

YAGEO CORPORATION

Lead-Free & RoHs Compliance!!

SPECIFICATION FOR APPROVAL

CUSTOMER : _____
CUSTOMER P/N : _____
OUR DWG No : _____
QUANTITY : _____ Pcs. DATE : 2010/11/01
ITEM : CL201209T-1R0K-N

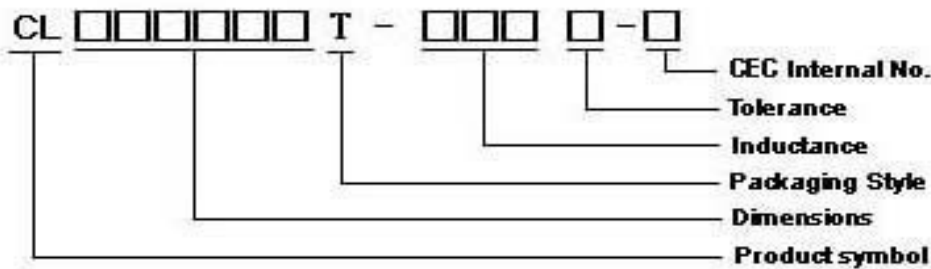
SPECIFICATION ACCEPTED BY:	
COMPONENT ENGINEER	
ELECTRICAL ENGINEER	
MECHANICAL ENGINEER	
APPROVED	
REJECTED	

DRAWN BY Sally2	CHECKED BY Ling	APPROVED BY Slddo
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CL201209T Series Specification

1 Scope: This specification applies to Multilayer Ferrite chip inductors

2 Part Numbering: Product Identification



3 Rating:

Operating Temperature: -25°C ~ 85°C

Storage Temperature: -25°C ~ 85°C (after PCB)

-5°C ~ 40°C, Humidity 40% ~ 70% (before PCB)

4 Marking:

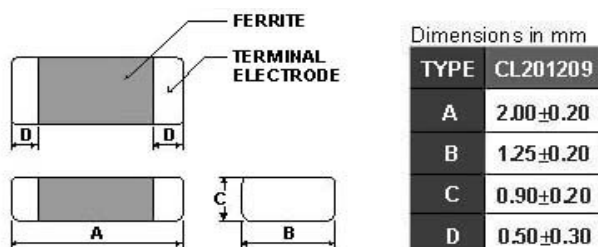


5 Standard Testing Condition

	Unless otherwise specified	In case of doubt
Temperature	Ordinary Temperature(15 to 35°C)	20±2°C
Humidity	Ordinary Humidity(25 to 85% RH)	60 to 70 % RH

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6 Configuration and Dimensions:



7 ELECTRICAL CHARACTERISTICS :

Part No.	Inductance (uH)	L,Q Test Freq.	Q Min.	SRF (MHZ)Min.	RDC (Ω)Max.	IDC (mA)Max.	Tolerance (±%)
CL201209T-22N□-N	0.022	50 MHZ,200 mV	20	320	0.2	300	20,15
CL201209T-33N□-N	0.033	50 MHZ,200 mV	20	320	0.2	300	20,15
CL201209T-47N□-N	0.047	50 MHZ,200 mV	20	320	0.2	300	20,15
CL201209T-56N□-N	0.056	50 MHZ,200 mV	20	320	0.2	300	20,15
CL201209T-68N□-N	0.068	50 MHZ,200 mV	20	280	0.2	300	20,15
CL201209T-82N□-N	0.082	50 MHZ,200 mV	20	255	0.2	300	20,15
CL201209T-R10□-N	0.1	25 MHZ,200 mV	25	235	0.3	250	20,15,10
CL201209T-R12□-N	0.12	25 MHZ,200 mV	25	220	0.3	250	20,15,10
CL201209T-R15□-N	0.15	25 MHZ,200 mV	25	200	0.4	250	20,15,10
CL201209T-R18□-N	0.18	25 MHZ,200 mV	25	185	0.4	250	20,15,10
CL201209T-R22□-N	0.22	25 MHZ,200 mV	25	170	0.5	250	20,15,10
CL201209T-R27□-N	0.27	25 MHZ,200 mV	25	150	0.5	250	20,15,10
CL201209T-R33□-N	0.33	25 MHZ,200 mV	25	145	0.55	250	20,15,10
CL201209T-R39□-N	0.39	25 MHZ,200 mV	25	135	0.65	250	20,15,10
CL201209T-R47□-N	0.47	25 MHZ,200 mV	25	125	0.65	250	20,15,10
CL201209T-R56□-N	0.56	25 MHZ,200 mV	25	115	0.75	150	20,15,10
CL201209T-R68□-N	0.68	25 MHZ,200 mV	25	105	0.8	150	20,15,10
CL201209T-R82□-N	0.82	25 MHZ,200 mV	25	100	1	150	20,15,10
CL201209T-1R0□-N	1	10 MHZ,200 mV	45	75	0.4	50	20,15,10
CL201209T-1R2□-N	1.2	10 MHZ,200 mV	45	65	0.5	50	20,15,10
CL201209T-1R5□-N	1.5	10 MHZ,200 mV	45	60	0.5	50	20,15,10
CL201209T-1R8□-N	1.8	10 MHZ,200 mV	45	55	0.6	50	20,15,10
CL201209T-2R2□-N	2.2	10 MHZ,200 mV	45	50	0.65	30	20,15,10

NOTE: □-tolerance K=±10% / L=±15% / M=±20%

1. Operating temperature range – 25 °C ~ 85 °C

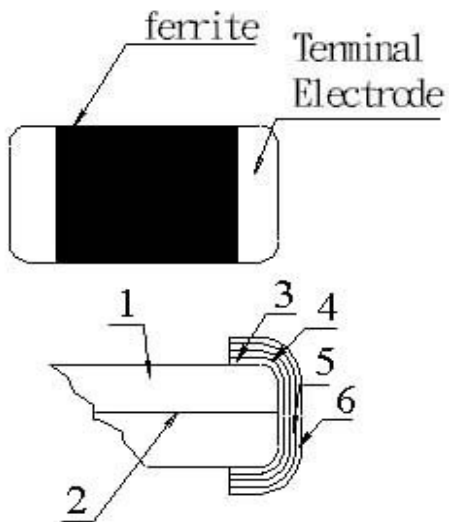
2. IDC: Applied the current to coils, the inductance shall be less than 10% initial value

"-N" FOR COMPLETELY LEAD FREE TYPE(INCLUDING FERRITE BODY & SOLDER)

CL201209T Series Specification

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8.1 Construction:



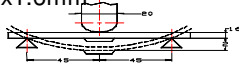
8.2 Material List:

NO	PART	MATERIAL
1	Ferrite Substance	NiO-CuO-ZnO-Ferrite
2	Silver electrode	Ag
3	Silver electrode	Ag
4	Cu plating	Cu
5	Ni plating	Ni
6	Sn plating	Sn

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9 Reliability Of Ferrite Multilayer Chip Inductor

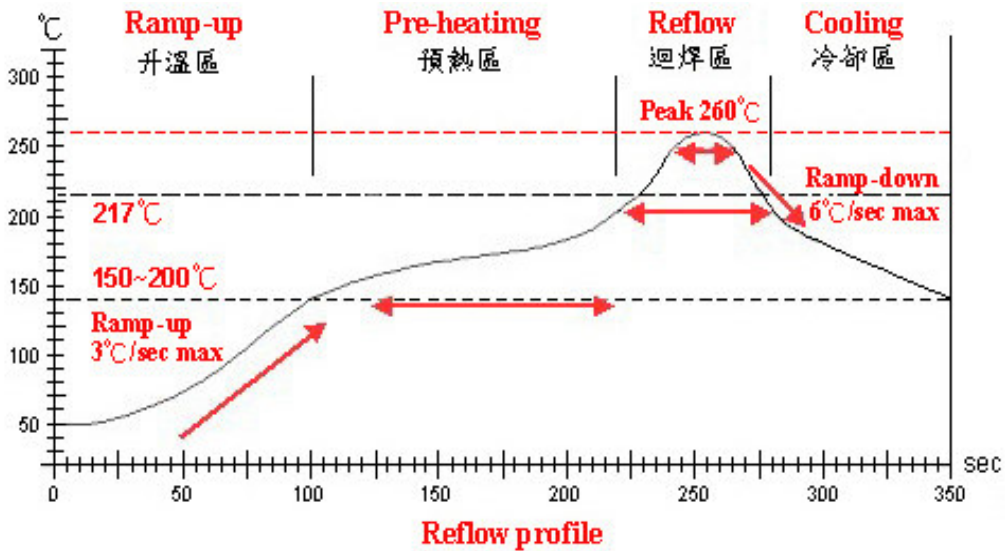
1-1.Mechanical Performance

No	Item	Specification	Test Method
1-1-1	Flexure Strength	The forces applied on the right conditions must not damage the terminal electrode and the ferrite	Test device shall be soldered on the substrate Substrate Dimension: 100x40x1.6mm Deflection: 2.0mm Keeping Time: 30sec *For 100505, substrate dimension is 100x40x0.8mm 
1-1-2	Vibration		Test device shall be soldered on the substrate Oscillation Frequency: 10 to 55 to 10Hz for 1min Amplitude: 1.5mm Time: 2hrs for each axis (X, Y & Z), total 6hrs
1-1-3	Resistance to Soldering Heat	Appearance: No damage More than 75% of the terminal electrode should be covered with solder. Inductance: within $\pm 15\%$ of initial value Q: within $\pm 30\%$ of initial value Inductance: within $\pm 20\%$ of initial value	Pre-heating: 150°C, 1min Solder Composition: Sn/Pb = 63/37 Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free) Solder Temperature: 260 ± 5 °C Immersion Time: 10 ± 1 sec
1-1-4	Solder ability	The electrodes shall be at least 95% covered with new solder coating	Pre-heating: 150°C, 1min Solder Composition: Sn/Pb = 63/37 Solder Temperature: 220 ± 5 °C Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free) Solder Temperature: 245 ± 5 °C (Pb-Free) Immersion Time: 4 ± 1 sec

1-2.Environmental Performance

No	Item	Specification	Test Method															
1-2-1	Temperature Cycle	Appearance: No damage Inductance: within $\pm 10\%$ of initial value Q change: within $\pm 30\%$ of initial value	One cycle: <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-25± 3</td> <td>30</td> </tr> <tr> <td>2</td> <td>25± 2</td> <td>3</td> </tr> <tr> <td>3</td> <td>85± 3</td> <td>30</td> </tr> <tr> <td>4</td> <td>25± 2</td> <td>3</td> </tr> </tbody> </table> Total: 100cycles Measured after exposure in the room condition for 24hrs	Step	Temperature (°C)	Time (min)	1	-25 ± 3	30	2	25 ± 2	3	3	85 ± 3	30	4	25 ± 2	3
Step	Temperature (°C)	Time (min)																
1	-25 ± 3	30																
2	25 ± 2	3																
3	85 ± 3	30																
4	25 ± 2	3																
1-2-2	Humidity Resistance		Temperature: 40 ± 2 °C Relative Humidity: 90 ~ 95% / Time: 1000hrs Measured after exposure in the room condition for 24hrs															
1-2-3	High Temperature Resistance		Temperature: 85 ± 3 °C Relative Humidity: 20% Applied Current: Rated Current / Time: 1000hrs Measured after exposure in the room condition for 24hrs															
1-2-4	Low Temperature Resistance		Temperature: -25 ± 3 °C Relative Humidity: 0% / Time: 1000hrs Measured after exposure in the room condition for 24hrs															

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Lead-Free(LF) 標準溫度分析範圍

Refer to J-STD-020C

管制項目 Item.	升温區 Ramp-up	預熱區 Pre-heating	迴焊區 Reflow	Peak Temp	冷卻區 Cooling
溫度範圍 Temp. scope	R.T. ~ 150°C	150°C ~ 200°C	217°C	260±5°C	Peak Temp. ~ 150°C
標準時間 Time spec.	—	60 ~ 180 sec	60 ~ 150 sec	20 ~ 40 sec	—
實際時間 Time result	—	75 ~ 100 sec	90 ~ 120 sec	20 ~ 35 sec	—

NOTE :

1. Re-flow possible times : within 2 times
2. Nitrogen adopted is recommended while in re-flow

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10 TEST DATA FOR PREPRODUCTION SAMPLES

QF-1419

DESCRIPTION: CL201209T-1R0K-N

MEAS. Item	L (uH)	Q	SRF (MHz)	RDC (Ω)	A m/m	B m/m	C m/m	D m/m			
Spec	Customer	1 \pm 10%									
	Suggest		45-0	75-0	0.40+0	2.0 \pm 0.2	1.25 \pm 0.2	0.9 \pm 0.2	0.5 \pm 0.3		
Test Freq.	10 MHZ 200 mV	10 MHZ 200 mV									
1	1.05	88	143	0.141	2.01	1.27	0.91	0.54			
2	1.07	91	143	0.139	2.02	1.27	0.89	0.53			
3	1.06	89	143	0.138	2.01	1.27	0.92	0.58			
4	1.02	88	138	0.145	1.99	1.28	0.88	0.56			
5	1.01	90	142	0.146	1.98	1.28	0.93	0.52			
6	1.06	88	141	0.144	2.03	1.26	0.92	0.55			
7	1.04	87	140	0.139	2.04	1.28	0.92	0.56			
8	1.05	89	143	0.142	2.03	1.26	0.91	0.54			
9	1.03	88	139	0.142	1.99	1.28	0.89	0.51			
10	1.04	87	142	0.146	1.98	1.27	0.93	0.52			
11											
12											
13											
14											
15											
\bar{X}	1.043	88.5	141.4	0.1422	2.008	1.272	0.91	0.541			
R	0.06	4	5	0.008	0.06	0.02	0.05	0.07			
CUSTOMER											
SAMPLE											

TEST INSTRUMENT:

HP4291A RF IMPEDANCE / MATERIAL ANALYZER FOR L,Q
 CHEN HWA 502BC / HP4338B FOR RDC
 HPE4991A&HP8753D FOR SRF

APPEARANCE AND DIMENSIONS :

SPEC : MEET ITEM 6.
 TEST METHOD : VISUAL INSPECTION AND MEASURED WITH SILDE CALIPERS.

TESTING CONDITIONS :

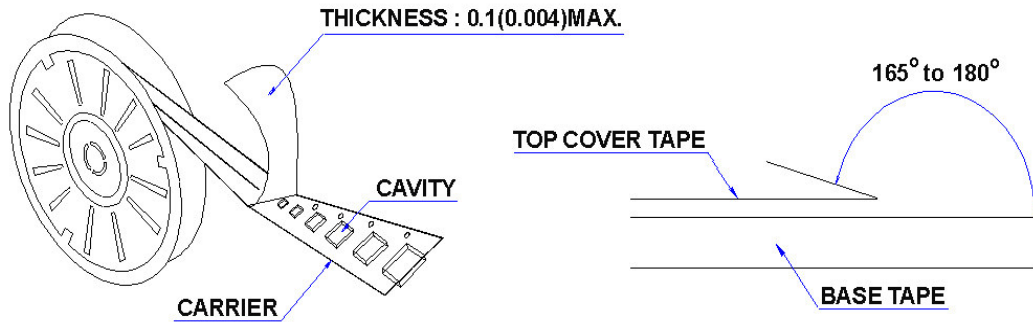
	Unless otherwise specified	In case of doubt
Temperature	Ordinary Temperature (15 to 35°C)	20 \pm 2 °C
Humidity	Ordinary Humidity (25 to 85 %RH)	60 to 70 %RH

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11 PACKAGING

11.1 Packaging -Cover tape

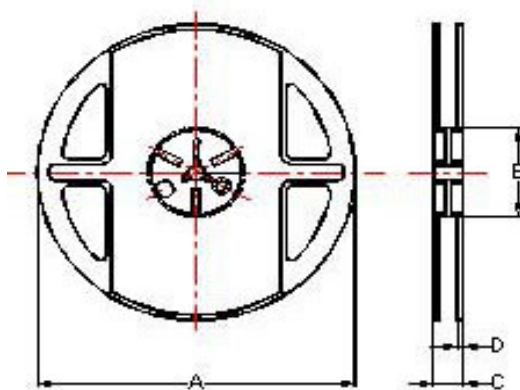
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



11.2 Packaging Quantity

TYPE	BULK	PCS/REEL
CL100505	✓	10000
CL160808	✓	4000
CL201209	✓	4000
CL201212	✓	3000
CL321611	✓	3000

11.3 Reel Dimensions



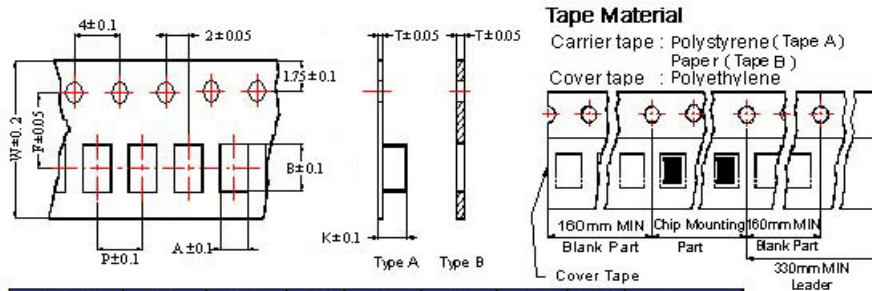
Dimensions in mm

TYPE	A	B	C	D
CL Series	178	60	12	1.5

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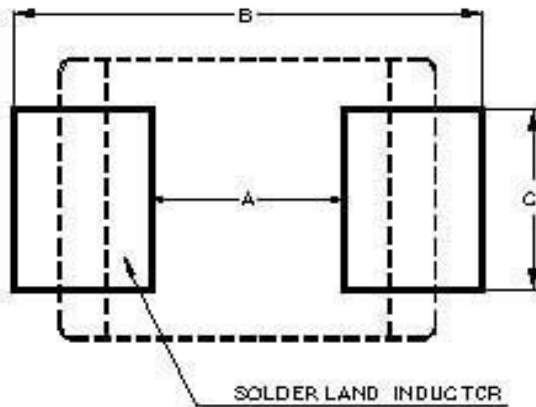
11 PACKAGING

11.4 Tape Dimensions in mm



TYPE	A	B	T	W	P	F	K	Tape Typ.
CL100505	0.65	1.12	0.60	8	2	3.5		B
CL160808	1.05	1.85	0.95	8	4	3.5		B
CL201209	1.50	2.30	0.97	8	4	3.5		B
CL201212	1.35	2.25	0.22	8	4	3.5	1.35	A
CL321611	1.88	3.50	0.22	8	4	3.5	1.27	A

12 Recommended Pattern



Dimensions in mm

TYPE	A	B	C
CL100505	0.4	1.2 ~ 1.4	0.5
CL160808	0.7 ~ 0.8	1.8 ~ 2.0	0.6 ~ 0.8
CL201209	1.0 ~ 1.2	2.6 ~ 4.0	1.0 ~ 1.2
CL201212	1.0 ~ 1.2	2.6 ~ 4.0	1.0 ~ 1.2
CL321611	2.0	4.2 ~ 5.2	1.2

13 Note:

1. Please make sure that your product is has been evaluated and confirmed against your specifications when our product is mounted to your product.
2. Do not knock nor drop.
3. All the items and parameters in this product specification have been prescribed on the premise that our product is used for the purpose, under the condition and in the environment agreed upon between you and us. You are requested not to use our product deviating from such agreement.
4. Please keep the distance between transformer/coil and other components (refer to the standard IEC 950)

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14 Curve:

