

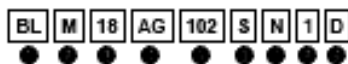
# On-Board Type (DC) EMI Suppression Filters (EMIFIL®)



## Chip Ferrite Beads Part Numbering

### Chip Ferrite Beads

(Part Number)



#### ● Product ID

| Product ID |                    |
|------------|--------------------|
| BL         | Chip Ferrite Beads |

#### ● Type

| Code | Type            |
|------|-----------------|
| A    | Array Type      |
| M    | Monolithic Type |

#### ● Dimensions (LXW)

| Code | Dimensions (LXW) | EIA  |
|------|------------------|------|
| 03   | 0.6X0.3mm        | 0201 |
| 15   | 1.0X0.5mm        | 0402 |
| 18   | 1.6X0.8mm        | 0603 |
| 2A   | 2.0X1.0mm        | 0804 |
| 21   | 2.0X1.25mm       | 0805 |
| 31   | 3.2X1.6mm        | 1206 |
| 41   | 4.5X1.6mm        | 1806 |

#### ● Characteristics/Applications

| Code *1 | Characteristics/Applications                      | Series                                    |
|---------|---|---|
| AG      | for General Use                                   | BLM03/BLM15/BLM18/BLM21/BLM31/BLA2A/BLA31 |
| TG      |   | BLM18                                     |
| BA      | for High-speed Signal Lines                       | BLM18                                     |
| BB      |   | BLM15/BLM18/BLM21/BLA2A                   |
| BD      |   | BLM15/BLM18/BLM21/BLA2A/BLA31             |
| PG      | for Power Supplies                                | BLM15/BLM18/BLM21/BLM31/BLM41             |
| RK      | for Digital Interface                             | BLM18/BLM21                               |
| HG      | for GHz Band General Use                          | BLM15/BLM18                               |
| EG      | for GHz Band General Use (Low DC Resistance type) |   |
| HB      | for GHz Band High-speed Signal Line               | BLM18                                     |
| HD      |   | BLM15/BLM18                               |
| HK      | for GHz Band Digital Interface                    | BLM18                                     |
| GG      | for High-GHz Band General Use                     | BLM18                                     |

\*1 Frequency characteristics vary with each code.

#### ● Packaging

| Code | Packaging                    | Series                                 |
|------|------------------------------|--|
| K    | Plastic Taping (ø330mm Reel) | BLM31/BLM41/BLM21 *1                   |
| L    | Plastic Taping (ø180mm Reel) |  |
| B    | Bulk                         | All series                             |
| J    | Paper Taping (ø330mm Reel)   | BLM15/BLM18/BLM21*2 /BLA31             |
| D    | Paper Taping (ø180mm Reel)   | BLM03/BLM15/BLM18/BLM21*2 /BLA2A/BLA31 |
| C    | Bulk Case                    | BLM15/BLM18                            |

\*1 BLM21BD222SN1/BLM21BD272SN1 only.

\*2 Except BLM21BD222SN1/BLM21BD272SN1

#### ● Impedance

Expressed by three figures. The unit is in ohm (Ω). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.

#### ● Performance

Expressed by a letter.

Ex.)

| Code | Performance |
|------|-------------|
| S/T  | Sn Plating  |
| A    | Au Plating  |

#### ● Category

| Code | Category       |
|------|----------------|
| N    | Standard Type  |
| H    | For Automotive |

#### ● Number of Circuits

| Code | Number of Circuits |
|------|--------------------|
| 1    | 1 Circuit          |
| 4    | 4 Circuits         |

# On-Board Type (DC) EMI Suppression Filters (EMIFIL®)



## Chip Ferrite Bead BLM Series

1

# Essential for Noise Suppression in High Speed Signal Lines and DC Power Lines

The chip ferrite bead BLM series comprises ferrite beads in the shape of a chip. This ferrite bead generates a high impedance which at high frequencies mainly consists of a resistance element. The BLM series is effective in circuits without stable ground lines because the BLM series does not need a connection to ground.

Chip sizes of 0.6x0.3, 1.0x0.5, 1.6x0.8, 2.0x1.25, 3.2x1.6 and 4.5x1.6mm are cataloged. (The BLA series of array type chip ferrite beads is also cataloged.)

The nickel barrier structure of the external electrodes provides excellent solder heat resistance.

### ■ Features

The BLM series comprises the R series (for digital interface), the A series (for standard), the B series (for high speed signal), the P series (for large current), and the H/E/G series (for GHz range noise suppression).

#### 1. BLM□□R series – For Digital Interface

The BLM-R series can be used in Digital Interface.

Resistance of BLM-R series especially grows in the lower frequency range. Therefore BLM-R series is less effective for digital signal waveform at low frequency range and can suppress the ringing.

#### 2. BLM□□A/T series – For Standard

The BLM-A series generates an impedance from the relatively low frequencies. Therefore the BLM-A series is effective in noise suppression in the wide frequency range (30MHz – several hundred MHz).

#### 3. BLM□□B series – For High Speed Signal

The BLM-B series can minimize attenuation of the signal waveform due to its sharp impedance characteristics. Various impedances are available to match signal frequency.

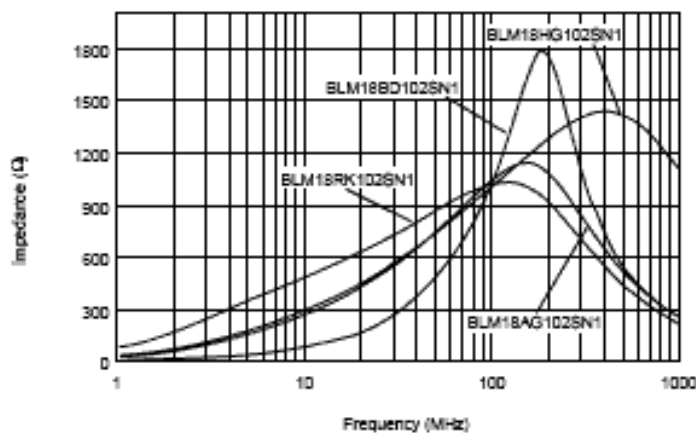
#### 4. BLM□□P series – For Large Current

The BLM-P series can be used in high current circuits due to its low DC resistance. It can match power lines to a maximum of 6A DC (BLM41P).

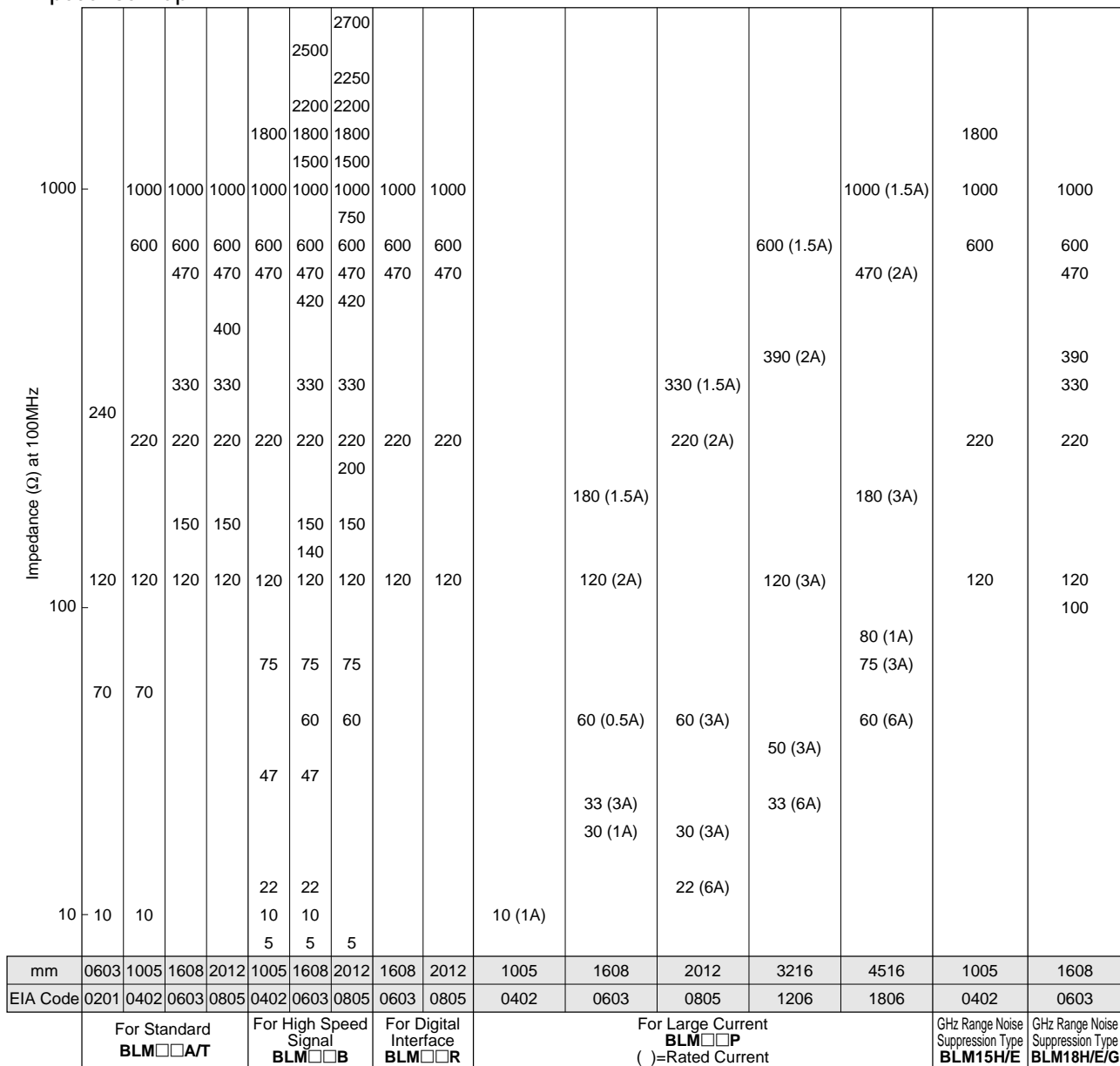
#### 5. BLM□□H/E/G series – For GHz Range Noise Suppression

The BLM□□H/E/G series has a modified internal electrode structure that minimizes stray capacitance and increases the effective frequency range.

[Impedance Characteristics]



■ Impedance Map




1

■BLM Series

| Size (EIA Code) | Type   |               | Part Number                              | Impedance (Ω) |               | Rated Current (mA) |            |       |
|-----------------|--|---------------|--|---------------|---------------|--------------------|------------|-------|
|                 |  |               |  | at 100MHz     | at 1GHz       |                    |            |       |
| 0201            | For Standard   |               | BLM03AG100SN1                            | 10 (Typ.)     | -             | 500                |            |       |
|                 |  |               | BLM03AG700SN1                            | 70 (Typ.)     | -             | 200                |            |       |
|                 |  |               | BLM03AG121SN1                            | 120±25%       | -             | 200                |            |       |
|                 |  |               | BLM03AG241SN1                            | 240±25%       | -             | 100                |            |       |
| 0402            | For Standard   |               | BLM15AG100SN1                            | 10 (Typ.)     | -             | 1000               |            |       |
|                 |  |               | BLM15AG700SN1                            | 70 (Typ.)     | -             | 500                |            |       |
|                 |  |               | BLM15AG121SN1                            | 120±25%       | -             |                    |            |       |
|                 |  |               | BLM15AG221SN1                            | 220±25%       | -             | 300                |            |       |
|                 |  |               | BLM15AG601SN1                            | 600±25%       | -             |                    |            |       |
|                 |  |               | BLM15AG102SN1                            | 1000±25%      | -             | 200                |            |       |
|                 |  |               | BLM15AG601AN1                            | 600±25%       | 140 (Typ.)    | 300                |            |       |
|                 |  |               | BLM15AG102AN1                            | 1000±25%      | 300 (Typ.)    | 200                |            |       |
|                 | For High Speed Signal<br>(Sharp impedance characteristics) |               | BLM15BB050SN1                            | 5±25%         | -             | 300                |            |       |
|                 |  |               | BLM15BB100SN1                            | 10±25%        | -             |                    |            |       |
|                 |  |               | BLM15BB220SN1                            | 22±25%        | -             |                    |            |       |
|                 |  |               | BLM15BB470SN1                            | 47±25%        | -             |                    |            |       |
|                 |  |               | BLM15BB750SN1                            | 75±25%        | -             | 200                |            |       |
|                 |  |               | BLM15BB121SN1                            | 120±25%       | -             |                    |            |       |
|                 |  |               | BLM15BB221SN1                            | 220±25%       | -             | 300                |            |       |
|                 |  |               | BLM15BD750SN1                            | 75±25%        | -             |                    |            |       |
|                 |  |               | BLM15BD121SN1                            | 120±25%       | -             |                    |            |       |
|                 |  |               | BLM15BD221SN1                            | 220±25%       | -             | 200                |            |       |
|                 |  |               | BLM15BD471SN1                            | 470±25%       | -             |                    |            |       |
|                 |  |               | BLM15BD601SN1                            | 600±25%       | -             |                    |            |       |
|                 |  |               | BLM15BD102SN1                            | 1000±25%      | -             | 100                |            |       |
|                 |  |               | BLM15BD182SN1                            | 1800±25%      | -             | 100                |            |       |
|                 | For Large Current  |               | BLM15PG100SN1                            | 10 (Typ.)     | -             | 1000               |            |       |
|                 | GHz Range  |               | For Standard                             |               | BLM15HG601SN1 | 600±25%            | 1000±40%   | 300   |
|                 |  |               |  |               | BLM15HG102SN1 | 1000±25%           | 1400±40%   | 250   |
|                 |  |               | For High Speed Signal                    |               | BLM15HD601SN1 | 600±25%            | 1400±40%   | 300   |
|                 |  |               |  |               | BLM15HD102SN1 | 1000±25%           | 2000±40%   | 250   |
|                 |  |               |  |               | BLM15HD182SN1 | 1800±25%           | 2700±40%   | 200   |
|                 |  |               | For Standard<br>(Low DC Resistance Type) |               | BLM15EG121SN1 | 120±25%            | 145 (Typ.) | 1500* |
|                 | BLM15EG221SN1  | 220±25%       |  |               | 270 (Typ.)    | 700*               |            |       |
| 0603            | For Standard   |               | BLM18AG121SN1                            | 120±25%       | -             | 200                |            |       |
|                 |  |               | BLM18AG151SN1                            | 150±25%       | -             |                    |            |       |
|                 |  |               | BLM18AG221SN1                            | 220±25%       | -             |                    |            |       |
|                 |  |               | BLM18AG331SN1                            | 330±25%       | -             |                    |            |       |
|                 |  |               | BLM18AG471SN1                            | 470±25%       | -             |                    |            |       |
|                 |  |               | BLM18AG601SN1                            | 600±25%       | -             |                    |            |       |
|                 |  |               | BLM18AG102SN1                            | 1000±25%      | -             | 100                |            |       |
|                 | For High Speed Signal<br>(Sharp impedance characteristics) |               | BLM18BA050SN1                            | 5±25%         | -             | 500                |            |       |
|                 |  |               | BLM18BB050SN1                            |               | -             | 700                |            |       |
|                 |  |               | BLM18BA100SN1                            | 10±25%        | -             | 500                |            |       |
|                 |  |               | BLM18BB100SN1                            |               | -             |                    |            |       |
|                 |  |               | BLM18BA220SN1                            | 22±25%        | -             | 300                |            |       |
|                 |  |               | BLM18BB220SN1                            |               | -             |                    |            |       |
|                 |  |               | BLM18BA470SN1                            | 47±25%        | -             | 500                |            |       |
|                 |  |               | BLM18BB470SN1                            |               | -             |                    |            |       |
|                 |  |               | BLM18BB600SN1                            | 60±25%        | -             | 200                |            |       |
|                 |  |               | BLM18BA750SN1                            | 75±25%        | -             | 300                |            |       |
|                 |  |               | BLM18BB750SN1                            |               | -             | 200                |            |       |
|                 |  |               | BLM18BA121SN1                            | 120±25%       | -             | 200                |            |       |
|                 |  |               | BLM18BB121SN1                            |               | -             |                    |            |       |
| BLM18BD121SN1   |  |               | -  |               |               |                    |            |       |
| BLM18BB141SN1   | -  |               |  |               |               |                    |            |       |
|                 |  | BLM18BB141SN1 | 140±25%                                  | -             |               |                    |            |       |


\* Please see P.58 "Derating of Rated Current".

Continued on the following page. 

Continued from the preceding page.

| Size (EIA Code) | Type   |            | Part Number                              | Impedance (Ω) |               | Rated Current (mA) |             |       |
|-----------------|--|------------|--|---------------|---------------|--------------------|-------------|-------|
|                 |  |            |  | at 100MHz     | at 1GHz       |                    |             |       |
| 0603            | For High Speed Signal<br>(Sharp impedance characteristics) |            | BLM18BB151SN1                            | 150±25%       | -             | 200                |             |       |
|                 |  |            | BLM18BD151SN1                            |               | -             |                    |             |       |
|                 |  |            | BLM18BB221SN1                            | 220±25%       | -             |                    |             |       |
|                 |  |            | BLM18BD221SN1                            |               | -             |                    |             |       |
|                 |  |            | BLM18BB331SN1                            | 330±25%       | -             |                    |             |       |
|                 |  |            | BLM18BD331SN1                            |               | -             |                    |             |       |
|                 |  |            | BLM18BD421SN1                            | 420±25%       | -             |                    |             |       |
|                 |  |            | BLM18BB471SN1                            | 470±25%       | -             |                    | 50          |       |
|                 |  |            | BLM18BD471SN1                            |               | -             |                    | 200         |       |
|                 |  |            | BLM18BD601SN1                            | 600±25%       | -             |                    | 200         |       |
|                 |  |            | BLM18BD102SN1                            | 1000±25%      | -             |                    | 100         |       |
|                 |  |            | BLM18BD152SN1                            | 1500±25%      | -             |                    | 50          |       |
|                 |  |            | BLM18BD182SN1                            | 1800±25%      | -             |                    |             |       |
|                 |  |            | BLM18BD222SN1                            | 2200±25%      | -             |                    |             |       |
|                 | BLM18BD252SN1  | 2500±25%   | -  |               |               |                    |             |       |
|                 | For Digital Interface                                      |            | BLM18RK121SN1                            | 120±25%       | -             | 200                |             |       |
|                 |  |            | BLM18RK221SN1                            | 220±25%       | -             |                    |             |       |
|                 |  |            | BLM18RK471SN1                            | 470±25%       | -             |                    |             |       |
|                 |  |            | BLM18RK601SN1                            | 600±25%       | -             |                    |             |       |
|                 |  |            | BLM18RK102SN1                            | 1000±25%      | -             |                    |             |       |
|                 | For Large Current  |            | BLM18PG300SN1                            | 30 (Typ.)     | -             | 1000               |             |       |
|                 |  |            | BLM18PG330SN1                            | 33±25%        | -             | 3000*              |             |       |
|                 |  |            | BLM18PG600SN1                            | 60 (Typ.)     | -             | 500                |             |       |
|                 |  |            | BLM18PG121SN1                            | 120±25%       | -             | 2000*              |             |       |
|                 |  |            | BLM18PG181SN1                            | 180±25%       | -             | 1500*              |             |       |
|                 | GHz Range  |            | For Standard                             |               | BLM18HG471SN1 | 470±25%            | 600 (Typ.)  | 200   |
|                 |  |            |  |               | BLM18HG601SN1 | 600±25%            | 700 (Typ.)  |       |
|                 |  |            |  |               | BLM18HG102SN1 | 1000±25%           | 1000 (Typ.) |       |
|                 |  |            | For High Speed Signal                    |               | BLM18HB121SN1 | 120±25%            | 500±40%     | 200   |
|                 |  |            |  |               | BLM18HB221SN1 | 220±25%            | 1100±40%    | 100   |
|                 |  |            |  |               | BLM18HB331SN1 | 330±25%            | 1600±40%    | 50    |
|                 |  |            |  |               | BLM18HD471SN1 | 470±25%            | 1000 (Typ.) | 100   |
|                 |  |            |  |               | BLM18HD601SN1 | 600±25%            | 1200 (Typ.) |       |
|                 |  |            |  |               | BLM18HD102SN1 | 1000±25%           | 1700 (Typ.) |       |
|                 |  |            | For Digital Interface                    |               | BLM18HK331SN1 | 330±25%            | 400±40%     | 200   |
|                 |  |            |  |               | BLM18HK471SN1 | 470±25%            | 600±40%     |       |
|                 |  |            |  |               | BLM18HK601SN1 | 600±25%            | 700±40%     |       |
|                 |  |            |  |               | BLM18HK102SN1 | 1000±25%           | 1200±40%    |       |
|                 |  |            | For Standard<br>(Low DC Resistance Type) |               | BLM18EG101TN1 | 100±25%            | 140 (Typ.)  | 2000* |
|                 |  |            |  |               | BLM18EG121SN1 | 120±25%            | 145 (Typ.)  | 2000* |
| BLM18EG221TN1   |  |            |  |               | 220±25%       | 300 (Typ.)         | 1000        |       |
| BLM18EG331TN1   | 330±25%  | 450 (Typ.) |  |               | 500           |                    |             |       |
| BLM18EG391TN1   | 390±25%  | 520 (Typ.) |  |               | 500           |                    |             |       |
| BLM18EG471SN1   | 470±25%  | 550 (Typ.) |  |               | 500           |                    |             |       |
| BLM18EG601SN1   | 600±25%  | 700 (Typ.) |  |               | 500           |                    |             |       |
| BLM18GG471SN1   | 470±25%  | 1800±30%   |  |               | 100           |                    |             |       |
| 0805            | For Standard   |            | BLM21AG121SN1                            | 120±25%       | -             | 200                |             |       |
|                 |  |            | BLM21AG151SN1                            | 150±25%       | -             |                    |             |       |
|                 |  |            | BLM21AG221SN1                            | 220±25%       | -             |                    |             |       |
|                 |  |            | BLM21AG331SN1                            | 330±25%       | -             |                    |             |       |
|                 |  |            | BLM21AG471SN1                            | 470±25%       | -             |                    |             |       |
|                 |  |            | BLM21AG601SN1                            | 600±25%       | -             |                    |             |       |
|                 |  |            | BLM21AG102SN1                            | 1000±25%      | -             |                    |             |       |

\* Please see P.53 "Derating of Rated Current".

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| Size (inches)     | Type   | Part Number   | Impedance (Ω) |         | Rated Current (mA) |
|-------------------|--|---------------|---------------|---------|--------------------|
|                   |  |               | at 100MHz     | at 1GHz |                    |
| 0805              | For High Speed Signal<br>(Sharp impedance characteristics) | BLM21BB050SN1 | 5±25%         | -       | 500                |
|                   |  | BLM21BB600SN1 | 60±25%        | -       |                    |
|                   |  | BLM21BB750SN1 | 75±25%        | -       |                    |
|                   |  | BLM21BB121SN1 | 120±25%       | -       |                    |
|                   |  | BLM21BD121SN1 |               | -       |                    |
|                   |  | BLM21BB151SN1 | 150±25%       | -       |                    |
|                   |  | BLM21BD151SN1 |               | -       |                    |
|                   |  | BLM21BB201SN1 | 200±25%       | -       |                    |
|                   |  | BLM21BB221SN1 | 220±25%       | -       |                    |
|                   |  | BLM21BD221SN1 |               | -       |                    |
|                   |  | BLM21BB331SN1 | 330±25%       | -       |                    |
|                   |  | BLM21BD331SN1 |               | -       |                    |
|                   |  | BLM21BD421SN1 | 420±25%       | -       | 200                |
|                   |  | BLM21BB471SN1 | 470±25%       | -       |                    |
|                   |  | BLM21BD471SN1 |               | -       |                    |
|                   |  | BLM21BD601SN1 | 600±25%       | -       |                    |
|                   |  | BLM21BD751SN1 | 750±25%       | -       |                    |
|                   |  | BLM21BD102SN1 | 1000±25%      | -       |                    |
|                   |  | BLM21BD152SN1 | 1500±25%      | -       |                    |
|                   |  | BLM21BD182SN1 | 1800±25%      | -       |                    |
|                   | BLM21BD222SN1  | 2250 (Typ.)   | -             |         |                    |
|                   | BLM21BD222TN1  | 2200±25%      | -             |         |                    |
|                   | BLM21BD272SN1  | 2700±25%      | -             |         |                    |
|                   | For Digital Interface                                      | BLM21RK121SN1 | 120±25%       | -       | 200                |
|                   |  | BLM21RK221SN1 | 220±25%       | -       |                    |
|                   |  | BLM21RK471SN1 | 470±25%       | -       |                    |
|                   |  | BLM21RK601SN1 | 600±25%       | -       |                    |
|                   |  | BLM21RK102SN1 | 1000±25%      | -       |                    |
| For Large Current | BLM21PG220SN1  | 22±25%        | -             | 6000*   |                    |
|                   | BLM21PG300SN1  | 30 (Typ.)     | -             | 3000*   |                    |
|                   | BLM21PG600SN1  | 60±25%        | -             |         |                    |
|                   | BLM21PG221SN1  | 220±25%       | -             | 2000*   |                    |
|                   | BLM21PG331SN1  | 330±25%       | -             | 1500*   |                    |
| 1206              | For Large Current  | BLM31PG330SN1 | 33±25%        | -       | 6000*              |
|                   |  | BLM31PG500SN1 | 50 (Typ.)     | -       | 3000*              |
|                   |  | BLM31PG121SN1 | 120±25%       | -       |                    |
|                   |  | BLM31PG391SN1 | 390±25%       | -       | 2000*              |
|                   |  | BLM31PG601SN1 | 600±25%       | -       | 1500*              |
| 1806              | For Large Current  | BLM41PG600SN1 | 60 (Typ.)     | -       | 6000*              |
|                   |  | BLM41PG750SN1 | 75 (Typ.)     | -       | 3000*              |
|                   |  | BLM41PG181SN1 | 180±25%       | -       | 3000*              |
|                   |  | BLM41PG471SN1 | 470±25%       | -       | 2000*              |
|                   |  | BLM41PG102SN1 | 1000±25%      | -       | 1500*              |

\* Please see P.53 "Derating of Rated Current".

# On-Board Type (DC) EMI Suppression Filters (EMIFIL®)



## Chip Ferrite Beads BLM03/BLM15/BLM18/BLM21/BLM31/BLM41 Series

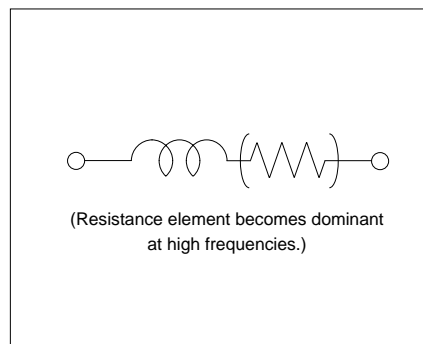
### ■ Features (BLM\_A Series)

The chip ferrite bead BLM series comprises ferrite beads in the shape of a chip. This ferrite bead generates a high impedance which at high frequency mainly consists of a resistance element. The BLM series is effective in circuits without stable ground lines because the BLM series does not need a connection to ground.

The nickel barrier structure of the external electrodes provides excellent solder heat resistance. BLM\_A series generates an impedance from the relatively low frequencies. Therefore BLM\_A series is effective in noise suppression in a wide frequency range (30MHz - several hundred MHz).

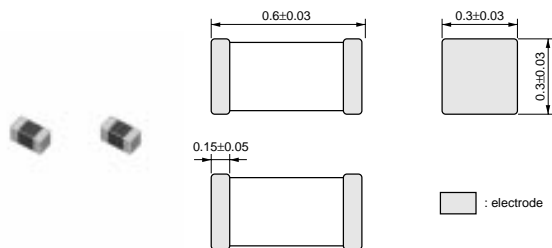
The small size of BLM03 series (0.6x0.3mm) is suitable for noise suppression in small equipment such as PA modules for cellular phones.

### ■ Equivalent Circuit



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### BLM03A Series (0201 Size)

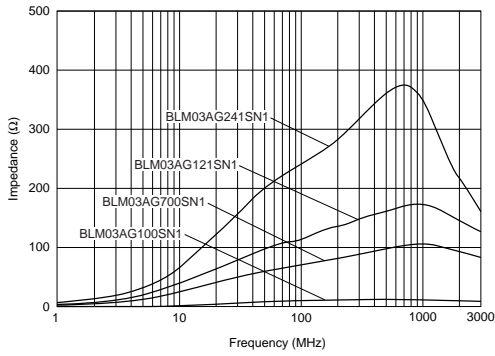


(in mm)

| Part Number   | Impedance<br>(at 100MHz/20°C)<br>(ohm) | Rated Current<br>(mA) | DC Resistance (max.)<br>(ohm) | Operating<br>Temperature Range<br>(°C) |
|---------------|--|-----------------------|-------------------------------|--|
| BLM03AG100SN1 | 10 (Typ.)                              | 500                   | 0.1                           | -55 to +125                            |
| BLM03AG700SN1 | 70 (Typ.)                              | 200                   | 0.5                           | -55 to +125                            |
| BLM03AG121SN1 | 120 ±25%                               | 200                   | 0.8                           | -55 to +125                            |
| BLM03AG241SN1 | 240 ±25%                               | 100                   | 1.0                           | -55 to +125                            |

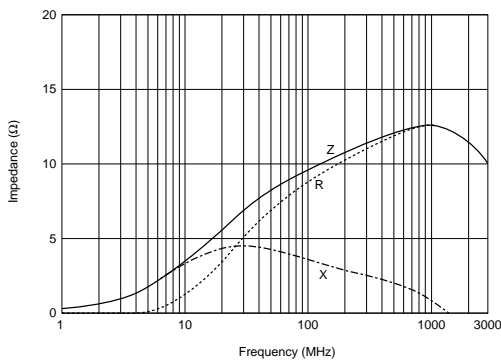
## Impedance-Frequency (Typical)

BLM03 Series

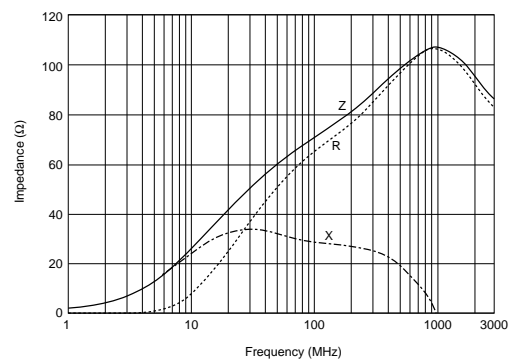


## Impedance-Frequency Characteristics

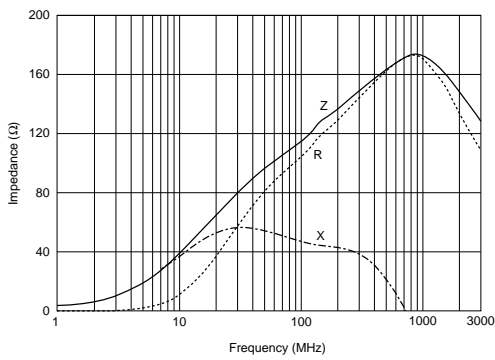
BLM03AG100SN1



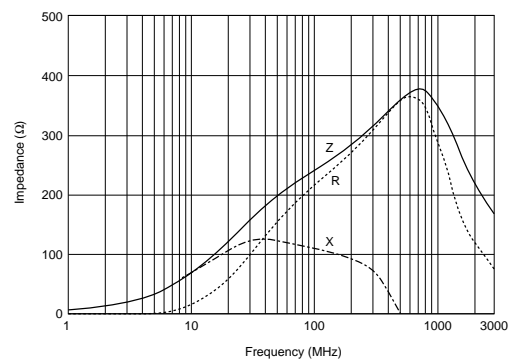
BLM03AG700SN1



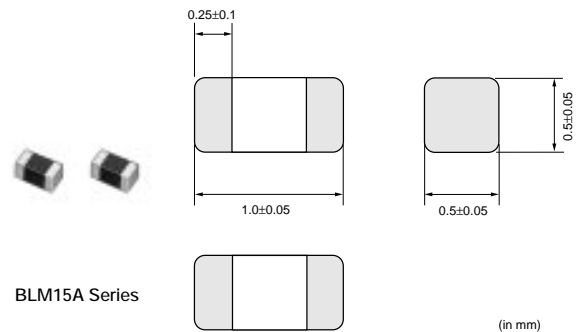
BLM03AG121SN1



BLM03AG241SN1



## BLM15A Series (0402 Size)

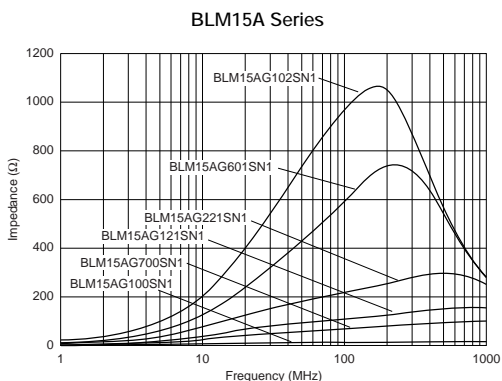




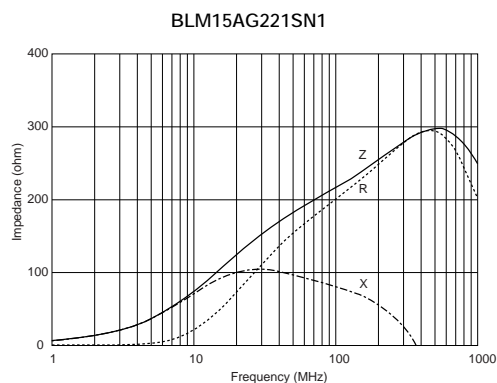
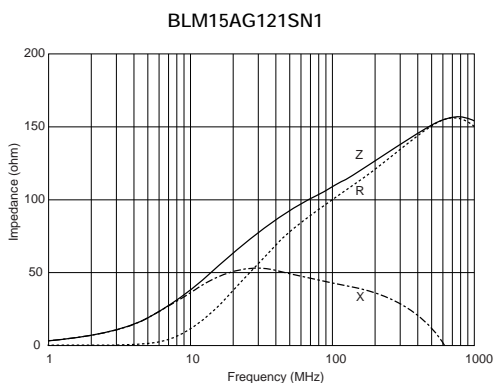
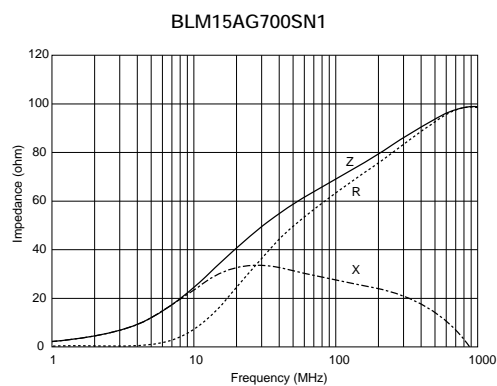
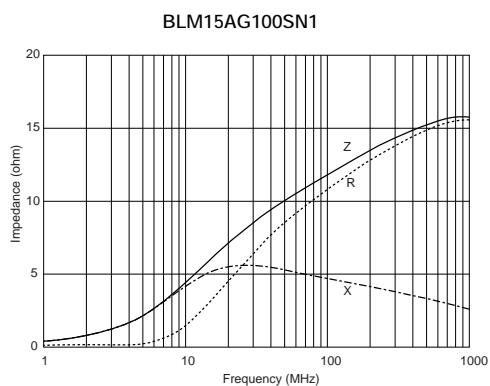
| Part Number          | Impedance (at 100MHz/20°C) (ohm) | Rated Current (mA) | DC Resistance (max.) (ohm) | Operating Temperature Range (°C) |
|----------------------|----------------------------------|--------------------|----------------------------|----------------------------------|
| <b>BLM15AG100SN1</b> | 10 (Typ.)                        | 1000               | 0.05                       | -55 to +125                      |
| <b>BLM15AG700SN1</b> | 70 (Typ.)                        | 500                | 0.15                       | -55 to +125                      |
| <b>BLM15AG121SN1</b> | 120 ±25%                         | 500                | 0.25                       | -55 to +125                      |
| <b>BLM15AG221SN1</b> | 220 ±25%                         | 300                | 0.35                       | -55 to +125                      |
| <b>BLM15AG601SN1</b> | 600 ±25%                         | 300                | 0.6                        | -55 to +125                      |
| <b>BLM15AG102SN1</b> | 1000 ±25%                        | 200                | 1.0                        | -55 to +125                      |

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Impedance-Frequency (Typical)



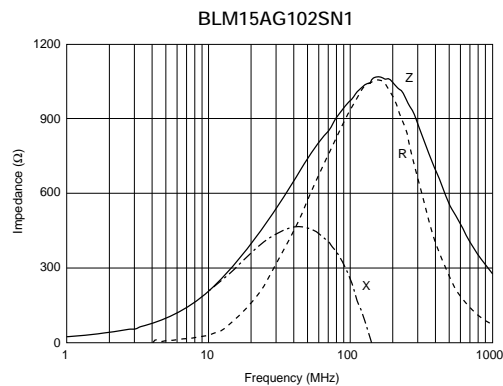
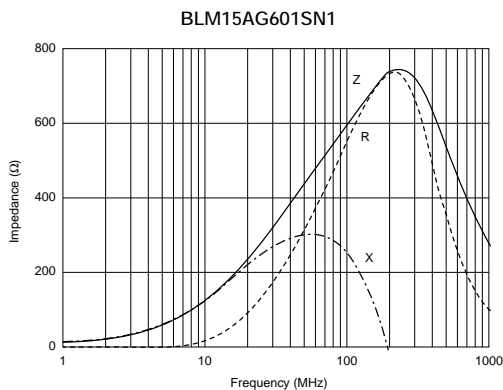
Impedance-Frequency Characteristics



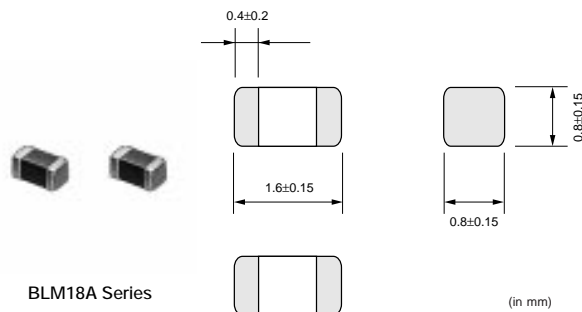
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### Impedance-Frequency Characteristics

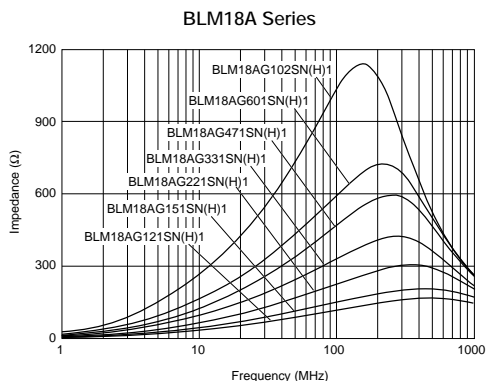


### BLM18A Series (0603 Size)

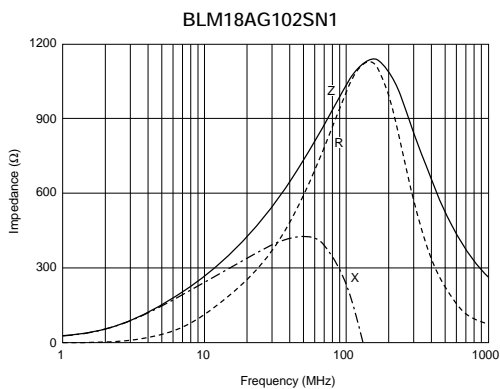
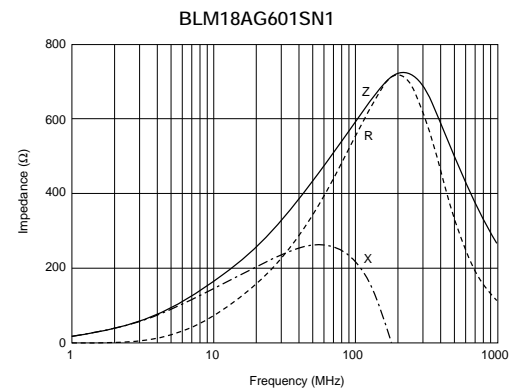
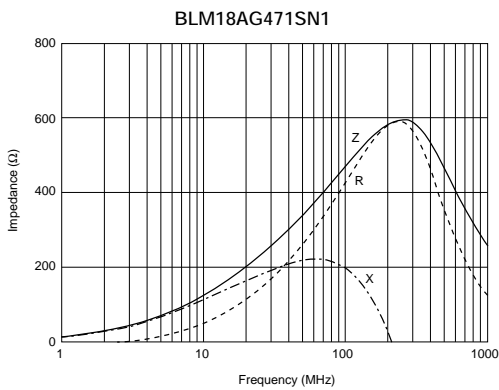
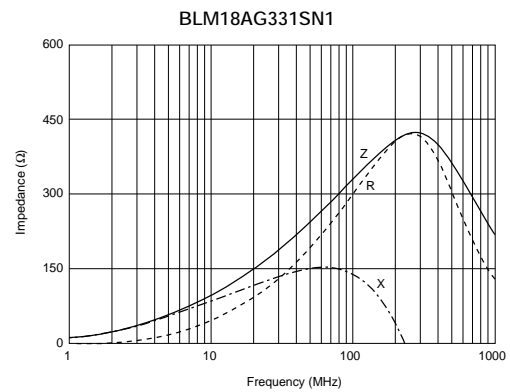
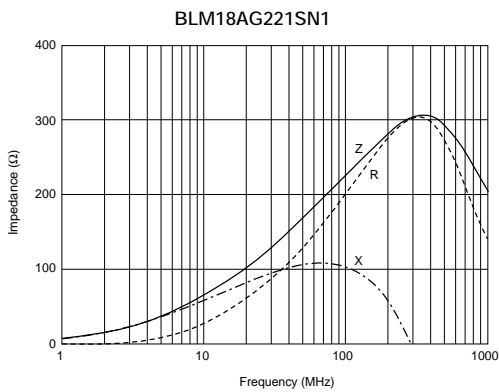
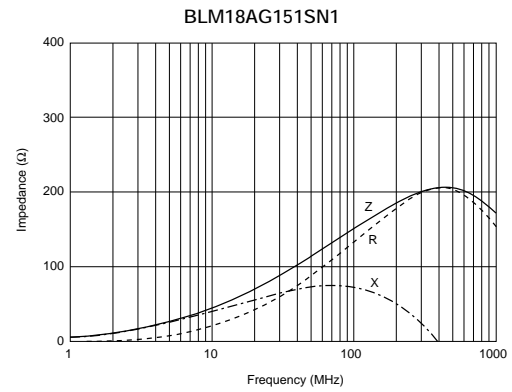
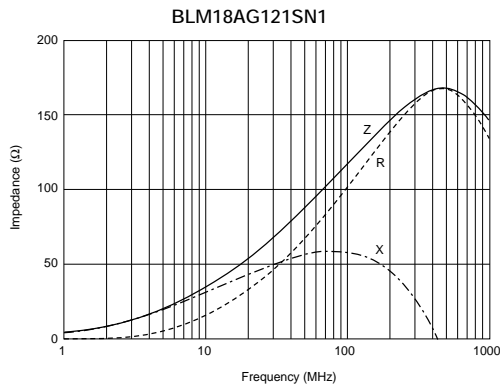


| Part Number   | Impedance (at 100MHz/20°C) (ohm) | Rated Current (mA) | DC Resistance (max.) (ohm) | Operating Temperature Range (°C) |
|---------------|----------------------------------|--------------------|----------------------------|----------------------------------|
| BLM18AG121SN1 | 120 ±25%                         | 200                | 0.20                       | -55 to +125                      |
| BLM18AG151SN1 | 150 ±25%                         | 200                | 0.25                       | -55 to +125                      |
| BLM18AG221SN1 | 220 ±25%                         | 200                | 0.30                       | -55 to +125                      |
| BLM18AG331SN1 | 330 ±25%                         | 200                | 0.45                       | -55 to +125                      |
| BLM18AG471SN1 | 470 ±25%                         | 200                | 0.50                       | -55 to +125                      |
| BLM18AG601SN1 | 600 ±25%                         | 200                | 0.50                       | -55 to +125                      |
| BLM18AG102SN1 | 1000 ±25%                        | 100                | 0.70                       | -55 to +125                      |

### Impedance-Frequency (Typical)



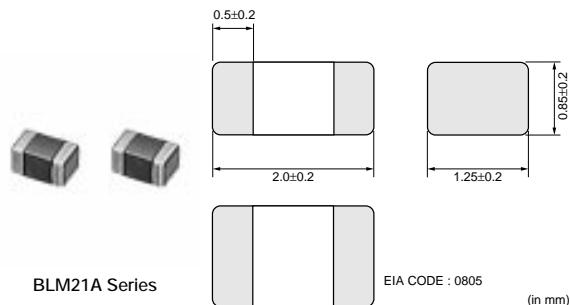
## Impedance-Frequency Characteristics



1

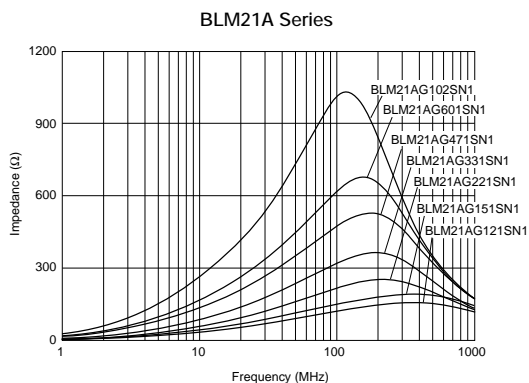
## BLM21A Series (0805 Size)

1

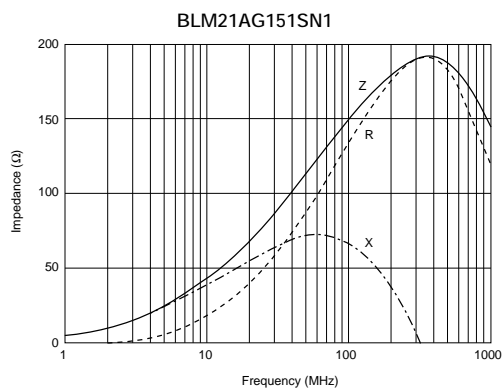
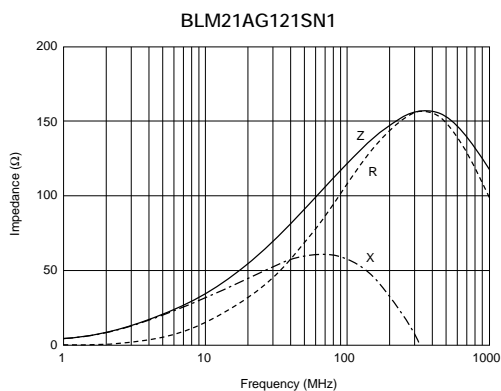


| Part Number   | Impedance<br>(at 100MHz/20°C)<br>(ohm) | Rated Current<br>(mA) | DC Resistance (max.)<br>(ohm) | Operating<br>Temperature Range<br>(°C) |
|---------------|--|-----------------------|-------------------------------|--|
| BLM21AG121SN1 | 120 ±25%                               | 200                   | 0.15                          | -55 to +125                            |
| BLM21AG151SN1 | 150 ±25%                               | 200                   | 0.15                          | -55 to +125                            |
| BLM21AG221SN1 | 220 ±25%                               | 200                   | 0.20                          | -55 to +125                            |
| BLM21AG331SN1 | 330 ±25%                               | 200                   | 0.25                          | -55 to +125                            |
| BLM21AG471SN1 | 470 ±25%                               | 200                   | 0.25                          | -55 to +125                            |
| BLM21AG601SN1 | 600 ±25%                               | 200                   | 0.30                          | -55 to +125                            |
| BLM21AG102SN1 | 1000 ±25%                              | 200                   | 0.45                          | -55 to +125                            |

### ■ Impedance-Frequency (Typical)



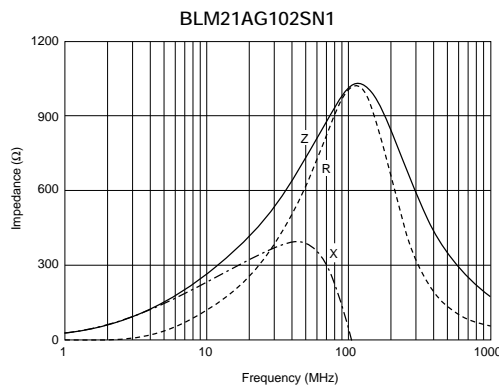
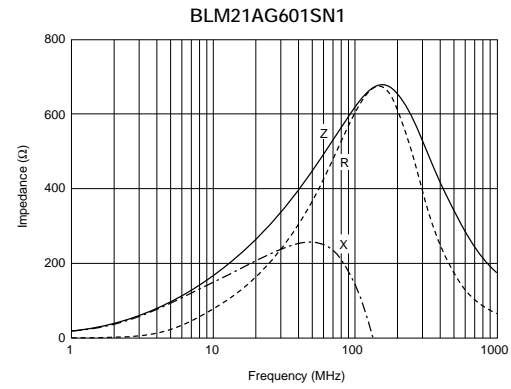
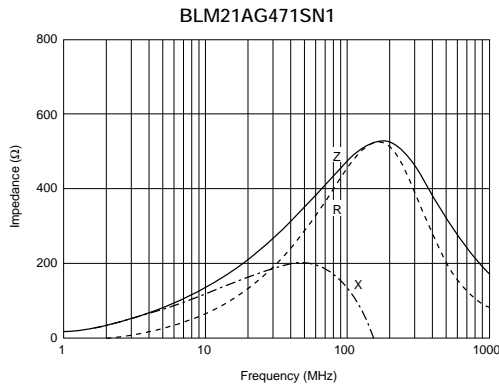
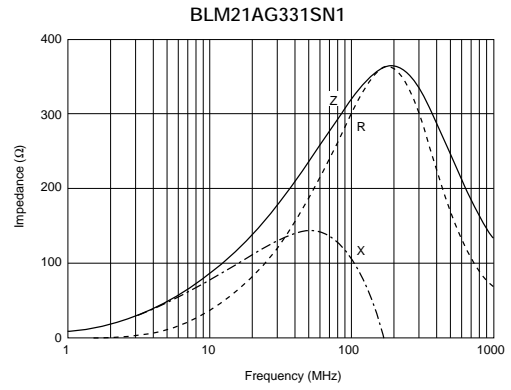
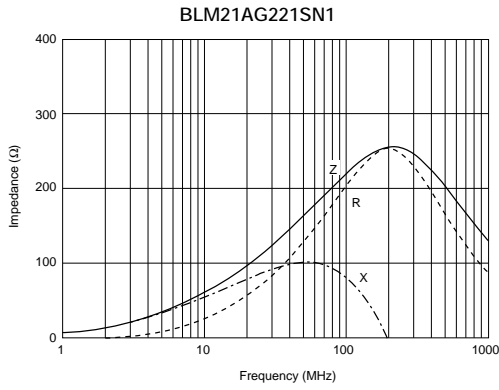
### ■ Impedance-Frequency Characteristics



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### Impedance-Frequency Characteristics



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## Chip EMI Suppression Filter Design Kits



### ●EKEMBL15C (Chip Ferrite Beads 0402 Size)

| No. | Part Number   | Quantity (pcs.) | Impedance typ.<br>(at 100MHz, 20 degree C) | Rated Current (mA) | DC Resistance (Ω) max. |
|-----|---------------|-----------------|--|--------------------|------------------------|
| 1   | BLM15AG100SN1 | 20              | 10Ω (Typ.)                                 | 1000               | 0.05                   |
| 2   | BLM15AG700SN1 | 20              | 70Ω (Typ.)                                 | 500                | 0.15                   |
| 3   | BLM15AG121SN1 | 20              | 120Ω±25%                                   | 500                | 0.25                   |
| 4   | BLM15AG221SN1 | 20              | 220Ω±25%                                   | 300                | 0.35                   |
| 5   | BLM15AG601SN1 | 20              | 600Ω±25%                                   | 300                | 0.60                   |
| 6   | BLM15AG102SN1 | 20              | 1000Ω±25%                                  | 200                | 1.00                   |
| 7   | BLM15BB050SN1 | 20              | 5Ω±25%                                     | 500                | 0.08                   |
| 8   | BLM15BB100SN1 | 20              | 10Ω±25%                                    | 300                | 0.10                   |
| 9   | BLM15BB220SN1 | 20              | 22Ω±25%                                    | 300                | 0.20                   |
| 10  | BLM15BB470SN1 | 20              | 47Ω±25%                                    | 300                | 0.35                   |
| 11  | BLM15BB750SN1 | 20              | 75Ω±25%                                    | 300                | 0.40                   |
| 12  | BLM15BB121SN1 | 20              | 120Ω±25%                                   | 300                | 0.55                   |
| 13  | BLM15BB221SN1 | 20              | 220Ω±25%                                   | 200                | 0.80                   |
| 14  | BLM15BD471SN1 | 20              | 470Ω±25%                                   | 200                | 0.60                   |
| 15  | BLM15BD601SN1 | 20              | 600Ω±25%                                   | 200                | 0.65                   |
| 16  | BLM15BD102SN1 | 20              | 1000Ω±25%                                  | 200                | 0.90                   |

### ●EKEMBL18A (Chip Ferrite Beads 0603 Size/ for Large-current P Type)

| No. | Part Number   | Quantity (pcs.) | Impedance typ.<br>(at 100MHz, 20 degree C) | Rated Current (mA) | DC Resistance (Ω) max. |
|-----|---------------|-----------------|--|--------------------|------------------------|
| 1   | BLM18AG121SN1 | 20              | 120Ω±25%                                   | 200                | 0.20                   |
| 2   | BLM18AG221SN1 | 20              | 220Ω±25%                                   | 200                | 0.30                   |
| 3   | BLM18AG471SN1 | 20              | 470Ω±25%                                   | 200                | 0.50                   |
| 4   | BLM18AG601SN1 | 20              | 600Ω±25%                                   | 200                | 0.50                   |
| 5   | BLM18AG102SN1 | 20              | 1000Ω±25%                                  | 100                | 0.70                   |
| 6   | BLM18BA050SN1 | 20              | 5Ω±25%                                     | 500                | 0.20                   |
| 7   | BLM18BA100SN1 | 20              | 10Ω±25%                                    | 500                | 0.25                   |
| 8   | BLM18BA220SN1 | 20              | 22Ω±25%                                    | 500                | 0.35                   |
| 9   | BLM18BA470SN1 | 20              | 47Ω±25%                                    | 300                | 0.55                   |
| 10  | BLM18BA750SN1 | 20              | 75Ω±25%                                    | 300                | 0.70                   |
| 11  | BLM18BA121SN1 | 20              | 120Ω±25%                                   | 200                | 0.90                   |
| 12  | BLM18BB100SN1 | 20              | 10Ω±25%                                    | 500                | 0.15                   |
| 13  | BLM18BB220SN1 | 20              | 22Ω±25%                                    | 500                | 0.25                   |
| 14  | BLM18BB470SN1 | 20              | 47Ω±25%                                    | 500                | 0.30                   |
| 15  | BLM18BB600SN1 | 20              | 60Ω±25%                                    | 200                | 0.35                   |
| 16  | BLM18BB121SN1 | 20              | 120Ω±25%                                   | 200                | 0.50                   |
| 17  | BLM18BB221SN1 | 20              | 220Ω±25%                                   | 200                | 0.65                   |
| 18  | BLM18BB471SN1 | 20              | 470Ω±25%                                   | 50                 | 1.00                   |
| 19  | BLM18BD121SN1 | 20              | 120Ω±25%                                   | 200                | 0.40                   |

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## Chip EMI Suppression Filter Design Kits

Continued from the preceding page.

| No. | Part Number   | Quantity (pcs.) | Impedance typ.<br>(at 100MHz, 20 degree C) | Rated Current (mA) | DC Resistance (Ω) max. |
|-----|---------------|-----------------|--|--------------------|------------------------|
| 20  | BLM18BD221SN1 | 20              | 220Ω±25%                                   | 200                | 0.45                   |
| 21  | BLM18BD471SN1 | 20              | 470Ω±25%                                   | 200                | 0.55                   |
| 22  | BLM18BD601SN1 | 20              | 600Ω±25%                                   | 200                | 0.65                   |
| 23  | BLM18BD102SN1 | 20              | 1000Ω±25%                                  | 100                | 0.85                   |
| 24  | BLM18BD182SN1 | 20              | 1800Ω±25%                                  | 50                 | 1.50                   |
| 25  | BLM18BD252SN1 | 20              | 2500Ω±25%                                  | 50                 | 1.50                   |
| 26  | BLM18HG471SN1 | 20              | 470Ω±25%                                   | 200                | 0.85                   |
| 27  | BLM18HG601SN1 | 20              | 600Ω±25%                                   | 200                | 1.00                   |
| 28  | BLM18HG102SN1 | 20              | 1000Ω±25%                                  | 100                | 1.60                   |
| 29  | BLM18HD471SN1 | 20              | 470Ω±25%                                   | 100                | 1.20                   |
| 30  | BLM18HD601SN1 | 20              | 600Ω±25%                                   | 100                | 1.50                   |
| 31  | BLM18HD102SN1 | 20              | 1000Ω±25%                                  | 50                 | 1.80                   |
| 32  | BLM18PG330SN1 | 20              | 33Ω±25%                                    | 3000               | 0.025                  |
| 33  | BLM18PG121SN1 | 20              | 120Ω±25%                                   | 2000               | 0.05                   |
| 34  | BLM18PG181SN1 | 20              | 180Ω±25%                                   | 1500               | 0.09                   |
| 35  | BLM21PG221SN1 | 20              | 220Ω (Typ.)                                | 2000               | 0.05                   |
| 36  | BLM21PG331SN1 | 20              | 330Ω (Typ.)                                | 1500               | 0.09                   |
| 37  | BLM31PG121SN1 | 20              | 120Ω (Typ.)                                | 3000               | 0.025                  |
| 38  | BLM31PG391SN1 | 20              | 390Ω (Typ.)                                | 2000               | 0.05                   |
| 39  | BLM31PG601SN1 | 20              | 600Ω (Typ.)                                | 1500               | 0.09                   |
| 40  | BLM41PG181SN1 | 20              | 180Ω (Typ.)                                | 3000               | 0.025                  |
| 41  | BLM41PG471SN1 | 20              | 470Ω (Typ.)                                | 2000               | 0.05                   |
| 42  | BLM41PG102SN1 | 20              | 1000Ω (Typ.)                               | 1500               | 0.09                   |
| 43  | BLM18RK121SN1 | 20              | 120Ω±25%                                   | 200                | 0.25                   |
| 44  | BLM18RK221SN1 | 20              | 220Ω±25%                                   | 200                | 0.3                    |
| 45  | BLM18RK471SN1 | 20              | 470Ω±25%                                   | 200                | 0.5                    |
| 46  | BLM18RK601SN1 | 20              | 600Ω±25%                                   | 200                | 0.6                    |
| 47  | BLM18RK102SN1 | 20              | 1000Ω±25%                                  | 200                | 0.8                    |
| 48  | BLM18HK471SN1 | 20              | 470Ω±25%                                   | 200                | 0.7                    |
| 49  | BLM18HK601SN1 | 20              | 600Ω±25%                                   | 100                | 0.9                    |
| 50  | BLM18HK102SN1 | 20              | 1000Ω±25%                                  | 50                 | 1.5                    |

### ●EKEMBL21B (Chip Ferrite Beads 0805 Size)

| No. | Part Number   | Quantity (pcs.) | Impedance typ.<br>(at 100MHz, 20 degree C) | Rated Current (mA) | DC Resistance (Ω) max. |
|-----|---------------|-----------------|--|--------------------|------------------------|
| 1   | BLM21AG121SN1 | 20              | 120Ω±25%                                   | 200                | 0.15                   |
| 2   | BLM21AG221SN1 | 20              | 220Ω±25%                                   | 200                | 0.20                   |
| 3   | BLM21AG471SN1 | 20              | 470Ω±25%                                   | 200                | 0.25                   |
| 4   | BLM21AG601SN1 | 20              | 600Ω±25%                                   | 200                | 0.30                   |
| 5   | BLM21AG102SN1 | 20              | 1000Ω±25%                                  | 200                | 0.45                   |
| 6   | BLM21BB600SN1 | 20              | 60Ω±25%                                    | 200                | 0.20                   |
| 7   | BLM21BB750SN1 | 20              | 75Ω±25%                                    | 200                | 0.25                   |
| 8   | BLM21BB121SN1 | 20              | 120Ω±25%                                   | 200                | 0.25                   |
| 9   | BLM21BB221SN1 | 20              | 220Ω±25%                                   | 200                | 0.35                   |
| 10  | BLM21BB471SN1 | 20              | 470Ω±25%                                   | 200                | 0.45                   |
| 11  | BLM21BD121SN1 | 20              | 120Ω±25%                                   | 200                | 0.25                   |
| 12  | BLM21BD221SN1 | 20              | 220Ω±25%                                   | 200                | 0.25                   |
| 13  | BLM21BD471SN1 | 20              | 470Ω±25%                                   | 200                | 0.35                   |
| 14  | BLM21BD601SN1 | 20              | 600Ω±25%                                   | 200                | 0.35                   |
| 15  | BLM21BD102SN1 | 20              | 1000Ω±25%                                  | 200                | 0.40                   |
| 16  | BLM21BD182SN1 | 20              | 1800Ω±25%                                  | 200                | 0.50                   |
| 17  | BLM21BD222SN1 | 20              | 2250Ω (Typ.)                               | 200                | 0.60                   |

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## Chip EMI Suppression Filter Design Kits

Continued from the preceding page.

| No. | Part Number          | Quantity (pcs.) | Impedance typ.<br>(at 100MHz, 20 degree C) | Rated Current (mA) | DC Resistance (Ω) max. |
|-----|----------------------|-----------------|--|--------------------|------------------------|
| 18  | <b>BLM21BD222TN1</b> | 20              | 2200Ω±25%                                  | 200                | 0.60                   |
| 19  | <b>BLM21BD272SN1</b> | 20              | 2700Ω±25%                                  | 200                | 0.80                   |

### ●EKEMFL18B (Chip EMIFIL LC Combined Type)

| No. | Part Number           | Quantity (pcs.) | Cut off Frequency | Rated Voltage | Rated Current | Insulation Resistance (MΩ min.) | DC Resistance max. |
|-----|-----------------------|-----------------|-------------------|---------------|---------------|---------------------------------|--------------------|
| 1   | <b>NFL18ST107X1C3</b> | 20              | 100MHz            | 16 V          | 100mA         | 1000                            | 4.5Ω               |
| 2   | <b>NFL18ST157X1C3</b> | 20              | 150MHz            | 16 V          | 100mA         | 1000                            | 4.0Ω               |
| 3   | <b>NFL18ST207X1C3</b> | 20              | 200MHz            | 16 V          | 150mA         | 1000                            | 3.5Ω               |
| 4   | <b>NFL18ST307X1C3</b> | 20              | 300MHz            | 16 V          | 200mA         | 1000                            | 1.8Ω               |
| 5   | <b>NFL18ST507X1C3</b> | 20              | 500MHz            | 16 V          | 200mA         | 1000                            | 1.5Ω               |
| 6   | <b>NFL18SP157X1A3</b> | 20              | 150MHz            | 10 V          | 100mA         | 1000                            | 3.0Ω               |
| 7   | <b>NFL18SP207X1A3</b> | 20              | 200MHz            | 10 V          | 100mA         | 1000                            | 3.0Ω               |
| 8   | <b>NFL18SP307X1A3</b> | 20              | 300MHz            | 10 V          | 100mA         | 1000                            | 3.0Ω               |
| 9   | <b>NFL18SP507X1A3</b> | 20              | 500MHz            | 10 V          | 100mA         | 1000                            | 2.0Ω               |
| 10  | <b>NFL21SP206X1C3</b> | 20              | 20MHz             | 16 V          | 100mA         | 1000                            | 8.5Ω               |
| 11  | <b>NFL21SP506X1C3</b> | 20              | 50MHz             | 16 V          | 150mA         | 1000                            | 3.5Ω               |
| 12  | <b>NFL21SP706X1C3</b> | 20              | 70MHz             | 16 V          | 150mA         | 1000                            | 3.0Ω               |
| 13  | <b>NFL21SP107X1C3</b> | 20              | 100MHz            | 16 V          | 200mA         | 1000                            | 2.0Ω               |
| 14  | <b>NFL21SP157X1C3</b> | 20              | 150MHz            | 16 V          | 200mA         | 1000                            | 2.0Ω               |
| 15  | <b>NFL21SP207X1C3</b> | 20              | 200MHz            | 16 V          | 250mA         | 1000                            | 1.5Ω               |
| 16  | <b>NFL21SP307X1C3</b> | 20              | 300MHz            | 16 V          | 300mA         | 1000                            | 1.2Ω               |
| 17  | <b>NFL21SP407X1C3</b> | 20              | 400MHz            | 16 V          | 300mA         | 1000                            | 1.2Ω               |
| 18  | <b>NFL21SP507X1C3</b> | 20              | 500MHz            | 16 V          | 300mA         | 1000                            | 1.2Ω               |

| No. | Part Number           | Quantity (pcs.) | Cut off Frequency | Attenuation (dB min.) |         |         |         |         |         |         |         |         |      | Rated Current | Rated Voltage |
|-----|-----------------------|-----------------|-------------------|-----------------------|---------|---------|---------|---------|---------|---------|---------|---------|------|---------------|---------------|
|     |                       |                 |                   | 10MHz                 | 20MHz   | 50MHz   | 100MHz  | 150MHz  | 200MHz  | 300MHz  | 400MHz  | 500MHz  | 1GHz |               |               |
| 19  | <b>NFW31SP106X1E4</b> | 20              | 10MHz             | 6dB max               | 5       | 25      | 25      | -       | 25      | -       | -       | 30      | 30   | 200mA         | 25V           |
| 20  | <b>NFW31SP206X1E4</b> | 20              | 20MHz             | -                     | 6dB max | 5       | 25      | -       | 25      | -       | -       | 30      | 30   | 200mA         | 25V           |
| 21  | <b>NFW31SP506X1E4</b> | 20              | 50MHz             | -                     | -       | 6dB max | 10      | -       | 30      | -       | -       | 30      | 30   | 200mA         | 25V           |
| 22  | <b>NFW31SP107X1E4</b> | 20              | 100MHz            | -                     | -       | -       | 6dB max | -       | 5       | -       | -       | 20      | 30   | 200mA         | 25V           |
| 23  | <b>NFW31SP157X1E4</b> | 20              | 150MHz            | -                     | -       | -       | -       | 6dB max | -       | 10      | 20      | 30      | 30   | 200mA         | 25V           |
| 24  | <b>NFW31SP207X1E4</b> | 20              | 200MHz            | -                     | -       | -       | -       | -       | 6dB max | -       | -       | 10      | 30   | 200mA         | 25V           |
| 25  | <b>NFW31SP307X1E4</b> | 20              | 300MHz            | -                     | -       | -       | -       | -       | -       | 6dB max | -       | 5       | 15   | 200mA         | 25V           |
| 26  | <b>NFW31SP407X1E4</b> | 20              | 400MHz            | -                     | -       | -       | -       | -       | -       | -       | 6dB max | -       | 10   | 200mA         | 25V           |
| 27  | <b>NFW31SP507X1E4</b> | 20              | 500MHz            | -                     | -       | -       | -       | -       | -       | -       | -       | 6dB max | 10   | 200mA         | 25V           |

### ●EKEMFA31B (Chip EMIFIL Capacitor Array Type/ Capacitor Type/ LC Combined Type)

| No. | Part Number           | Quantity (pcs.) | Capacitance | Rated Voltage | Rated Current | Insulation Resistance (MΩ min.) |
|-----|-----------------------|-----------------|-------------|---------------|---------------|---------------------------------|
| 1   | <b>NFA31CC220S1E4</b> | 20              | 22pF±20%    | 25 V          | 200mA         | 1000                            |
| 2   | <b>NFA31CC470S1E4</b> | 20              | 47pF±20%    | 25 V          | 200mA         | 1000                            |
| 3   | <b>NFA31CC101S1E4</b> | 20              | 100pF±20%   | 25 V          | 200mA         | 1000                            |
| 4   | <b>NFA31CC221S1E4</b> | 20              | 220pF±20%   | 25 V          | 200mA         | 1000                            |
| 5   | <b>NFA31CC471R1E4</b> | 20              | 470pF±20%   | 25 V          | 200mA         | 1000                            |
| 6   | <b>NFA31CC102R1E4</b> | 20              | 1000pF±20%  | 25 V          | 200mA         | 1000                            |
| 7   | <b>NFA31CC222R1E4</b> | 20              | 2200pF±20%  | 25 V          | 200mA         | 1000                            |
| 8   | <b>NFA31CC223R1C4</b> | 20              | 22000pF±20% | 16 V          | 200mA         | 1000                            |
| 9   | <b>NFA31GD1006R84</b> | 20              | 10pF±20%    | 6 V           | 50mA          | 1000                            |
| 10  | <b>NFA31GD1004704</b> | 20              | 10pF±20%    | 6 V           | 20mA          | 1000                            |
| 11  | <b>NFA31GD1001014</b> | 20              | 10pF±20%    | 6 V           | 15mA          | 1000                            |
| 12  | <b>NFA31GD4706R84</b> | 20              | 47pF±20%    | 6 V           | 50mA          | 1000                            |

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## Chip EMI Suppression Filter Design Kits

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### ●EKEMFA31B (Chip EMIFIL Capacitor Array Type/ Capacitor Type/ LC Combined Type)


| No. | Part Number    | Quantity (pcs.) | Capacitance | Rated Voltage | Rated Current | Insulation Resistance (MΩ min.) |
|-----|----------------|-----------------|-------------|---------------|---------------|---------------------------------|
| 13  | NFA31GD4704704 | 20              | 47pF±20%    | 6 V           | 20mA          | 1000                            |
| 14  | NFA31GD4701014 | 20              | 47pF±20%    | 6 V           | 15mA          | 1000                            |
| 15  | NFA31GD1016R84 | 20              | 100pF±20%   | 6 V           | 50mA          | 1000                            |
| 16  | NFA31GD1014704 | 20              | 100pF±20%   | 6 V           | 20mA          | 1000                            |
| 17  | NFA31GD1011014 | 20              | 100pF±20%   | 6 V           | 15mA          | 1000                            |

### ●EKEMDL21D (Chip Common Mode Choke Coils)

| No. | Part Number   | Quantity (pcs.) | Common Mode Impedance typ. (at 100MHz, 20 degree C) | Rated Voltage | Rated Current | Insulation Resistance (MΩ min.) |
|-----|---------------|-----------------|---|---------------|---------------|---------------------------------|
| 1   | DLW21HN670SQ2 | 10              | 67Ω (Typ.)  | 50V           | 330mA         | 10                              |
| 2   | DLW21HN900SQ2 | 10              | 90Ω (Typ.)  | 50V           | 330mA         | 10                              |
| 3   | DLW21HN121SQ2 | 10              | 120Ω (Typ.)   | 50V           | 280mA         | 10                              |
| 4   | DLW21HN181SQ2 | 10              | 180Ω (Typ.)   | 50V           | 250mA         | 10                              |
| 5   | DLW21SN670SQ2 | 10              | 67Ω (Typ.)  | 50V           | 400mA         | 10                              |
| 6   | DLW21SN900SQ2 | 10              | 90Ω (Typ.)  | 50V           | 330mA         | 10                              |
| 7   | DLW21SN121SQ2 | 10              | 120Ω (Typ.)   | 50V           | 370mA         | 10                              |
| 8   | DLW21SN181SQ2 | 10              | 180Ω (Typ.)   | 50V           | 330mA         | 10                              |
| 9   | DLW21SN261SQ2 | 10              | 260Ω (Typ.)   | 50V           | 300mA         | 10                              |
| 10  | DLW21SN371SQ2 | 10              | 370Ω (Typ.)   | 50V           | 280mA         | 10                              |
| 11  | DLW31SN900SQ2 | 10              | 90Ω (Typ.)  | 50V           | 370mA         | 10                              |
| 12  | DLW31SN161SQ2 | 10              | 160Ω (Typ.)   | 50V           | 340mA         | 10                              |
| 13  | DLW31SN261SQ2 | 10              | 260Ω (Typ.)   | 50V           | 310mA         | 10                              |
| 14  | DLW31SN601SQ2 | 10              | 600Ω (Typ.)   | 50V           | 260mA         | 10                              |
| 15  | DLW31SN102SQ2 | 10              | 1000Ω (Typ.)  | 50V           | 230mA         | 10                              |
| 16  | DLW31SN222SQ2 | 10              | 2200Ω (Typ.)  | 50V           | 200mA         | 10                              |
| 17  | DLW5AHN402SQ2 | 5               | 4000Ω (Typ.)  | 50V           | 200mA         | 10                              |
| 18  | DLW5BSN302SQ2 | 5               | 3000Ω (Typ.)  | 50V           | 500mA         | 10                              |
| 19  | DLW5BSN152SQ2 | 5               | 1500Ω (Typ.)  | 50V           | 1000mA        | 10                              |
| 20  | DLW5BSN102SQ2 | 5               | 1000Ω (Typ.)  | 50V           | 1500mA        | 10                              |
| 21  | DLW5BSN351SQ2 | 5               | 350Ω (Typ.)   | 50V           | 2000mA        | 10                              |
| 22  | DLW5BSN191SQ2 | 5               | 190Ω (Typ.)   | 50V           | 5000mA        | 10                              |
| 23  | DLP11SN900SL2 | 10              | 90Ω (Typ.)  | 5V            | 160mA         | 100                             |
| 24  | DLP11SN121SL2 | 10              | 120Ω (Typ.)   | 5V            | 140mA         | 100                             |
| 25  | DLP11SN161SL2 | 10              | 160Ω (Typ.)   | 5V            | 120mA         | 100                             |
| 26  | DLP11SN201SL2 | 10              | 200Ω (Typ.)   | 5V            | 130mA         | 100                             |
| 27  | DLP31DN900ML4 | 10              | 90Ω±20%   | 10V           | 160mA         | 100                             |
| 28  | DLP31DN131ML4 | 10              | 130Ω±20%  | 10V           | 120mA         | 100                             |
| 29  | DLP31DN201ML4 | 10              | 200Ω±20%  | 10V           | 100mA         | 100                             |
| 30  | DLP31DN321ML4 | 10              | 320Ω±20%  | 10V           | 80mA          | 100                             |
| 31  | DLP31DN441ML4 | 10              | 440Ω±20%  | 10V           | 70mA          | 100                             |

### ●EKEMNFMPB

| No. | Part Number    | Quantity (pcs.) | Capacitance | Rated Voltage | Rated Current | Insulation Resistance (MΩ min.) |
|-----|----------------|-----------------|-------------|---------------|---------------|---------------------------------|
| 1   | NFM18PC104R1C3 | 20              | 0.1μF±20%   | 16 V          | 2A            | 1000                            |
| 2   | NFM18PC105R0J3 | 20              | 1μF±20%     | 6.3 V         | 2A            | 500                             |
| 3   | NFM21PC104R1E3 | 20              | 0.1μF±20%   | 25 V          | 2A            | 1000                            |
| 4   | NFM21PC224R1C3 | 20              | 0.22μF±20%  | 16 V          | 2A            | 1000                            |
| 5   | NFM21PC474R1C3 | 20              | 0.47μF±20%  | 16 V          | 2A            | 1000                            |
| 6   | NFM21PC105B1A3 | 20              | 1μF±20%     | 10 V          | 4A            | 500                             |

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## Chip EMI Suppression Filter Design Kits

Continued from the preceding page.

| No. | Part Number           | Quantity (pcs.) | Capacitance     | Rated Voltage | Rated Current | Insulation Resistance (MΩ min.) |
|-----|-----------------------|-----------------|-----------------|---------------|---------------|---------------------------------|
| 7   | <b>NFM21PC105B1C3</b> | 20              | 1μF±20%         | 16 V          | 4A            | 500                             |
| 8   | <b>NFE31PT152Z1E9</b> | 20              | 1500pF +50/-20% | 25 V          | 6A            | 1000                            |
| 9   | <b>NFE31PT222Z1E9</b> | 20              | 2200pF±50%      | 25 V          | 6A            | 1000                            |
| 10  | <b>NFE61PT102E1H9</b> | 20              | 1000pF +80/-20% | 50 V          | 2A            | 1000                            |
| 11  | <b>NFE61PT472C1H9</b> | 20              | 4700pF +80/-20% | 50 V          | 2A            | 1000                            |
| 12  | <b>NFM41PC204F1H3</b> | 20              | 0.2μF +80/-20%  | 50 V          | 2A            | 1000                            |
| 13  | <b>NFM41PC155B1E3</b> | 20              | 1.5μF±20%       | 25 V          | 6A            | 300                             |

### ●EKEMNFMCA

| No. | Part Number           | Quantity (pcs.) | Capacitance | Rated Voltage | Rated Current | Insulation Resistance (MΩ min.) |
|-----|-----------------------|-----------------|-------------|---------------|---------------|---------------------------------|
| 1   | <b>NFM18CC220U1C3</b> | 20              | 22pF±20%    | 16 V          | 400mA         | 1000                            |
| 2   | <b>NFM18CC470U1C3</b> | 20              | 47pF±20%    | 16 V          | 400mA         | 1000                            |
| 3   | <b>NFM18CC101R1C3</b> | 20              | 100pF±20%   | 16 V          | 500mA         | 1000                            |
| 4   | <b>NFM18CC221R1C3</b> | 20              | 220pF±20%   | 16 V          | 500mA         | 1000                            |
| 5   | <b>NFM18CC471R1C3</b> | 20              | 470pF±20%   | 16 V          | 500mA         | 1000                            |
| 6   | <b>NFM18CC102R1C3</b> | 20              | 1000pF±20%  | 16 V          | 600mA         | 1000                            |
| 7   | <b>NFM18CC222R1C3</b> | 20              | 2200pF±20%  | 16 V          | 700mA         | 1000                            |
| 8   | <b>NFM18CC223R1C3</b> | 20              | 22000pF±20% | 16 V          | 1000mA        | 1000                            |
| 9   | <b>NFM21CC220U1H3</b> | 20              | 22pF±20%    | 50 V          | 700mA         | 1000                            |
| 10  | <b>NFM21CC470U1H3</b> | 20              | 47pF±20%    | 50 V          | 700mA         | 1000                            |
| 11  | <b>NFM21CC101U1H3</b> | 20              | 100pF±20%   | 50 V          | 700mA         | 1000                            |
| 12  | <b>NFM21CC221R1H3</b> | 20              | 220pF±20%   | 50 V          | 700mA         | 1000                            |
| 13  | <b>NFM21CC471R1H3</b> | 20              | 470pF±20%   | 50 V          | 1000mA        | 1000                            |
| 14  | <b>NFM21CC102R1H3</b> | 20              | 1000pF±20%  | 50 V          | 1000mA        | 1000                            |
| 15  | <b>NFM21CC222R1H3</b> | 20              | 2200pF±20%  | 50 V          | 1000mA        | 1000                            |
| 16  | <b>NFM21CC223R1H3</b> | 20              | 22000pF±20% | 50 V          | 2000mA        | 1000                            |