Ⅰ. SCOPE：

This specification applies to the Pb Free Ceramic Chip Inductors

for MHSC-231715-SERIES

PRODUCT INDENTIFICATION

MHSC- 231715 - 12N J

① ② ③ ④

① Product Code

② Dimensions Code

③ Inductance Code

④ Tolerance 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℃,

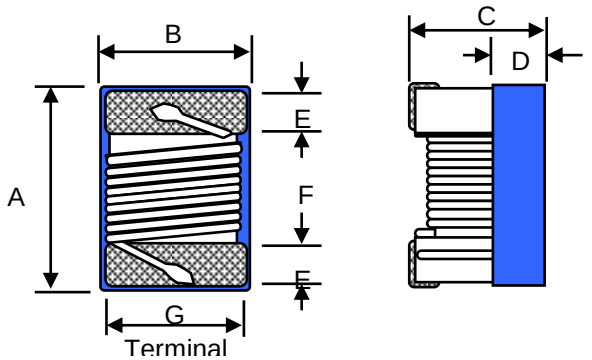
Humidity＝65±5%

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.

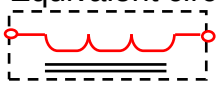
In addition, suggest to use product within 6 months from the time of delivery.

(1) SHAPES AND DIMENSIONS(mm)



A:	**2.35**	**Max.**
B:	**1.73**	**Max.**
C:	**1.52**	**Max.**
D:	**0.71**	**Typ.**
E:	**0.51**	**Typ.**
F:	**1.02**	**Typ.**
G:	**1.27**	**Typ.**

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

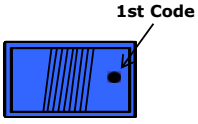
TABLE 1

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-231715-2N7☐	2.7	G,J,K	250/1500	50	7900	0.060	800	Yellow
MHSC-231715-2N8☐	2.8	G,J,K	250/1500	80	7900	0.060	800	Gray
MHSC-231715-3N0☐	3.0	G,J,K	250/1500	65	7900	0.060	800	White
MHSC-231715-3N3☐	3.3	G,J,K	250/1500	50	7900	0.080	600	Black
MHSC-231715-5N6☐	5.6	G,J,K	250/1000	65	5500	0.080	600	Orange
MHSC-231715-6N8☐	6.8	G,J,K	250/1000	50	5500	0.110	600	Brown
MHSC-231715-7N5☐	7.5	G,J,K	250/1000	50	4500	0.140	600	Green
MHSC-231715-8N2☐	8.2	G,J,K	250/1000	50	4700	0.120	600	Red
MHSC-231715-10N☐	10	G,J,K	250/500	60	4200	0.100	600	Blue
MHSC-231715-12N☐	12	G,J,K	250/500	50	4000	0.150	600	Orange
MHSC-231715-15N☐	15	G,J,K	250/500	50	3400	0.170	600	Yellow
MHSC-231715-18N☐	18	G,J,K	250/500	50	3300	0.200	600	Green
MHSC-231715-22N☐	22	G,J,K	250/500	55	2600	0.220	500	Blue
MHSC-231715-24N☐	24	G,J,K	250/500	50	2000	0.220	500	Gray
MHSC-231715-27N☐	27	G,J,K	250/500	55	2500	0.250	500	Violet
MHSC-231715-33N☐	33	G,J,K	250/500	60	2050	0.270	500	Gray
MHSC-231715-36N☐	36	G,J,K	250/500	55	1700	0.270	500	Orange
MHSC-231715-39N☐	39	G,J,K	250/500	60	2000	0.290	500	White
MHSC-231715-43N☐	43	G,J,K	200/500	60	1650	0.340	500	Yellow
MHSC-231715-47N☐	47	G,J,K	200/500	60	1650	0.310	500	Black
MHSC-231715-56N☐	56	G,J,K	200/500	60	1550	0.340	500	Brown
MHSC-231715-68N☐	68	G,J,K	200/500	60	1450	0.380	500	Red
MHSC-231715-82N☐	82	G,J,K	150/500	65	1300	0.420	400	Orange
MHSC-231715-91N☐	91	G,J,K	150/500	65	1200	0.480	400	Black
MHSC-231715-R10☐	100	G,J,K	150/500	65	1200	0.460	400	Yellow
MHSC-231715-R11☐	110	G,J,K	150/250	50	1000	0.480	400	Brown
MHSC-231715-R12☐	120	G,J,K	150/250	50	1100	0.510	400	Green
MHSC-231715-R15☐	150	G,J,K	100/250	50	920	0.560	400	Blue
MHSC-231715-R18☐	180	G,J,K	100/250	50	870	0.640	400	Violet
MHSC-231715-R20☐	200	G,J,K	100/250	50	860	0.680	400	Red
MHSC-231715-R22☐	220	G,J,K	100/250	50	850	0.700	400	Gray
MHSC-231715-R24☐	240	G,J,K	100/250	44	690	1.000	350	Red
MHSC-231715-R24☐	250	G,J,K	100/250	45	660	1.200	350	Yellow
MHSC-231715-R27☐	270	G,J,K	100/250	48	650	1.000	350	White
MHSC-231715-R30☐	300	G,J,K	100/250	25	450	1.400	310	Orange
MHSC-231715-R33☐	330	G,J,K	100/250	48	600	1.400	310	Black
MHSC-231715-R39☐	390	G,J,K	100/250	48	560	1.500	290	Brown
MHSC-231715-R47☐	470	G,J,K	50/100	33	450	1.760	250	Violet
MHSC-231715-R51☐	510	G,J,K	25/50	23	340	1.900	230	Gray
MHSC-231715-R56☐	560	G,J,K	25/50	23	340	1.900	230	Orange
MHSC-231715-R62☐	620	G,J,K	25/50	23	220	2.200	210	Yellow
MHSC-231715-R68☐	680	G,J,K	25/50	23	188	2.200	190	Green
MHSC-231715-R82☐	820	G,J,K	25/50	23	215	2.350	180	Blue
MHSC-231715-1R0☐	1,000	G,J,K	25/50	20	100	2.500	170	Gray
MHSC-231715-1R2☐	1,200	J,K	7.9/25	18	100	2.500	170	White
MHSC-231715-1R8☐	1,800	G,J,K	7.9/7.9	16	80	2.500	170	Orange
MHSC-231715-3R3☐	3,300	G,J,K	7.9/7.9	15	40	4.400	90	Red
MHSC-231715-4R7☐	4,700	G,J,K	7.9/7.9	15	40	6.400	90	Yellow

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

2. Irms for a 15℃ temperature rise from 25℃ ambient with current

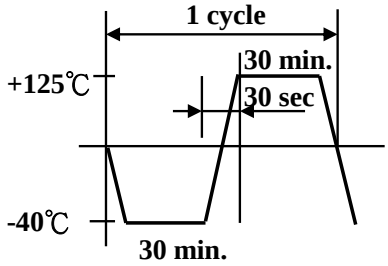
3. Color coding is not necessarily same position,
and Color coding non-directional printing.



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 1.0Kg	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.

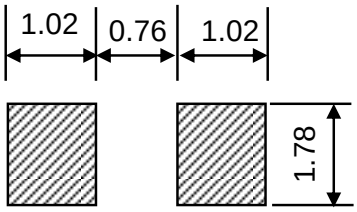
Item	Specifications	Test conditions
Low temperature storage	There must be no case deformation or change in dimensions. Inductance must not change more than the stated tolerance.	Inductors shall be subjected to temperature -40±2℃ for 48±12 hours. Measure the test items after leaving the inductors at room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

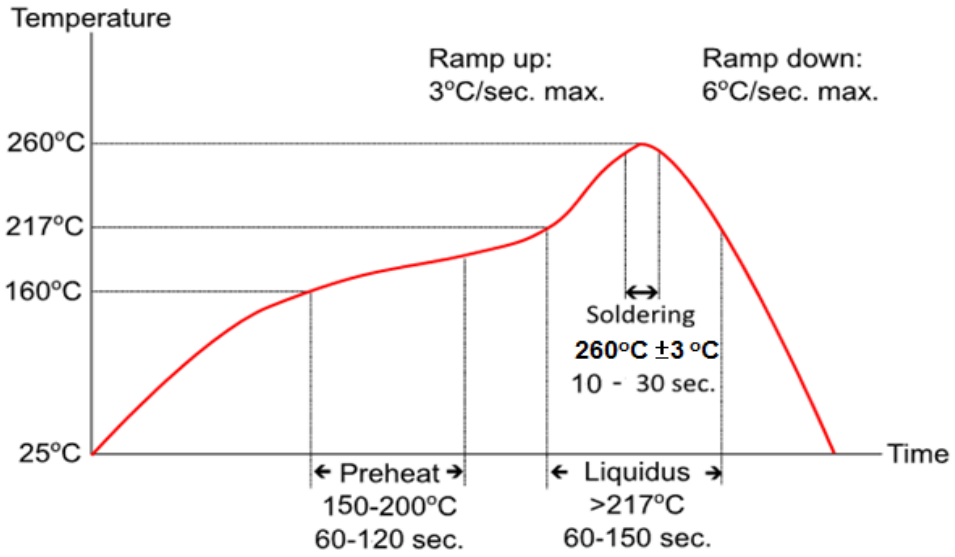
(Please use this product by reflow soldering)

(5)-1 RECOMMENDED FOOTPRINT

Unit: mm



(5)-2 RECOMMENED REFLOW PATTERN



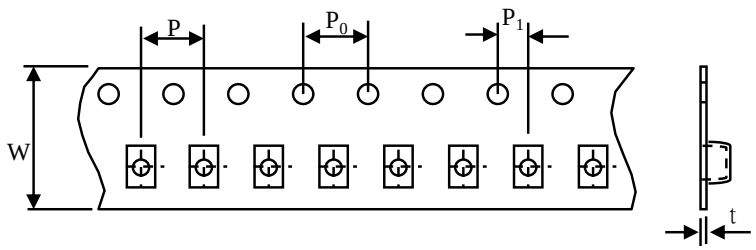
(5)-3 IRON SOLDERING

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)

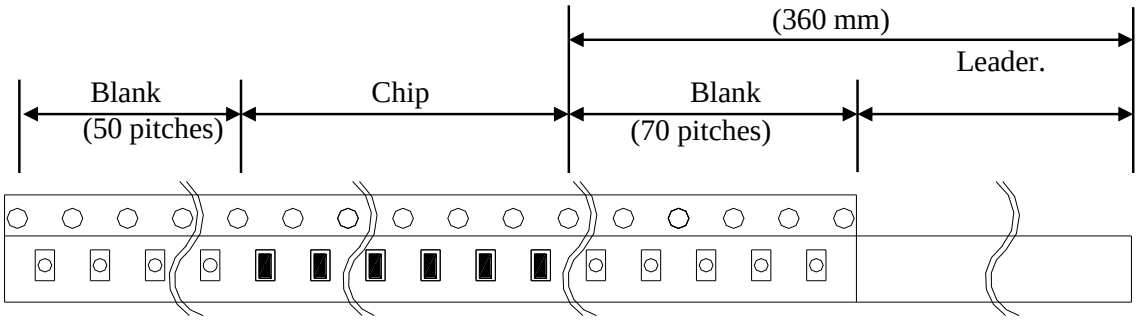


W : 8.0 mm
P : 4.0 mm
P0 : 4.0 mm
P1 : 2.0 mm
t : 0.23 mm

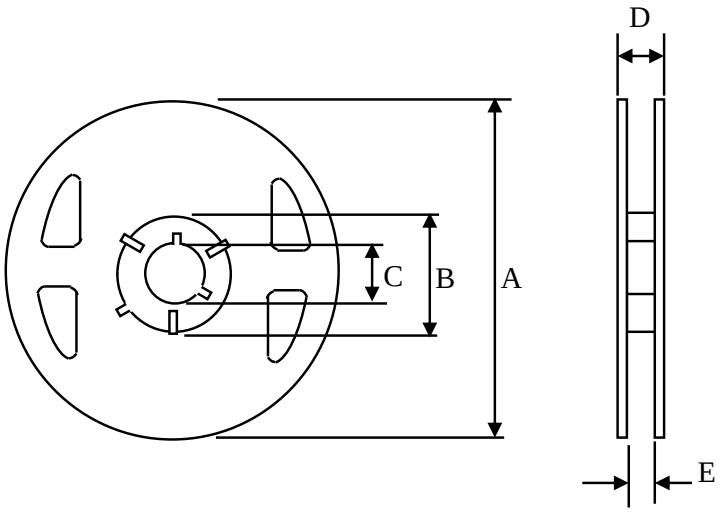
(6)-2 TAPING DIMENSIONS (mm)

***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

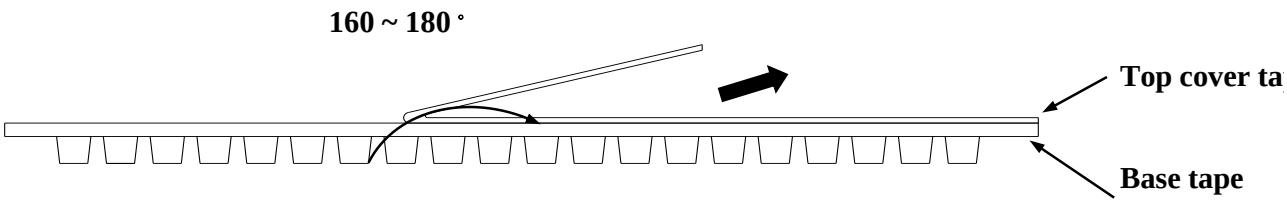
(6)-4 TOP TAPE PEEL STRENGTH

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

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 condenses

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

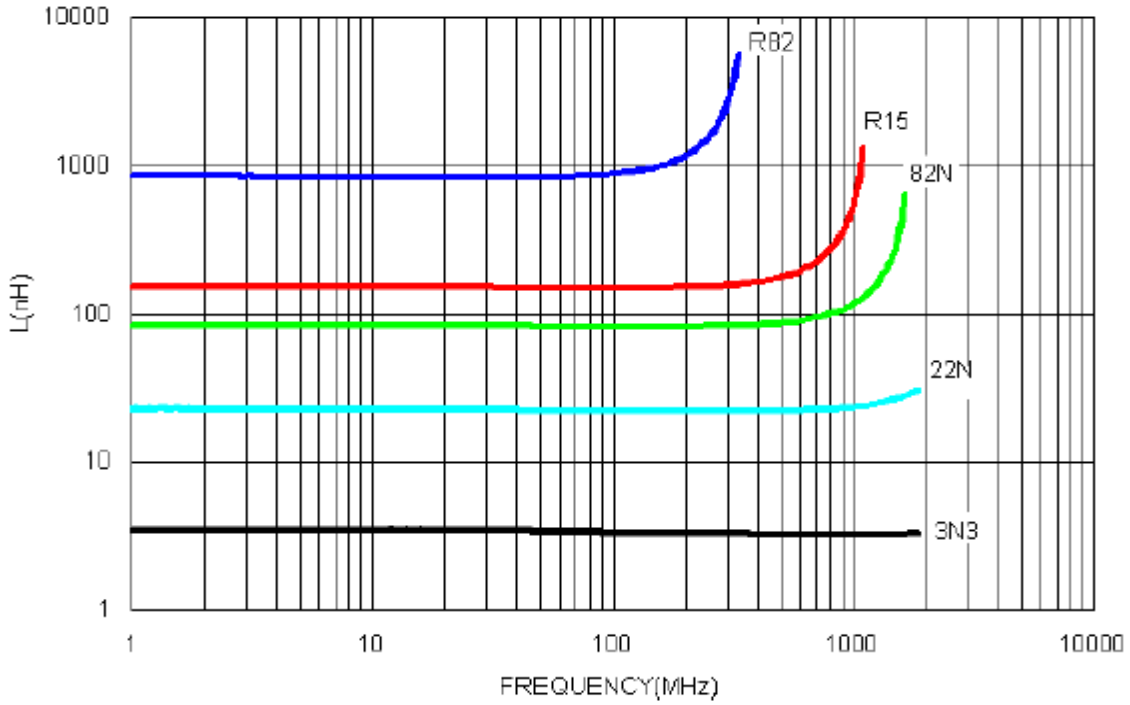
Vibrations or shocks which exceed the specified condition

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 ELECTRICAT CHARACTERISTICS

L VS. Frequency



Q VS. Frequency