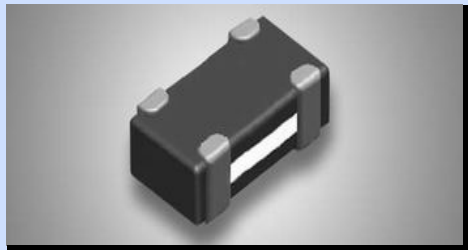


# EMCM Series

## Multilayer Chip Common Mode Filter

TRIGON  
COMPONENTS



### FEATURES

- Powerful component with composite co-fired material to solve EMI problem for high-speed differential signal transmission line as USB, IEEE1394 and LVDS, without distortion to high speed signal transmission.
- High coupling constant: 0.99
- Small size and low profile.
- Various common mode impedance items of 90 to 550 Ohm can be used, considering noise level and signal frequency.
- Small dimension enable higher density packaging.
- RoHS Compliant

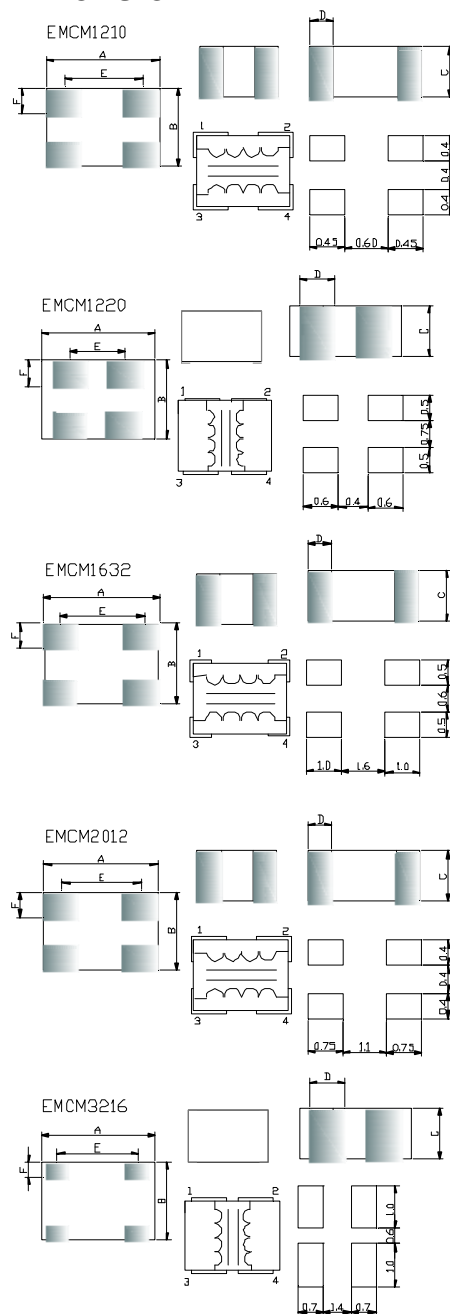
### ORDERING CODE

**EMCM XXXX X XX X X X X**  
(1) (2) (3) (4) (5) (6) (7) (8)

- (1) Series Name
- (2) Size(mm)Length x Width
- (3) Material Code
- (4) Impedance Value(Ohm) $\pm 25\%$
- (5) Fixed Decimal Point
- (6) Rated Current
- (7) Soldering
- (8) Packaging

※Please refer to complete Ordering Code (CMCM-Ord) for more ordering options.

### Dimension



Size	1210 $\pm 0.1$	1220 $\pm 0.2$	1632 $\pm 0.2$	2012 $\pm 0.2$	3216 $\pm 0.2$
A	1.25	2.0	3.2	2.0	3.2
B	1.00	1.25	1.6	1.25	1.6
C	0.82	1.1	1.1	1.1	1.1
D	0.25	0.6	0.6	0.4	0.7
E	1.00	1.0	2.6	1.6	2.1
F	0.30	0.25	0.45	0.3	0.3

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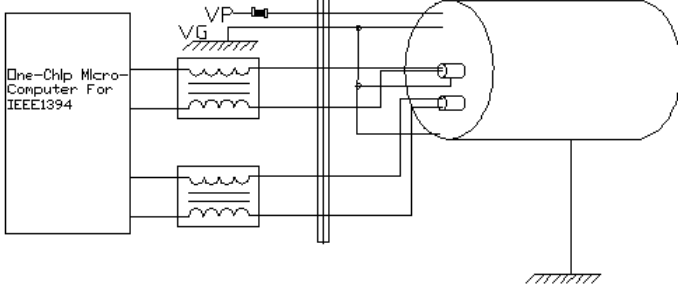
# EMCM Series

## Multilayer Chip Common Mode Filter

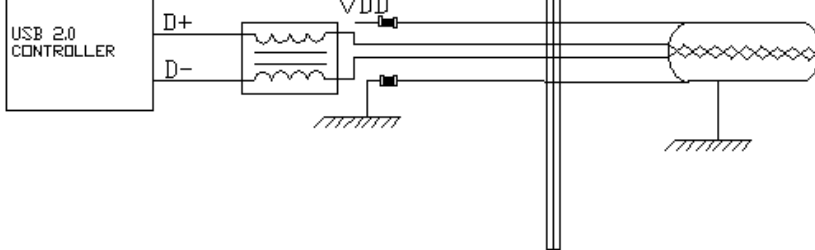
TRIGON  
COMPONENTS

### Application

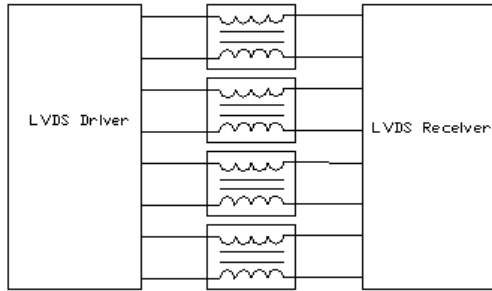
IEEE1394



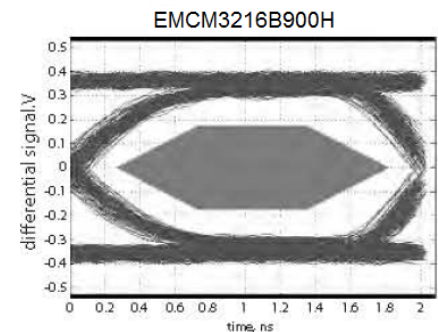
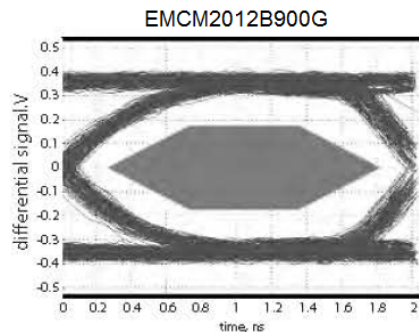
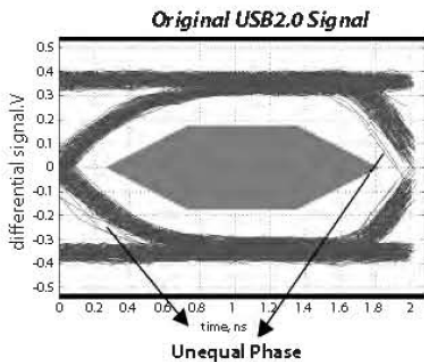
USB2.0



LVDS



### Signal Quality Test Result



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# EMCM Series

## Multilayer Chip Common Mode Filter

**TRIGON**  
COMPONENTS

### Specification

EMCM2012 (0805)							
Part Number	Impedance @100MHZ(Ohm)	DCR Max(Ohm)	DCR Type(Ohm)	Rated Current(mA)	Rated Voltage(V)	Withstand Voltage(V)	Insulation resistance Min(MOhm)
EMCM2012B900G	90	0.70	0.30	400	10	25	200
EMCM2012B121G	120	0.80	0.35	400	10	25	200
EMCM2012B181G	180	0.90	0.40	400	10	25	200
EMCM2012B221F	220	1.00	0.50	300	10	25	200
EMCM2012B281F	280	1.10	0.60	300	10	25	200
EMCM2012B371F	370	1.20	0.70	300	10	25	200
EMCM2012B900G	90	0.50	0.30	400	10	25	100
EMCM2012H181G	180	0.60	0.40	400	10	25	100
EMCM2012H281F	280	0.70	0.50	300	10	25	100

EMCM1220 (0508)							
Part Number	Impedance @100MHZ(Ohm)	DCR Max(Ohm)	DCR Type(Ohm)	Rated Current(mA)	Rated Voltage(V)	Withstand Voltage(V)	Insulation resistance Min(MOhm)
EMCM1220B900G	90	0.70	0.30	400	10	25	200
EMCM1220B121G	120	0.80	0.35	400	10	25	200
EMCM1220B181G	180	0.90	0.40	400	10	25	200
EMCM1220B221F	220	1.00	0.50	300	10	25	200
EMCM1220B281F	280	1.10	0.60	300	10	25	200
EMCM1220B371F	370	1.20	0.70	300	10	25	200

EMCM3216 (1206)							
Part Number	Impedance @100MHZ(Ohm)	DCR Max(Ohm)	DCR Type(Ohm)	Rated Current(mA)	Rated Voltage(V)	Withstand Voltage(V)	Insulation resistance Min(MOhm)
EMCM3216B900H	90	0.70	0.30	500	10	25	200
EMCM3216B121H	120	0.80	0.35	500	10	25	200
EMCM3216B181G	180	0.90	0.40	400	10	25	200
EMCM3216B221G	220	1.00	0.45	400	10	25	200
EMCM3216B281G	280	1.00	0.55	400	10	25	200
EMCM3216B371F	370	1.10	0.60	300	10	25	200
EMCM3216B471F	470	1.20	0.70	300	10	25	200
EMCM3216B551F	550	1.30	0.80	300	10	25	200
EMCM3216B900J	90	0.30	0.20	700	10	25	100
EMCM3216H121G	120	0.30	0.20	400	10	25	100
EMCM3216H201G	200	0.35	0.30	400	10	25	100
EMCM3216H281G	280	0.40	0.30	400	10	25	100
EMCM3216H371G	370	0.45	0.35	400	10	25	100
EMCM3216H551G	550	0.50	0.40	400	10	25	100

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# EMCM Series

## Multilayer Chip Common Mode Filter

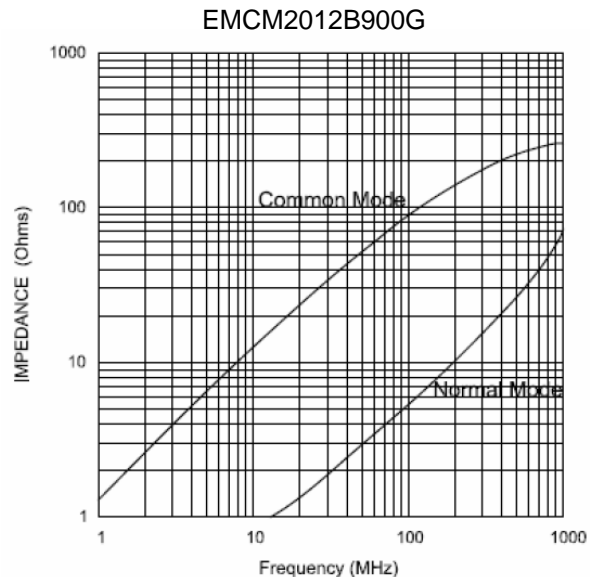
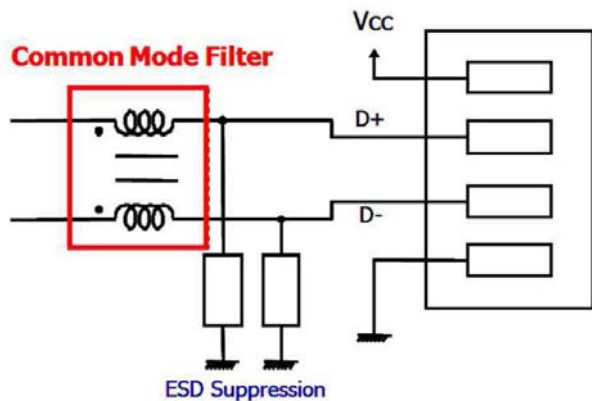
**TRIGON**  
COMPONENTS

EMCM1632 (0612)							
Part Number	Impedance @100MHZ(Ohm)	DCR Max(Ohm)	DCR Type(Ohm)	Rated Current(mA)	Rated Voltage(V)	Withstand Voltage(V)	Insulation resistance Min(MOhm)
EMCM1632B900H	90	0.70	0.30	500	10	25	200
EMCM1632B121H	120	0.80	0.35	500	10	25	200
EMCM1632B181G	180	0.90	0.40	400	10	25	200
EMCM1632B221G	220	1.00	0.45	400	10	25	200
EMCM1632B281G	280	1.00	0.55	400	10	25	200
EMCM1632B371F	370	1.10	0.60	300	10	25	200
EMCM1632B471F	470	1.20	0.70	300	10	25	200
EMCM1632B551F	550	1.30	0.80	300	10	25	200
EMCM1632H900G	90	0.50	0.30	400	10	25	100
EMCM1632H181G	180	0.60	0.35	400	10	25	100
EMCM1632H371G	370	0.70	0.40	400	10	25	100

EMCM1210 (0504)							
Part Number	Impedance @100MHZ(Ohm)	DCR Max(Ohm)	DCR Type(Ohm)	Rated Current(mA)	Rated Voltage(V)	Withstand Voltage(V)	Insulation resistance Min(MOhm)
EMCM1210B350H	35	0.90	0.40	170	10	25	100
EMCM1210B670H	67	1.20	0.70	150	10	25	100
EMCM1210B900G	90	1.40	0.90	150	10	25	100

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### COMMON MODE & NORMAL MODE vs. FREQUENCY CHARACTERISTICS

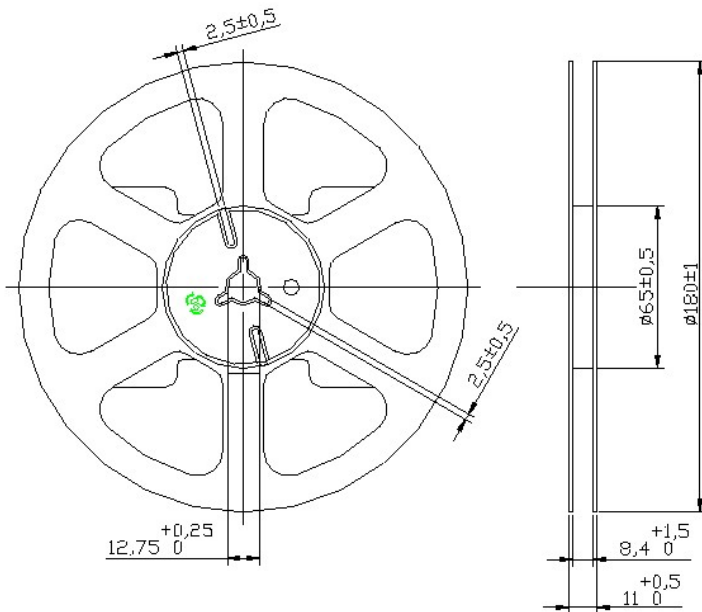


# EMCM Series

## Multilayer Chip Common Mode Filter

### Package Information

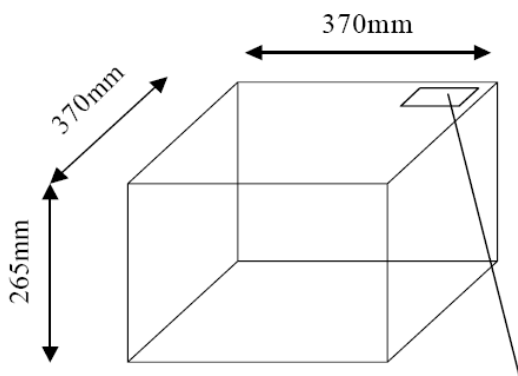
#### Reel



#### Quantity of Reel Packaging

PART SIZE		1005	1608	201209	201212	3216	3225	4516	4532
7" REEL	Qty. (pcs)	10,000	4,000	4,000	3,000	3,000	2,000	2,000	1,000
13" REEL		NA	NA	10,000	10,000	10,000	5,000	5,000	2,500
BULK		20,000	20,000	20,000	20,000	20,000	10,000	10,000	10,000

#### Carton



1. Put taped reel in an anti-static bag.
2. Put desiccant in an anti-static bag, and seal the anti-static bag by heat pressing.
3. Put the styrofoam in the bottom and around the box.
4. Put 4 reels which was packed as step 2 in one layer.
5. Then, put the stiffener on the top of those four reels as an isolation on between layer and layer.
6. Repeat step 4 and 5 until there is 10 layers in one box.
7. Before sealing the box, put the styrofoam on the top. Then, using adhesive tape to seal the box.
8. Stick the shipment label on the top of the box.
9. Recommended storage temperature:  
Temp : 40°C Max.  
Humidity : 70% RH Max.

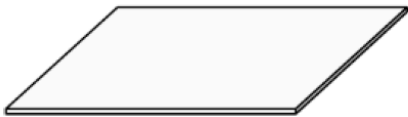
Packing Label

# EMCM Series

## Multilayer Chip Common Mode Filter



Styrofoam: × 6 (350mm\*350mm\*15mm )



Stiffener: × 10 (340\*340mm )



Taped reel + desiccant + anti-static bag: × 40

Carton size	L*W*H (mm)	Loading Quantity 7" (reels)	Loading quantity 13" (reels)
L	370*370*265	40	12
M	370*370*133	20	5
S	370*200*133	20	-

# EMCM Series

## Multilayer Chip Common Mode Filter

### Reliability and Test Condition

Stress	Performance	Test Condition
<b>Leaching (Resistance to Solder Heat)</b>	The chip should not crack ; More than 90% of the terminal electrode should be covered with solder , free from defects, chip body should not exposed.	1.Solder: SHEN MAU (Sn60A-B20) 2.Solder Temp: 260 ±5°C 3.Flux: Rosin 4.Dip time: 10 ±1 sec
<b>Solderability 1 (IR Re-flow test)</b>	1.Sn cover area need to over half thickness of chip 2.Chip shift distance under 50% of width 3.No short , open ,...etc defect symptom	For Normal Process 1.Solder: Alpha (63SN/37PB) 2.General:135/135/195/235°C For Lead-free Process 1.Solder:Alpha(SAC305) 2.100%TIN:155/155/220/250°C 3.Sn;Ag;Cu=96.5:3:0.5
<b>Solderability 2 (After steam 4 hrs)</b>	More than 90% of the terminal electrode should be covered with new solder	1.Steam 8 hrs 2.Solder: SHEN MAU (Sn60A-B20) 3.Solder Temp.:235 ±5°C 4.Flux: Rosin 5.Dip time:5 ±1 sec
<b>Terminal Strength</b>	The terminal electrode should not peel off	100505>0.2kgt , 160808>0.3kgt , 201209>0.6kgt , 201212>0.6kgt , 321611>1.0kgt , 322513>1.0kgt , 451616>1.0kgt , 453215>1.5kgt , ; pulling time:30 ±5 sec
<b>Bending Strength</b>	The body should not be damaged by force applied on the right	100505>0.2kgf , 160808>0.3kgf , 201209>1.0kgf , 201212>1.0kgf , 321611>2.0kgf , 322513>2.5kgf , 451616>2.5kgf , 453215>2.5kgf , M4A3216>2.0kgf
<b>Flexure Strength</b>	No mechanical damage shall be noticed even when the board is bent 2 mm ( 0.079 inches)	1.At ambient temperature & Humidity 2.To bend 2 mm

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# EMCM Series

## Multilayer Chip Common Mode Filter

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<p><b>Thermal Shock (Temperature Cycle)</b></p>	<ol style="list-style-type: none"> <li>1.No mechanical damage</li> <li>2.Inductance should be within <math>\pm 10\%</math> of the initial value</li> <li>3.Q value should be within <math>\pm 30\%</math> of the initial value</li> <li>4.Impedance value should be within <math>\pm 20\%</math> of the initial value</li> </ol>	<ol style="list-style-type: none"> <li>1. Temperature: <math>-40 \sim 85^{\circ}\text{C}</math> For 30 minutes each</li> <li>2. Cycle: 100 cycles</li> <li>3. Measurement: At ambient temperature 24 hours After test completion</li> </ol>
<p><b>Operational Life</b></p>	<ol style="list-style-type: none"> <li>1.No mechanical damage</li> <li>2.Inductance should be within <math>\pm 10\%</math> of the initial value</li> <li>3.Q value should be within <math>\pm 30\%</math> of the initial value</li> <li>4.Impedance value should be within <math>\pm 20\%</math> of the initial value</li> </ol>	<ol style="list-style-type: none"> <li>1. Temperature: <math>125 \pm 5^{\circ}\text{C}</math></li> <li>2. Testing time: 1000 hrs</li> <li>3. Applied current: Full rated current</li> <li>4. Measurement: At ambient temperature 24 hours After test completion</li> </ol>
<p><b>Biased Humidity</b></p>	<ol style="list-style-type: none"> <li>1.No mechanical damage</li> <li>2.Inductance should be within <math>\pm 10\%</math> of the initial value</li> <li>3.Q value should be within <math>\pm 30\%</math> of the initial value</li> <li>4.Impedance value should be within <math>\pm 20\%</math> of the initial value</li> </ol>	<ol style="list-style-type: none"> <li>1. Temperature: <math>40^{\circ}\text{C}</math></li> <li>2. Humidity: 90-95 % RH</li> <li>3. Applied current: Full rated current</li> <li>4. Testing time: 1000 hrs</li> <li>5. Measurement: At ambient temperature 24 hours After test completion</li> </ol>
<p><b>Rated Current</b></p>	<ol style="list-style-type: none"> <li>1.MCB / MFI / MCI product Surface temperature below room temperature plus <math>10^{\circ}\text{C}</math></li> <li>2.MHC product surface temp. below room temperature plus <math>40^{\circ}\text{C}</math></li> </ol>	<ol style="list-style-type: none"> <li>1. At ambient temperature &amp; humidity</li> <li>2. Testing time: 5 minutes ( under full rated current )</li> </ol>

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