



WIRE WOUND CHIP COMMON MODE COIL 片式共模绕线电感

● **FEATURES 特性**

- 1.High common mode impedance at high frequency effects excellent noise suppression performance.
高频共模阻抗高，噪声抑制性能优良。
- 2.20Ω~2000Ω are optional for different noise level and signal frequency
对于不同的噪声电频和信号频率，选择20Ω~2000Ω阻抗。



● **APPLICATIONS 用途**

- 1.USB 2.0 line for personal computers and peripheral
电脑和外围设备的USB 2.0线路。
- 2.IEEE 1394 line for personal computers, DVC, STB
用于计算机、DVC、机顶盒的IEEE 1394线路。
- 3.LVDS, panel line for liquid display panels, graph card,etc.
LVDS，用于液体显示面板的面板线，图形卡等。
- 3.USB 3.0 line or HDMI2.0 for personal computers and peripheral
电脑和外围设备的USB 3.0或HDMI2.0线路。

● **PART NUMBERING SYSTEM 品名系统**

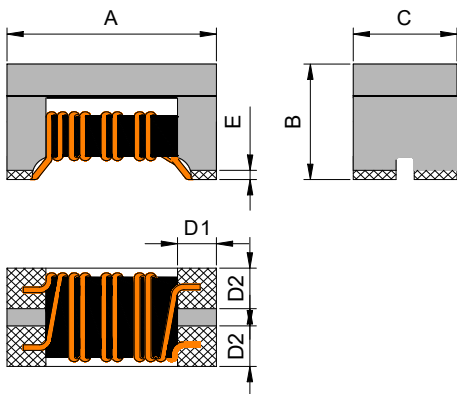
CMC 3216 S - 102 - 2P - T
A B C D E F

A: Type 型号 B: External Dimensions 外形尺寸 A*C

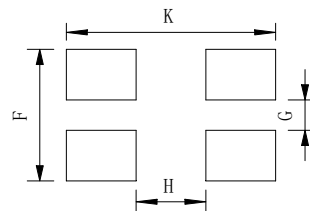
C: Material type 材料类型 D: Impedance Value 阻抗值 102 = 1000Ω

E: Number of line 2P : 2-Line 双线 F: Packaging : T=Taping and reel

● **SHAPES AND DIMENSIONS 外形尺寸 (Unit:mm)**

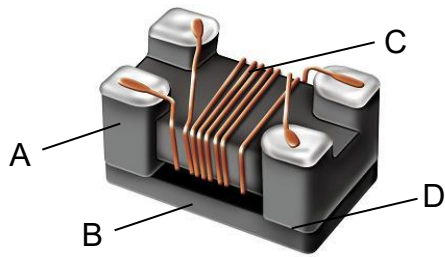


Recommended Land Pattern



| TYPE(型号) | A | B | C | D1 | D2 | E | F | G | H | K |
|----------|----------|---------|---------|----------|----------|----------|---------|---------|---------|----------|
| CMC1210 | 1.25±0.2 | 0.8±0.1 | 1.0±0.2 | 0.33 Ref | 0.36 Ref | 0.10 Max | 1.0 Ref | 0.3 Ref | 0.5 Ref | 1.55 Ref |
| CMC2012 | 2.0±0.2 | 1.2±0.2 | 1.2±0.2 | 0.5 Ref | 0.45 Ref | 0.17 Max | 1.2 Ref | 0.4 Ref | 0.8 Ref | 2.6 Ref |
| CMC3216 | 3.2±0.2 | 2.0±0.2 | 1.6±0.2 | 0.7 Ref | 0.6 Ref | 0.22 Max | 1.6 Ref | 0.4 Ref | 1.6 Ref | 3.7 Ref |
| CML3416 | 3.4±0.2 | 2.0±0.2 | 1.6±0.2 | 0.7 Ref | 0.6 Ref | 0.22Max | 1.7 Ref | 0.5 Ref | 1.7 Ref | 3.7 Ref |
| CMC3225 | 3.2±0.2 | 2.2±0.2 | 2.5±0.2 | 0.7 Ref | 0.7Ref | 0.3Max | 3.5Ref | 0.6Ref | 1.6 Ref | 4.4Ref |
| CMC4532 | 4.5±0.2 | 2.8±0.2 | 3.2±0.2 | 0.8 Ref | 1.1 Ref | 0.5 Max | 3.2 Ref | 1.0 Ref | 2.7 Ref | 5.1 Ref |
| CML4532 | 4.5±0.2 | 2.8±0.2 | 3.2±0.2 | 0.8 Ref | 1.1 Ref | 0.5 Max | 3.2 Ref | 1.0 Ref | 2.7 Ref | 5.1 Ref |

● **STRUCTURE AND MATERIAL**



| Part | Components | Material |
|------|------------|-----------------------------------|
| A | Core | Ferrite |
| B | I Core | Ferrite |
| C | Wire | Polyurethane enameled copper wire |
| D | Epoxy | Epoxy resin |

● **ELECTRICAL CHARACTERISTICS**

1. Operating temperature range : -40°C~105°C(Including self - temperature rise)
2. Storage temperature range (packaging conditions): -10°C~+40°C and RH 70% (Max.)

● **TEST AND MEASUREMENT PROCEDURES**

1. Common Mode Impedance(Ω)

Test equipment: Keysight E4991B / Agilent 4787A or equivalent

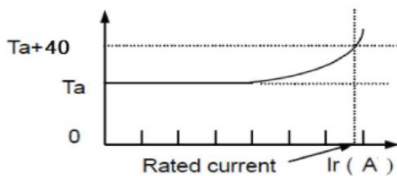
2. DC Resistance (DCR)

Test equipment: Agilent34420A / Agilent 4338B or equivalent

3. Rated Current (Irms)

Irms is direct electric current as chip surface temperature rose just 20 or 40 against chip initial surface temperature (T_a),

$$\text{Rated Current} \geq 1A \Delta T \text{ } 40^\circ\text{C Max}$$



4. Insulation Resistance

Test equipment: Chroma or equivalent TH2683A / ZX6583

● **RECOMMENDED SOLDERING TECHNOLOGIES**

Re-flowing Profile

Preheat condition: 150~200 /60~120sec.

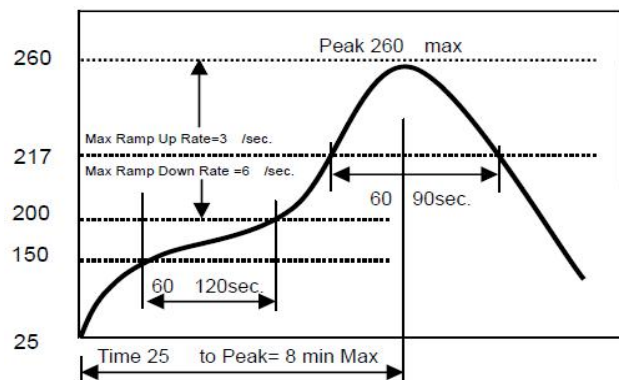
Allowed time above 217C: 60~90sec.

Max temp: 260

Max time at max temp: 10sec

Solder paste: Sn/3.0Ag/0.5Cu

Allowed Reflow time: 2 times max



● **SPECIFICATION TABLE:**

CMC1210S Series

| Part No. | Common Mode Impedance(Ω) | Test Frequency (MHz) | DCR (Ω) Max | Max. Rated Current (mA) | Rated Voltage (Vdc) | Insulation Resistance ($M\Omega$) Min. |
|-------------------|-----------------------------------|----------------------|----------------------|-------------------------|---------------------|--|
| CMC1210S-200-2P-T | 20 \pm 25% | 100 | 0.15 | 500 | 50 | 10 |
| CMC1210S-350-2P-T | 35 \pm 25% | 100 | 0.18 | 430 | 50 | 10 |
| CMC1210S-600-2P-T | 60 \pm 25% | 100 | 0.30 | 400 | 50 | 10 |
| CMC1210S-900-2P-T | 90 \pm 25% | 100 | 0.30 | 400 | 50 | 10 |
| CMC1210S-121-2P-T | 120 \pm 25% | 100 | 0.40 | 260 | 50 | 10 |
| CMC1210S-161-2P-T | 160 \pm 25% | 100 | 0.40 | 260 | 50 | 10 |
| CMC1210S-181-2P-T | 180 \pm 25% | 100 | 0.40 | 250 | 50 | 10 |
| CMC2012S-201-2P-T | 200 \pm 25% | 100 | 0.40 | 250 | 50 | 10 |

CMC1210U Series

| Part No. | Common Mode Impedance(Ω) | Test Frequency (MHz) | DCR (Ω) Max | Max. Rated Current (mA) | Rated Voltage (Vdc) | Insulation Resistance ($M\Omega$) Min. |
|-------------------|-----------------------------------|----------------------|----------------------|-------------------------|---------------------|--|
| CMC1210U-140-2P-T | 14 \pm 25% | 100 | 0.12 | 600 | 50 | 10 |
| CMC1210U-350-2P-T | 35 \pm 25% | 100 | 0.30 | 400 | 50 | 10 |
| CMC1210U-500-2P-T | 50 \pm 25% | 100 | 0.30 | 300 | 50 | 10 |
| CMC1210U-600-2P-T | 60 \pm 25% | 100 | 0.30 | 300 | 50 | 10 |
| CMC1210U-900-2P-T | 90 \pm 25% | 100 | 0.40 | 300 | 50 | 10 |

CMC2012S Series

| Part No. | Common Mode Impedance(Ω) | Test Frequency (MHz) | DCR (Ω) Max | Max. Rated Current (mA) | Rated Voltage (Vdc) | Insulation Resistance ($M\Omega$) Min. |
|-------------------|-----------------------------------|----------------------|----------------------|-------------------------|---------------------|--|
| CMC2012S-300-2P-T | 30 \pm 25% | 100 | 0.20 | 450 | 50 | 10 |
| CMC2012S-800-2P-T | 80 \pm 25% | 100 | 0.30 | 400 | 50 | 10 |
| CMC2012S-900-2P-T | 90 \pm 25% | 100 | 0.30 | 400 | 50 | 10 |

| | | | | | | |
|-------------------|----------|-----|------|-----|----|----|
| CMC2012S-121-2P-T | 120±25% | 100 | 0.30 | 400 | 50 | 10 |
| CMC2012S-181-2P-T | 180±25% | 100 | 0.35 | 350 | 50 | 10 |
| CMC2012S-201-2P-T | 200±25% | 100 | 0.35 | 330 | 50 | 10 |
| CMC2012S-260-2P-T | 260±25% | 100 | 0.40 | 300 | 50 | 10 |
| CMC2012S-371-2P-T | 370±25% | 100 | 0.45 | 300 | 50 | 10 |
| CMC2012S-801-2P-T | 800±25% | 100 | 0.75 | 300 | 50 | 10 |
| CMC2012S-901-2P-T | 900±25% | 100 | 0.80 | 150 | 50 | 10 |
| CMC2012S-102-3P-T | 1000±25% | 100 | 0.80 | 150 | 50 | 10 |

CMC2012U Series

| Part No. | Common Mode Impedance(Ω) | Test Frequency (MHz) | DCR (Ω) Max | Max. Rated Current (mA) | Rated Voltage (Vdc) | Insulation Resistance (MΩ) Min. |
|-------------------|--------------------------|----------------------|-------------|-------------------------|---------------------|---------------------------------|
| CMC2012U-300-2P-T | 30±25% | 100 | 0.20 | 400 | 50 | 10 |
| CMC2012U-600-2P-T | 60±25% | 100 | 0.30 | 300 | 50 | 10 |
| CMC2012U-900-2P-T | 90±25% | 100 | 0.30 | 300 | 50 | 10 |
| CMC2012U-120-2P-T | 120±25% | 100 | 0.35 | 330 | 50 | 10 |

CMC3216S/L Series

| Part No. | Common Mode Impedance(Ω) | Test Frequency (MHz) | DCR (Ω) Max | Max. Rated Current (mA) | Rated Voltage (Vdc) | Insulation Resistance (MΩ) Min. |
|-------------------|--------------------------|----------------------|-------------|-------------------------|---------------------|---------------------------------|
| CMC3216S-900-2P-T | 90±25% | 100 | 0.30 | 370 | 50 | 10 |
| CMC3216S-260-2P-T | 260±25% | 100 | 0.50 | 310 | 50 | 10 |
| CMC3216S-601-2P-T | 600±25% | 100 | 0.80 | 260 | 50 | 10 |
| CMC3216S-102-2P-T | 1000±25% | 100 | 1.00 | 230 | 50 | 10 |
| CMC3216S-222-2P-T | 2200±25% | 100 | 1.20 | 200 | 50 | 10 |
| CMC3216S-242-2P-T | 2400±25% | 100 | 1.20 | 200 | 50 | 10 |
| CML3216S-600-2P-T | L:50uH~90uH @100khz | 100 | 1.70 | 200 | 50 | 10 |

CMC3225S Series

| Part No. | Common Mode Impedance(Ω) | Test Frequency (MHz) | DCR (Ω) Max | Max. Rated Current (mA) | Rated Voltage (Vdc) | Insulation Resistance (M Ω) Min. |
|-------------------|-----------------------------------|----------------------|----------------------|-------------------------|---------------------|--|
| CMC3225S-900-2P-T | 90 \pm 25% | 100 | 0.05 | 1000 | 50 | 10 |
| CMC3225S-161-2P-T | 160 \pm 25% | 100 | 0.12 | 680 | 50 | 10 |
| CMC3225S-271-2P-T | 270 \pm 25% | 100 | 0.13 | 640 | 50 | 10 |
| CMC3225S-501-2P-T | 500 \pm 25% | 100 | 0.20 | 1000 | 50 | 10 |
| CMC3225S-601-2P-T | 600 \pm 25% | 100 | 0.20 | 1000 | 50 | 10 |
| CMC3225S-801-2P-T | 800 \pm 25% | 100 | 0.20 | 1000 | 50 | 10 |
| CMC3225S-102-2P-T | 1000 \pm 25% | 100 | 0.30 | 750 | 50 | 10 |
| CMC3225S-222-2P-T | 2200 \pm 25% | 100 | 0.30 | 640 | 50 | 10 |
| CMC3225S-242-2P-T | 2400 \pm 25% | 100 | 0.30 | 640 | 50 | 10 |
| CML3225B-510-2P-T | L:51uH + 50%/-30% | 100kHz,0.1v | 0.70 | 200 | 80 | 10 |
| CML3225E-101-2P-T | L:51uH + 50%/-30% | 100kHz,0.1v | 1.50 | 150 | 80 | 10 |

CMC3225H Series

| Part No. | Indutance(Ω) | Test Frequency (MHz) | DCR (Ω) Max | Max. Rated Current (mA) | Rated Voltage (Vdc) | Insulation Resistance (M Ω) Min. |
|-------------------|-----------------------|----------------------|----------------------|-------------------------|---------------------|--|
| CMC3225H-501-2P-T | 500 \pm 25% | 100 | 0.10 | 2000 | 50 | 10 |
| CMC3225H-102-2P-T | 1000 \pm 25% | 100 | 0.10 | 1500 | 50 | 10 |

CML3416S Series

| Part No. | Indutance(uH) | Test Frequency (MHz) | DCR (Ω) Max | Max. Rated Current (mA) | Rated Voltage (Vdc) | Insulation Resistance (M Ω) Min. |
|-------------------|---------------|----------------------|----------------------|-------------------------|---------------------|--|
| CML3416S-60uH.Min | 60uH Min | 100KHZ,0.1v | 1.70 | 200 | 50 | 10 |

CMC4532S Series

| Part No. | Common Mode Impedance(Ω) | Test Frequency (MHz) | DCR (Ω) Max | Max. Rated Current (mA) | Rated Voltage (Vdc) | Insulation Resistance (M Ω) Min. |
|-------------------|-----------------------------------|----------------------|----------------------|-------------------------|---------------------|--|
| CMC4532S-900-2P-T | 90 \pm 25% | 100 | 0.05 | 4000 | 50 | 10 |
| CMC4532S-121-2P-T | 120 \pm 25% | 100 | 0.07 | 3000 | 50 | 10 |

| | | | | | | |
|--------------------|------------------------------------|-----|------|------|----|----|
| CMC4532S-201-2P-T | 200±25% | 100 | 0.10 | 1500 | 50 | 10 |
| CMC4532H-231-2P-T | 230±25% | 100 | 0.05 | 3500 | 50 | 10 |
| CMC4532S-331-2P-T | 330±25% | 100 | 0.11 | 1500 | 50 | 10 |
| CMC4532S-601-2P-T | 600±25% | 100 | 0.12 | 1500 | 50 | 10 |
| CMC4532H-601-2P-T | 600±25% | 100 | 0.06 | 2500 | 50 | 10 |
| CMC4532S-801-2P-T | 800±25% | 100 | 0.16 | 1000 | 50 | 10 |
| CMC4532H-102-2P-T | 1000±25% | 100 | 0.11 | 2100 | 50 | 10 |
| CMC4532S-142-2P-T | 1400±25% | 100 | 0.20 | 700 | 50 | 10 |
| CMC4532S-1000Ω/Min | 1000ΩMin L:51uH+50%/-30%@100khz | 10 | 1.00 | 200 | 50 | 10 |

CML4532S Series

| Part No. | Common Mode Impedance(Ω) | Test Frequency (KHz) | DCR (Ω) Max | Max. Rated Current (mA) | Rated Voltage (Vdc) | Insulation Resistance (MΩ) Min. | L(uH) |
|-------------------|--------------------------|----------------------|-------------|-------------------------|---------------------|---------------------------------|--------------|
| CML4532S-11uH | 300Ω Min@10MHz | 100 | 0.60 | 360 | 50 | 10 | 11+50%/-30% |
| CML4532S-220-2P-T | 500Ω Min@10MHz | 100 | 1.00 | 310 | 50 | 10 | 22+50%/-30% |
| CML4532S-51uH | 1000 Min@10MHz | 100 | 1.00 | 230 | 50 | 10 | 51+50%/-30% |
| CML4532S-101-2P-T | 2000Ω Min@10MHz | 100 | 2.00 | 200 | 50 | 10 | 100+50%/-30% |

1. Operating temperature range : -40℃~105℃(Including self - temperature rise)
2. Storage temperature range (packaging conditions): -10℃~+40℃ and RH 70% (Max.)
3. Rated Current (Irms)

Irms is direct electric current as chip surface temperature rose just 20℃ or 40℃ against chip initial surface temperature (Ta)

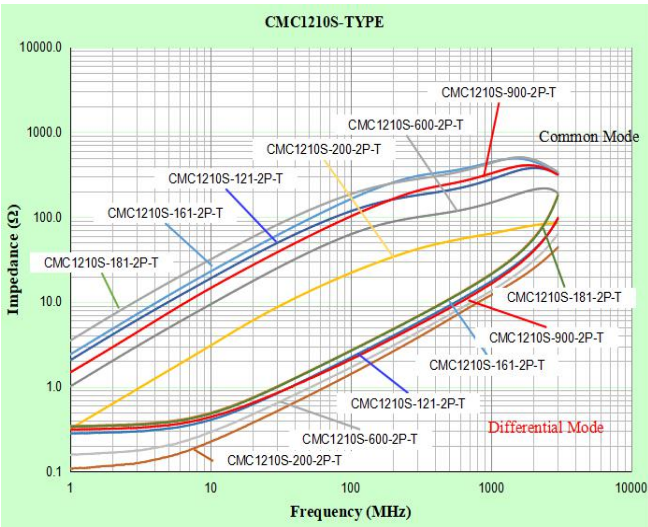
Temperature rise: Rated Current < 1A ΔT 20℃ Max

Rated Current ≥ 1A ΔT 40℃ Max

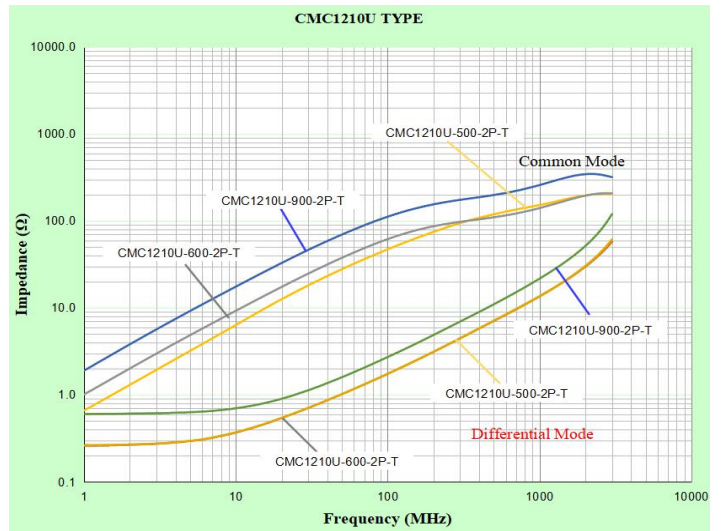


● Impedance Vs Frequency Curve:

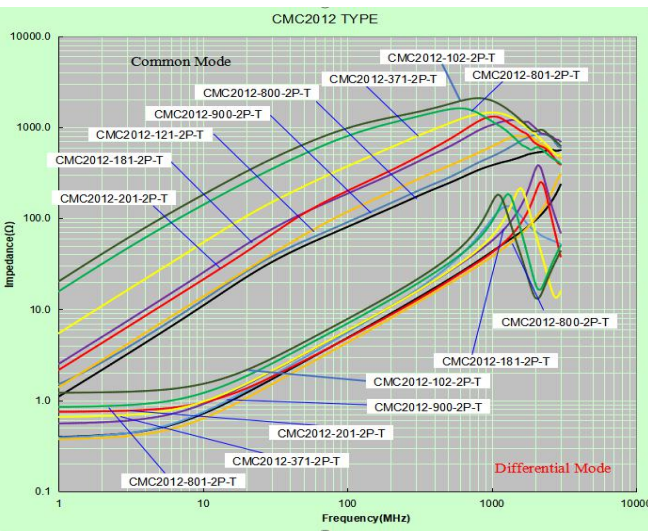
CMC1210 Series



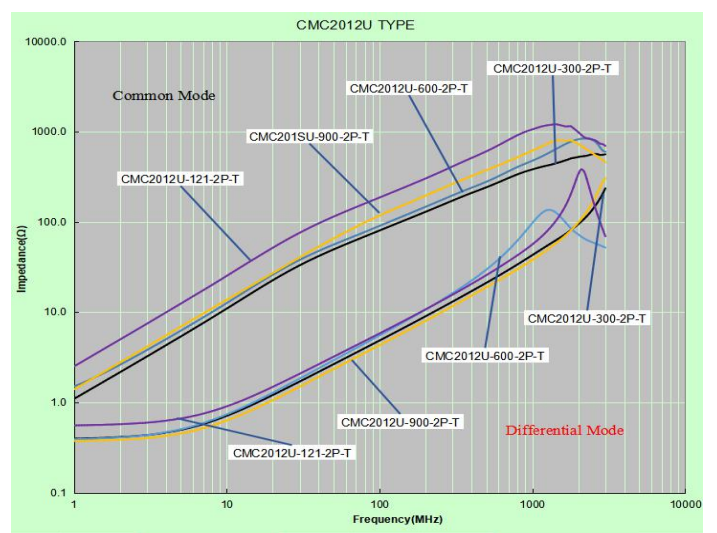
CMC1210U Series



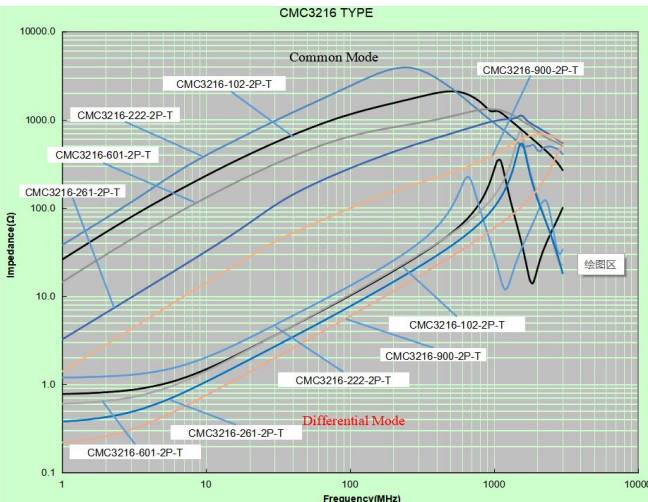
CMC2012 Series



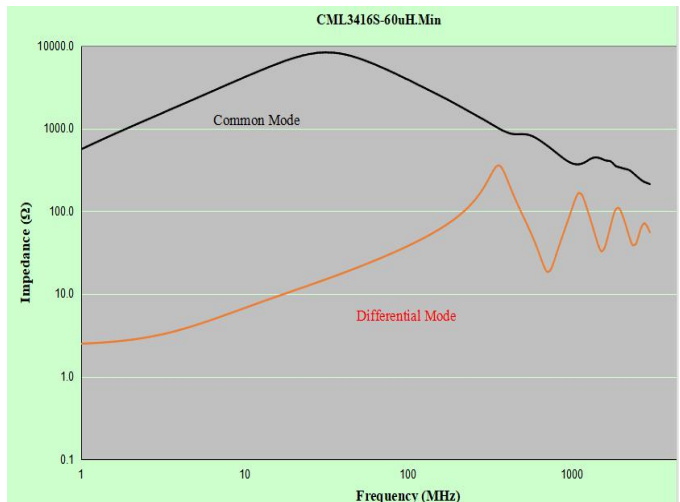
CMC2012U Series



CMC3216 Series

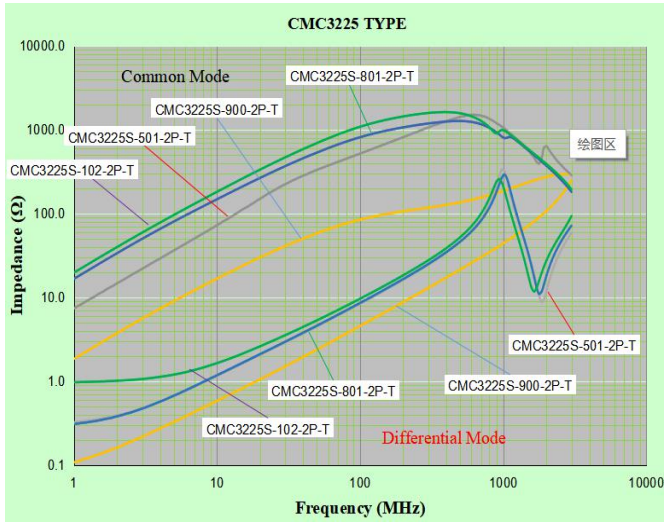


CML3416 Series

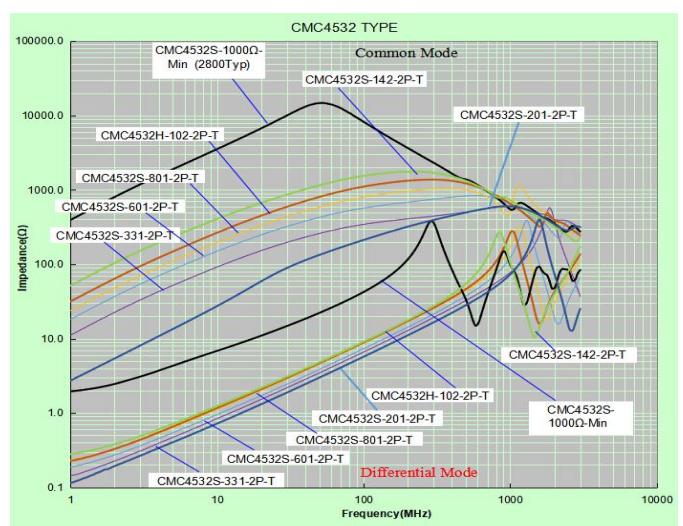




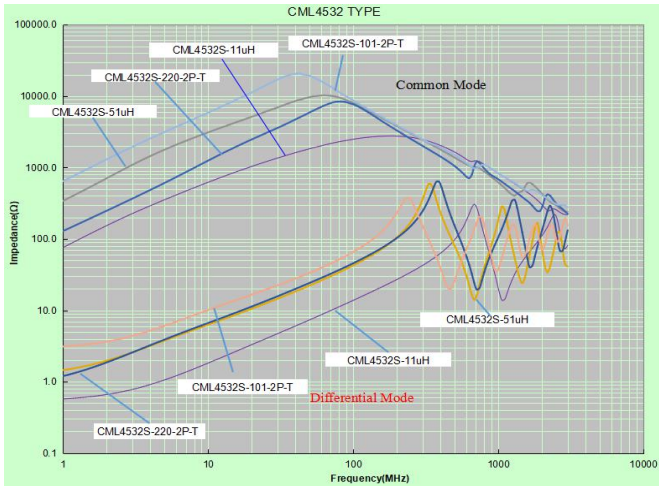
CMC3225 Series



CMC4532 Series



CML4532 Series

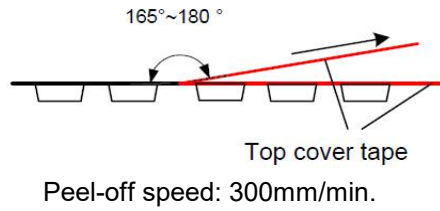
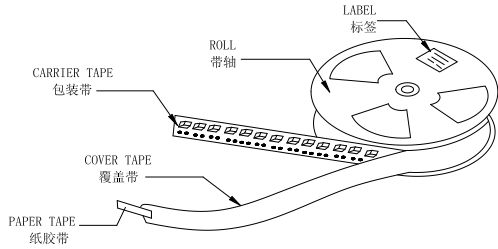




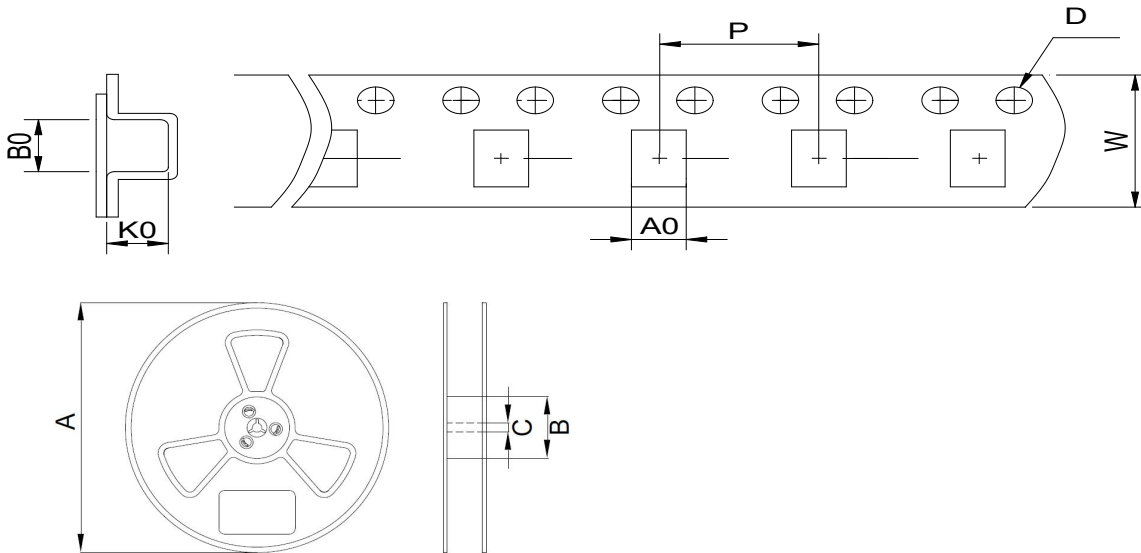
● **PACKAGING SPECIFICATION :**

1. Packaging - Cover Tape

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



2. Packaging - Tape & Reel



| Type | Tape Dimension (mm) | | | | | | Reel Dimension (mm) | | | Quantity (Pcs/Reel) |
|---------|---------------------|------|------|-----|-----|---|---------------------|-------|-----|---------------------|
| | W | A0 | B0 | K0 | D | P | A | B | C | |
| CMC1210 | 8 | 1.1 | 1.4 | 1.0 | 1.5 | 4 | 178 | 60 | 13 | 3000 pcs |
| CMC2012 | 8 | 1.55 | 2.45 | 1.5 | 1.5 | 4 | 178 | 60 | 13 | 2000 pcs |
| CMC3216 | 8 | 1.95 | 3.7 | 2.4 | 1.5 | 4 | 178 | 60 | 13 | 2000 pcs |
| CML3416 | 8 | 1.95 | 3.7 | 2.4 | 1.5 | 4 | 178 | 60 | 13 | 2000 pcs |
| CMC3225 | 12 | 2.9 | 3.5 | 2.7 | 1.5 | 8 | 330 | 10.75 | 2.3 | 3000 pcs |
| CMC4532 | 12 | 3.7 | 4.85 | 3 | 1.5 | 8 | 178 | 60 | 13 | 500 pcs |

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