

PRODUCT SPECIFICATION

SPEC. NO: T-0622-002z

DATE: Aug. 21, 2018

CUSTOMER'S PRODUCT NAME:

EMTEK PRODUCT NAME:

LCF1210-Series

THIS SPECIFICATION IS:

- ☐ FULLY ACCEPTED
☐ DENIED
☐ ACCEPTED UNDER THE FOLLOWING CONDITIONS



SIGNATURE:

DATE:

NAME(PRINT):

TITLE:

 **EMTEK CO., LTD.**

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1. Scope

This specification applies Ferrite Chip Inductance LCF1210-Series to be delivered to user.

2. Product Identification

LCF 1210 - 100 □ - T

(1) (2) (3) (4) (5)

(1) Product name

(2) Shapes and dimensions

(3) Inductance

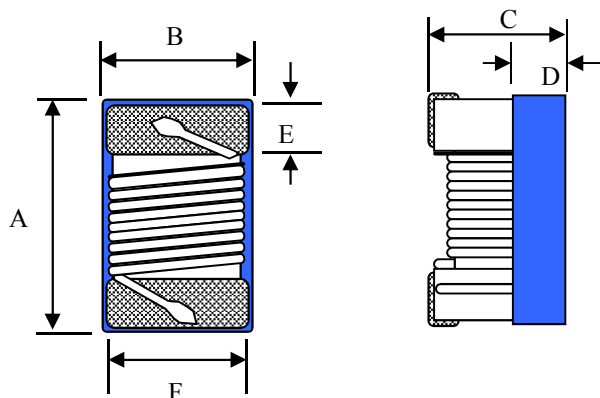
100 : 10 uH

(4) Tolerance

J=±5% , K=±10%

(5) Taping Type

3. Shapes and Dimensions



A max. : 3.60 mm

B max. : 2.90 mm

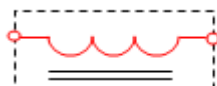
C max. : 2.50 mm

D ref. : 1.10 mm

E : 0.5 ± 0.1 mm

F ref. : 2.40 mm

Equivalent circuit



No Polarity

Drawn by	Checked by	Approved by
Cindy Jun.11.2018	Therry Jun.11.2018	Lin Jun.11.2018

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4. Electrical Characteristics

Customer Part Number	Our Product Part Number	Inductance (uH)/MHz	Inductance Tolerance	Q/MHz Min.	SRF(Min.) (MHz)	Rdc (Ω)Max.	Isat Max. (mA)	Irms Typ. (mA)	Color Coding		
									1st	2nd	3rd
	LCF1210-R27□-T	0.27/25	J K	40/25	500	0.080	3900	3400	Red	Violet	Brown
	LCF1210-R33□-T	0.33/25	K	40/25	500	0.090	3400	2600	Orange	Orange	Brown
	LCF1210-R39□-T	0.39/25	J K	40/25	500	0.090	3100	2200	Orange	White	Brown
	LCF1210-R47□-T	0.47/25	J K	40/25	500	0.090	3200	2400	Yellow	Violet	Brown
	LCF1210-R56□-T	0.56/25	K	40/25	500	0.100	2900	2300	Green	Blue	Brown
	LCF1210-R68□-T	0.68/25	J K	40/25	450	0.120	2500	2300	Blue	Gray	Brown
	LCF1210-R82□-T	0.82/25	J K	40/25	450	0.105	2400	2300	Gray	Red	Brown
	LCF1210-R91□-T	0.91/25	J K	45/25	410	0.165	2100	1600	White	Brown	Brown
	LCF1210-1R0□-T	1.0/7.9	J K	35/7.9	340	0.125	2400	1750	Brown	Black	Red
	LCF1210-1R2□-T	1.2/7.9	K	35/7.9	280	0.135	2400	1650	Brown	Red	Red
	LCF1210-1R5□-T	1.5/7.9	K	30/7.9	160	0.145	2100	1750	Brown	Green	Red
	LCF1210-1R8□-T	1.8/7.9	J K	30/7.9	120	0.160	2100	1450	Brown	Gray	Red
	LCF1210-2R0□-T	2.0/7.9	J K	30/7.9	110	0.165	1800	1450	Red	Black	Red
	LCF1210-2R2□-T	2.2/7.9	J K	30/7.9	100	0.170	1800	1450	Red	Red	Red
	LCF1210-2R5□-T	2.5/7.9	J K	30/7.9	80	0.190	1700	1400	Red	Green	Red
	LCF1210-2R7□-T	2.7/7.9	J K	30/7.9	75	0.185	1500	1300	Red	Violet	Red
	LCF1210-3R3□-T	3.3/7.9	J K	30/7.9	70	0.210	1600	1300	Orange	Orange	Red
	LCF1210-4R7□-T	4.7/7.9	J K	28/7.9	55	0.300	1300	1100	Yellow	Violet	Red



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									1st	2nd	3rd
	LCF1210-5R6□-T	5.6/7.9	J	28/7.9	50	0.350	1100	1000	Green	Blue	Red
			K								
	LCF1210-6R8□-T	6.8/7.9	J	28/7.9	45	0.370	1100	1000	Blue	Gray	Red
			K								
	LCF1210-8R2□-T	8.2/7.9	J	28/7.9	45	0.470	940	900	Gray	Red	Red
			K								
	LCF1210-100□-T	10/2.5	J	22/2.5	47	0.500	990	800	Brown	Black	Orange
			K								
	LCF1210-120□-T	12/2.5	J	22/2.5	42	0.680	770	700	Brown	Red	Orange
			K								
	LCF1210-150□-T	15/2.5	J	22/2.5	34	0.720	740	660	Brown	Green	Orange
			K								
	LCF1210-180□-T	18/2.5	J	22/2.5	28	0.950	630	600	Brown	Gray	Orange
			K								
	LCF1210-220□-T	22/2.5	J	22/2.5	25	1.100	640	550	Red	Red	Orange
			K								
	LCF1210-270□-T	27/2.5	J	20/2.5	18	1.250	600	510	Red	Violet	Orange
			K								
	LCF1210-330□-T	33/2.5	J	20/2.5	13	1.370	490	420	Orange	Orange	Orange
			K								
	LCF1210-390□-T	39/2.5	J	20/2.5	13	1.850	400	400	Orange	White	Orange
			K								
	LCF1210-470□-T	47/2.5	J	20/2.5	12	1.880	470	410	Yellow	Violet	Orange
			K								
	LCF1210-560□-T	56/2.5	J	22/2.5	10	2.750	360	340	Green	Blue	Orange
			K								
	LCF1210-680□-T	68/2.5	J	22/2.5	10	3.000	380	330	Blue	Gray	Orange
			K								
	LCF1210-820□-T	82/2.5	J	22/2.5	10	4.100	300	280	Gray	Red	Orange
			K								
	LCF1210-101□-T	100/1.0	J	15/1.0	8	4.682	310	260	Brown	Black	Yellow
			K								
	LCF1210-121□-T	120/1.0	J	15/1.0	7	5.800	220	240	Brown	Red	Yellow
			K								
	LCF1210-151□-T	150/1.0	J	13/1.0	7	6.102	260	230	Brown	Green	Yellow
			K								

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									1st	2nd	3rd
	LCF1210-181□-T	180/1.0	J	13/1.0	3	7.100	250	210	Brown	Gray	Yellow
			K								
	LCF1210-221□-T	220/1.0	J	13/1.0	3	7.650	220	190	Red	Red	Yellow
			K								
	LCF1210-271□-T	270/1.0	J	13/1.0	3	12.520	150	170	Red	Violet	Yellow
			K								
	LCF1210-331□-T	330/1.0	J	13/1.0	3	12.62	170	160	Orange	Orange	Yellow
			K								
	LCF1210-391□-T	390/1.0	J	13/1.0	3	23.00	120	140	Orange	White	Yellow
			K								
	LCF1210-471□-T	470/1.0	J	13/1.0	3	25.00	135	130	Yellow	Violet	Yellow
			K								
	LCF1210-501□-T	500/1.0	J	13/1.0	2	25.90	100	95	Green	Black	Yellow
			K								
	LCF1210-561□-T	560/1.0	J	13/1.0	2	27.00	100	95	Green	Blue	Yellow
			K								
	LCF1210-681□-T	680/1.0	J	13/1.0	2	31.00	100	95	Blue	Gray	Yellow
			K								
	LCF1210-821□-T	820/1.0	J	10/1.0	2	42.00	100	95	Gray	Red	Yellow
			K								
	LCF1210-102□-T	1000/1.0	J	10/1.0	2	46.00	95	95	Brown	Black	Red
			K								

1. When ordering, please specify tolerance and packaging codes. Ex: LCF1210-4R7K-T

Tolerance : J = $\pm 5\%$, K = $\pm 10\%$

Packaging : Clear tape and reel { standard }.

2. L , Q : Agilent/HP E4991A+ Agilent/HP16197A

(The electrical specification test by the smallest gap position) or HP16193A

3. SRF : Agilent/HP E4991A+ Agilent/HP 16197A

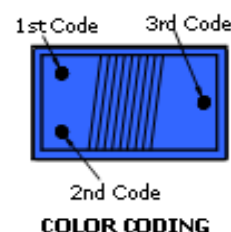
(The electrical specification test by the smallest gap position) or HP16193A

4. Rdc : DIGITAL MILLIOHM METER Chroma 16502, or equivalent.

5. Isat: Idc obtained when Inductance drop 35% from its value without current.

6. Irms for 40°C rise from 25°C ambient.

7. Operating temperature range from -25°C to 105°C.



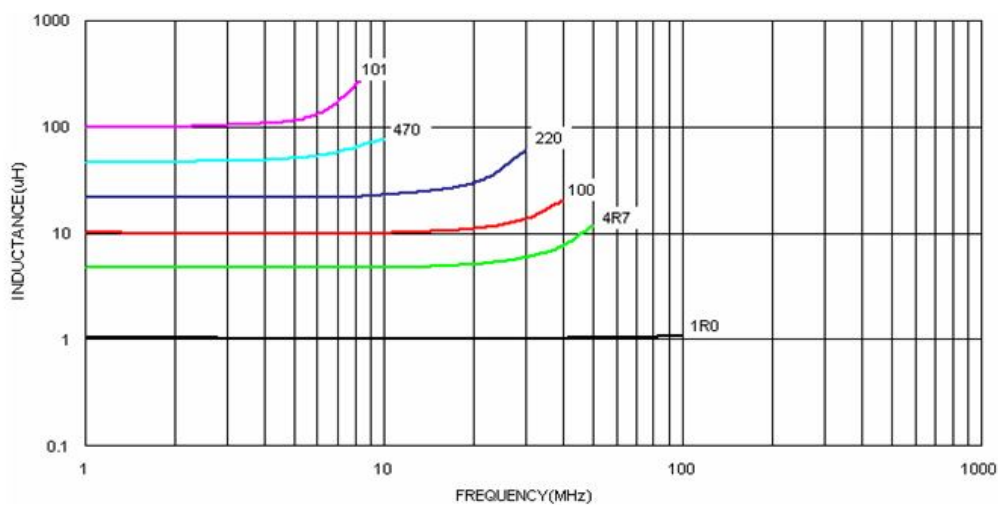
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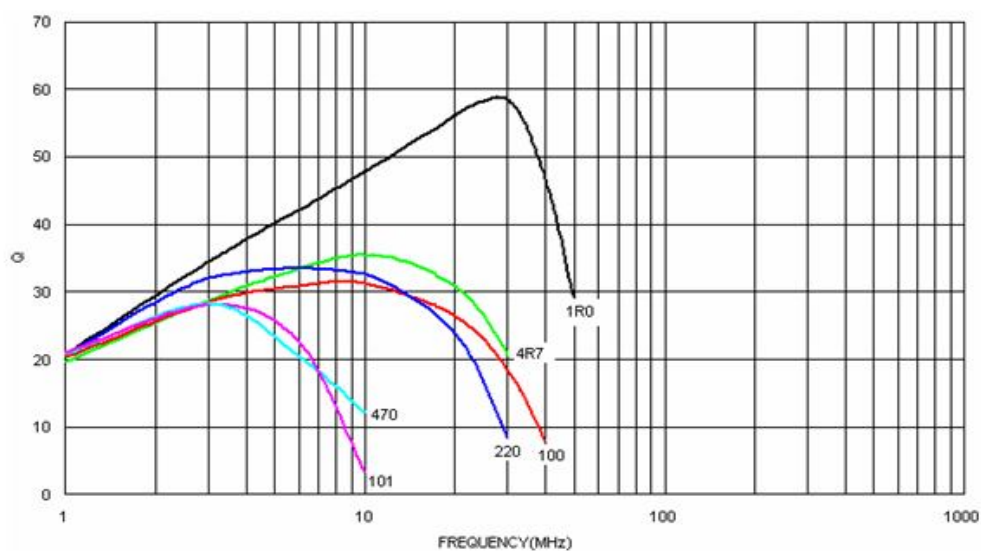
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Inductance v.s. Frequency



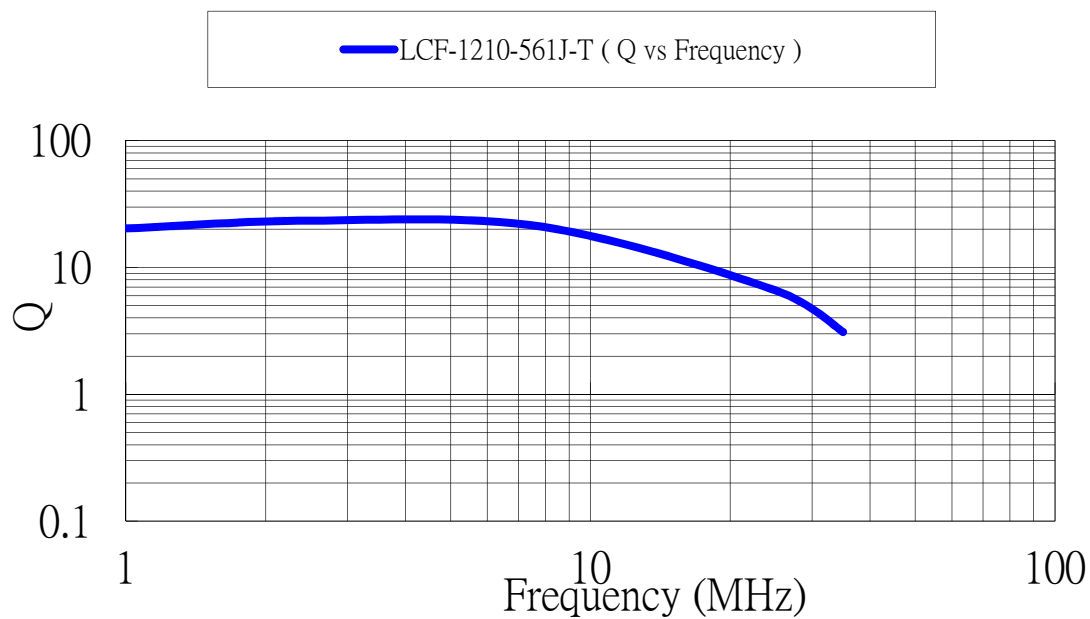
Q v.s. Frequency



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5. Material list

Item	Material
Core	Ferrite core
Wire	Copper wire
Epoxy	UV Epoxy

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6. Reliability Test

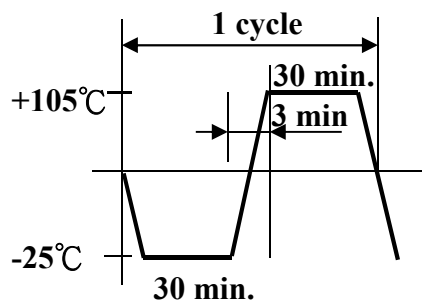
Item	Specifications	Test conditions
Solderability	The metalized area must have 90% minimum solder coverage.	Dip pads in flux and dip in solder pot(96.5 Sn/3.5 Ag solder) at 255°C ±5°C.
Resistance to soldering heat	There must be no case deformation or change in dimensions. Inductance must not change more 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 105±2°C for 500±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 openwinding.	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 1.8Kg	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.

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Item	Specifications	Test conditions
Low 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 $-25\pm 2^{\circ}\text{C}$ for 500 ± 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.

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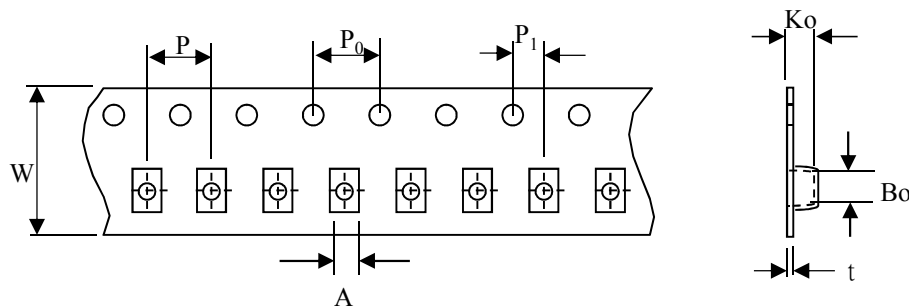
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7. Packaging

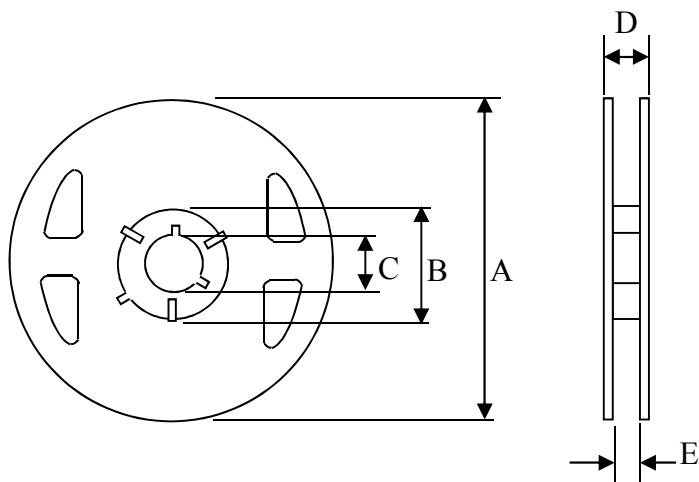
The packaging must be done not to receive any damage during transporting and storing.

7-1 Tape dimensions

(Dimensions in mm; Tolerance : ± 0.1)

Symbol	W	P	P ₀	P ₁	A ₀	Bo	Ko	t
Dimension	8	4	4	2	2.88	3.72	2.5	0.26

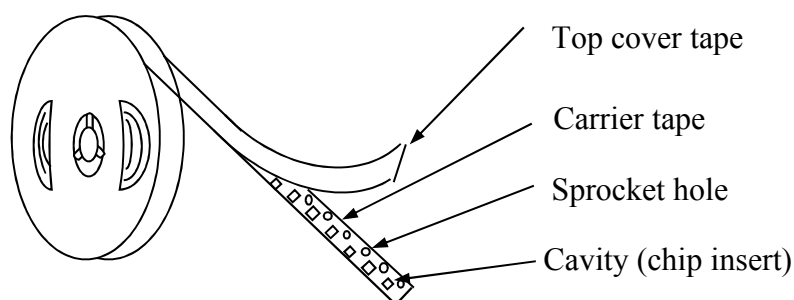
7-2 Reel dimensions



(Dimensions in mm)

Symbol	T
A	180
B	60
C	13
D	14.4
E	8.4

7-3 Tapping figure



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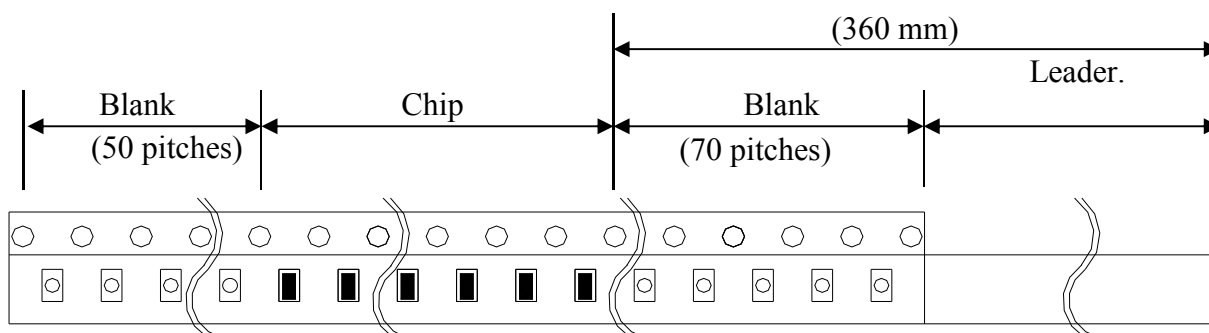
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7-4 Packaging Form

There shall not continuation more than two vacancies of the product.



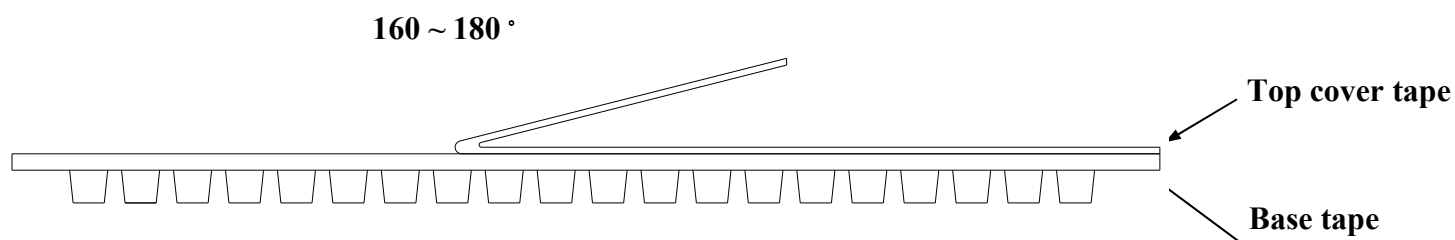
7-5 Cover Tape Peel Strength

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

Temperature : 5 ~ 35°C

Humidity : 45 ~ 85%

Atmospheric pressure : 860 ~ 1060 hpa



7-6 Packing Quantity

φ180 mm reel type : 2,000 pcs./reel

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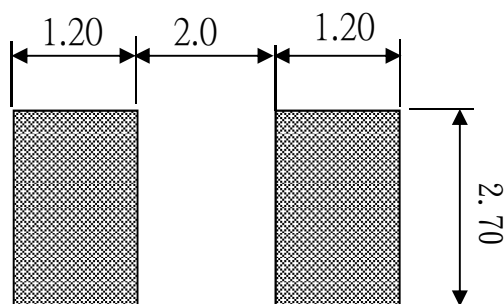
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8. Recommended Soldering Conditions

(Please use this product by reflow soldering)

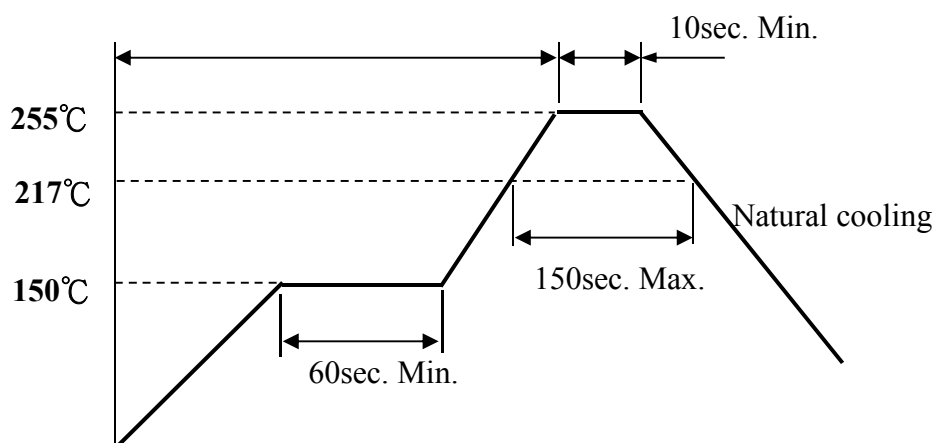
8-1 Recommended Footprint



Unit: mm

8-2 Recommended Reflow Pattern

Reflow at 260°C/3 Cycles



8-3 Iron Soldering

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

5 seconds max. at 260°C.

9. Attention in Case of Using

In case of using product, please avoid following matters:

Splashing water or salt water

Dew condenses

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

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.

10. Others

10-1 Operating temperature range : Ferrite Series : -25~+105°C

10-2 Storage condition : Temperature 20°~25°C, Relative Humidity 40%~60%

10-3 Recommended wire wound inductors should be used within 6 months from the time of delivery.



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