

## SCOPE :

This specification applies to the Pb Free high current type SMD inductors for  
MSCDRI-6020X-SERIES

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

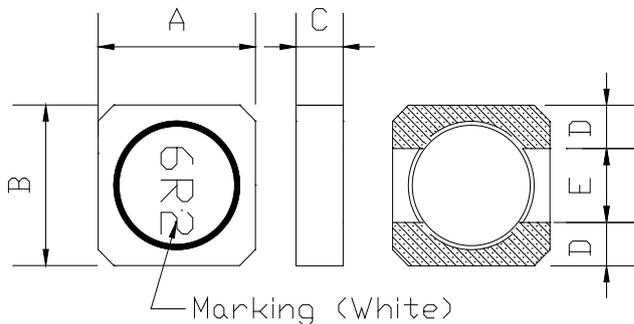
### PRODUCT IDENTIFICATION

**MSCDRI - 6020X - 6R2 M**

①                      ②                      ③                      ④

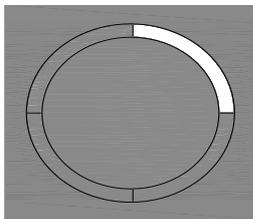
- ① Product Code
- ② Dimensions Code
- ③ Inductance Code
- ④ Tolerance Code

## (1) SHAPES AND DIMENSIONS



A: 6.0±0.2	mm
B: 6.0±0.2	mm
C: 2.0 Max.	mm
D: 2.0 Typ.	mm
E: 2.0 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 MILLIOHMMETER (or equivalent)



**MAG.LAYERS**

**TABLE 1**

MAGLAYERS PT/NO.	Inductance L(μH)	Percent Tolerance	Test Frequency	Resistance RDC(Ω)Max.	Rated DC Current		Marking
					IDC1(A)	IDC2(A)	
MSCDRI-6020X-1R3□	1.3	N	100kHz/0.1V	30.5m	3.20	3.00	1R3
MSCDRI-6020X-1R5□	1.5	N	100kHz/0.1V	30.5m	3.20	3.00	1R5
MSCDRI-6020X-1R8□	1.8	N	100kHz/0.1V	37.5m	3.00	2.60	1R8
MSCDRI-6020X-2R2□	2.2	N	100kHz/0.1V	40m	2.70	2.40	2R2
MSCDRI-6020X-2R5□	2.5	N	100kHz/0.1V	40m	2.70	2.40	2R5
MSCDRI-6020X-3R3□	3.3	N	100kHz/0.1V	60m	2.50	2.30	3R3
MSCDRI-6020X-4R7□	4.7	M,N	100kHz/0.1V	70m	2.10	2.00	4R7
MSCDRI-6020X-6R2□	6.2	M,N	100kHz/0.1V	85m	1.90	1.80	6R2
MSCDRI-6020X-6R8□	6.8	M,N	100kHz/0.1V	85m	1.90	1.80	6R8
MSCDRI-6020X-8R2□	8.2	M,N	100kHz/0.1V	0.125	1.70	1.50	8R2
MSCDRI-6020X-100□	10	M,N	100kHz/0.1V	0.15	1.40	1.20	100
MSCDRI-6020X-150□	15	M,N	100kHz/0.1V	0.22	1.10	1.10	150
MSCDRI-6020X-220□	22	M,N	100kHz/0.1V	0.32	1.00	0.90	220
MSCDRI-6020X-330□	33	M,N	100kHz/0.1V	0.45	0.90	0.80	330
MSCDRI-6020X-470□	47	M,N	100kHz/0.1V	0.60	0.85	0.70	470
MSCDRI-6020X-101□	100	M,N	100kHz/0.1V	1.20	0.50	0.45	101

※ □ specify the inductance tolerance, M(±20%), N(±30%)

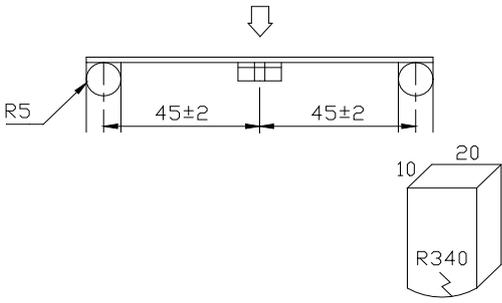
※ IDC1 : Based on inductance change ( $\Delta L/L_0$  : drop 30% Max.) @ ambient temp. 25°C

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 style="text-align: center;">The specimen shall be passed through the reflow oven with the condition shown in the above profile for 1 time.</p> <p style="text-align: center;">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	$\Delta L/Lo \leq \pm 5\%$  There shall be no mechanical damage.	The sample shall be left for 96±4 hours in an atmosphere with a temperature of 125°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	$\Delta L/Lo \leq \pm 5\%$  There shall be no mechanical damage.	The sample shall be left for 96±4 hours in an atmosphere with a temperature of -25±3°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	$\Delta L/Lo \leq \pm 5\%$  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;">-25±3°C (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;">85±2°C (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±3°C (Thermostat No.1)	30 min.	2	Standard atmospheric	No.1→No.2	3	85±2°C (Thermostat No.2)	30 min.	4	Standard atmospheric	No.2→No.1
	Temperature	Duration															
1	-25±3°C (Thermostat No.1)	30 min.															
2	Standard atmospheric	No.1→No.2															
3	85±2°C (Thermostat No.2)	30 min.															
4	Standard atmospheric	No.2→No.1															
Moisture storage	$\Delta L/Lo \leq \pm 5\%$  There shall be no mechanical damage.	The sample shall be left for 96±4 hours in a temperature of 40±2°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.																	

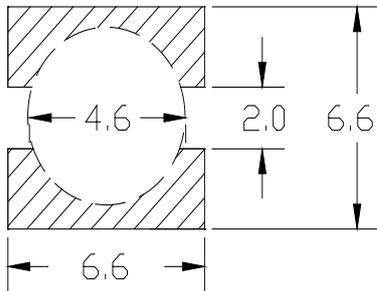
## (5) LAND DIMENSION (Ref.)

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

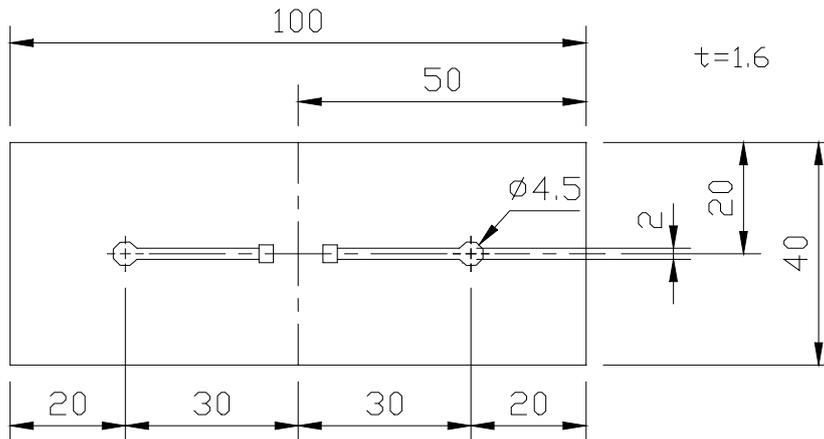
### (5)-1 LAND PATTERN DIMENSIONS

(STANDARD PATTERN)

unit : mm

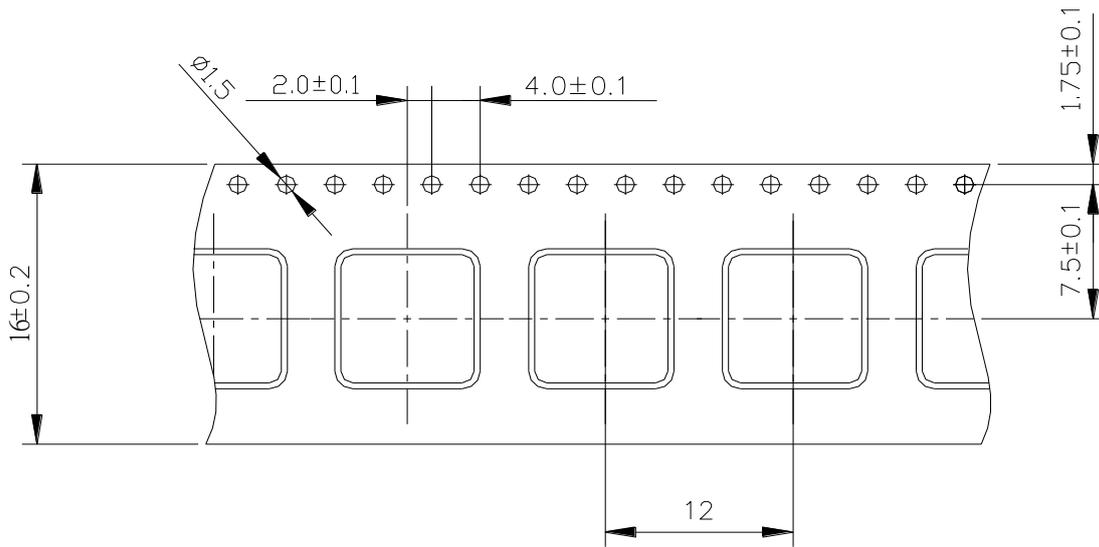


### (5)-2 SUBSTRATE BENDING TEST BENDING TEST BOARD

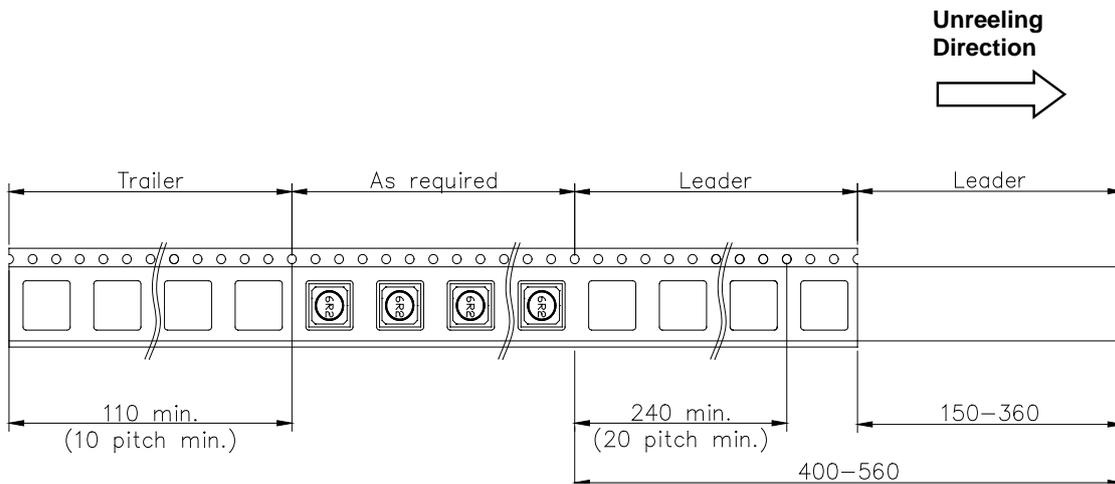


## (6) PACKAGING

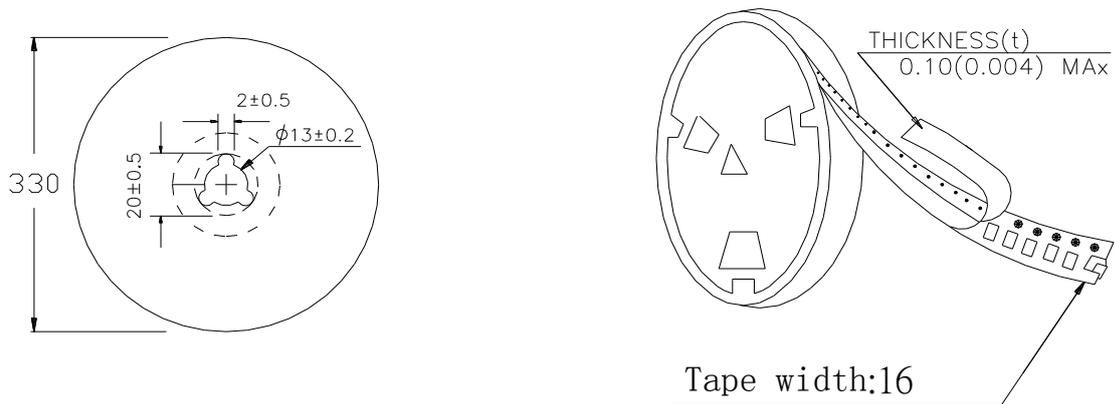
### (6)-1 CARRIER TAPE DIMENSIONS (mm)



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



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



### (6)-4 QUANTITY

2000pcs/Reel

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

