

SCOPE :

This specification applies to the Pb Free high current type SMD inductors for
MSCD-54-SERIES

PRODUCT IDENTIFICATION

MSCD- 54 - 1R0 M

① ② ③ ④

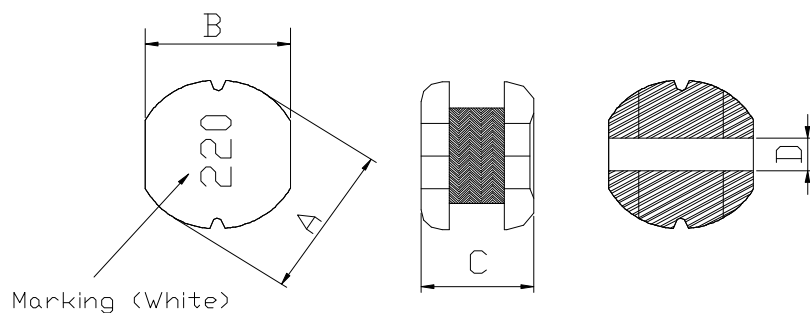
① Product Code

② Dimensions Code

③ Inductance Code

④ Tolerance Code

(1) SHAPES AND DIMENSIONS



A: 5.8 ± 0.3 mm
B: 5.2 ± 0.3 mm
C: 4.5 ± 0.3 mm
D: 2.0 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



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TABLE 1

| MAGLAYERS PT/NO. | Inductance L(μH) | Percent Tolerance | Test Frequency | Resistance RDC(Ω)Max. | Rated DC Current IDC(A) | Marking | Wire Tuns(Ref.) |
|---------------------|---------------------|----------------------|-------------------|--------------------------|----------------------------|---------|--------------------|
| MSCD-54-R47□ | 0.47 | N | 100kHz/0.25V | 16 m | 4.50 | R47 | |
| MSCD-54-R56□ | 0.56 | N | 100kHz/0.25V | 16 m | 4.50 | R56 | |
| MSCD-54-1R0□ | 1.0 | M,N | 100kHz/0.25V | 28 m | 3.00 | 1R0 | |
| MSCD-54-1R4□ | 1.4 | M,N | 100kHz/0.25V | 29 m | 2.80 | 1R4 | φ0.3 8.5Ts |
| MSCD-54-1R8□ | 1.8 | M,N | 100kHz/0.25V | 30 m | 2.60 | 1R8 | |
| MSCD-54-2R2□ | 2.2 | M,N | 100kHz/0.25V | 42 m | 2.30 | 2R2 | φ0.4 9.5Ts |
| MSCD-54-2R7□ | 2.7 | M,N | 100kHz/0.25V | 44 m | 2.10 | 2R7 | |
| MSCD-54-3R3□ | 3.3 | M,N | 100kHz/0.25V | 45 m | 2.00 | 3R3 | φ0.4 11.5Ts |
| MSCD-54-3R9□ | 3.9 | M,N | 100kHz/0.25V | 47 m | 1.95 | 3R9 | |
| MSCD-54-4R7□ | 4.7 | M,N | 100kHz/0.25V | 48 m | 1.90 | 4R7 | |
| MSCD-54-5R0□ | 5.0 | M,N | 100kHz/0.25V | 49 m | 1.85 | 5R0 | |
| MSCD-54-5R6□ | 5.6 | M,N | 100kHz/0.25V | 50 m | 1.80 | 5R6 | |
| MSCD-54-6R8□ | 6.8 | M,N | 100kHz/0.25V | 60 m | 1.60 | 6R8 | |
| MSCD-54-8R2□ | 8.2 | M,N | 100kHz/0.25V | 90 m | 1.50 | 8R2 | |
| MSCD-54-100□ | 10 | M,N | 100kHz/0.25V | 0.10 | 1.44 | 100 | |
| MSCD-54-120□ | 12 | M,N | 100kHz/0.25V | 0.12 | 1.40 | 120 | |
| MSCD-54-150□ | 15 | L,M,N | 100kHz/0.25V | 0.14 | 1.30 | 150 | φ0.26 24.5Ts |
| MSCD-54-180□ | 18 | M,N | 100kHz/0.25V | 0.15 | 1.23 | 180 | |
| MSCD-54-220□ | 22 | K,M,N | 100kHz/0.25V | 0.18 | 1.11 | 220 | |
| MSCD-54-270□ | 27 | M,N | 100kHz/0.25V | 0.20 | 0.97 | 270 | |
| MSCD-54-330□ | 33 | K,L,M | 100kHz/0.25V | 0.23 | 0.88 | 330 | |
| MSCD-54-390□ | 39 | L,M | 100kHz/0.25V | 0.32 | 0.80 | 390 | |
| MSCD-54-470□ | 47 | L,M | 100kHz/0.25V | 0.37 | 0.72 | 470 | |
| MSCD-54-560□ | 56 | K,M | 100kHz/0.25V | 0.42 | 0.68 | 560 | |
| MSCD-54-680□ | 68 | K,M | 100kHz/0.25V | 0.46 | 0.61 | 680 | |
| MSCD-54-820□ | 82 | K,M | 100kHz/0.25V | 0.60 | 0.58 | 820 | |
| MSCD-54-101□ | 100 | K,M | 100kHz/0.25V | 0.70 | 0.52 | 101 | |
| MSCD-54-121□ | 120 | K,M | 100kHz/0.25V | 0.93 | 0.48 | 121 | |
| MSCD-54-151□ | 150 | K,M | 100kHz/0.25V | 1.10 | 0.40 | 151 | |
| MSCD-54-181□ | 180 | K,M | 100kHz/0.25V | 1.38 | 0.38 | 181 | |
| MSCD-54-221□ | 220 | K,M | 100kHz/0.25V | 1.57 | 0.35 | 221 | |
| MSCD-54-271□ | 270 | K,M | 100kHz/0.25V | 1.85 | 0.28 | 271 | |
| MSCD-54-331□ | 330 | K,M | 100kHz/0.25V | 2.00 | 0.26 | 331 | |
| MSCD-54-391□ | 390 | K,M | 100kHz/0.25V | 2.60 | 0.24 | 391 | |
| MSCD-54-471□ | 470 | K,M | 100kHz/0.25V | 3.00 | 0.12 | 471 | |
| MSCD-54-561□ | 560 | K,M | 100kHz/0.25V | 3.50 | 0.11 | 561 | |
| MSCD-54-102□ | 1000 | K,M | 100kHz/0.25V | 6.20 | 80m | 102 | |
| MSCD-54-152□ | 1500 | K,M | 100kHz/0.25V | 8.40 | 70m | 152 | |
| MSCD-54-222□ | 2200 | K,M | 100kHz/0.25V | 12.90 | 50m | 222 | |

※ 1. □ Specify the inductance tolerance, K(±10%), L(±15%), M(±20%), N(±30%)

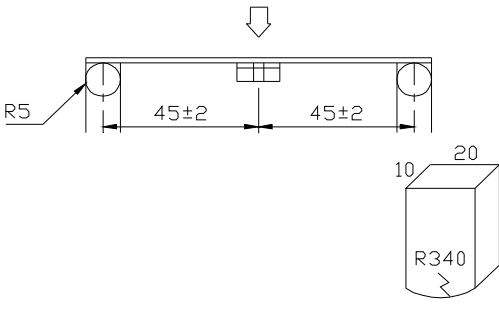
※ 2. IDC : Based on inductance change ($\Delta L/L_0$: drop 10% Max.) @ ambient temp. 25°C and

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



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(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°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>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 |
|------------------------------|--|--|
| 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 $1 \times 10^8 \Omega$.</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 -25 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 | $\Delta L/L_o \leq \pm 5\%$ 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 | $\Delta L/L_o \leq \pm 5\%$ 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 | $\Delta L/L_o \leq \pm 5\%$ 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 atmospheric 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 | $\Delta L/L_o \leq \pm 5\%$ 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. | | | | | | | | | | | | | | | | | |

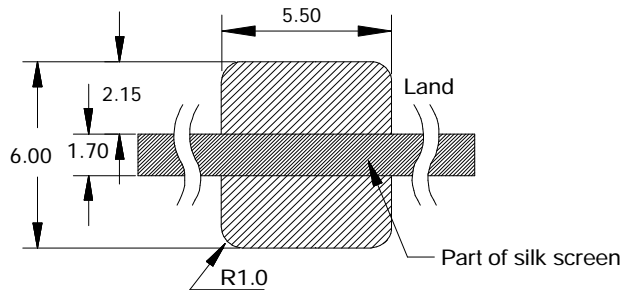


(5) LAND DIMENSION (Ref.)

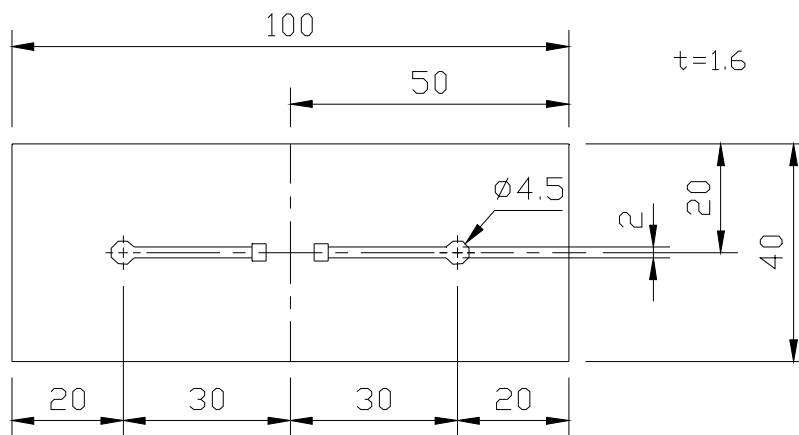
PCB: GLASS EPOXY $t=1.6\text{mm}$

(5)-1 LAND PATTERN DIMENSIONS

(STANDARD PATTERN) Unit : mm

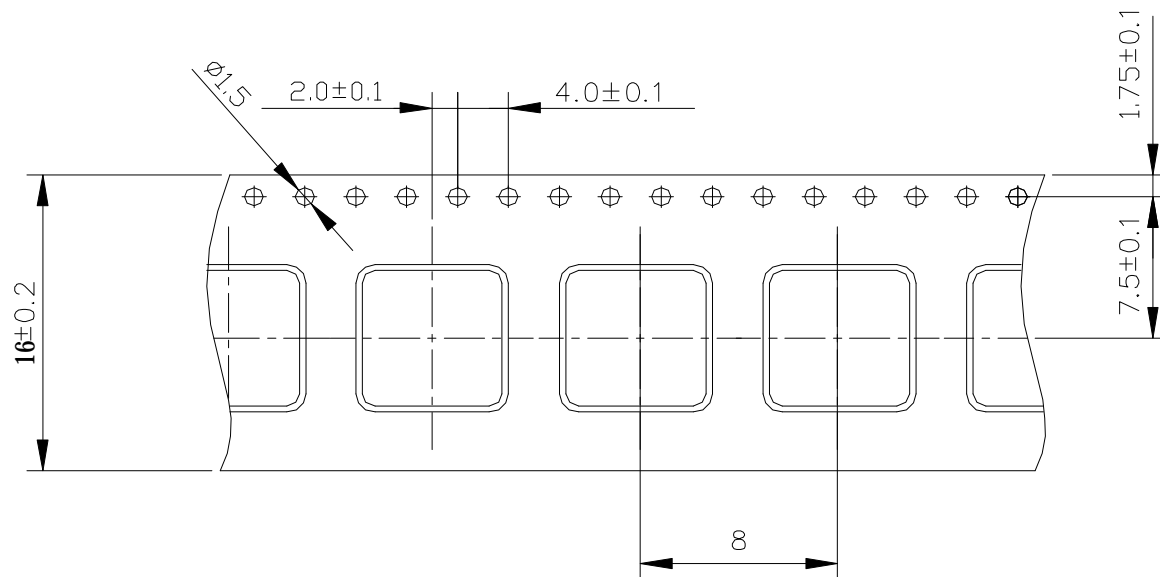


(5)-2 SUBSTRATE BENDING TEST BENDING TEST BOARD

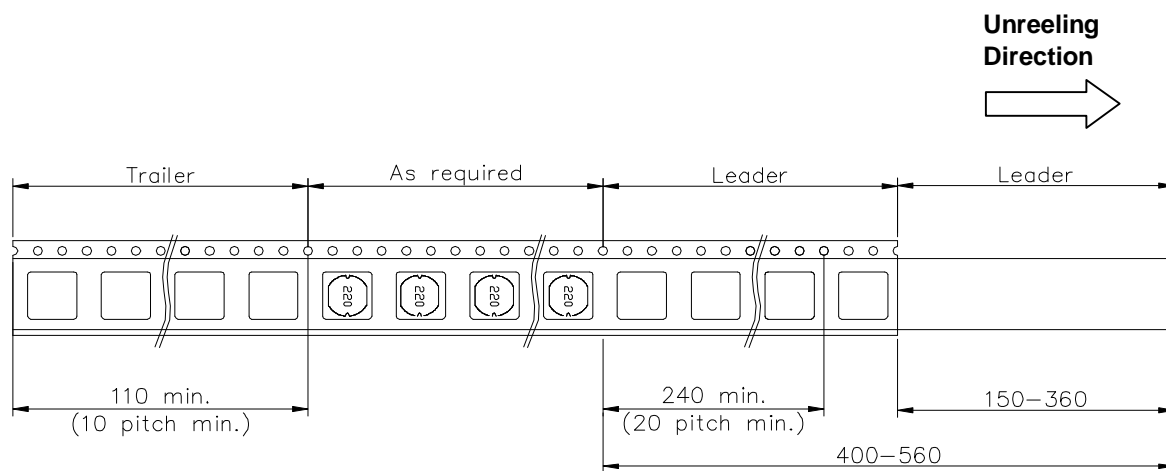


(6) PACKAGING

(6)-1 CARRIER TAPE DIMENSIONS (mm)

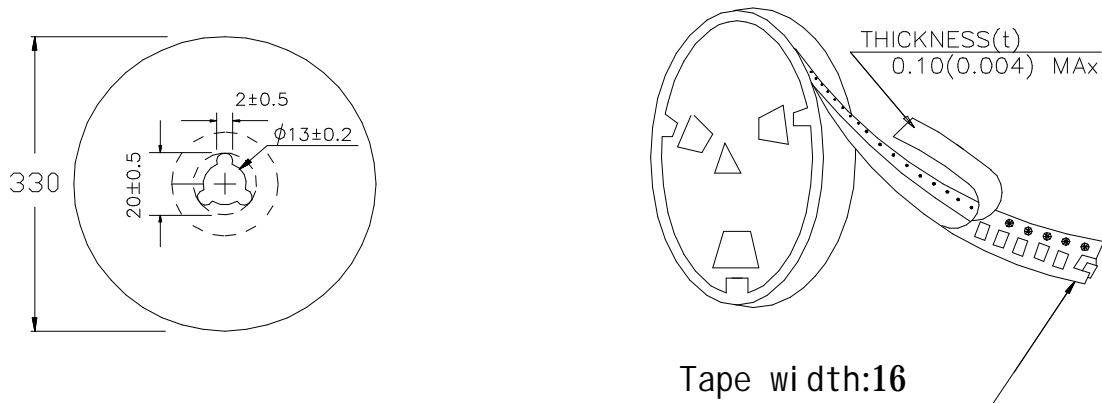


(6)-2 TAPING DIMENSIONS (mm)



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(6)-3 REEL DIMENSIONS (mm)



(6)-4 QUANTITY

1000 pcs/Reel

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