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# SPECIFICATIONS

Chip Common Mode Filter

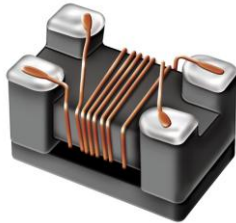
## CM-Serie

Version February 2013

## Chip Common Mode Choke

### ■ Features

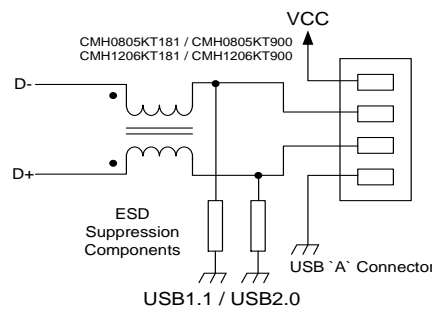
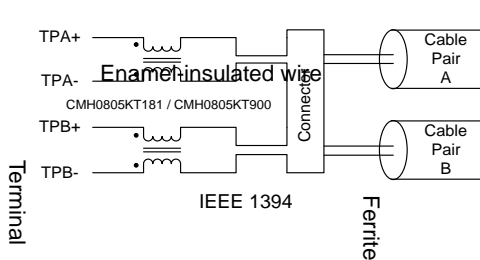
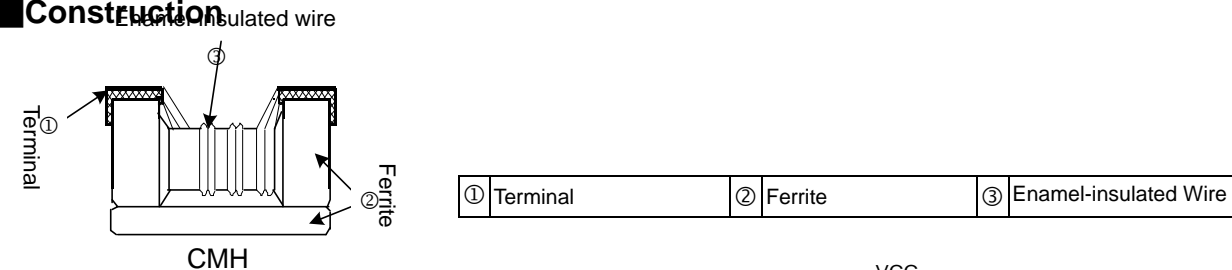
- Small chip inductor with ferrite core and two line types wire wound
- Highly effective in noise suppression High common-mode impedance at noise band and low differential-mode impedance at signal band
- Low differential-mode impedance with high coupling factor. There is almost no distortion on high-speed signal.
- Operating temperature -40°C~85°C



### ■ Applications

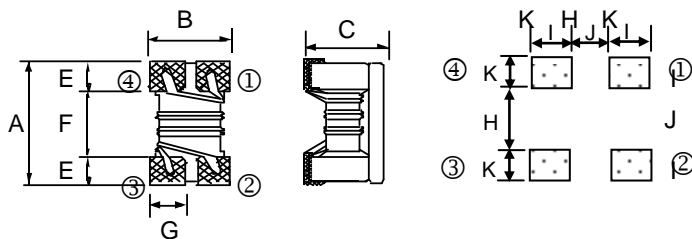
- EMI Radiation Noise Suppression for Any Electronic Device
- USB Line for Personal Computers and Peripheral
- IEEE 1394 Line for Personal Computers, DVC, STB
- LCD Panels. Low-Voltage Differential Signal (LVDS)

### ■ Construction

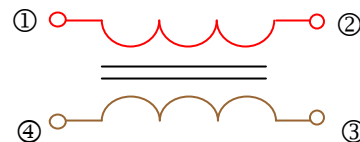


Epoxy  
CMA

### ■ Dimensions



### ■ Equivalent Circuit



Unit : mm

| Type  | Size (Inch) | A       | B       | C       | E    | F   | G   | H   | I   | J   | K    | Weight (g)<br>(1000pcs) |
|-------|-------------|---------|---------|---------|------|-----|-----|-----|-----|-----|------|-------------------------|
| CMH05 | 0805        | 2.0±0.2 | 1.2±0.2 | 1.2±0.2 | 0.45 | 1.2 | 0.4 | 0.8 | 0.4 | 0.4 | 0.90 | 19                      |
| CMH06 | 1206        | 3.2±0.2 | 1.6±0.2 | 1.8±0.2 | 0.60 | 2.0 | 0.6 | 1.6 | 0.6 | 0.4 | 1.05 | 53.3                    |

**Chip Common Mode Choke**

**Part Numbering**

|              |                                |                                    |                                |   |  |
|--------------|--------------------------------|------------------------------------|--------------------------------|---|--|
| <b>CM</b>    | <b>H</b>                       | <b>05</b>                          | <b>M</b>                       | <b>T</b>                                    | <b>900</b>   |
| Product Type | Shielding Type<br>H: Shielding | Dimensions<br>05: 0805<br>06: 1206 | Impedance Tolerance<br>M: ±20% | Packaging Code<br>T: Taping Reel<br>B: Bulk | Impedance<br>900: 90 Ω<br>121: 120 Ω<br>102: 1000 Ω<br>222: 2200 Ω |

**Standard Electrical Specifications**

CMH05 / Standard Type

| Impedance (Ω) | Tolerance | Test Condition (MHz) | DCR (Ω) max. | IDC (mA) max. | Rated Voltage Vdc (V) | Withstanding Voltage Vdc (V) | Insulation Resistance (MΩ) min. |
|---------------|-----------|----------------------|--------------|---------------|-----------------------|------------------------------|---------------------------------|
| 30            | ±20%      | 100                  | 0.20         | 450           | 50                    | 125                          | 10                              |
| 67            | ±20%      | 100                  | 0.25         | 400           | 50                    | 125                          | 10                              |
| 90            | ±20%      | 100                  | 0.35         | 330           | 50                    | 125                          | 10                              |
| 120           | ±20%      | 100                  | 0.30         | 370           | 50                    | 125                          | 10                              |
| 160           | ±20%      | 100                  | 0.35         | 330           | 50                    | 125                          | 10                              |
| 180           | ±20%      | 100                  | 0.35         | 330           | 50                    | 125                          | 10                              |
| 200           | ±20%      | 100                  | 0.35         | 330           | 50                    | 125                          | 10                              |
| 220           | ±20%      | 100                  | 0.35         | 330           | 50                    | 125                          | 10                              |
| 260           | ±20%      | 100                  | 0.40         | 300           | 50                    | 125                          | 10                              |
| 360           | ±20%      | 100                  | 0.40         | 280           | 50                    | 125                          | 10                              |
| 370           | ±20%      | 100                  | 0.40         | 280           | 50                    | 125                          | 10                              |

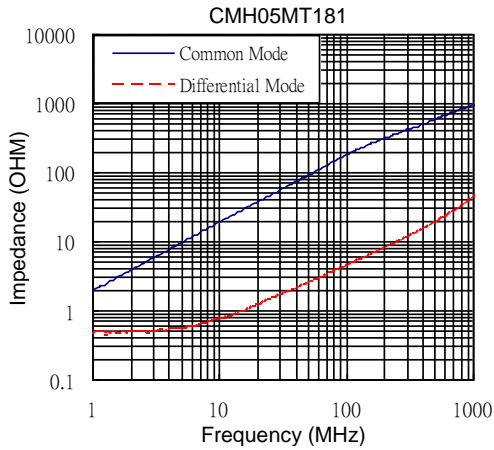
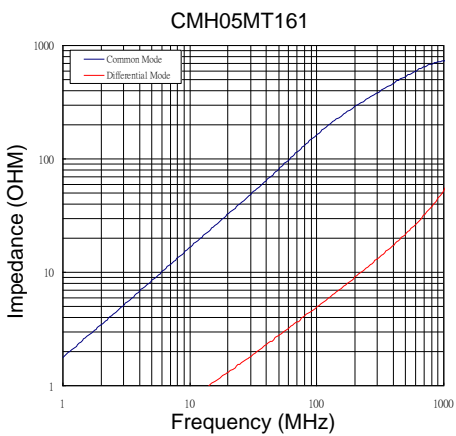
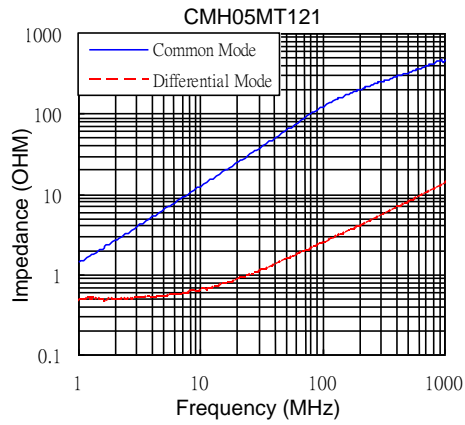
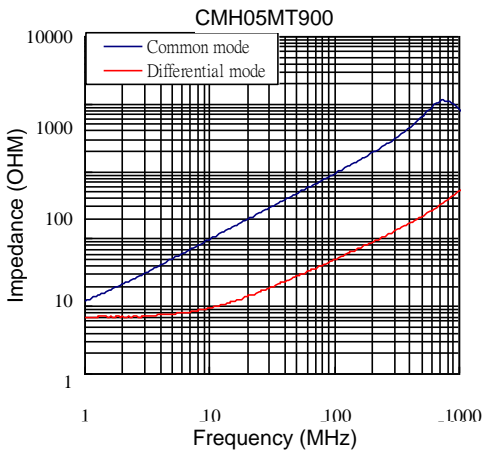
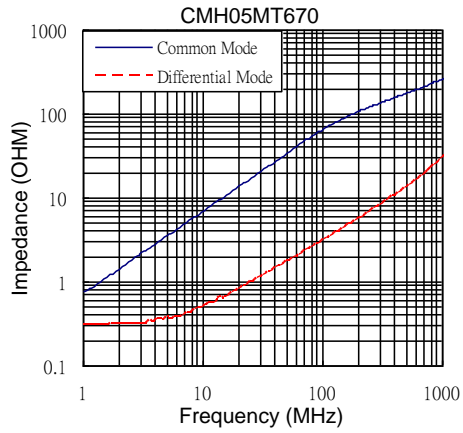
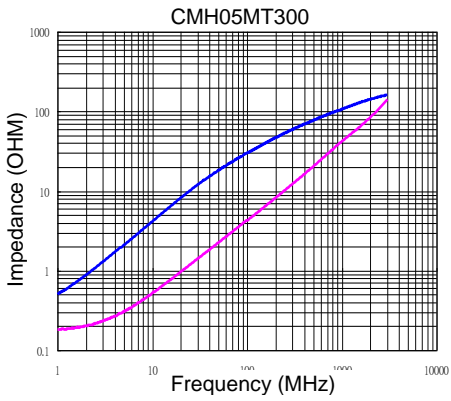
CMH06 / Standard Type

| Impedance (Ω) | Tolerance | Test Condition (MHz) | DCR (Ω) max. | IDC (mA) max. | Rated Voltage Vdc (V) | Withstanding Voltage Vdc (V) | Insulation Resistance (MΩ) min. |
|---------------|-----------|----------------------|--------------|---------------|-----------------------|------------------------------|---------------------------------|
| 90            | ±20%      | 100                  | 0.30         | 370           | 50                    | 125                          | 10                              |
| 120           | ±20%      | 100                  | 0.30         | 370           | 50                    | 125                          | 10                              |
| 160           | ±20%      | 100                  | 0.40         | 340           | 50                    | 125                          | 10                              |
| 260           | ±20%      | 100                  | 0.50         | 310           | 50                    | 125                          | 10                              |
| 600           | ±20%      | 100                  | 0.80         | 260           | 50                    | 125                          | 10                              |
| 1000          | ±20%      | 100                  | 1.00         | 230           | 50                    | 125                          | 10                              |
| 2200          | ±20%      | 100                  | 1.20         | 200           | 50                    | 125                          | 10                              |

■ All specifications are subject to change without notice

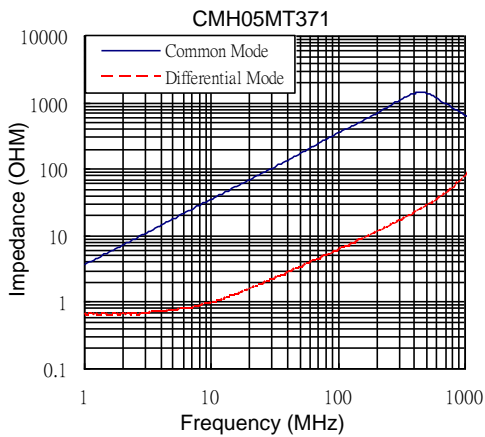
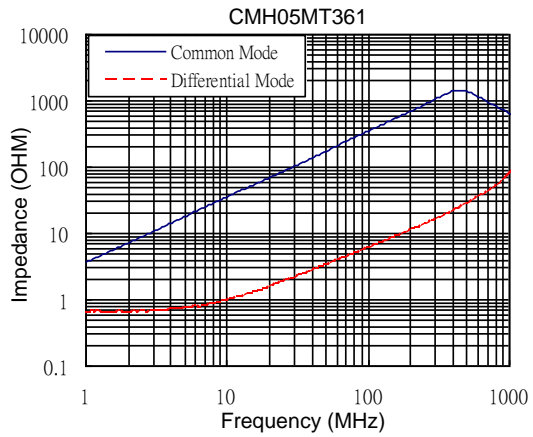
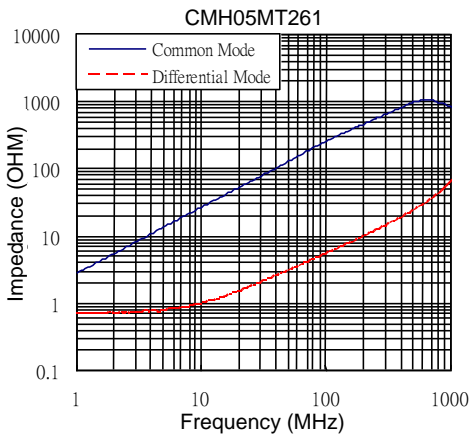
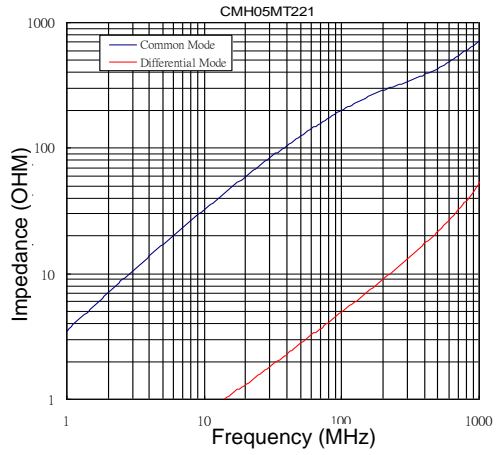
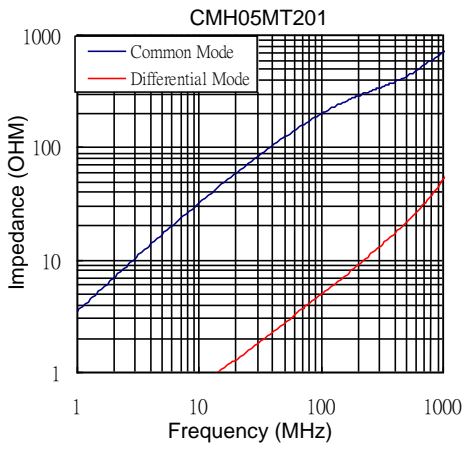
**Chip Common Mode Choke**

**■ Characteristics (Impedance vs. Frequency)-CMH05**



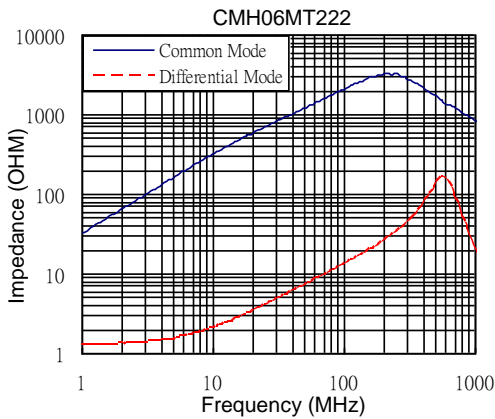
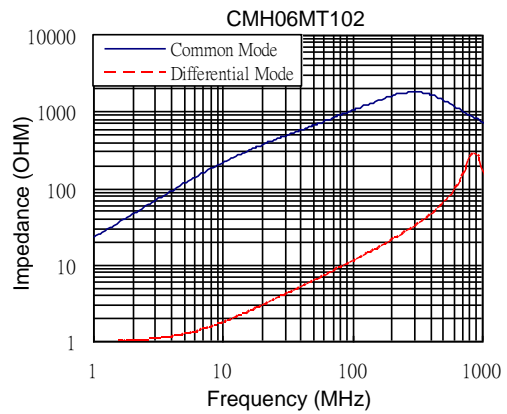
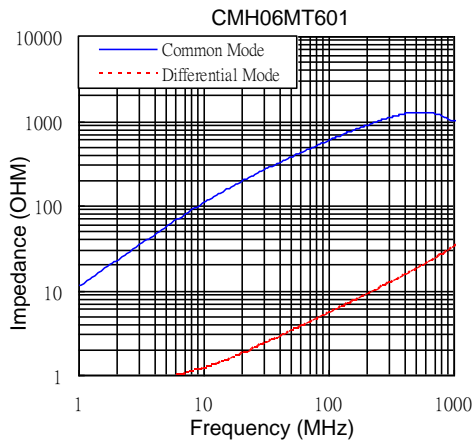
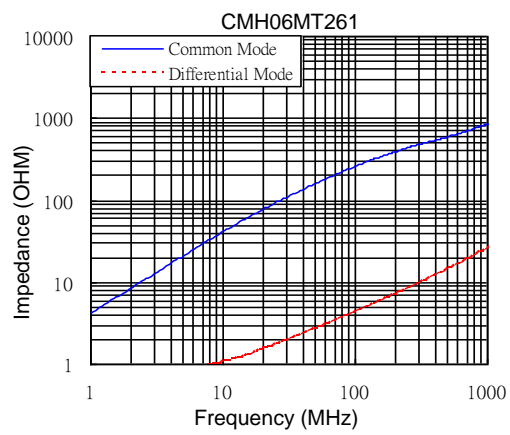
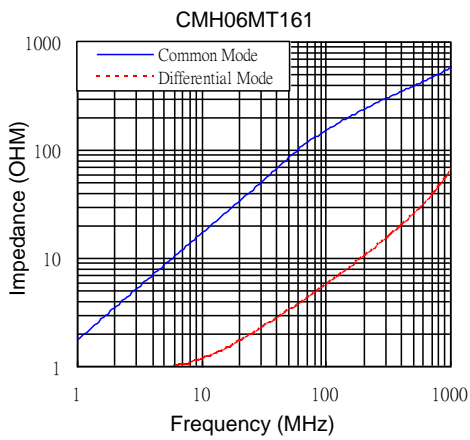
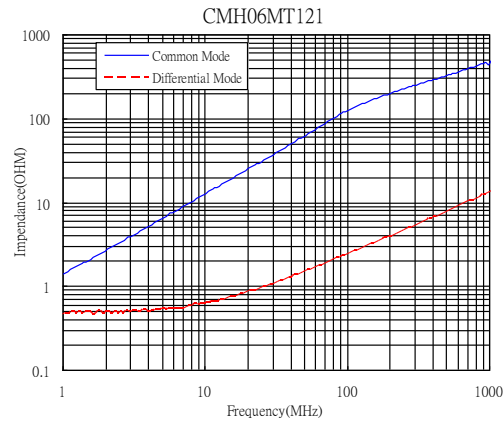
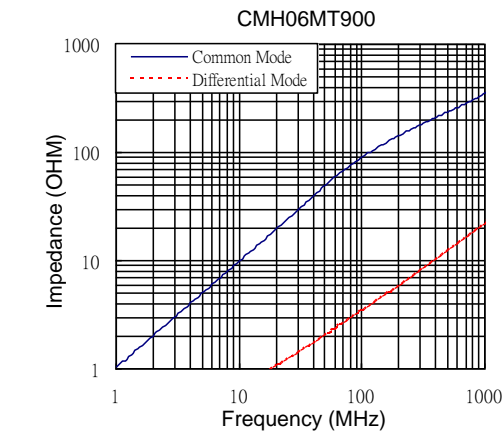
**Chip Common Mode Choke**

**■ Characteristics (Impedance vs. Frequency)-CMH05**



### Chip Common Mode Choke

### ■ Characteristics (Impedance vs. Frequency)-CMH06



**Chip Common Mode Choke**

**Environmental Characteristics**

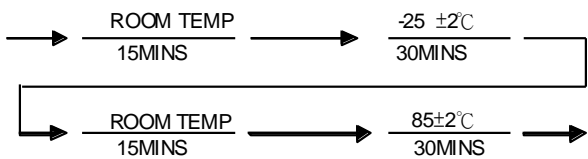
Electrical Performance Test

| Items                       | Requirement  | Test Conditions / Test Methods   |
|-----------------------------|--|--|
| Impedance                   | Refer to standard electrical characteristic spec.<br>Component should not be damaged | LCR Meter HP 4291B   |
| DC Resistance DCR           |  | Micro-Ohm meter (GOM-801G)   |
| Withstand Voltage (VDC)     |  | Test Voltage: 2.5 Times Rated Voltage<br>Testing Time: 60 seconds<br>Charge Current: 0.5mA |
| Rated Voltage (VDC)         |  | Test Voltage: Rated Voltage<br>Testing Time: 1 to 5 seconds<br>Charge Current: 1mA         |
| Insulation Resistance (I.R) |  | Charge Current: 1minute<br>10M ohm min.  |

Mechanical Performance Test

| Items                          | Requirement  | Test Conditions / Test Methods   |
|--------------------------------|--|--|
| Component Adhesion (Push Test) | Base: 0805 ≥ 2 Lbs<br>Cover: 0805 ≥ 1 Lbs<br>Base: 1206 ≥ 4 Lbs<br>Cover: 1206 ≥ 2 Lbs | The component should be soldered (232°C ± 5°C for 10 sec.) to tinned copper substrate<br>Applied force gauge to the side of component It must withstand force of 2 or 4 pounds without failure of the component. |
| Drop                           | Component should not be damaged  | Dropping chip by each side and corner. Drop 10 times in total<br>Drop height: 100 cm<br>Drop weight: 125 g   |
| Solderability                  | The terminal should at least be 90% covered with solder                                | The component shall be dipped in a melted solder bath at 245 ± 5 for 3 seconds   |
| Vibration Test (Low Frequency) | Component should not be damaged  | 1. Amplitude: 1.5 m/m<br>2. Frequency: 10-55-10Hz (1min.)<br>3. Direction: X, Y, Z<br>4. Duration: 2 Hrs/X, Y, Z   |

Climatic Test

| Items                      | Requirement   | Test Conditions / Test Methods   |
|----------------------------|---|--|
| Low Temperature Storage    | Impedance change: Within ± 20%<br>Without distinct damage in appearance | 1. Temp: -40 ± 2°C<br>2. Time: 1000 ± 48 Hours<br>3. Component should be tested after 1 hour at room temperature   |
| Thermal Shock              |   |  <p>The diagram shows two thermal shock cycles. The first cycle starts at ROOM TEMP (15MINS), then transitions to -25 ± 2°C (30MINS), and returns to ROOM TEMP. The second cycle starts at ROOM TEMP (15MINS), then transitions to 85 ± 2°C (30MINS), and returns to ROOM TEMP. Total: 5 Cycles.</p> |
| High Temperature Storage   |   | 1. Temp: 85 ± 2°C<br>2. Time: 1000 ± 48 Hours<br>3. Component should be tested after 1 hour at room temperature  |
| Humidity                   |   | 1. Temp: 40 ± 2°C<br>2. R.H. : 90 ~ 95%<br>3. Time: 48 ± 2 Hours   |
| High Temperature Load Life |   | 1. Temp: 85 ± 2°C<br>2. Time: 96 ± 12 Hours<br>3. Load: Allowed DC Current   |
| Low Temperature Load Life  | There should be no evidence of short or open circuit                    | 1. Temp: -40 ± 2°C<br>2. Time: 96 ± 12 Hours<br>3. Load: Allowed DC Current  |

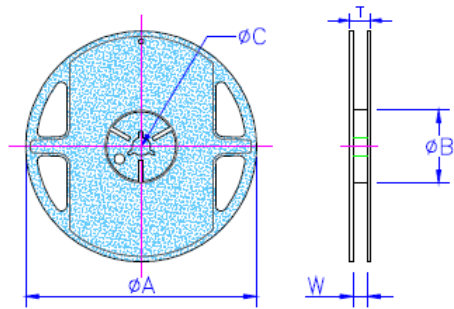
**Storage Temperature: 25±3°C; Humidity < 80%RH**

**Chip Common Mode Choke**

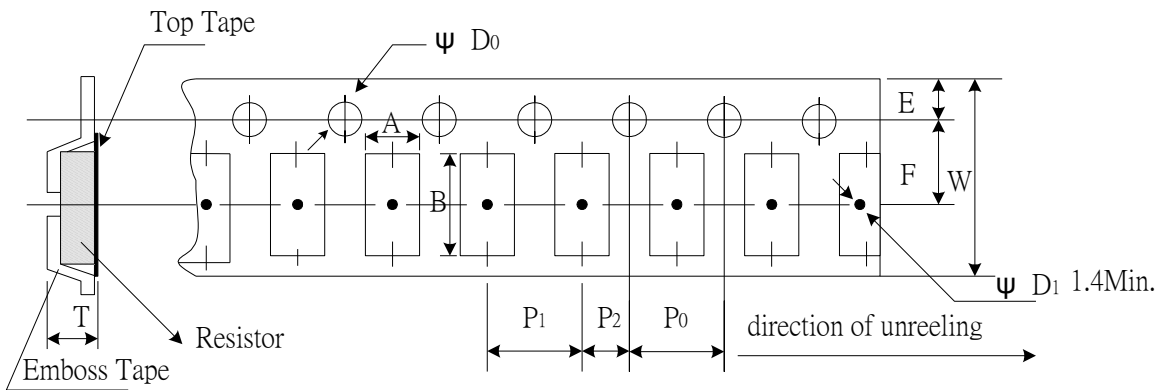
**■Packaging**

Packaging Quantity & Reel Specifications

| Type  | ΦA      | ΦB     | ΦC     | W     | T        | Quantity (EA) |
|-------|---------|--------|--------|-------|----------|---------------|
| CMH05 | 178±2.0 | 60±0.5 | 13±0.3 | 9±0.3 | 11.4±1.0 | 2000          |
| CMH06 | 178±2.0 | 60±0.5 | 13±0.3 | 9±0.3 | 11.4±1.0 | 2000          |



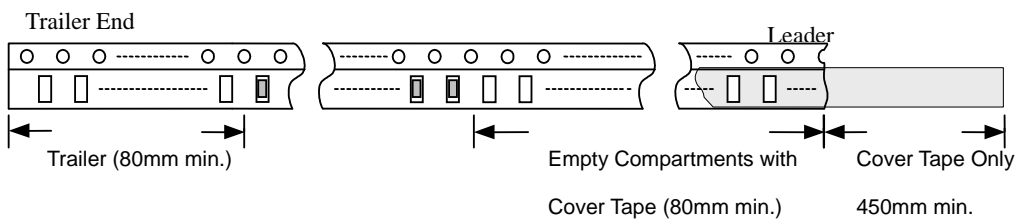
Embossed Plastic Tape Specifications



Unit: mm

| Type  | A         | B         | W        | E         | F        | P0        | P1        | P2        | ΦD <sub>0</sub> | t         |
|-------|-----------|-----------|----------|-----------|----------|-----------|-----------|-----------|-----------------|-----------|
| CMH05 | 1.40±0.10 | 2.55±0.05 | 8.0±0.20 | 1.75±0.10 | 3.5±0.10 | 4.00±0.10 | 4.00±0.10 | 2.00±0.10 | 1.50±0.10       | 1.35±0.10 |
| CMH06 | 1.90±0.10 | 3.50±0.05 | 8.0±0.20 | 1.75±0.10 | 3.5±0.10 | 4.00±0.10 | 4.00±0.10 | 2.00±0.10 | 1.50±0.10       | 2.10±0.10 |

Leader / Tape



Peel-off Force

The force for tearing off cover tape is 0.05~0.69 (N) in the arrow direction at the following conditions:

Temperature: 5 ~ 35°C

Humidity: 45 ~ 85%

Atmospheric pressure: 860 ~ 1060hpa

