

## ECMM Series For USB 3.0,

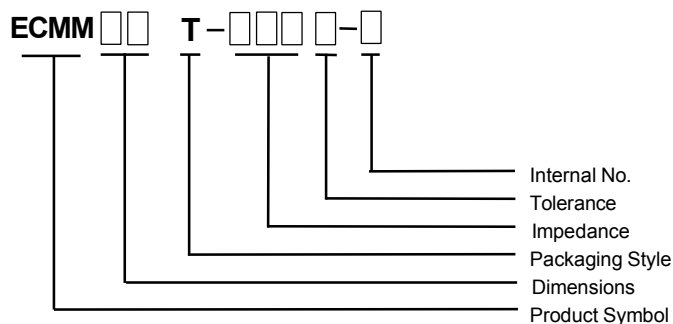


Based on LYE's technical expertise, we have introduced a full series of common mode choke. They are designed for excellent noise attenuation with a compact size for wide applications such as USB line for personal computers and peripheral, DVC, STB and LVDS, panel line for liquid display panels, etc. We welcome you to contact us for requirement of our standard series or custom design service.

### Features

- Ro HS Compliant
- Miniature SMD type common mode filter for fully automated assembly.
- Excellent Solderability.

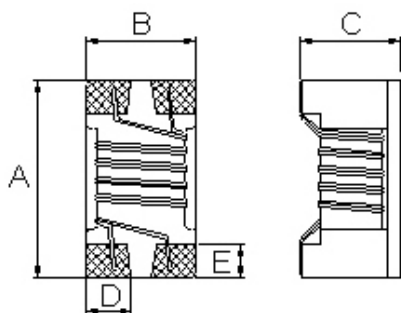
### Product Identification



### Applications

- USB3.0
- Packaging: T : Tape and Reel

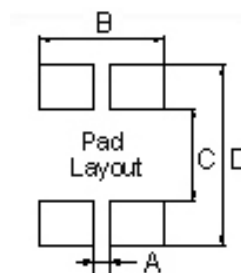
### Shapes and Dimensions



Dimensions in mm

| TYPE   | A        | B        | C       | D    | E    |
|--------|----------|----------|---------|------|------|
| ECMM11 | 1.25±0.2 | 1.00±0.2 | 0.8±0.1 | 0.32 | 0.33 |

### Recommended Pattern



Dimensions in mm

| TYPE   | A    | B    | C    | D    |
|--------|------|------|------|------|
| ECMM11 | 0.36 | 1.00 | 0.59 | 1.75 |

## SMD Common Mode Choke - ECMM Series

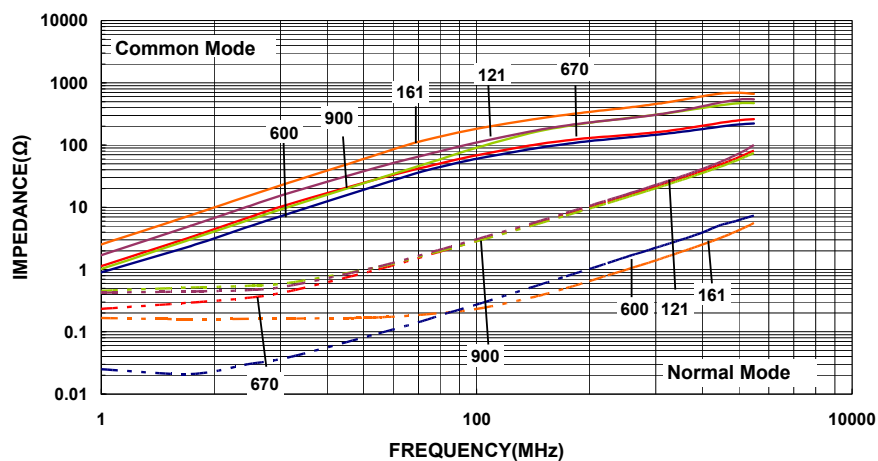
### Electrical Characteristics

| Part Number    | Impedance ( $\Omega$ ) | Test Frequency (MHz) | Tolerance ( $\pm\%$ ) | Idc (mA) Max | Rated Voltage (Vdc) | Rdc ( $\Omega$ ) Max | Insulation Resistance (M $\Omega$ ) Min |
|----------------|------------------------|----------------------|-----------------------|--------------|---------------------|----------------------|-----------------------------------------|
| ECMM11T-600M-N | 60                     | 100                  | 20                    | 300          | 20                  | 0.40                 | 10                                      |
| ECMM11T-670M-N | 67                     | 100                  | 20                    | 300          | 50                  | 0.25                 | 10                                      |
| ECMM11T-900M-N | 90                     | 100                  | 20                    | 250          | 50                  | 0.30                 | 10                                      |
| ECMM11T-121M-N | 120                    | 100                  | 20                    | 200          | 50                  | 0.40                 | 10                                      |
| ECMM11T-161M-N | 160                    | 100                  | 20                    | 160          | 50                  | 0.43                 | 10                                      |

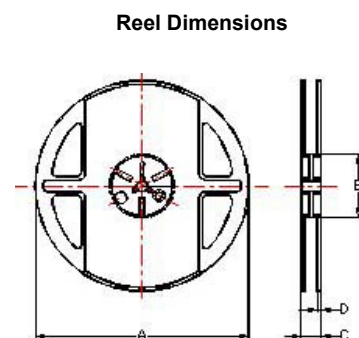
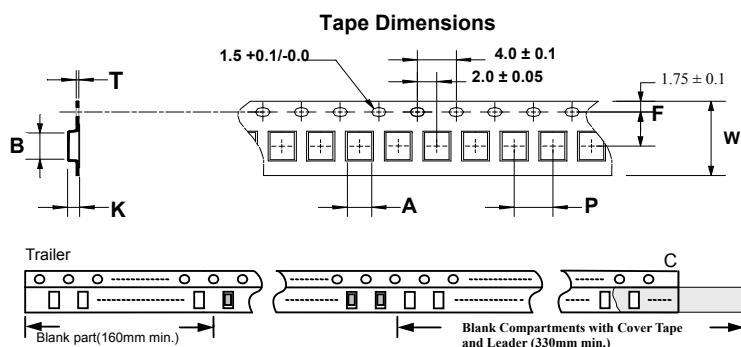
- When ordering, please specify tolerance and packaging codes. Ex:ECMM11T-600M-N
- Tolerance : M =  $\pm 20\%$
- Packaging : Clear tape and reel { standard }.
- Z : Agilent/HP4287A+Agilent16197A
- Rdc(single line) :Chroma16502
- Insulation Resistance : Agilent/HP4339B
- Operating temperature range from  $-40^{\circ}\text{C}$  to  $105^{\circ}\text{C}$ . (Including self - temperature rise )

**Test Instruments :** HP4287A Material/Impedance Analyzer

Typical Impedance vs. Frequency



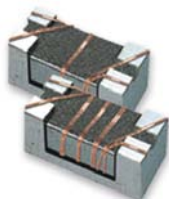
### Packaging Specifications



Dimensions in mm

| TYPE   | Tape Dimensions |      |      |   |   |     |      | Reel Dimensions |    |    |     | Quantity<br>PCS / Reel |
|--------|-----------------|------|------|---|---|-----|------|-----------------|----|----|-----|------------------------|
|        | A               | B    | T    | W | P | F   | K    | A               | B  | C  | D   |                        |
| ECMM11 | 1.10            | 1.40 | 0.24 | 8 | 4 | 3.5 | 1.00 | 178             | 60 | 12 | 1.5 | 2000                   |

## ECMM Series For USB 2.0, IEEE1394b, LVDS Applications



Based on LYE's technical expertise, we have introduced a full series of common mode choke. They are designed for excellent noise attenuation with a compact size for wide applications such as USB line for personal computers and peripheral, IEEE 1394 line for personal computers, DVC, STB and LVDS, panel line for liquid display panels, etc. We welcome you to contact us for requirement of our standard series or custom design service.

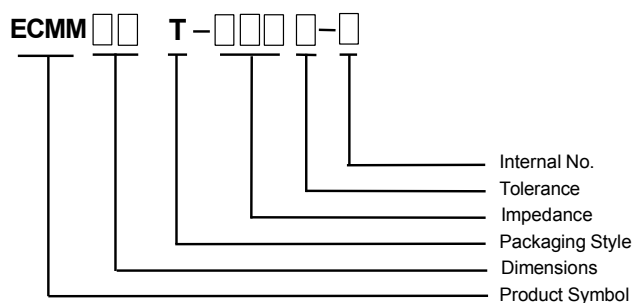
### Features Applica

- RoHS Compliant
- Miniature SMD type common mode filter for fully automated assembly.
- Wide Impedance range ( $30\Omega \sim 2200\Omega$ ) for noise suppression.
- Excellent Solderability.

### tions

- USB line for personal computers and peripheral,
- IEEE 1394 line for personal computers, DVC, STB.
- LVDS, panel line for liquid display panels, graph card etc.

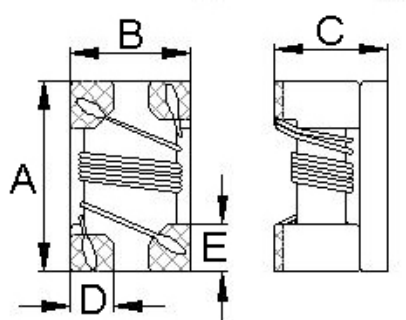
### Product Identification



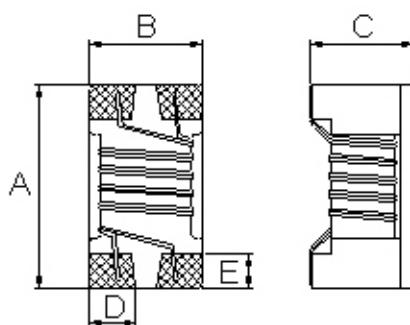
- Packaging: T : Tape and Reel

### Shapes and Dimensions

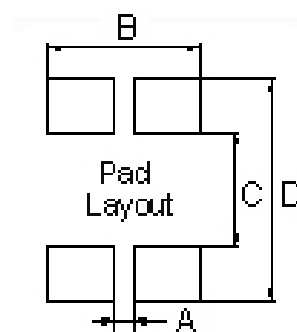
ECMM21



ECMM31



### Recommended Pattern



Dimensions in mm

| TYPE   | A        | B        | C        | D    | E    |
|--------|----------|----------|----------|------|------|
| ECMM21 | 2.05±0.2 | 1.25±0.2 | 1.20±0.2 | 0.50 | 0.58 |
| ECMM31 | 3.20±0.2 | 1.60±0.2 | 1.90±0.2 | 0.60 | 0.60 |

Dimensions in mm

| TYPE   | A    | B    | C    | D    |
|--------|------|------|------|------|
| ECMM21 | 0.50 | 1.20 | 0.80 | 2.60 |
| ECMM31 | 0.40 | 1.60 | 1.60 | 3.70 |

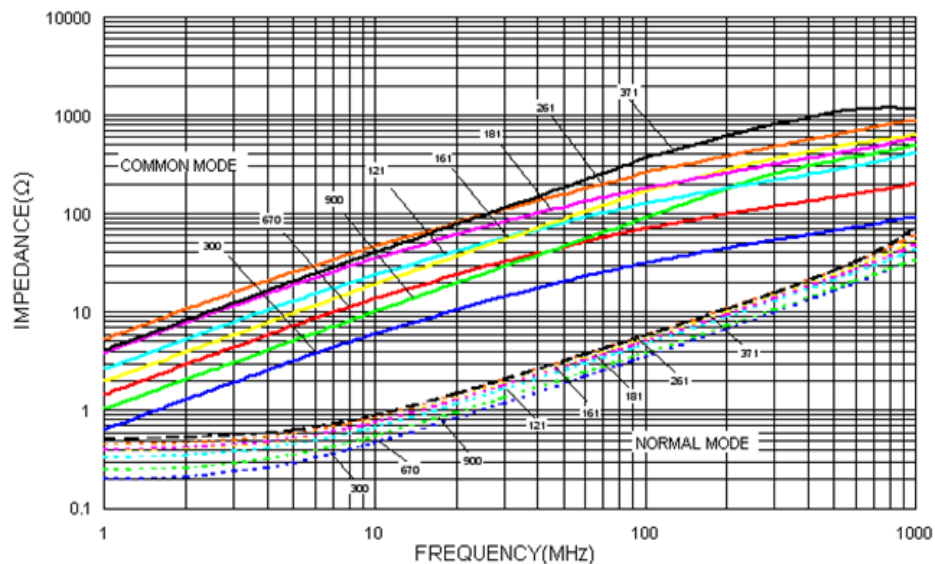
## Electrical Characteristics

| Part Number    | Impedance<br>( $\Omega$ ) | Test Frequency<br>(MHz) | Tolerance<br>( $\pm\%$ ) | Idc<br>(mA) Max | Rated Voltage<br>(Vdc) | Rdc<br>( $\Omega$ ) Max | Insulation Resistance<br>(M $\Omega$ ) Min |
|----------------|---------------------------|-------------------------|--------------------------|-----------------|------------------------|-------------------------|--------------------------------------------|
| ECMM21T-300M-N | 30                        | 100                     | 20                       | 450             | 120                    | 0.20                    | 10                                         |
| ECMM21T-670M-N | 67                        | 100                     | 20                       | 400             | 120                    | 0.25                    | 10                                         |
| ECMM21T-900M-N | 90                        | 100                     | 20                       | 330             | 120                    | 0.35                    | 10                                         |
| ECMM21T-121M-N | 120                       | 100                     | 20                       | 370             | 120                    | 0.30                    | 10                                         |
| ECMM21T-161M-N | 160                       | 100                     | 20                       | 350             | 120                    | 0.35                    | 10                                         |
| ECMM21T-181M-N | 180                       | 100                     | 20                       | 330             | 120                    | 0.35                    | 10                                         |
| ECMM21T-201M-N | 200                       | 100                     | 20                       | 330             | 120                    | 0.35                    | 10                                         |
| ECMM21T-221M-N | 220                       | 100                     | 20                       | 310             | 120                    | 0.35                    | 10                                         |
| ECMM21T-261M-N | 260                       | 100                     | 20                       | 300             | 120                    | 0.40                    | 10                                         |
| ECMM21T-301M-N | 300                       | 100                     | 20                       | 290             | 120                    | 0.40                    | 10                                         |
| ECMM21T-361M-N | 360                       | 100                     | 20                       | 280             | 120                    | 0.45                    | 10                                         |
| ECMM21T-371M-N | 370                       | 100                     | 20                       | 280             | 120                    | 0.45                    | 10                                         |
| ECMM21T-501M-N | 500                       | 100                     | 20                       | 170             | 120                    | 0.55                    | 10                                         |
| ECMM21T-671M-N | 670                       | 100                     | 20                       | 140             | 120                    | 0.60                    | 10                                         |
| ECMM21T-901M-N | 900                       | 100                     | 20                       | 80              | 120                    | 0.60                    | 10                                         |

- When ordering, please specify tolerance and packaging codes.
- Tolerance : M =  $\pm 20\%$
- Packaging : Clear tape and reel { standard }.
- Z : Agilent/HP4291A
- Rdc(single line) : CH502BC/ HP4338B
- Insulation Resistance : Agilent /HP4339B
- Operating temperature range from  $-40^{\circ}\text{C}$  to  $105^{\circ}\text{C}$ . (Including self - temperature rise )

**Test Instruments** : HP4291A Material/Impedance Analyzer

**Typical Impedance vs. Frequency**



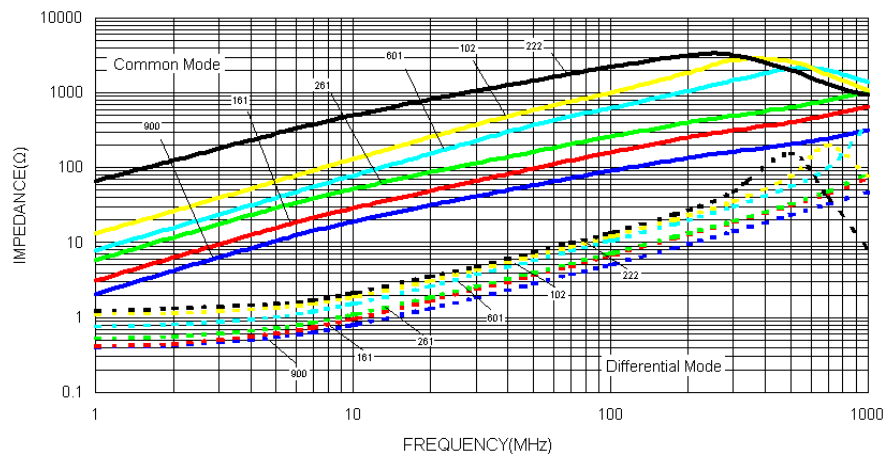
## Electrical Characteristics

| Part Number    | Impedance<br>(Ω) | Test Frequency<br>(MHz) | Tolerance<br>(±%) | Idc<br>(mA) Max | Rated Voltage<br>(Vdc) | Rdc<br>(Ω) Max | Insulation Resistance<br>(MΩ) Min |
|----------------|------------------|-------------------------|-------------------|-----------------|------------------------|----------------|-----------------------------------|
| ECMM31T-900M-N | 90               | 100                     | 20                | 370             | 50                     | 0.3            | 10                                |
| ECMM31T-161M-N | 160              | 100                     | 20                | 340             | 50                     | 0.4            | 10                                |
| ECMM31T-221M-N | 220              | 100                     | 20                | 320             | 50                     | 0.4            | 10                                |
| ECMM31T-261M-N | 260              | 100                     | 20                | 310             | 50                     | 0.5            | 10                                |
| ECMM31T-601M-N | 600              | 100                     | 20                | 260             | 50                     | 0.8            | 10                                |
| ECMM31T-102M-N | 1000             | 100                     | 20                | 230             | 50                     | 1.0            | 10                                |
| ECMM31T-222M-N | 2200             | 100                     | 20                | 200             | 50                     | 1.2            | 10                                |

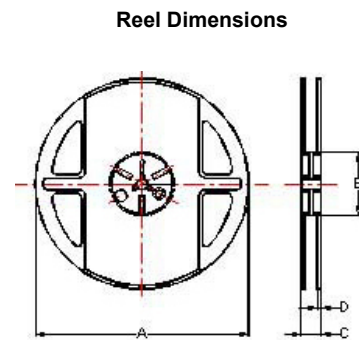
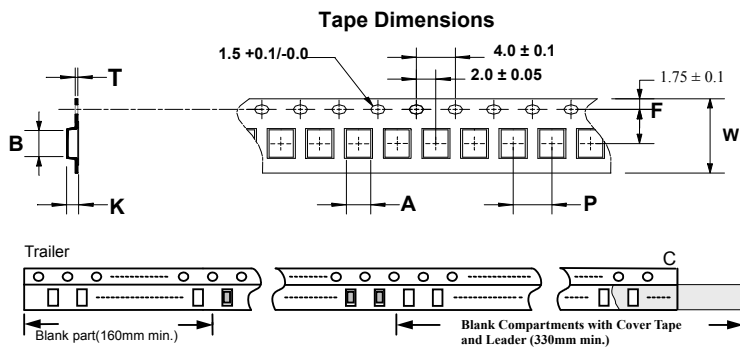
- Tolerance: M = ±20%
- Packaging: Clear tape and reel {standard}
- Z: Agilent/HP4291A
- Rdc (single line): CH502BC/ HP4338B
- Insulation Resistance: Agilent/HP4339B
- Operating temperature range from -40°C to +105°C. (Including self - temperature rise )

## Test Instruments : HP4291A Material/Impedance Analyzer

### Typical Impedance vs. Frequency



## Packaging Specifications



## Dimensions in mm

| TYPE   | Tape Dimensions |      |      |   |   |     |      | Reel Dimensions |    |    |     | Quantity<br>PCS / Reel |
|--------|-----------------|------|------|---|---|-----|------|-----------------|----|----|-----|------------------------|
|        | A               | B    | T    | W | P | F   | K    | A               | B  | C  | D   |                        |
| ECMM21 | 1.50            | 2.25 | 0.24 | 8 | 4 | 3.5 | 1.45 | 178             | 60 | 12 | 1.5 | 2000                   |
| ECMM31 | 1.76            | 3.47 | 0.22 | 8 | 4 | 3.5 | 2.05 | 178             | 60 | 12 | 1.5 | 2000                   |