

SMD POWER INDUCTORS (PRELIMINARY)

SPH5020FT SERIES

1. PART NO. EXPRESSION :

SPH5020FT-1R2NZF

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

(a) Series code

(b) Dimension code

(c) Powder coating type

(d) Taping package

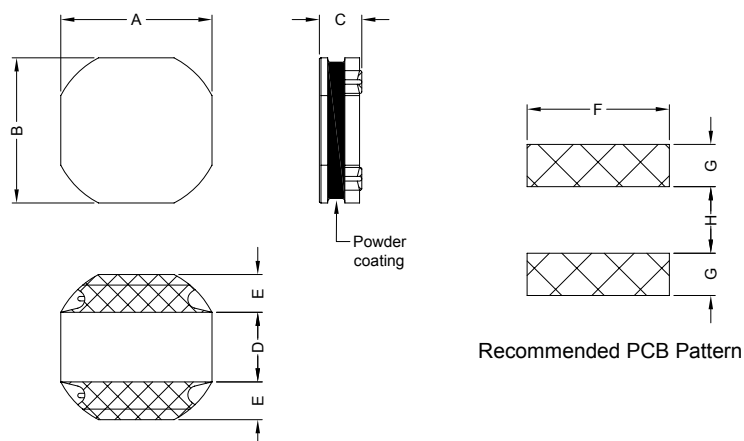
(e) Inductance code : 1R2 = 1.2uH

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

(g) Z : Standard part

(h) F : RoHS Compliant

2. CONFIGURATION & DIMENSIONS :



Unit:m/m

A	B	C	D	E	F	G	H
5.0 $\pm$ 0.2	4.9 $\pm$ 0.2	2.0 Max.	2.2 Typ.	1.35 Typ.	4.7 Typ.	1.4 Typ.	2.2 Typ.

3. MATERIALS :

(a) Core : Ferrite

(b) Wire : Polyurethane Enamelled Copper Wire

(c) Solder : M35E

(d) Coating : Powder Coating



RoHS Compliant

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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 (μH)	Test Frequency (Hz)	RDC ($\text{m}\Omega$) $\pm 20\%$	IDC1 (A)	IDC2 (A)
SPH5020FT-1R0NZF	1.0 $\pm 30\%$	0.1V/100K	21	4.40	3.50
SPH5020FT-1R2NZF	1.2 $\pm 30\%$	0.1V/100K	21	4.40	3.50
SPH5020FT-1R5NZF	1.5 $\pm 30\%$	0.1V/100K	26	3.50	3.10
SPH5020FT-2R2NZF	2.2 $\pm 30\%$	0.1V/100K	35	3.00	2.60
SPH5020FT-3R3NZF	3.3 $\pm 30\%$	0.1V/100K	48	2.60	2.20
SPH5020FT-4R7MZF	4.7 $\pm 20\%$	0.1V/100K	60	2.00	2.00
SPH5020FT-6R8MZF	6.8 $\pm 20\%$	0.1V/100K	90	1.60	1.65
SPH5020FT-100MZF	10 $\pm 20\%$	0.1V/100K	120	1.30	1.45
SPH5020FT-220MZF	22 $\pm 20\%$	0.1V/100K	260	0.90	1.00

**RoHS Compliant**

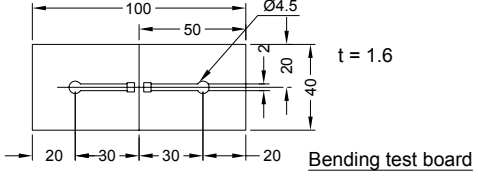
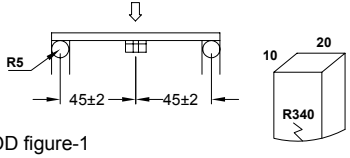
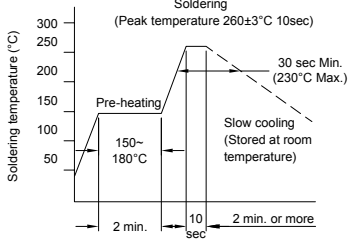
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6. RELIABILITY & TEST CONDITION :

ITEM	PERFORMANCE	TEST CONDITION
Mechanical		
Substrate bending	$\Delta L/L_0 \leq \pm 10\%$ 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>Bending test board</p>  <p>PRESSURE ROD figure-1</p>
Vibration	$\Delta L/L_0 \leq \pm 10\%$ 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>
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 & 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	$\Delta L/L_{20^\circ\text{C}} \leq \pm 10\%$ 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	$\Delta L/L_0 \leq \pm 10\%$ 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	$\Delta L/L_0 \leq \pm 10\%$ 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	$\Delta L/L_0 \leq \pm 10\%$ 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. <table border="1"> <thead> <tr> <th></th><th>Temperature</th><th>Duration</th></tr> </thead> <tbody> <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> </tbody> </table>		Temperature	Duration	1	-25±3°C (Thermostat No.1)	30 min.	2	Standard atmospheric	5 sec. or less No.1→No.2	3	85±2°C (Thermostat No.2)	30 min.	4	Standard atmospheric	5 sec. or less No.2→No.1
	Temperature	Duration															
1	-25±3°C (Thermostat No.1)	30 min.															
2	Standard atmospheric	5 sec. or less No.1→No.2															
3	85±2°C (Thermostat No.2)	30 min.															
4	Standard atmospheric	5 sec. or less No.2→No.1															
Moisture storage	$\Delta L/L_0 \leq \pm 10\%$ 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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