

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

**muRata**

## Chip Ferrite Beads Part Numbering

### Chip Ferrite Beads

(Part Number) 

BL	M	18	AG	102	S	N	1	D
1	2	3	4	5	6	7	8	9

#### ① Product ID

Product ID	
BL	Chip Ferrite Beads

#### ② Type

Code	Type
A	Array Type
M	Monolithic Type

#### ③ Dimensions (L×W)

Code	Dimensions (L×W)	EIA
03	0.6×0.3mm	0201
15	1.0×0.5mm	0402
18	1.6×0.8mm	0603
2A	2.0×1.0mm	0804
21	2.0×1.25mm	0805
31	3.2×1.6mm	1206
41	4.5×1.6mm	1806

#### ④ Characteristics/Applications

Code *1	Characteristics/Applications	Series
AG	for General Use	BLM03/BLM15/BLM18/BLM21/BLM31/BLA2A/BLA31
TG		BLM18
BA		BLM18
BB	for High-speed Signal Lines	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)	BLM18
HB	for GHz Band High-speed Signal Line	BLM15/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.

#### ⑨ 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

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

**muRata**

## 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 catalogued. (The BLA series of array type chip ferrite beads is also catalogued.)

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.

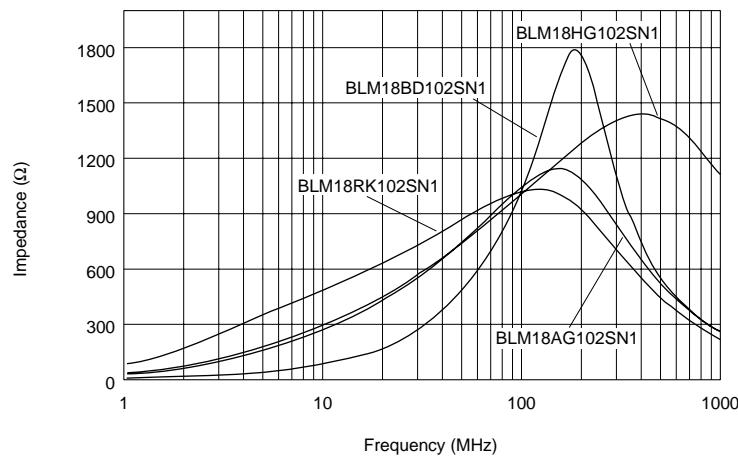
#### 4. BLM□□P series – For Large Current

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).

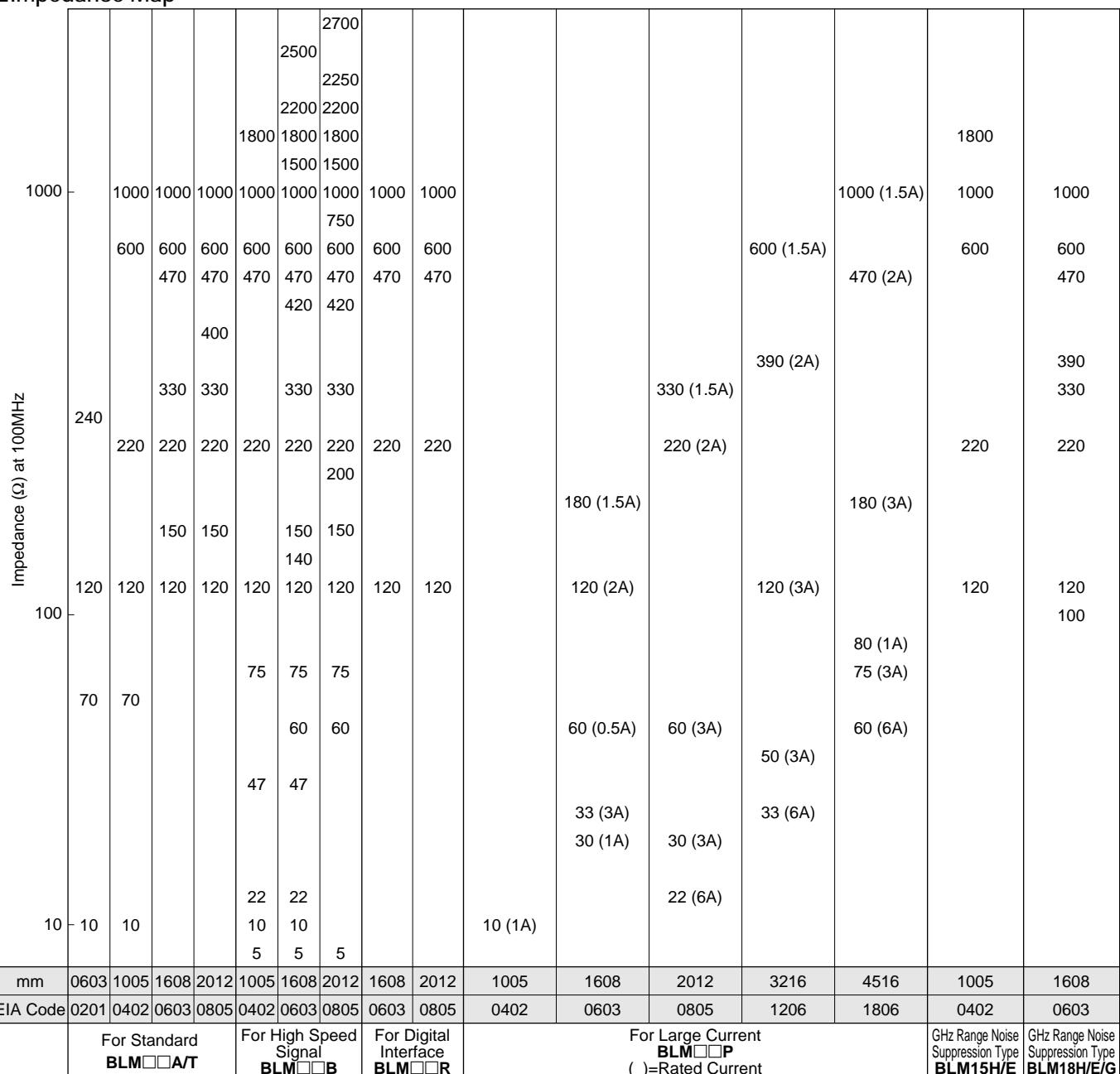
#### 5. BLM□□H/E/G series – For GHz Range Noise Suppression

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



■ BLM Series

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

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

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

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

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

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

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

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

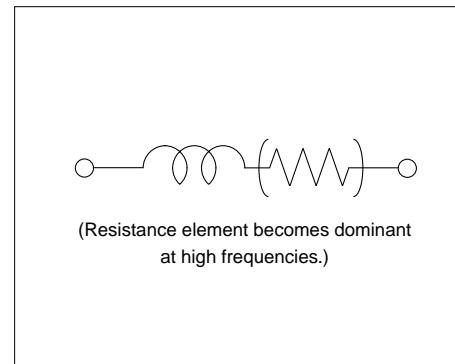
### ■ Features (BLM\_A Series)

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.

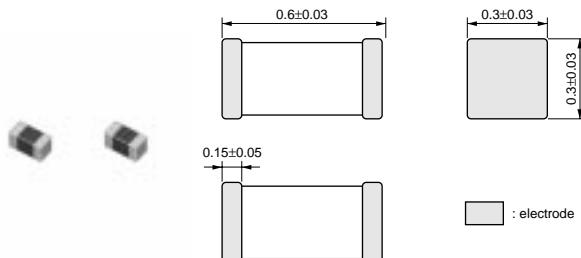
The nickel barrier structure of the external electrodes provides excellent solder heat resistance. BLM\_A series generates an impedance from the relatively low frequencies. Therefore BLM\_A series is effective in noise suppression in a wide frequency range (30MHz - several hundred MHz).

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



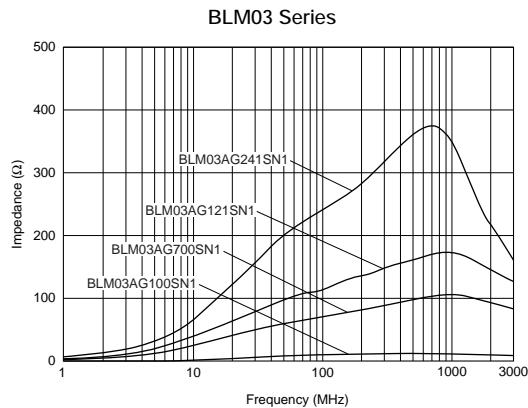
### BLM03A Series (0201 Size)



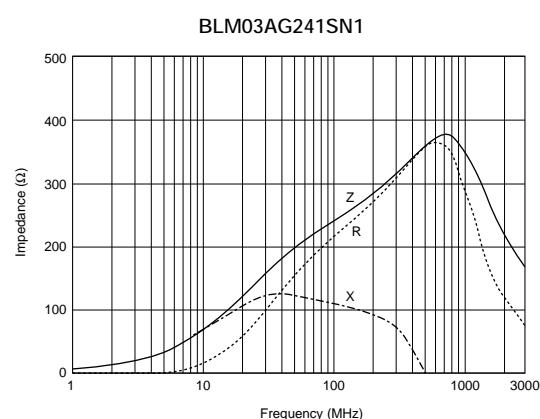
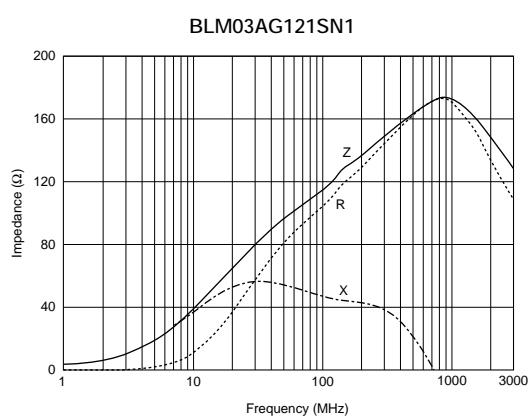
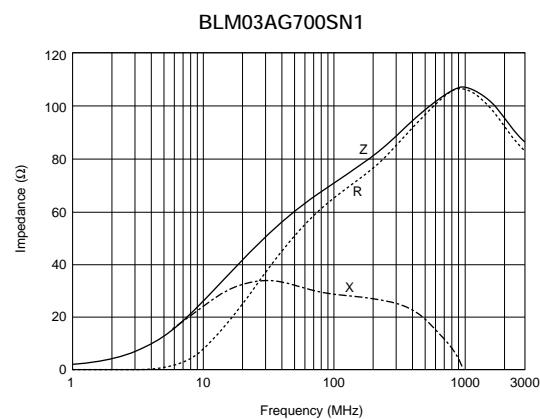
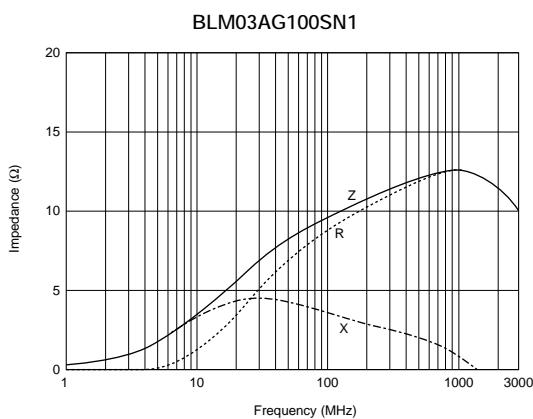
(in mm)

Part Number	Impedance (at 100MHz/20°C) (ohm)	Rated Current (mA)	DC Resistance (max.) (ohm)	Operating Temperature Range (°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

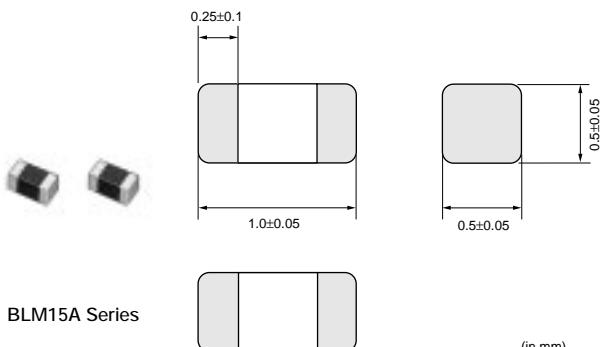
## ■ Impedance-Frequency (Typical)



## ■ Impedance-Frequency Characteristics



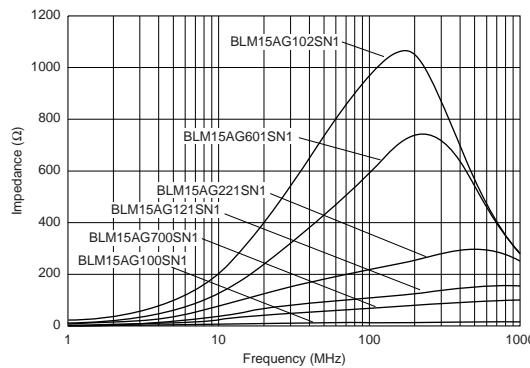
## BLM15A Series (0402 Size)



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

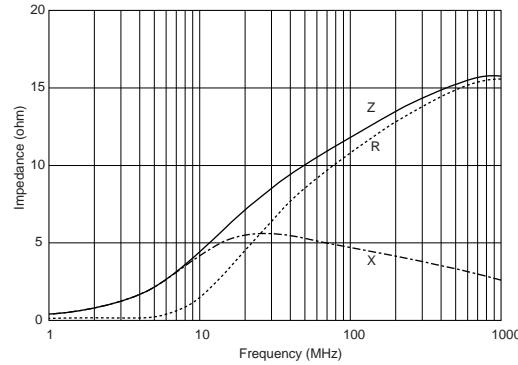
## ■ Impedance-Frequency (Typical)

BLM15A Series

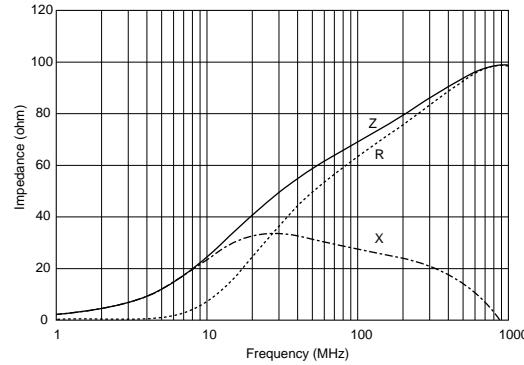


## ■ Impedance-Frequency Characteristics

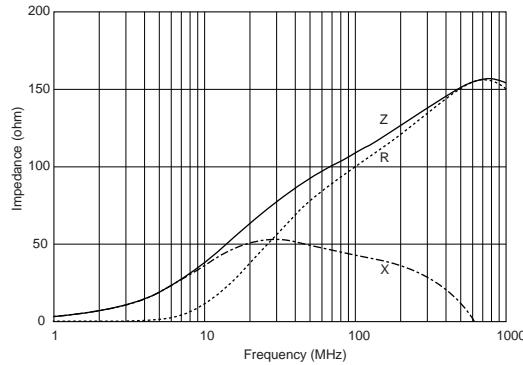
BLM15AG100SN1



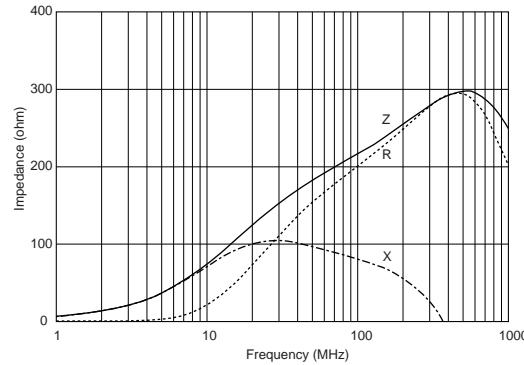
BLM15AG700SN1



BLM15AG121SN1



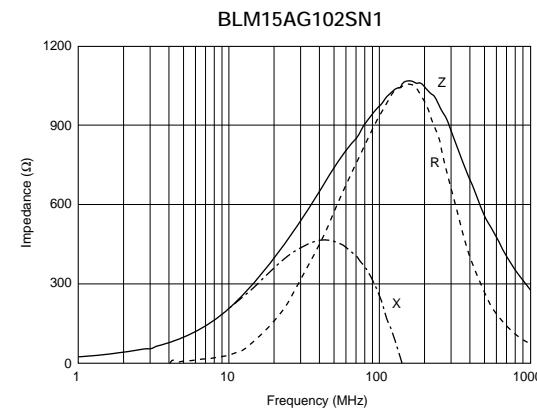
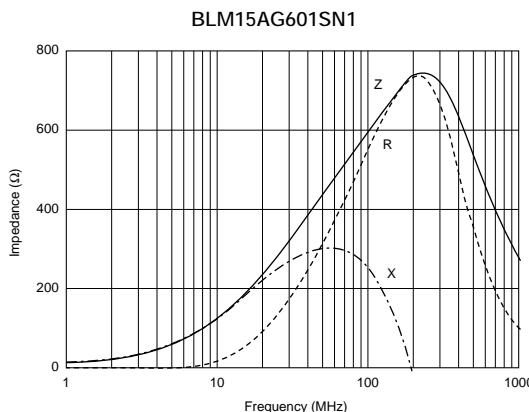
BLM15AG221SN1



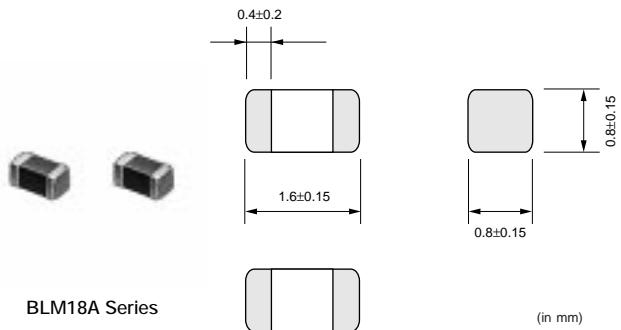
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## ■ Impedance-Frequency Characteristics

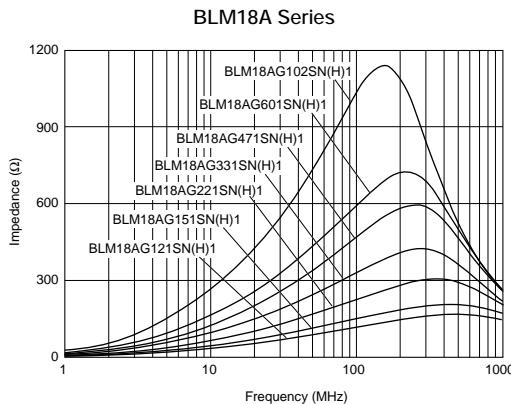


## ■ BLM18A Series (0603 Size)



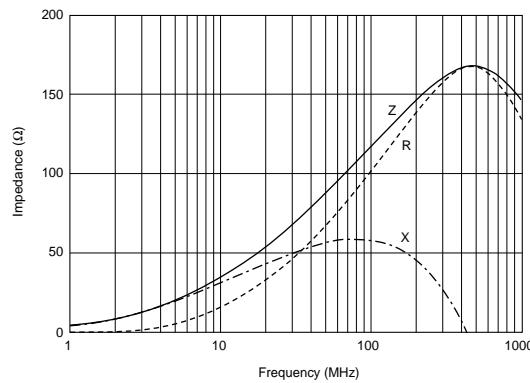
Part Number	Impedance (at 100MHz/20°C) (ohm)	Rated Current (mA)	DC Resistance (max.) (ohm)	Operating Temperature Range (°C)
BLM18AG121SN1	120 ±25%	200	0.20	-55 to +125
BLM18AG151SN1	150 ±25%	200	0.25	-55 to +125
BLM18AG221SN1	220 ±25%	200	0.30	-55 to +125
BLM18AG331SN1	330 ±25%	200	0.45	-55 to +125
BLM18AG471SN1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

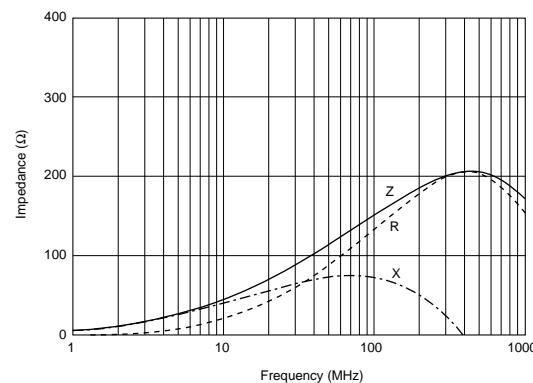


## ■ Impedance-Frequency Characteristics

BLM18AG121SN1

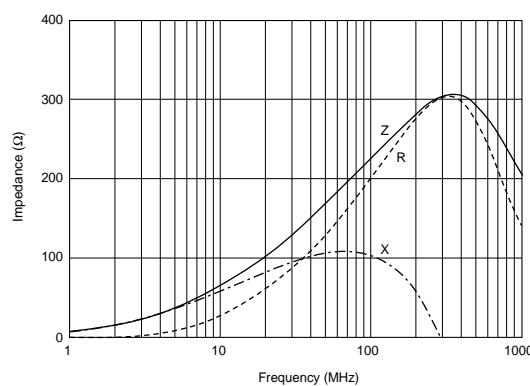


BLM18AG151SN1

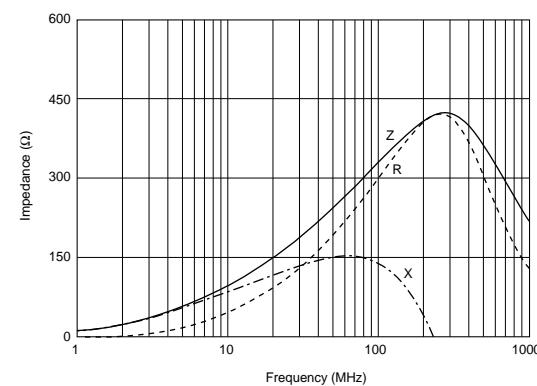


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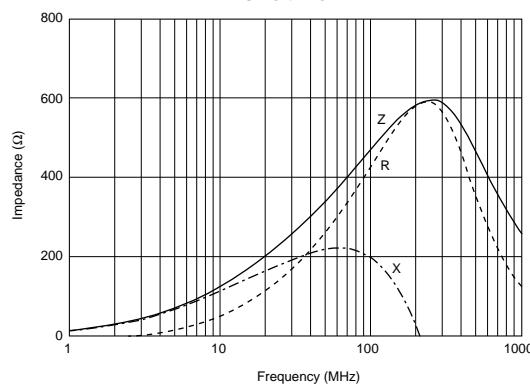
BLM18AG221SN1



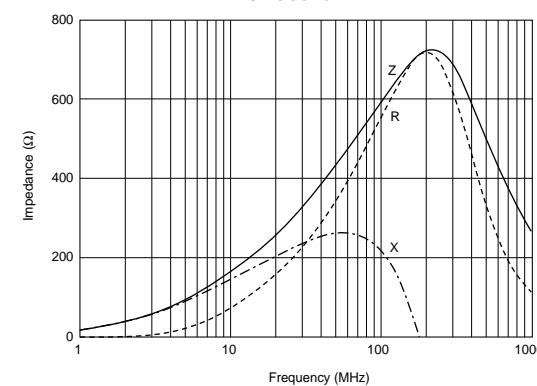
BLM18AG331SN1



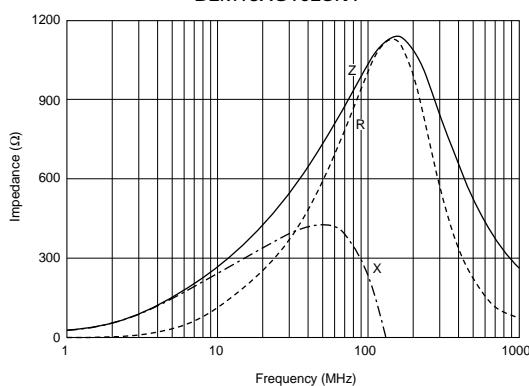
BLM18AG471SN1



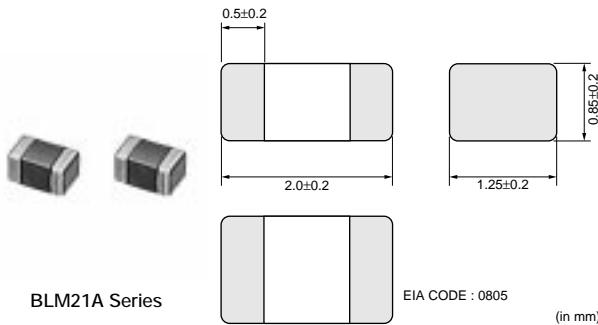
BLM18AG601SN1



BLM18AG102SN1



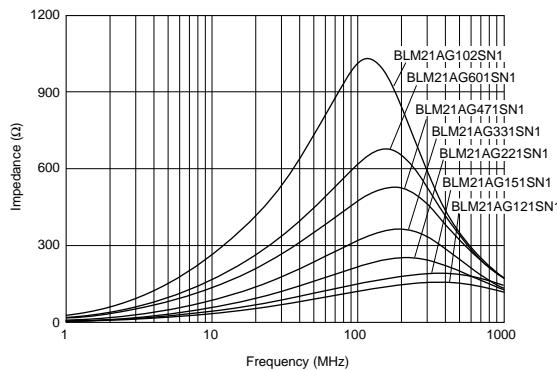
## BLM21A Series (0805 Size)



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

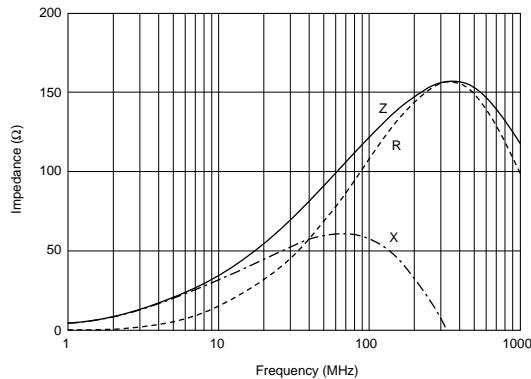
### ■ Impedance-Frequency (Typical)

BLM21A Series

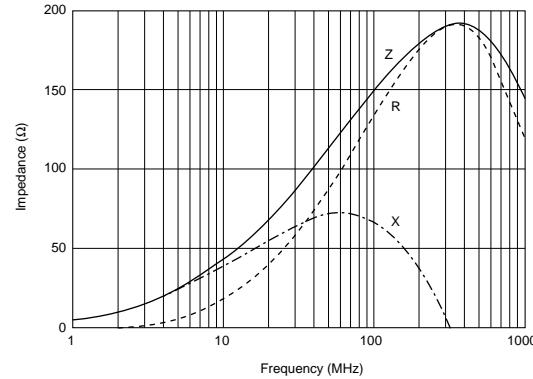


### ■ Impedance-Frequency Characteristics

BLM21AG121SN1



BLM21AG151SN1

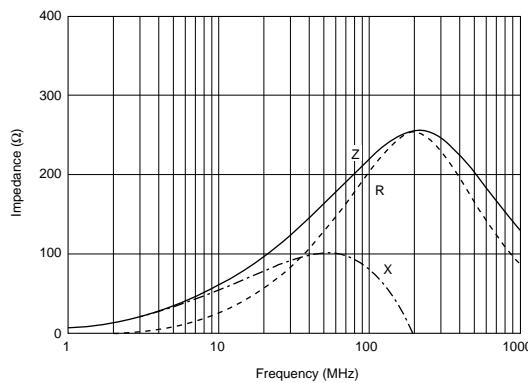


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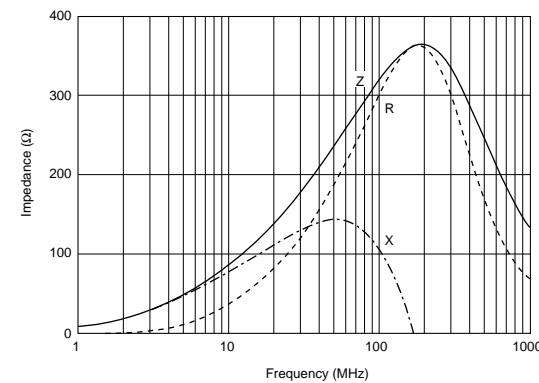
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## ■ Impedance-Frequency Characteristics

BLM21AG221SN1

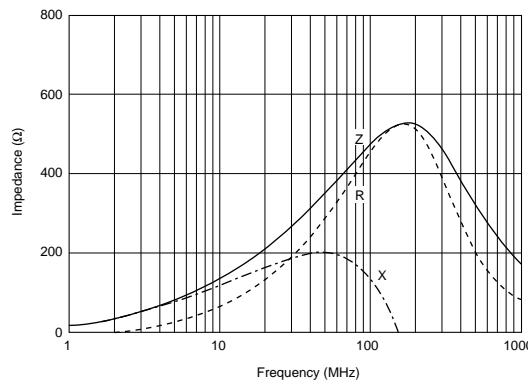


BLM21AG331SN1

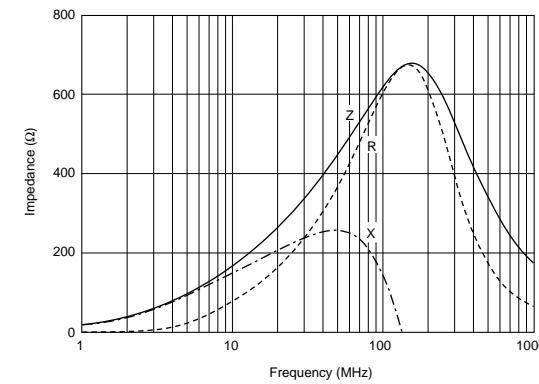


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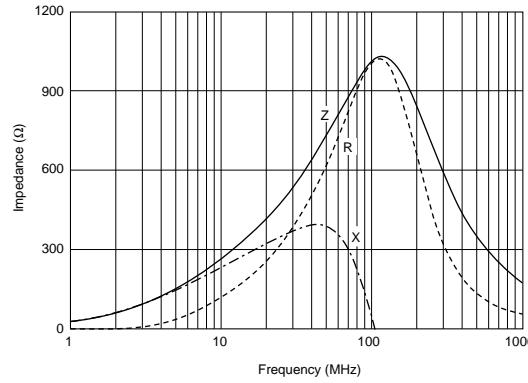
BLM21AG471SN1



BLM21AG601SN1



BLM21AG102SN1



## Chip EMI Suppression Filter Design Kits



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

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

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

No.	Part Number	Quantity (pcs.)	Impedance typ. (at 100MHz, 20 degree C)	Rated Current (mA)	DC Resistance (Ω) max.
1	<b>BLM18AG121SN1</b>	20	120Ω±25%	200	0.20
2	<b>BLM18AG221SN1</b>	20	220Ω±25%	200	0.30
3	<b>BLM18AG471SN1</b>	20	470Ω±25%	200	0.50
4	<b>BLM18AG601SN1</b>	20	600Ω±25%	200	0.50
5	<b>BLM18AG102SN1</b>	20	1000Ω±25%	100	0.70
6	<b>BLM18BA050SN1</b>	20	5Ω±25%	500	0.20
7	<b>BLM18BA100SN1</b>	20	10Ω±25%	500	0.25
8	<b>BLM18BA220SN1</b>	20	22Ω±25%	500	0.35
9	<b>BLM18BA470SN1</b>	20	47Ω±25%	300	0.55
10	<b>BLM18BA750SN1</b>	20	75Ω±25%	300	0.70
11	<b>BLM18BA121SN1</b>	20	120Ω±25%	200	0.90
12	<b>BLM18BB100SN1</b>	20	10Ω±25%	500	0.15
13	<b>BLM18BB220SN1</b>	20	22Ω±25%	500	0.25
14	<b>BLM18BB470SN1</b>	20	47Ω±25%	500	0.30
15	<b>BLM18BB600SN1</b>	20	60Ω±25%	200	0.35
16	<b>BLM18BB121SN1</b>	20	120Ω±25%	200	0.50
17	<b>BLM18BB221SN1</b>	20	220Ω±25%	200	0.65
18	<b>BLM18BB471SN1</b>	20	470Ω±25%	50	1.00
19	<b>BLM18BD121SN1</b>	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. (at 100MHz, 20 degree C)	Rated Current (mA)	DC Resistance (Ω) max.
20	<b>BLM18BD221SN1</b>	20	220Ω±25%	200	0.45
21	<b>BLM18BD471SN1</b>	20	470Ω±25%	200	0.55
22	<b>BLM18BD601SN1</b>	20	600Ω±25%	200	0.65
23	<b>BLM18BD102SN1</b>	20	1000Ω±25%	100	0.85
24	<b>BLM18BD182SN1</b>	20	1800Ω±25%	50	1.50
25	<b>BLM18BD252SN1</b>	20	2500Ω±25%	50	1.50
26	<b>BLM18HG471SN1</b>	20	470Ω±25%	200	0.85
27	<b>BLM18HG601SN1</b>	20	600Ω±25%	200	1.00
28	<b>BLM18HG102SN1</b>	20	1000Ω±25%	100	1.60
29	<b>BLM18HD471SN1</b>	20	470Ω±25%	100	1.20
30	<b>BLM18HD601SN1</b>	20	600Ω±25%	100	1.50
31	<b>BLM18HD102SN1</b>	20	1000Ω±25%	50	1.80
32	<b>BLM18PG330SN1</b>	20	33Ω±25%	3000	0.025
33	<b>BLM18PG121SN1</b>	20	120Ω±25%	2000	0.05
34	<b>BLM18PG181SN1</b>	20	180Ω±25%	1500	0.09
35	<b>BLM21PG221SN1</b>	20	220Ω (Typ.)	2000	0.05
36	<b>BLM21PG331SN1</b>	20	330Ω (Typ.)	1500	0.09
37	<b>BLM31PG121SN1</b>	20	120Ω (Typ.)	3000	0.025
38	<b>BLM31PG391SN1</b>	20	390Ω (Typ.)	2000	0.05
39	<b>BLM31PG601SN1</b>	20	600Ω (Typ.)	1500	0.09
40	<b>BLM41PG181SN1</b>	20	180Ω (Typ.)	3000	0.025
41	<b>BLM41PG471SN1</b>	20	470Ω (Typ.)	2000	0.05
42	<b>BLM41PG102SN1</b>	20	1000Ω (Typ.)	1500	0.09
43	<b>BLM18RK121SN1</b>	20	120Ω±25%	200	0.25
44	<b>BLM18RK221SN1</b>	20	220Ω±25%	200	0.3
45	<b>BLM18RK471SN1</b>	20	470Ω±25%	200	0.5
46	<b>BLM18RK601SN1</b>	20	600Ω±25%	200	0.6
47	<b>BLM18RK102SN1</b>	20	1000Ω±25%	200	0.8
48	<b>BLM18HK471SN1</b>	20	470Ω±25%	200	0.7
49	<b>BLM18HK601SN1</b>	20	600Ω±25%	100	0.9
50	<b>BLM18HK102SN1</b>	20	1000Ω±25%	50	1.5

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

No.	Part Number	Quantity (pcs.)	Impedance typ. (at 100MHz, 20 degree C)	Rated Current (mA)	DC Resistance (Ω) max.
1	<b>BLM21AG121SN1</b>	20	120Ω±25%	200	0.15
2	<b>BLM21AG221SN1</b>	20	220Ω±25%	200	0.20
3	<b>BLM21AG471SN1</b>	20	470Ω±25%	200	0.25
4	<b>BLM21AG601SN1</b>	20	600Ω±25%	200	0.30
5	<b>BLM21AG102SN1</b>	20	1000Ω±25%	200	0.45
6	<b>BLM21BB600SN1</b>	20	60Ω±25%	200	0.20
7	<b>BLM21BB750SN1</b>	20	75Ω±25%	200	0.25
8	<b>BLM21BB121SN1</b>	20	120Ω±25%	200	0.25
9	<b>BLM21BB221SN1</b>	20	220Ω±25%	200	0.35
10	<b>BLM21BB471SN1</b>	20	470Ω±25%	200	0.45
11	<b>BLM21BD121SN1</b>	20	120Ω±25%	200	0.25
12	<b>BLM21BD221SN1</b>	20	220Ω±25%	200	0.25
13	<b>BLM21BD471SN1</b>	20	470Ω±25%	200	0.35
14	<b>BLM21BD601SN1</b>	20	600Ω±25%	200	0.35
15	<b>BLM21BD102SN1</b>	20	1000Ω±25%	200	0.40
16	<b>BLM21BD182SN1</b>	20	1800Ω±25%	200	0.50
17	<b>BLM21BD222SN1</b>	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. (at 100MHz, 20 degree C)	Rated Current (mA)	DC Resistance (Ω) max.
18	BLM21BD222TN1	20	2200Ω±25%	200	0.60
19	BLM21BD272SN1	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	NFL18ST107X1C3	20	100MHz	16 V	100mA	1000	4.5Ω
2	NFL18ST157X1C3	20	150MHz	16 V	100mA	1000	4.0Ω
3	NFL18ST207X1C3	20	200MHz	16 V	150mA	1000	3.5Ω
4	NFL18ST307X1C3	20	300MHz	16 V	200mA	1000	1.8Ω
5	NFL18ST507X1C3	20	500MHz	16 V	200mA	1000	1.5Ω
6	NFL18SP157X1A3	20	150MHz	10 V	100mA	1000	3.0Ω
7	NFL18SP207X1A3	20	200MHz	10 V	100mA	1000	3.0Ω
8	NFL18SP307X1A3	20	300MHz	10 V	100mA	1000	3.0Ω
9	NFL18SP507X1A3	20	500MHz	10 V	100mA	1000	2.0Ω
10	NFL21SP206X1C3	20	20MHz	16 V	100mA	1000	8.5Ω
11	NFL21SP506X1C3	20	50MHz	16 V	150mA	1000	3.5Ω
12	NFL21SP706X1C3	20	70MHz	16 V	150mA	1000	3.0Ω
13	NFL21SP107X1C3	20	100MHz	16 V	200mA	1000	2.0Ω
14	NFL21SP157X1C3	20	150MHz	16 V	200mA	1000	2.0Ω
15	NFL21SP207X1C3	20	200MHz	16 V	250mA	1000	1.5Ω
16	NFL21SP307X1C3	20	300MHz	16 V	300mA	1000	1.2Ω
17	NFL21SP407X1C3	20	400MHz	16 V	300mA	1000	1.2Ω
18	NFL21SP507X1C3	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	NFW31SP106X1E4	20	10MHz	6dB max	5	25	25	-	25	-	-	30	30	200mA	25V
20	NFW31SP206X1E4	20	20MHz	-	6dB max	5	25	-	25	-	-	30	30	200mA	25V
21	NFW31SP506X1E4	20	50MHz	-	-	6dB max	10	-	30	-	-	30	30	200mA	25V
22	NFW31SP107X1E4	20	100MHz	-	-	-	6dB max	-	5	-	-	20	30	200mA	25V
23	NFW31SP157X1E4	20	150MHz	-	-	-	-	6dB max	-	10	20	30	30	200mA	25V
24	NFW31SP207X1E4	20	200MHz	-	-	-	-	-	6dB max	-	-	10	30	200mA	25V
25	NFW31SP307X1E4	20	300MHz	-	-	-	-	-	-	6dB max	-	5	15	200mA	25V
26	NFW31SP407X1E4	20	400MHz	-	-	-	-	-	-	-	6dB max	-	10	200mA	25V
27	NFW31SP507X1E4	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	NFA31CC220S1E4	20	22pF±20%	25 V	200mA	1000
2	NFA31CC470S1E4	20	47pF±20%	25 V	200mA	1000
3	NFA31CC101S1E4	20	100pF±20%	25 V	200mA	1000
4	NFA31CC221S1E4	20	220pF±20%	25 V	200mA	1000
5	NFA31CC471R1E4	20	470pF±20%	25 V	200mA	1000
6	NFA31CC102R1E4	20	1000pF±20%	25 V	200mA	1000
7	NFA31CC222R1E4	20	2200pF±20%	25 V	200mA	1000
8	NFA31CC223R1C4	20	22000pF±20%	16 V	200mA	1000
9	NFA31GD1006R84	20	10pF±20%	6 V	50mA	1000
10	NFA31GD1004704	20	10pF±20%	6 V	20mA	1000
11	NFA31GD1001014	20	10pF±20%	6 V	15mA	1000
12	NFA31GD4706R84	20	47pF±20%	6 V	50mA	1000

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## Chip EMI Suppression Filter Design Kits

Continued from the preceding page.

### ● 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	<b>NFA31GD4704704</b>	20	47pF±20%	6 V	20mA	1000
14	<b>NFA31GD4701014</b>	20	47pF±20%	6 V	15mA	1000
15	<b>NFA31GD1016R84</b>	20	100pF±20%	6 V	50mA	1000
16	<b>NFA31GD1014704</b>	20	100pF±20%	6 V	20mA	1000
17	<b>NFA31GD1011014</b>	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	<b>DLW21HN670SQ2</b>	10	67Ω (Typ.)	50V	330mA	10
2	<b>DLW21HN900SQ2</b>	10	90Ω (Typ.)	50V	330mA	10
3	<b>DLW21HN121SQ2</b>	10	120Ω (Typ.)	50V	280mA	10
4	<b>DLW21HN181SQ2</b>	10	180Ω (Typ.)	50V	250mA	10
5	<b>DLW21SN670SQ2</b>	10	67Ω (Typ.)	50V	400mA	10
6	<b>DLW21SN900SQ2</b>	10	90Ω (Typ.)	50V	330mA	10
7	<b>DLW21SN121SQ2</b>	10	120Ω (Typ.)	50V	370mA	10
8	<b>DLW21SN181SQ2</b>	10	180Ω (Typ.)	50V	330mA	10
9	<b>DLW21SN261SQ2</b>	10	260Ω (Typ.)	50V	300mA	10
10	<b>DLW21SN371SQ2</b>	10	370Ω (Typ.)	50V	280mA	10
11	<b>DLW31SN900SQ2</b>	10	90Ω (Typ.)	50V	370mA	10
12	<b>DLW31SN161SQ2</b>	10	160Ω (Typ.)	50V	340mA	10
13	<b>DLW31SN261SQ2</b>	10	260Ω (Typ.)	50V	310mA	10
14	<b>DLW31SN601SQ2</b>	10	600Ω (Typ.)	50V	260mA	10
15	<b>DLW31SN102SQ2</b>	10	1000Ω (Typ.)	50V	230mA	10
16	<b>DLW31SN222SQ2</b>	10	2200Ω (Typ.)	50V	200mA	10
17	<b>DLW5AHN402SQ2</b>	5	4000Ω (Typ.)	50V	200mA	10
18	<b>DLW5BSN302SQ2</b>	5	3000Ω (Typ.)	50V	500mA	10
19	<b>DLW5BSN152SQ2</b>	5	1500Ω (Typ.)	50V	1000mA	10
20	<b>DLW5BSN102SQ2</b>	5	1000Ω (Typ.)	50V	1500mA	10
21	<b>DLW5BSN351SQ2</b>	5	350Ω (Typ.)	50V	2000mA	10
22	<b>DLW5BSN191SQ2</b>	5	190Ω (Typ.)	50V	5000mA	10
23	<b>DLP11SN900SL2</b>	10	90Ω (Typ.)	5V	160mA	100
24	<b>DLP11SN121SL2</b>	10	120Ω (Typ.)	5V	140mA	100
25	<b>DLP11SN161SL2</b>	10	160Ω (Typ.)	5V	120mA	100
26	<b>DLP11SN201SL2</b>	10	200Ω (Typ.)	5V	130mA	100
27	<b>DLP31DN900ML4</b>	10	90Ω±20%	10V	160mA	100
28	<b>DLP31DN131ML4</b>	10	130Ω±20%	10V	120mA	100
29	<b>DLP31DN201ML4</b>	10	200Ω±20%	10V	100mA	100
30	<b>DLP31DN321ML4</b>	10	320Ω±20%	10V	80mA	100
31	<b>DLP31DN441ML4</b>	10	440Ω±20%	10V	70mA	100

### ● EKEMNFMPB

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

Continued on the following page. 

## 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