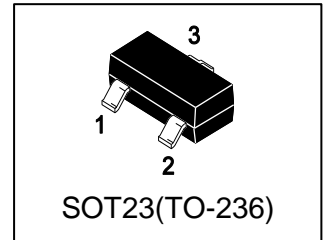


# LBSS138LT1G

## S-LBSS138LT1G

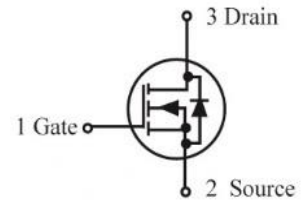
Power MOSFET

200 mA, 50V 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.
- Low threshold voltage ( $V_{GS(th)}$ ): 0.5V...1.5V) makes it ideal for low voltage applications.



### 2. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LBSS138LT1G	J1	3000/Tape&Reel
LBSS138LT3G	J1	10000/Tape&Reel

### 3. MAXIMUM RATINGS( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	VDSS	50	V
Gate-to-Source Voltage – Continuous	VGS	$\pm 20$	V
Drain Current			mA
– Continuous $T_A = 25^\circ\text{C}$	ID	200	
– Pulsed ( $t_p \leq 10\mu\text{s}$ )	IDM	800	

### 4. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Total Device Dissipation, FR-4 Board (Note 1) @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	PD	287 2.3	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient(Note 1)	R $\theta$ JA	435	$^\circ\text{C}/\text{W}$
Junction and Storage temperature	T $_J$ , T $_{stg}$	-55~+150	$^\circ\text{C}$
Maximum Lead Temperature for Solde Purposes, for 10 seconds	TL	260	$^\circ\text{C}$

1. 30.0mm×25.0mm×1.6mm(FR4), Copper foil thickness 35 $\mu\text{m}$ ;

**5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)**
**OFF CHARACTERISTICS**

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = 250μA)	VBRDSS	50	-	-	V
Zero Gate Voltage Drain Current (VGS = 0, VDS = 25 V) (VGS = 0, VDS = 50 V)	IDSS	- -	- -	0.1 0.5	μA
Gate–Body Leakage Current, Forward (VGS = 20 V)	IGSSF	-	-	0.1	μA
Gate–Body Leakage Current, Reverse (VGS = - 20 V)	IGSSR	-	-	-0.1	μA

**ON CHARACTERISTICS (Note 2)**

Gate Threshold Voltage (VDS = VGS, ID = 1.0mA)	VGS(th)	0.5	-	1.5	V
Static Drain–Source On–State Resistance (VGS = 2.75 V, ID < 200 mA, TA = -40°C to +85°C) (VGS = 5.0 V, ID = 200 mA)	RDS(on)	- -	5.6 -	10 3.5	Ohms
Forward Transconductance (VDS = 25 V, ID = 200 mA, f = 1.0 kHz)	gfs	100	-	-	mS

**DYNAMIC CHARACTERISTICS**

Input Capacitance (VDS = 25 V, VGS = 0, f = 1.0 MHz)	Ciss	-	40	50	pF
Output Capacitance (VDS = 25 V, VGS = 0, f = 1.0 MHz)	Coss	-	12	25	pF
Reverse Transfer Capacitance (VDS = 25 V, VGS = 0, f = 1.0 MHz)	Crss	-	3.5	5.0	pF

**SWITCHING CHARACTERISTICS**

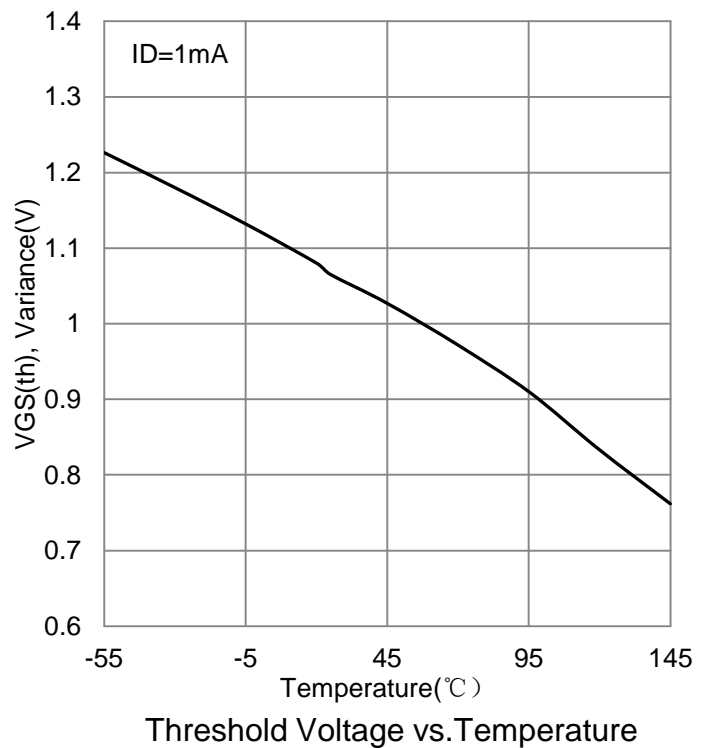
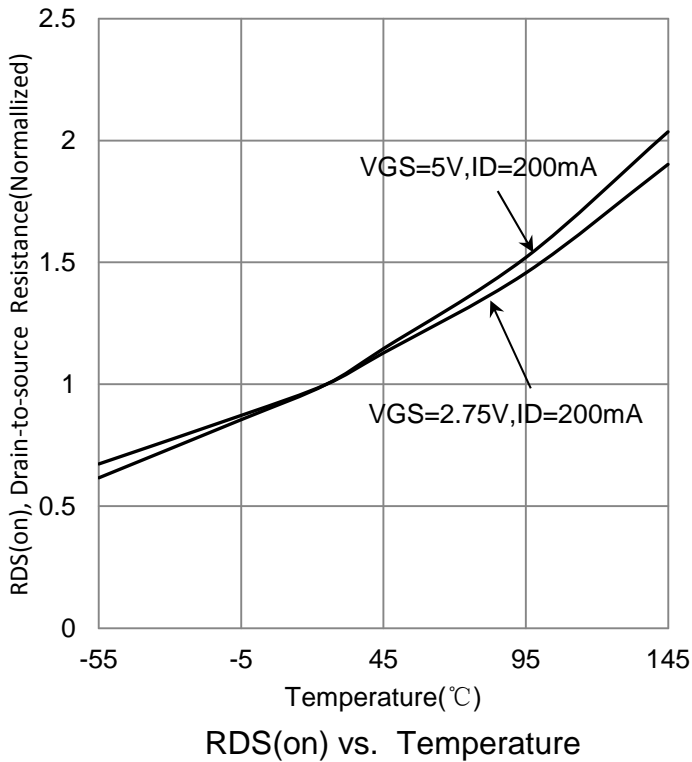
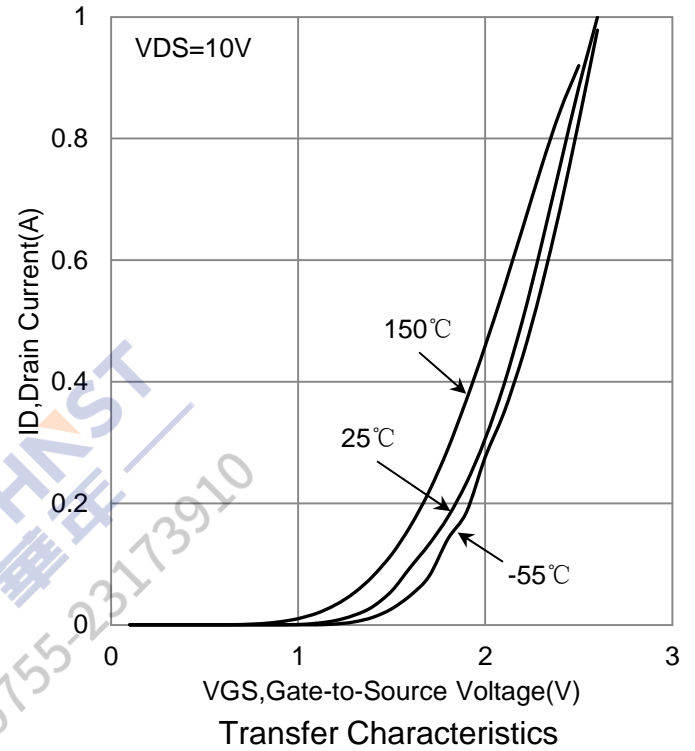
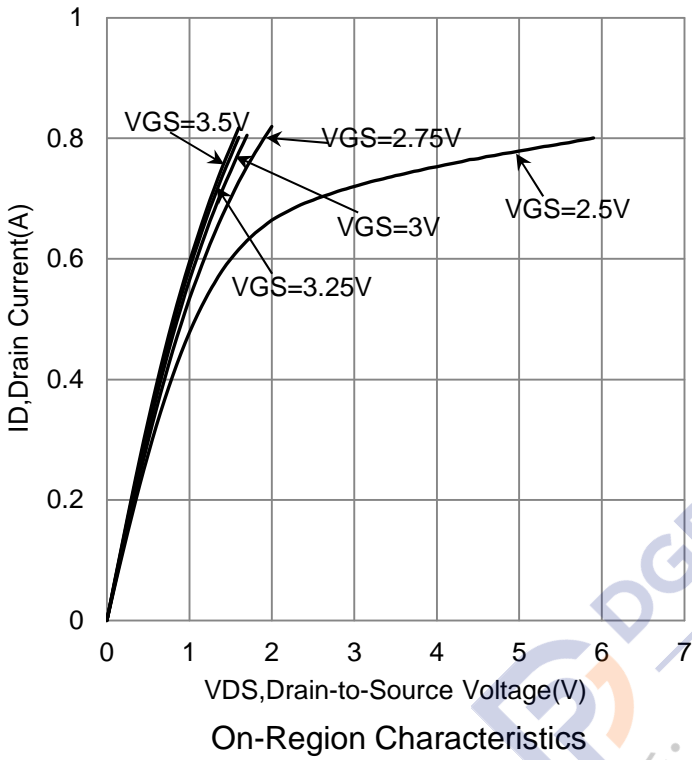
Turn-On Delay Time	(VDD = 30 V , ID =200 mA)	td(on)	-	-	20	ns
Turn-Off Delay Time		td(off)	-	-	20	

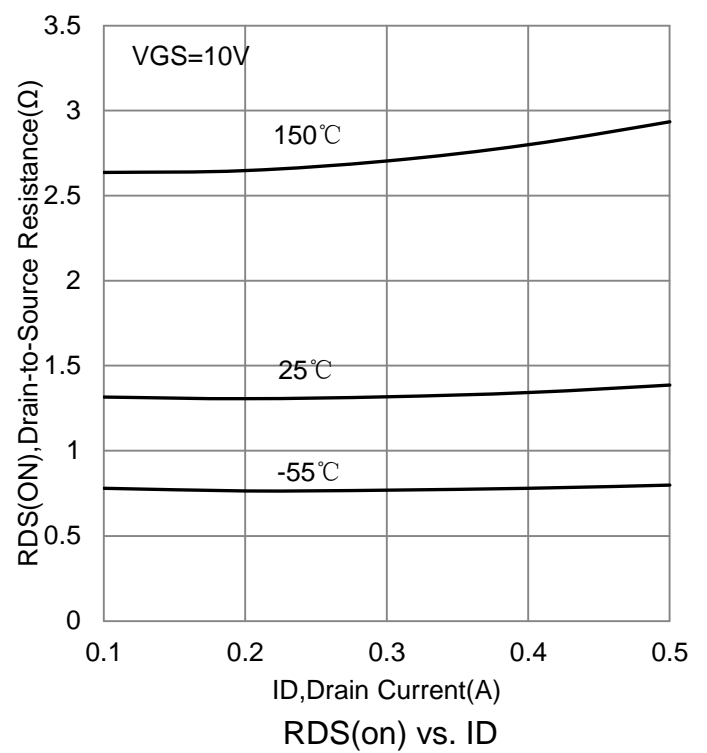
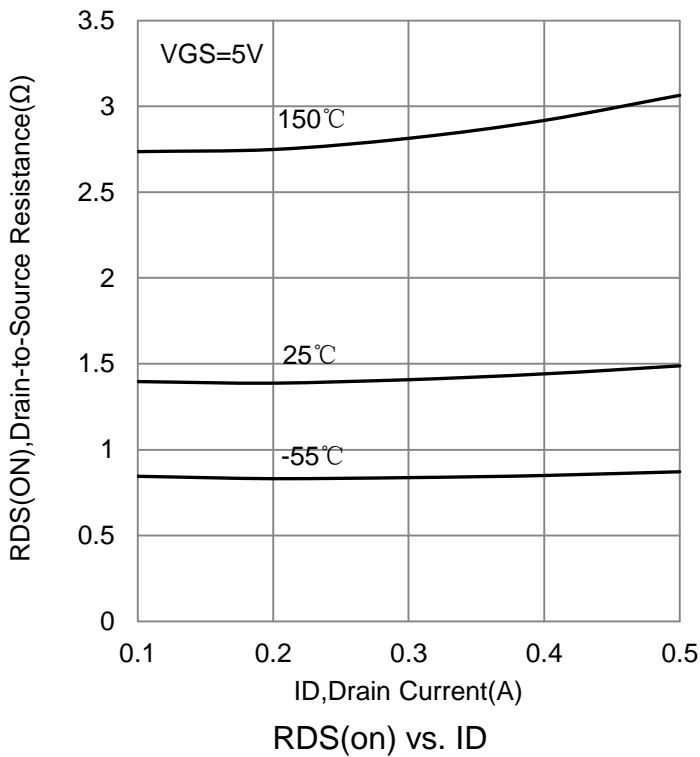
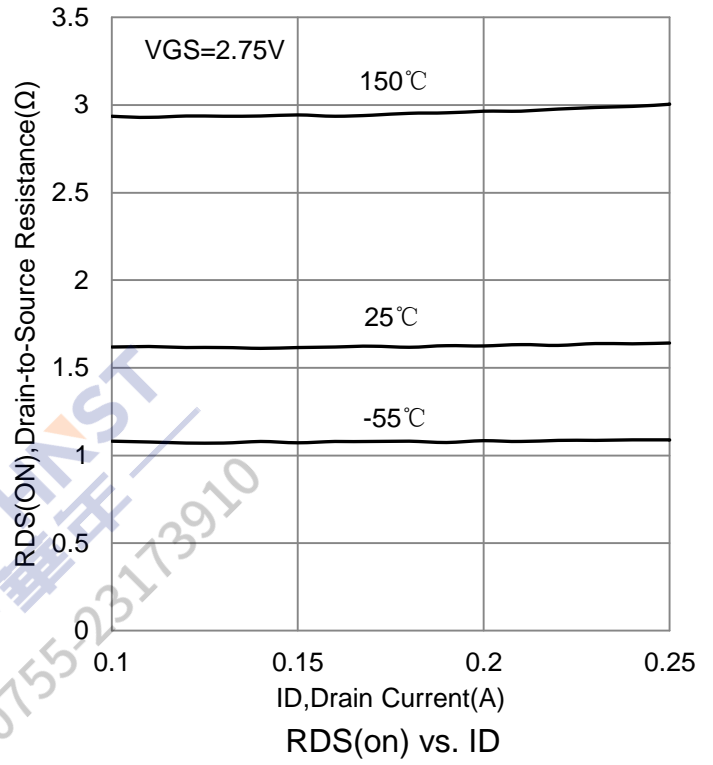
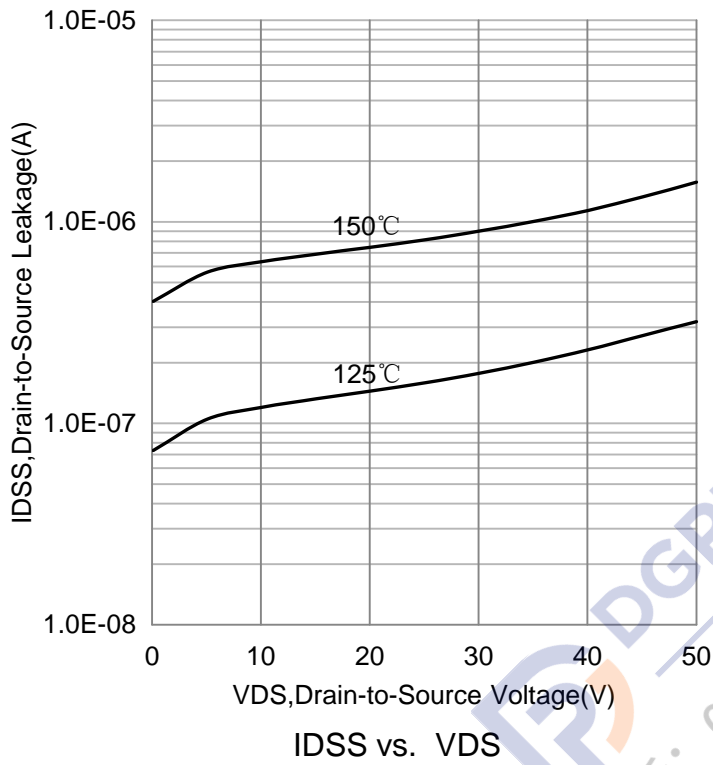
**SOURCE–DRAIN DIODE CHARACTERISTICS**

Forward Voltage (IS=0.2A ,VGS=0V)	VSD	-	-	1.4	V
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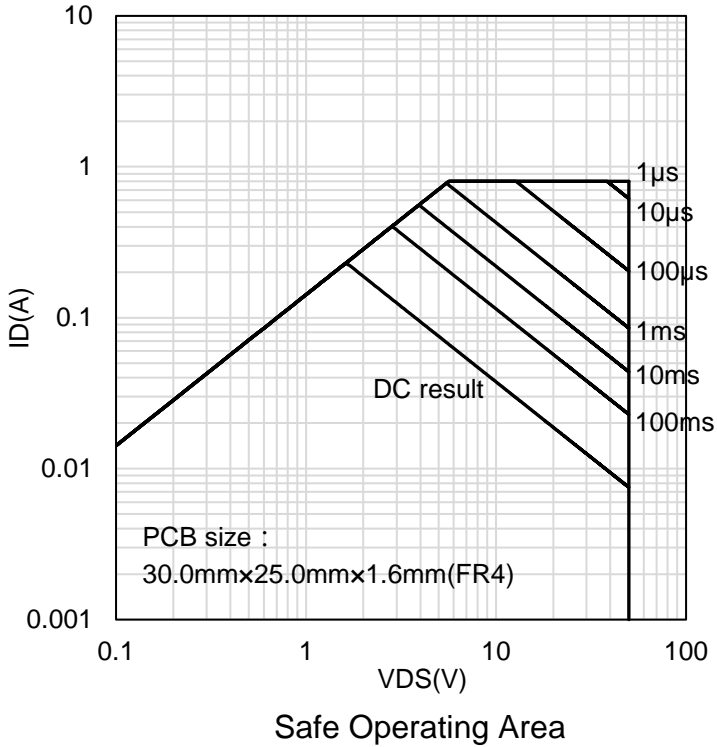
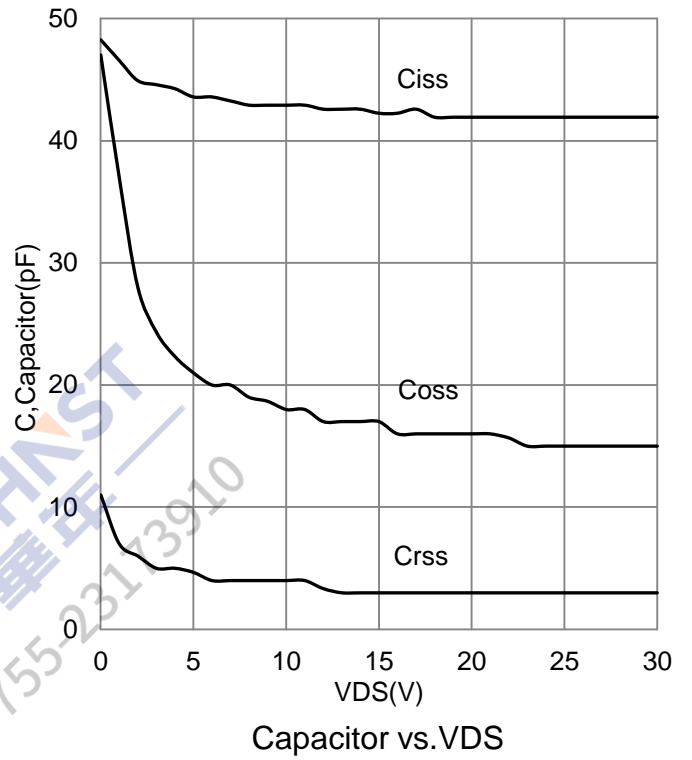
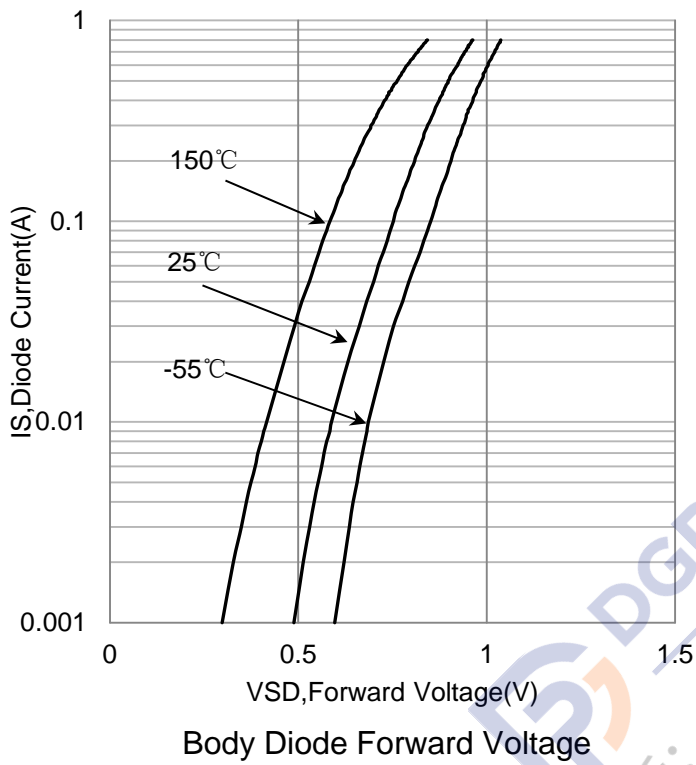
2.Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.

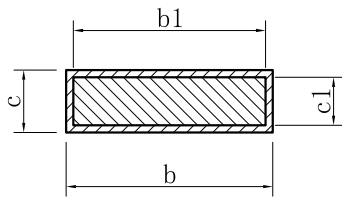
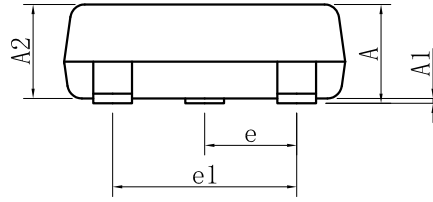
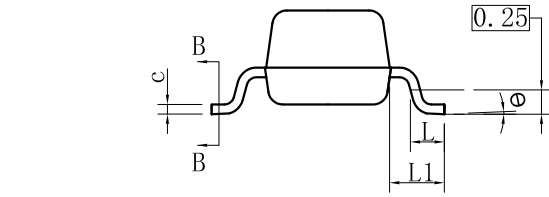
**6. ELECTRICAL CHARACTERISTICS CURVES**



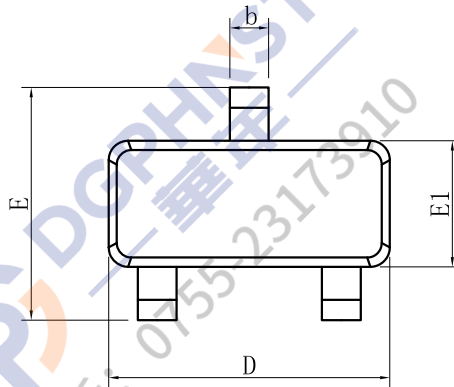
**6.ELECTRICAL CHARACTERISTICS CURVES(Con.)**


**6.ELECTRICAL CHARACTERISTICS CURVES(Con.)**



**7. OUTLINE AND DIMENSIONS**


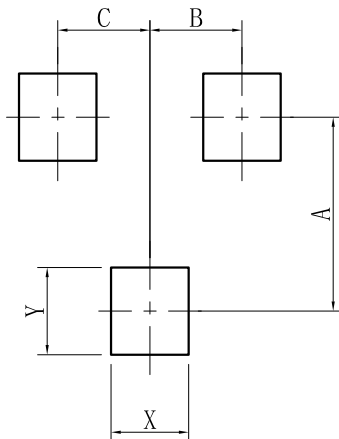
SECTION B-B



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

**8. 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.
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