

## Common Mode Choke for Automotive Signal Line CM Series

### FEATURES AND APPLICATIONS

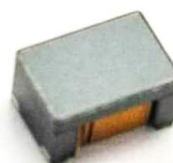
Laird CM1210 CM1812 series automotive common mode chokes improve performance and reliability. A low profile and compact design benefits automotive electronics, industrial and telecom design. Products feature superior common mode noise suppression over broadband frequency and reduce customer total EMC cost. Chokes are designed in wire wound construction and perform in extended operating temperature range.

#### FEATURES

- Magnetic wire-wound structure
- Superior common mode noise suppression over broadband frequency
- Low profile and small size

#### APPLICATIONS

- Automotive CAN-BUS Signal Lines
- Telecom and Industrial Singal Lines



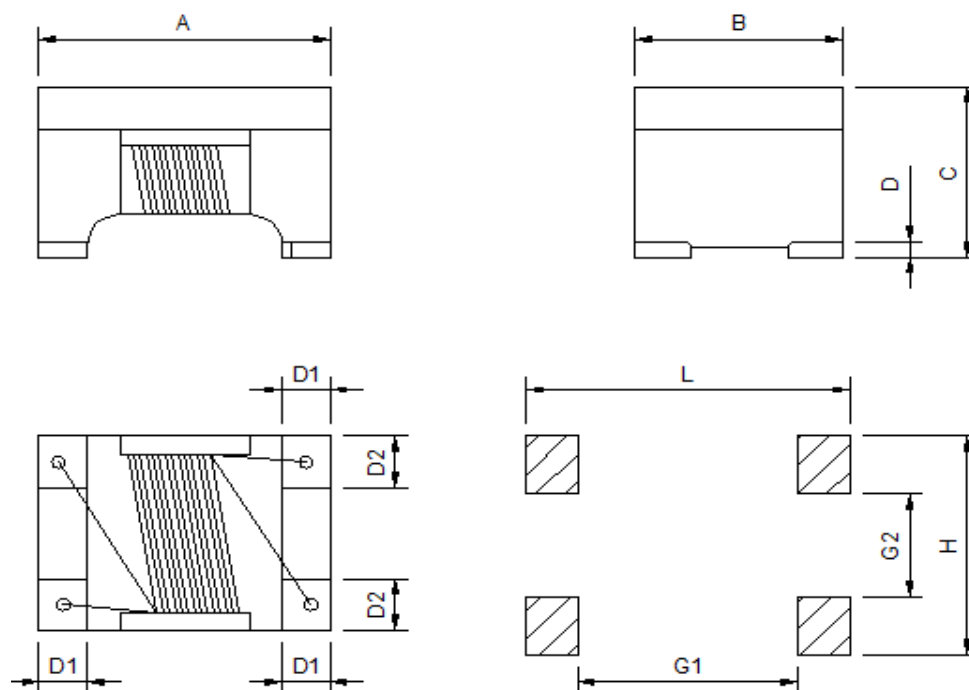
#### PART NUMBER EXPLANATION

|                        |                   |                  |                    |   |                    |
|------------------------|-------------------|------------------|--------------------|---|--------------------|
| <b>CM</b>              | <b>1812</b>       | <b>B</b>         | <b>104R</b>        | - | <b>1A</b>          |
| Product series<br>code | Dimension<br>code | Material<br>code | Inductance<br>code |   | Automotive<br>code |

#### ELECTRICAL SPECIFICATIONS

- Reliability test for this part meets AEC-Q200 standard
- Inductance tested at 100KHz, 0.1Vrms
- Operating Temperature range :
  - CM1812B Series -55°C to +150°C (Including self - temperature rise )
  - CM1812A Series -40°C to +125°C (Including self - temperature rise )
  - CM1210C Series -55°C to +150°C (Including self - temperature rise )
  - CM1210B Series -55°C to +150°C (Including self - temperature rise )
  - CM1210A Series -40°C to +125°C (Including self - temperature rise )
- Humidity Range : 85±3% RH
- Storage temperature range (packaging conditions): -10°C~+40°C and RH 60%(MAX.)

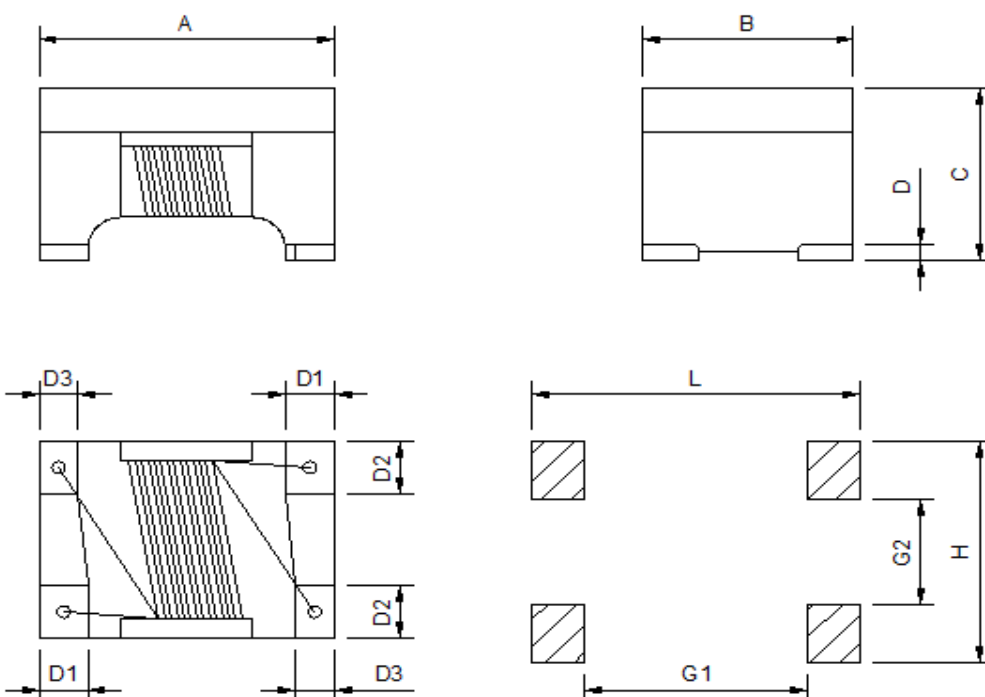
## 1. CM1210 SERIES DIMENSIONS



Recommended layout

## CM1210 Series

| A             | B       | C       | D       | D1       | D2       | L       | H       | G1      | G2      |
|---------------|---------|---------|---------|----------|----------|---------|---------|---------|---------|
| 3.20±0.3/-0.2 | 2.5±0.2 | 2.5 Max | 0.3 Min | 0.55±0.2 | 0.75±0.2 | 3.7 REF | 2.8 REF | 2.4 REF | 1.2 REF |



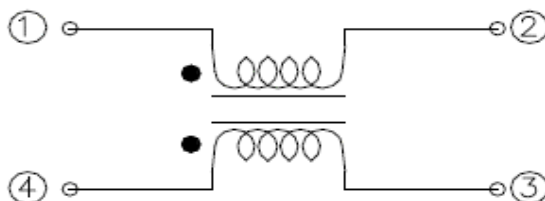
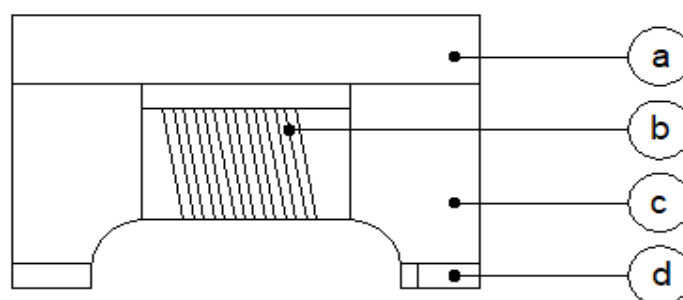
## CM1812 Series

| A       | B       | C       | D       | D1      | D2       | D3      | L       | H       | G1      | G2      |
|---------|---------|---------|---------|---------|----------|---------|---------|---------|---------|---------|
| 4.5±0.2 | 3.2±0.2 | 2.8±0.2 | 0.4 Min | 0.8±0.2 | 0.85±0.2 | 0.6±0.2 | 5.0 REF | 3.6 REF | 3.4 REF | 1.7 REF |

**2.SPECIFICATION**

| Part No.       | Common Mode Impedance(ohm)<br>10MHz |      | Inductance<br>(uH)<br>0.1V/100KHz | DC<br>Resistance<br>(ohm) Max | Rated<br>Current<br>(A) | Rated Volt<br>(Vdc) | IR<br>(Mohm)<br>Min |
|----------------|-------------------------------------|------|-----------------------------------|-------------------------------|-------------------------|---------------------|---------------------|
|                | Typ                                 | Min  |                                   |                               |                         |                     |                     |
| CM1210C113R-1A | 550                                 | 300  | 10 +50/-30%                       | 0.4                           | 0.30                    | 80                  | 10                  |
| CM1210B223R-1A | 1100                                | 500  | 22 +50/-30%                       | 0.5                           | 0.25                    | 80                  | 10                  |
| CM1210B513R-1A | 2600                                | 1000 | 51 +50/-30%                       | 0.7                           | 0.20                    | 80                  | 10                  |
| CM1210B104R-1A | 5100                                | 2200 | 100 +50/-30%                      | 1.5                           | 0.15                    | 80                  | 10                  |
| CM1210A204R-1A | ---                                 | ---  | 200 +50/-10%                      | 5.5                           | 0.07                    | 80                  | 10                  |

|                |      |      |              |     |      |    |    |
|----------------|------|------|--------------|-----|------|----|----|
| CM1812B113R-1A | 600  | 300  | 11 +50/-30%  | 0.6 | 0.36 | 50 | 10 |
| CM1812B223R-1A | 1200 | 500  | 22 +50/-30%  | 1.0 | 0.31 | 50 | 10 |
| CM1812B513R-1A | 2800 | 1000 | 51 +50/-30%  | 1.0 | 0.23 | 50 | 10 |
| CM1812B104R-1A | 5800 | 2000 | 100 +50/-30% | 2.0 | 0.20 | 50 | 10 |
| CM1812A204R-1A | ---  | ---  | 200 +60/-20% | 4.5 | 0.10 | 50 | 10 |

**3.EQUIVALENT CIRCUIT****4.MATERIAL LIST**

(a) Upper Cover

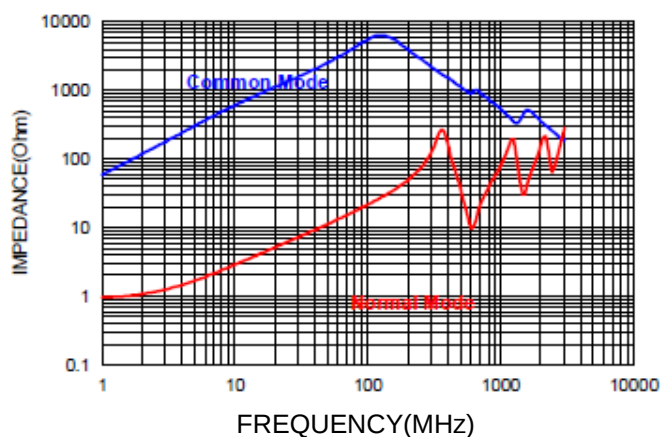
(b) Wire

(c) Core

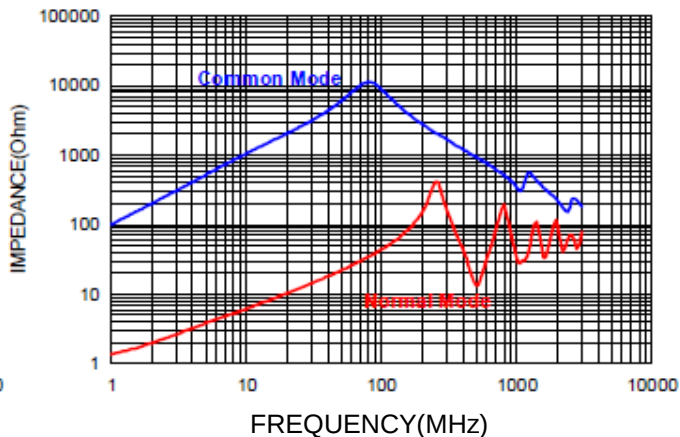
(d) Terminal

## 5. CHARACTERISTICS CURVES

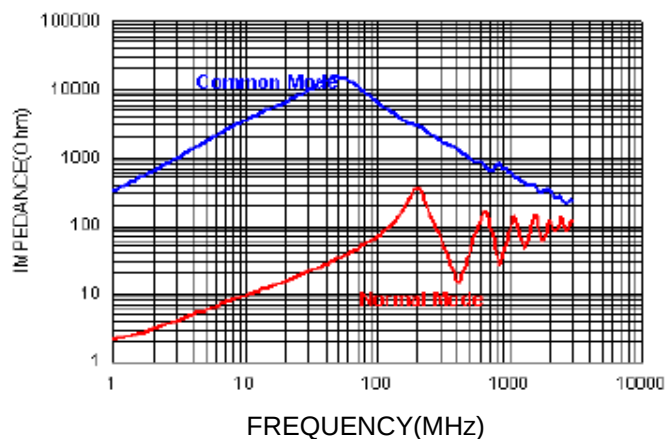
CM1210C113R-1A



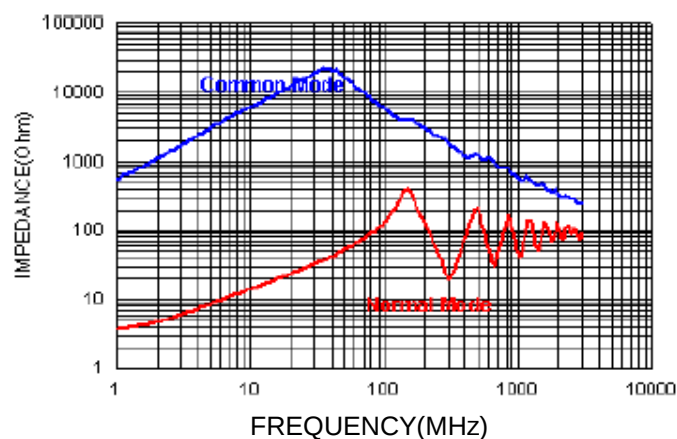
CM1210B223R-1A



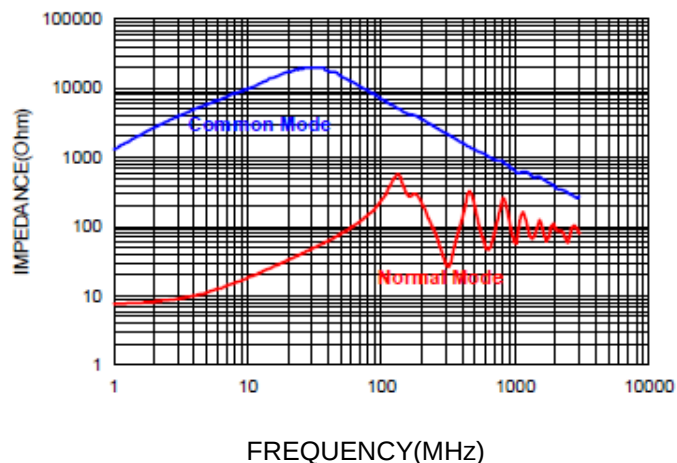
CM1210B513R-1A



CM1210B104R-1A

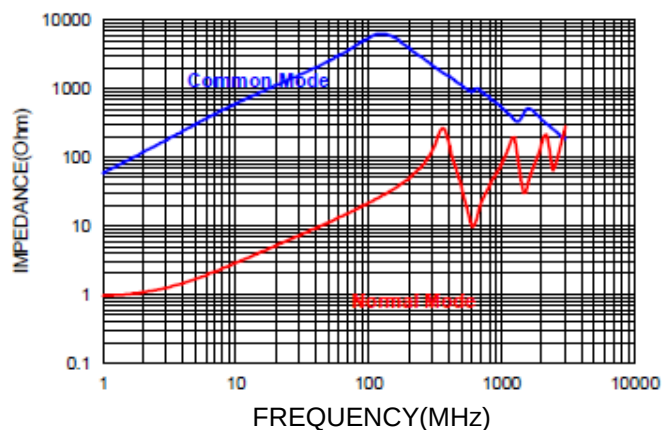


CM1210A204R-1A

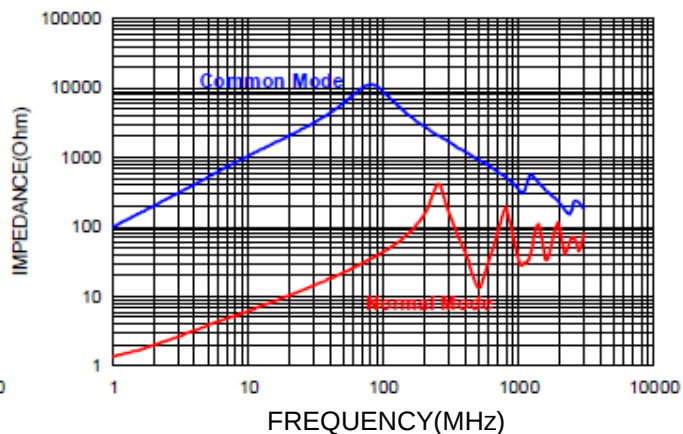


## 5. CHARACTERISTICS CURVES

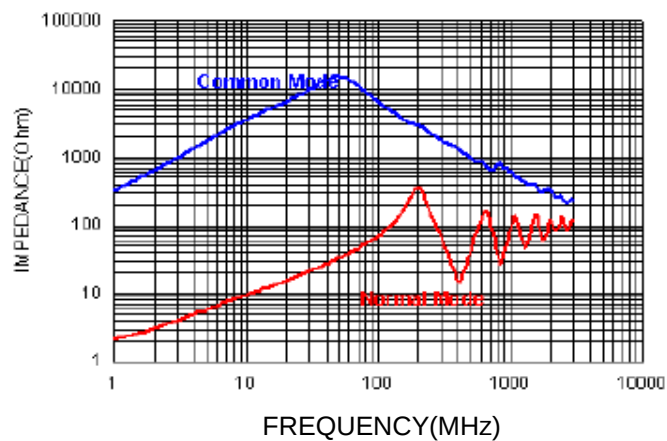
CM1812B113R-1A



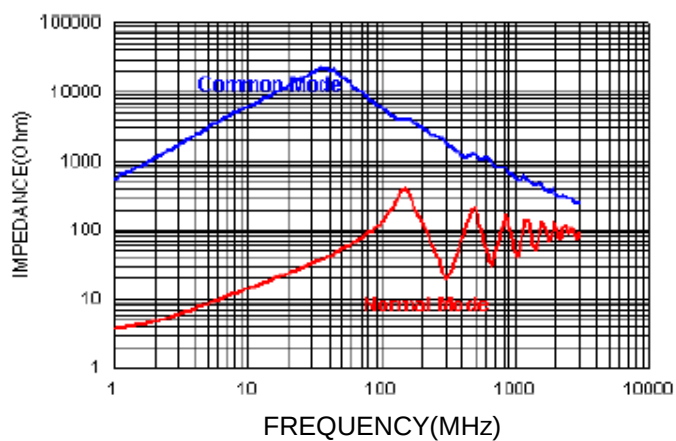
CM1812B223R-1A



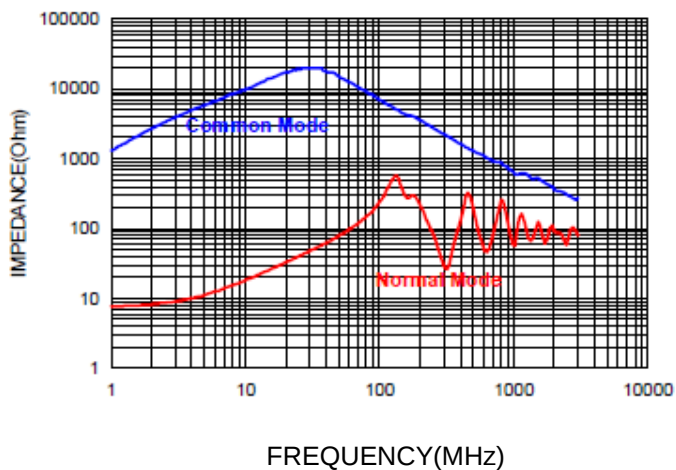
CM1812B513R-1A



CM1812B104R-1A



CM1812A204R-1A



## 6. SOLDERING

*Mildly activated rosin fluxes are preferred.*

Recommended temperature profiles for re - flow soldering in Figure 1 .

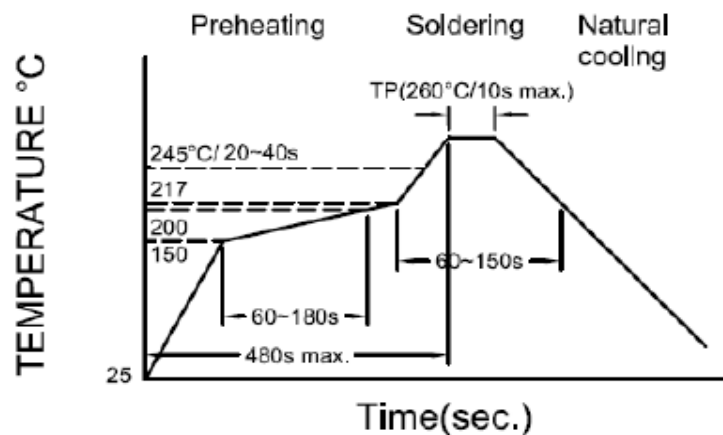
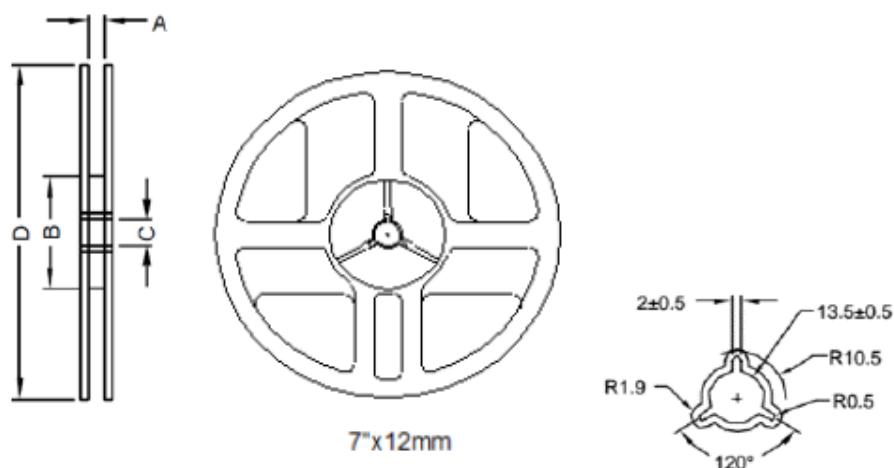


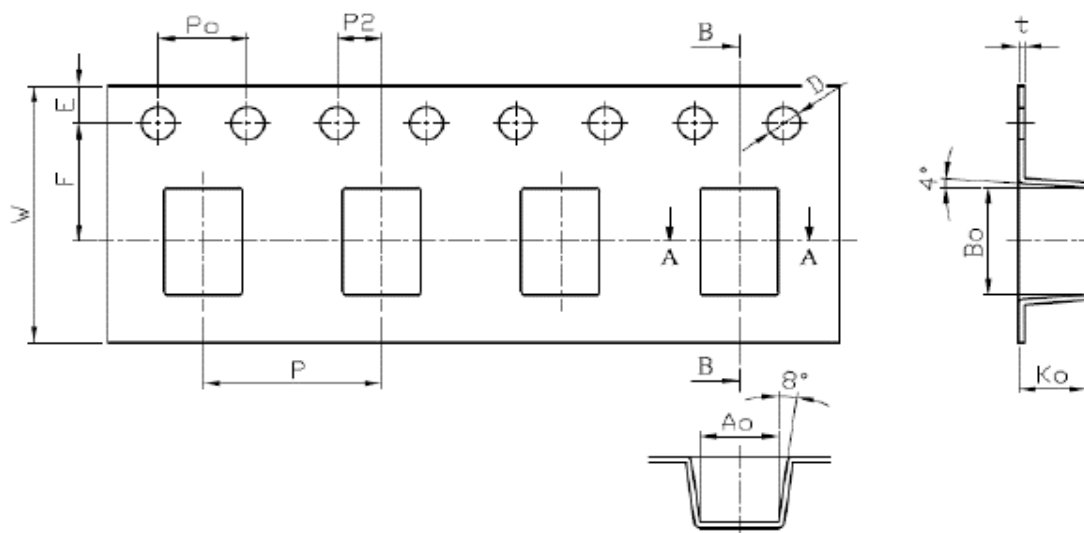
Figure 1. : Re-flow Soldering time  
3 times Max.

## 7. PACKAGING

## 7-1 Reel Dimension



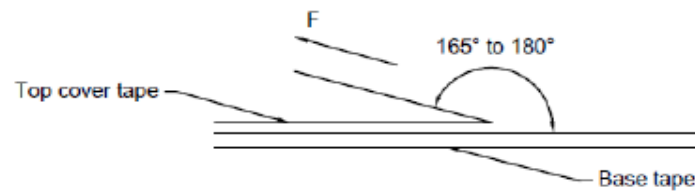
| Size   | Type    | A(mm)    | B(mm)    | C(mm)    | D(mm)     |
|--------|---------|----------|----------|----------|-----------|
| CM1210 | 7"x8mm  | 9.0±0.5  | 60.0±2.0 | 13.5±0.5 | 178.0±2.0 |
| CM1812 | 7"x12mm | 13.5±0.5 | 60.0±2.0 | 13.5±0.5 | 178.0±2.0 |



| Size   | P(mm)   | Po(mm)  | P2(mm)  | Bo(mm)   | Ao(mm)   | Ko(mm)  | D(mm)       | E(mm)    | F(mm)    | W(mm)    | T(mm)     |
|--------|---------|---------|---------|----------|----------|---------|-------------|----------|----------|----------|-----------|
| CM1210 | 4.0±0.1 | 4.0±0.1 | 2.0±0.1 | 4.9±0.1  | 3.6±0.1  | 3.0±0.1 | 1.05+0.1/-0 | 1.75±0.1 | 5.5±0.05 | 12.0±0.1 | 0.26±0.05 |
| CM1812 | 8.0±0.1 | 4.0±0.1 | 2.0±0.1 | 3.65±0.1 | 2.88±0.1 | 2.5±0.1 | 1.05+0.1/-0 | 1.75±0.1 | 3.5±0.05 | 8.0±0.1  | 0.26±0.05 |

| Size   | Reel | Inner Box | Outer Box |
|--------|------|-----------|-----------|
| CM1210 | 2000 | 10000     | 50000     |
| CM1812 | 500  | 2000      | 10000     |

### 7-2 Tearing Off Force



The force for tearing off cover tape is 10~100 grame in the arrow direction under the following conditions .

| Room Temp<br>(°C) | Room<br>Humidity(%) | Room atm<br>(hPa) | Tearing Speed<br>mm/min |
|-------------------|---------------------|-------------------|-------------------------|
| 5~35              | 45~85               | 860~1060          | 300                     |

## 8. Application Notice:

### 1.Storage Conditions:

To maintain the solderability of terminal electrodes:

- a) Recommended products should be used within 12 months from the time of delivery .
- b) The packaging material should be kept where no chlorine or sulfur exists in the air .

### 2. Transportation:

- a) Products should be -handled with care to avoid damage or contamination from perspiration and skin oils .
- b) Vacuum pick up is strongly recommended for individual components .
- c) Bulk handling should ensure that abrasion and mechanical shock are minimized .

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