## SCOPE :

**This specification applies to the Pb Free high current type SMD inductors for**

**MSCDRI-5D28-SERIES**

**PRODUCT INDENTIFICATION**

**MSCDRI - 5D28 - 100 M**

**① ② ③ ④**

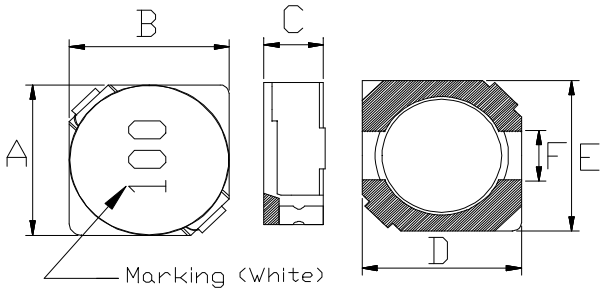
**① Product Code**

**② Dimensions Code**

**③ Inductance Code**

**④ Tolerance Code**

## (1) SHAPES AND DIMENSIONS




| | | |
|---|---|---|
| **A:** | **5.70±0.3** | **mm** |
| **B:** | **5.70±0.3** | **mm** |
| **C:** | **3.00 Max.** | **mm** |
| **D:** | **5.50 Typ.** | **mm** |
| **E:** | **5.50 Typ.** | **mm** |
| **F:** | **2.00 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℃ Max.**

**(3)-2 Operate temperature range ..... －40℃～＋125℃**

**(Including self temp. rise)**

**(3)-3 Storage temperature range ..... －40℃～＋125℃**

## TABLE 1

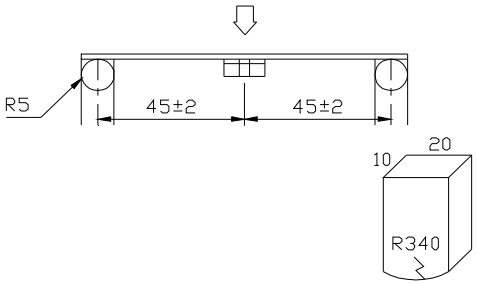
| MAGLAYERS PT/NO. | Inductance L(μH) | Percent Tolerance | Test Frequency | Resistance RDC(Ω)Max. | Rated DC Current IDC(A) | Marking |
|---|---|---|---|---|---|---|
| MSCDRI-5D28-1R0□ | 1.0 | N | 100kHz/0.25V | 12m | 3.70 | 1R0 |
| MSCDRI-5D28-1R2□ | 1.2 | N | 100kHz/0.25V | 13m | 3.50 | 1R2 |
| MSCDRI-5D28-2R2□ | 2.2 | N | 100kHz/0.25V | 18m | 2.80 | 2R2 |
| MSCDRI-5D28-2R5□ | 2.5 | N | 100kHz/0.25V | 18m | 2.60 | 2R5 |
| MSCDRI-5D28-2R7□ | 2.7 | N | 100kHz/0.25V | 18m | 2.60 | 2R7 |
| MSCDRI-5D28-3R0□ | 3.0 | N | 100kHz/0.25V | 24m | 2.40 | 3R0 |
| MSCDRI-5D28-3R3□ | 3.3 | M,N | 100kHz/0.25V | 24m | 2.40 | 3R3 |
| MSCDRI-5D28-3R9□ | 3.9 | N | 100kHz/0.25V | 31m | 2.20 | 3R9 |
| MSCDRI-5D28-4R2□ | 4.2 | N | 100kHz/0.25V | 31m | 2.20 | 4R2 |
| MSCDRI-5D28-4R7□ | 4.7 | M,N | 100kHz/0.25V | 35m | 2.00 | 4R7 |
| MSCDRI-5D28-5R3□ | 5.3 | N | 100kHz/0.25V | 38m | 1.90 | 5R3 |
| MSCDRI-5D28-6R2□ | 6.2 | N | 100kHz/0.25V | 45m | 1.80 | 6R2 |
| MSCDRI-5D28-6R6□ | 6.6 | M,N | 100kHz/0.25V | 45m | 1.80 | 6R6 |
| MSCDRI-5D28-8R2□ | 8.2 | M,N | 100kHz/0.25V | 53m | 1.60 | 8R2 |
| MSCDRI-5D28-100□ | 10 | M,N | 100kHz/0.25V | 65m | 1.30 | 100 |
| MSCDRI-5D28-120□ | 12 | M,N | 100kHz/0.25V | 76m | 1.20 | 120 |
| MSCDRI-5D28-150□ | 15 | M,N | 100kHz/0.25V | 0.103 | 1.10 | 150 |
| MSCDRI-5D28-180□ | 18 | M,N | 100kHz/0.25V | 0.110 | 1.00 | 180 |
| MSCDRI-5D28-220□ | 22 | M,N | 100kHz/0.25V | 0.122 | 0.90 | 220 |
| MSCDRI-5D28-270□ | 27 | M,N | 100kHz/0.25V | 0.175 | 0.85 | 270 |
| MSCDRI-5D28-330□ | 33 | M,N | 100kHz/0.25V | 0.189 | 0.75 | 330 |
| MSCDRI-5D28-390□ | 39 | M,N | 100kHz/0.25V | 0.212 | 0.70 | 390 |
| MSCDRI-5D28-470□ | 47 | M,N | 100kHz/0.25V | 0.250 | 0.62 | 470 |
| MSCDRI-5D28-560□ | 56 | M,N | 100kHz/0.25V | 0.305 | 0.58 | 560 |
| MSCDRI-5D28-680□ | 68 | M,N | 100kHz/0.25V | 0.355 | 0.52 | 680 |
| MSCDRI-5D28-820□ | 82 | M,N | 100kHz/0.25V | 0.463 | 0.46 | 820 |
| MSCDRI-5D28-101□ | 100 | M,N | 100kHz/0.25V | 0.520 | 0.42 | 101 |
| MSCDRI-5D28-151□ | 150 | M,N | 100kHz/0.25V | 1.050 | 0.35 | 151 |
| MSCDRI-5D28-181□ | 180 | M,N | 100kHz/0.25V | 1.550 | 0.32 | 181 |

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

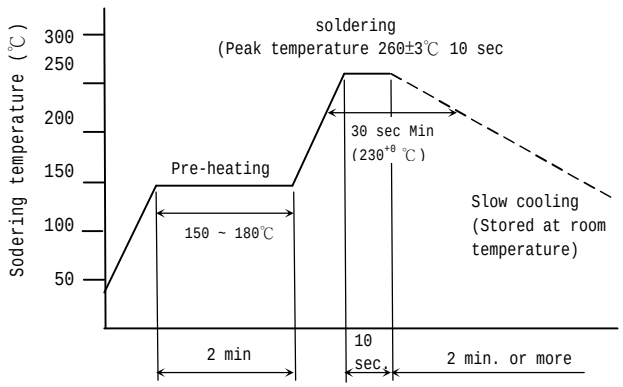
※ IDC : Based on inductance change (△L/Lo： ≦ drop 35%) @ambient temp. 25℃ and
Based on temperature rise (△T： 40℃ TYP.)

## (4) RELIABILITY TEST METHOD

### MECHANICAL

| TEST ITEM | SPECIFICATION | TEST DETAILS |
|---|---|---|
| Substrate bending | △L/Lo≦±5%<br><br>There shall be no mechanical damage or electrical damege. | The sample shall be soldered onto the printed circuit board in figure 1 and a load applied unitil the figure in the arrow direction is made approximately 3mm.(keep time 30 seconds)<br>PCB dimension shall the page 7/9<br>F(Pressurization)<br>  <br><br>PRESSURE ROD<br>figure-1 |
| Vibration | △L/Lo≦±5%<br><br>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.<br>(A total of 6 hours) |
| Solderability | New solder<br>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℃ 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℃.<br>More than 90% of the electrode sections shall be couered 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. | Temperature profile of reflow soldering<br>  <br><br>The specimen shall be passed through the reflow oven with the condition shown in the above profile for 1 time.<br>The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made. |

## 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.<br>The insulation resistance shall be more than $1 \times 10^8$ Ω. |
| Dielectric withstand voltage | There shall be no other damage or problems. | AC 100V voltage shall be applied for 1 minute acrosset the top surface and the terminal of this sample |
| Temperature characteristics | △L/L20℃ ≦±10%<br>0～2000 ppm/℃ | The test shall be performed after the sample has stabilized in an ambient temperature of -20 to +85℃,and the value calculated based on the value applicable in a normal temperature and narmal humidity shall be △L/L20℃ ≦±10%. |

## ENVIROMENT CHARACTERISTICS

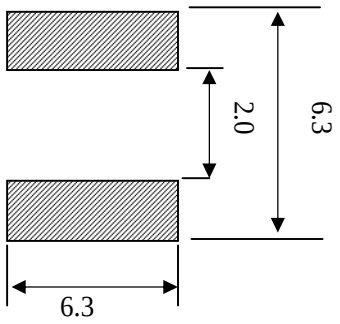
<table>
<tr><th>TEST ITEM</th><th colspan="2">SPECIFICATION</th></tr>
<tr><td>High temperature storage</td><td>△L/Lo≦±5%<br><br>There shall be no mechanical damage.</td><td>The sample shall be left for 96±4 hours in an atmospere with a temperature of 85±2℃ and a normal humidity.<br>Upon completion of the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.</td></tr>
<tr><td>Low temperature storage</td><td>△L/Lo≦±5%<br><br>There shall be no mechanical damage.</td><td>The sample shall be left for 96±4 hours in an atmosphere with a temperature of -25±3℃.<br>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.</td></tr>
<tr><td>Change of temperature</td><td>△L/Lo≦±5%<br><br>There shall be no other dama-ge of problems</td><td>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.<br><br>table 2
<table>
<tr><th></th><th>Temperature</th><th>Duration</th></tr>
<tr><td>1</td><td>－25±3℃<br>(Themostat 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±2℃<br>(Themostat No.2)</td><td>30 min.</td></tr>
<tr><td>4</td><td>Standard atmospheric</td><td>No.2→No.1</td></tr>
</table></td></tr>
<tr><td>Moisture storage</td><td>△L/Lo≦±5%<br><br>There shall be no mechanical damage.</td><td>The sample shall be left for 96±4 hours in a temperature of 40±2℃ and a humidity(RH) of 90～95%.<br>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.</td></tr>
<tr><td colspan="3">Test conditions：<br>The sample shall be reflow soldered onto the printed circuit board in every test.</td></tr>
</table>

## (5) LAND DIMENSION (Ref.)

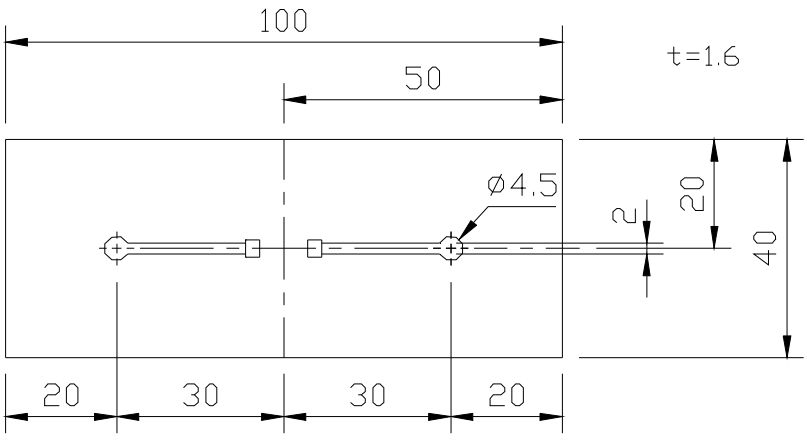
**PCB: GLASS EPOXY t=1.6mm**

### (5)-1 LAND PATTERN DIMENSIONS

**(STANDARD PATTERN) Unit : mm**

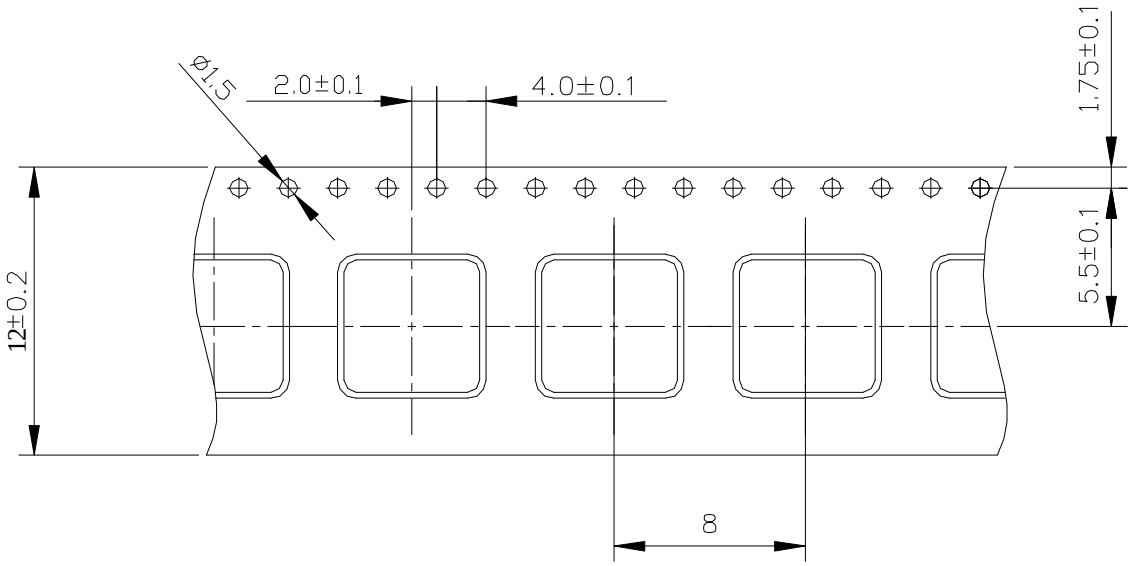



### (5)-2 SUBSTRATE BENDING TEST BENDING TEST BOARD

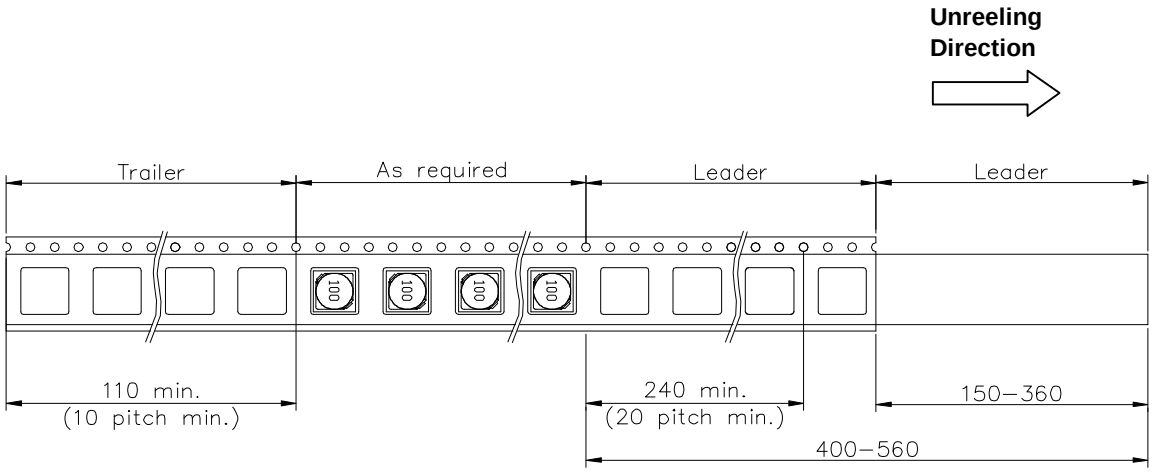


# (6) PACKAGING

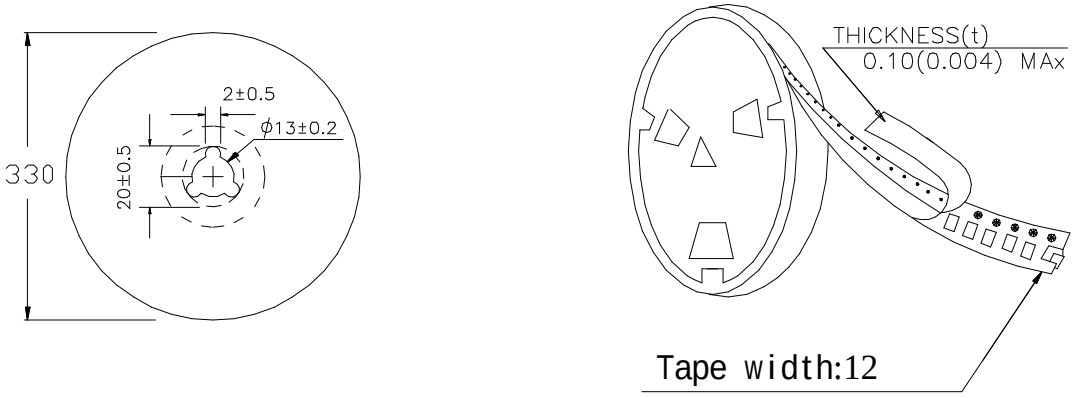
## (6)-1 CARRIER TAPE DIMENSIONS (mm)




## (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.**