

BMMN Series



Overview

Power inductors are passive electronic components used in various circuits to store energy in a magnetic field when electrical current flows through them. They are critical in filtering, energy storage, and noise suppression in power electronic systems. They are designed to handle higher currents and are optimized for minimal power loss and thermal efficiency. This series is the most common standard specification.

Benefits

- 1. Automotive grade available
- 2. Energy Storage, Efficiently stores and transfers energy in DC-DC converters and power supplies.
- 3. High Current Handling, Supports high current capacity with minimal losses, ensuring thermal stability.
- 4. Compact and Efficient Design, Advanced materials and construction enable miniaturization without sacrificing performance, ideal for space-constrained designs.

Applications

- 1. Automotive Systems for ADAS, infotainment.
- 2. Industrial Equipment: Robotics, power tools, industrial automation, and IoT devices.
- 3. DC-DC converters, inverters, and battery management systems.
- 4. Base stations, 5G infrastructure, and signal processing systems.
- 5. Consumer Electronics: Smartphones, laptops, tablets, wearable devices, and gaming consoles.

Product Information

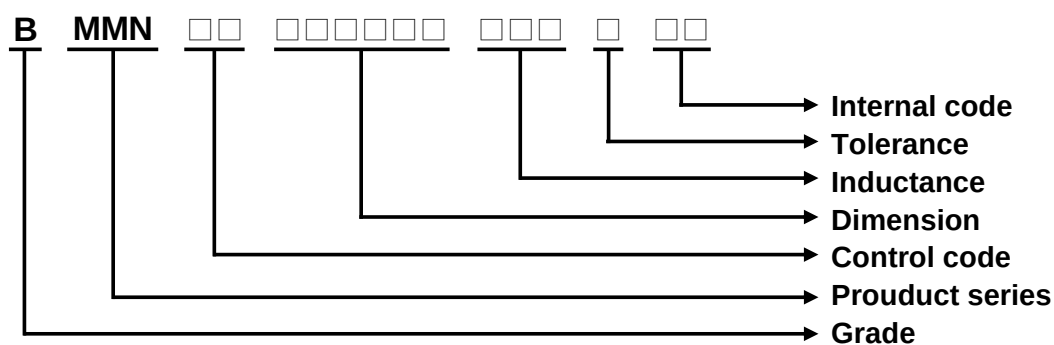
| Series | L (mm) | W (mm) | T (mm) | Inductance (μH) |
|--------|--------|--------|--------|-----------------|
| BMMN   | 5.18   | 5.49   | 1.2    | 0.18 ~ 47       |
|        | 5.18   | 5.49   | 1.5    |                 |
|        | 5.18   | 5.49   | 1.8    |                 |
|        | 4.7    | 5.3    | 3.0    |                 |
|        | 6.47   | 6.86   | 1.5    |                 |
|        | 6.6    | 7.4    | 1.8    |                 |
|        | 6.6    | 6.95   | 3.0    |                 |
|        | 10     | 11.5   | 2.0    |                 |
|        | 10     | 11.5   | 3.0    |                 |
|        | 10     | 11.5   | 4.0    |                 |
|        | 12.9   | 13.2   | 5.0    |                 |
|        | 12.6   | 14.2   | 6.0    |                 |
|        | 12.6   | 13.2   | 6.5    |                 |
|        | 17.2   | 17.6   | 7.00   |                 |



## BMMN00131350 Series Specification

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

### 2 Part numbering

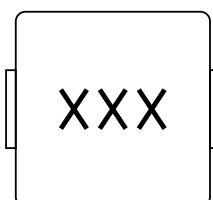


### 3 Temperature rating

Operating Temperature: -55°C~125°C

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

### 4 Marking



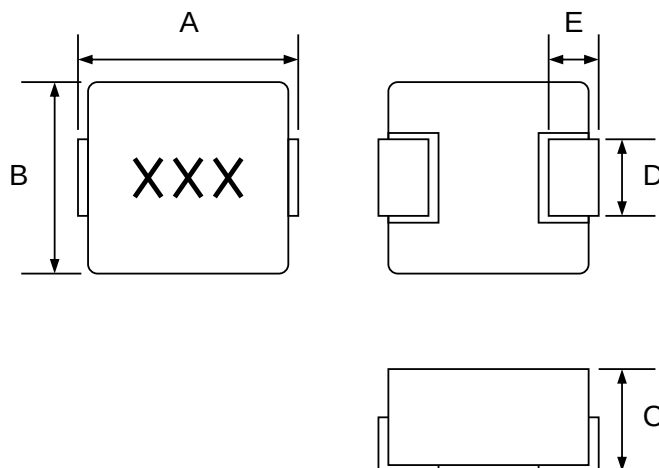
Marking : R82

### 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     |

## BMMN00131350 Series Specification

### 6 Configuration and dimensions



Dimensions in mm

| Type | 131350     |
|------|------------|
| A    | 13.2 ± 0.5 |
| B    | 12.9 Max   |
| C    | 5.0 Max    |
| D    | 3.5 ± 0.5  |
| E    | 2.3 ± 0.3  |

| Size Code | Net weight(grms) |
|-----------|------------------|
| 131350    | 4.6 (typ.)       |

### 7 Electrical characteristics

| Part number        | Inductance (uH) | Tolerance (±%) | Test Freq.  | I <sub>rms</sub> (A)<br>Max.(Typ.) | I <sub>sat</sub> (A)<br>Max.(Typ.) | RDC (mΩ)<br>Max.(Typ.) | Marking |
|--------------------|-----------------|----------------|-------------|------------------------------------|------------------------------------|------------------------|---------|
| BMMN00131350R82MX1 | 0.82            | 20             | 100kHz,0.5V | 28(31)                             | 55(65)                             | 2(1.7)                 | R82     |
| BMMN001313501R0MX1 | 1               | 20             | 100kHz,0.5V | 26(29)                             | 50(58)                             | 2.5(2.05)              | 1R0     |
| BMMN001313502R2MX1 | 2.2             | 20             | 100kHz,0.5V | 18.5(20)                           | 32(36)                             | 5.2(4.5)               | 2R2     |
| BMMN001313503R3MX1 | 3.3             | 20             | 100kHz,0.5V | 13.5(15)                           | 28.4(33)                           | 8.6(7.5)               | 3R3     |

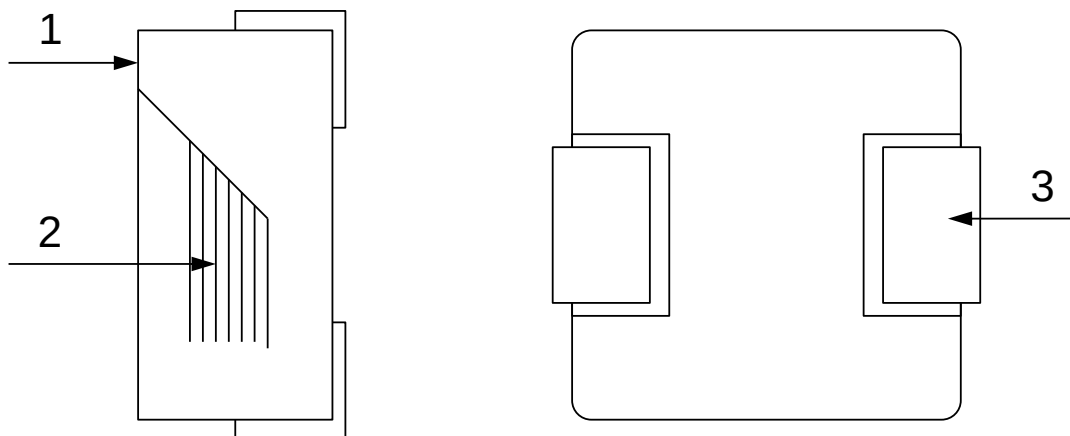
#### Note:

- Operating temperature range -55°C to 125°C.
- I<sub>sat</sub> for Inductance drop 30% from its value without current.
- I<sub>rms</sub> for a 40°C temperature rise from 25°C ambient.
- 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.
- Absolute maximum voltage 30V DC. (Based on test method, it may not be the same under different application, it is recommended to verify first.)

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#### 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 |

## BMMN00131350 Series Specification

### 9 Reliability test items

#### 1-1.Mechanical Performance

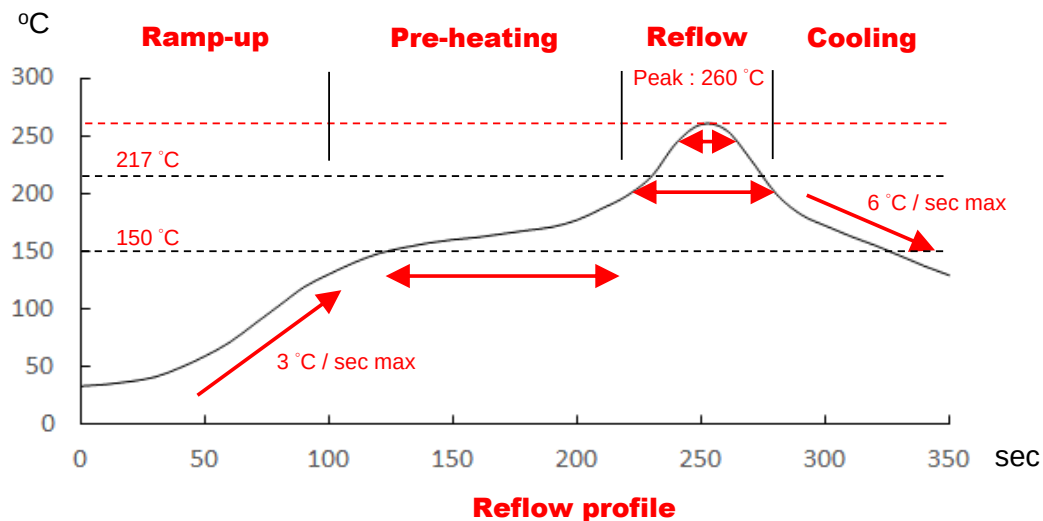
| No    | Item                         | Specification                                                           | Test Method                                                                                                                                                               |
|-------|------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1-1-1 | Vibration                    | Appearance: No damage<br>Inductance: within $\pm 10\%$ of initial value | Test device shall be soldered on the substrate<br>Oscillation Frequency: 10 to 55 to 10Hz for 1min<br>Amplitude: 1.5mm<br>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<br>Solder Composition: Sn/Ag3.0/Cu0.5<br>Solder Temperature: 260 $\pm$ 5°C<br>Immersion Time: 10 $\pm$ 1sec                                      |
| 1-1-3 | Solder ability               | The electrodes shall be at least 95% covered with new solder coating    | Pre-heating: 150°C, 1min<br>Solder Composition: Sn/Ag3.0/Cu0.5<br>Solder Temperature: 245 $\pm$ 5°C<br>Immersion Time: 4 $\pm$ 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

| 2 Environmental Performance |                     |                                                                  | Test Method                                                                                                                                                           |                 |            |
|-----------------------------|---------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------|
| No                          | Item                | Specification                                                    |                                                                                                                                                                       |                 |            |
| 1-2-1                       | Temperature Shock   | Appearance: No damage<br>Inductance: within±10% of initial value | 10 cycles (Air to Air) 1 cycles shall consist of:<br>30 minutes exposure to -55℃<br>30 minutes exposure to 125℃<br>15 seconds maximum transition between temperatures |                 |            |
| 1-2-2                       | Temperature Cycle   |                                                                  | One cycle:                                                                                                                                                            |                 |            |
|                             |                     |                                                                  | Step                                                                                                                                                                  | Temperature (℃) | Time (min) |
|                             |                     |                                                                  | 1                                                                                                                                                                     | -55±3           | 30         |
|                             |                     |                                                                  | 2                                                                                                                                                                     | 25±2            | 3          |
|                             |                     | 3                                                                | 125±3                                                                                                                                                                 | 30              |            |
|                             |                     | 4                                                                | 25±2                                                                                                                                                                  | 3               |            |
|                             |                     |                                                                  | Total: 100cycles<br>Measured after exposure in the room condition for 24hrs                                                                                           |                 |            |
| 1-2-3                       | Humidity Resistance |                                                                  | Temperature: 40±2℃<br>Relative Humidity: 90 ~ 95%<br>Time: 1000hrs<br>Measured after exposure in the room condition for 24hrs                                         |                 |            |
| 1-2-4                       | Heat Life           |                                                                  | Temperature: 85±3℃<br>Relative Humidity: 20%<br>Applied Current: Rated Current<br>Time: 1000hrs<br>Measured after exposure in the room condition for 24hrs            |                 |            |
| 1-2-5                       | Cold Resistance     |                                                                  | Temperature: -55±3℃<br>Relative Humidity: 0%<br>Time: 1000hrs<br>Measured after exposure in the room condition for 24hrs                                              |                 |            |

## BMMN00131350 Series Specification

### 10 Recommended IR 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.<br>150 °C |
| Time spec   | -            | 60~120 sec    | 60~150 sec | 20~40 sec  | -                    |

Note:

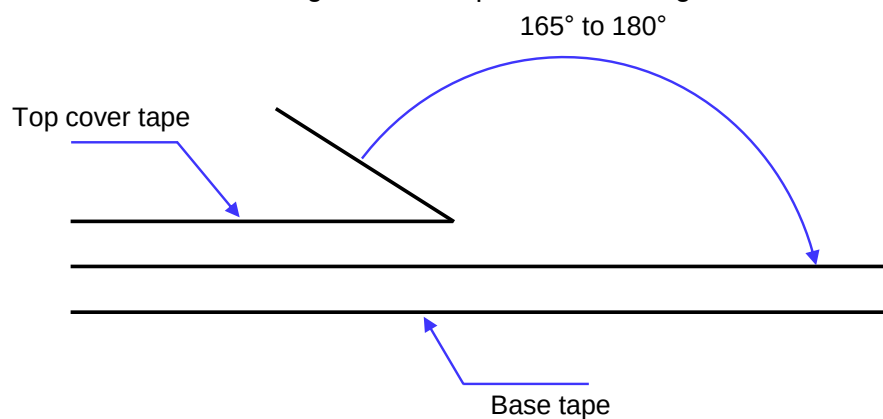
1. IR reflow times: within 3 times
2. Nitrogen adopted is recommended while in IR reflow

## BMMN00131350 Series Specification

### 11 Packaging

#### 11.1 Packaging-cover tape

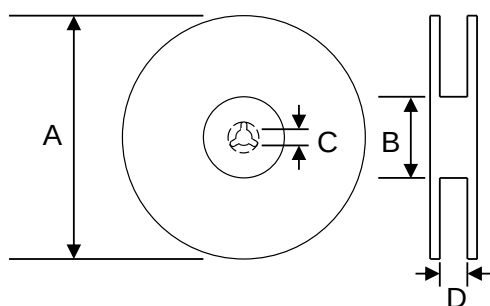
The force for tearing off cover tape is 10 to 130 grams.



#### 11.2 Packaging quantity

| Type   | pcs/reel |
|--------|----------|
| 131350 | 250      |

#### 11.3 Reel dimensions



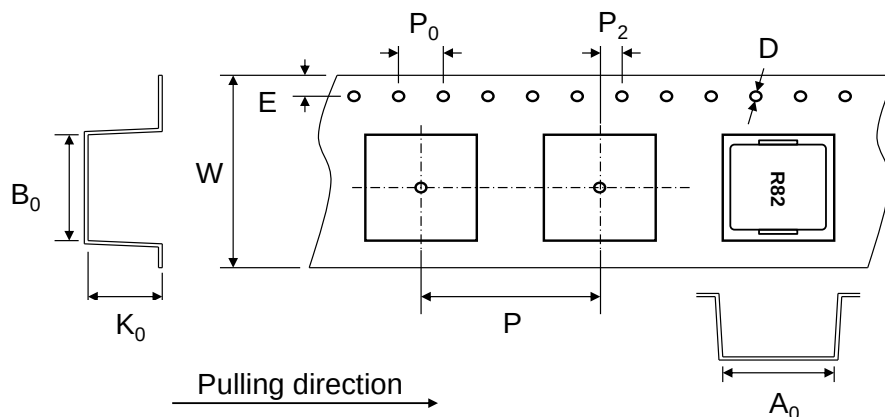
Dimensions in mm

| Type   | A   | B   | C  | D    |
|--------|-----|-----|----|------|
| 131350 | 330 | 100 | 13 | 24.2 |

## BMMN00131350 Series Specification

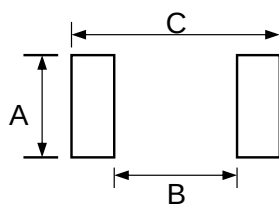
### 11 Packaging

#### 11.4 Tape dimensions in mm



| Type   | A <sub>0</sub> | B <sub>0</sub> | K <sub>0</sub> | D   | E    | W  | P  | P <sub>0</sub> | P <sub>2</sub> |
|--------|----------------|----------------|----------------|-----|------|----|----|----------------|----------------|
| 131350 | 13.4           | 14.0           | 5.4            | 1.5 | 1.75 | 24 | 16 | 4              | 2              |

### 12 Recommended pattern



Dimensions in mm

| Type   | A | B | C    |
|--------|---|---|------|
| 131350 | 5 | 8 | 14.5 |

### 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.



## BMMN00131350 Series Specification

### 14 Graph

