# MCM2012D SERIES (Chip Common Mode Filter) Engineering Specification

## Features and Application

· Powerful components with composite co-fired material to solve EMI problem for high speed differential signal transmission line as USB, and LVDS, without distortion to high speed signal transmission.

## 1.PRODUCT DETAIL

| Part No. | Imp. Com. (Ω)±25% @100MHz | DCR Max. (Ω) | Rated Current Max.(mA) | Rated Voltage (V) | Withstand Voltage (V) | Insulation Resistance Min.(MΩ) |
|---|---|---|---|---|---|---|
| MCM2012D900FBE | 90 | 0.7 | 300 | 10 | 25 | 200 |
| MCM2012D121FBE | 120 | 0.7 | 300 | 10 | 25 | 200 |
| Test Instruments | •Agilent E4991A RF IMPEDANCE / MATERIAL ANALYZER<br>•HP4338 MILLIOHMMETER<br>• Agilent E5071C ENA SERIES NETWORK ANALYZER<br>•Keithley 2410 1100V SOURCE METER | | | | | |

## 2.PART NUMBER CODE

| MCM | 2012 | D | 90 | 0 | F | B | E |
|---|---|---|---|---|---|---|---|
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |

*1* Series Name
*2* Size Code: the first two digitals : length(mm), the last two digitals : width(mm)
*3* Material Code
*4* Impedance(Ω) ± 25%
*5* Fixed Decimal Point — (ex：900=90Ω ；121=120Ω)
*6* Rated Current Code

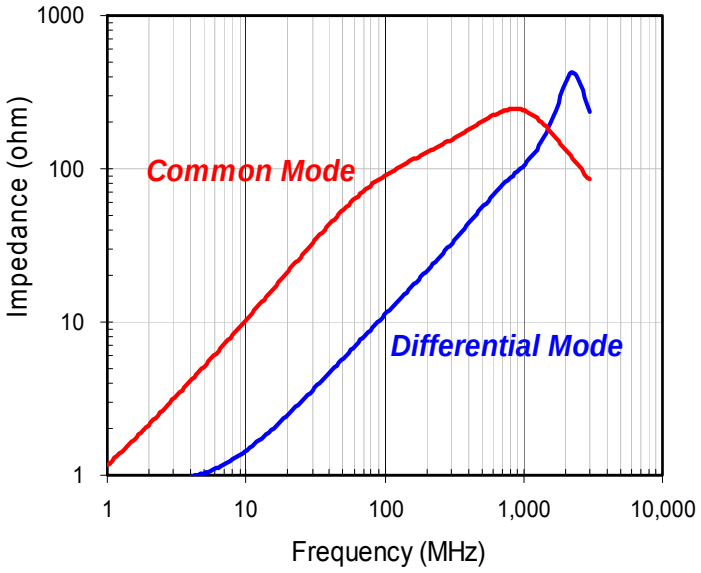
| | | | | | |
|---|---|---|---|---|---|
| A=50mA | B=80mA | C=100mA | D=150mA | E=200mA | F=300mA |
| G=400mA | H=500mA | I =600mA | J =700mA | K=800mA | |

*7* Soldering: Green Parts: A— Soldering Lead-Free B— Lead-Free for whole chip
*8* Packaging: E - Embossed plastic tape, 7" reel.

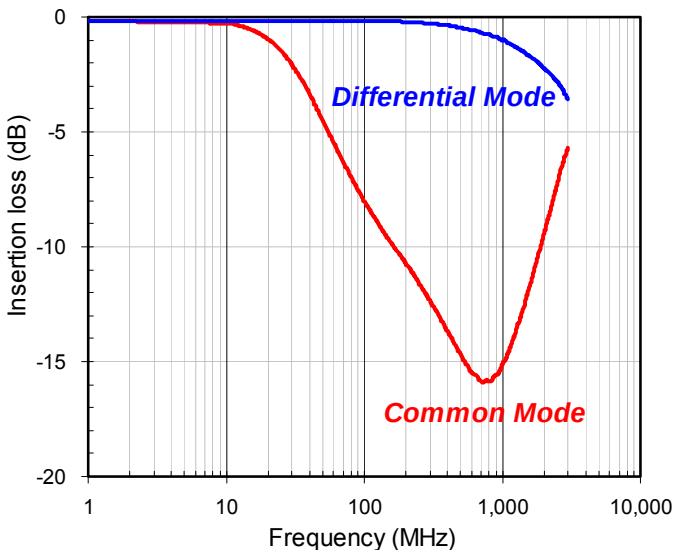
## 3.TYPICAL CHARACTERISTIC

### MCM2012D900

IMPEDANCE vs. FREUQENCY CHARACTERISTICS

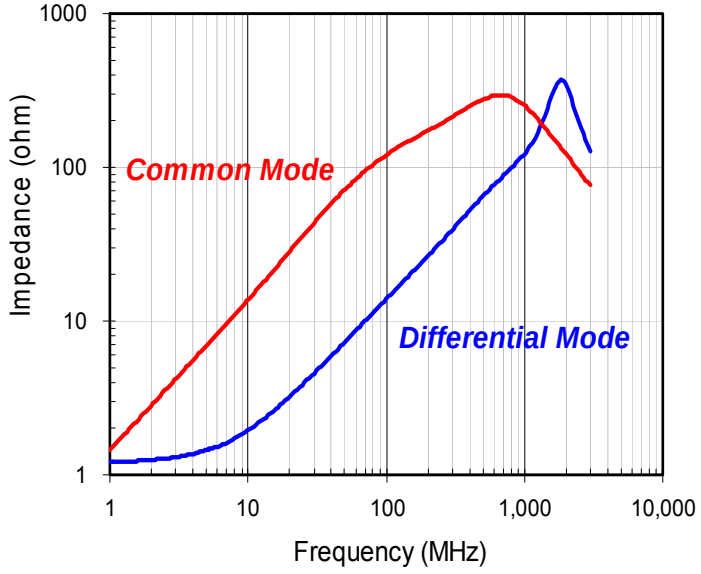



INSERTION LOSS vs. FREUQENCY CHARACTERISTICS

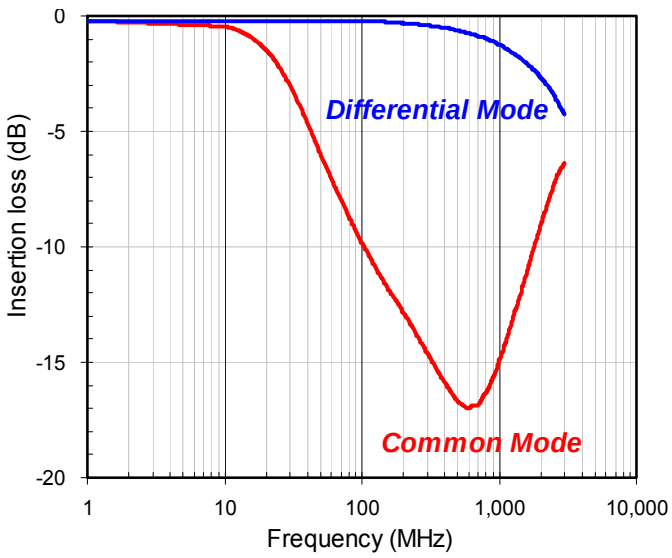



### MCM2012D121

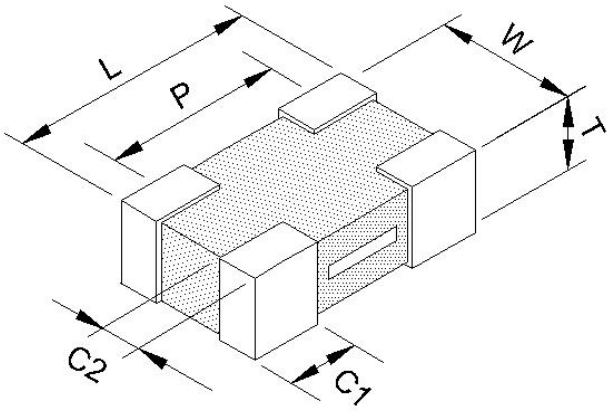
IMPEDANCE vs. FREUQENCY CHARACTERISTICS




INSERTION LOSS vs. FREUQENCY CHARACTERISTICS



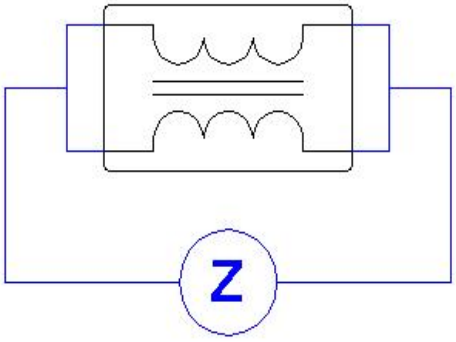
## 4.SHAPES AND DIMENSIONS



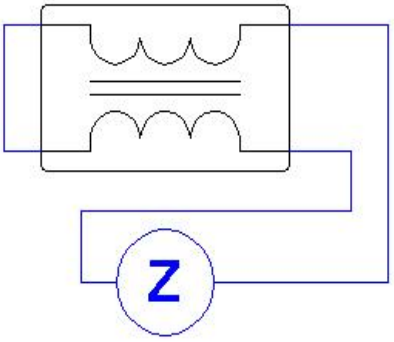

| TYPE | 2012 |
|---|---|
| L | 2.00±0.20 |
| W | 1.25±0.20 |
| T | 1.00±0.10 |
| P | 1.60±0.20 |
| C1 | 0.40±0.20 |
| C2 | 0.30±0.20 |
| Unit: mm | |

## 5.MEASURING CIRCUITS

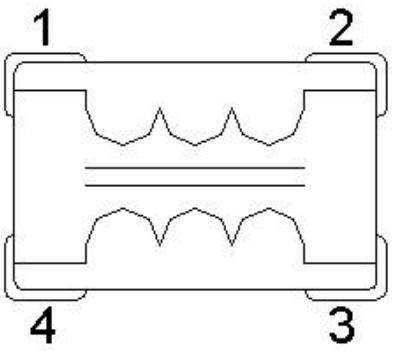
(A):Common mode

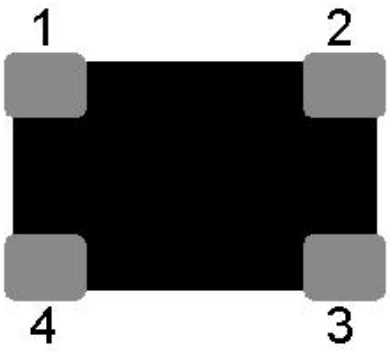


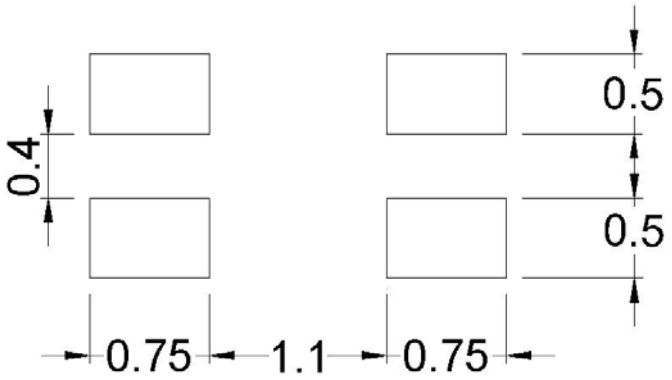

(B):Differential mode



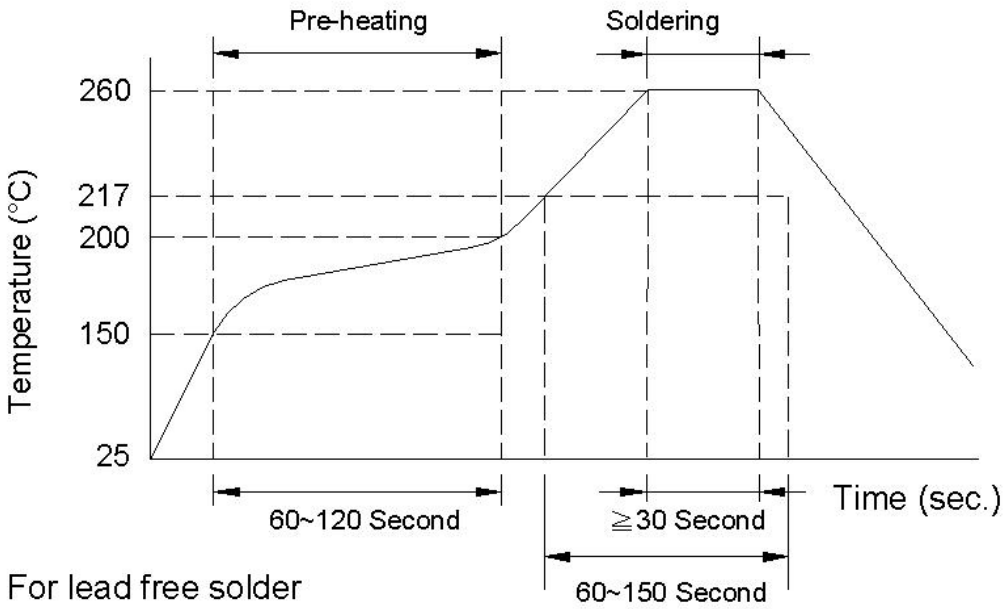
## 6.CIRCUIT CONFIGURATION & LAYOUT PAD




## 7.RECOMMENDED SOLDERING CONDITIONS

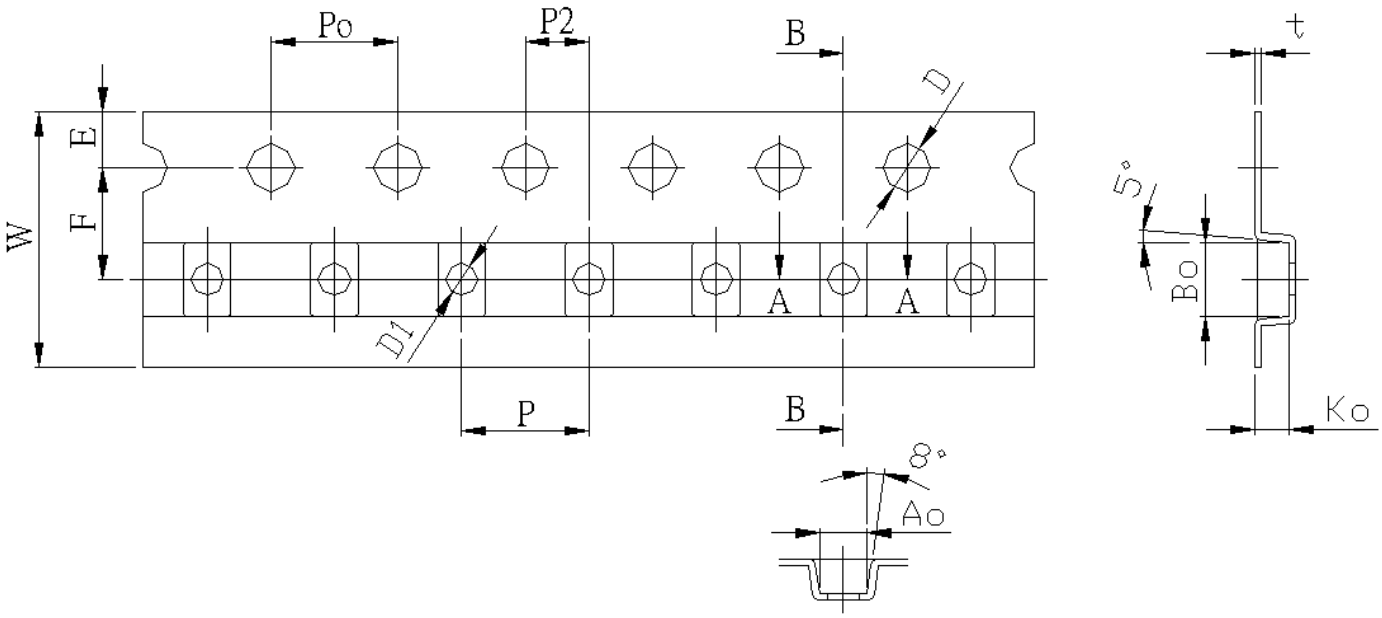


## 8.RELIABILITY AND TEST CONDITION

| Test item | Test condition | Criteria |
|---|---|---|
| **Temperature Cycle** | A. Temperature : -40 ~ +85℃<br>B. Cycle : 100 cycles<br>C. Dwell time : 30minutes<br><br>Measurement : at ambient temperature 24 hrs after test completion | A. No mechanical damage<br>B. Impedance value should be within ± 20 % of the initial value |
| **Operational Life** | A. Temperature : 85℃ ± 5℃<br>B. Test time : 1000 hrs<br>C. Apply current : full rated current<br><br>Measurement : at ambient temperature 24 hrs after test completion | A. No mechanical damage<br>B. Impedance value should be within ± 20 % of the initial value |
| **Biased Humidity** | A. Temperature : 40 ± 2℃<br>B. Humidity : 90 ~ 95 % RH<br>C. Test time : 1000 hrs<br>D. Apply current : full rated current<br><br>Measurement : at ambient temperature 24 hrs after test completion | A. No mechanical damage<br>B. Impedance value should be within ± 20 % of the initial value |
| **Resistance to Solder Heat** | A. Solder temperature : 260 ± 5℃<br>B. Flux : Rosin<br>C. DIP time : 10 ± 1 sec | A. More than 95 % of terminal electrode should be covered with new solder<br>B. No mechanical damage<br>C .Impedance value should be within ± 20 % of the initial value |
| **Steam Aging Test** | A. Temperature : 93 ± 2℃<br>B. Test time : 4 hrs(MCA)<br>Others : 8 hrs<br>C. Solder temperature : 235 ± 5℃<br>D. Flux : Rosin<br>E. DIP time : 5 ± 1 sec | More than 95 % of terminal electrode should be covered with new solder |

## 9.TAPE AND REEL SPECIFICATIONS

Type：Plastic Carrier

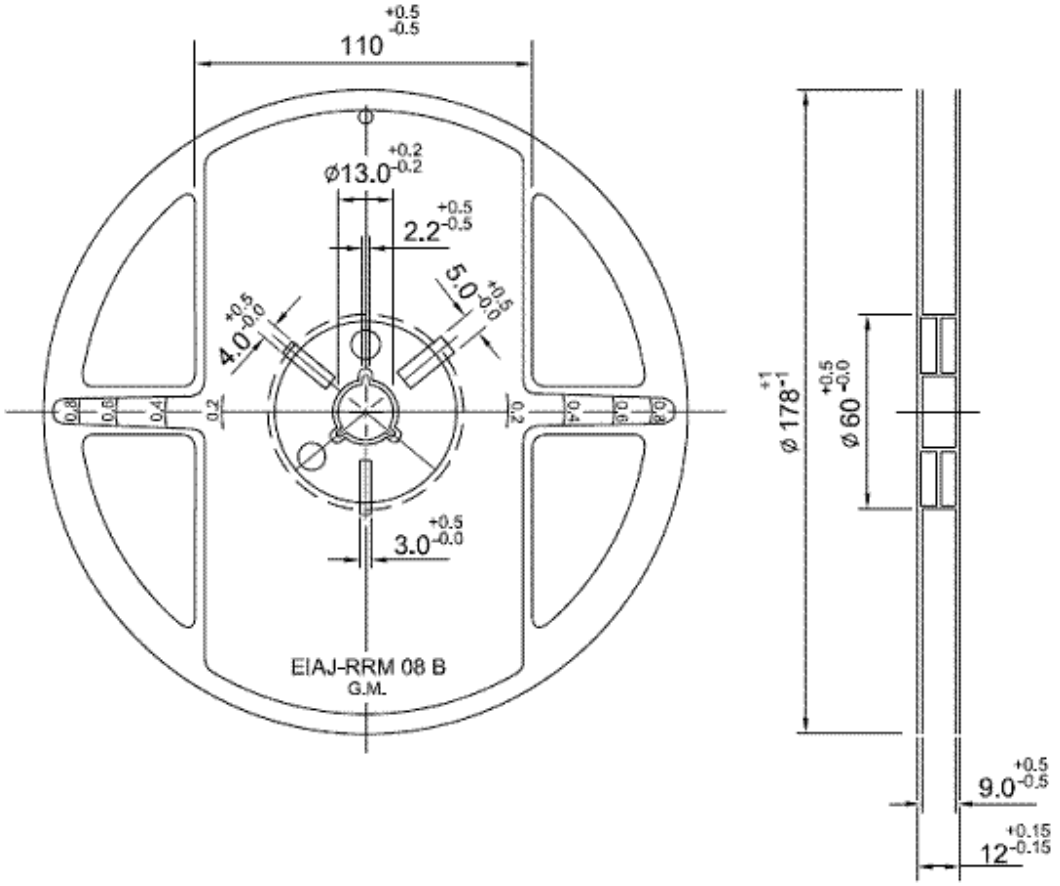



Unit：mm

| Symbol | Size | Symbol | Size |
|---|---|---|---|
| W | 8.00±0.10 | D1 | 1.00±0.10 |
| P | 4.00±0.10 | Po | 4.00±0.10 |
| E | 1.75±0.10 | Ao | 1.40±0.10 |
| F | 3.50±0.05 | Bo | 2.30±0.10 |
| P2 | 2.00±0.05 | Ko | 1.13±0.10 |
| D | $1.50^{+0.10}_{-0.00}$ | t | 0.22±0.05 |

## 10.REEL DIMENSIONS

Unit: mm




## 11.STANDARD QUANTITY FOR PACKAGING

Packaging style：Taping

Reel packaging quantity：3000 pcs/reel

Inner box：5 reel/inner box

## 12.GENERAL TECHNICAL DATA

Operating temperature range : - 40℃ ~ +85℃

Storage Condition : Less than 40℃ and 70% RH

Storage Time: 6 months Max.

Soldering method: Reflow or Wave Soldering