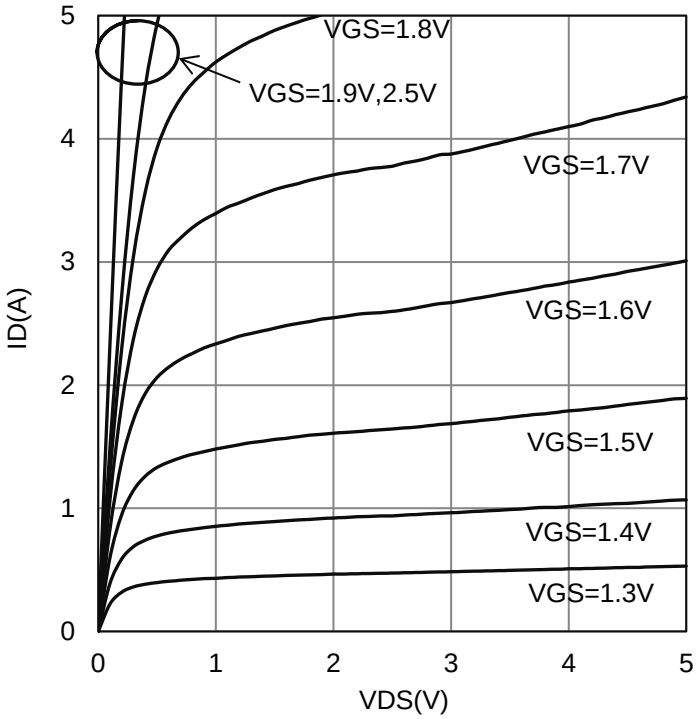
Parameter	Symbol	Limits	Unit
Maximum Power Dissipation(Note 1)	PD	1.25	W
Thermal Resistance, Junction–to–Ambient(Note 1)	RΘJA	100	ºC/W
Junction and Storage temperature	TJ,Tstg	−55~+150	°C

1. Surface−mounted on FR4 board using 1 in sq pad size
   (Cu area = 1.127 in sq [1 oz] including traces).

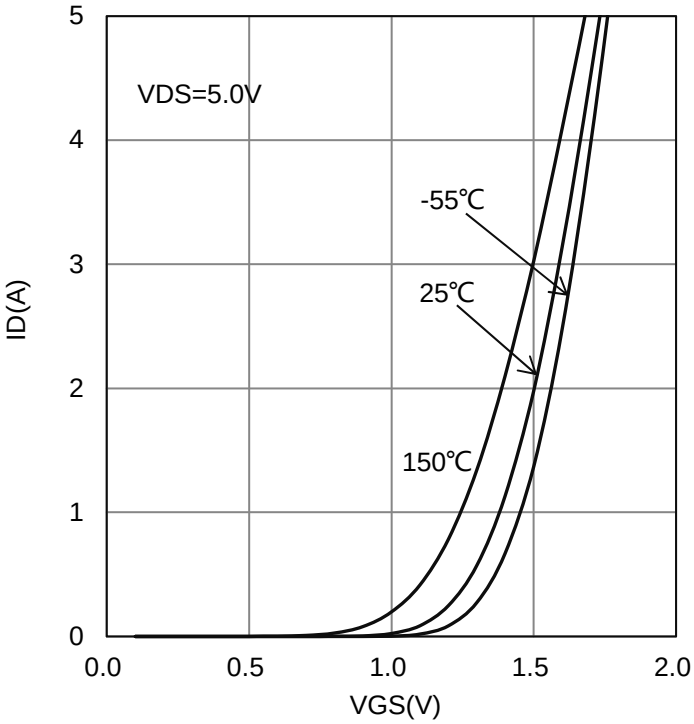
6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

Characteristic		Symbol	Min.	Typ.	Max.	Unit
Static						
Drain–Source Breakdown Voltage (VGS = 0, ID = 250μA)		V(BR)DSS	20	-	-	V
Zero Gate Voltage Drain Current (VDS=16V, VGS=0V)		IDSS	-	-	1.5	μA
Gate–Body Leakage Current, Forward (VDS = 0 V, VGS = 12 V)		IGSSF	-	-	100	nA
Gate–Body Leakage Current, Reverse (VDS = 0 V, VGS = -12 V)		IGSSR	-	-	-100	nA
Gate Threshold Voltage (VDS = VGS, ID = 250μA)		VGS(th)	0.6	-	1.2	V
Static Drain–Source On–State Resistance (VGS = 4.5 V, ID = 3.6 A) (VGS = 2.5 V, ID = 3.1 A)		RDS(on)	- -	70 85	80 105	mΩ
Forward Transconductance (VDS = 5.0 V, ID = 3.6 A)		gfs	-	9	-	S
Forward Voltage (VGS = 0 V, ISD = 1.6 A)		VSD	-	0.8	1.2	V
Dynamic						
Input Capacitance (VGS = 0 V, f = 1.0MHz,VDS= 10 V)		Ciss	-	388	-	pF
Output Capacitance (VGS = 0 V, f = 1.0MHz,VDS= 10 V)		Coss	-	53	-	pF
Reverse Transfer Capacitance (VGS = 0 V, f = 1.0MHz,VDS= 10 V)		Crss	-	45	-	pF
Total Gate Charge	(VDS = 10V, VGS = 4.5V, ID = 3.6A)	Qg	-	4	6	nC
Gate-Source Charge		Qgs	-	0.6	-	
Gate-Drain Charge		Qgd	-	1.3	-	
Turn-On Delay Time	(VGS = 4.5 V, VDS =10V ID = 3.6 A, RG = 6.0Ω)	td(on)	-	6.5	-	ns
Rise Time		tr	-	12	-	
Turn-Off Delay Time		td(off)	-	12	-	
Fall Time		tf	-	3	-	

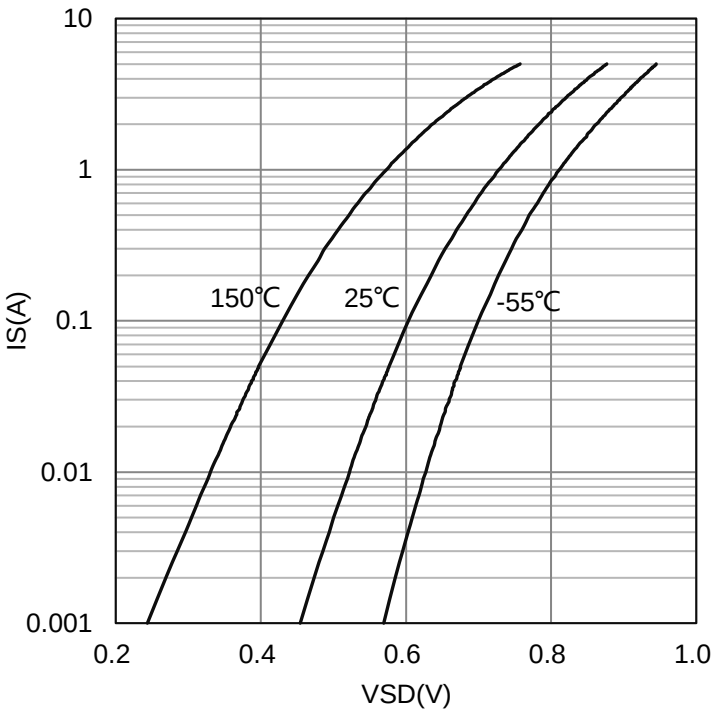
7. ELECTRICAL CHARACTERISTICS CURVES



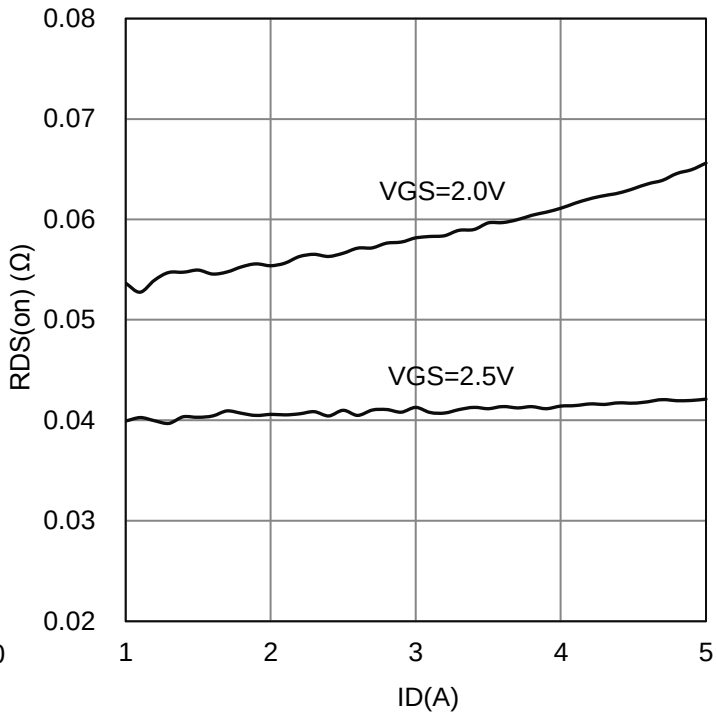
ID vs. VDS



ID vs. VGS

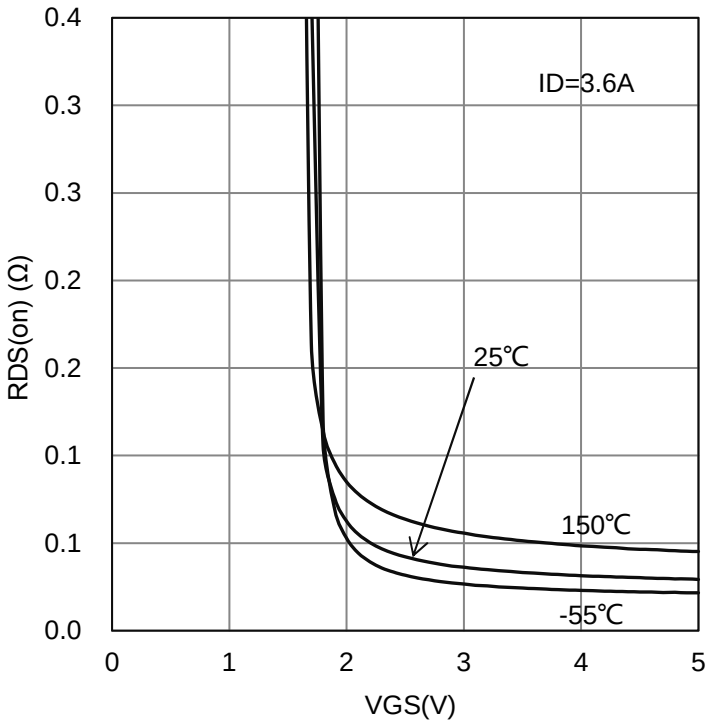


IS vs. VSD

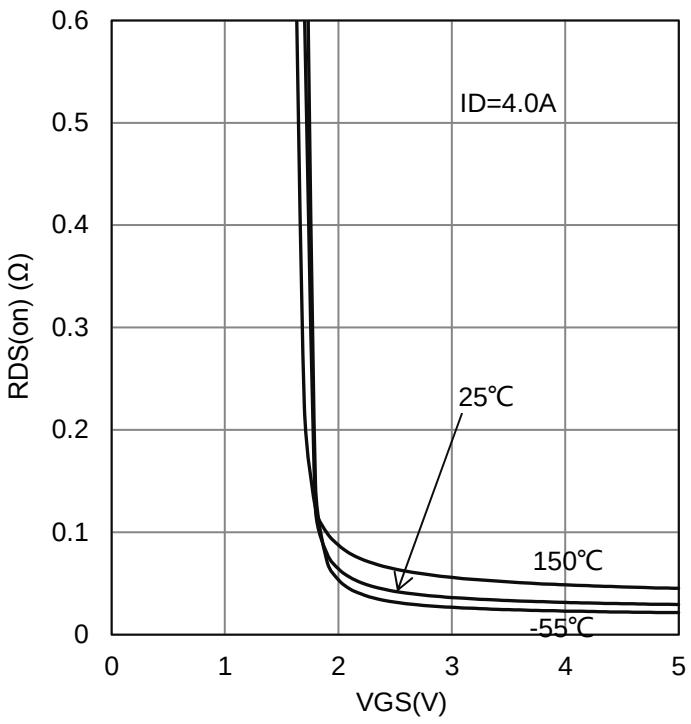


RDS(on) vs. ID

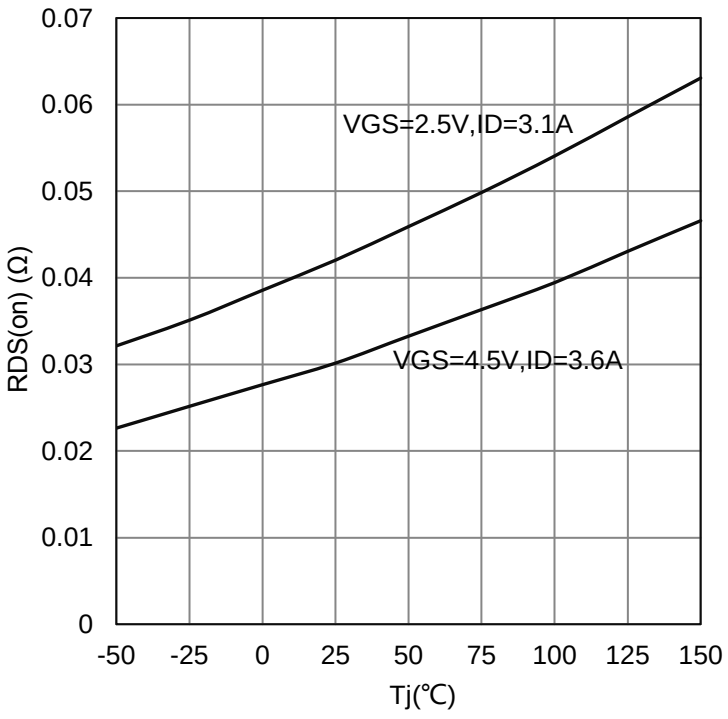
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



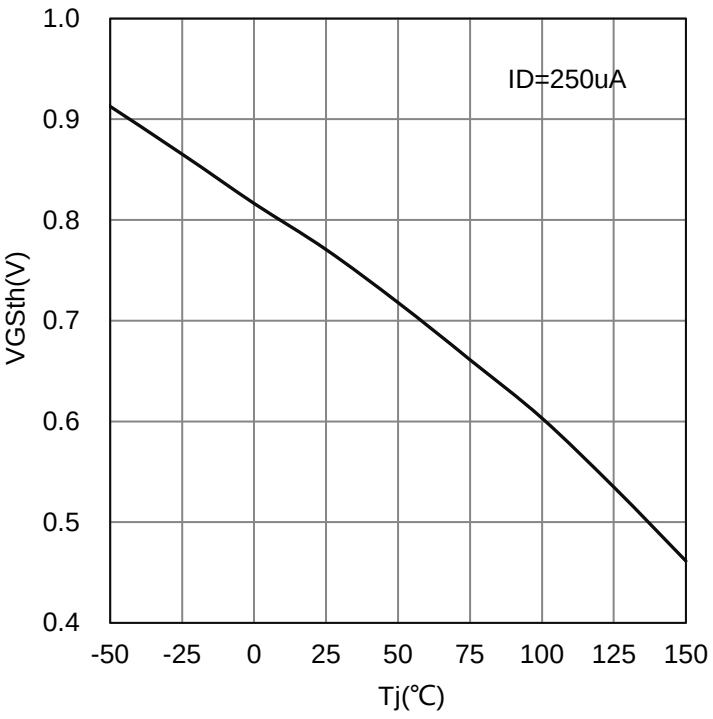
RDS(on) vs. VGS(ID=3.6A)



RDS(on) vs. VGS(ID=4.0A)

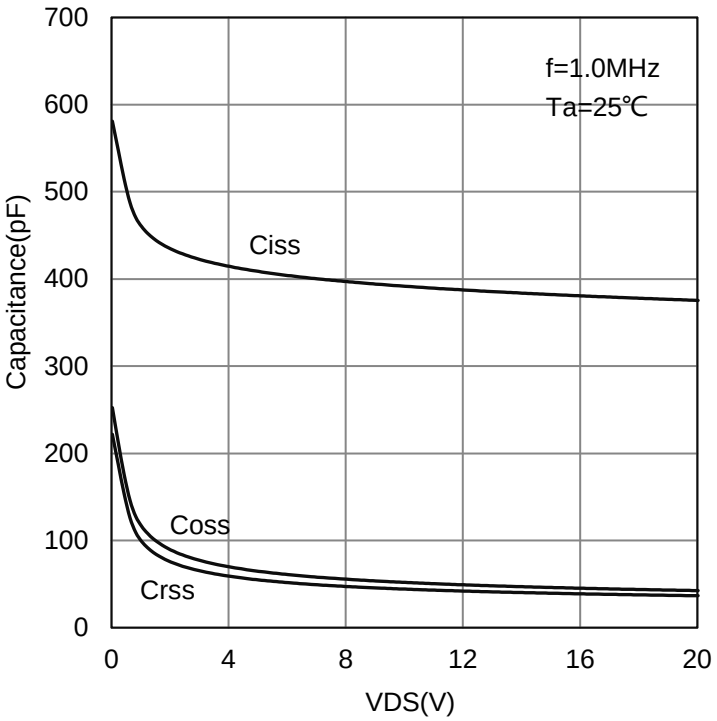


RDS(on) vs. Tj

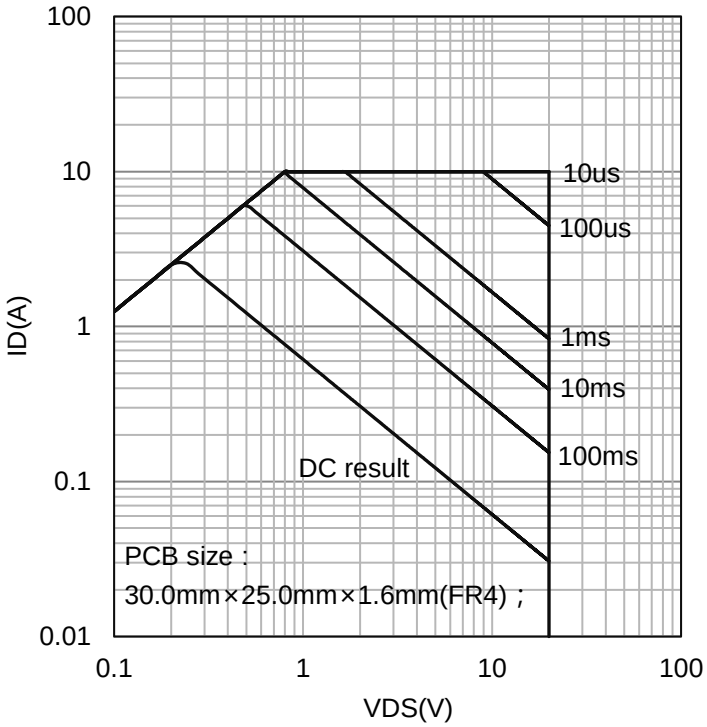


VGSth vs. Tj

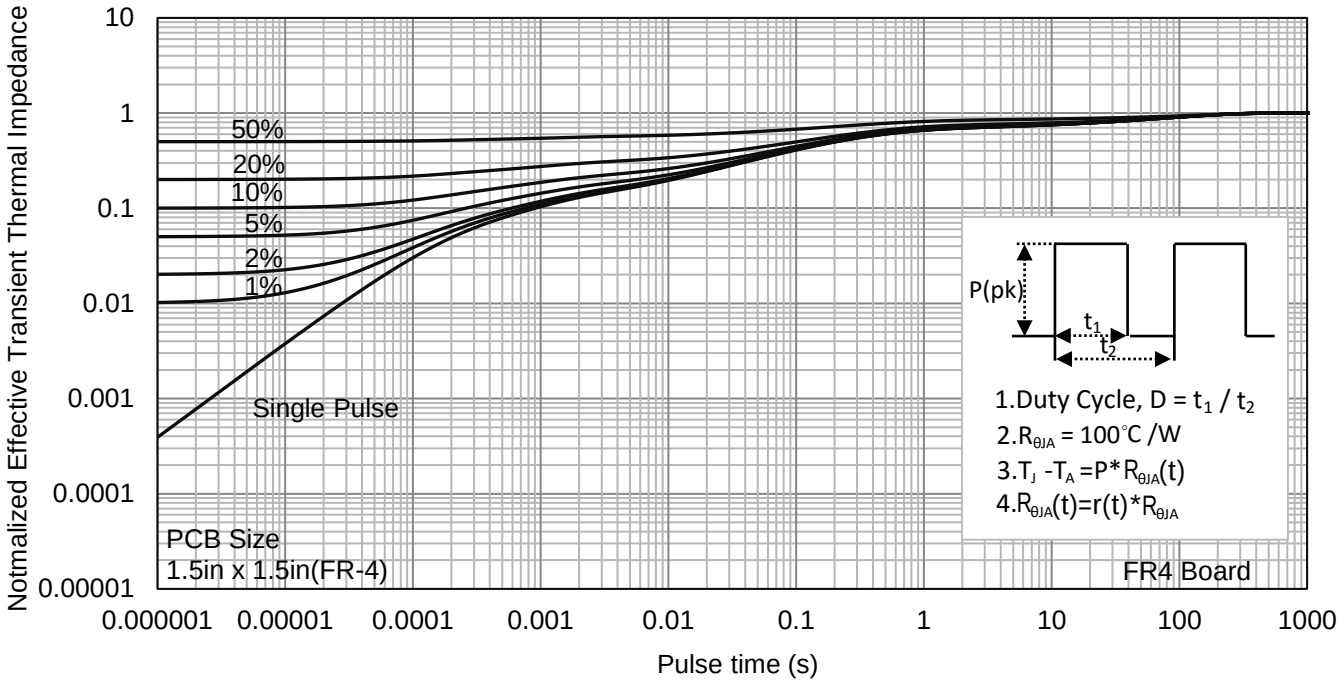
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



Capacitance

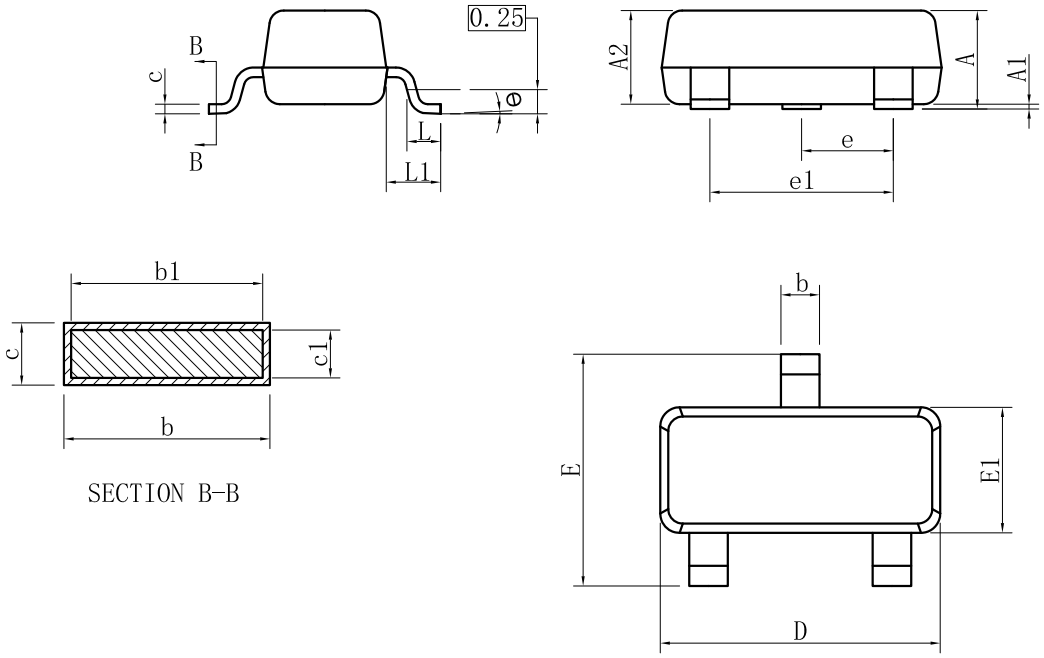


Safe Operating Area



Thermal Response

8.OUTLINE AND DIMENSIONS

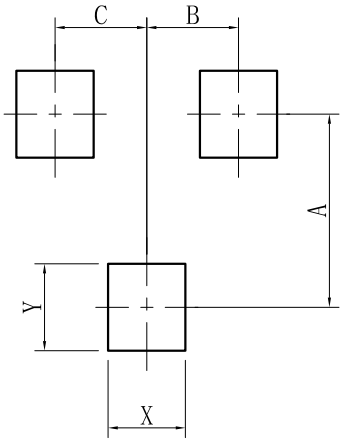


SOT23			
DIM	MIN	NOR	MAX
A	0.89	-	1.12
A1	0.01	-	0.10
A2	0.88	0.95	1.02
b	0.30	-	0.50
b1	0.30	0.40	0.45
c	0.08	-	0.20
c1	0.08	0.10	0.16
D	2.80	2.90	3.04
E	2.10	-	2.64
E1	1.20	1.30	1.40
e	0.95BSC		
e1	1.90BSC		
L	0.40	0.46	0.60
L1	0.54REF		
θ	0°	-	8°
All Dimensions in mm			

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.

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