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Power Inductor

BMMA Series

Overview

BMMA Series is designed for low profile type with low RDC and ultra large current.
Its molded magnetic shielded type is suitable for high-density mounting and ultra low buzz noise.
Soldering conditions can be easily confirmed when mounting onto the board.
This series also provides customers with embossed carrier type packaging for automatic mounting machine.

Benefits

1. Low resistance and high current rating
2. Magnetic core made by high performance magnetic powder

Applications

1. High current power supplies
2. PMIC
3. DC-DC converters, inverters
4. Consumer Electronics: Smartphones, laptops, tablets, wearable devices, and gaming consoles.

Product Information

Series	L (mm)	W(mm)	T (mm)	Inductance (μH)
BMMA	4	4	1.2	0.047 ~ 15
	4.0	4	2.0	
	5.18	5.49	1.2 ~ 3.0	
	6.47	6.86	1.8 ~ 5	
	8.1	8.3	3 ~ 4	
	10	11.5	1.5 ~ 5	
	12.9	13.2	3.5 ~ 6.4	
	17.2	17.6	7.0	



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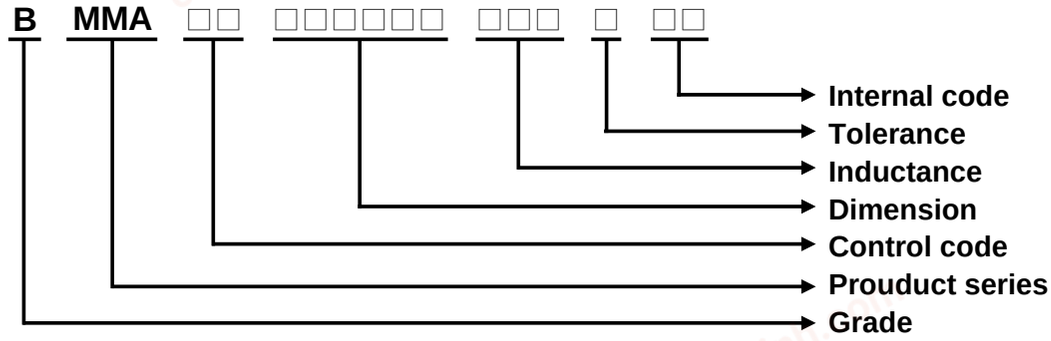
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BMMA00040420 Series Specification

1 Scope

This specification applies to large current and low loss SMD power inductor

2 Part numbering

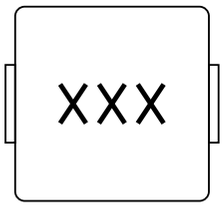


3 Temperature rating

Operating Temperature: -55°C~125°C

Storage Temperature: (on tape & reel): -20°C to +40°C; 75% RH max.

4 Marking



Marking : R10

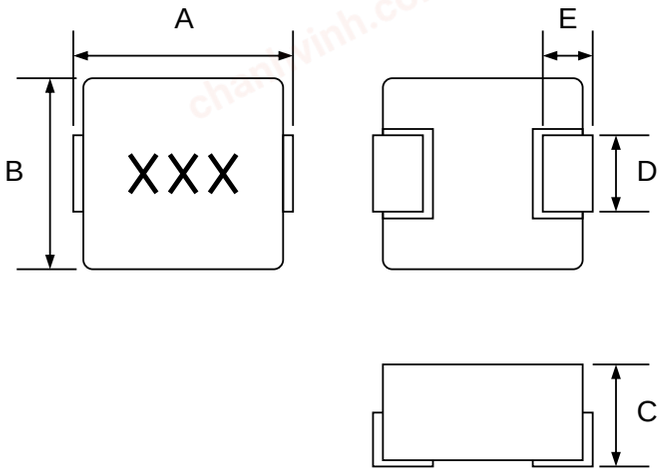
5 Standard testing condition

	Unless otherwise specified	In case of doubt
Temperature	Ordinary Temperature(15 to 35°C)	20 to 30°C
Humidity	Ordinary Humidity(25 to 85% RH)	50 to 80 %RH

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6 Configuration and dimensions



Dimensions in mm

Type	040420
A	4.45 ± 0.25
B	4.06 ± 0.25
C	2.0 Max
D	2.0 ± 0.3
E	0.76 ± 0.3

Size Code	Net weight(grms)
040420	0.2 (typ.)

7 Electrical characteristics

Part number	Inductance (uH)	Tolerance (±%)	Test Freq.	Irms (A) Typ.	Isat (A) Typ.	RDC (mΩ) Max.(Typ.)	Marking
BMMA00040420R10MX2	0.1	20	100kHz,0.5V	12	22	4(3.5)	R10
BMMA00040420R22MX2	0.22	20	100kHz,0.5V	9	12.5	6.6(6)	R22
BMMA00040420R47MX2	0.47	20	100kHz,0.5V	7	9.5	14(12.5)	R47
BMMA00040420R56MX2	0.56	20	100kHz,0.5V	6.5	10	16(14)	R56
BMMA00040420R68MX2	0.68	20	100kHz,0.5V	6	9	18(16)	R68
BMMA000404201R0MX2	1	20	100kHz,0.5V	4.5	7	27(24)	1R0
BMMA000404201R5MX2	1.5	20	100kHz,0.5V	4	6	43(35)	1R5
BMMA000404202R2MX2	2.2	20	100kHz,0.5V	3	5	58(52)	2R2
BMMA000404203R3MX2	3.3	20	100kHz,0.5V	2.5	4	87(74)	3R3
BMMA000404204R7MX2	4.7	20	100kHz,0.5V	2.2	3	105(92)	4R7

Note:

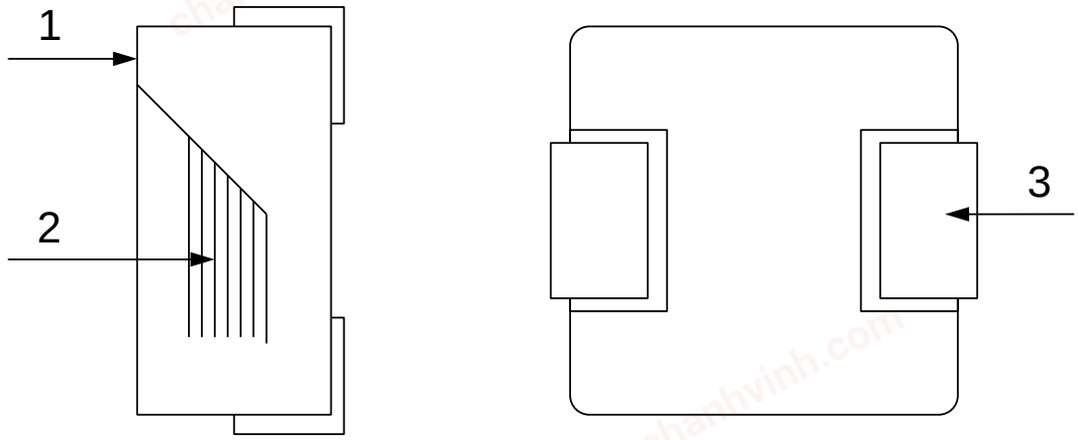
1. Operating temperature range -55°C to 125°C.
2. Isat for Inductance drop 30% from its value without current.
3. Irms for a 40°C temperature rise from 25°C ambient.
4. The part temperature (ambient + temp rise) should not exceed 125°C under worst case operating conditions. Circuit design 125°C under worst case operating conditions. 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 25V DC. (Based on test method, it may not the sameunder different application, it is recommended to verify first.)

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8 BMMA00040420 Series

8.1 Construction



8.2 Material List

Item	Part	Description
1	Magnetic core	Magnetic metal powder
2	Coil	Enameled copper wire
3	Terminals	Copper based terminal

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9 Reliability test items

1-1.Mechanical Performance

No	Item	Specification	Test Method
1-1-1	Vibration	Appearance: No damage Inductance:within±10% of initial value	Test device shall be soldered on the substrate Oscillation Frequency: 10 to 55 to 10Hz for 1min Amplitude: 1.5mm Time: 2hrs for each axis (X, Y & Z), total 6hrs
1-1-2	Resistance to Soldering Heat	Appearance: No damage	Pre-heating: 150°C, 1min Solder Composition: Sn/Ag3.0/Cu0.5 Solder Temperature: 260±5°C Immersion Time: 10±1sec
1-1-3	Solder ability	The electrodes shall be at least 95% covered with new solder coating	Pre-heating: 150°C, 1min Solder Composition: Sn/Ag3.0/Cu0.5 Solder Temperature: 245±5°C Immersion Time: 4±1sec
1-1-4	Resistance to solvent	There must be no change in appearance or obliteration of marking.	Inductors must withstand 6 minutes of alcohol or water.

1-2.Environmental Performance

No	Item	Specification	Test Method
1-2-1	Temperature Shock	Appearance: No damage Inductance:within±10% of initial value	10 cycles (Air to Air) 1 cycles shall consist of: 30 minutes exposure to -55°C 30 minutes exposure to 125°C 15 seconds maximum transition between temperatures
1-2-2	Temperature Cycle		One cycle:

Step	Temperature (°C)	Time (min)
1	-55±3	30
2	25±2	3
3	125±3	30
4	25±2	3

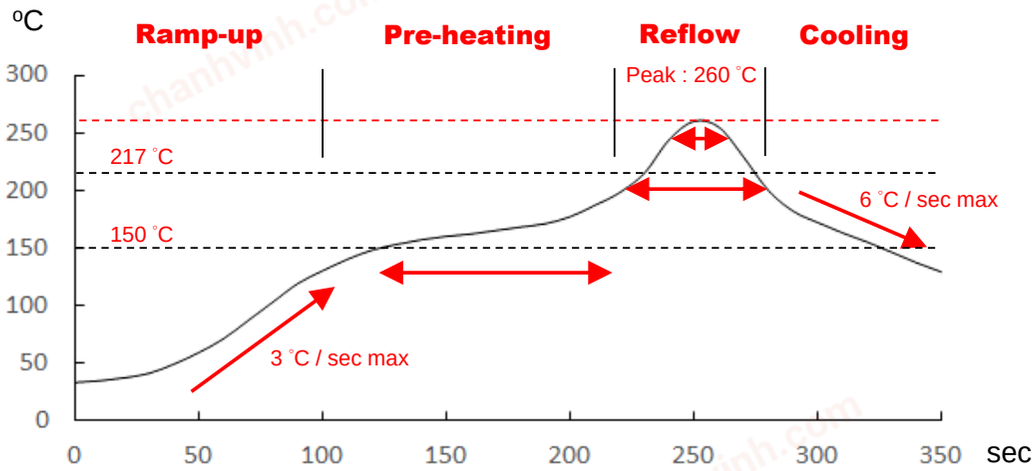
Total: 100cycles
Measured after exposure in the room condition for 24hrs

1-2-3	Humidity Resistance	Temperature: 40±2°C Relative Humidity: 90 ~ 95% Time: 1000hrs Measured after exposure in the room condition for 24hrs
1-2-4	Heat Life	Temperature: 85±3°C Relative Humidity: 20% Applied Current: Rated Current Time: 1000hrs Measured after exposure in the room condition for 24hrs
1-2-5	Cold Resistance	Temperature: -55±3°C Relative Humidity: 0% Time: 1000hrs Measured after exposure in the room condition for 24hrs

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10 Recommended IR reflow profile



Reflow profile

Lead-Free(LF) Refer to J-STD-020F

Item	Ramp-up	Pre-heating	Reflow	Peak Temp.	Cooling
Temp. scope	R.T. ~150 ˚C	150 ˚C~200 ˚C	217 ˚C	260±5 ˚C	Peak Temp. 150 ˚C
Time spec	-	60~120 sec	60~150 sec	20~40 sec	-

Note:

1. IR reflow times: within 3 times
2. Nitrogen adopted is recommended while in IR reflow

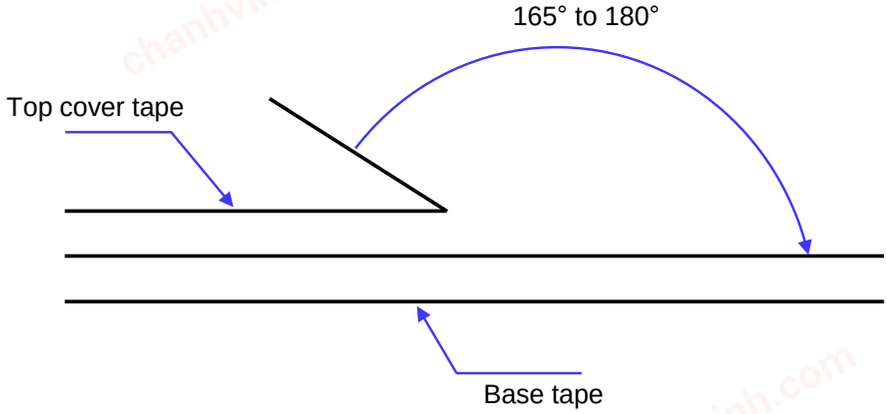
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BMMA00040420 Series Specification

11 Packaging

11.1 Packaging-cover tape

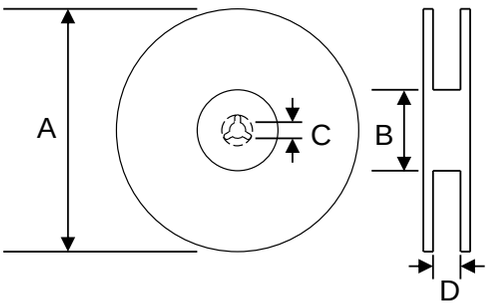
The force for tearing off cover tape is 10 to 130 grams.



11.2 Packaging quantity

Type	pcs/reel
040420	2000

11.3 Reel dimensions



Dimensions in mm

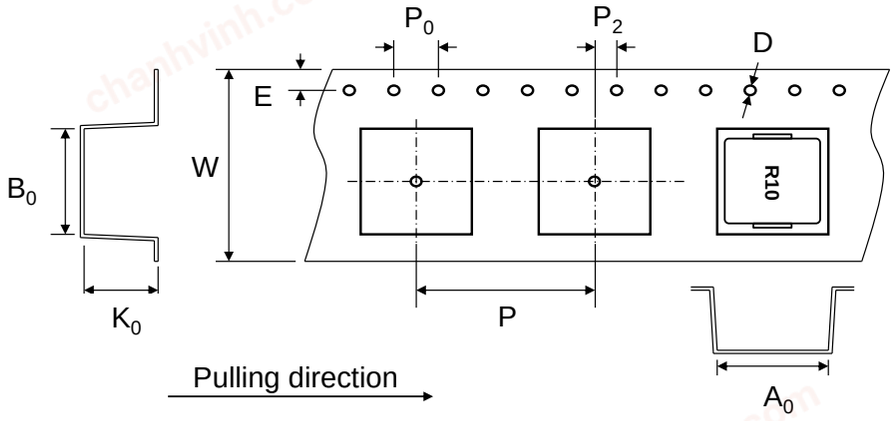
Type	A	B	C	D
040420	330	100	13	12.4

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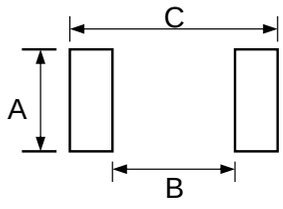
11 Packaging

11.4 Tape dimensions in mm



Type	A_0	B_0	K_0	D	E	W	P	P_0	P_2
040420	4.4	4.9	2.4	1.5	1.75	12	8	4	2

12 Recommended pattern



Dimensions in mm

Type	A	B	C
040420	2.5	2.2	5.2

13 Note

1. Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.
2. Don’t design/mount any components in contact with this product.
3. The moisture sensitivity level (MSL) of products is classified as level 1.
4. Shelf life: 1 years from the date of shipment.

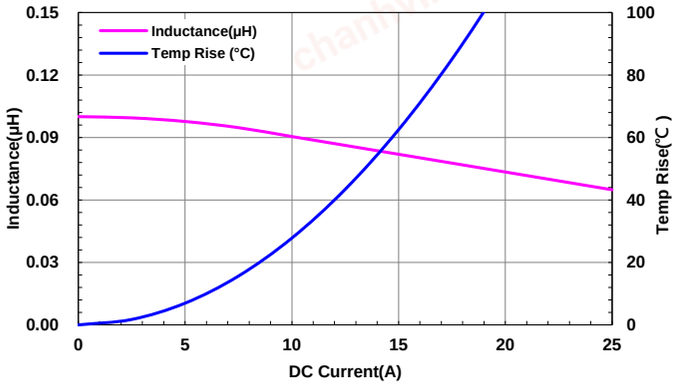
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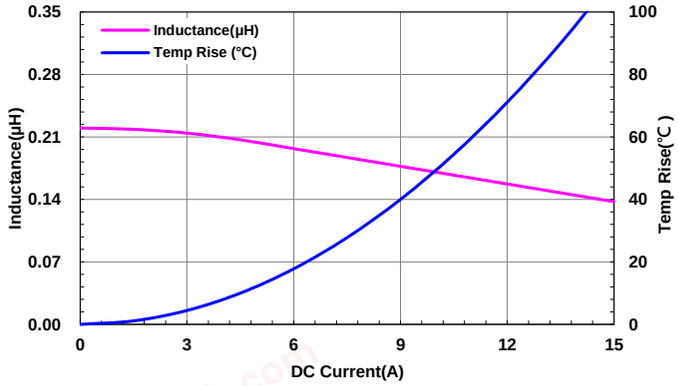
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14 Graph

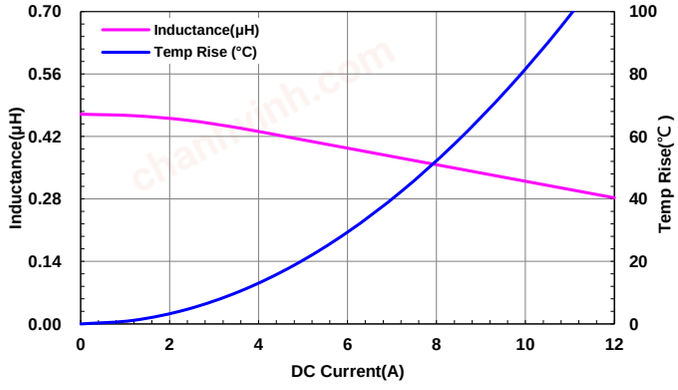
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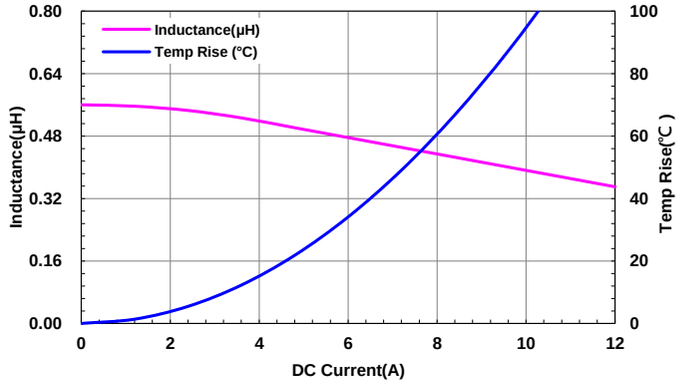
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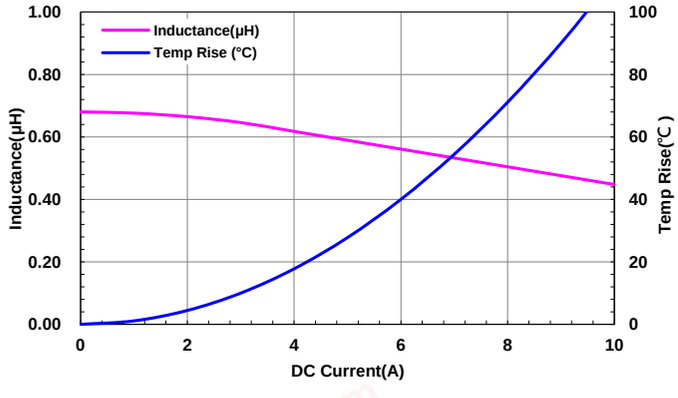
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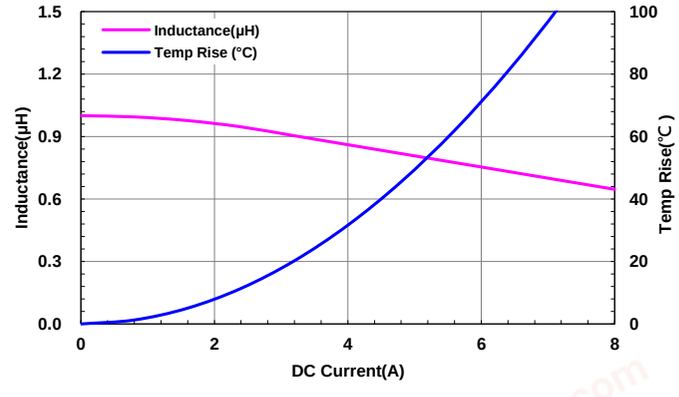
BMMA00040420R56MX2



BMMA00040420R68MX2



BMMA000404201R0MX2



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14 Graph

