

## SCOPE :

This specification applies to the Pb Free high current type SMD inductors for  
MSCH-3216C-SERIES

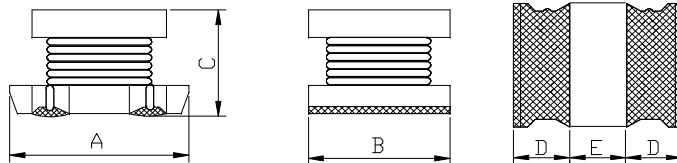
### PRODUCT IDENTIFICATION

MSCH - 3216C - 100 K

①      ②      ③    ④

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

## (1) SHAPES AND DIMENSIONS



A: $3.2 \pm 0.3$	mm
B: $1.6 \pm 0.2$	mm
C: $1.8 \pm 0.3$	mm
D: 1.0Typ.	mm
E: 1.2Typ.	mm

## (2) ELECTRICAL SPECIFICATIONS

### SEE TABLE 1

#### TEST INSTRUMENTS

- L : HP 4285A 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 .....  $+60^{\circ}\text{C}$  Max.
- (3)-2 Operate temperature range .....  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$   
(Including self temp. rise)
- (3)-3 Storage temperature range .....  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$



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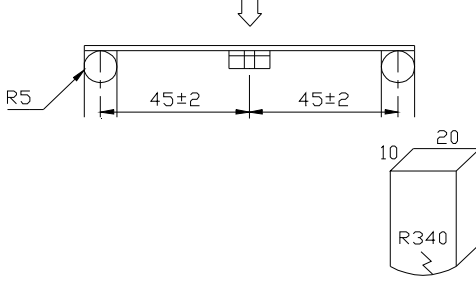
**TABLE 1**

MAGLAYERS PT/NO.	Inductance L( $\mu$ H)	Percent Tolerance	Test Frequency	Resistance RDC( $\Omega$ )Max.	IDC (mA) Max.	SRF (MHz) Min.
MSCH-3216C-R12□	0.12	N	1MHz/0.25V	0.112	970	250
MSCH-3216C-R22□	0.22	N	1MHz/0.25V	0.140	850	250
MSCH-3216C-R47□	0.47	N	1MHz/0.25V	0.210	700	180
MSCH-3216C-1R0□	1.0	M,N	1MHz/0.25V	0.364	510	100
MSCH-3216C-2R2□	2.2	M,N	1MHz/0.25V	0.533	430	50
MSCH-3216C-4R7□	4.7	M,N	1MHz/0.25V	0.845	340	31
MSCH-3216C-100□	10	M,N	1MHz/0.25V	1.69	230	20
MSCH-3216C-220□	22	M,N	1MHz/0.25V	3.90	160	14
MSCH-3216C-470□	47	M,N	1MHz/0.25V	10.4	100	10
MSCH-3216C-101□	100	K,M	1MHz/0.25V	15.6	80	7

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

※ IDC : Based on inductance change ( $\Delta L/L_0$  :  $\leq$  drop 10%) @ ambient temperature 25°C

#### (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><b>PRESSURE ROD</b> 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℃ 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℃.</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><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
Insulation resistance	There shall be no other damage or problems.	<p>DC 100V voltage shall be applied across this sample of top surface and the terminal.</p> <p>The insulation resistance shall be more than <math>1 \times 10^8 \Omega</math>.</p>
Dielectric withstand voltage	There shall be no other damage or problems.	<p>AC 100V voltage shall be applied for 1 minute across the top surface and the terminal of this sample</p>
Temperature characteristics	$\Delta L/L20^\circ\text{C} \leq \pm 10\%$ $0 \sim 2000 \text{ ppm}/^\circ\text{C}$	<p>The test shall be performed after the sample has stabilized in an ambient temperature of <math>-20</math> to <math>+85^\circ\text{C}</math>, and the value calculated based on the value applicable in a normal temperature and normal humidity shall be <math>\Delta L/L20^\circ\text{C} \leq \pm 10\%</math>.</p>



## 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 continuos cycles, such as shown in the table 2 below and then it shall be subjected to standard stmospheric conditions for 1 hour, after which measurement shall be made.  <div style="text-align: center;">table 2</div> <table border="1"> <thead> <tr> <th></th><th>Temperature</th><th>Duration</th></tr> </thead> <tbody> <tr> <td>1</td><td><math>-25 \pm 3^\circ\text{C}</math> (Thermostat No.1)</td><td>30 min.</td></tr> <tr> <td>2</td><td>Standard atmospheric</td><td>No.1→No.2</td></tr> <tr> <td>3</td><td><math>85 \pm 2^\circ\text{C}</math> (Thermostat No.2)</td><td>30 min.</td></tr> <tr> <td>4</td><td>Standard atmospheric</td><td>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.																	



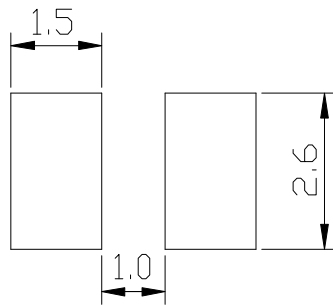
## (5) LAND DIMENSION (Ref.)

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

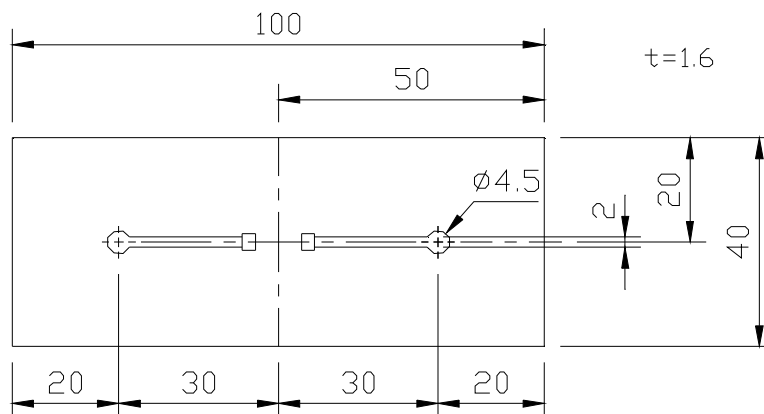
### (5)-1 LAND PATTERN DIMENSIONS

(STANDARD PATTERN)

unit : mm



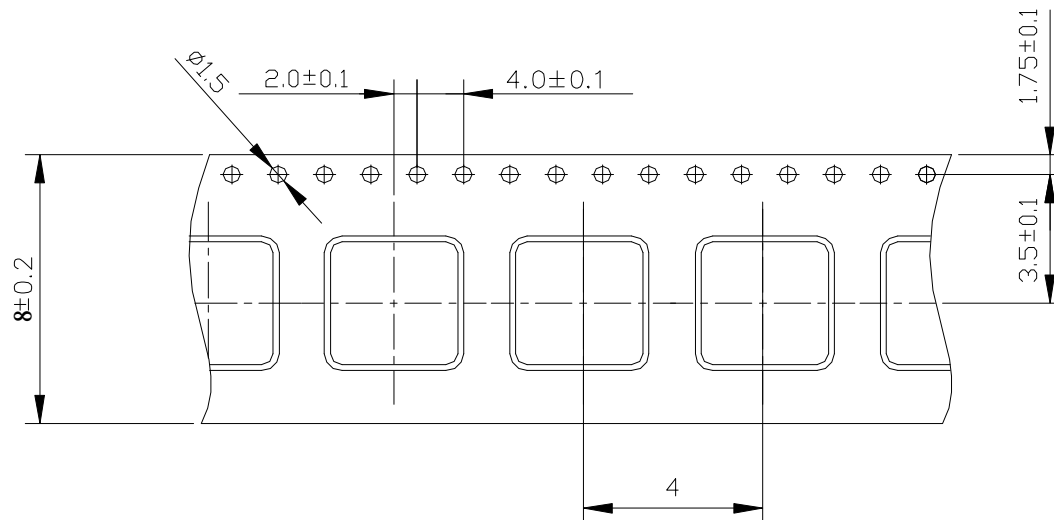
### (5)-2 SUBSTRATE BENDING TEST BENDING TEST BOARD



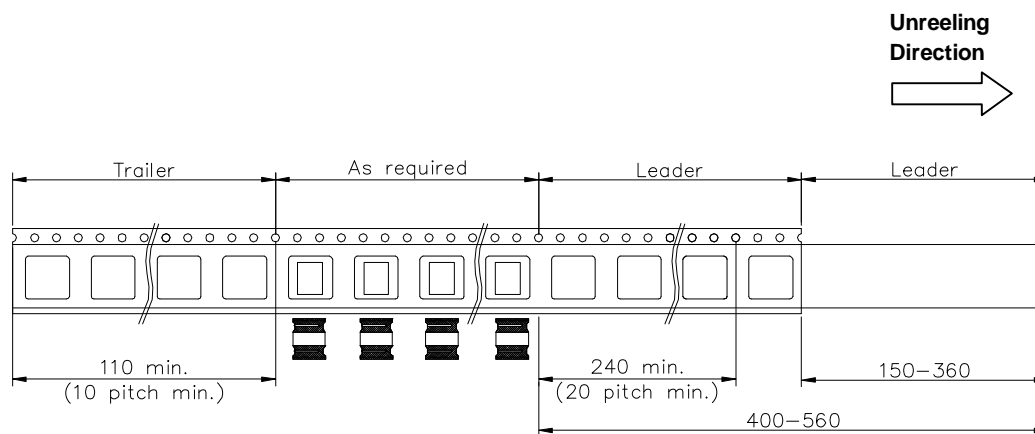
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## (6) PACKAGING

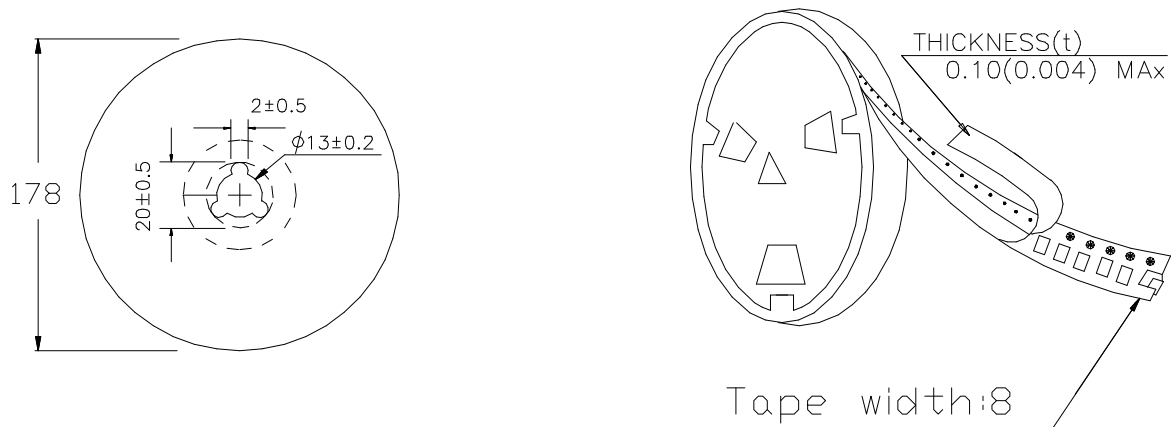
### (6)-1 CARRIER TAPE DIMENSIONS (mm)



### (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.



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