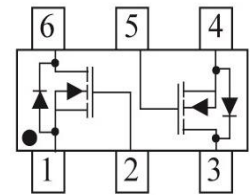
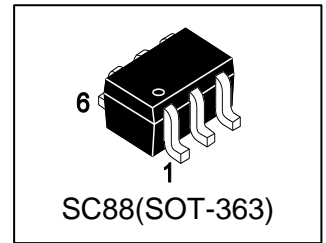


# LBSS138DW1T1G

## S-LBSS138DW1T1G

Power MOSFET

200 mA, 50V N-Channel SC-88



### 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
LBSS138DW1T1G	J1	3000/Tape&Reel
LBSS138DW1T3G	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	
Junction temperature	TJ	$-55 \sim +150$	$^{\circ}\text{C}$
Storage temperature	Tstg	$-55 \sim +150$	$^{\circ}\text{C}$
Maximum Lead Temperature for Solde Purposes, for 10 seconds	TL	260	$^{\circ}\text{C}$

### 4. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Total Device Dissipation (Note 1) $T_A = 25^{\circ}\text{C}$	PD	264	mW
Derate above $25^{\circ}\text{C}$		2.1	mW/ $^{\circ}\text{C}$
Thermal Resistance, Junction-to-Ambient(Note 1)	R $\theta$ JA	474	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	R $\theta$ JC	238	$^{\circ}\text{C}/\text{W}$

1. 30.0mmx25.0mmx1.6mm(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

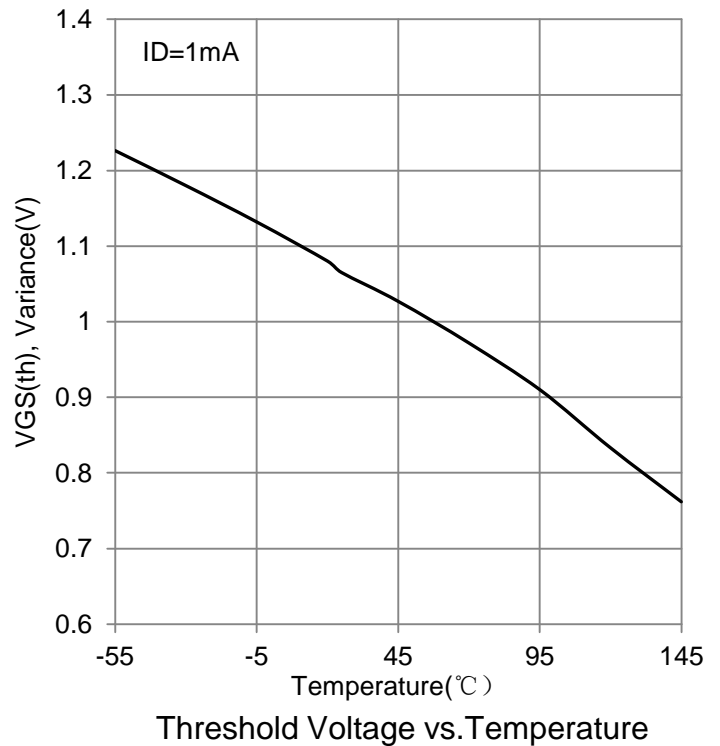
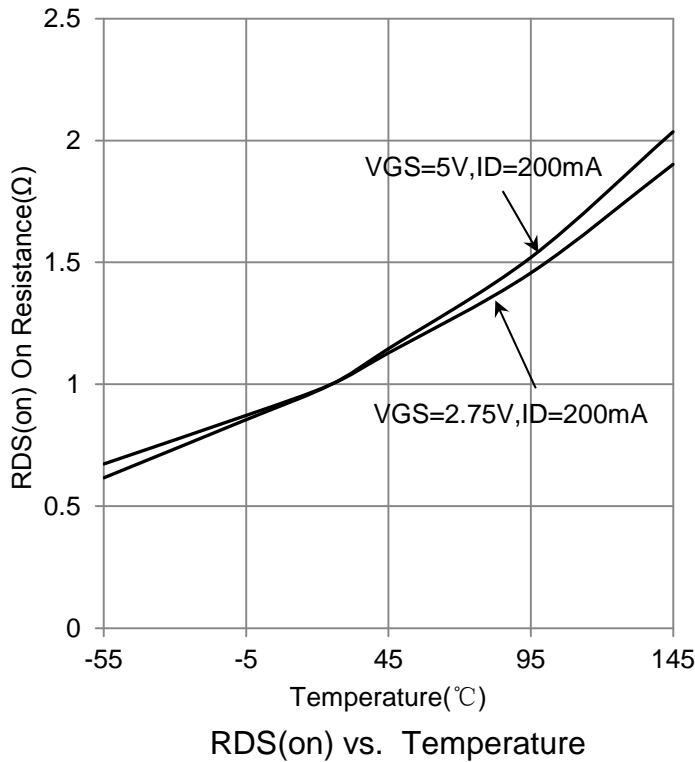
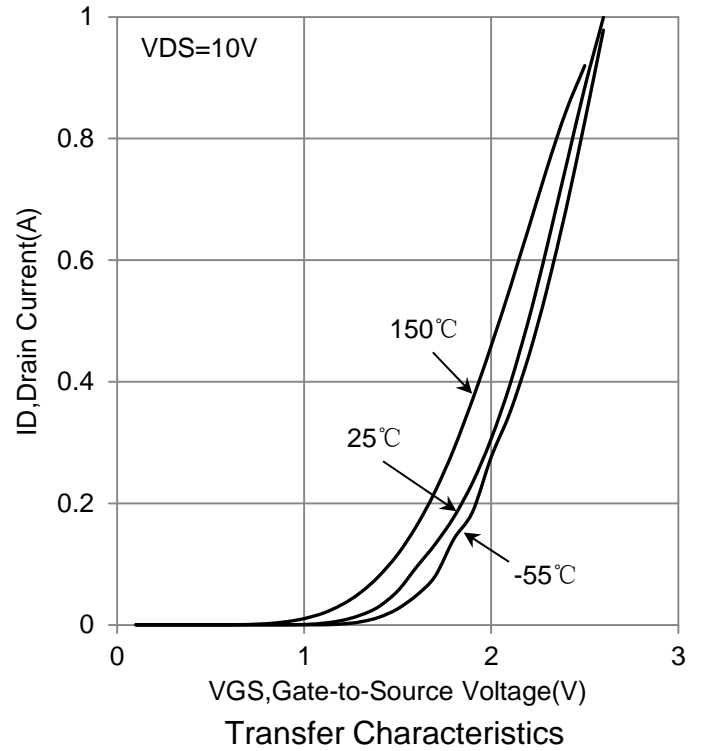
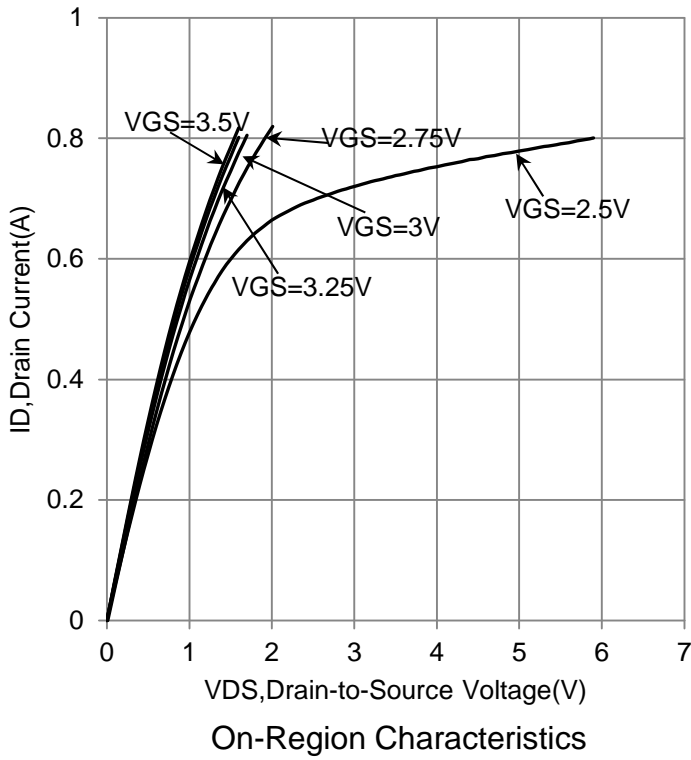
**DYNAMIC CHARACTERISTICS**

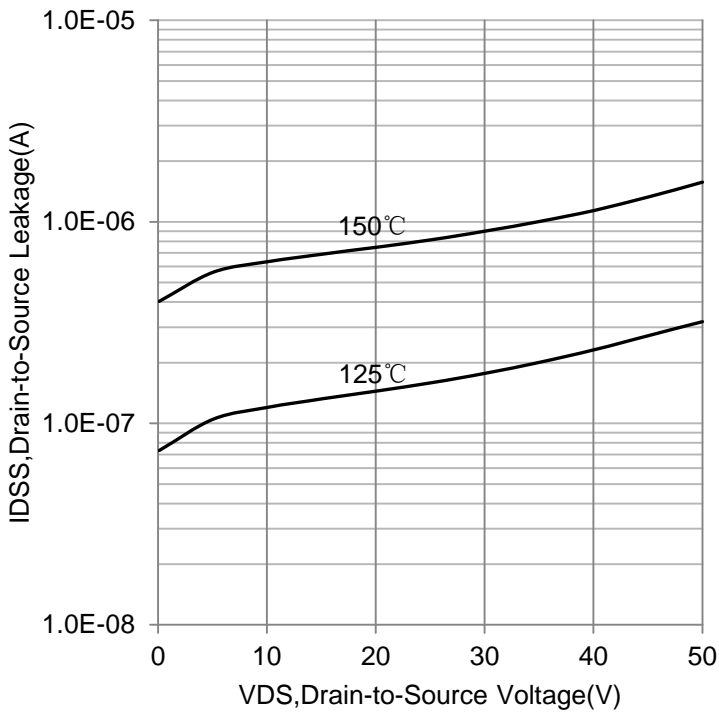
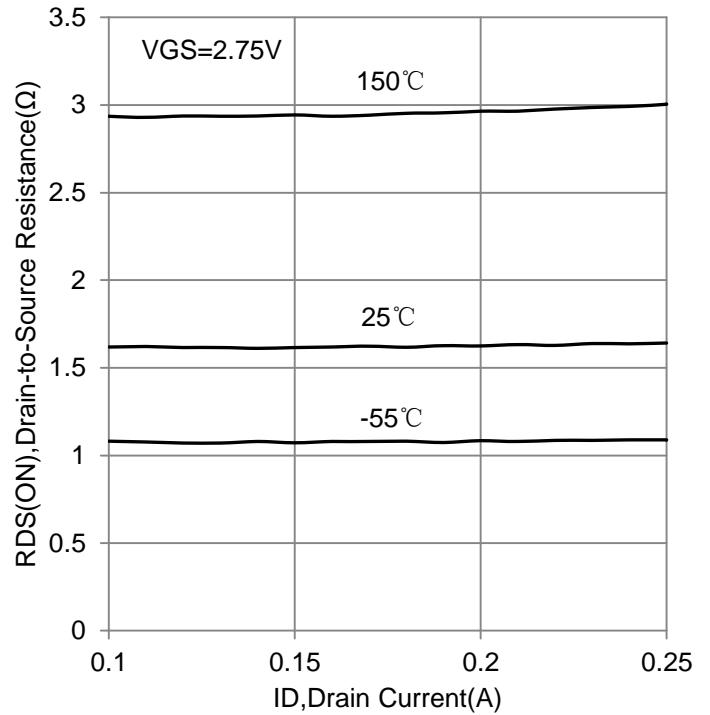
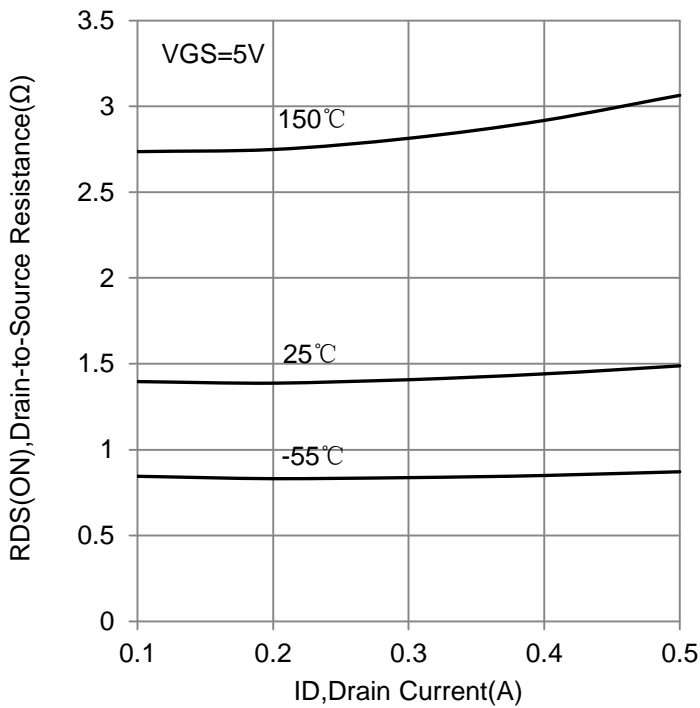
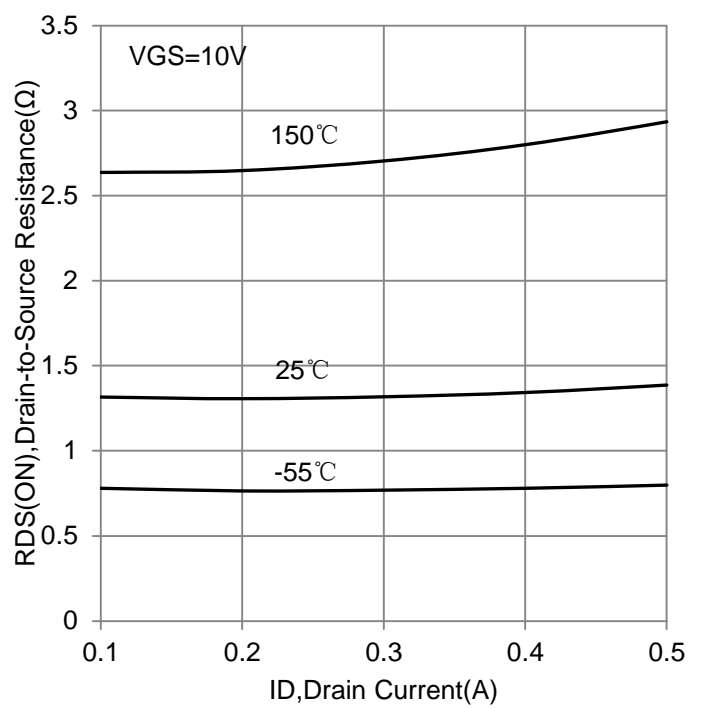
Input Capacitance (VDS = 25 V, VGS = 0, f = 1.0 MHz)	Ciss	-	40	50	pF
Output Capacitance (VDS = 25 V, VGS = 0, f = 1.0 MHz)	Coss	-	12	25	pF
Reverse Transfer Capacitance (VDS = 25 V, VGS = 0, f = 1.0 MHz)	Ciss	-	3.5	5.0	pF

**SWITCHING CHARACTERISTICS**

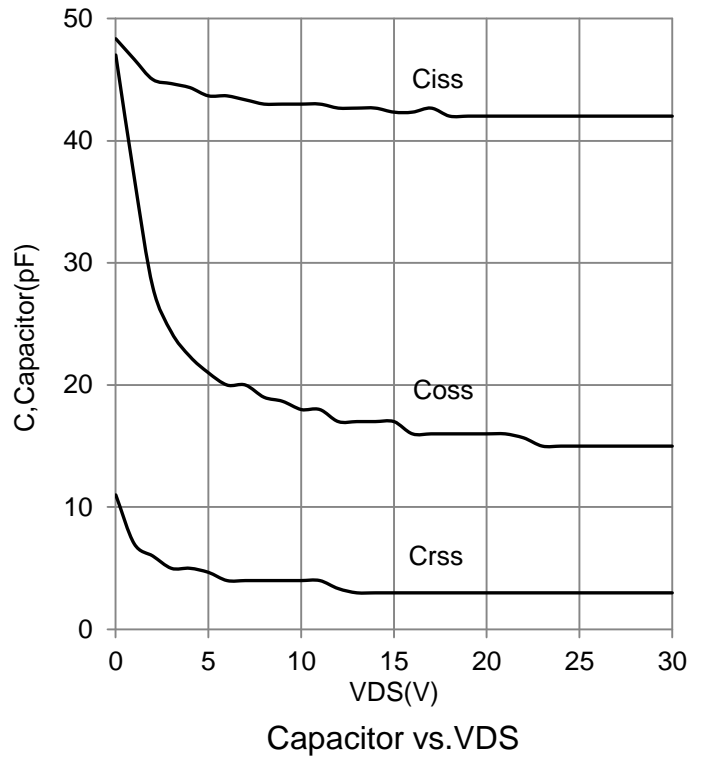
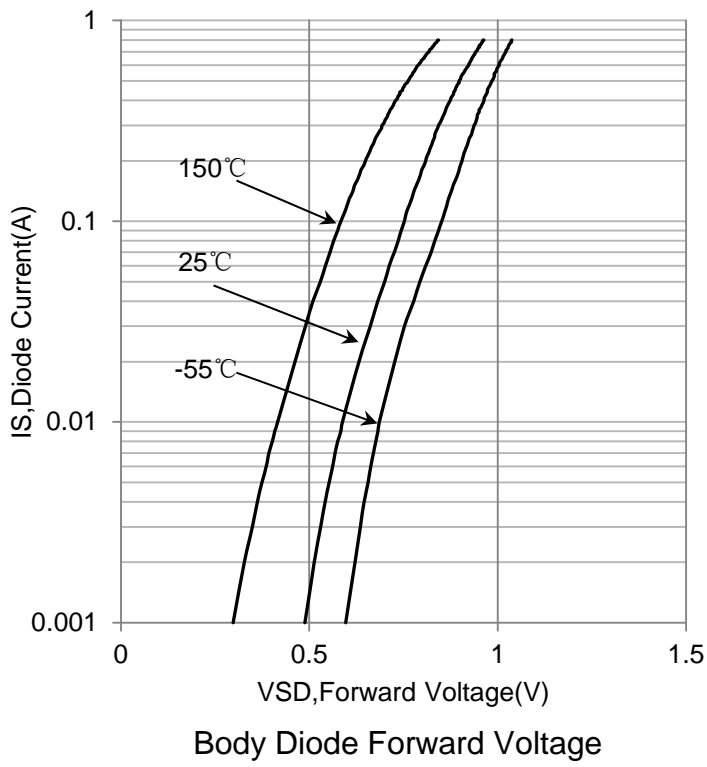
Turn-On Delay Time	(VDD = 30 V , ID =200 mA)	td(on)	-	-	20	ns
Turn-Off Delay Time		td(off)	-	-	20	

2.Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

**6. ELECTRICAL CHARACTERISTICS CURVES**


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

**IDSS vs. VDS**

**RDS(on) vs. ID**

**RDS(on) vs. ID**

**RDS(on) vs. ID**

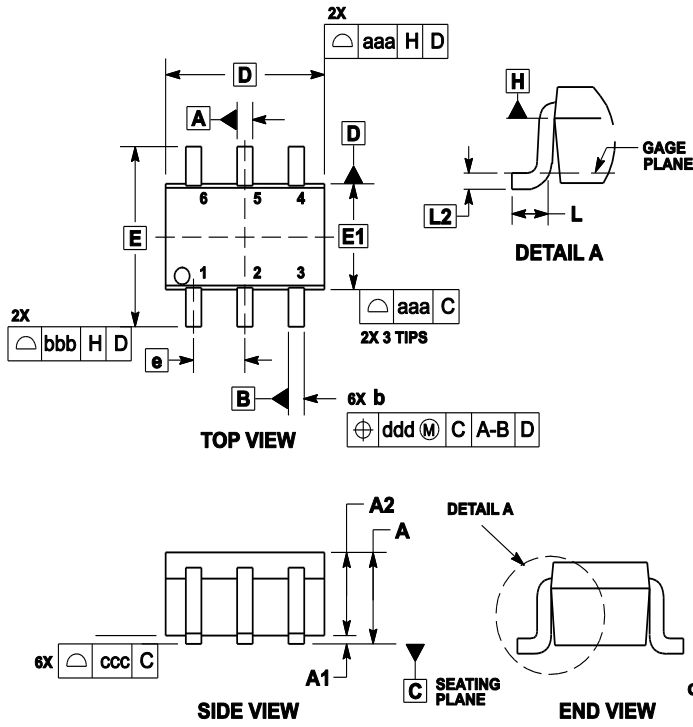
6.ELECTRICAL CHARACTERISTICS CURVES(Con.)



### 7.OUTLINE AND DIMENSIONS

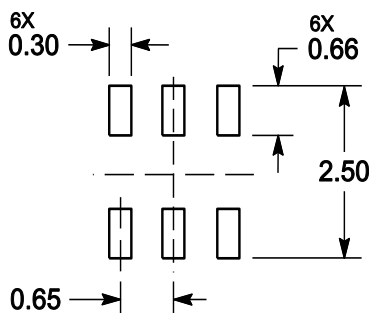
Notes:

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 E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	---	---	1.10	---	---	0.043
A1	0.00	---	0.10	0	---	0.004
A2	0.70	0.90	1.00	0.027	0.035	0.039
b	0.15	0.20	0.25	0.006	0.008	0.01
C	0.08	0.15	0.22	0.003	0.006	0.009
D	1.80	2.00	2.20	0.07	0.078	0.086
E	2.00	2.10	2.20	0.078	0.082	0.086
E1	1.15	1.25	1.35	0.045	0.049	0.053
e	0.65 BSC			0.026 BSC		
L	0.26	0.36	0.46	0.010	0.014	0.018
L2	0.15 BSC			0.006 BSC		
aaa	0.15			0.01		
bbb	0.30			0.01		
ccc	0.10			0.00		
ddd	0.10			0.00		

### 8.SOLDERING FOOTPRINT



## **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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