



INPAQ

PRODUCT SPECIFICATION

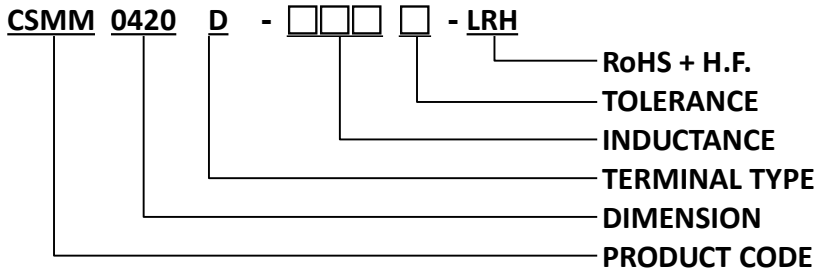
DOCUMENT NO. ENS000154180

DESCRIPTION	DRAWN BY	DESIGNED BY	CHECKED BY	APPROVED BY
CSMM0420D-XXXM-LRH	Zhuoling Tang	Tieqiao Gong	Shengjun Zhou	Dick Wang

ENGINEERING CHANGE NOTICE – RECORD

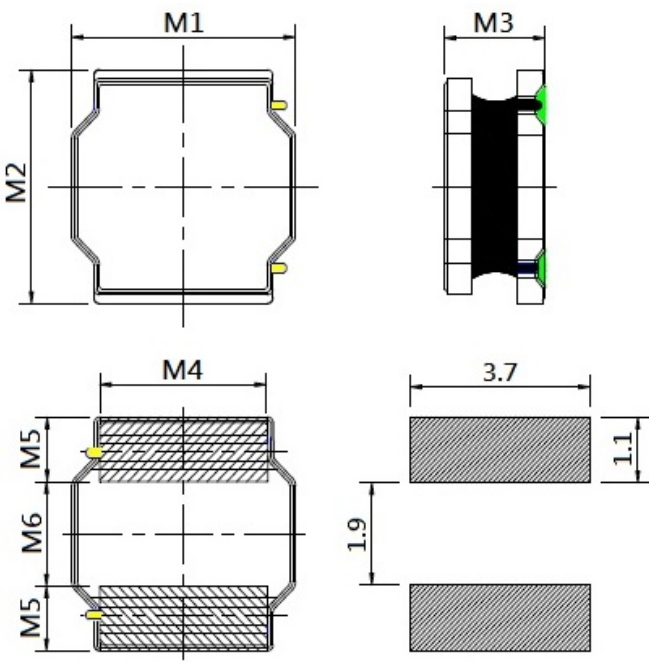
REVISION NO.	REVISION DESCRIPTION	AUTHOR	DATE	REMARK
A0	Change INPAQ form REV NO. FROM A TO A0	Shengjun Zhou	2021/8/18	
A1	1. Change from outsourcing products to own products 2. Change M5 size from 1.0±0.2 to 1.0±0.3	Tieqiao Gong	2022/4/20	

1. PART NUMBER IDENTIFICATION



2. MECHANICAL DIMENSION

UNIT: mm



	DIM.	TOL.
M1	4.0	±0.2
M2	4.0	±0.2
M3	1.8	±0.2
M4	3.3	±0.3
M5	1.0	±0.3
M6	2.0	±0.3

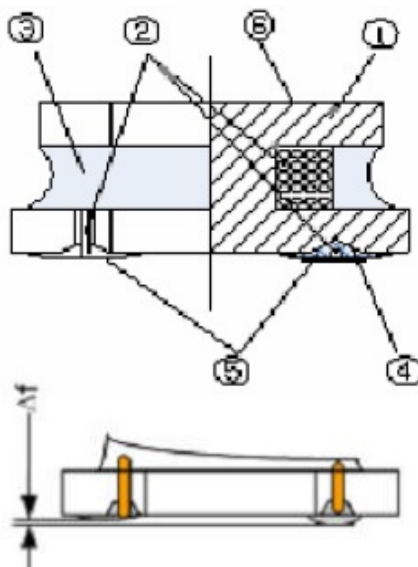
Recommended PCB pattern

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



Δf: Clearance between terminal and the surface of plate must be 0.15mm 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	Substrate	FeNiCu/Ag
5	Top Electrodes	Sn alloy
6	Marking	Nitrocellulose

6. TEST INSTRUMENT

6-1 Inductance: HIOKI3532-50/3536

6-2 DC Resistance: HIOKI 3540

6-3 Isat/Irms: HP4284A+42841

7. ELECTRICAL SPECIFICATION

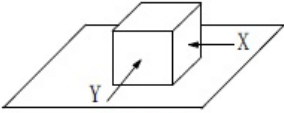
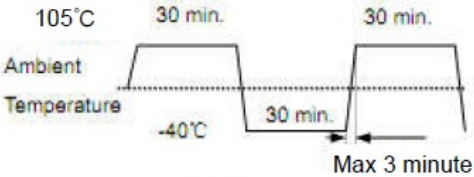
Part number	Inductance (μH)	Inductance Tolerance	Test Frequency (MHz/V)	DC Resistance (Ω) MAX.	DC Resistance (Ω) TYP.	Isat (A) MAX.	Isat (A) TYP.	Irms (A) MAX.	Irms (A) TYP.
CSMM0420D-R24□-LRH	0.24	M	1/1	0.017	0.013	14.0	17.0	6.00	7.00
CSMM0420D-R33□-LRH	0.33	M	1/1	0.020	0.015	13.0	16.0	5.90	6.80
CSMM0420D-R47□-LRH	0.47	M	1/1	0.022	0.016	11.0	12.0	5.90	6.80
CSMM0420D-R68□-LRH	0.68	M	1/1	0.0245	0.0192	9.00	11.5	5.80	6.70
CSMM0420D-1R0□-LRH	1.0	M	1/1	0.028	0.023	8.70	11.0	5.80	6.70
CSMM0420D-1R5□-LRH	1.5	M	1/1	0.038	0.032	7.70	9.60	5.20	6.00
CSMM0420D-2R2□-LRH	2.2	M	1/1	0.056	0.046	6.00	7.50	4.00	4.80
CSMM0420D-3R3□-LRH	3.3	M	1/1	0.088	0.073	4.70	5.90	3.40	4.00
CSMM0420D-4R7□-LRH	4.7	M	1/1	0.115	0.095	4.00	4.90	2.85	3.30
CSMM0420D-6R8□-LRH	6.8	M	1/1	0.160	0.130	3.00	4.20	2.40	2.80
CSMM0420D-8R2□-LRH	8.2	M	1/1	0.220	0.175	2.90	3.80	2.10	2.40
CSMM0420D-100□-LRH	10	M	1/1	0.220	0.190	2.80	3.50	2.00	2.35
CSMM0420D-150□-LRH	15	M	1/1	0.400	0.305	2.10	2.80	1.00	1.20
CSMM0420D-220□-LRH	22	M	1/1	0.545	0.415	1.30	1.50	0.95	1.10
CSMM0420D-330□-LRH	33	M	1/1	0.850	0.650	1.20	1.40	0.70	0.86
CSMM0420D-470□-LRH	47	M	1/1	1.20	0.950	1.10	1.30	0.56	0.66

NOTE:

□ Inductance Tolerance: M: ±20%

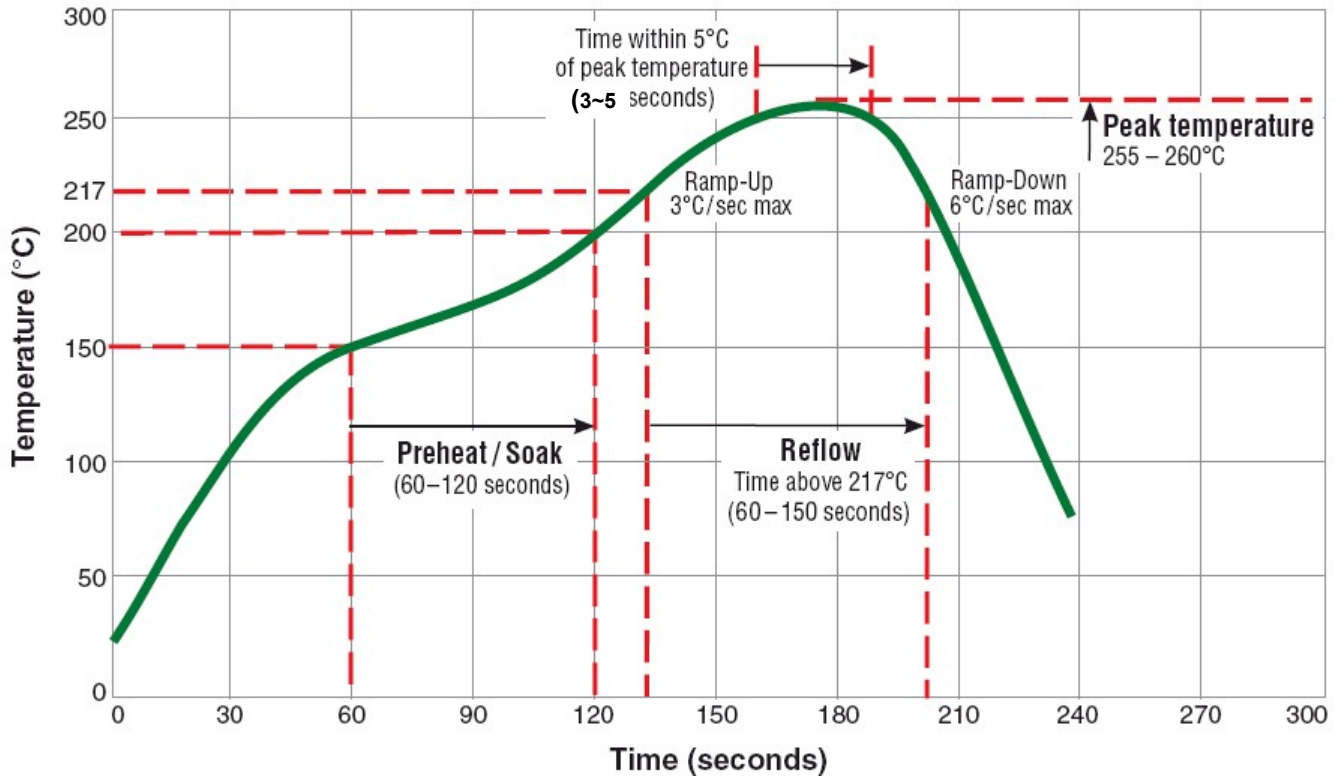
1. Rated current: Isat (max.) or Irms (max.), whichever is smaller.
2. Saturation Current: Max. Value, DC current at which the inductance drops less than 30% from its value without current; Typ. Value, DC current at which the inductance drops 30% from its value without current.
3. Irms: DC current that causes the temperature rise (ΔT) from 20°C ambient. For Max. Value, $\Delta T < 40$ °C; For Typ. Value, ΔT is approximate 40°C.
4. 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.
5. Absolute maximum voltage: DC 40V.
6. MSL: Level 1

8. RELIABILITY PERFORMANCE

Items	Requirements	Test Methods and Remarks
<p>Terminal Strength</p>	<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
<p>High Temperature</p>	<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.
<p>Low Temperature</p>	<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 Recovery: then measured at room ambient temperature after placing 24 hours.
<p>Vibration test</p>	<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
<p>High Temperature Storage Tested</p>	<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% RH Duration: 96±4 Hours Recovery: then measured at room ambient temperature after placing 24 hours.
<p>Thermal Shock</p>	<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

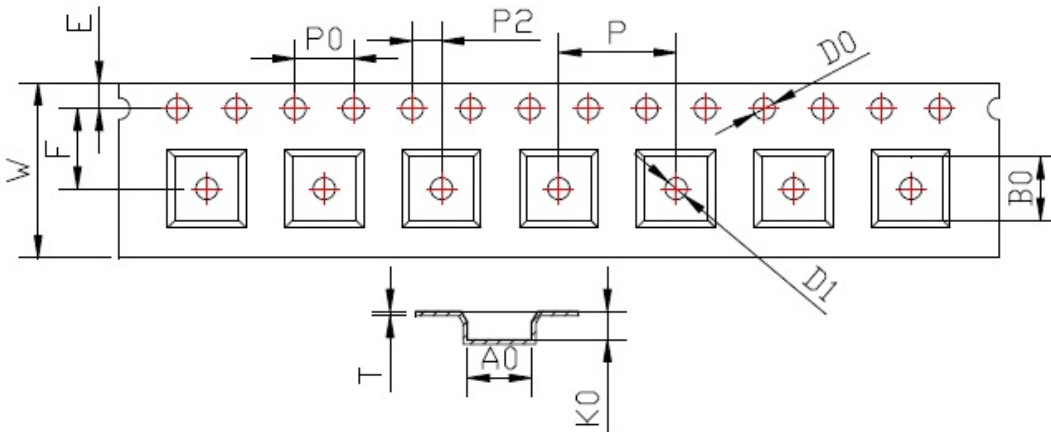
9. REFLOW CHART

Typical RoHS Reflow Profile



10. PACKING

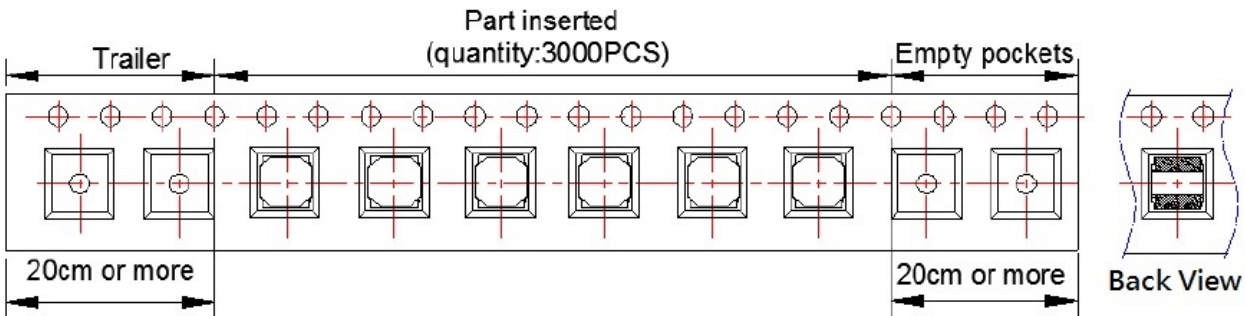
10-1. Carrier Tape Dimensions:



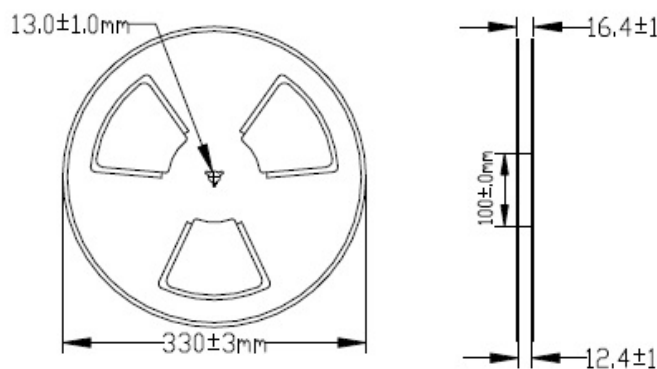
UNIT : mm

	W	A0	B0	K0	P	F	E	D0	D1	P0	P2	T
DIM.	12.00	4.3	4.3	2.25	8.00	5.50	1.75	1.50	1.50	4.00	2.00	0.30
TOL.	+0.30-0.10	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1	+0.1	±0.1	±0.1	±0.05

10-2. Taping Dimensions



10-3. Reel Dimensions



10-4. Packaging Quantity:

3KPCS/ Reel ,9KPCS/ Inner Box ,27KPCS/ Outer Box