Ⅰ. SCOPE：

This specification applies to the Pb Free Ceramic Chip Inductors

for MHSC-161008-SERIES

PRODUCT INDENTIFICATION

MHSC- 161008 - 12N J

① ② ③ ④

① Product Code

② Dimensions Code

③ Inductance Code

④ Tolerance Code

⑤ Inner Control Code

Ⅱ. INDEX：

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℃,

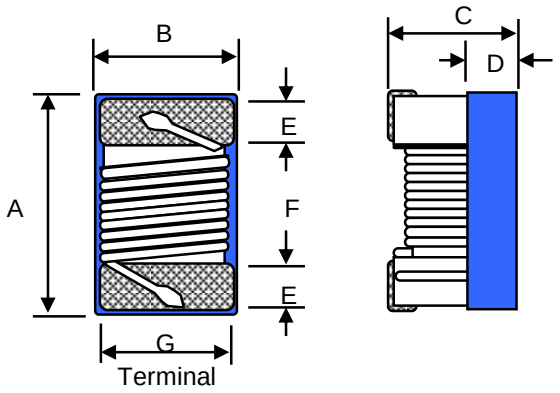
Humidity＝65±5%

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.

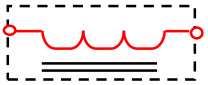
In addition, suggest to use product within 6 months from the time of delivery.

(1) SHAPES AND DIMENSIONS(mm)



A:	**1.60+0.2/ -0.1**	**mm**
B:	**1.02±0.1**	**mm**
C:	**0.82+0.2/ -0.1**	**mm**
D:	**0.51 Typ.**	**mm**
E:	**0.33 Typ.**	**mm**
F:	**0.86 Typ.**	**mm**
G:	**0.76 Typ.**	**mm**

Equivalent circuit



No Polarity

(2) ELECTRICAL SPECIFICATIONS

SEE TABLE 1

TEST INSTRUMENTS

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

SRF : ENA E5071B NETWORK ANALYZER (or equivalent)

RDC : CHROMA MODEL 16502 MILLIOHMMETER (or equivalent)

(3) CHARACTERISTICS

(3)-1 Operate temperature range ..... －40℃～＋125℃

(Including self temp. rise)

(3)-2 Storage temperature range ..... －40℃～＋105℃

MATERIALS

NO.	ITEM	DESCRIPTION & TYPE
1	CORE	Ceramic
2	WIRE	Copper wire
3	Epoxy	UV Epoxy

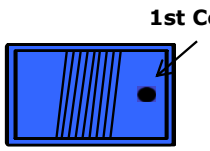
TABLE 1

MAGLAYERS PT/NO.	Inductance L(nH)	Percent Tolerance	L/Q Freq. (MHz)	Quality Min.	SRF (MHz)Min.	DCR (Ω) Max.	Irms (mA) Max.	Color Coding
MHSC-161008-1N6□	1.6	J,K	250/250	24	12500	0.030	700	Red
MHSC-161008-1N8□	1.8	J,K	250/250	16	12500	0.045	700	Black
MHSC-161008-2N2□	2.2	J,K	250/250	13	12500	0.250	700	Yellow
MHSC-161008-3N3□	3.3	J,K	250/250	35	5900	0.045	700	Blue
MHSC-161008-3N6□	3.6	G,J,K	250/250	22	5900	0.063	700	Red
MHSC-161008-3N9□	3.9	G,J,K	250/250	22	6900	0.080	700	Brown
MHSC-161008-4N3□	4.3	G,J,K	250/250	22	5900	0.063	700	Orange
MHSC-161008-4N7□	4.7	G,J,K	250/250	20	5800	0.116	700	Violet
MHSC-161008-5N1□	5.1	G,J,K	250/250	20	5700	0.140	700	Green
MHSC-161008-5N6□	5.6	G,J,K	250/250	20	5800	0.170	700	Yellow
MHSC-161008-6N3□	6.3	G,J,K	250/250	20	5700	0.140	700	White
MHSC-161008-6N8□	6.8	G,J,K	250/250	27	5800	0.110	700	Red
MHSC-161008-7N5□	7.5	G,J,K	250/250	28	4800	0.106	700	Brown
MHSC-161008-8N2□	8.2	G,J,K	250/250	28	4700	0.109	700	White
MHSC-161008-8N7□	8.7	G,J,K	250/250	28	4600	0.109	700	Yellow
MHSC-161008-9N1□	9.1	G,J,K	250/250	28	4800	0.120	700	Violet
MHSC-161008-9N5□	9.5	G,J,K	250/250	28	5400	0.135	700	Blue
MHSC-161008-10N□	10	G,J,K	250/250	31	4800	0.130	700	Orange
MHSC-161008-11N□	11	G,J,K	250/250	33	4000	0.086	700	Gray
MHSC-161008-12N□	12	G,J,K	250/250	35	4000	0.130	700	Yellow
MHSC-161008-13N□	13	G,J,K	250/250	30	4000	0.160	700	Black
MHSC-161008-15N□	15	G,J,K	250/250	35	4000	0.170	700	Green
MHSC-161008-16N□	16	G,J,K	250/250	34	3300	0.104	700	White
MHSC-161008-18N□	18	G,J,K	250/250	35	3100	0.170	700	Blue
MHSC-161008-20N□	20	G,J,K	250/250	38	3000	0.190	700	Red

※ 1. Please specify the inductance tolerance, G(±2%),J(±5%),K(±10%)

2. Irms for a 15°C rise above 25°C ambient.

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



COLOR CODING

TABLE 1

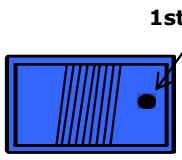
MAGLAYERS PT/NO.	Inductance L(nH)	Percent Tolerance	L/Q Freq. (MHz)	Quality Min.	SRF (MHz)Min.	DCR (Ω) Max.	Irms (mA) Max.	Color Coding
MHSC-161008-22N□	22	G,J,K	250/250	38	3000	0.190	700	Violet
MHSC-161008-23N□	23	G,J,K	250/250	38	2850	0.190	700	Orange
MHSC-161008-24N□	24	G,J,K	250/250	37	2650	0.135	700	Black
MHSC-161008-27N□	27	G,J,K	250/250	40	2800	0.220	600	Gray
MHSC-161008-30N□	30	G,J,K	250/250	37	2250	0.144	600	Brown
MHSC-161008-33N□	33	G,J,K	250/250	40	2300	0.220	600	White
MHSC-161008-36N□	36	G,J,K	250/250	38	2080	0.250	600	Red
MHSC-161008-39N□	39	G,J,K	250/250	40	2200	0.250	600	Black
MHSC-161008-43N□	43	G,J,K	250/250	39	2000	0.280	600	Orange
MHSC-161008-47N□	47	G,J,K	200/200	38	2000	0.280	600	Brown
MHSC-161008-51N□	51	G,J,K	200/200	38	1900	0.310	600	Brown
MHSC-161008-56N□	56	G,J,K	200/200	38	1900	0.310	600	Red
MHSC-161008-68N□	68	G,J,K	200/200	37	1700	0.340	600	Orange
MHSC-161008-72N□	72	G,J,K	150/150	34	1700	0.490	400	Yellow
MHSC-161008-82N□	82	G,J,K	150/150	34	1700	0.540	400	Green
MHSC-161008-91N□	91	G,J,K	150/150	34	1400	0.580	400	Black
MHSC-161008-R10□	100	G,J,K	150/150	34	1400	0.580	400	Blue
MHSC-161008-R11□	110	G,J,K	150/150	32	1350	0.610	300	Violet
MHSC-161008-R12□	120	G,J,K	150/150	32	1300	0.750	300	Gray
MHSC-161008-R15□	150	G,J,K	150/150	28	990	0.920	280	White
MHSC-161008-R16□	160	G,J,K	100/100	25	990	1.250	240	Yellow
MHSC-161008-R18□	180	G,J,K	100/100	25	990	1.250	240	Black
MHSC-161008-R20□	200	G,J,K	100/100	25	900	2.100	200	Red
MHSC-161008-R21□	210	G,J,K	100/100	27	895	2.060	200	Gray
MHSC-161008-R22□	220	G,J,K	100/100	25	900	2.100	200	Brown
MHSC-161008-R24□	240	G,J,K	100/100	25	900	2.200	200	Green
MHSC-161008-R25□	250	G,J,K	100/100	25	822	3.550	120	Violet
MHSC-161008-R27□	270	G,J,K	100/100	24	900	2.800	170	Red
MHSC-161008-R33□	330	G,J,K	100/100	25	900	3.890	100	Orange
MHSC-161008-R39□	390	G,J,K	100/100	25	900	4.350	100	Yellow
MHSC-161008-R47□	470	G,J,K	100/100	25	500	4.500	100	Green
MHSC-161008-R56□	560	G,J,K	100/100	23	460	4.700	90	Blue

※ 1. Please specify the inductance tolerance, G(±2%),J(±5%),K(±10%)

2. Irms for a 15°C rise above 25°C ambient.

3. Color coding is not necessarily same position,

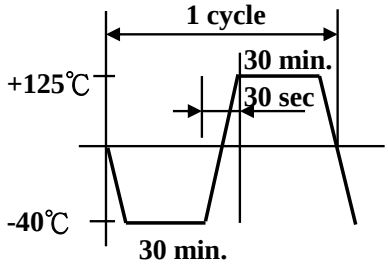
and Color coding non-directional printing.



COLOR CODING

(4) RELIABILITY TEST METHOD

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 260°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 house for a total of 6 hours. Frequency : 10～50 Hz Amplitude : 1.5 mm
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℃ 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 open winding.	Inductors shall be subjected to temperature 85±2℃ 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 0.9Kg	Inductors shall be reflow soldered (260°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.

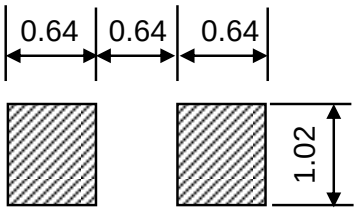
Item	Specifications	Test conditions
Low temperature storage	There must be no case deformation or change in dimensions. Inductance must not change more than the stated tolerance.	Inductors shall be subjected to temperature -40±2℃ for 48±12 hours. Measure the test items after leaving the inductors at room 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

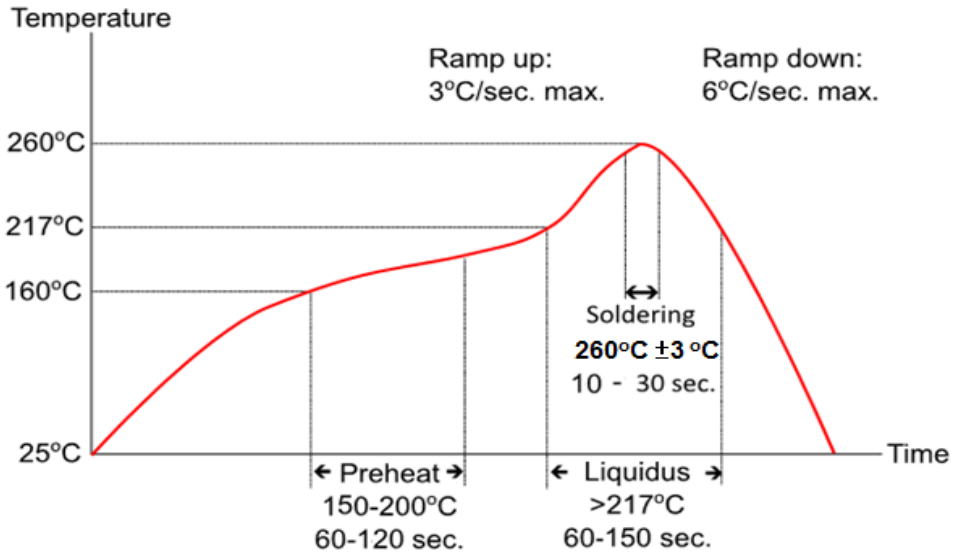
(Please use this product by reflow soldering)

(5)-1 RECOMMENDED FOOTPRINT

Unit: mm



(5)-2 RECOMMENED REFLOW PATTERN



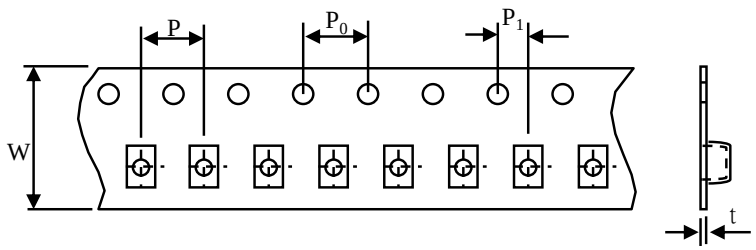
(5)-3 IRON SOLDERING

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

3 seconds max. at 260℃.

(6) PACKAGING

(6)-1 CARRIER TAPE DIMENSIONS (mm)

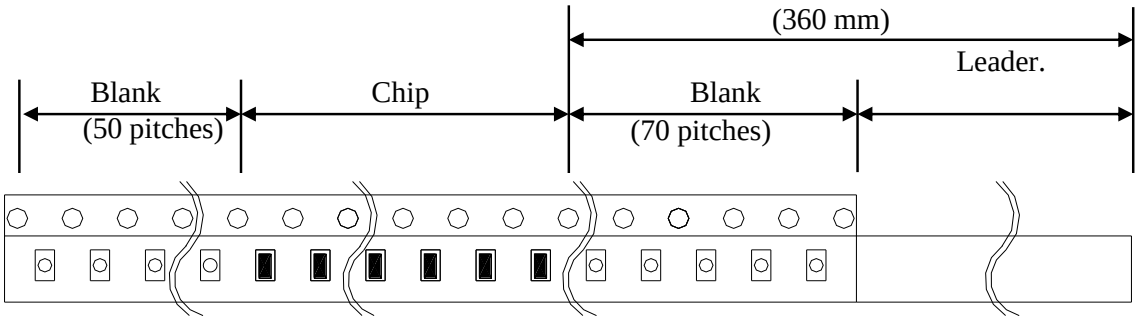


W : 8.0 mm
P : 4.0 mm
P0 : 4.0 mm
P1 : 2.0 mm
t : 0.23 mm

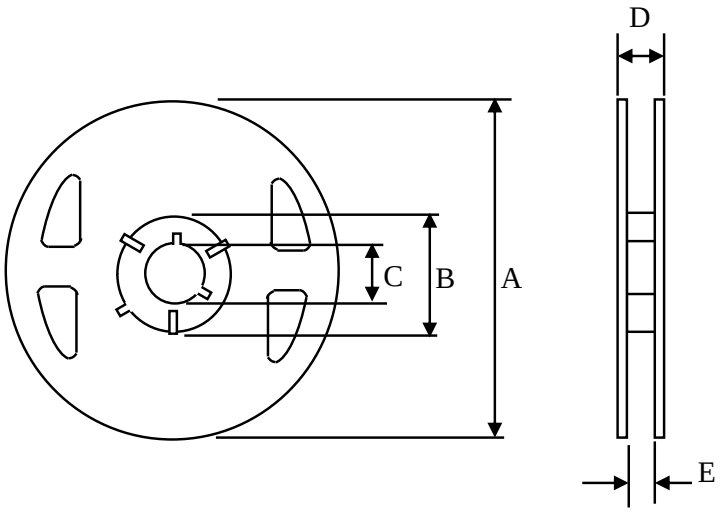
(6)-2 TAPING DIMENSIONS (mm)

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

***Marking non-directional printing**



(6)-3 REEL DIMENSIONS



A : 178 mm
B : 60.0 mm
C : 13.0 mm
D : 12.0 mm
E : 8.4 mm

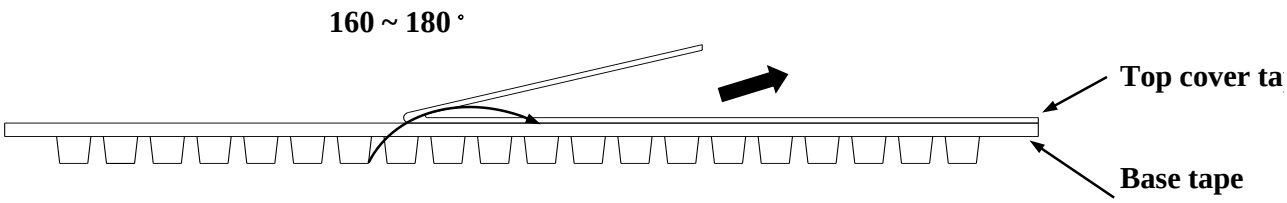
(6)-4 TOP TAPE PEEL STRENGTH

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

Temperature : 5 ~ 35℃

Humidity : 45 ~ 85%

Atmospheric pressure : 860 ~ 1060 hpa



(6)-5 QUANTITY

4000 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 condenses

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

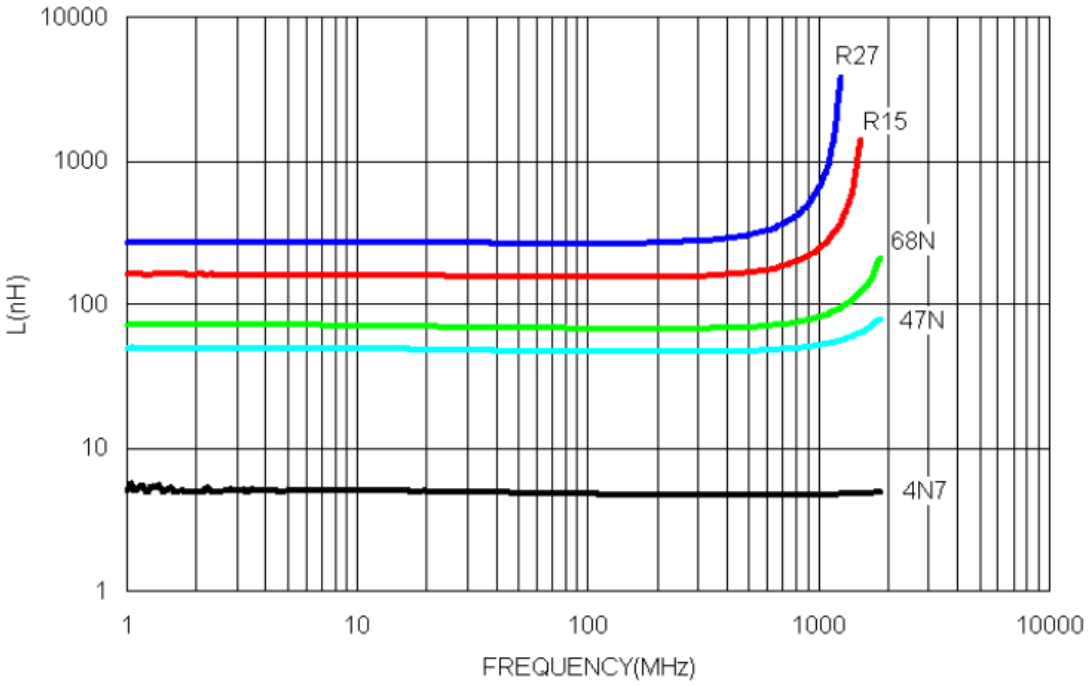
Vibrations or shocks which exceed the specified condition

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