

## SCOPE :

This specification applies to the Pb Free high current type SMD inductors for  
MSCDRI-5020X-SERIES

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

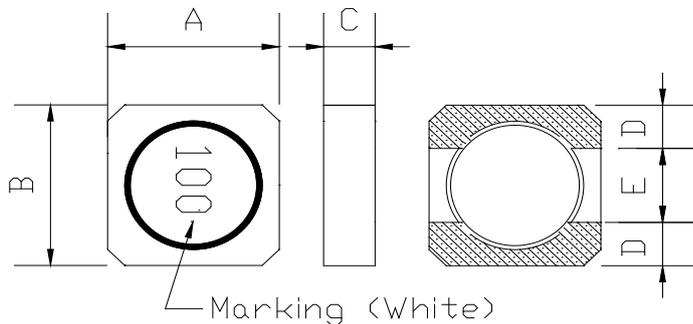
### PRODUCT IDENTIFICATION

**MSCDRI - 5020X - 100 M**

①      ②      ③      ④

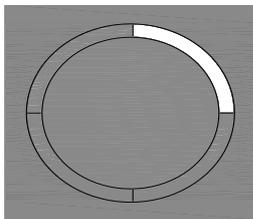
- ① Product Code
- ② Dimensions Code
- ③ Inductance Code
- ④ Tolerance Code

## (1) SHAPES AND DIMENSIONS



A: 5.00±0.2	mm
B: 5.00±0.2	mm
C: 2.00 Max.	mm
D: 1.75 Typ.	mm
E: 1.50 Typ.	mm

### Void Appearance Tolerance Limit



- 1.The length of the hole in the epoxy of the sealed glue position should be less than 1/4 of the DR core 's circumference, otherwise, it is NG.
- 2.The total length of the amount of hole in the epoxy should be less than 1/4 of the DR core 's circumference, otherwise, it is NG.

## (2) ELECTRICAL SPECIFICATIONS

**SEE TABLE 1**

TEST INSTRUMENTS

L : HP 4284A PRECISION LCR METER (or equivalent)

RDC : CHROMA MODEL 16502 MILLIOHMETER (or equivalent)



**TABLE 1**

MAGLAYERS PT/NO.	Inductance L( $\mu$ H)	Percent Tolerance	Test Frequency	Resistance RDC( $\Omega$ )Max.	Rated DC Current		Marking
					IDC1(A)	IDC2(A)	
MSCDRI-5020X-R30□	0.30	N	100kHz/0.1V	8.75m	6.00	7.00	R30
MSCDRI-5020X-R33□	0.33	N	100kHz/0.1V	10.65m	5.80	6.00	R33
MSCDRI-5020X-R68□	0.68	N	100kHz/0.1V	14.70m	4.00	5.20	R68
MSCDRI-5020X-1R0□	1.0	N	100kHz/0.1V	24.55m	3.50	4.00	1R0
MSCDRI-5020X-1R3□	1.3	N	100kHz/0.1V	35.0m	3.20	3.30	1R3
MSCDRI-5020X-1R5□	1.5	N	100kHz/0.1V	35.0m	3.20	3.30	1R5
MSCDRI-5020X-1R8□	1.8	M,N	100kHz/0.1V	45.0m	3.00	3.00	1R8
MSCDRI-5020X-2R2□	2.2	M,N	100kHz/0.1V	55.0m	2.70	2.75	2R2
MSCDRI-5020X-3R3□	3.3	M,N	100kHz/0.1V	65.0m	2.40	2.50	3R3
MSCDRI-5020X-4R7□	4.7	M,N	100kHz/0.1V	80.0m	2.10	2.00	4R7
MSCDRI-5020X-5R6□	5.6	M,N	100kHz/0.1V	90.0m	1.95	1.90	5R6
MSCDRI-5020X-6R8□	6.8	M,N	100kHz/0.1V	0.105	1.80	1.70	6R8
MSCDRI-5020X-100□	10	M,N	100kHz/0.1V	0.15	1.40	1.50	100
MSCDRI-5020X-150□	15	M,N	100kHz/0.1V	0.27	1.10	1.20	150
MSCDRI-5020X-220□	22	M,N	100kHz/0.1V	0.35	0.78	0.90	220
MSCDRI-5020X-330□	33	M,N	100kHz/0.1V	0.48	0.65	0.80	330
MSCDRI-5020X-470□	47	M,N	100kHz/0.1V	0.75	0.60	0.70	470
MSCDRI-5020X-101□	100	M,N	100kHz/0.1V	1.21	0.34	0.55	101
MSCDRI-5020X-121□	120	M,N	100kHz/0.1V	1.60	0.30	0.48	121
MSCDRI-5020X-151□	150	M,N	100kHz/0.1V	2.25	0.28	0.40	151
MSCDRI-5020X-221□	220	M,N	100kHz/0.1V	3.30	0.26	0.37	221

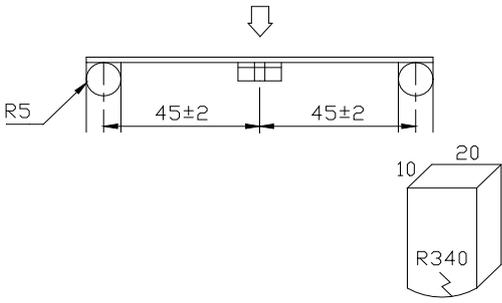
※ □ specify the inductance tolerance, M( $\pm$ 20%), N( $\pm$ 30%)

※ IDC1 : Based on inductance change ( $\Delta$ L/Lo : drop 30% Max.) @ ambient temp. 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)</p> <p>PCB dimension shall the page 7/9</p> <p>F(Pressurization)</p>  <p>10 20 R340</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
Temperature characteristics	$\Delta L/L20^{\circ}\text{C} \leq \pm 10\%$ $0 \sim 2000 \text{ ppm}/^{\circ}\text{C}$	The test shall be performed after the sample has stabilized in an ambient temperature of $-20$ to $+85^{\circ}\text{C}$ , and the value calculated based on the value applicable in a normal temperature and normal humidity shall be $\Delta L/L20^{\circ}\text{C} \leq \pm 10\%$ .



## 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 $125^\circ\text{C}$ 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;">                         table 2  <table border="1" style="margin: 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> </div>		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.																	

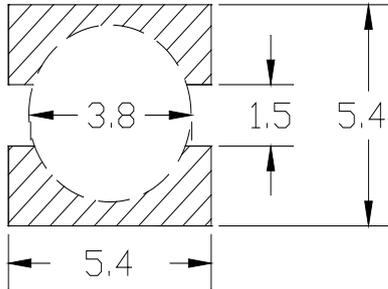
## (5) LAND DIMENSION (Ref.)

PCB: GLASS EPOXY t=1.6mm

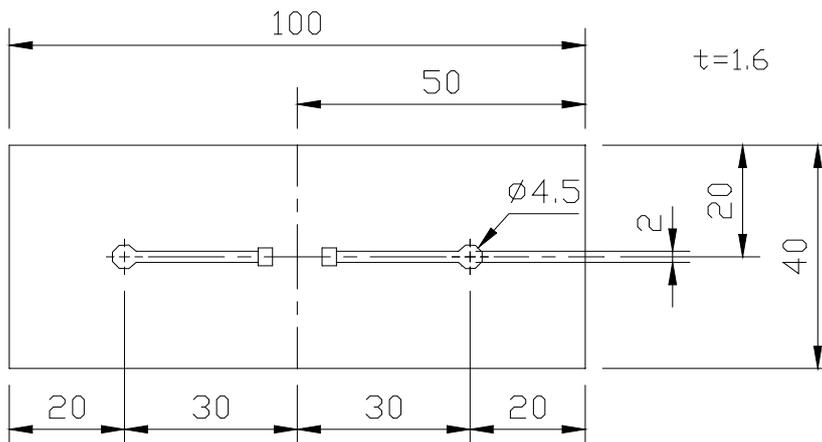
### (5)-1 LAND PATTERN DIMENSIONS

(STANDARD PATTERN)

unit : mm

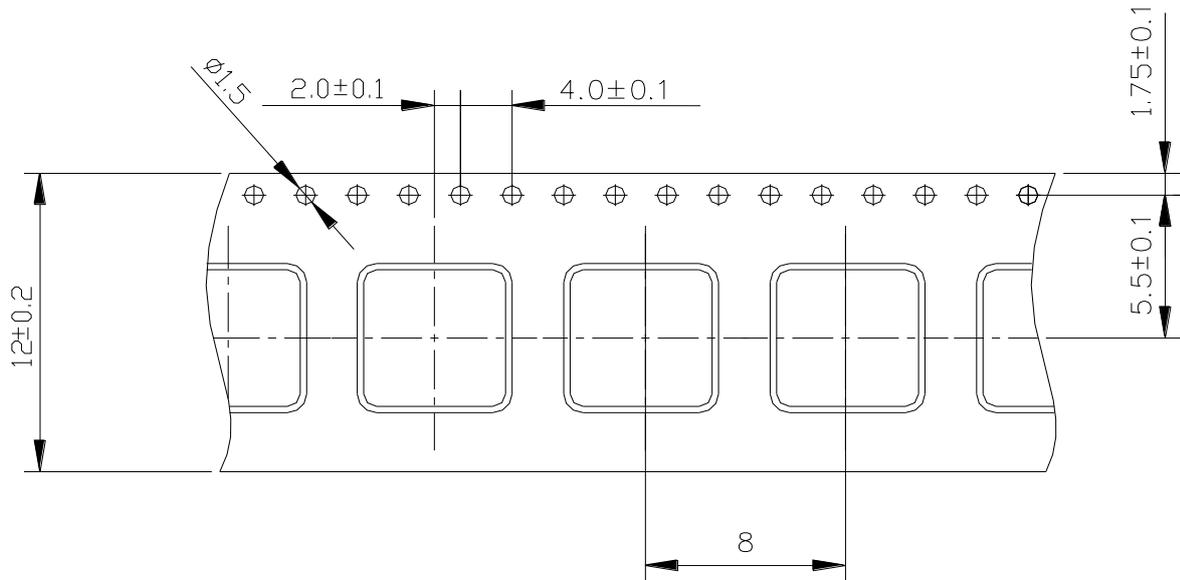


### (5)-2 SUBSTRATE BENDING TEST BENDING TEST BOARD

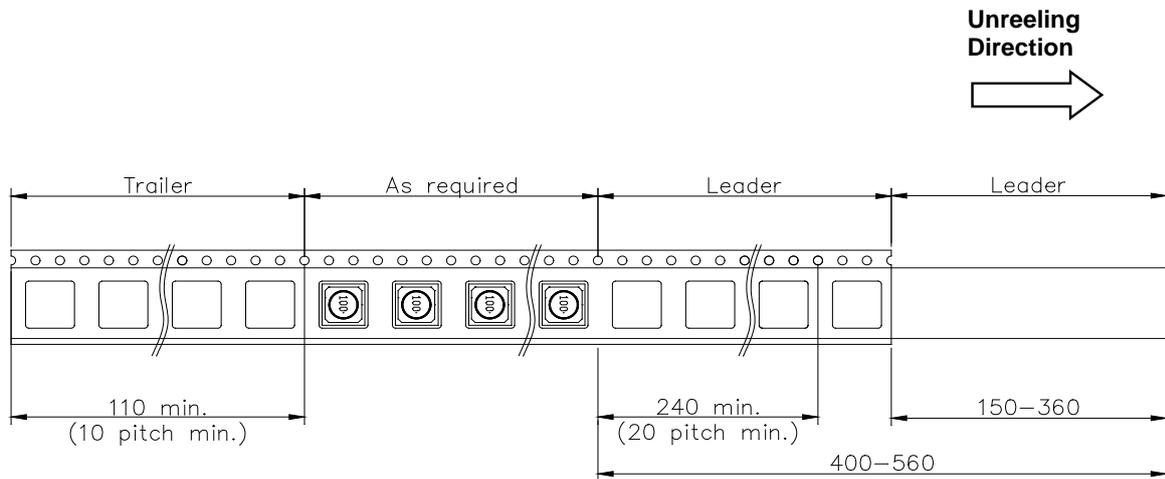


## (6) PACKAGING

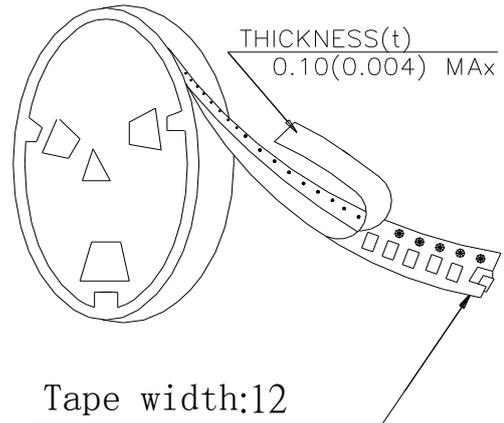
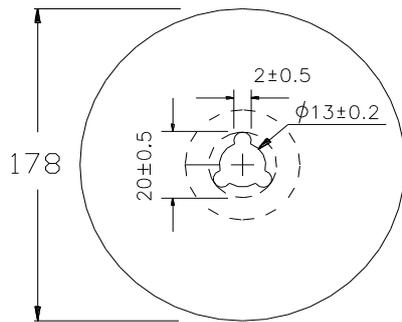
### (6)-1 CARRIER TAPE DIMENSIONS (mm)



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



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



### (6)-4 QUANTITY

900pcs/Reel

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

