

## SCOPE :

This specification applies to the Pb Free high current type SMD inductors for  
MSCDB-1311-SERIES

Warn : It is here not to use synchronous rectification circuit !

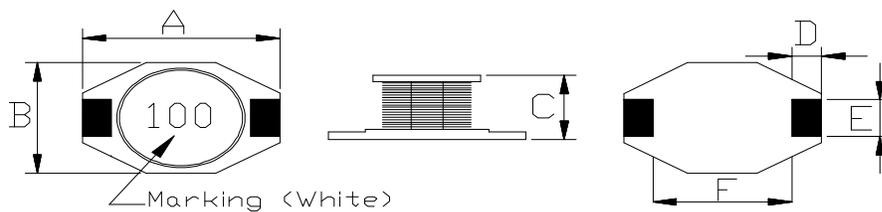
### PRODUCT IDENTIFICATION

MSCDB - 1311 - 100 M

①      ②      ③ ④

- ① Product Code
- ② Dimensions Code
- ③ Inductance Code
- ④ Tolerance Code

## (1) SHAPES AND DIMENSIONS



A: 13.5 Max.	mm
B: 9.50 Max.	mm
C: 11.5 Max.	mm
D: 2.54 Typ.	mm
E: 2.54 Typ.	mm
F: 7.62 Typ.	mm

## (2) ELECTRICAL SPECIFICATIONS

### SEE TABLE 1

#### TEST INSTRUMENTS

- L : HP 4284A PRECISION LCR METER (or equivalent)
- SRF : HP 4291B IMPEDANCE ANALYZER (or equivalent)
- RDC : CHROMA MODEL 16502 MILLIOHMMETER (or equivalent)

## (3) CHARACTERISTICS

- (3)-1 Ambient temperature ..... +60°C Max.
- (3)-2 Operate temperature range ..... -40°C ~ +125°C  
(Including self temp. rise)
- (3)-3 Storage temperature range ..... -40°C ~ +125°C



MAG.LAYERS

**TABLE 1**

MAGLAYERS PT/NO.	Inductance L( $\mu$ H)	Percent Tolerance	Test Frequency	SRF(MHz) Typ.	Resistance RDC( $\Omega$ )Max.	Rated DC Current		Marking
						IDC1(A)	IDC2(A)	
MSCDB-1311-1R0□	1.0	M,N	100kHz/0.25V	100	8m	16	10.0	1R0
MSCDB-1311-2R2□	2.2	N	100kHz/0.25V	60	18m	14	8.5	2R2
MSCDB-1311-3R3□	3.3	N	100kHz/0.25V	50	20m	12	6.5	3R3
MSCDB-1311-4R7□	4.7	N	100kHz/0.25V	35	23m	9.5	4.5	4R7
MSCDB-1311-100□	10	M,N	100kHz/0.25V	22	33m	8.0	3.5	100
MSCDB-1311-150□	15	M,N	100kHz/0.25V	18	42m	7.0	3.0	150
MSCDB-1311-220□	22	M,N	100kHz/0.25V	11	54m	5.5	2.5	220
MSCDB-1311-330□	33	M,N	100kHz/0.25V	9	80m	4.0	2.0	330
MSCDB-1311-470□	47	M,N	100kHz/0.25V	8	0.10	3.8	1.6	470
MSCDB-1311-680□	68	M,N	100kHz/0.25V	7	0.17	3.0	1.2	680
MSCDB-1311-101□	100	K,M	100kHz/0.25V	5	0.22	2.5	1.2	101
MSCDB-1311-151□	150	K,M	100kHz/0.25V	4	0.34	2.0	0.9	151
MSCDB-1311-221□	220	K,M	100kHz/0.25V	3.5	0.44	1.6	0.7	221
MSCDB-1311-331□	330	K,M	100kHz/0.25V	2.5	0.70	1.2	0.6	331
MSCDB-1311-471□	470	K,M	100kHz/0.25V	2.0	0.95	1.0	0.3	471
MSCDB-1311-681□	680	K,M	100kHz/0.25V	2.0	1.20	1.0	0.2	681
MSCDB-1311-102□	1000	K,M	100kHz/0.25V	1.5	2.00	0.8	0.1	102

※ □ specify the inductance tolerance, K( $\pm$ 10%), M( $\pm$ 20%), N( $\pm$ 30%)

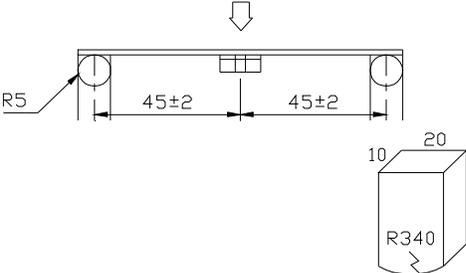
※ IDC1 : Based on inductance change ( $\Delta$ L/Lo : drop 10% Max.) @ambient temperature 25°C

IDC2 : Based on temperature rise ( $\Delta$ T : 40°C TYP.)

Rated DC Current : The less value which is IDC1 or IDC2.



**(4) RELIABILITY TEST METHOD  
MECHANICAL**

TEST ITEM	SPECIFICATION	TEST DETAILS
Substrate bending	$\Delta L/L_0 \leq \pm 5\%$  There shall be no mechanical damage or electrical damage.	<p>The sample shall be soldered onto the printed circuit board in figure 1 and a load applied until the figure in the arrow direction is made approximately 3mm.(keep time 30 seconds)            PCB dimension shall the page 7/9</p> <p>F(Pressurization)</p>  <p>PRESSURE ROD figure-1</p>
Vibration	$\Delta L/L_0 \leq \pm 5\%$  There shall be no mechanical damage.	<p>The sample shall be soldered onto the printed circuit board and when a vibration having an amplitude of 1.52mm and a frequency of from 10 to 55Hz/1 minute repeated should be applied to the 3 directions (X,Y,Z) for 2 hours each.            (A total of 6 hours)</p>
Solderability	New solder More than 90%	<p>Flux (rosin, isopropyl alcohol{JIS-K-1522}) shall be coated over the whole of the sample before hard, the sample shall then be preheated for about 2 minutes in a temperature of 130~150°C and after it has been immersed to a depth 0.5mm below for 3±0.2 seconds fully in molten solder M705 with a temperature of 245±5°C.</p> <p>More than 90% of the electrode sections shall be covered with new solder smoothly when the sample is taken out of the solder bath.</p>

## MECHANICAL

TEST ITEM	SPECIFICATION	
Resistance to Soldering heat (reflow soldering)	There shall be no damage or problems.	<p style="text-align: center;"><b>Temperature profile of reflow soldering</b></p> <p>The specimen shall be passed through the reflow oven with the condition shown in the above profile for 1 time.</p> <p>The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made.</p>

## ELECTRICAL

TEST ITEM	SPECIFICATION	TEST DETAILS
Dielectric withstand voltage	There shall be no other damage or problems.	AC 100V voltage shall be applied for 1 minute across the top surface and the terminal of this sample
Temperature characteristics	$\Delta L/L_{20^{\circ}\text{C}} \leq \pm 10\%$ 0~2000 ppm/°C	The test shall be performed after the sample has stabilized in an ambient temperature of -20 to +85°C, and the value calculated based on the value applicable in a normal temperature and normal humidity shall be $\Delta L/L_{20^{\circ}\text{C}} \leq \pm 10\%$ .



## ENVIROMENT CHARACTERISTICS

TEST ITEM	SPECIFICATION																
High temperature storage	$\Delta L/L_0 \leq \pm 5\%$  There shall be no mechanical damage.	The sample shall be left for $96 \pm 4$ hours in an atmosphere with a temperature of $85 \pm 2^\circ\text{C}$ and a normal humidity.  Upon completion of the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.															
Low temperature storage	$\Delta L/L_0 \leq \pm 5\%$  There shall be no mechanical damage.	The sample shall be left for $96 \pm 4$ hours in an atmosphere with a temperature of $-25 \pm 3^\circ\text{C}$ .  Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.															
Change of temperature	$\Delta L/L_0 \leq \pm 5\%$  There shall be no other damage of problems	The sample shall be subject to 5 continuous cycles, such as shown in the table 2 below and then it shall be subjected to standard atmospheric conditions for 1 hour, after which measurement shall be made. <div style="text-align: center; margin: 10px 0;">                         table 2                     </div> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;">Temperature</th> <th style="text-align: center;">Duration</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;"><math>-25 \pm 3^\circ\text{C}</math> (Thermostat No.1)</td> <td style="text-align: center;">30 min.</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">Standard atmospheric</td> <td style="text-align: center;">No.1→No.2</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;"><math>85 \pm 2^\circ\text{C}</math> (Thermostat No.2)</td> <td style="text-align: center;">30 min.</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">Standard atmospheric</td> <td style="text-align: center;">No.2→No.1</td> </tr> </tbody> </table>		Temperature	Duration	1	$-25 \pm 3^\circ\text{C}$ (Thermostat No.1)	30 min.	2	Standard atmospheric	No.1→No.2	3	$85 \pm 2^\circ\text{C}$ (Thermostat No.2)	30 min.	4	Standard atmospheric	No.2→No.1
	Temperature	Duration															
1	$-25 \pm 3^\circ\text{C}$ (Thermostat No.1)	30 min.															
2	Standard atmospheric	No.1→No.2															
3	$85 \pm 2^\circ\text{C}$ (Thermostat No.2)	30 min.															
4	Standard atmospheric	No.2→No.1															
Moisture storage	$\Delta L/L_0 \leq \pm 5\%$  There shall be no mechanical damage.	The sample shall be left for $96 \pm 4$ hours in a temperature of $40 \pm 2^\circ\text{C}$ and a humidity(RH) of 90~95%.  Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity more than 1 hour.															
Test conditions :  The sample shall be reflow soldered onto the printed circuit board in every test.																	



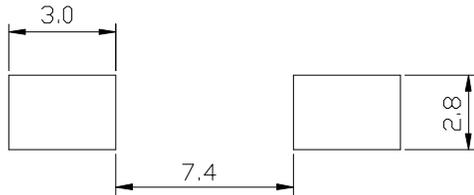
## (5) LAND DIMENSION (Ref.)

PCB: GLASS EPOXY  $t=1.6\text{mm}$

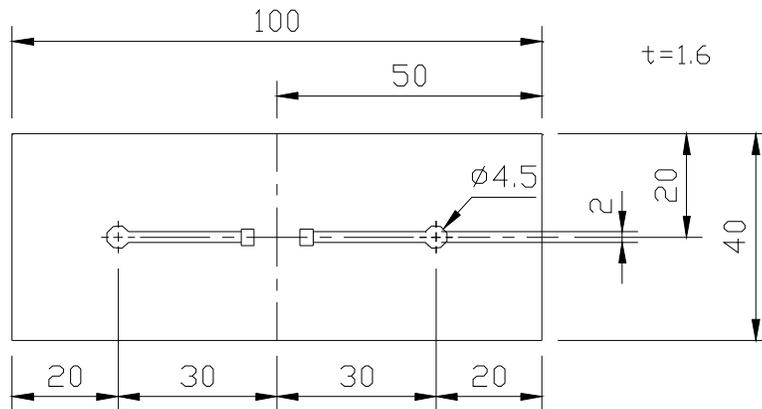
### (5)-1 LAND PATTERN DIMENSIONS

(STANDARD PATTERN)

unit : mm

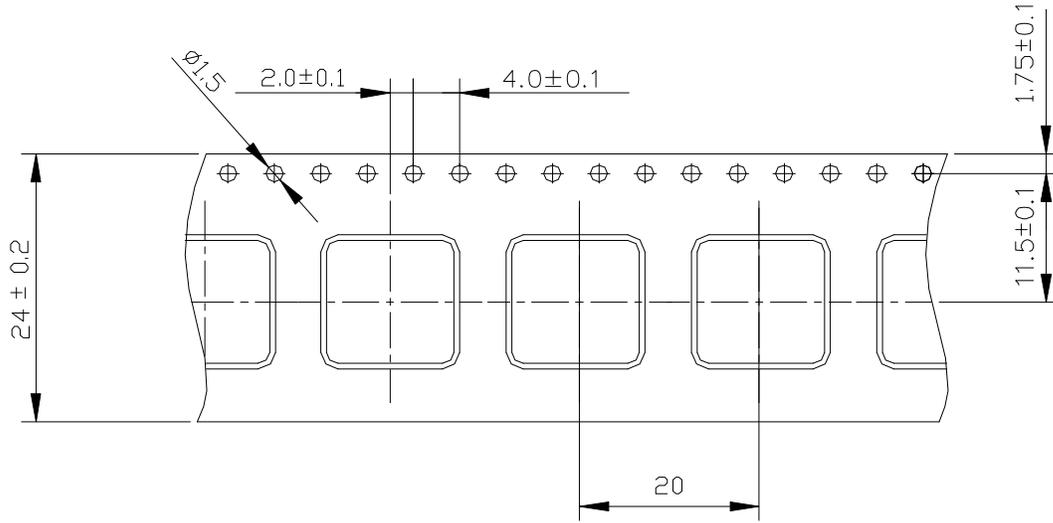


### (5)-2 SUBSTRATE BENDING TEST BENDING TEST BOARD

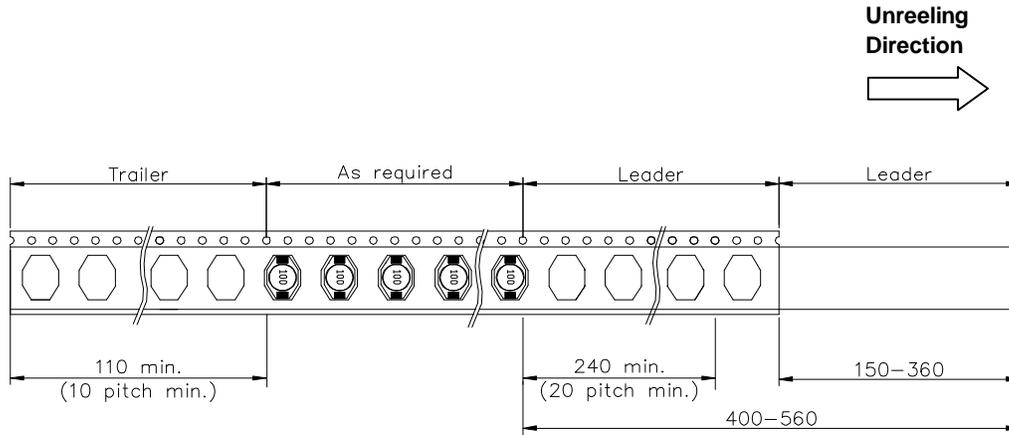


## (6) PACKAGING

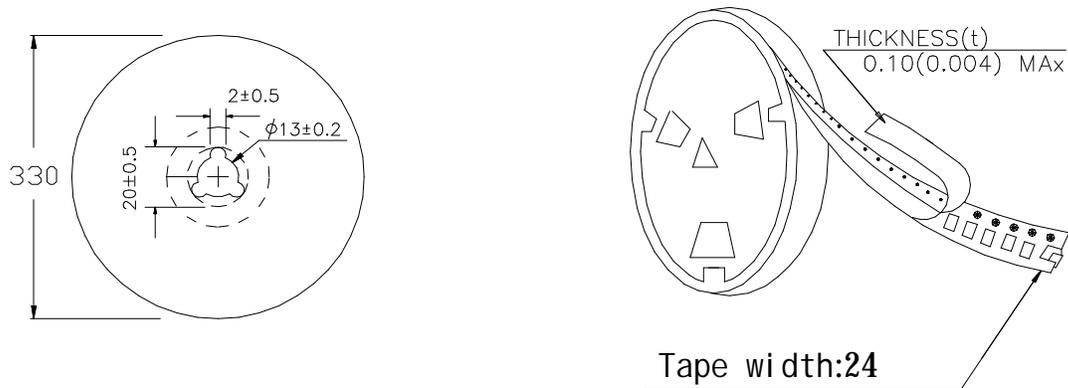
### (6)-1 CARRIER TAPE DIMENSIONS (mm)



### (6)-2 TAPING DIMENSIONS (mm)



### (6)-3 REEL DIMENSIONS (mm)



### (6)-4 QUANTITY

250pcs/Reel

The products are packaged so that no damage will be sustained.