

DATA SHEET

PRODUCT **POWER CHOKE**

SERIES CSMM0420D

PART NO. _____

DESCRIPTION _____

ISSUE DATE 2023/08/11

REVISION DATE 2023/08/11

REFERENCE NO. ENS000181900

RoHS COMPLIANCE ITEM

Disclaimer:

- This datasheet is downloaded from the Website of Walsin Technology Corporation, and Walsin Technology Corporation reserves all rights for modification content without further notification.
- All product, specification and data are subject to change without notice.
- Walsin Technology Corporation, its affiliates, agents, employees, and all persons acting on its or their behalf, hereby disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any product related information, including but not limited to product specifications, datasheets, pictures and/or graphics.
- Walsin Technology Corporation makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. It is the customer's responsibility to validate that a particular product is suitable for use in a particular application.
- To the maximum extent permitted by applicable law, Walsin Technology Corporation disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- If you have any questions, please contact our sales staff.

POWER CHOKES Engineering Specification

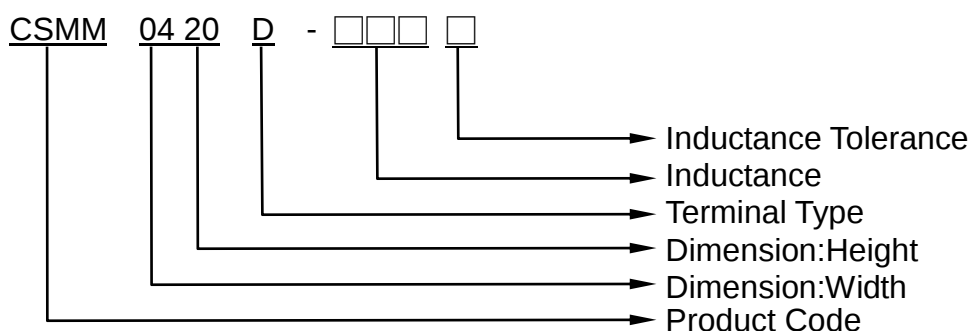
1. Feature

- High saturation current realized by material properties and structure design.
- Low DC resistance to achieve high conversion efficiency and lower temperature rising.
- Low Profile: 4.0 mm × 4.0 mm × 1.8 mm.
- Magnetically shielded structure to accomplish high resolution in EMC protection.
- Halogen free, Lead Free, RoHS Compliance.
- Surface marking : None.
- The moisture sensitivity level (MSL) of products is level 1.

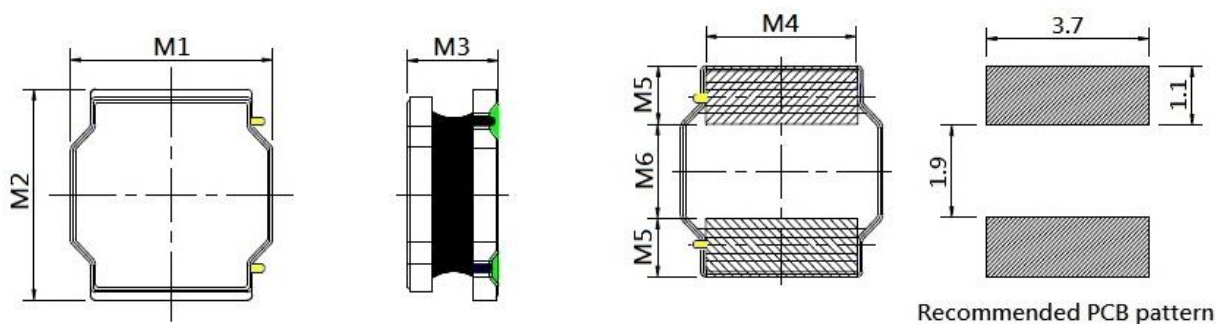
2. Applications

- Smart phone, PAD
- DC/DC converter
- Thin-type power supply module,

3. Explanation of Part Number



4. Shapes and Dimensions (Unit:mm)



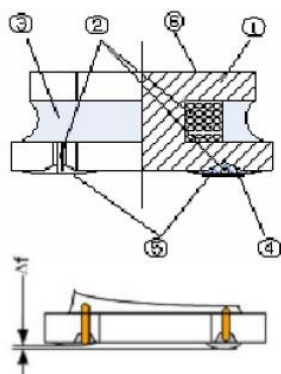
ITEM	M1	M2	M3	M4	M5	M6
DIM.	4.0	4.0	1.8	3.3	1.0	2.0
TOL.	±0.2	±0.2	±0.2	±0.3	±0.3	±0.3

5. Temperature Specifications

Operating Temperature range(individual chip without packing) : - 40°C to +125°C (Including self-heating)

Storage Temperature range(packaging conditions) : - 10°C to + 40°C and RH 70% (Max.).

6. Structure



Δf: Clearance between terminal and the surface of plate must be 0.15mm max when coil is placed on a flat plate.

7. Material List

No.	Components	Material
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

8. Electrical Specification

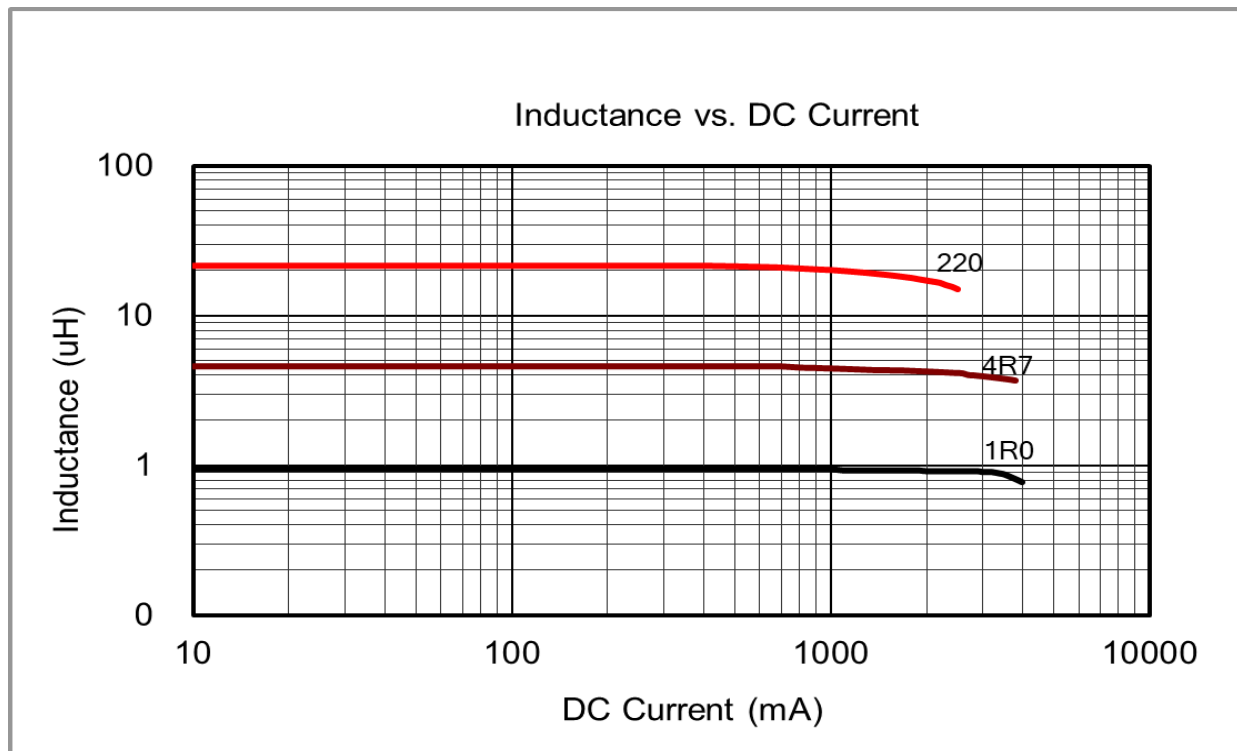
● Specifications

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

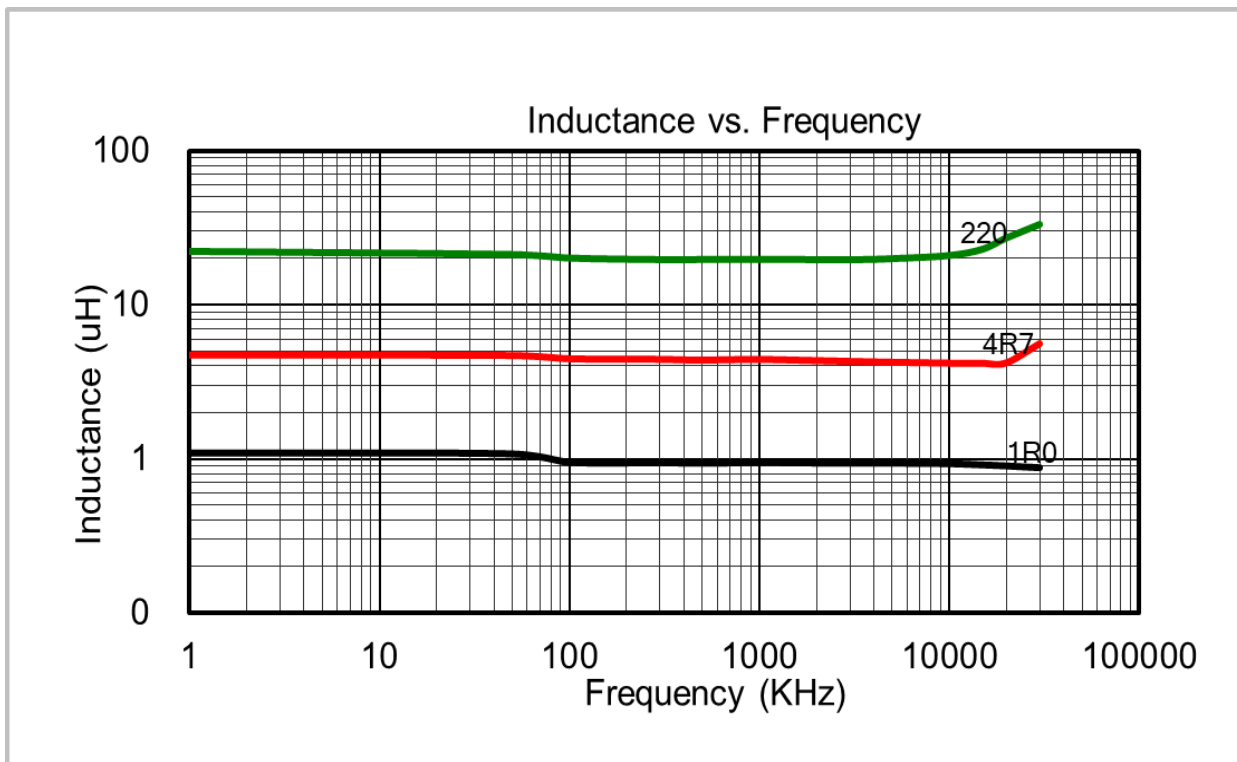
Notes

- Tolerance:.,M:±20%, Test frequency:1MHz/1V
- Inductance: CH3302 or equivalent, DC Resistance: CH16502 or equivalent, Isat/Irms: CH3302+CH1320 or equivalent
- 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, $\Delta T < 40^\circ\text{C}$; 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

- Current Characteristic

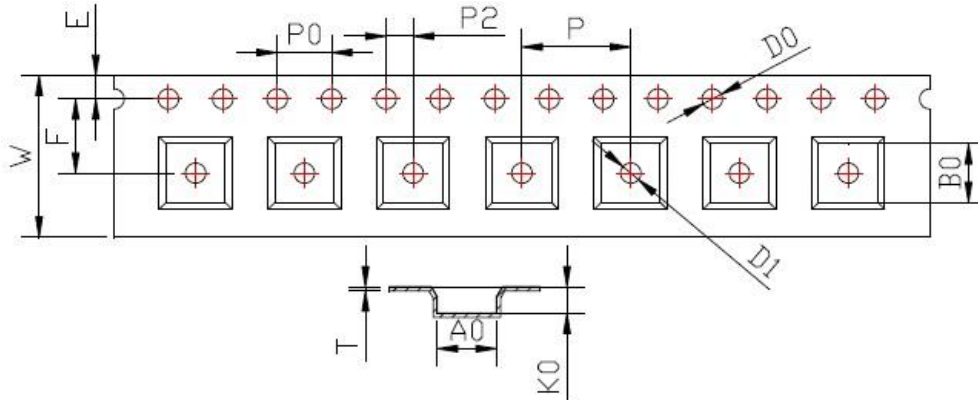


- Frequency Characteristic



9. Packing

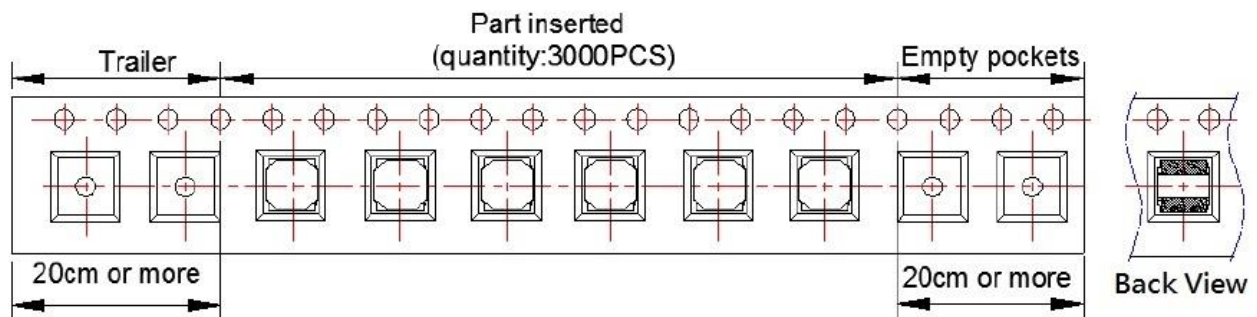
● Carrier Tape Dimensions



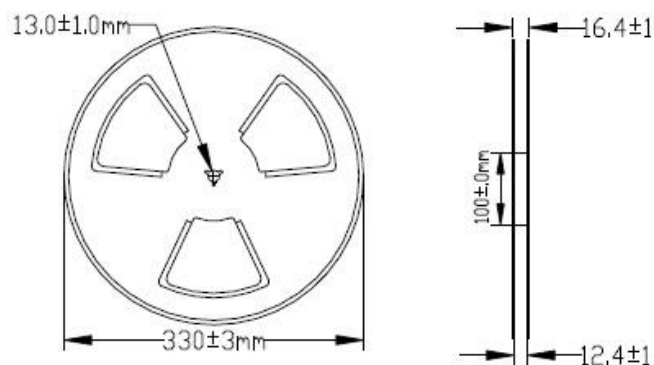
Unit:mm

ITEM	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

● Taping Dimensions



● Carrier Reel Dimension

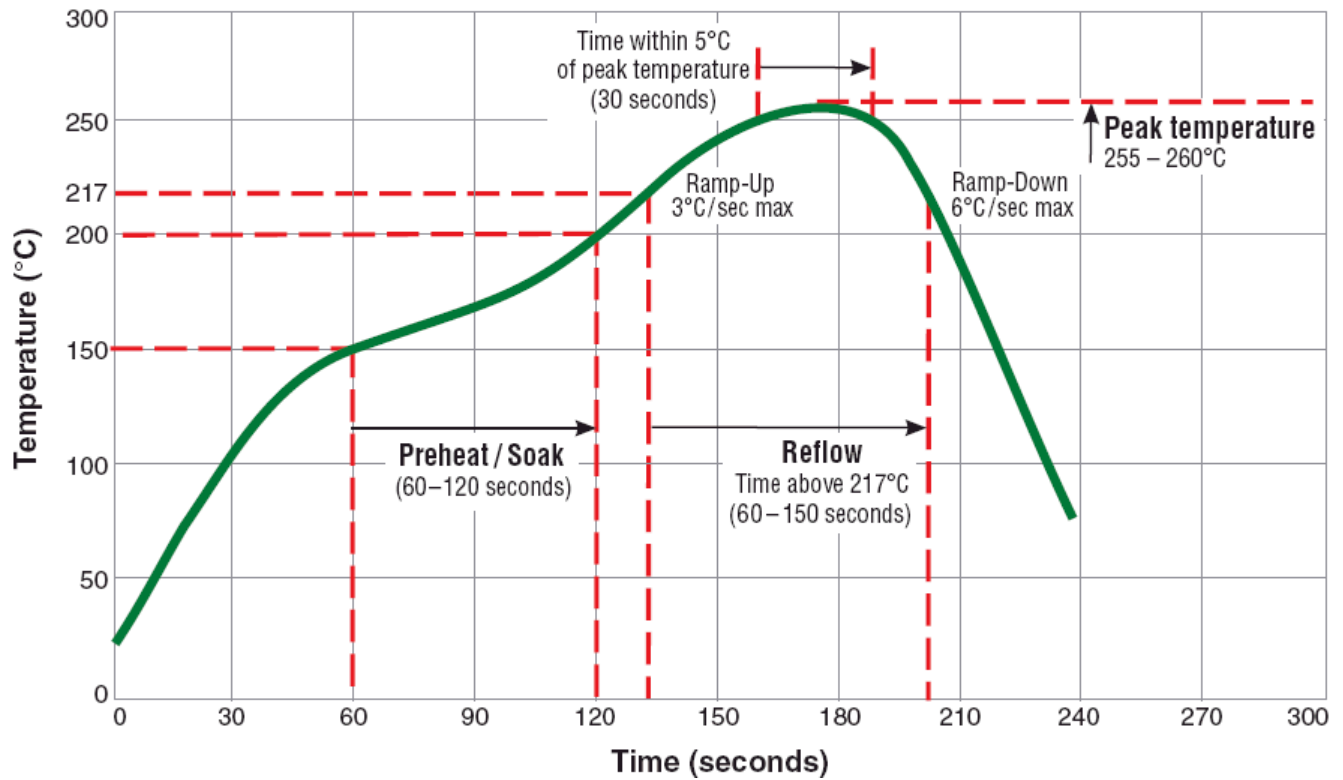


● Packaging Quantity

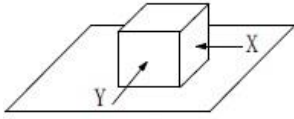
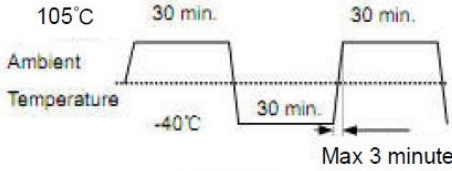
3KPCS/ Reel

10. Recommended Soldering Conditions

Typical RoHS Reflow Profile



11. Reliability and Test Condition

Items	Requirements	Test Methods and Remarks
Terminal Strength	No removal or split of the termination or other defects shall occur.  Fig.7.1-1	1. 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. 2. 10N force. 3. Keep time: 5±2s
High Temperature	1. No visible mechanical damage. 2. Inductance change: Within ±10%	1. Storage Temperature :125+/-5°C 2. Duration: 96 ±4 Hours 3. Recovery: then measured at room ambient temperature after placing 24 hours.
Low Temperature	1. No visible mechanical damage. 2. Inductance change: Within ±10%	1. Temperature and time: -40±5°C 2. Duration: 96±4 hours 3. TRecovery: then measured at room ambient temperature after placing 24 hours.
Vibration test	1. No visible mechanical damage. 2. Inductance change: Within ±10%	1. Frequency range:10HZ~55HZ~10HZ 2. Amplitude:1.5mm p-p 3. Direction: X, Y, Z 4. Time:1 minute/cycle,2hours per axis
High Temperature Storage Tested	1. No visible mechanical damage. 2. Inductance change: Within ±10%	1. Storage Temperature: 60+/-2°C 2. Relative Humidity: 90-95% RH 3. Duration : 96 ±4 Hours 4. Recovery: then measured at room ambient temperature after placing 24 hours.
Thermal Shock	1. No visible mechanical damage. 2. Inductance change: Within ±10%  Fig.7.7-1	1. Temperature and time: -40±3°C for 30±3 min→105 °C for 30±3min, please refer to Fig.7.7-1. 2. Transforming interval: Max, 3 minute 3. Tested cycle: 100 cycles 4. The chip shall be stabilized at normal condition for 1~2 hours before measuring