

I. SCOPE :

This specification applies to the Pb Free Wound Chip Inductors for
MLSF-241715-SERIES

PRODUCT IDENTIFICATION

MLSF- 241715 - 100 K

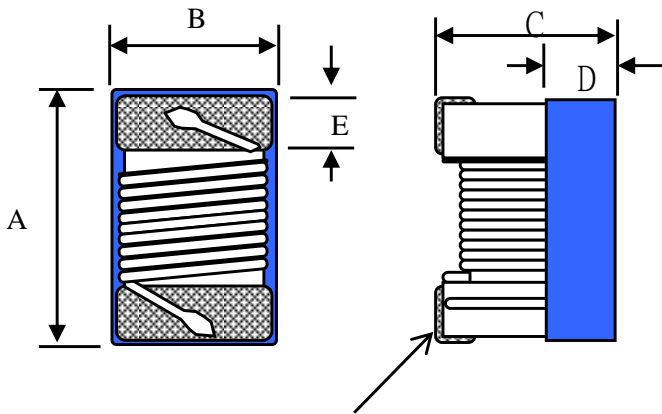
① ② ③ ④

- ① Product Code
- ② Dimensions Code
- ③ Inductance Code
- ④ Tolerance Code
- ⑤ Inner Control Code

II. INDEX :

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| 7. PACKAGING | Please see (6) | 7/8 , 8/8 |
| 8. ATTENTION IN CASE OF USING | Please see (7) | 8/8 |
| 9. STANDARD TEST CONDITIONS Unless otherwise specified, test condition should be Temp. = 20±5℃ , Humidity = 35~85% But if needed, then test condition should be Temp. = 20±2℃ , Humidity = 65±5% | | |
| 10. SHELF LIFE Storage Condition: The temperature should be within -40℃ ~105℃ and humidity should be less than 75%RH. The product should be used within 12 months from the time of delivery. In addition, suggest to use product within 6 months from the time of delivery. | | |

(1) SHAPES AND DIMENSIONS



| | | |
|----|-----------|----|
| A: | 2.40 Max. | mm |
| B: | 1.72 Max. | mm |
| C: | 1.52 Max. | mm |
| D: | 0.70 Typ. | mm |
| E: | 0.50 Typ. | mm |

Terminal wraparound :
0.15mm Min. both ends

(2) ELECTRICAL SPECIFICATIONS

SEE TABLE 1

TEST INSTRUMENTS

L,Q,SRF : HP 4291B IMPEDANCE ANALYZER (or equivalent)

RDC : CHROMA MODEL 16502 MILLIOHMMETER (or equivalent)

(3) CHARACTERISTICS

(3)-1 Operate temperature range $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
(Including self temp. rise)

(3)-2 Storage temperature range $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$

MATERIALS

| NO. | ITEM | DESCRIPTION & TYPE |
|-----|---------|--------------------|
| 1 | DR CORE | FERRITE |
| 2 | WIRE | COPPER WIRE |
| 3 | Epoxy | UV Epoxy |



MAG.LAYERS

TABLE 1

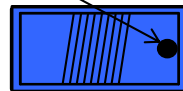
| MAGLAYERS PT/NO. | Inductance L(μH) | Percent Tolerance | Quality Typ. | L,Q Freq. (MHz) | SRF (MHz)Min. | DCR (Ω) Max. | IDC (mA) | Color Coding |
|---------------------|---------------------|----------------------|-----------------|--------------------|------------------|-----------------|-------------|-----------------|
| MLSF-241715-78N□ | 0.078 | K | 19 | 7.9 / 7.9 | 1440 | 0.06 | 2000 | Black |
| MLSF-241715-90N□ | 0.09 | K | 19 | 7.9 / 7.9 | 1200 | 0.07 | 2000 | Red |
| MLSF-241715-R11□ | 0.11 | J,K | 19 | 7.9 / 7.9 | 1200 | 0.07 | 2000 | Brown |
| MLSF-241715-R47□ | 0.47 | J,K | 19 | 7.9 / 7.9 | 480 | 0.40 | 800 | Red |
| MLSF-241715-R56□ | 0.56 | J,K | 35 | 7.9 / 25.5 | 480 | 0.40 | 800 | Yellow |
| MLSF-241715-R68□ | 0.68 | J,K | 20 | 7.9 / 7.9 | 480 | 0.40 | 800 | Orange |
| MLSF-241715-R91□ | 0.91 | J,K | 20 | 7.9 / 7.9 | 400 | 0.69 | 700 | Yellow |
| MLSF-241715-1R0□ | 1.0 | J,K | 20 | 7.9 / 7.9 | 400 | 0.69 | 700 | Yellow |
| MLSF-241715-1R2□ | 1.2 | J,K | 20 | 7.9 / 7.9 | 330 | 0.83 | 700 | Red |
| MLSF-241715-1R5□ | 1.5 | J,K | 20 | 7.9 / 7.9 | 330 | 0.83 | 700 | Green |
| MLSF-241715-1R8□ | 1.8 | J,K | 20 | 7.9 / 7.9 | 300 | 1.00 | 650 | Blue |
| MLSF-241715-2R2□ | 2.2 | J,K | 20 | 7.9 / 7.9 | 250 | 1.10 | 650 | Violet |
| MLSF-241715-2R7□ | 2.7 | J,K | 23 | 7.9 / 7.9 | 200 | 1.25 | 650 | Gray |
| MLSF-241715-3R3□ | 3.3 | J,K | 23 | 7.9 / 7.9 | 160 | 1.45 | 650 | White |
| MLSF-241715-3R9□ | 3.9 | J,K | 23 | 7.9 / 7.9 | 90 | 1.50 | 600 | Black |
| MLSF-241715-4R7□ | 4.7 | J,K,M | 20 | 7.9 / 7.9 | 70 | 1.60 | 530 | Brown |
| MLSF-241715-5R6□ | 5.6 | J,K | 20 | 7.9 / 7.9 | 65 | 1.70 | 500 | Red |
| MLSF-241715-6R8□ | 6.8 | J,K | 20 | 7.9 / 7.9 | 45 | 1.95 | 470 | Orange |
| MLSF-241715-8R2□ | 8.2 | J,K | 16 | 2.5 / 2.5 | 45 | 2.10 | 450 | Yellow |
| MLSF-241715-100□ | 10 | J,K | 16 | 2.5 / 2.5 | 40 | 2.40 | 400 | Green |
| MLSF-241715-120□ | 12 | J,K | 16 | 2.5 / 2.5 | 38 | 3.20 | 360 | Red |
| MLSF-241715-150□ | 15 | J,K | 16 | 2.5 / 2.5 | 30 | 3.55 | 350 | Blue |
| MLSF-241715-180□ | 18 | J,K | 16 | 2.5 / 2.5 | 25 | 4.90 | 300 | Orange |
| MLSF-241715-220□ | 22 | J,K | 16 | 2.5 / 2.5 | 20 | 5.45 | 270 | Violet |
| MLSF-241715-270□ | 27 | J,K | 16 | 2.5 / 2.5 | 19 | 7.80 | 240 | Gray |
| MLSF-241715-330□ | 33 | J,K | 16 | 2.5 / 2.5 | 16 | 9.50 | 210 | White |
| MLSF-241715-470□ | 47 | J,K | 16 | 2.5 / 2.5 | 15 | 14.50 | 180 | Brown |

※ 1. □ specify the inductance tolerance, J(±5%), K(±10%), M(±20%)

※ 2. IDC : Based on inductance change ($\Delta L/L_0$: drop 10% Max.) @ ambient temp. 25°C

3. Color coding is not necessarily same position,
and Color coding non-directional printing

1st Code



COLOR CODING



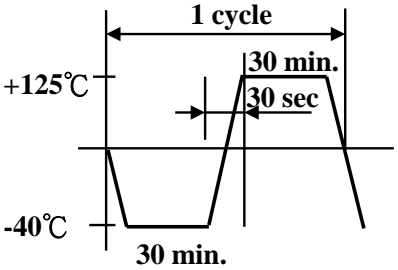
MAG.LAYERS

(4) RELIABILITY TEST METHOD

MECHANICAL

| Item | Specifications | Test conditions |
|--------------------------------|--|---|
| Solderability | The metalized area must have 90% minimum solder coverage. | Dip pads in flux and dip in solder pot (96.5 Sn/3.5 Ag solder) at 255°C ±5°C. |
| Resistance to soldering heat | There must be no case deformation or change in dimensions. Inductance must not change more than the stated tolerance. | Inductors shall be reflowed onto a PC board using 96.5 Sn/3.5 Ag solder paste. Solder process shall be at a maximum temperature of 260°C. For 96.5 Sn/3.5 Ag solder paste:>217°C for 90 seconds |
| Vibration | There must be no case deformation or change in dimensions. Inductance must not change more than the stated tolerance. | Solder specimen inductor on the test printed circuit board. Apply vibrations in each of the x,y and z directions for 2 hours for a total of 6 hours. Frequency : 10~50 Hz Amplitude : 1.5mm |
| High temperature resistance | There must be no case deformation or change in dimensions. Inductance must not change more than the stated tolerance. | Inductors shall be subjected to temperature 125±2°C for 50±12 hours. Measure the test items after leaving the inductors at room temperature and humidity for 2 hours. |
| Static Humidity | Inductors must not have a shorted or open winding. | Inductors shall be subjected to temperature 85±2°C and 90 to 95%RH. for ten 24-hours. Measure the test items after leaving the inductors at room temperature and humidity for 2 hours. |
| Component adhesion (push test) | Inductors shall be subjected to 1.0Kg | Inductors shall be reflow soldered (255°C ±5°C for 10 seconds) to a tinned copper substrate. A force gauge shall be applied to the side of the component. The device must withstand the stated force without a failure of the termination. |

MECHANICAL

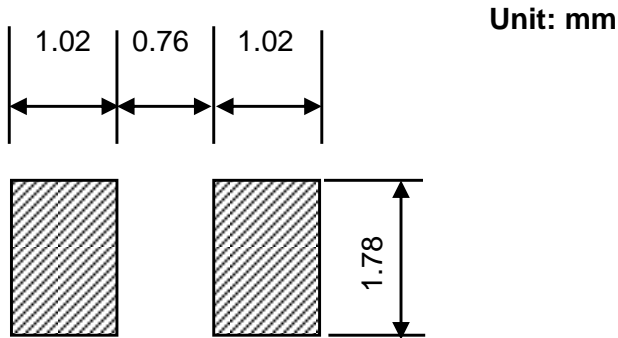
| Item | Specifications | Test conditions |
|-------------------------|--|--|
| Low temperature storage | There must be no case deformation or change in dimensions. Inductance must not change more than the stated tolerance. | Inductors shall be subjected to temperature $-40\pm 2^{\circ}\text{C}$ for 48 ± 12 hours. Measure the test items after leaving the inductors at room temperature and humidity for 1 to 2 hours. |
| Resistance to solvent | There must be no case deformation, change in dimensions, or obliteration of marking. | Inductors must withstand 6 minutes of alcohol or water. |
| Thermal shock | There must be no case deformation or change in dimensions. Inductance must not change more than the stated tolerance. | Inductors shall be subjected to 10 cycles to the the following temperature cycle:  Measure the test items after leaving the inductors at room temperature and humidity for 2 hours. |



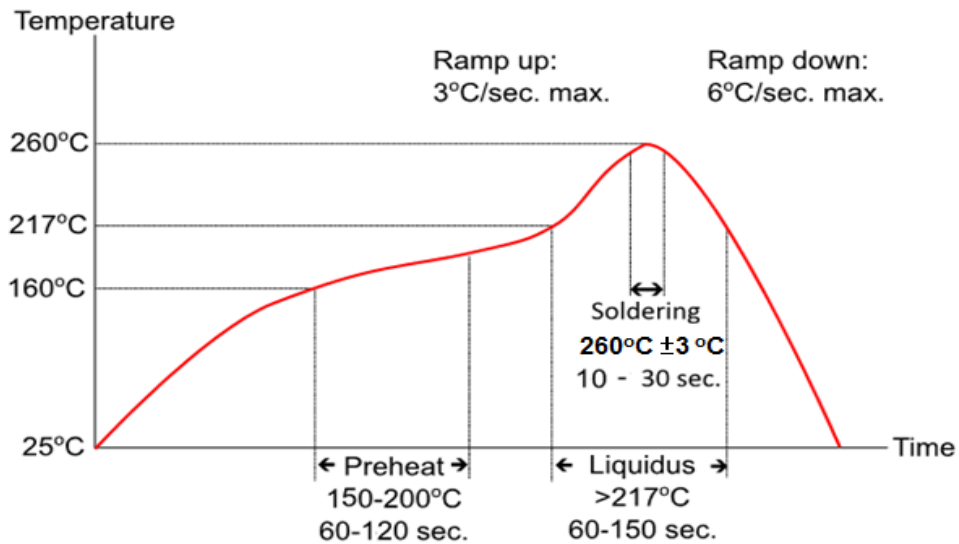
(5) RECOMMENDED SOLDERING CONDITIONS

(Please use this product by reflow soldering)

(5)-1 RECOMMENDED FOOTPRINT



(5)-2 RECOMMENDED REFLOW PATTERN



(5)-3 IRON SOLDERING

Use a solder iron of less than 30W when soldering ,do not allow the soldering iron tip directly touch the Ferrite body outside of terminal electrode.

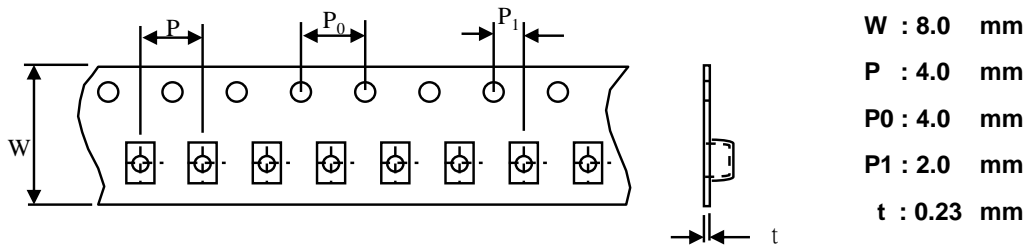
3 seconds max. at 260°C.



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(6) PACKAGING

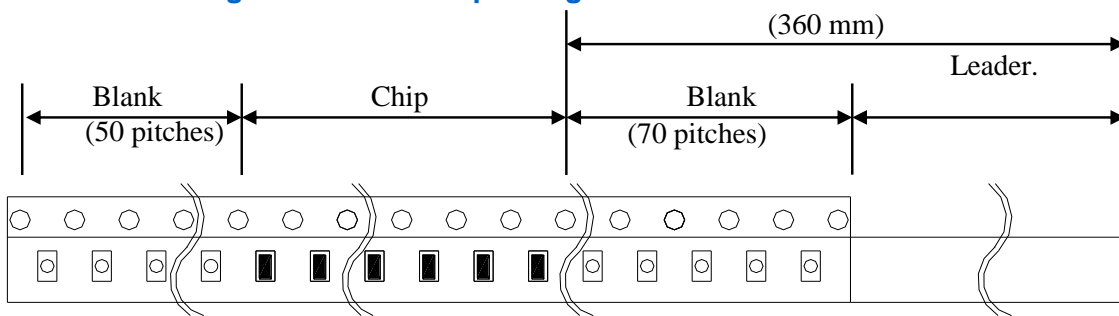
(6-1) CARRIER TAPE DIMENSIONS (mm)



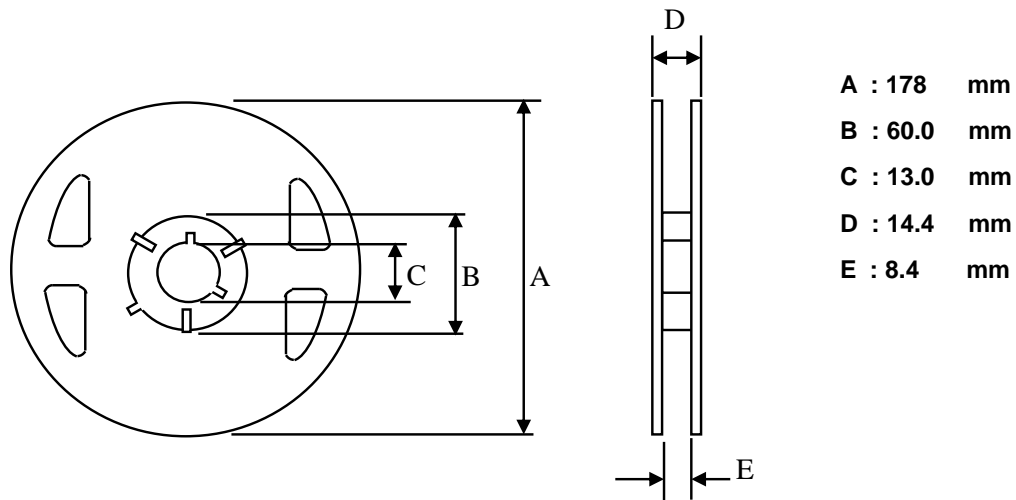
(6-2) TAPING DIMENSIONS (mm)

There shall not continuation more than two vacancies of the product

*Marking non-directional printing



(6-3) REEL DIMENSIONS (mm)



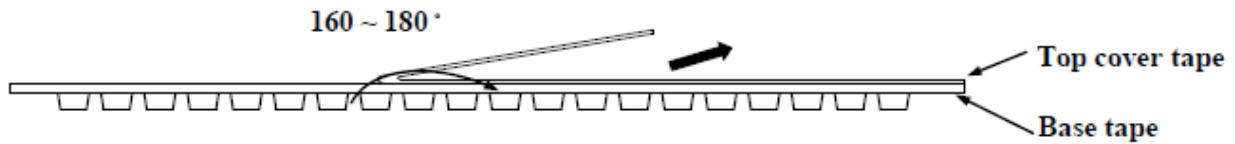
(6)-4 COVER TAPE PEEL STRENGTH

The force for tearing off cover tape is 0.1~0.6(N) in the arrow direction at the following conditions:

Temperature : 5 ~ 35°C

Humidity : 45 ~ 85%

Atmospheric pressure : 860 ~ 1060 hpa



(6)-5 QUANTITY

2000 pcs/Reel

(6)-6 The products are packaged so that no damage will be sustained.

(7) ATTENTION IN CASE OF USING

In case of using product ,please avoid following matters:

Splashing water or salt water

Dew condensens

Toxic gas (Hydrogen sulfide, Sulfurous acid ,Chlorine, Ammonia)

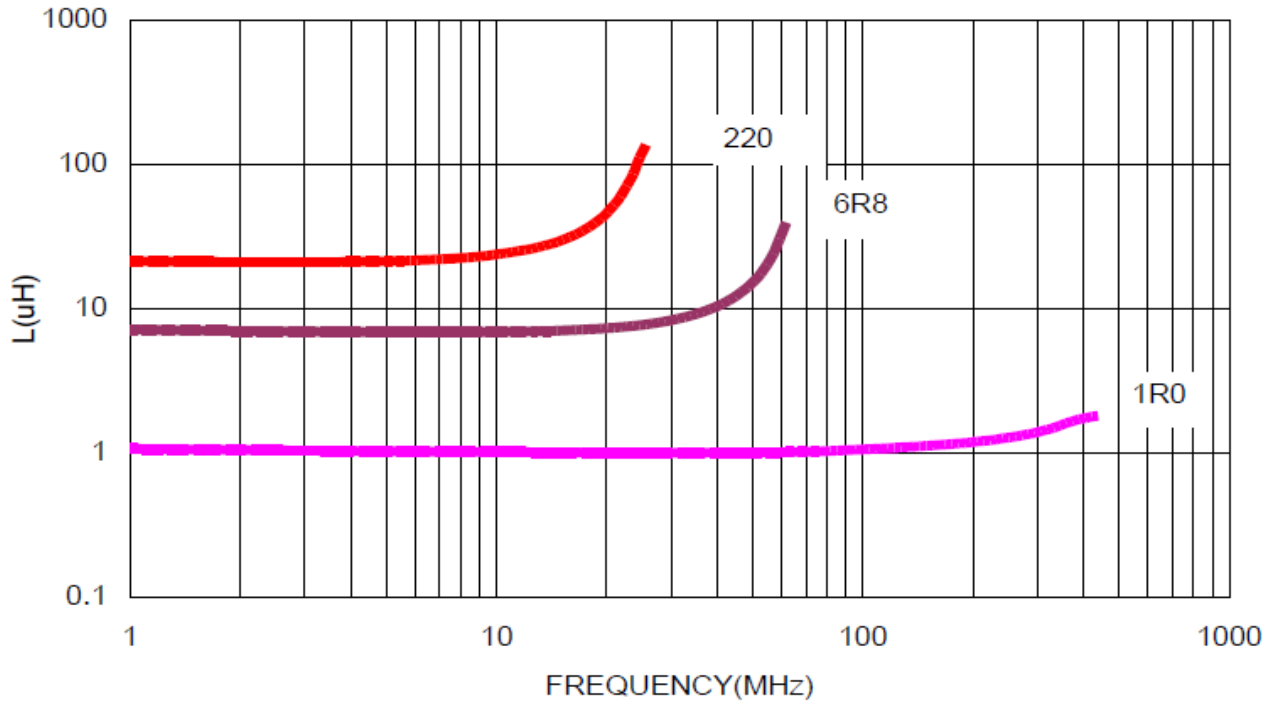
Vibrations or shocks which exceed the specified condition

Please be careful for the stress to this product by board flexure or something after the mounting.

Please note that the contents may change without any prior notice due to reasons such as upgrading.

TYPICAL ELECTRICAL CHARACTERISTICS

INDUCTANCE vs FREQUENCY



Q vs FREQUENCY

