



Mag Layers USA, INC

Specification Sheet

P/N : MSCDRI-4D28C-SERIES-RU

Products:

[Molded Power Chokes](#)

[Multilayer Chip Inductors](#)

[Lan Transformer](#)

[RF Passive / Antennas](#)

[Automotive](#)

Certifications:

[ISO9001](#)

[IATF16949](#)

[ISO14001](#)

[QC080000](#)

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SCOPE :

This specification applies to the Pb Free high current type SMD inductors for
MSCDRI-4D28C-SERIES

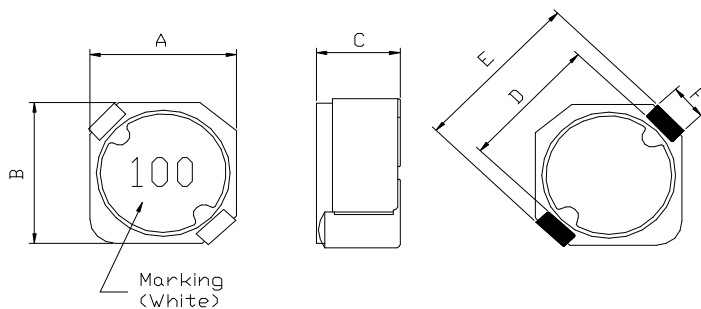
PRODUCT IDENTIFICATION

MSCDRI - 4D28C - 100 M-RU

① ② ③ ④

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

(1) SHAPES AND DIMENSIONS



| | | |
|----|-----------|----|
| A: | 5.10 Max. | mm |
| B: | 5.10 Max. | mm |
| C: | 3.00 Max. | mm |
| D: | 4.40 Typ. | mm |
| E: | 6.20 Max. | mm |
| F: | 1.40 Typ. | mm |

(2) ELECTRICAL SPECIFICATIONS

SEE TABLE 1

TEST INSTRUMENTS

- L : HP 4284A PRECISION LCR METER (or equivalent)
- RDC : CHROMA MODEL 16502 MILLIOHM METER (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

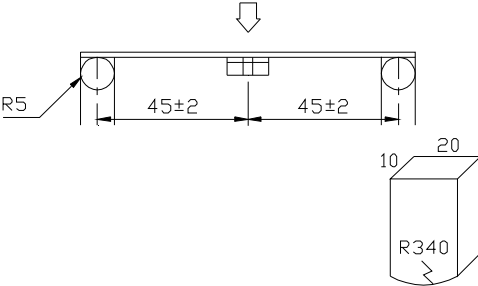
| MAGLAYERS PT/NO. | Inductance L(μ H) | Percent Tolerance | Test Frequency | Resistance RDC(Ω)Max. | Rated DC Current IDC(A) | Marking |
|----------------------|---------------------------|----------------------|-------------------|-----------------------------------|----------------------------|---------|
| MSCDRI-4D28C-1R1□-RU | 1.1 | N | 100kHz/0.25V | 22m | 3.80 | 1R1 |
| MSCDRI-4D28C-2R0□-RU | 2.0 | M,N | 100kHz/0.25V | 29m | 2.60 | 2R0 |
| MSCDRI-4D28C-3R2□-RU | 3.2 | N | 100kHz/0.25V | 42m | 2.30 | 3R2 |
| MSCDRI-4D28C-4R7□-RU | 4.7 | M,N | 100kHz/0.25V | 63m | 1.80 | 4R7 |
| MSCDRI-4D28C-6R3□-RU | 6.3 | N | 100kHz/0.25V | 94m | 1.30 | 6R3 |
| MSCDRI-4D28C-100□-RU | 10 | M,N | 100kHz/0.25V | 0.106 | 1.26 | 100 |
| MSCDRI-4D28C-150□-RU | 15 | M,N | 100kHz/0.25V | 0.137 | 1.05 | 150 |
| MSCDRI-4D28C-220□-RU | 22 | M,N | 100kHz/0.25V | 0.207 | 0.85 | 220 |
| MSCDRI-4D28C-330□-RU | 33 | M,N | 100kHz/0.25V | 0.331 | 0.70 | 330 |
| MSCDRI-4D28C-470□-RU | 47 | M,N | 100kHz/0.25V | 0.510 | 0.54 | 470 |
| MSCDRI-4D28C-680□-RU | 68 | M,N | 100kHz/0.25V | 0.625 | 0.49 | 680 |
| MSCDRI-4D28C-101□-RU | 100 | M,N | 100kHz/0.25V | 0.948 | 0.40 | 101 |

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

※ IDC : Based on inductance change (Δ L/Lo : drop 35% max) @ ambient temp. 25°C and
Based on temperature rise (Δ T : 40°C TYP.)



**(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) 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 style="text-align: center;">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. | 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 | $\Delta L/L20^\circ \leq \pm 10\%$ $0 \sim 2000 \text{ ppm}/^\circ\text{C}$ | 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 $\Delta L/L20^\circ \leq \pm 10\%$. |

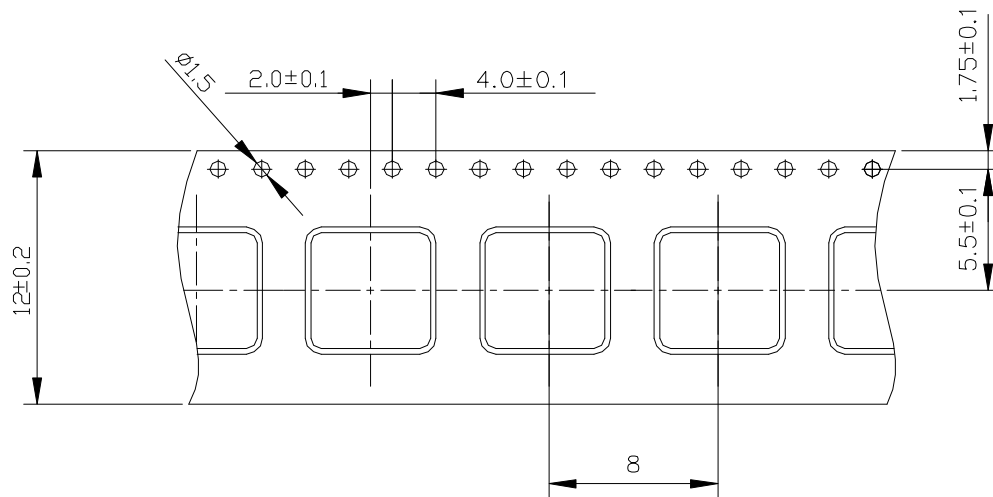


ENVIROMENT CHARACTERISTICS

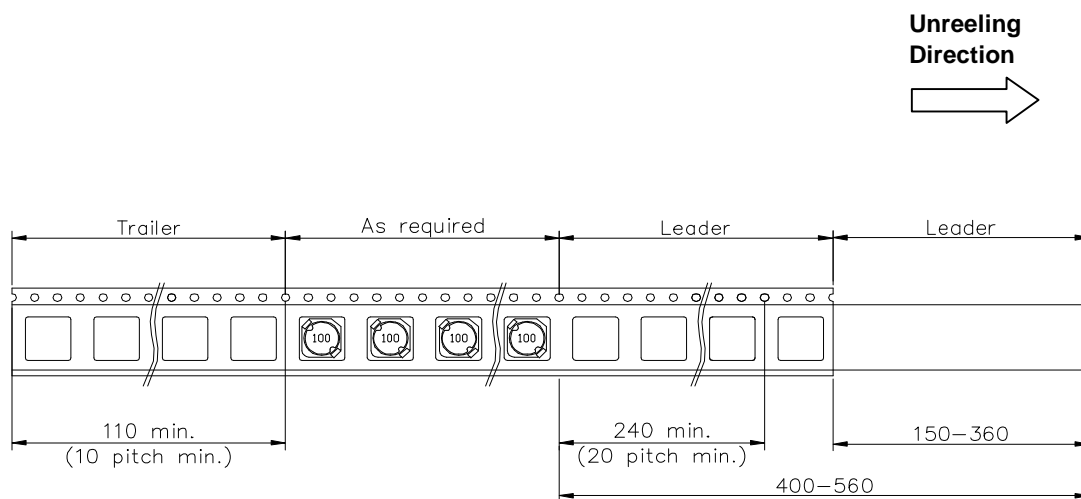
| TEST ITEM | SPECIFICATION | | | | | | | | | | | | | | | | |
|--|--|---|--|-------------|----------|---|-------------------------------|---------|---|----------------------|-----------|---|-----------------------------|---------|---|----------------------|-----------|
| High temperature storage | $\Delta L/Lo \leq \pm 5\%$ 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 | | | | | | | | | | | | | | | |
| Moisutire 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)

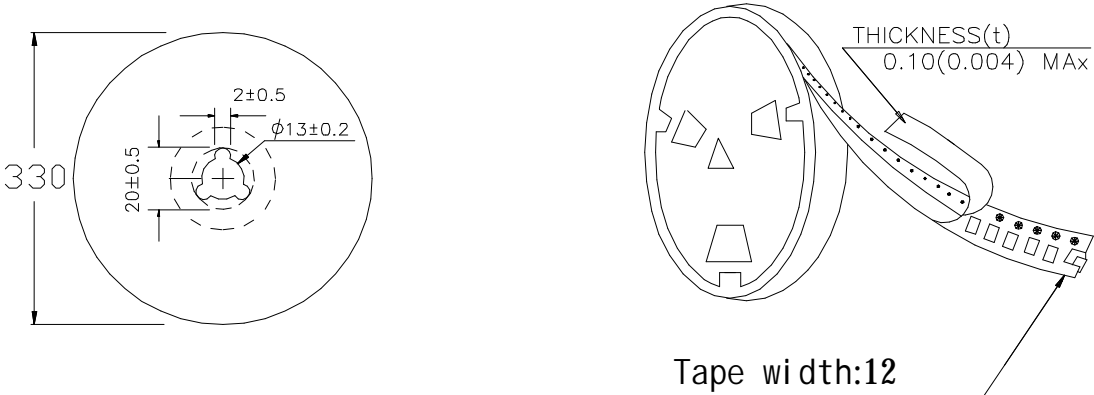


(6)-2 TAPING DIMENSIONS (mm)



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(6)-3 REEL DIMENSIONS (mm)



(6)-4 QUANTITY

2000pcs/Reel

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