

SCOPE :

This specification applies to the Pb Free high current type SMD inductors for
MSCDRB-0905-SERIES

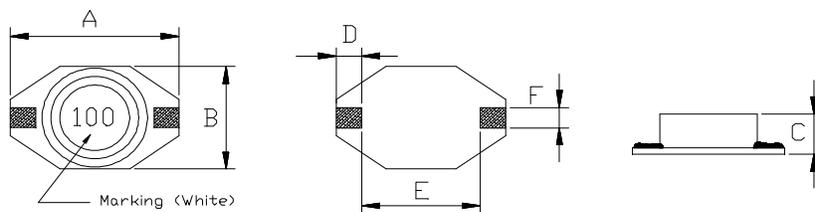
PRODUCT IDENTIFICATION

MSCDRB - 0905 - 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: | 5.20 Max. | mm |
| D: | 2.54 Typ. | mm |
| E: | 7.80 Typ. | mm |
| F: | 2.54 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)

(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(μ H) | Percent Tolerance | Test Frequency | Resistance RDC(Ω)Max. | Rated DC Current | | Marking |
|---------------------|---------------------------|----------------------|-------------------|-----------------------------------|------------------|---------|---------|
| | | | | | IDC1(A) | IDC2(A) | |
| MSCDRB-0905-R47□ | 0.47 | M,N | 100kHz/0.25V | 10m | 7.5 | 8.00 | R47 |
| MSCDRB-0905-1R0□ | 1.0 | N | 100kHz/0.25V | 21m | 5.6 | 5.00 | 1R0 |
| MSCDRB-0905-1R5□ | 1.5 | M,N | 100kHz/0.25V | 22m | 5.2 | 4.95 | 1R5 |
| MSCDRB-0905-2R2□ | 2.2 | N | 100kHz/0.25V | 32m | 5.0 | 4.70 | 2R2 |
| MSCDRB-0905-3R3□ | 3.3 | M,N | 100kHz/0.25V | 39m | 3.9 | 3.50 | 3R3 |
| MSCDRB-0905-4R7□ | 4.7 | N | 100kHz/0.25V | 54m | 3.2 | 2.80 | 4R7 |
| MSCDRB-0905-6R8□ | 6.8 | N | 100kHz/0.25V | 75m | 2.8 | 2.40 | 6R8 |
| MSCDRB-0905-100□ | 10 | M,N | 100kHz/0.25V | 0.101 | 2.4 | 1.70 | 100 |
| MSCDRB-0905-150□ | 15 | M,N | 100kHz/0.25V | 0.150 | 2.0 | 1.35 | 150 |
| MSCDRB-0905-220□ | 22 | M,N | 100kHz/0.25V | 0.207 | 1.6 | 1.20 | 220 |
| MSCDRB-0905-330□ | 33 | M,N | 100kHz/0.25V | 0.334 | 1.4 | 1.00 | 330 |
| MSCDRB-0905-470□ | 47 | M,N | 100kHz/0.25V | 0.472 | 1.0 | 0.80 | 470 |
| MSCDRB-0905-680□ | 68 | M,N | 100kHz/0.25V | 0.66 | 0.9 | 0.70 | 680 |
| MSCDRB-0905-101□ | 100 | M,N | 100kHz/0.25V | 1.11 | 0.8 | 0.60 | 101 |
| MSCDRB-0905-151□ | 150 | M,N | 100kHz/0.25V | 1.55 | 0.6 | 0.45 | 151 |
| MSCDRB-0905-221□ | 220 | M,N | 100kHz/0.25V | 2.00 | 0.5 | 0.35 | 221 |

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

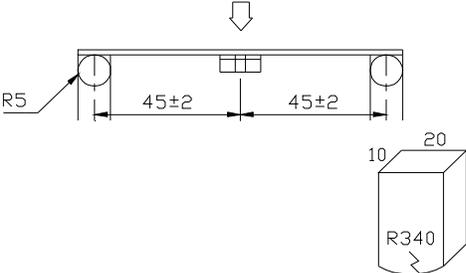
※ IDC1 : Based on inductance change (Δ L/Lo : \leq drop 10%) @ ambient temperature 25°C

IDC2 : Based on temperature rise (Δ 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. | 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 F(Pressurization)  PRESSURE ROD figure-1 |
| Vibration | $\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage. | 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) |
| Solderability | New solder More than 90% | 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. More than 90% of the electrode sections shall be covered with new solder smoothly when the sample is taken out of the solder bath. |

MECHANICAL

| TEST ITEM | SPECIFICATION | |
|---|---------------------------------------|---|
| Resistance to Soldering heat (reflow soldering) | There shall be no damage or problems. | <p style="text-align: center;">Temperature profile of reflow soldering</p> <p>The graph shows the soldering temperature profile. The y-axis is 'Soldering temperature (°C)' ranging from 50 to 300. The x-axis represents time. The profile starts at 50°C, rises to a pre-heating plateau of 150-180°C for 2 minutes. It then rises to a soldering peak of 260±3°C for 10 seconds. The temperature then drops to a minimum of 230°C for 30 seconds before slow cooling to room temperature. The cooling phase is labeled 'Slow cooling (Stored at room temperature)' and takes 2 minutes or more.</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. | DC 100V voltage shall be applied across this sample of top surface and the terminal. The insulation resistance shall be more than $1 \times 10^8 \Omega$. |
| 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 | $\Delta L/L20^\circ\text{C} \leq \pm 10\%$ $0 \sim 2000 \text{ ppm}/^\circ\text{C}$ | 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 $\Delta L/L20^\circ\text{C} \leq \pm 10\%$. |

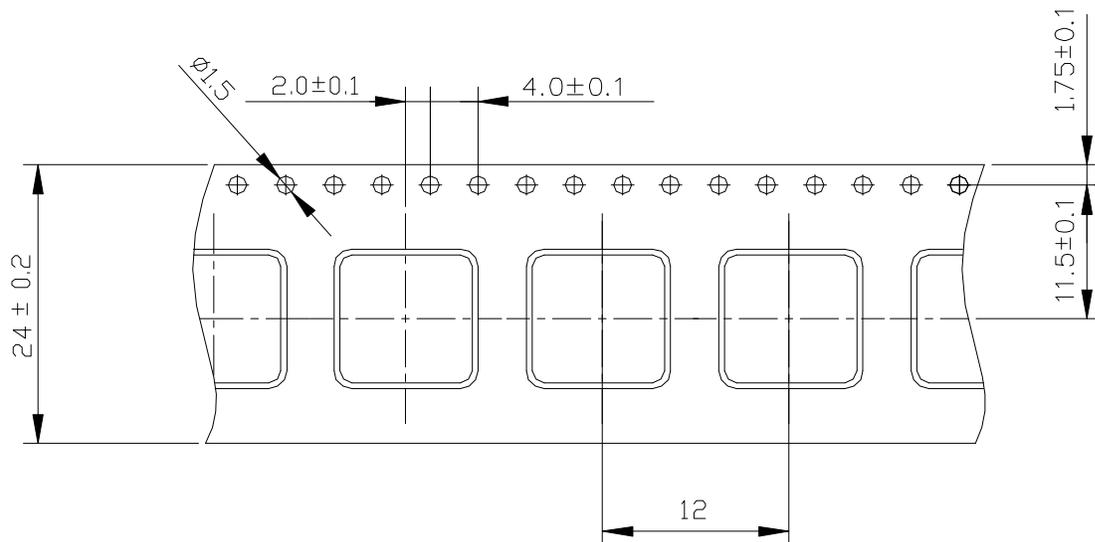


ENVIROMENT CHARACTERISTICS

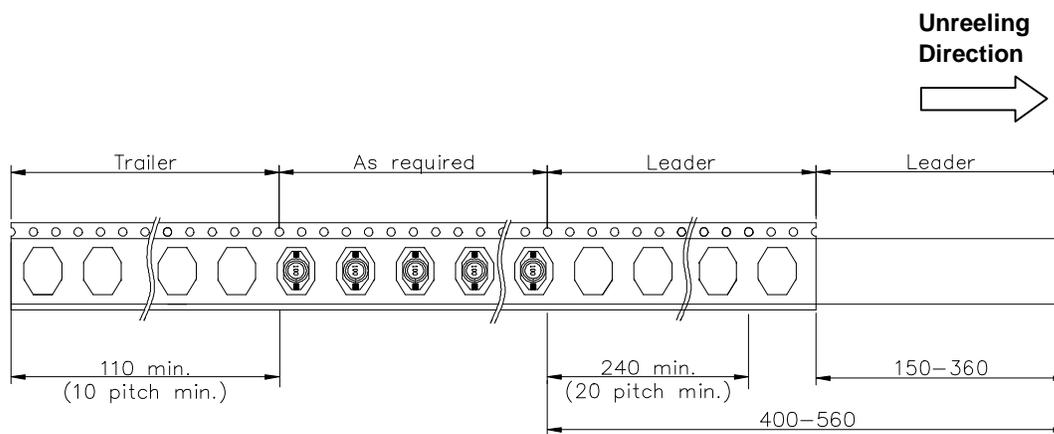
| TEST ITEM | SPECIFICATION | | | | | | | | | | | | | | | | |
|--|--|---|--|-------------|----------|---|-------------------------------|---------|---|----------------------|-----------|---|-----------------------------|---------|---|----------------------|-----------|
| High temperature storage | $\Delta L/Lo \leq \pm 5\%$ There shall be no mechanical damage. | The sample shall be left for 96±4 hours in an atmosphere with a temperature of 85±2°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; 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;">- 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> | | 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. | | | | | | | | | | | | | | | | | |

(6) PACKAGING

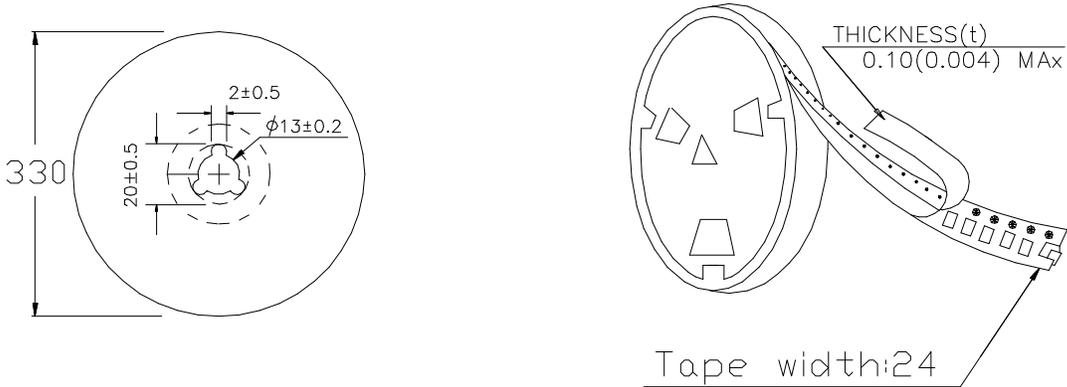
(6)-1 CARRIER TAPE DIMENSIONS (mm)



(6)-2 TAPING DIMENSIONS (mm)



(6)-3 REEL DIMENSIONS (mm)



(6)-4 QUANTITY

1000pcs/Reel

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