

### 1. PART NO. EXPRESSION :

S P I 4 0 1 5 - 1 R 0 N Z F

(a) (b) (c) (d)(e)(f)

(a) Series code

(b) Dimension code

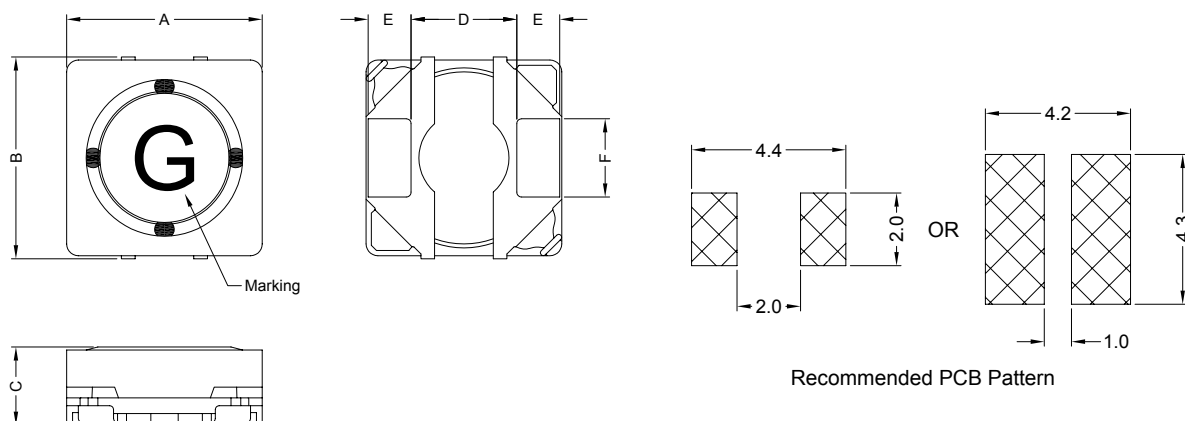
(c) Inductance code : 1R0 = 1.0uH

(d) Tolerance code : M =  $\pm 20\%$ , N =  $\pm 30\%$

(e) Z : Standard part

(f) F : RoHS Compliant

### 2. CONFIGURATION & DIMENSIONS :



Unit:m/m

| A             | B             | C        | D       | E        | F       | G       |
|---------------|---------------|----------|---------|----------|---------|---------|
| 4.0 $\pm$ 0.2 | 4.0 $\pm$ 0.3 | 1.5 Max. | 2.1 Typ | 0.96 Typ | 1.6 Typ | 1.1 Typ |

### 3. MATERIALS :

(a) Core : Ferrite

(b) Wire : Polyurethane Enamelled Copper Wire

(c) Terminal Clip : C5191

(d) Adhesive : Epoxy

(e) Ink : 70000-00101



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**4. GENERAL SPECIFICATION :**

- a) IDC1 : Based on inductance change ( $\Delta L/L_0: \leq 30\%$ ) @ ambient temp. 25°C
- b) IDC2 : Based on temperature rise ( $\Delta T: 40^\circ\text{C Typ.}$ )
- c) Rated current : IDC1 or IDC2, whichever value is lower
- d) Storage temp. : -40°C to +105°C
- e) Operating temp. : -40°C to +105°C ( include self temp. rise )
- f) Resistance to solder heat : 260°C 10secs

**5. ELECTRICAL CHARACTERISTICS :**

| Part No.       | Inductance<br>( $\mu\text{H}$ ) | Test<br>Frequency<br>( Hz ) | RDC<br>( $\text{m}\Omega$ )<br>$\pm 20\%$ | IDC1<br>( A ) | IDC2<br>( A ) | Marking |
|----------------|---------------------------------|-----------------------------|-------------------------------------------|---------------|---------------|---------|
| SPI4015-1R0NZF | 1.0 $\pm 30\%$                  | 0.1V/100K                   | 43                                        | 2.30          | 2.30          | A       |
| SPI4015-1R5NZF | 1.5 $\pm 30\%$                  | 0.1V/100K                   | 50                                        | 2.00          | 2.05          | C       |
| SPI4015-2R2NZF | 2.2 $\pm 30\%$                  | 0.1V/100K                   | 57                                        | 1.70          | 1.85          | E       |
| SPI4015-3R3NZF | 3.3 $\pm 30\%$                  | 0.1V/100K                   | 80                                        | 1.30          | 1.60          | G       |
| SPI4015-4R7MZF | 4.7 $\pm 20\%$                  | 0.1V/100K                   | 99                                        | 1.10          | 1.25          | I       |
| SPI4015-5R6MZF | 5.6 $\pm 20\%$                  | 0.1V/100K                   | 120                                       | 1.00          | 1.20          | J       |
| SPI4015-6R8MZF | 6.8 $\pm 20\%$                  | 0.1V/100K                   | 130                                       | 1.00          | 1.15          | K       |
| SPI4015-100MZF | 10 $\pm 20\%$                   | 0.1V/100K                   | 190                                       | 0.78          | 1.00          | M       |
| SPI4015-150MZF | 15 $\pm 20\%$                   | 0.1V/100K                   | 280                                       | 0.63          | 0.88          | O       |
| SPI4015-220MZF | 22 $\pm 30\%$                   | 0.1V/100K                   | 340                                       | 0.57          | 0.80          | Q       |
| SPI4015-330MZF | 33 $\pm 20\%$                   | 0.1V/100K                   | 530                                       | 0.44          | 0.56          | S       |
| SPI4015-470MZF | 47 $\pm 20\%$                   | 0.1V/100K                   | 750                                       | 0.35          | 0.40          | U       |
| SPI4015-101MZF | 100 $\pm 20\%$                  | 0.1V/100K                   | 1730                                      | 0.27          | 0.30          | Y       |



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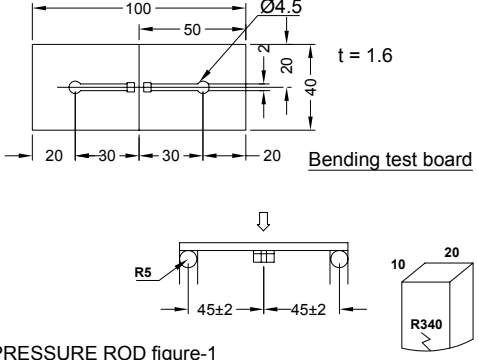
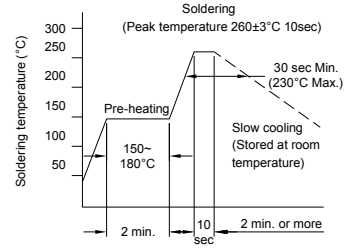
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## 6. RELIABILITY & TEST CONDITION :

| ITEM                                            | PERFORMANCE                                                                                   | TEST CONDITION                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mechanical                                      |                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Substrate bending                               | $\Delta L/L_0 \leq \pm 10\%$<br><br>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 secs)</p>  <p>PRESSURE ROD figure-1</p>                                                                                                                                                                        |
| Vibration                                       | $\Delta L/L_0 \leq \pm 10\%$<br><br>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<br>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> |
| Resistance to Soldering heat (reflow soldering) | There shall be no damage or problems.                                                         |  <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>                                                                                                                                       |

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## 6. RELIABILITY &amp; TEST CONDITION :

| ITEM                            | PERFORMANCE                                                                | TEST CONDITION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |             |          |   |                              |         |   |                         |                             |   |                             |         |   |                         |                             |
|---------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------|----------|---|------------------------------|---------|---|-------------------------|-----------------------------|---|-----------------------------|---------|---|-------------------------|-----------------------------|
| Electrical Characteristics Test |                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |             |          |   |                              |         |   |                         |                             |   |                             |         |   |                         |                             |
| Dielectric withstand voltage    | There shall be no damage or problems.                                      | AC 100V voltage shall be applied for 1 minute across the top surface and the terminal of this sample                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |             |          |   |                              |         |   |                         |                             |   |                             |         |   |                         |                             |
| Temperature characteristics     | $\Delta L/L_{20^\circ\text{C}} \leq \pm 10\%$<br>0~2000 ppm/°C             | The test shall be performed after the sample has stabilized in an ambient temperature of -20 to +85°C, and the value calculated based on the value applicable in a normal temperature and normal humidity shall be $\Delta L/L_{20^\circ\text{C}} \leq \pm 10\%$ .                                                                                                                                                                                                                                                                                                                                                                                                                   |  |             |          |   |                              |         |   |                         |                             |   |                             |         |   |                         |                             |
| High temperature storage        | $\Delta L/L_0 \leq \pm 10\%$<br>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         | $\Delta L/L_0 \leq \pm 10\%$<br>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           | $\Delta L/L_0 \leq \pm 10\%$<br>There shall be no other damage of problems | <p>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.</p> <table border="1"> <thead> <tr> <th></th><th>Temperature</th><th>Duration</th></tr> </thead> <tbody> <tr> <td>1</td><td>-25±3°C<br/>(Thermostat No.1)</td><td>30 min.</td></tr> <tr> <td>2</td><td>Standard<br/>atmospheric</td><td>5 sec. or less<br/>No.1→No.2</td></tr> <tr> <td>3</td><td>85±2°C<br/>(Thermostat No.2)</td><td>30 min.</td></tr> <tr> <td>4</td><td>Standard<br/>atmospheric</td><td>5 sec. or less<br/>No.2→No.1</td></tr> </tbody> </table> |  | Temperature | Duration | 1 | -25±3°C<br>(Thermostat No.1) | 30 min. | 2 | Standard<br>atmospheric | 5 sec. or less<br>No.1→No.2 | 3 | 85±2°C<br>(Thermostat No.2) | 30 min. | 4 | Standard<br>atmospheric | 5 sec. or less<br>No.2→No.1 |
|                                 | Temperature                                                                | Duration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |             |          |   |                              |         |   |                         |                             |   |                             |         |   |                         |                             |
| 1                               | -25±3°C<br>(Thermostat No.1)                                               | 30 min.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |             |          |   |                              |         |   |                         |                             |   |                             |         |   |                         |                             |
| 2                               | Standard<br>atmospheric                                                    | 5 sec. or less<br>No.1→No.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |             |          |   |                              |         |   |                         |                             |   |                             |         |   |                         |                             |
| 3                               | 85±2°C<br>(Thermostat No.2)                                                | 30 min.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |             |          |   |                              |         |   |                         |                             |   |                             |         |   |                         |                             |
| 4                               | Standard<br>atmospheric                                                    | 5 sec. or less<br>No.2→No.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |             |          |   |                              |         |   |                         |                             |   |                             |         |   |                         |                             |
| Moisture storage                | $\Delta L/L_0 \leq \pm 10\%$<br>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.                                                                                                                                                                                                                                                                                                                                                                                                                             |  |             |          |   |                              |         |   |                         |                             |   |                             |         |   |                         |                             |



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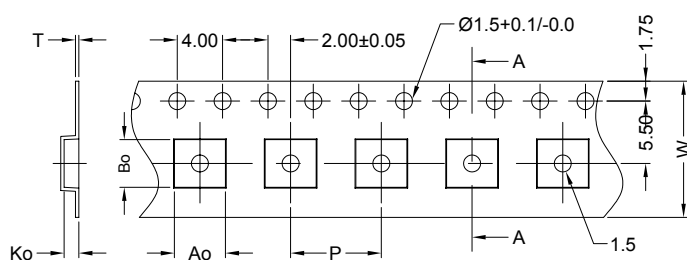
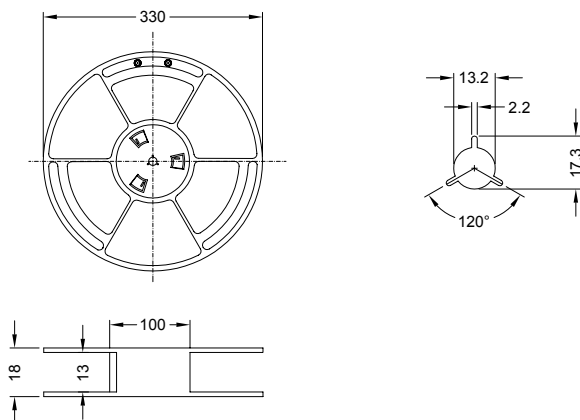
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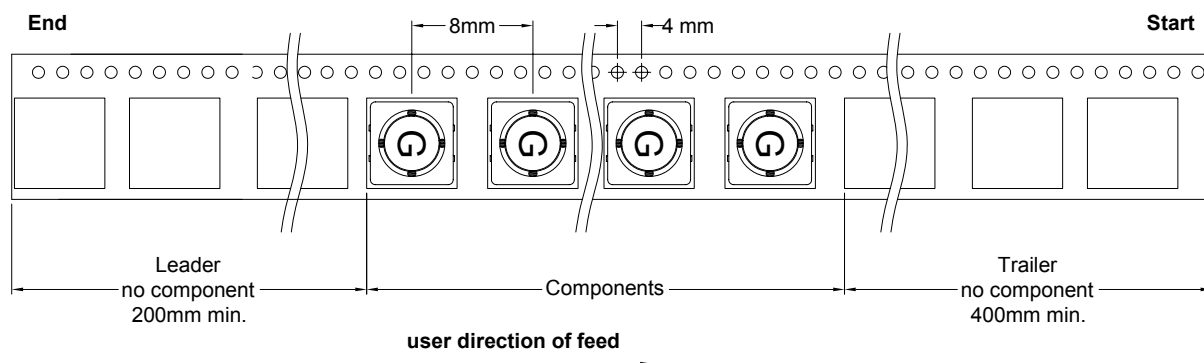
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### 7-1. Reel Dimension (mm)



|       |       |       |      |       |       |
|-------|-------|-------|------|-------|-------|
| Ao    | Bo    | Ko    | W    | P     | T     |
| 4.5mm | 4.2mm | 1.9mm | 12mm | 8.0mm | 0.3mm |



3000pcs/Reel

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



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