

Power MOSFET MOSFET 200 mAmps, 50 Volts N–Channel

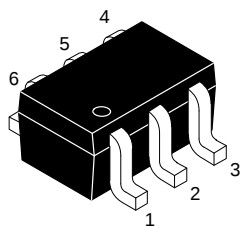
FEATURES:

- Low threshold voltage ($V_{GS(th)}$: 0.5V...1.5V) makes it ideal for low voltage applications.
- We declare that the material of product compliance with RoHS requirements and Halogen Free.

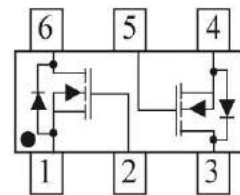
APPLICATIONS:

- Low Side Load Switch
- Level Shift Circuits
- DC–DC Converter

Circuit Diagram & Pin Configuration:



SOT363/SC-88



DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
BSS138DW1-S03T	J1	3000/Tape&Reel

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

Parameter	Symbol	Limits	Unit
Drain–Source Voltage	V_{DSS}	50	Vdc
Gate–to–Source Voltage – Continuous	V_{GS}	± 20	Vdc
Drain Current			mAdc
– Continuous $T_A = 25^{\circ}\text{C}$	I_D	200	
– Pulsed ($t_p \leq 10\mu\text{s}$)	I_{DM}	800	

THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Total Device Dissipation, FR–5 Board (Note 1) @ $T_A = 25^{\circ}\text{C}$ Derate above 25°C	PD	225 1.8	mW mW/ $^{\circ}\text{C}$
Thermal Resistance, Junction–to–Ambient(Note 1)	$R_{\theta JA}$	556	$^{\circ}\text{C}/\text{W}$
Junction and Storage temperature	T_J, T_{stg}	$-55 \sim +150$	$^{\circ}\text{C}$
Maximum Lead Temperature for Solde Purposes, for 10 seconds	TL	260	$^{\circ}\text{C}$

1. FR–5 = 1.0×0.75×0.062 in.

ELECTRICAL CHARACTERISTICS (Ta= 25°C)
OFF CHARACTERISTICS

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

ON CHARACTERISTICS (Note 2)

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

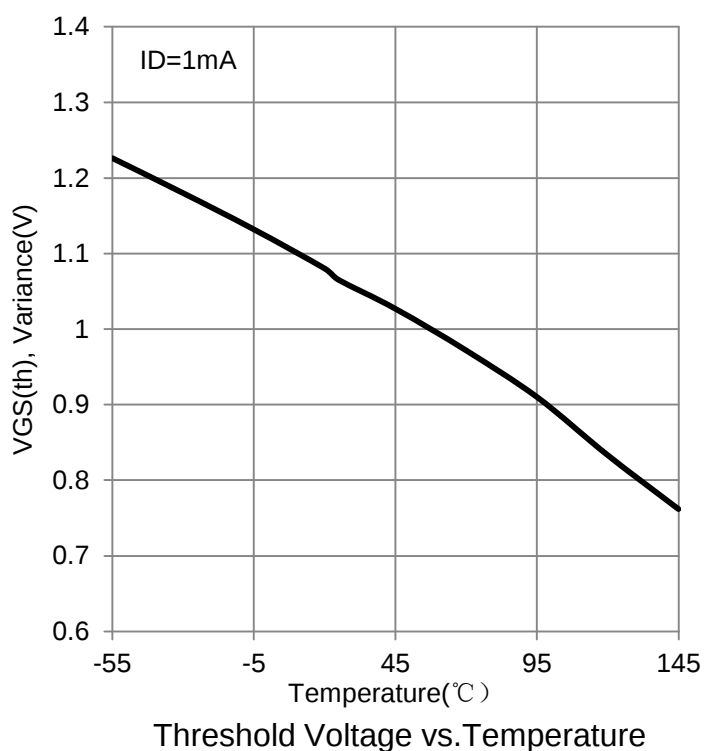
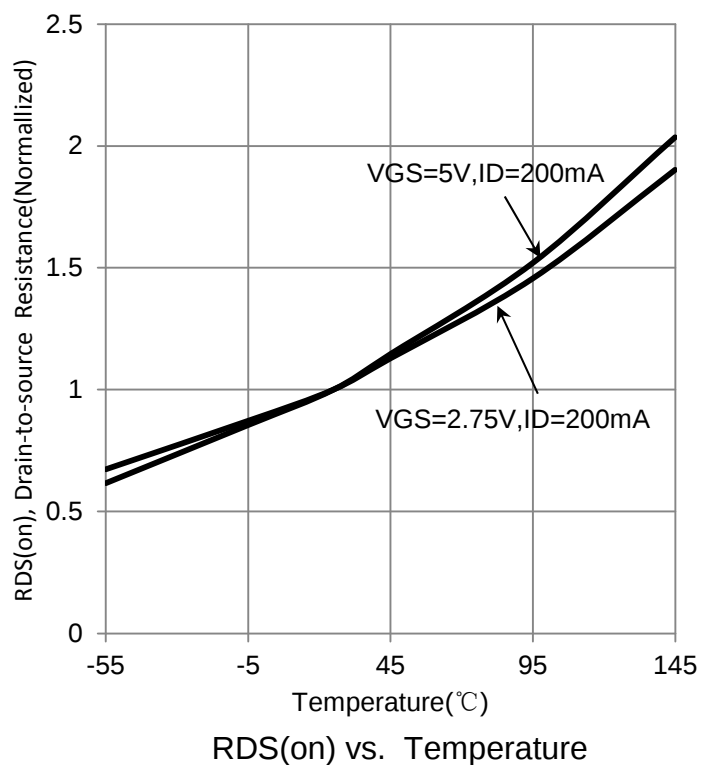
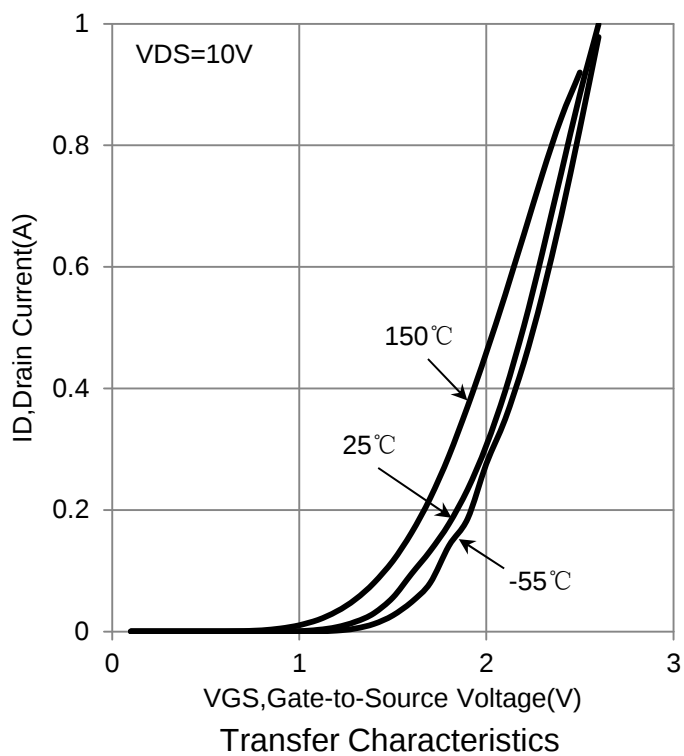
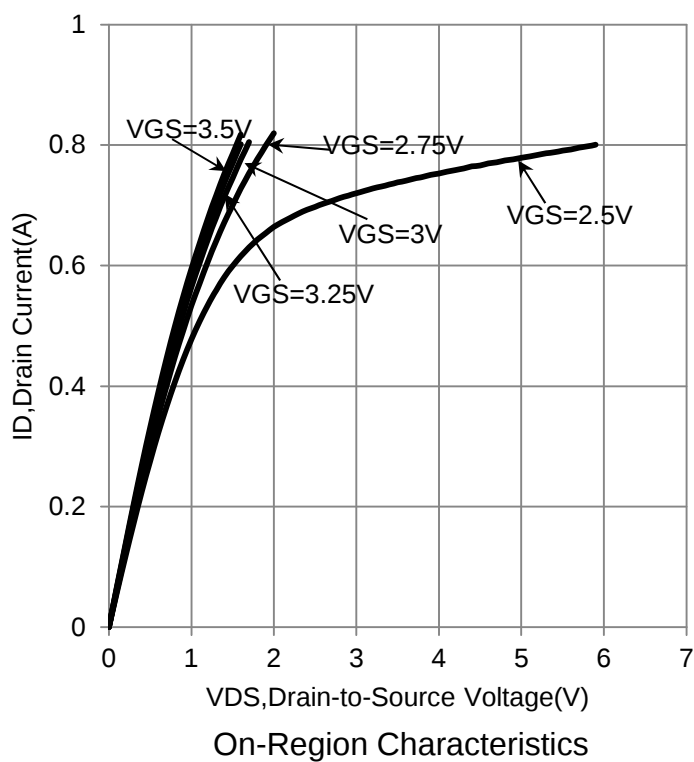
DYNAMIC CHARACTERISTICS

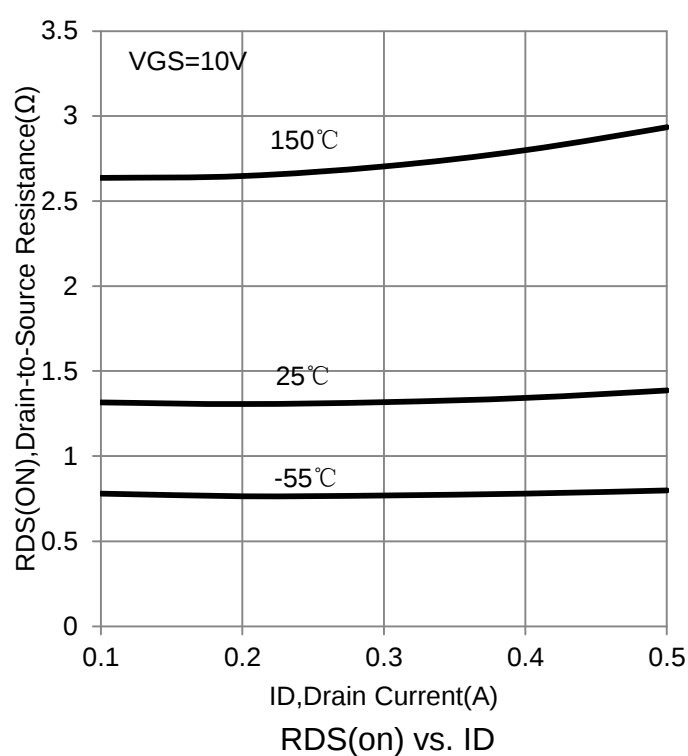
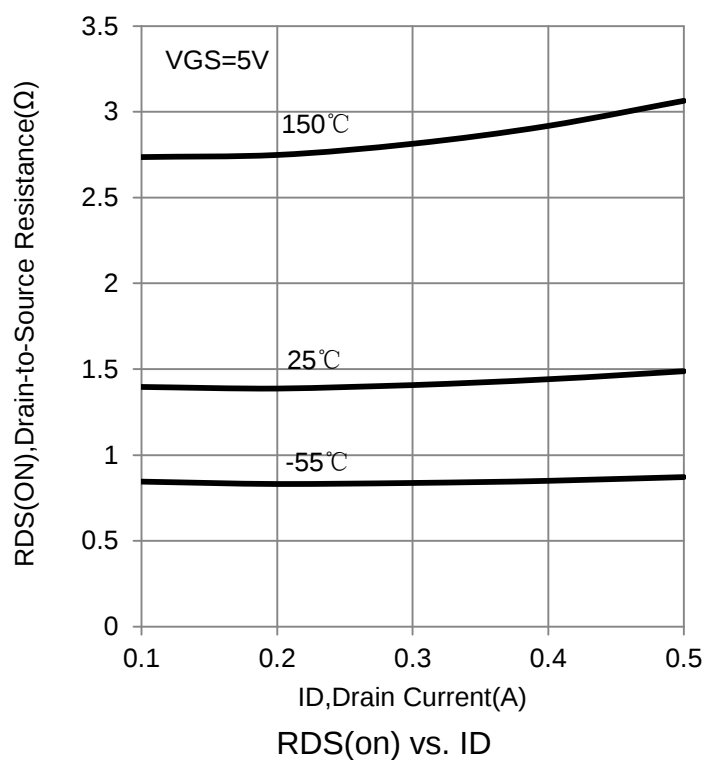
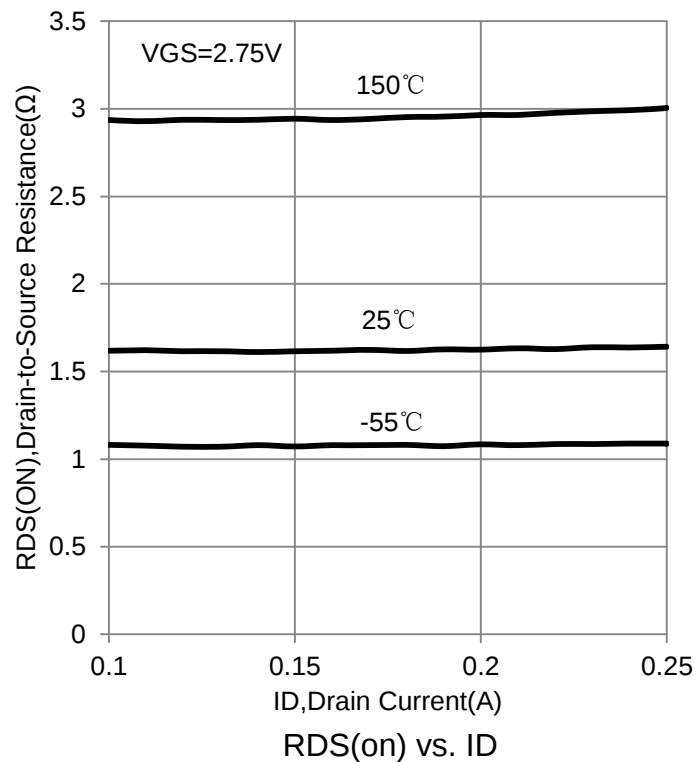
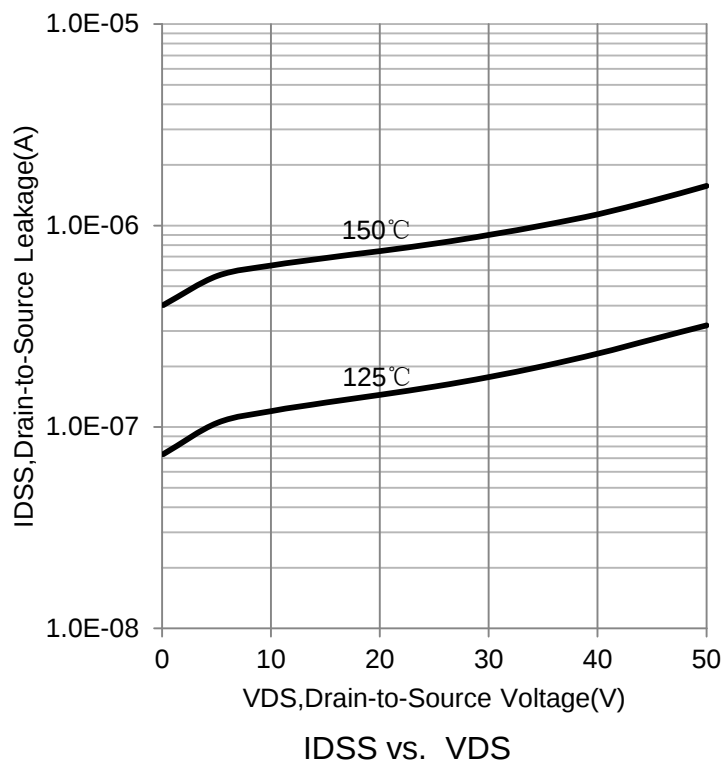
Input Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz)	Ciss	-	40	50	pF
Output Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz)	Coss	-	12	25	pF
Reverse Transfer Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz)	Ciss	-	3.5	5.0	pF

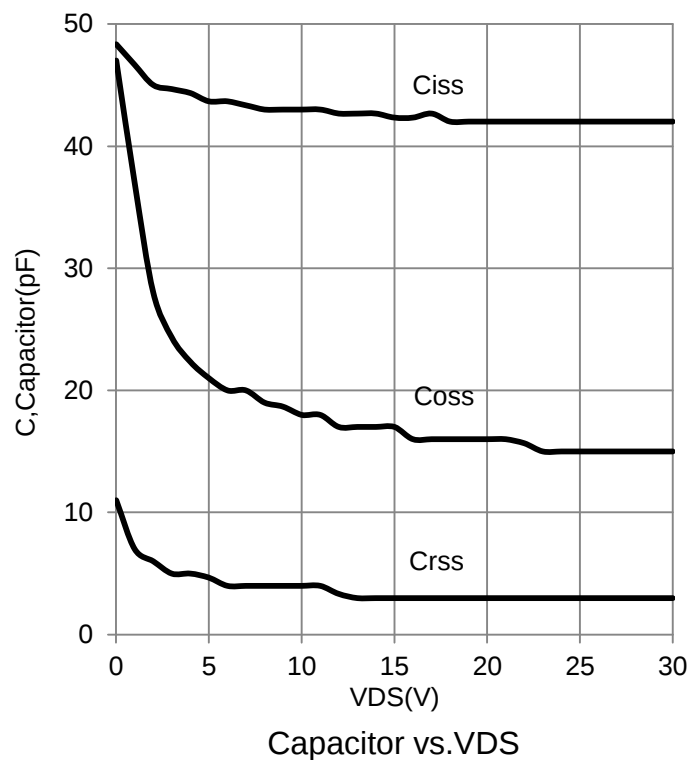
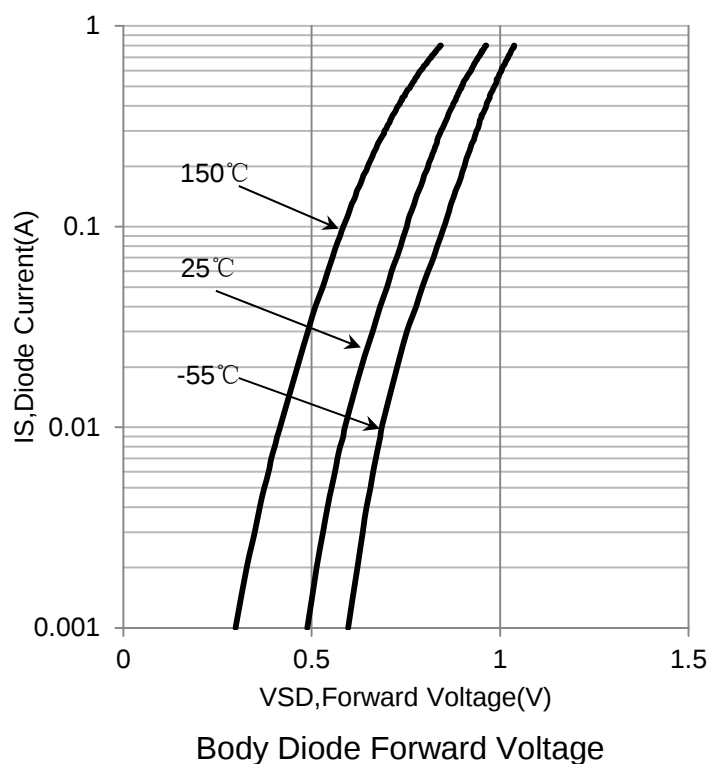
SWITCHING CHARACTERISTICS

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

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

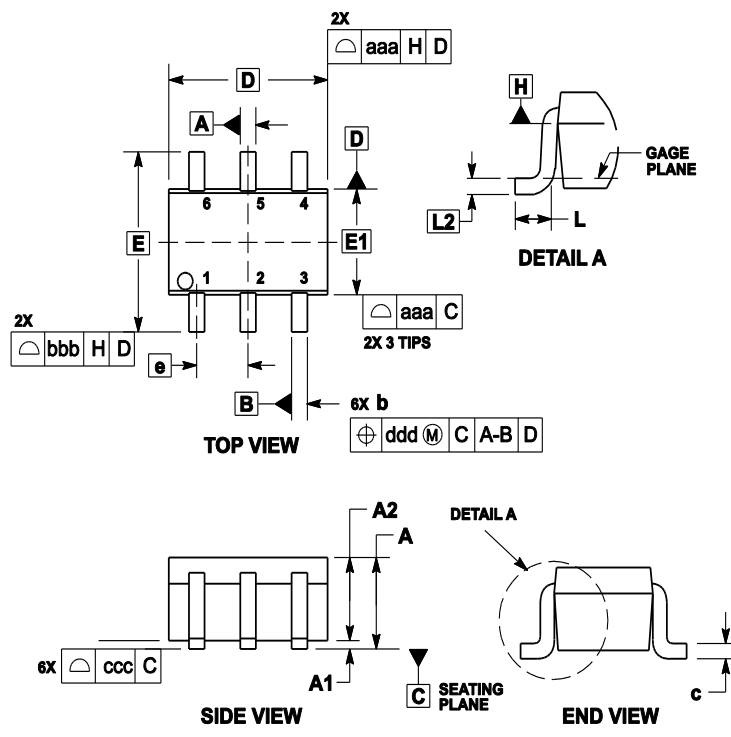
ELECTRICAL CHARACTERISTICS CURVES


ELECTRICAL CHARACTERISTICS CURVES(Con.)


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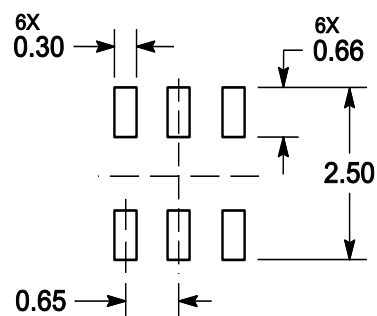
OUTLINE AND DIMENSIONS

- 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		

SOLDERING FOOTPRINT



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