

Wire Wound Chip Inductors

LPI1210FT Series



INTRODUCTION

Product : LPI Miniature SMD Inductor For Power Line

Size : 1210

The LPI series are low profile inductor used in notebook, PC, cellular phone backlight, inverter and etc. The devices are designed smallest possible sizes and highest performance.

FEATURES

- Operating temperature -40 to +85°C for ferrite series.
- Excellent solderability and resistance to soldering heat.
- Suitable for reflow soldering.
- High reliability and easy surface mount assembly.
- Wide range of inductance values are available for flexible needs.

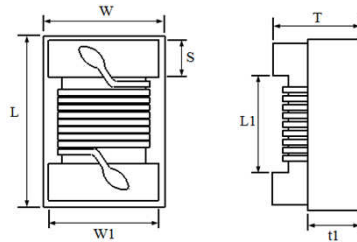
PART NUMBER

LPI 1210 F T 1R0 K - □□

1 2 3 taping 4 5 6

1 Product Type

2 Chip Dimension



Size (inch) mm	Length (L) (inch) mm	Width (W) (inch) mm	Thickness (T) (inch) mm	Terminal (S) (inch) mm	L1 (Ref.) mm	W1 (Ref.) mm	(t ₁) (Ref.) mm
LPI1210 3225	(0.126 ± 0.008) 3.20 ± 0.20	(0.098 ± 0.008) 2.50 ± 0.20	(0.047 max.) (1.20 max.)	(0.020 ± 0.004) 0.50 ± 0.10	2.20	2.40	0.80

3 Material Type F : Ferrite

4 Inductance Value 1R0 = 1.0uH 100 = 10uH

5 Tolerance K = ±10% M = ±20%

6 Internal Code

1 Scope

This specification applies to miniature wire wound inductors for power line.

2 Construction

*Configuration
& Dimension : Please refer to the attached figures and tables.

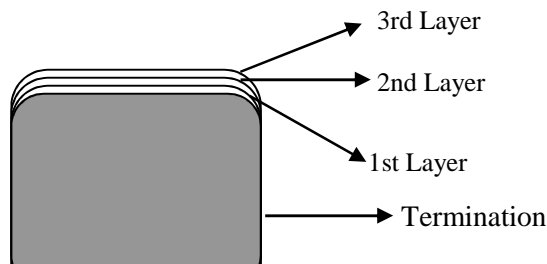
*Terminals : Consist of Ag alloy followed by Nickel, then Sn plating for easier soldering.

3 Operating Temperature Range

Operating Temperature Range is the scope of ambient temperature at which the inductor can be operated continuously at rated current.

*Temp. Range : Ferrite material : $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$

4 Ingredient of terminals electrode



Ferrite Type :

1st Layer : Ag

2nd Layer : Nickel (Ni)

3rd Layer : Tin (Sn)

5 Characteristics

Standard Atmospheric Conditions

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests are as follows:

Ambient Temperature : $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$

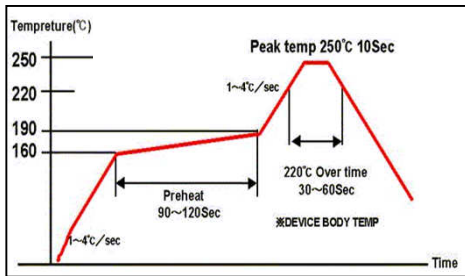
Relative Humidity : 60% to 70%

Air Pressure : 86Kpa to 106Kpa

Temperature Profile

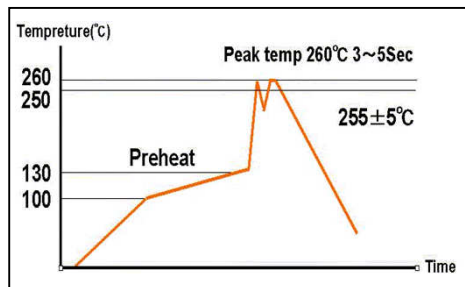
1 Reflow Temperature Profile

(Temperature of the mounted parts surface on the printed circuit board)



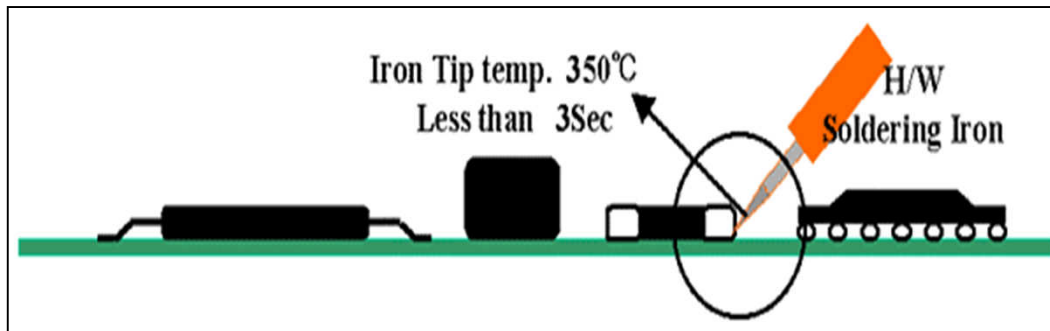
Recommended Peak Temperature : 250°C Max
250°C up /within 10secs
Max. Reflow temperature : 260°C
Gradient of temperature rise : av 1-4°C/sec
Preheat : 160-190°C/within 90-120secs
220°C up /within 30-60secs
Composition of solder Sn-3Ag-0.5Cu

2 Dip Temperature



Solder bathtub temperature : 260°C max
within 5secs.
Preheating temperature : 100~130°C
deposit solder temperature.
Composition of solder Sn-3Ag-0.5Cu

3 Soldering iron tip temperature : 350°C max / within 3 seconds.



LPI1210FT Series

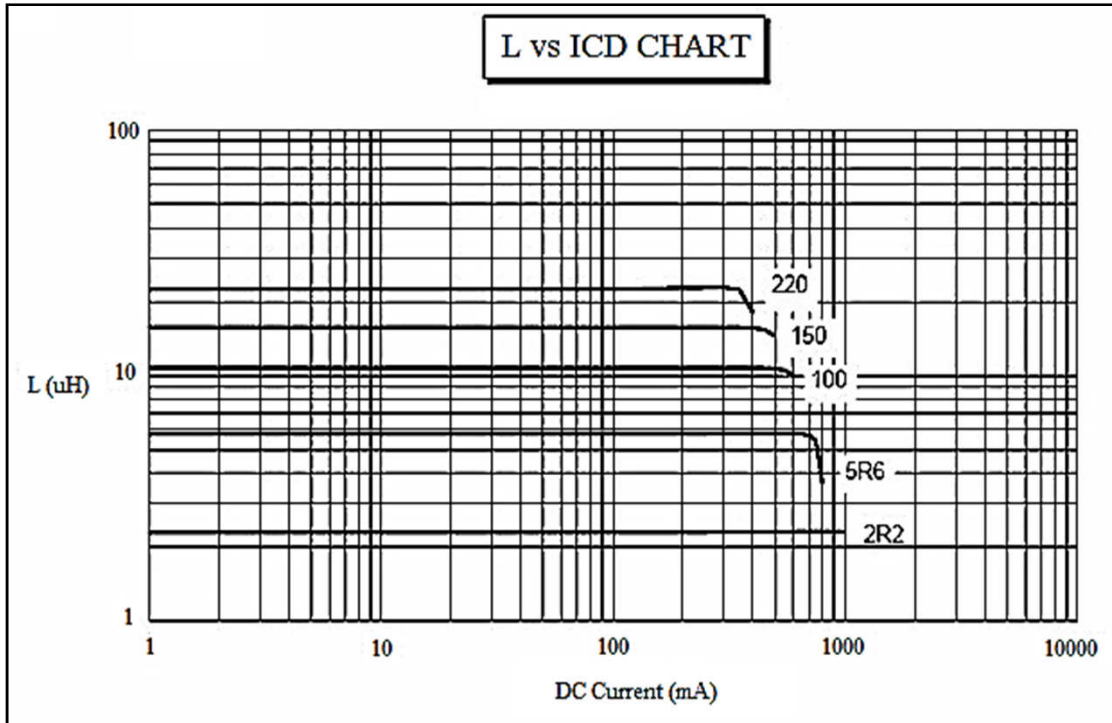
Part No.	Inductance ¹ (uH)	Tolerance	Q ² Min	S.R.F. ³ Min (MHz)	RDC ⁴ Max (Ω)	Isat ⁵ Max (mA)	IDC ⁶ Max (mA)	Marking
LPI1210FT 2R2 □-□□	2.2 @ 100KHz	K, M	10 @ 1MHz	150	0.50	850	800	-
LPI1210FT 2R7 □-□□	2.7 @ 100KHz	K, M	10 @ 1MHz	120	0.60	750	700	-
LPI1210FT 3R3 □-□□	3.3 @ 100KHz	K, M	10 @ 1MHz	100	0.75	700	650	-
LPI1210FT 3R9 □-□□	3.9 @ 100KHz	K, M	10 @ 1MHz	90	0.80	650	600	-
LPI1210FT 4R7 □-□□	4.7 @ 100KHz	K, M	10 @ 1MHz	80	0.95	600	550	-
LPI1210FT 5R6 □-□□	5.6 @ 100KHz	K, M	10 @ 1MHz	65	1.00	550	520	-
LPI1210FT 6R8 □-□□	6.8 @ 100KHz	K, M	10 @ 1MHz	55	1.10	500	480	-
LPI1210FT 8R2 □-□□	8.2 @ 100KHz	K, M	10 @ 1MHz	40	1.30	480	450	-
LPI1210FT 100 □-□□	10 @ 100KHz	K, M	10 @ 1MHz	36	1.50	450	430	-
LPI1210FT 120 □-□□	12 @ 100KHz	K, M	10 @ 1MHz	34	1.60	420	400	-
LPI1210FT 150 □-□□	15 @ 100KHz	K, M	10 @ 1MHz	32	1.90	400	350	-
LPI1210FT 180 □-□□	18 @ 100KHz	K, M	10 @ 1MHz	30	2.90	350	320	-
LPI1210FT 220 □-□□	22 @ 100KHz	K, M	10 @ 1MHz	30	3.50	320	300	-
LPI1210FT 270 □-□□	27 @ 100KHz	K, M	10 @ 1MHz	25	4.20	280	250	-
LPI1210FT 330 □-□□	33 @ 100KHz	K, M	10 @ 1MHz	20	5.00	250	220	-

1. Inductance is measured in HP-4284A/4285A RF LCR meter with SMD-A fixture.
2. Q is measured in HP-4284A/4285A RF LCR meter with SMD-A fixture.
3. SRF is measured in ENA E5071B network analyzer or equivalent.

4. RDC is measured in HP-4338B milliohmeter or equivalent.
5. Inductance drop 10% from the initial value.
6. For 25°C rise.

Remarks :

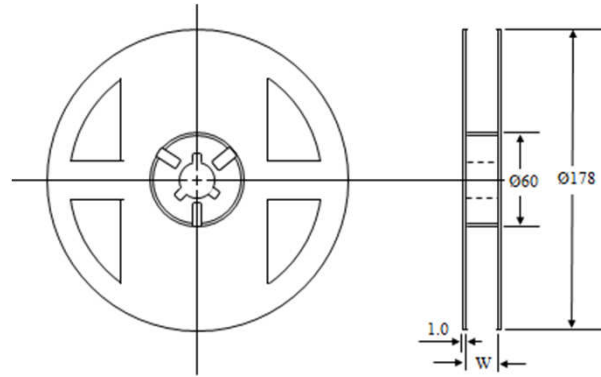
Unit weight = 0.045g (for ref.)



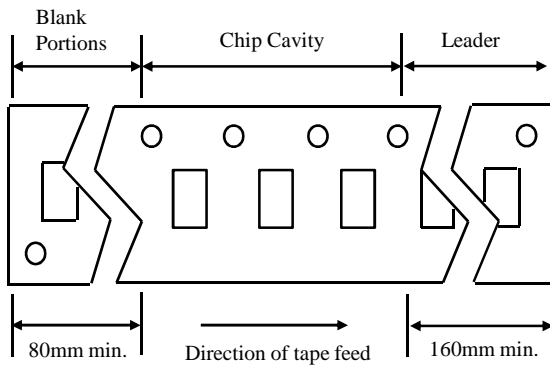
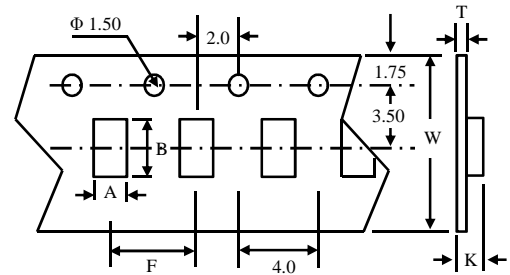
ITEM		CONDITION	SPECIFICATION
Electrical Characteristics	Inductance and Tolerance	Measuring Frequency : As shown in Product Table	Within Specified Tolerance
	Quality Factor	Measuring Temperature : +25°C	
	Insulation Resistance	Measured at 100V DC between inductor terminals and center of case.	1000 mega ohms minimum
	Dielectric Withstanding Voltage	Measured at 500V AC between inductor terminals and center of case for a maximum of 1 minute.	No damage occurs when the test voltage is applied.
	Temperature Coefficient of Inductance (TCL)	Over -40°C to +85°C at frequency specified in Product Table.	+25 to 500 ppm/°C $TCL = \frac{L1 - L2}{L1(T1 - T2)} \times 10^6$ (ppm /°C)
Mechanical Characteristics	Component Adhesion (Push Test)	The component shall be reflow soldered onto a P.C. Board (240°C ± 5°C for 20 seconds). Then a dynamometer force gauge shall be applied to any side of the component.	Minimum 1Kg
	Drop Test	The inductor shall be dropped two times on the concrete floor or the vinyl tile from 1M naturally.	Change In Inductance: No more than 5%
	Thermal Shock Test	Each cycle shall consist of 30 minutes at -40°C followed by 30 minutes at +85°C with a 5 minutes transition time between temperature extremes. Test duration is 10 cycles.	Change In Q: No more than 10% Change In Appearance: Without distinct damage
Endurance Characteristics	Solderability	Dip pads in flux and dip in solder pot containing lead free solder at 240°C ± 5°C for 5 seconds.	A minimum of 80% of the metalized area must be covered with solder.
	Resistance to Soldering Heat	Dip the components into flux and dip into solder pot containing lead free solder at 260°C ± 5°C for 5 ± 2 seconds.	Change In Inductance: No more than 5%
	Vibration (Random)	Inductors shall be randomly vibrated at amplitude of 1.5mm and frequency of 10-55Hz : 0.04G/Hz for a minimum of 15 minutes per axis for each of the three axes.	Change In Q: No more than 10%
	Cold Temperature Storage	Inductors shall be stored at temperature of -40°C ± 2°C for 1000hrs (+48 -0 hrs.) Then inductors shall be subjected to standard atmospheric conditions for 1 hour. After that, measurement shall be made.	Change In Appearance: Without distinct damage
	High Temperature Storage	Inductors shall be stored at temperature of 85°C ± 2°C for 1000hrs (+48 -0 hrs.) Then inductors shall be subjected to standard atmospheric conditions for 1 hour. After that, measurement shall be made.	
	Moisture Resistance	Inductors shall be stored in the chamber at 45°C at 90-95 R.H. for 1000 hours. Then inductors are to be tested after 2 hours at room temperature.	Inductors shall not have a shorted or open winding.
	High Temperature with Loaded	Inductors shall be stored in the chamber at +85°C for 1000 hours with rated current applied. Inductors shall be tested at the beginning of test at 500 hours and 1000 hours. Then inductors are to be tested after 1 hour at room temperature.	

LPI1210FT Series

Type	Pcs/Reel
LPI1210	2,000

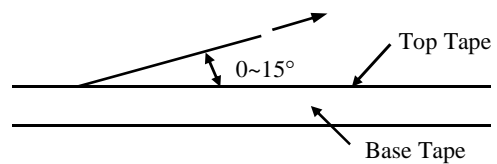


Type	Chip Cavity		Insert Pitch	Tape Thickness		
	A	B	F	K	T	W
LPI1210	2.80	3.50	4.00	1.34	0.23	8.00



Top Tape Strength

The top tape requires a peel-off force of 0.2 to 0.7N in the direction of the arrow as illustrated below.



Dimensions (unit : m/m)

Type	A	B	C
LPI1210	4.00	1.70	2.82

Recommended Pattern

