

# EMI Common Mode Choke



## BWDM Series



### Overview

An EMI common mode choke (CMC) for power lines is a passive component specifically designed to suppress electromagnetic interference (EMI) in power supply circuits. A full series of common mode choke is designed for excellent noise attenuation with compact sizing for use in wide range of applications. Both standard series and custom designs are available.

### Benefits

1. Miniature SMD type common mode filter for fully automated assembly
2. High Inductance at high frequency effects excellent noise suppression performance
3. Excellent solderability

### Applications

1. USB line for personal computers and peripheral
2. IEEE 1394 line for personal computers, DVC, STB
3. LVDS, panel line for liquid display panels, graph card, etc

### Product Information

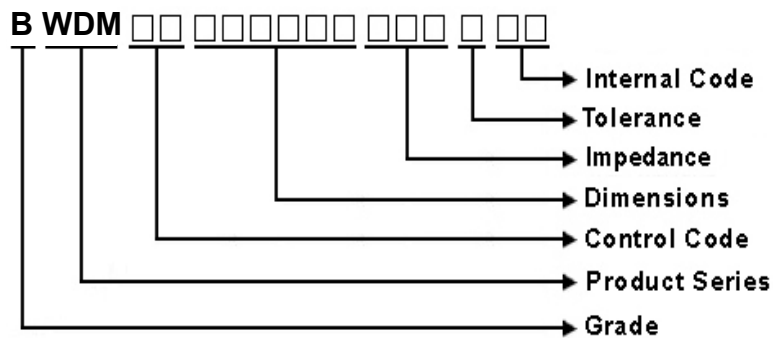
| Series | Size Code (JIS/EIA) | Impedance ( $\Omega$ ) |
|--------|---------------------|------------------------|
| BWDM   | 3416/1306           | 40 ~ 105               |



## BWDM00341620 Series Specification

**1 Scope:** This specification applies to BWDM Wire Wound Common Mode Choke Coil

**2 Part Numbering:**



**3 Rating:**

Operating Temperature: - 40°C ~ 105°C  
(Including self - temperature rise)

Storage Temperature: - 40°C ~ 105°C  
(The storage temperature range is for after the assembly)

**4 Marking:**

**No Marking**

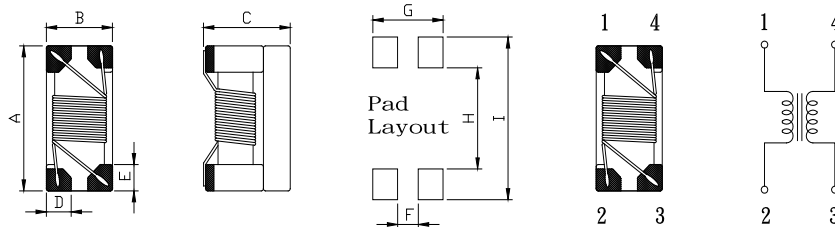
**5 Standard Testing Condition**

|             |                                  |                  |
|-------------|----------------------------------|------------------|
|             | 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 and Unit Weight:

NO Polarity Equivalent circuit



Dimensions in mm

| TYPE   | A       | B       | C       | D   | E   | F   | G   | H   | I   |
|--------|---------|---------|---------|-----|-----|-----|-----|-----|-----|
| 341620 | 3.4±0.2 | 1.6±0.2 | 2.0±0.2 | 0.6 | 0.6 | 0.5 | 1.7 | 2.3 | 3.7 |

Net Weight (grms)

| SIZE CODE | Net Weight (grms) |
|-----------|-------------------|
| 341620    | 0.047 (typ.)      |

### 7 Electrical Characteristics:

| Part No.           | L<br>(uH)Min. | RDC<br>(Ω)Max. | I <sub>rms</sub><br>(mA)Max. | Rated<br>Voltage<br>(Vdc) | Withstanding<br>Voltage<br>(Vdc) | Insulation<br>Resistance<br>(MΩ)(min) | Test Freq.<br>(KHz) |
|--------------------|---------------|----------------|------------------------------|---------------------------|----------------------------------|---------------------------------------|---------------------|
| BWDM00341620400X00 | 40            | 1.5            | 300                          | 50                        | 125                              | 10                                    | 100                 |
| BWDM00341620500X00 | 50            | 1.5            | 300                          | 50                        | 125                              | 10                                    | 100                 |
| BWDM00341620600X00 | 60            | 1.7            | 200                          | 50                        | 125                              | 10                                    | 100                 |
| BWDM00341620101X00 | 105           | 3              | 120                          | 50                        | 125                              | 10                                    | 100                 |

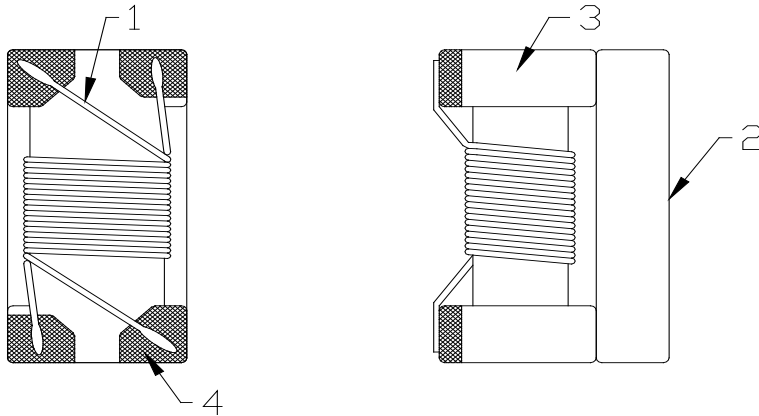
#### NOTE:

1. Operating temperature range - 40 °C ~ 105 °C (Including self - temperature rise)
2. RDC: SINGLE WIRE TEST VALUE
3. I<sub>rms</sub> for a 20°C temperature rise from 25°C ambient.

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#### 8.1 Construction:



#### 8.2 Material List:

| NO | PART        | MATERIAL    |
|----|-------------|-------------|
| 1  | WIRE        | COPPER 180  |
| 2  | COVER SHEET | FERRITE     |
| 3  | CORE        | FERRIT      |
| 4  | TERMINAL    | Ag/Cu/Ni/Sn |

## BWDM00341620 Series Specification

### 9 Common Mode Choke / RELIABILITY TEST

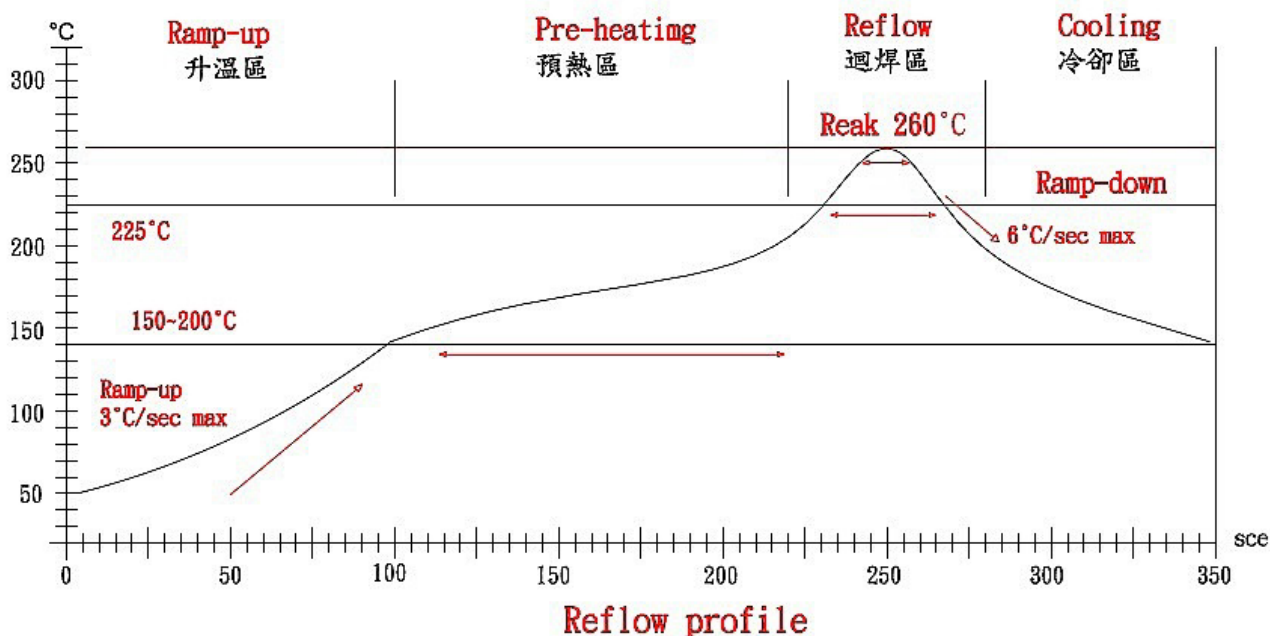
#### 1-1.Environmental Performance

| 1-1-Environmental Performance |                             |                                                                                                |                                                                                                |                                                                                            |            |
|-------------------------------|-----------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------|
| No                            | Item                        | Specification                                                                                  | Test method                                                                                    |                                                                                            |            |
| 1-1-1                         | Temperature Cycle           | Appearance: No Damage<br>Impedance: within±20% of initial value                                | One cycle:                                                                                     |                                                                                            |            |
|                               |                             |                                                                                                | Step                                                                                           | Temperature (℃)                                                                            | Time (min) |
|                               |                             |                                                                                                | 1                                                                                              | -40±3                                                                                      | 30         |
|                               |                             |                                                                                                | 2                                                                                              | 25±2                                                                                       | 3          |
|                               |                             |                                                                                                | 3                                                                                              | 105±3                                                                                      | 30         |
|                               |                             |                                                                                                | 4                                                                                              | 25±2                                                                                       | 3          |
|                               |                             |                                                                                                | Total: 5 cycles<br>Measured After Exposure in The Room Condition For 1hrs                      |                                                                                            |            |
| 1-1-2                         | High Temperature Resistance | Temperature: 105±3℃<br>Time: 1000Hrs<br>Measured After Exposure In The Room Condition For 1Hrs |                                                                                                |                                                                                            |            |
| 1-1-3                         | Low Temperature Resistance  |                                                                                                | Temperature: -40±3℃<br>Time: 1000Hrs<br>Measured After Exposure In The Room Condition For 1Hrs |                                                                                            |            |
| 1-1-4                         | Humidity Load Life          |                                                                                                |                                                                                                | Temperature: 40±2℃<br>Relative Humidity: 90~95%<br>Load: Allowed DC Current<br>Time: 96Hrs |            |

#### 1-2.Mechanical Performance

| No    | Item                         | Specification                                                        | Test method                                                                                                                                                                                                                                                                                       |
|-------|------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1-2-1 | Resistance To Soldering Heat | Appearance: No Damage                                                | 1. The device should be reflow soldered on PCB<br>(peak $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 10 seconds)<br>2. Solder Composition: Sn/Ag3.0/Cu0.5<br>3. Test time: 6 minutes                                                                                                           |
| 1-2-2 | Solder ability               | The electrodes shall be at least 95% covered with new solder coating | 1. Pre-Heating: $150^{\circ}\text{C}$ , 1min.<br>2. Solder Composition: Sn/Ag3.0/Cu0.5<br>3. Solder Temperature: $245\pm 5^{\circ}\text{C}$ .<br>4. Immersion Time: $4\pm 1$ sec.                                                                                                                 |
| 1-2-3 | Common Adhesion (Push Test)  | 1 Lbs. For CMM11<br>2 Lbs. For other                                 | The device should be reflow soldered ( $245\pm 5^{\circ}\text{C}$ For 10 seconds) to a tinned copper substrate. A force gauge should be applied to the side of the component.<br>The device must withstand a minimum force of 2 pounds without a failure of the termination attached to component |

## BWDM00341620 Series Specification



Lead-Free(LF)標準溫度分析範圍

Refer to J-STD-020C

| 管制項目<br>Item.       | 升溫區<br>Ramp-up | 預熱區<br>Pre-heating | 迴焊區<br>Reflow | Peak Temp   | 冷卻區<br>Cooling   |
|---------------------|----------------|--------------------|---------------|-------------|------------------|
| 溫度範圍<br>Temp.scope  | R.T ~ 150°C    | 150°C ~ 200°C      | Above 217°C   | 260±5°C     | Peak Temp.~150°C |
| 標準時間<br>Time spec.  | -              | 60 ~ 180 sec       | 60 ~ 150 sec  | 20 ~ 40 sec | -                |
| 實際時間<br>Time result | -              | 75 ~ 100 sec       | 90 ~ 120 sec  | 20 ~ 35 sec | -                |

NOTE :

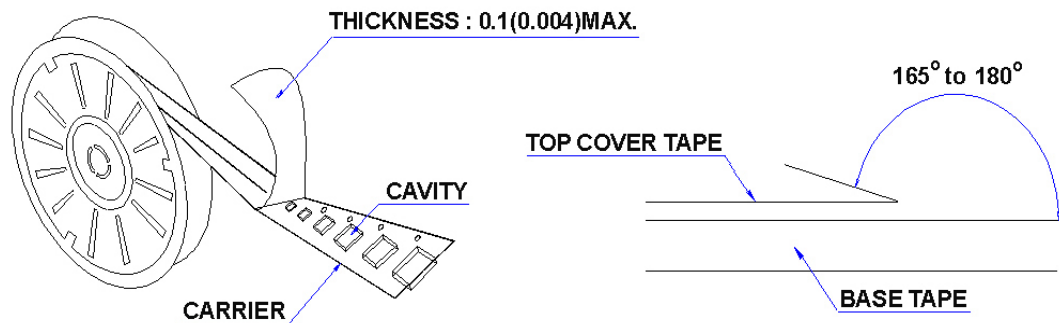
1. Re-flow possible times : within 2 times
2. Nitrogen adopted is recommended while in re-flow
3. Products can only be soldered with reflow

## BWDM00341620 Series Specification

### 10 Packaging:

#### 10.1 Packaging -Cover Tape

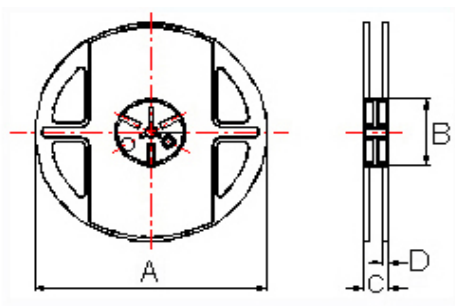
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



#### 10.2 Packaging Quantity

| TYPE   | PCS/REEL |
|--------|----------|
| 341620 | 2000     |

#### 10.3 Reel Dimensions



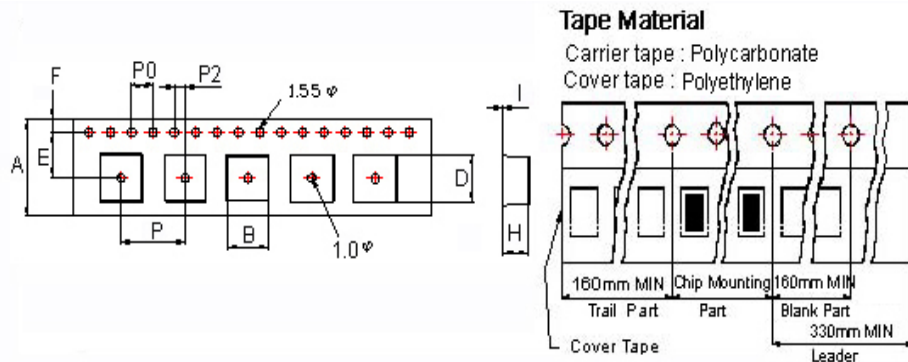
Dimensions in mm

| TYPE   | A     | B      | C      | D       |
|--------|-------|--------|--------|---------|
| 341620 | 178±1 | 60±0.5 | 12±0.2 | 1.5±0.2 |

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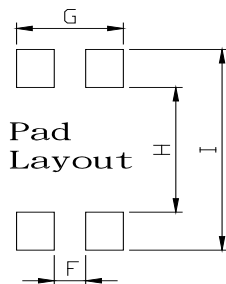
### 10 Packaging:

#### 10.4 Tape Dimensions in mm



| TYPE   | A | B    | D    | E   | F    | H    | I    | P | P0 | P2 |
|--------|---|------|------|-----|------|------|------|---|----|----|
| 341620 | 8 | 1.76 | 3.47 | 3.5 | 1.75 | 2.05 | 0.22 | 4 | 4  | 2  |

### 11 Recommended Land Pattern:



Dimensions in mm

| TYPE   | F   | G   | H   | I   |
|--------|-----|-----|-----|-----|
| 341620 | 0.5 | 1.7 | 2.3 | 3.7 |

### 12 Note:

- Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.
- Do not knock nor drop.
- All the items and parameters in this product specification have been prescribed on the premise that our product is used for the purpose, under the condition and in the environment agreed upon between you and us. You are requested not to use our product deviating from such agreement.
- The storage period is less than 12 months. Be sure to follow the storage conditions (Temperature: 5 to 40°C, Humidity: 10 to 75% RH or less).  
If the storage period elapses, the soldering of the terminal electrodes may deteriorate.
- Do not use or store in locations where there are conditions such as gas corrosion (salt, acid, alkali, etc.).
- The moisture sensitivity level (MSL) of products is classified as level 1.

## BWDM00341620 Series Specification

**13** Graph:

