SMD POWER INDUCTORS

SPI4012 SERIES

1. PART NO. EXPRESSION :

S P I 4 0 1 2 - 1 R 2 N Z F

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

(a) Series code

(b) Dimension code

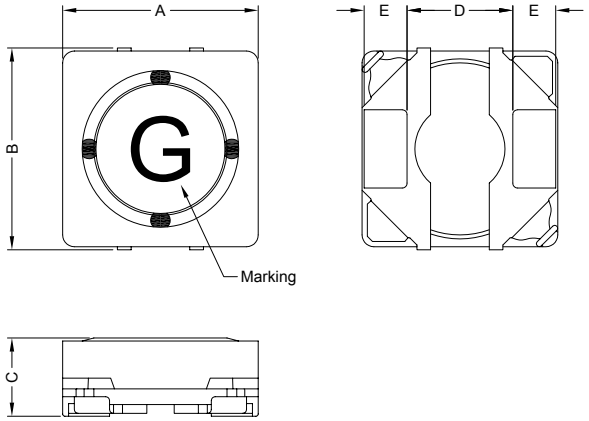
(c) Inductance code : 1R2 = 1.2uH

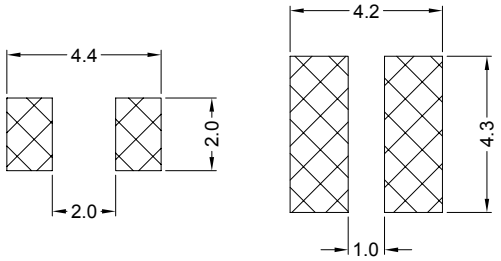
(d) Tolerance code : M = ±20%, N = ±30%

(e) Z : Standard part

(f) F : RoHS Compliant

2. CONFIGURATION & DIMENSIONS :





Recommended PCB Pattern

Unit:m/m

A	B	C	D	E	F	G
4.0±0.2	4.0±0.3	1.2 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

RoHS Compliant

NOTE : Specifications subject to change without notice. Please check our website for latest information.

4. GENERAL SPECIFICATION :

a) IDC1 : Based on inductance change (ΔL/Lo: ≤30%) @ ambient temp. 25°C

b) IDC2 : Based on temperature rise (ΔT: 40°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 (uH)	Test Frequency (Hz)	RDC (mΩ) ±20%	IDC1 (A)	IDC2 (A)	Marking
SPI4012-1R2NZF	1.2±30%	0.1V/100K	57	2.00	2.00	B
SPI4012-1R5NZF	1.5±30%	0.1V/100K	67	1.70	1.80	C
SPI4012-2R2NZF	2.2±30%	0.1V/100K	84	1.50	1.55	E
SPI4012-3R3NZF	3.3±30%	0.1V/100K	100	1.30	1.25	G
SPI4012-4R7MZF	4.7±20%	0.1V/100K	140	1.10	1.15	I
SPI4012-6R8MZF	6.8±20%	0.1V/100K	170	1.00	1.05	K
SPI4012-8R2MZF	8.2±20%	0.1V/100K	210	0.90	1.00	L
SPI4012-100MZF	10±20%	0.1V/100K	260	0.75	0.90	M
SPI4012-120MZF	12±20%	0.1V/100K	300	0.66	0.85	N
SPI4012-150MZF	15±30%	0.1V/100K	390	0.70	0.75	O
SPI4012-180MZF	18±20%	0.1V/100K	450	0.60	0.60	P
SPI4012-220MZF	22±20%	0.1V/100K	650	0.57	0.50	Q
SPI4012-270MZF	27±20%	0.1V/100K	750	0.48	0.40	R
SPI4012-330MZF	33±20%	0.1V/100K	850	0.39	0.45	S

RoHS Compliant

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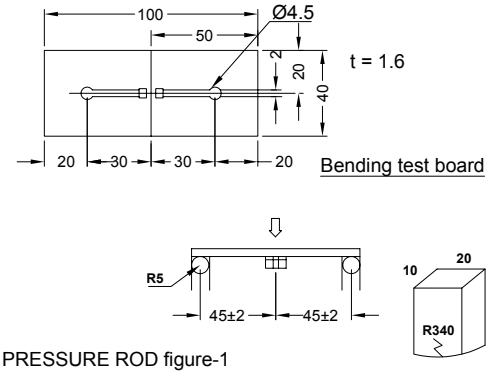
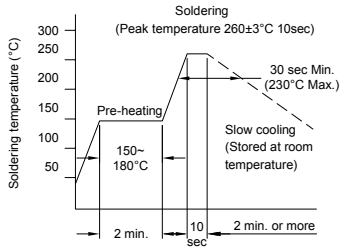
6. RELIABILITY & TEST CONDITION :

ITEM	PERFORMANCE	TEST CONDITION
Mechanical		
Substrate bending	ΔL/Lo≦±10% 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 secs)  PRESSURE ROD figure-1
Vibration	ΔL/Lo≦±10% 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 cowered with new solder smoothly when the sample is taken out of the solder bath.
Resistance to Soldering heat (reflow soldering)	There shall be no damage or problems.	 The specimen shall be passed through the reflow oven with the condition shown in the above profile for 1 time. The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made.

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6. RELIABILITY & TEST CONDITION :

<table>
<tr><th>ITEM</th><th>PERFORMANCE</th><th>TEST CONDITION</th></tr>
<tr><td colspan="3">Electrical Characteristics Test</td></tr>
<tr><td>Dielectric withstand voltage</td><td>There shall be no damage or problems.</td><td>AC 100V voltage shall be applied for 1 minute across the top surface and the terminal of this sample</td></tr>
<tr><td>Temperature characteristics</td><td>ΔL/L20°C≦±10%
0~2000 ppm/°C</td><td>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 ΔL/L20°C≦±10%.</td></tr>
<tr><td>High temperature storage</td><td>ΔL/Lo≦±10%
There shall be no mechanical damage.</td><td>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.</td></tr>
<tr><td>Low temperature storage</td><td>ΔL/Lo≦±10%
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°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.</td></tr>
<tr><td>Change of temperature</td><td>ΔL/Lo≦±10%
There shall be no other damage of problems</td><td>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.
<table>
<tr><th></th><th>Temperature</th><th>Duration</th></tr>
<tr><td>1</td><td>-25±3°C
(Thermostat No.1)</td><td>30 min.</td></tr>
<tr><td>2</td><td>Standard
atmospheric</td><td>5 sec. or less
No.1→No.2</td></tr>
<tr><td>3</td><td>85±2°C
(Thermostat No.2)</td><td>30 min.</td></tr>
<tr><td>4</td><td>Standard
atmospheric</td><td>5 sec. or less
No.2→No.1</td></tr>
</table></td></tr>
<tr><td>Moisture storage</td><td>ΔL/Lo≦±10%
There shall be no mechanical damage.</td><td>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.</td></tr>
</table>

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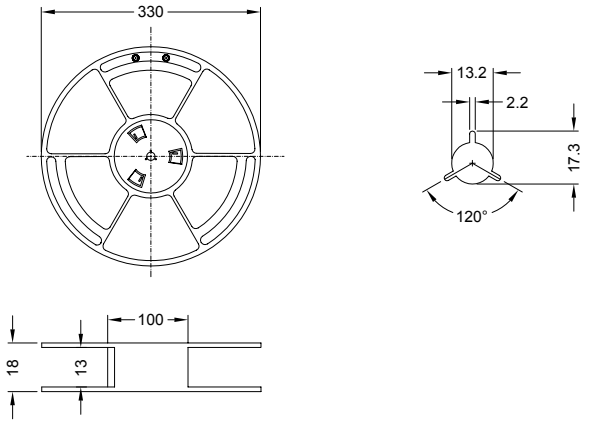
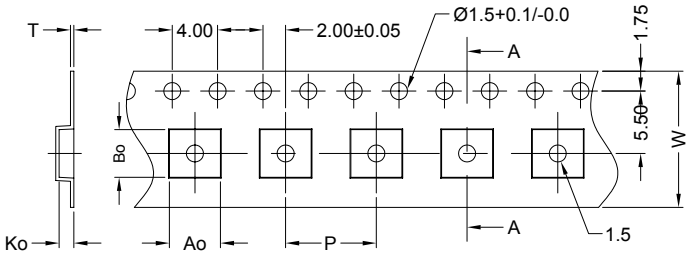
7. PACKAGING INFORMATION :

7-1. Reel Dimension (mm)

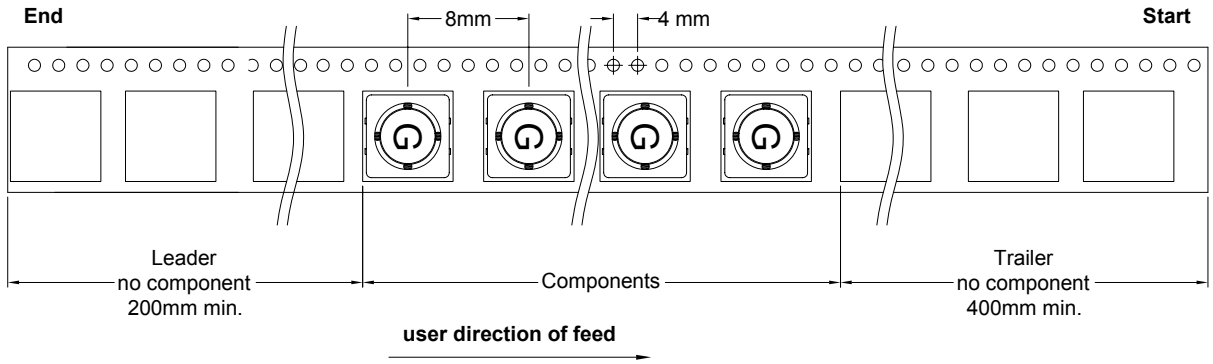


7-2 CARRIER TAPE DIMENSIONS (mm)



Ao	Bo	Ko	W	P	T
4.5mm	4.2mm	1.55mm	12mm	8.0mm	0.3mm

7-3 TAPING DIMENSIONS (mm)



7-4 QUANTITY

3000pcs/Reel

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

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