

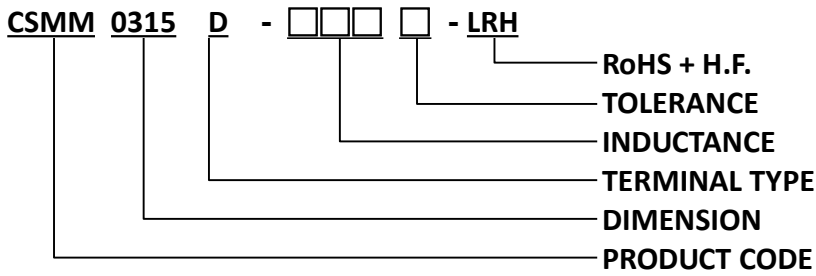


PRODUCT SPECIFICATION

DOCUMENT NO. ENS000153760

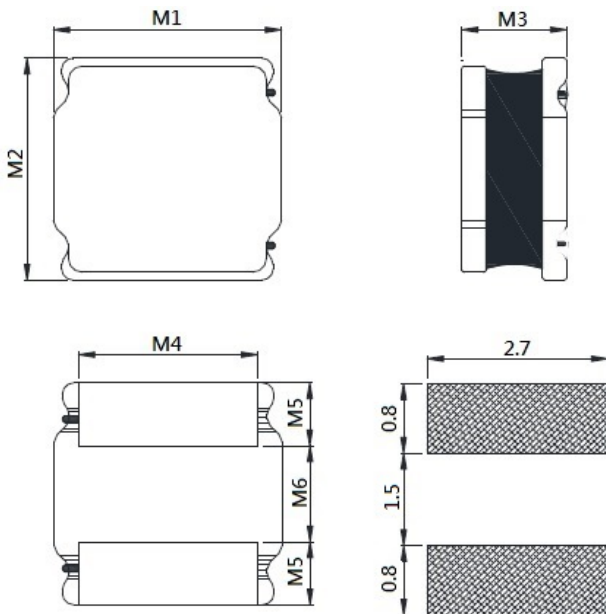
DESCRIPTION	DRAWN BY	DESIGNED BY	CHECKED BY	APPROVED BY
CSMM0315D-XXXX-LRH	Zhuoling Tang	Shengjun Zhou	Shengjun Zhou	Dick Wang

1. PART NUMBER IDENTIFICATION



2. MECHANICAL DIMENSION

UNIT: mm



	DIM.	TOL.
M1	3.0	±0.2
M2	3.0	±0.2
M3	1.55	MAX.
M4	2.5	±0.3
M5	0.8	±0.3
M6	1.4	±0.3

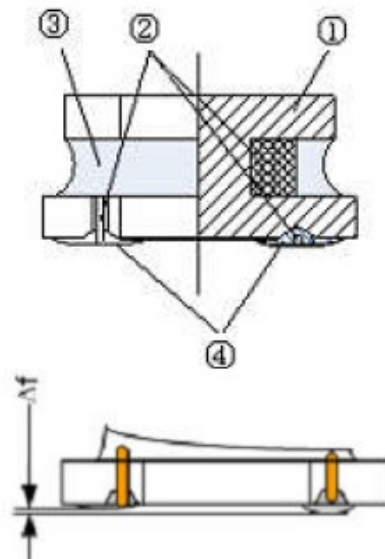
Recommended PCB pattern

3. RATING TEMPERATURE

OPERATING TEMPERATURE RANGE (individual chip without packing): -40°C~+125°C (Including Self-heating).

STORAGE TEMPERATURE RANGE (packaging conditions): -10°C~+40°C and RH 70% (Max.).

4. STRUCTURE



△f: Clearance between terminal and the surface of plate must be 0.1mm max when coil is placed on a flat plate.

5. MATERIAL LIST

ITEM	MATERIAL CATEGORY	MATERIAL TYPE
1	Core	Soft magnetic Metal
2	Wire	Polyurethane system enameled copper wire
3	Magnetic Glue	Epoxy resin and magnetic powder
4	Electrodes	Ag Ni Sn or Fe Ni Cu + Sn Alloy

6. TEST INSTRUMENT

6-1 Inductance: HIOKI3532-50/3536

6-2 DC Resistance: HIOKI 3540

6-3 Isat/Irms: HP4284A+42841

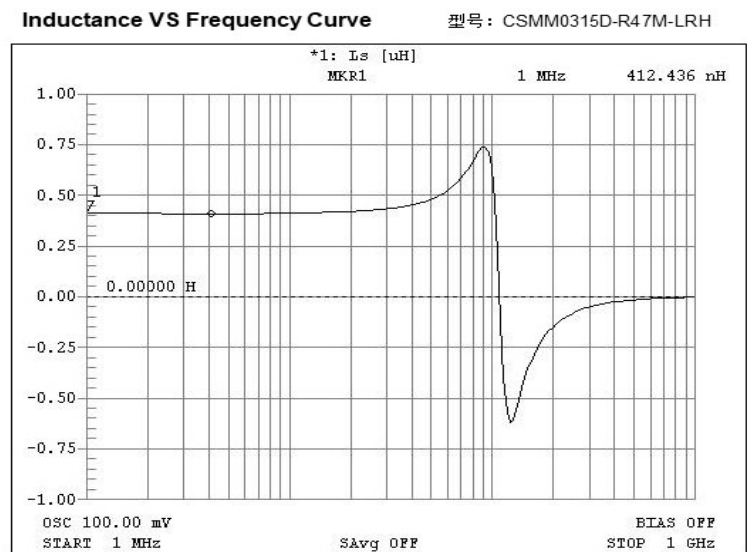
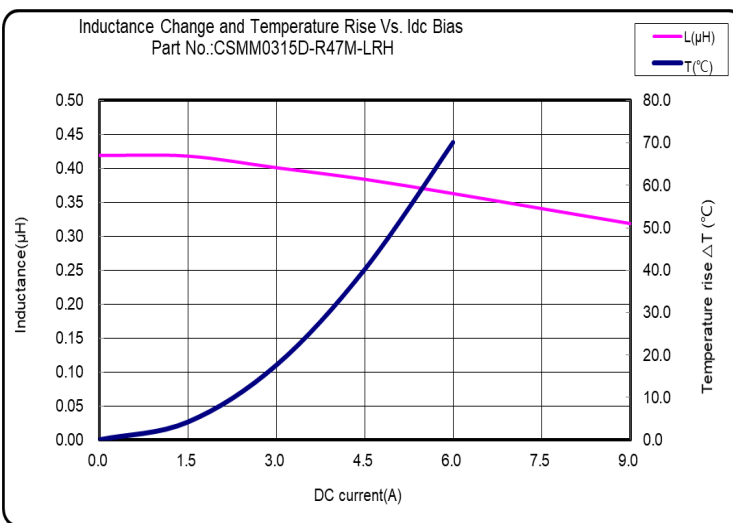
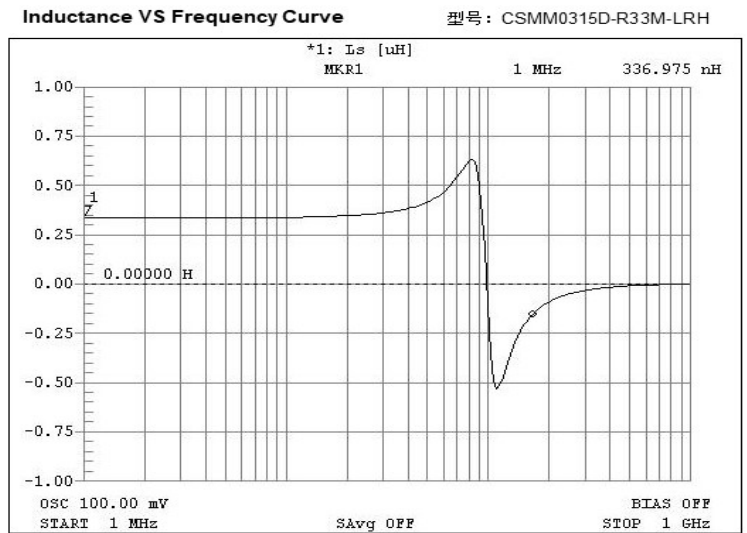
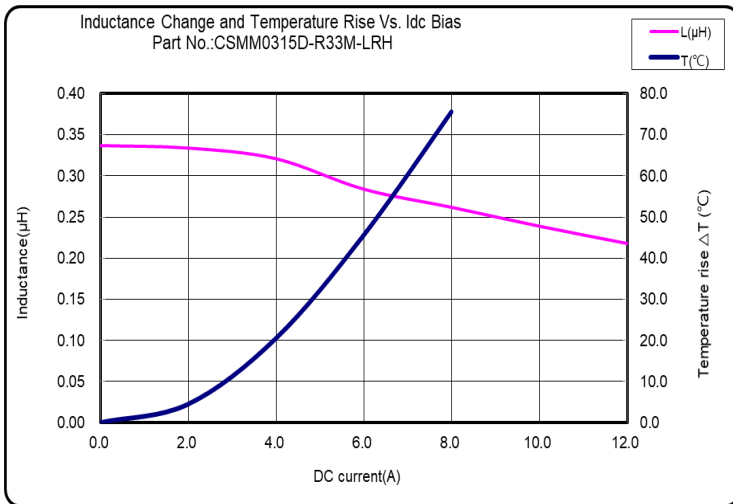
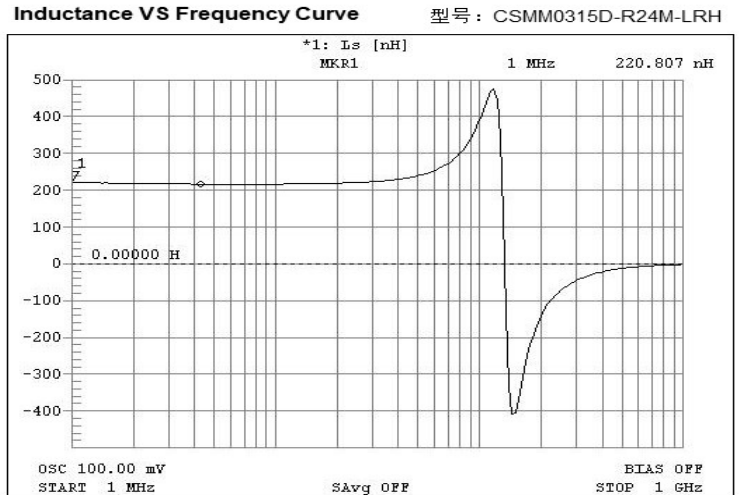
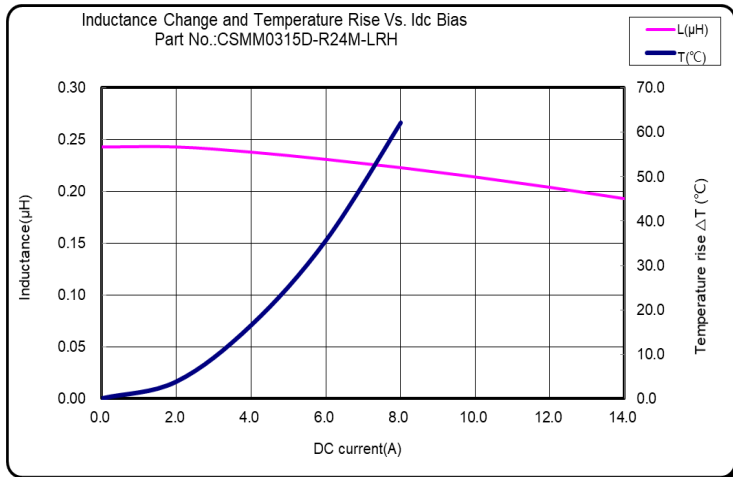
7. ELECTRICAL SPECIFICATION

Part number	Inductance (μ H) $\pm 20\%$	Inductance Tolerance	Test Frequency (MHz/V)	DC Resistance (Ω) MAX.	DC Resistance (Ω) TYP.	Isat (A) MAX.	Isat (A) TYP.	Irms (A) MAX.	Irms (A) TYP.
CSMM0315D-R22□-LRH	0.22	M	1/1	0.019	0.016	8.80	11.0	5.00	5.90
CSMM0315D-R24□-LRH	0.24	M	1/1	0.019	0.016	8.60	10.6	5.00	5.90
CSMM0315D-R33□-LRH	0.33	M	1/1	0.021	0.016	8.00	10.0	4.90	5.80
CSMM0315D-R47□-LRH	0.47	M	1/1	0.026	0.020	7.60	9.50	4.60	5.00
CSMM0315D-R68□-LRH	0.68	M	1/1	0.037	0.028	7.00	8.30	3.80	4.50
CSMM0315D-1R0□-LRH	1.0	M	1/1	0.048	0.037	5.80	7.00	3.30	3.80
CSMM0315D-1R5□-LRH	1.5	M	1/1	0.072	0.055	4.60	5.50	2.20	2.70
CSMM0315D-2R2□-LRH	2.2	M	1/1	0.095	0.074	3.70	4.60	2.20	2.50
CSMM0315D-3R3□-LRH	3.3	M	1/1	0.150	0.110	3.40	3.40	2.00	2.30
CSMM0315D-4R7□-LRH	4.7	M	1/1	0.185	0.150	2.50	3.00	1.70	1.90
CSMM0315D-6R8□-LRH	6.8	M	1/1	0.320	0.245	2.00	2.40	1.20	1.35
CSMM0315D-100□-LRH	10	M	1/1	0.450	0.350	1.60	2.00	1.10	1.20
CSMM0315D-150□-LRH	15	M	1/1	0.610	0.460	1.45	1.75	1.10	1.20

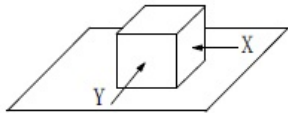
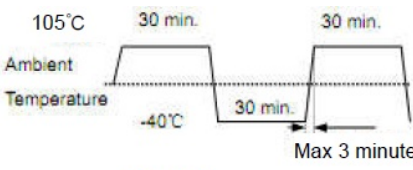
NOTE:

- Inductance Tolerance; N: $\pm 30\%$, M: $\pm 20\%$,
- Rated current: Isat (max.) or Irms (max.), whichever is smaller.
 - Saturation Current: Max. Value, DC current at which the inductance drops less than 30% from its value without current; Typ. Value, DC current at which the inductance drops 30% from its value without current.
 - Irms: DC current that causes the temperature rise (ΔT) from 20°C ambient. For Max. Value, $\Delta T < 40$ °C; For Typ. Value, ΔT is approximate 40°C.
 - The part temperature (ambient + temp. rise) should not exceed 125°C under worst case operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.
 - Absolute maximum voltage: DC 40V.
 - MSL: Level 1

8. CHARACTERISTIC CURVE



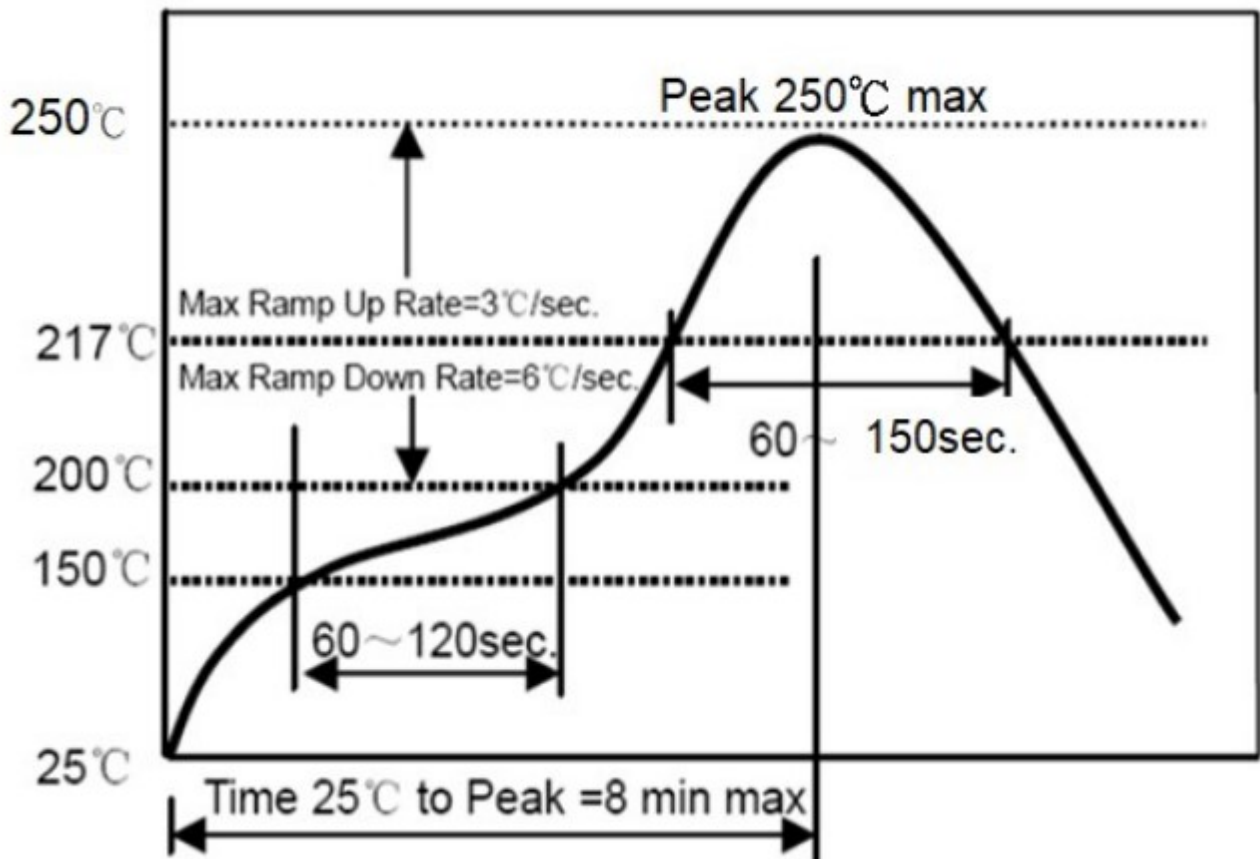
8. RELIABILITY PERFORMANCE

Items	Requirements	Test Methods and Remarks
Terminal Strength	<p>No removal or split of the termination or other defects shall occur.</p>  <p>Fig.7.1-1</p>	<ol style="list-style-type: none"> Solder the inductor to the testing jig (glass epoxy board shown in Fig.7.1-1) using eutectic solder. Then apply a force in the direction of the arrow. 10N force. Keep time: 5±2s
High Temperature	<ol style="list-style-type: none"> No visible mechanical damage. Inductance change: Within ±10% 	<ol style="list-style-type: none"> Storage Temperature: 125+/-5°C Duration: 96 ±4 Hours Recovery: then measured at room ambient temperature after placing 24 hours.
Low Temperature	<ol style="list-style-type: none"> No visible mechanical damage Inductance change: Within ±10% 	<ol style="list-style-type: none"> Temperature and time: -40±5°C Duration: 96±4 hours TRecovery: then measured at room ambient temperature after placing 24 hours.
Vibration test	<ol style="list-style-type: none"> No visible mechanical damage. Inductance change: Within ±10% 	<ol style="list-style-type: none"> Frequency range: 10HZ~55HZ~10HZ Amplitude: 1.5mm p-p Direction: X, Y, Z Time: 1 minute/cycle, 2hours per axis
High Temperature Storage Tested	<ol style="list-style-type: none"> No visible mechanical damage. Inductance change: Within ±10% 	<ol style="list-style-type: none"> Storage Temperature: 60+/-2°C Relative Humidity: 90-95% R.H. Duration: 96±4 Hours Recovery: then measured at room ambient temperature after placing 24 hours.
Thermal Shock	<ol style="list-style-type: none"> No visible mechanical damage. Inductance change: Within ±10%  <p>Fig.7.7-1</p>	<ol style="list-style-type: none"> Temperature and time: -40±3°C for 30±3 min→105°C for 30±3min, please refer to Fig.7.7-1. Transforming interval: Max, 3 minute Tested cycle: 100 cycles The chip shall be stabilized at normal condition for 1~2 hours before measuring

9. REFLOW CHART

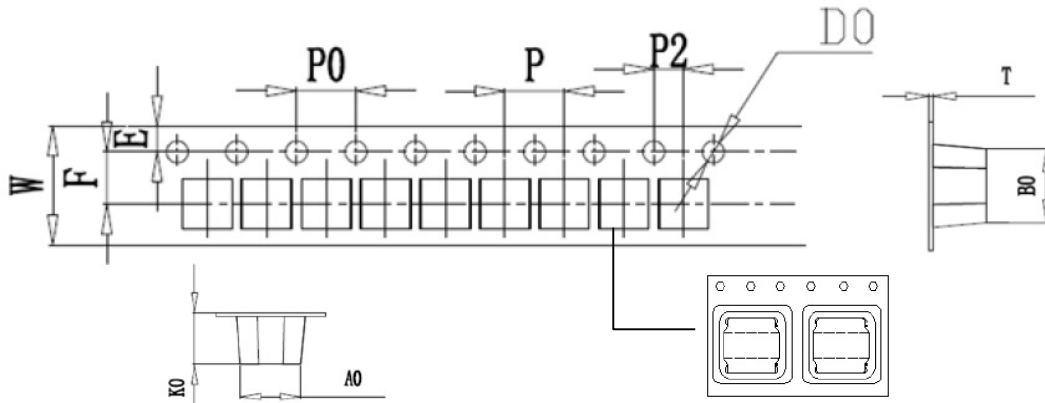
Re-flowing Profile

- Preheat condition: 150 ~200°C /60~120sec.
- Allowed time above 217°C : 60~150sec.
- Max temp: 250°C.
- Max time at max temp: 10sec.
- Solder paste: Sn/3.0Ag/0.5Cu.
- Allowed Reflow time: 2times.



10. PACKING

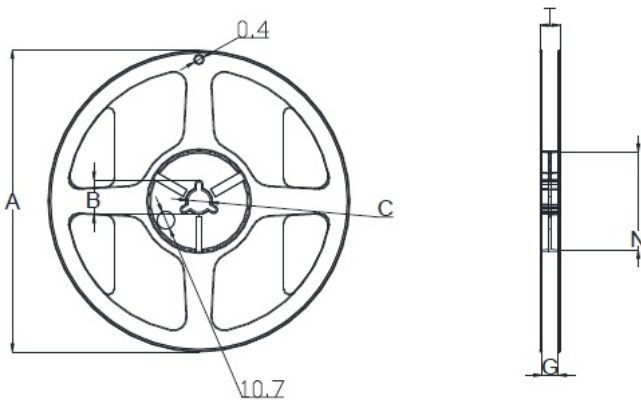
10-1. Carrier Tape Dimensions:



UNIT : mm

	W	A0	B0	K0	P	F	E	D0	P0	P2	T
DIM.	8.00	3.3	3.3	1.9	4.00	3.50	1.75	1.50	4.00	2.00	0.25
TOL.	±0.3	±0.05	±0.05	±0.05	±0.1	±0.05	±0.1	+0.1	±0.1	±0.05	±0.05

10-2. Reel Dimensions



Type	A	B	C	G	N	T
8 mm	178	20.7±0.8	13±0.4	9	60	10.8

10-3. Packaging Quantity:

2KPCS/ Reel 20KPCS/ Inner Box 80KPCS/ Outer Box