

I . SCOPE :

This specification applies to the Pb Free high current type SMD inductors for
MSI-100705-SERIES

PRODUCT IDENTIFICATION

MSI-100705-R12 M

① ② ③ ④

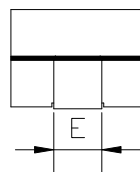
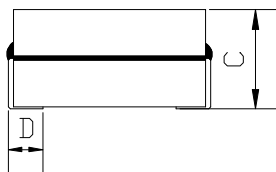
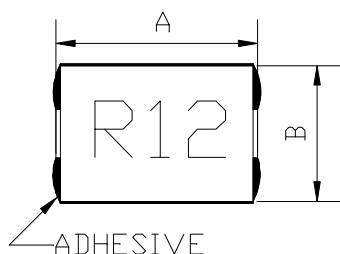
① Product Code

② Dimensions Code

③ Inductance Code

④ Tolerance Code

(1) SHAPES AND DIMENSIONS



| | |
|--------------|----|
| A: 10.2 Max. | mm |
| B: 7.0 Max. | mm |
| C: 4.96 Max. | mm |
| D: 1.52 Typ. | mm |
| E: 2.49 Typ. | mm |

(2) ELECTRICAL SPECIFICATIONS

SEE TABLE 1

TEST INSTRUMENTS

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

RDC : CHROMA MODEL 16502 MILLIOHMMETER (or equivalent)

IDC1 : CH3302/G LCR METER

CH1320,CH1320S BIAS CURRENT SOURCE(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



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TABLE

| MAGLAYERS PT/NO. | Inductance L(μH) | Percent Tolerance | Test Frequency | Resistance RDC(mΩ) | Rated DC Current | | Marking |
|---------------------|---------------------|----------------------|-------------------|-----------------------|------------------|---------|---------|
| | | | | | IDC1(A) | IDC2(A) | |
| MSI-100705-85N□ | 0.085 | M,N | 100kHz/0.1V | 0.39±7.7% | >70 | 31 | 85N |
| MSI-100705-R10□ | 0.100 | M | 100kHz/0.1V | 0.39±7.7% | 70 | 31 | R10 |
| MSI-100705-R12□ | 0.120 | M | 100kHz/0.1V | 0.39±7.7% | 52 | 31 | R12 |
| MSI-100705-R155□ | 0.155 | M | 100kHz/0.1V | 0.39±7.7% | 40 | 31 | R155 |
| MSI-100705-R22□ | 0.220 | M | 100kHz/0.1V | 0.39±7.7% | 33 | 25 | R22 |

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

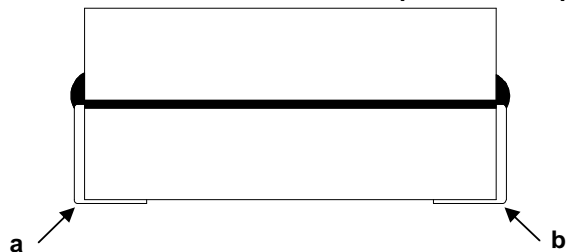
※ IDC1 : Based on inductance change ($\Delta L/L_0$: drop 20% Typ.) @ ambient temp. 25°C

IDC2 : Based on temperature rise (ΔT : 40°C TYP.)

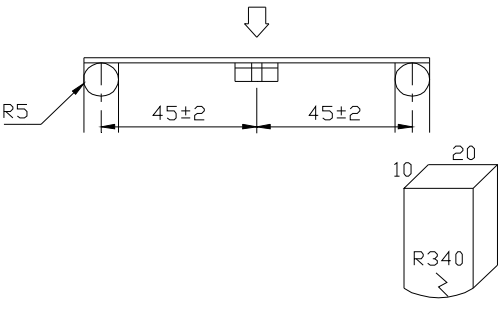
Rated DC Current : The less value which is IDC1 or IDC2 .

RDC TEST POINT

The nominal DCR is measured from point "a" to point "b" .

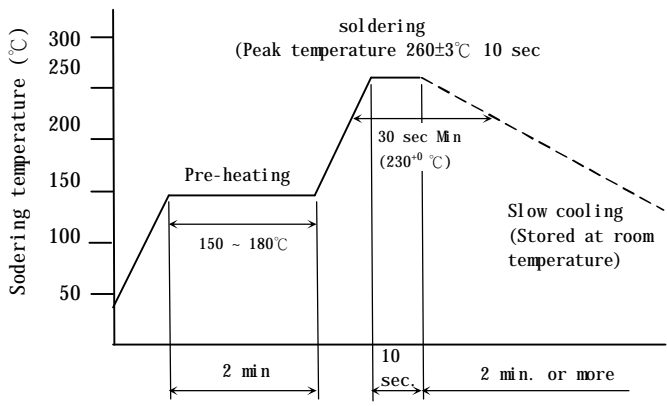


(4) RELIABILITY TEST METHOD MECHANICAL

| 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>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℃ 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>Temperature profile of reflow soldering</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 | $\Delta L/L20^{\circ}\text{C} \leq \pm 10\%$ $0 \sim 2000 \text{ ppm}/^{\circ}\text{C}$ | <p>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 $\Delta L/L20^{\circ}\text{C} \leq \pm 10\%$.</p> |



ENVIROMENT CHARACTERISTICS

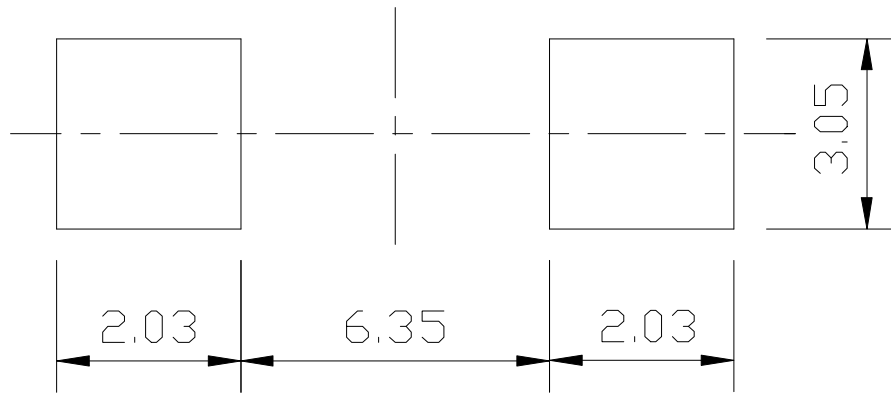
| TEST ITEM | SPECIFICATION | | | | | | | | | | | | | | | | |
|--|---|--|--|-------------|----------|---|--|---------|---|----------------------|-----------|---|---|---------|---|----------------------|-----------|
| High temperature storage | $\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage. | The sample shall be left for 96 ± 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 ± 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>$-25 \pm 3^\circ\text{C}$ (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>$85 \pm 2^\circ\text{C}$ (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 ± 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.)

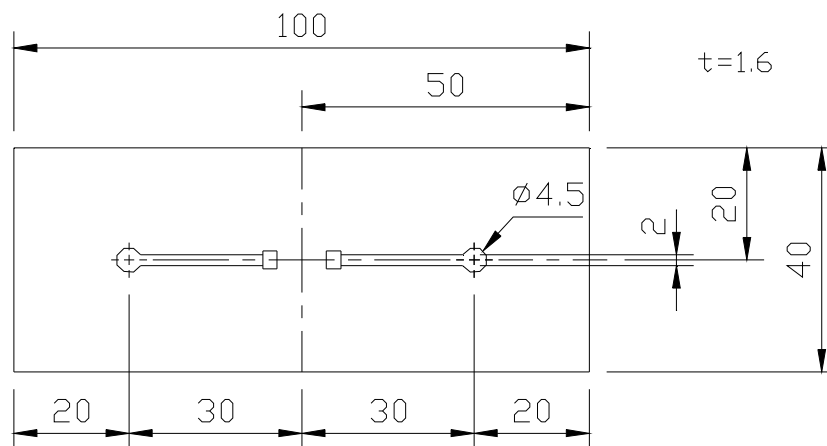
PCB: GLASS EPOXY $t=1.6\text{mm}$

(5)-1 LAND PATTERN DIMENSIONS(mm)

(STANDARD PATTERN)



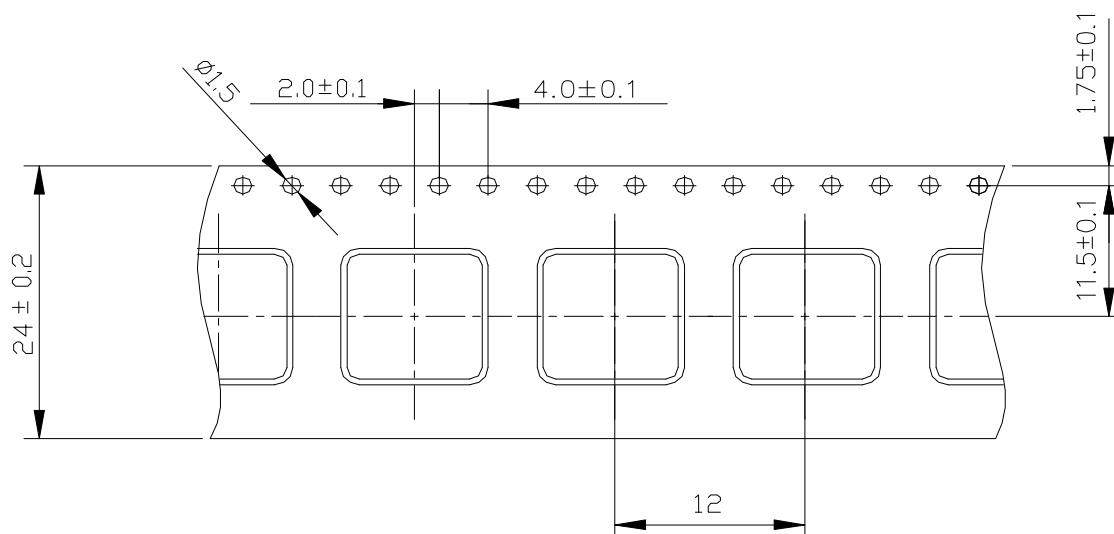
(5)-2 SUBSTRATE BENDING TEST BENDING TEST BOARD



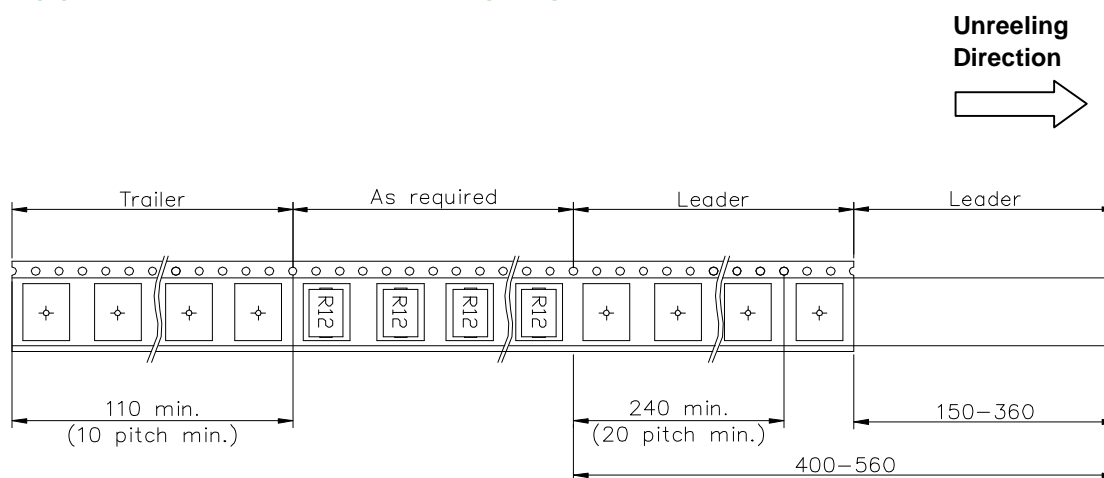
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(6) PACKAGING

(6)-1 CARRIER TAPE DIMENSIONS (mm)

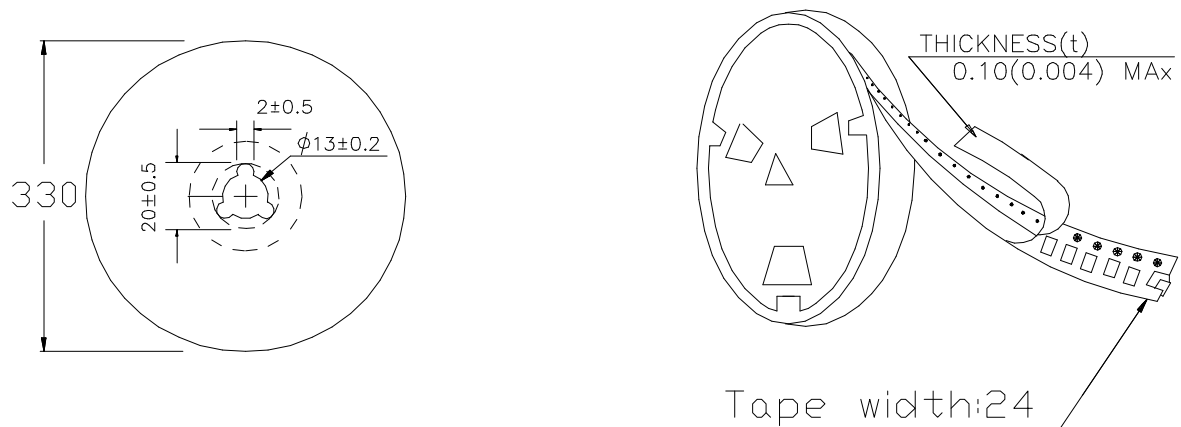


(6)-2 TAPING DIMENSIONS (mm)



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(6)-3 REEL DIMENSIONS (mm)



(6)-4 QUANTITY

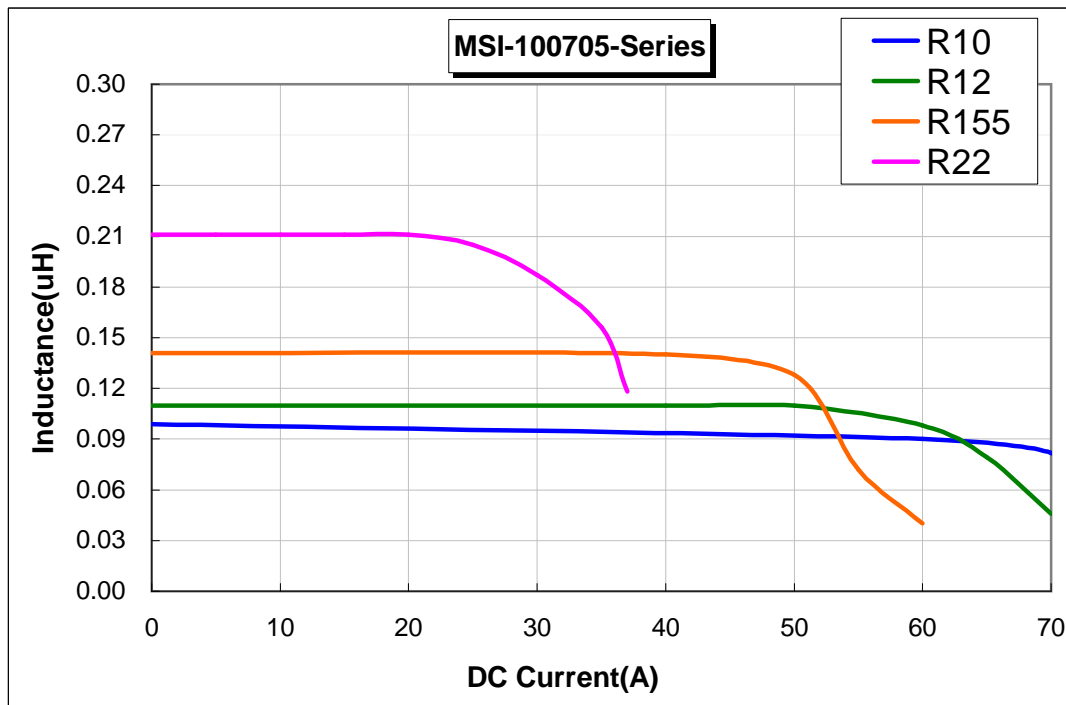
800pcs/Reel

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

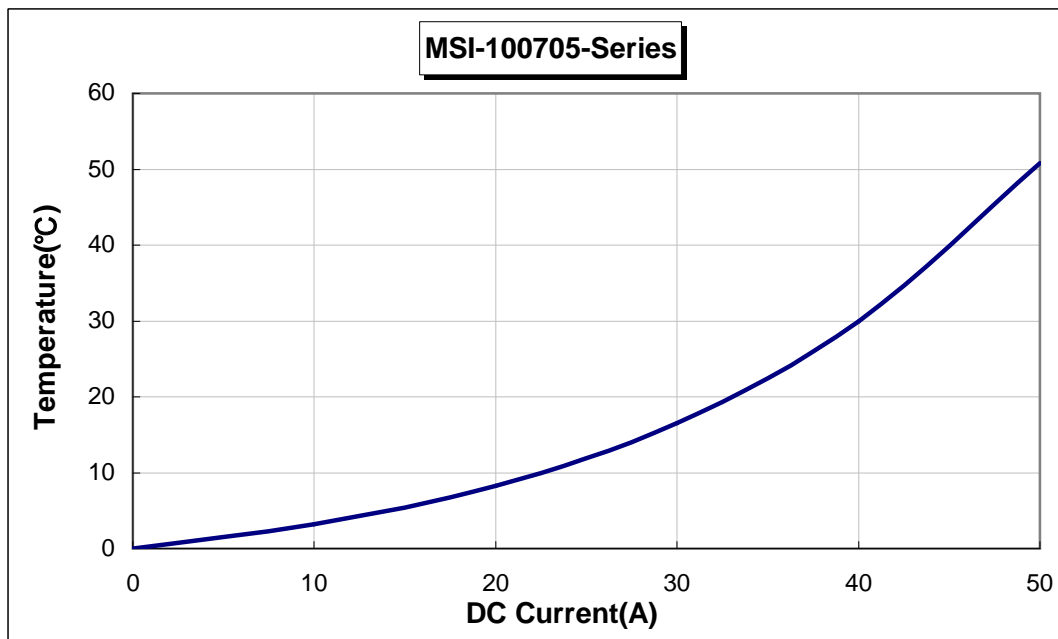
TYPICAL ELECTRICAL CHARACTERISTICS

INDUCTANCE vs. DC CURRENT@100kHz/0.1V

Ambient Temperature : 25°C



Temperature Rise vs. DC Current



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