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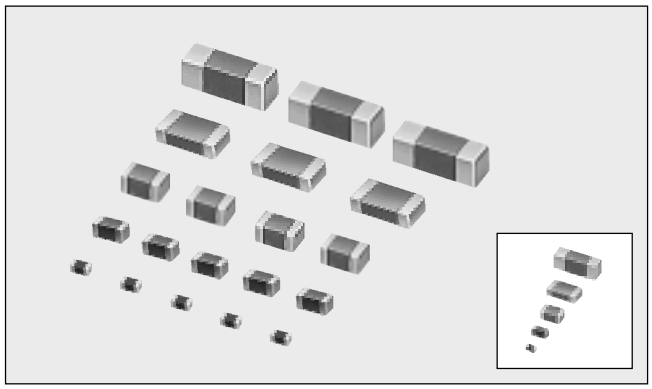
Chip Ferrite Bead Inductor **BLM** Series

The chip ferrite bead inductor BLM series comprises ferrite bead inductors in the shape of a chip. This inductor 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 1.0×0.5, 1.6×0.8, 2.0×1.25, 3.2×1.6 and 4.5×1.6mm are cataloged. (The BLA series of array type chip ferrite bead inductors is also cataloged.)
The nickel barrier structure of the external electrodes provides excellent solder heat resistance. Both flow and reflow soldering methods can be employed.

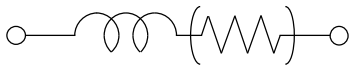


■FEATURES

The BLM series comprises the A series (standard), the B series (for high freq. signal), and the P series (high current).

1. **BLM□□A series-Standard**
   The BLM-A series generates an impedance down to relatively low frequencies. The impedance consists of a resistance element and prevents signal ringing. Various impedances are available to match signal frequency.
2. **BLM□□B series-High Frequency**
   The BLM-B series can minimize attenuation of the signal wave form due to its sharp impedance characteristics. Maximum signal frequencies ranging from 10MHz to 100MHz are available.
3. **BLM□□P series-High 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.

■EQUIVALENT CIRCUIT DIAGRAM



(Resistance element becomes dominant at high frequencies.)

■PART NUMBERING

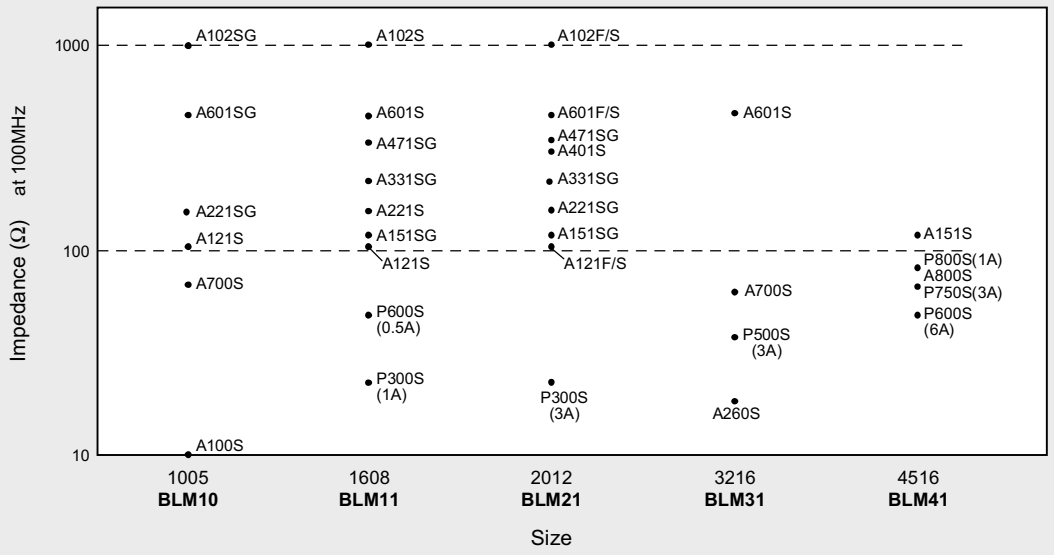
(Please specify the part number when ordering.)

(Ex.) **BLM11A** ❶ **121** ❷ **S** ❸ **PT** ❹

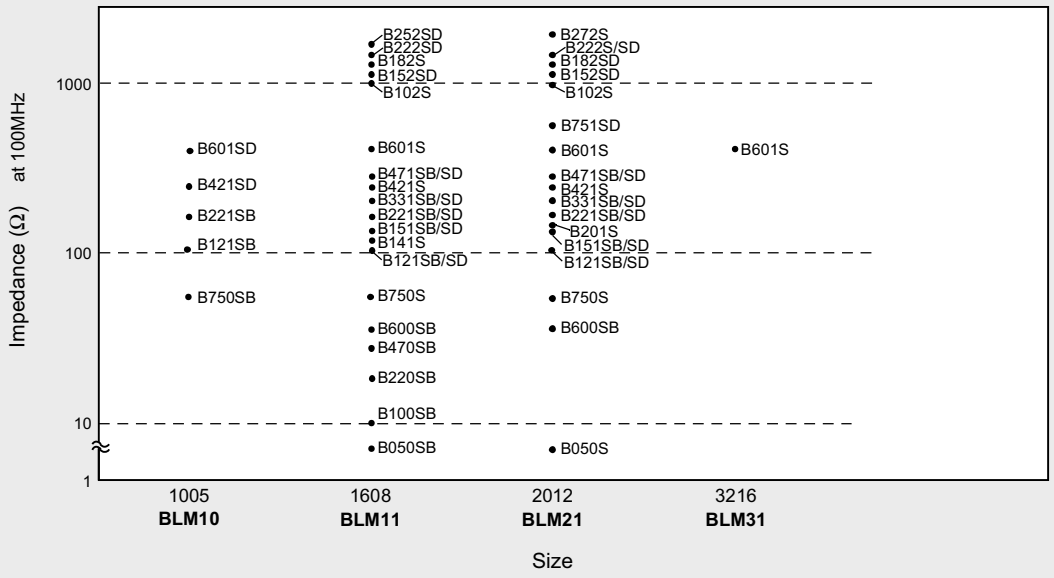
❶Type
❷Typical Impedance at 100MHz 121 : 120Ω
❸Other Characteristics
❹Packaging Code PT : Taped (ø180mm reel)
PT1 : Taped (ø330mm reel)
PB : Bulk package

■SELECTION GUIDE

● BLM□□A series-Standard・BLM□□P series-High Current

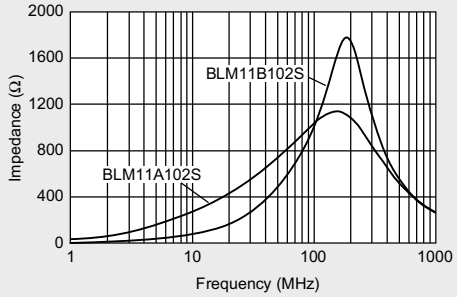


● BLM□□B series-High Frequency



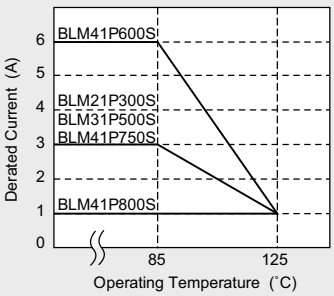
■DIFFERENCE BETWEEN A SERIES AND B SERIES

The BLM□□B series has sharp impedance characteristics and it does not affect the signal frequency. So, BLM□□B series can suppress noise without distorting the wave-form.



■DERATING

When the BLM□□P series is for high-current used in operating temperatures exceeding +85˚C, derating of current is necessary. Please apply the derating curve shown below according to the operating temperature.



■BLM SERIES

Type	Size (mm)	Part Number	Impedance (Ω) (Typ.) at 100MHz	Rated Current (mA)
BLM□□A Series -Standard	1.0×0.5	BLM10A100S	10	500
		BLM10A700S	70	200
		BLM10A121S	120	
		NEW BLM10A221SG	220	100
		NEW BLM10A601SG	600	50
		NEW BLM10A102SG	1000	
	1.6×0.8	BLM11A121S	120	200
		NEW BLM11A151SG	150	
		BLM11A221S	220	
		NEW BLM11A331SG	330	
		NEW BLM11A471SG	470	
		BLM11A601S	600	
		BLM11A102S	1000	100
	2.0×1.25	BLM21A121F	120	200
		BLM21A121S		
		NEW BLM21A151SG	150	
		NEW BLM21A221SG	220	
		NEW BLM21A331SG	330	
		BLM21A401S	400	
		NEW BLM21A471SG	470	
		BLM21A601F	600	
		BLM21A601S		
		BLM21A102F	1000	
		BLM21A102S		
	3.2×1.6	BLM31A260S	26	500
		BLM31A700S	70	200
		BLM31A601S	600	
	4.5×1.6	BLM41A800S	80	500
		BLM41A151S	150	200
BLM□□B Series -High Frequency (Sharp impedance characteristic)	1.0×0.5	NEW BLM10B750SB	75	100
		NEW BLM10B121SB	120	50
		NEW BLM10B221SB	220	
		NEW BLM10B421SD	420	
		NEW BLM10B601SD	600	
	1.6×0.8	NEW BLM11B050S	5	700
		NEW BLM11B100SB	10	500
		NEW BLM11B220SB	22	
		NEW BLM11B470SB	47	
		NEW BLM11B600SB	60	200
		BLM11B750S	75	
		NEW BLM11B121SB	120	
		NEW BLM11B121SD		
		BLM11B141S	140	
		NEW BLM11B151SB	150	
		NEW BLM11B151SD		
		NEW BLM11B221SB	220	
		NEW BLM11B221SD		
		NEW BLM11B331SB	330	
		NEW BLM11B331SD		
		BLM11B421S	420	
		NEW BLM11B471SB	470	50
		NEW BLM11B471SD		200
		BLM11B601S	600	
		BLM11B102S	1000	100
		NEW BLM11B152SD	1500	50
		BLM11B182S	1800	
		NEW BLM11B222SD	2200	
		NEW BLM11B252SD	2500	

Type	Size (mm)	Part Number	Impedance (Ω) (Typ.) at 100MHz	Rated Current (mA)
BLM□□B Series -High Frequency (Sharp impedance characteristic)	2.0×1.25	BLM21B050S	5	500
		NEW BLM21B600SB	60	200
		BLM21B750S	75	
		NEW BLM21B121SB	120	
		NEW BLM21B121SD		
		NEW BLM21B151SB	150	
		NEW BLM21B151SD		
		BLM21B201S	200	
		NEW BLM21B221SB	220	
		NEW BLM21B221SD		
		NEW BLM21B331SB	330	
		NEW BLM21B331SD		
		BLM21B421S	420	
		NEW BLM21B471SB	470	
		NEW BLM21B471SD		
		BLM21B601S	600	
		BLM21B751SD	750	
		BLM21B102S	1000	
		NEW BLM21B152SD	1500	
		NEW BLM21B182SD	1800	
		BLM21B222S	2200	
		NEW BLM21B222SD		
		BLM21B272S	2700	
	3.2×1.6	BLM31B601S	600	
BLM□□P Series -High Current	1.6×0.8	BLM11P300S	30	1000
		BLM11P600S	60	500
	2.0×1.25	BLM21P300S	30	3000
	3.2×1.6	BLM31P500S	50	
	4.5×1.6	BLM41P600S	60	6000
		BLM41P750S	75	3000
		BLM41P800S	80	1000

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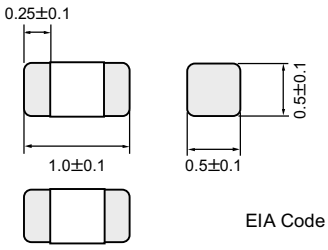
Chip Ferrite Bead Inductor **BLM10** Series

■SPECIFICATIONS

Part Number	Maximum Signal Frequency (MHz)	Impedance (Ω) (Typ.) at 100MHz	Rated Current (m A)	DC Resistance (Ω max.)	Operating Temp. Range (°C)
BLM10A100S	—	10	500	0.05	−55 to +125
BLM10A700S		70	200	0.40	
BLM10A121S		120		0.50	
BLM10A221SG		220	100	0.70	
BLM10A601SG		600	50	1.10	
BLM10A102SG		1000		1.50	
BLM10B750SB	140	75	100	0.8	
BLM10B121SB	90	120	50	1.1	
BLM10B221SB	60	220		1.4	
BLM10B421SD	20	420		1.3	
BLM10B601SD		600		1.5	

■DIMENSIONS

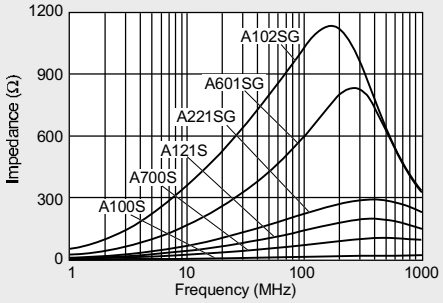


EIA Code : 0402

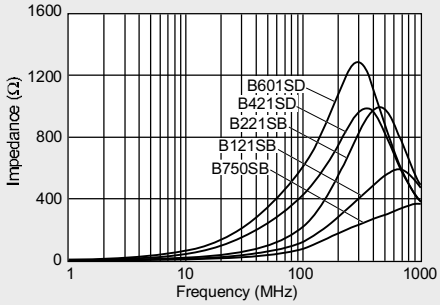
(in mm)

■IMPEDANCE-FREQUENCY CHARACTERISTICS (TYPICAL)

BLM10A Series

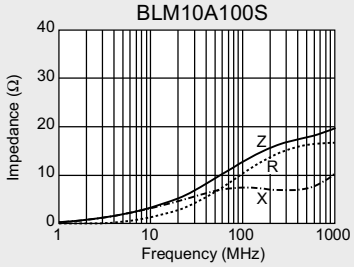


BLM10B Series

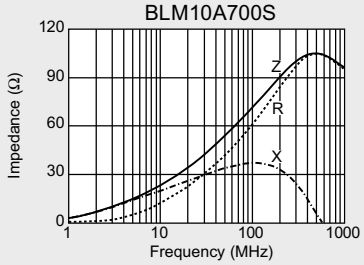


■IMPEDANCE-FREQUENCY CHARACTERISTICS (DETAILS)

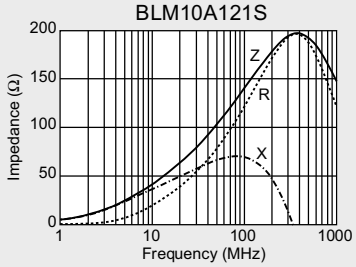
BLM10A100S



BLM10A700S



BLM10A121S



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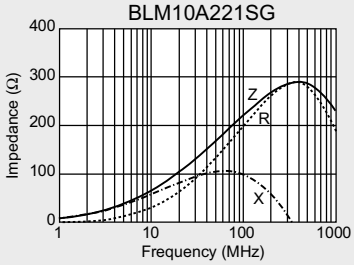

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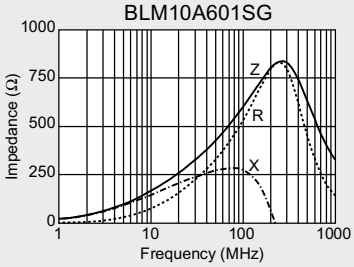
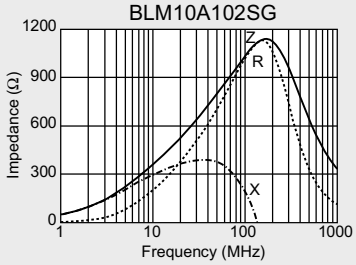
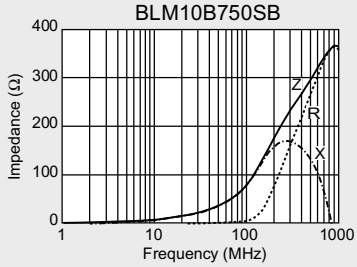


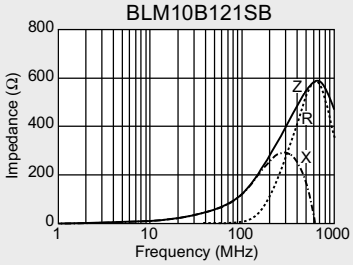
BLM10A102SG



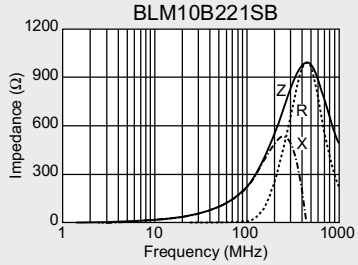
BLM10B750SB



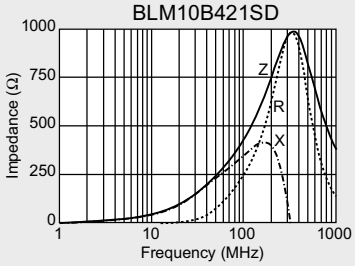
BLM10B121SB



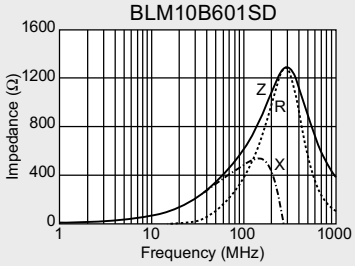
BLM10B221SB



BLM10B421SD



BLM10B601SD



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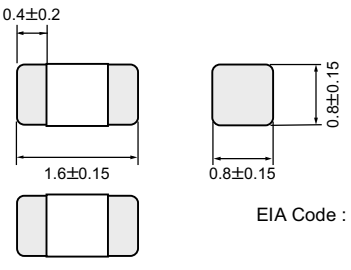
Chip Ferrite Bead Inductor **BLM11** Series

■SPECIFICATIONS

Part Number	Maximum Signal Frequency (MHz)		Impedance (Ω) (Typ.) at 100MHz	Rated Current (m A)	DC Resistance (Ω max.)	Operating Temp. Range (°C)
	*1	*2				
BLM11P300S	—	—	30	1000	0.06	−55 to +125
BLM11P600S			60	500	0.10	
BLM11A121S			120	200	0.20	
BLM11A151SG			150		0.25	
BLM11A221S			220		0.30	
BLM11A331SG			330		0.45	
BLM11A471SG			470		0.50	
BLM11A601S			600			
BLM11A102S			1000	100	0.70	
BLM11B050SB	—	500	5	700	0.10	
BLM11B100SB		200	10	500	0.15	
BLM11B220SB		100	22		0.25	
BLM11B470SB		50	47		0.30	
BLM11B600SB	150	—	60	200	0.35	
BLM11B750S	140		75			
BLM11B121SB	90		120		0.50	
BLM11B121SD	70				0.40	
BLM11B141S	80		140		0.55	
BLM11B151SB			150			
BLM11B151SD	50				0.40	
BLM11B221SB	60		220		0.65	
BLM11B221SD	40				0.45	
BLM11B331SB	50		330		0.75	
BLM11B331SD	30				0.50	
BLM11B421S	20		420		0.55	
BLM11B471SB	30		470	50	1.00	
BLM11B471SD	20			200	0.55	
BLM11B601S			600		0.65	
BLM11B102S	15		1000	100	0.85	
BLM11B152SD	7		1500	50	1.20	
BLM11B182S			1800		1.50	
BLM11B222SD			2200			
BLM11B252SD	5		2500			

*1 has sharp impedance characteristic suitable for high speed lines.(At Maximum Signal Frequency insertion loss is 6dB in 50Ω impedance circuit.)
*2 marked items are designed for ultra-high speed signal lines such as next generation memory interface. Since these impedance curve rise from several hundred MHz,these items can suppressnoise unless the misoperation of circuits. (At Maximum Signal Ferquency, impedance is 22Ω which is used as Dumping.)

■DIMENSIONS

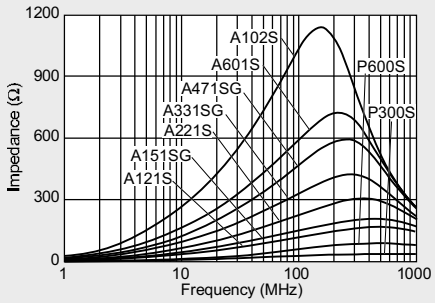


EIA Code : 0603

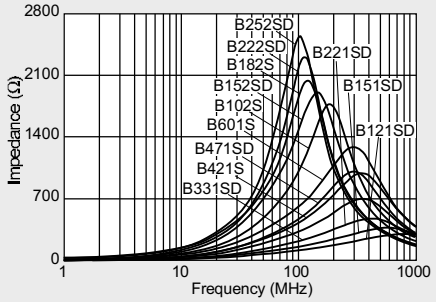
(in mm)

■IMPEDANCE-FREQUENCY CHARACTERISTICS (TYPICAL)

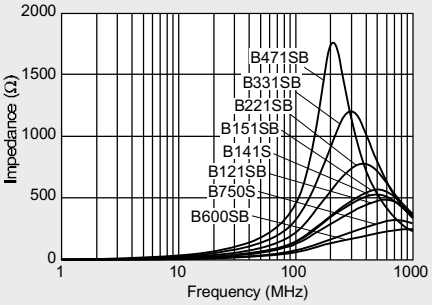
BLM11A／P Series



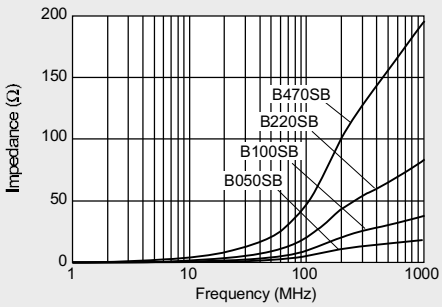
BLM11B Series



BLM11B Series

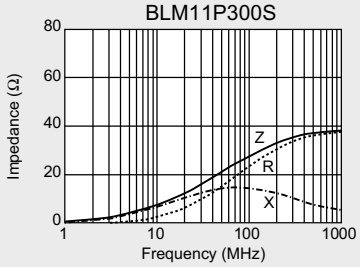


BLM11B Series

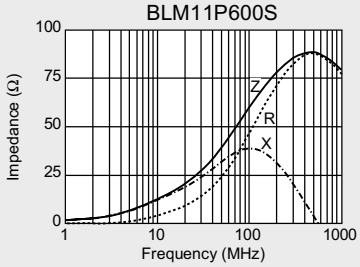


■IMPEDANCE-FREQUENCY CHARACTERISTICS (DETAILS)

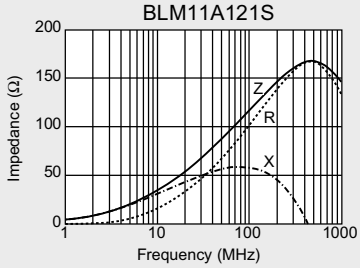
BLM11P300S



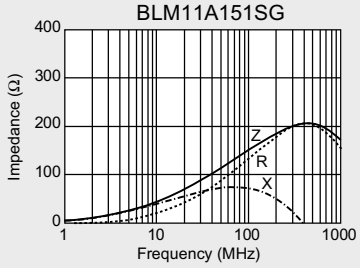
BLM11P600S



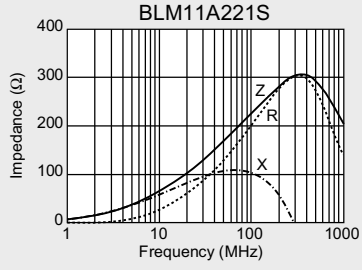
BLM11A121S



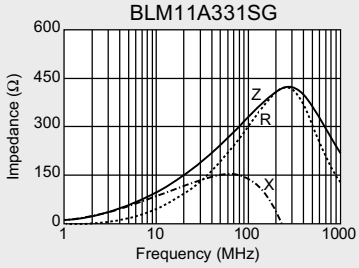
BLM11A151SG



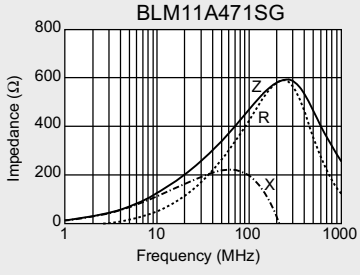
BLM11A221S



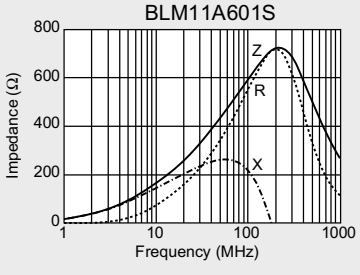
BLM11A331SG



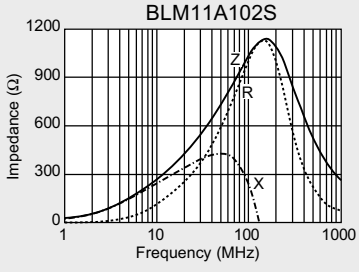
BLM11A471SG



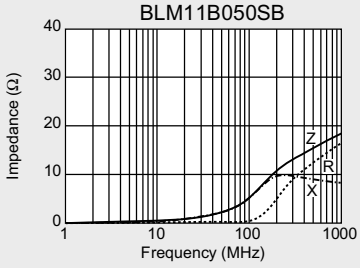
BLM11A601S



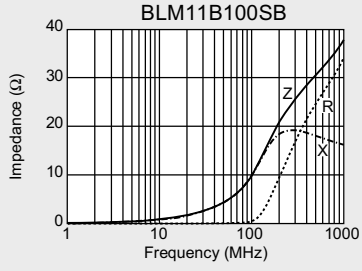
BLM11A102S



BLM11B050SB



BLM11B100SB



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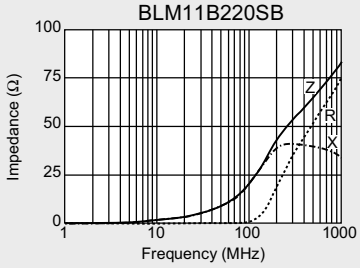

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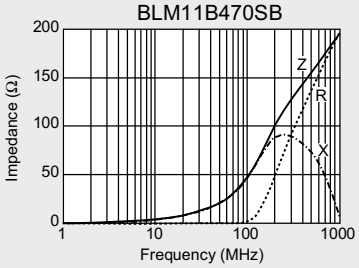

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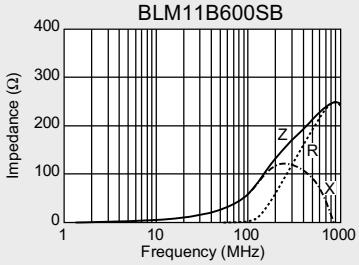

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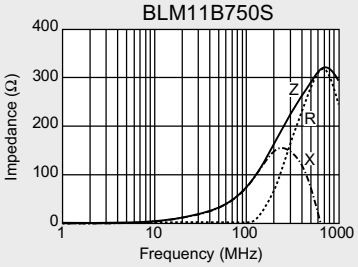

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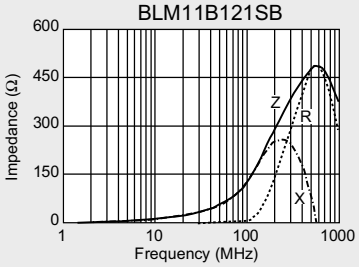

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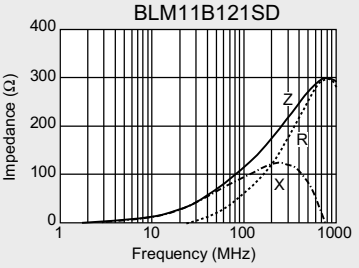

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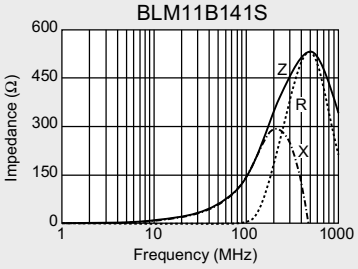

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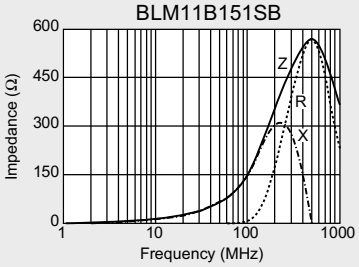

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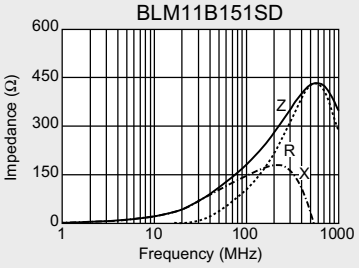

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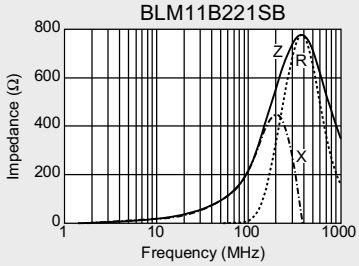

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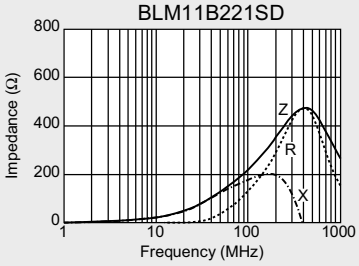

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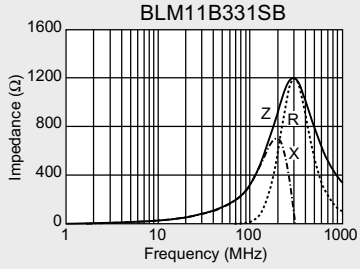

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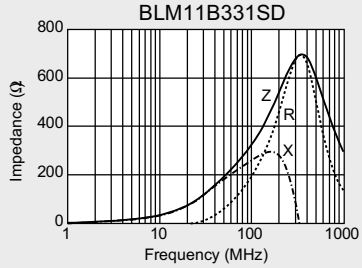

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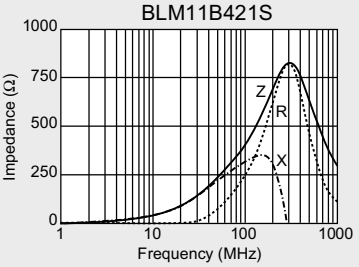

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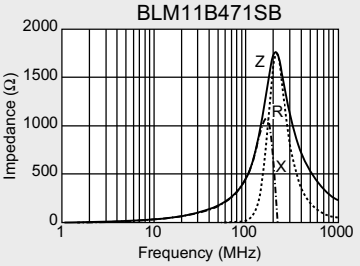

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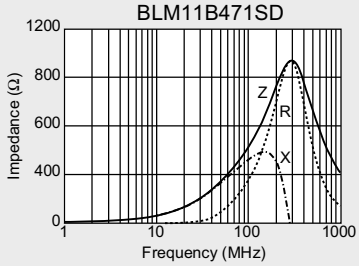

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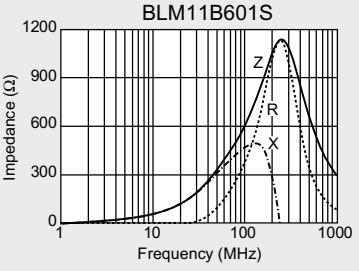

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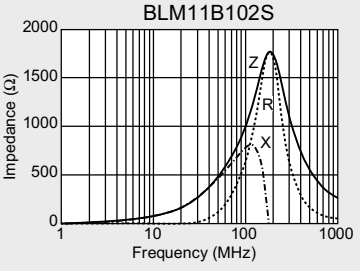

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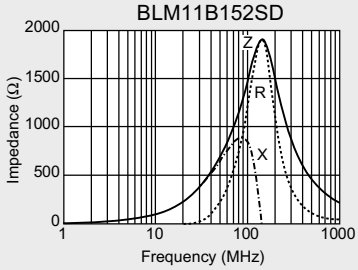

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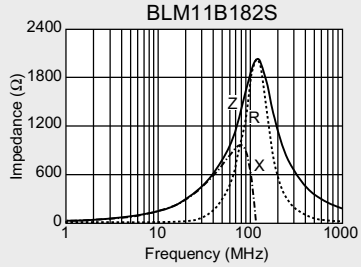

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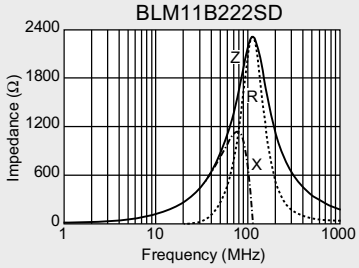

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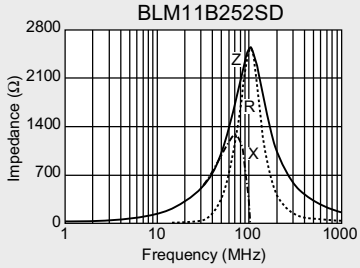


CHIP EMIFIL®

muRata

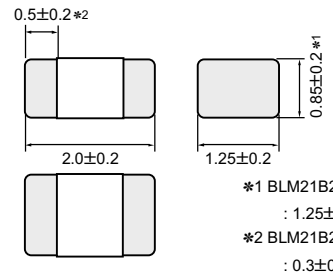
Chip Ferrite Bead Inductor **BLM21** Series

■SPECIFICATIONS

Part Number	Maximum Signal Frequency (MHz)	Impedance (Ω) (Typ.) at 100MHz	Rated Current (m A)	DC Resistance (Ω max.)	Operating Temp. Range (°C)
BLM21P300S	—	30	3000*2	0.015	−55 to +125
BLM21A121F		120	200	0.40	
BLM21A121S				0.15	
BLM21A151SG		150			
BLM21A221SG		220		0.20	
BLM21A331SG		330		0.25	
BLM21A401S		400		0.85	
BLM21A471SG		470		0.25	
BLM21A601F		600		1.10	
BLM21A601S				0.30	
BLM21A102F		1000		0.45	
BLM21A102S					−55 to +85
BLM21B050S		5*1	500	0.07	−55 to +125
BLM21B600SB	150	60*1	200	0.20	
BLM21B750S	140	75*1		0.25	
BLM21B121SB	90	120*1			
BLM21B121SD	70				
BLM21B151SB	80	150*1			
BLM21B151SD	50				
BLM21B201S	70	200*1		0.35	
BLM21B221SB	60	220*1			
BLM21B221SD	40			0.25	
BLM21B331SB	50	230*1		0.40	
BLM21B331SD	30			0.30	
BLM21B421S	20	420*1			
BLM21B471SB	30	470*1		0.45	
BLM21B471SD	20			0.35	
BLM21B601S		600*1			
BLM21B751SD	15	750*1		0.40	
BLM21B102S		1000*1			
BLM21B152SD	7	1500*1		0.45	
BLM21B182SD		1800*1		0.50	
BLM21B222S	5	2200*1		0.60	
BLM21B222SD					
BLM21B272S		2700*1		0.80	

*1 has sharp impedance characteristic suitable for high speed lines.
*2 BLM21P series : Please derate the maximum current, as shown in previous page, for temperatures above +85°C.

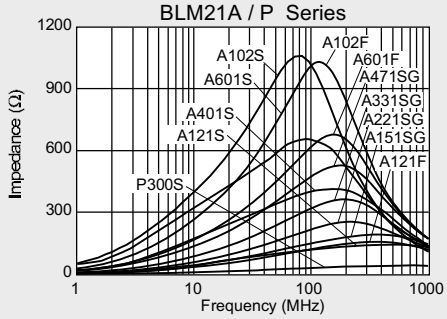
■DIMENSIONS

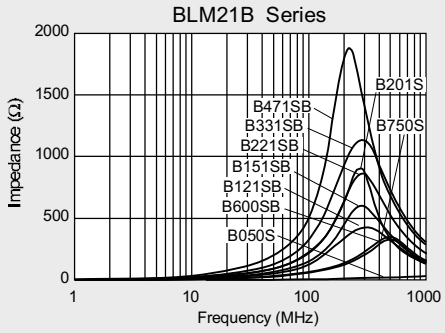


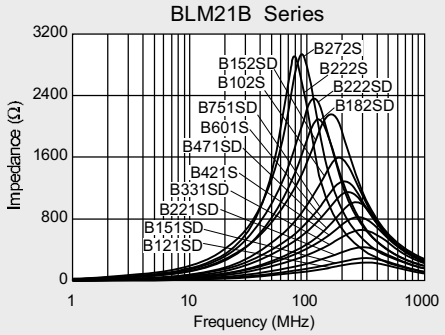
*1 BLM21B222S/B272S
: 1.25±0.2
*2 BLM21B272S
: 0.3±0.2
EIA Code : 0805

(in mm)

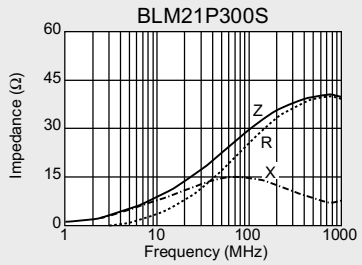
■IMPEDANCE-FREQUENCY CHARACTERISTICS (TYPICAL)

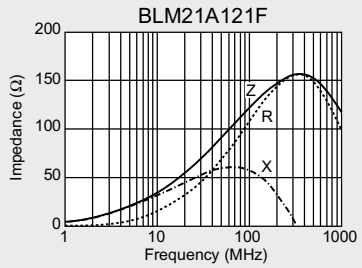


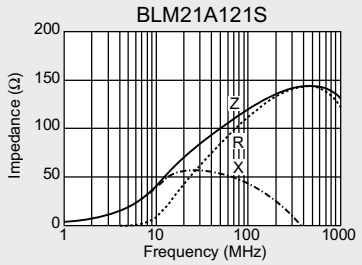


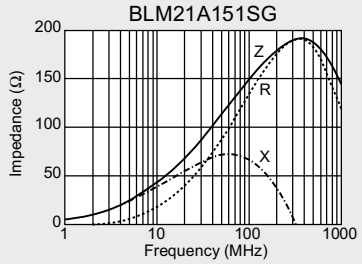


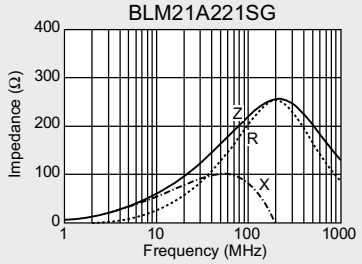
■IMPEDANCE-FREQUENCY CHARACTERISTICS (DETAILS)

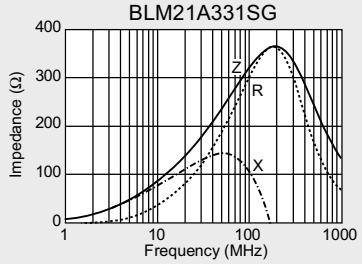


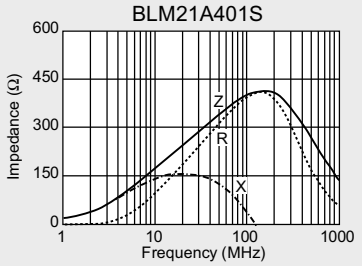


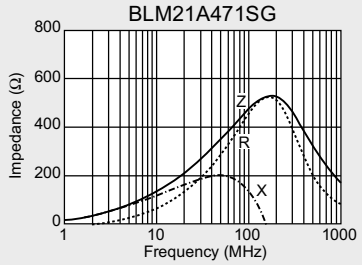


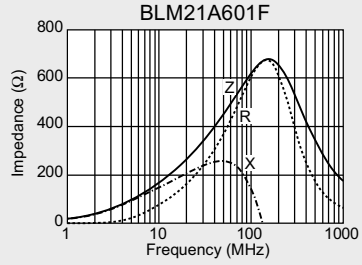


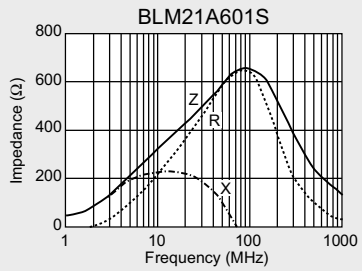


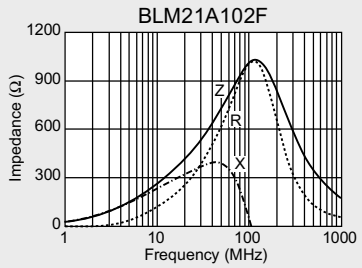


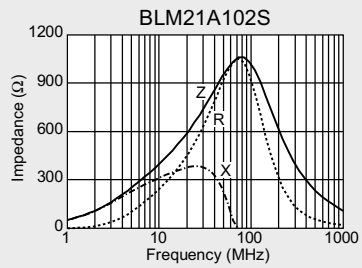


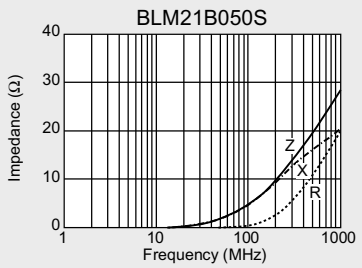


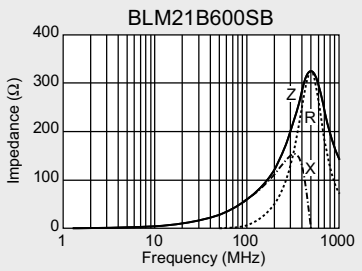


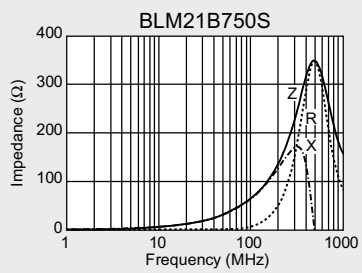












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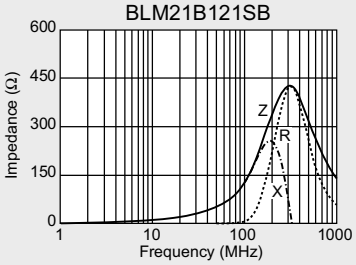

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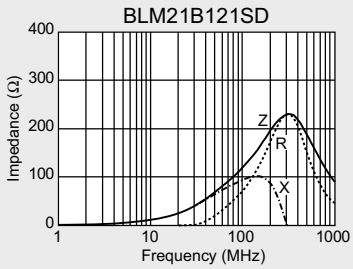

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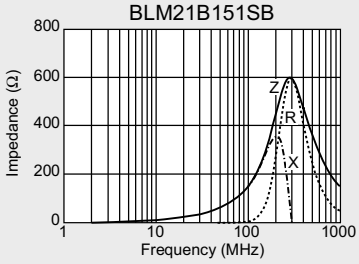

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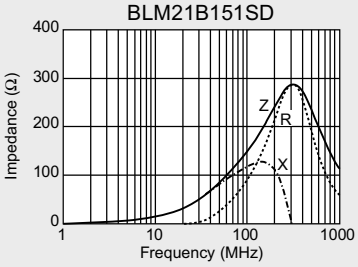

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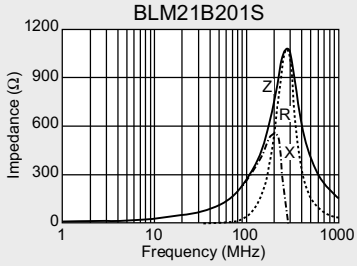

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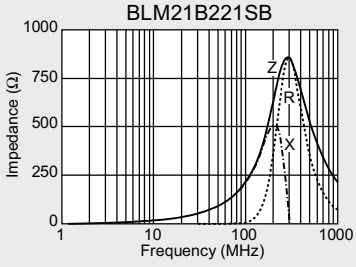

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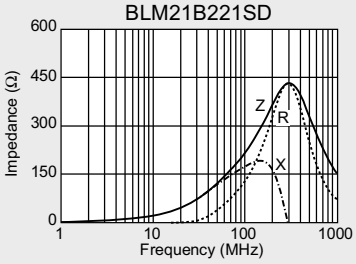

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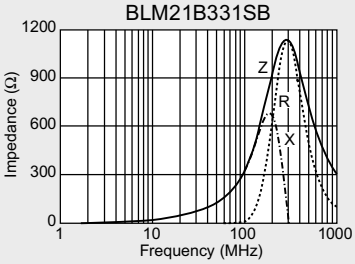

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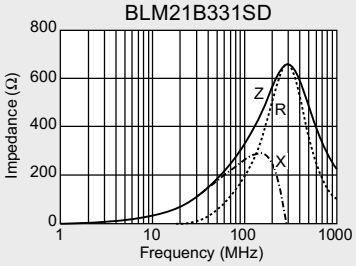

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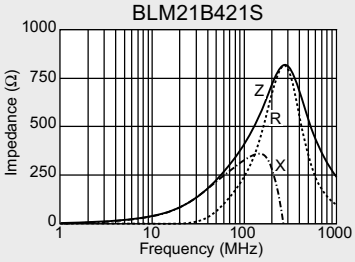

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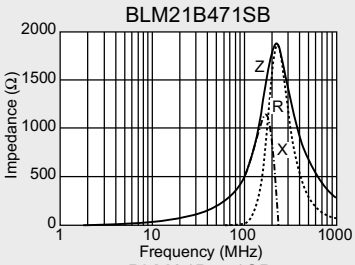

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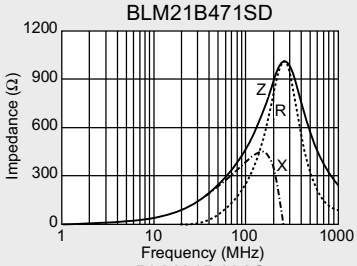

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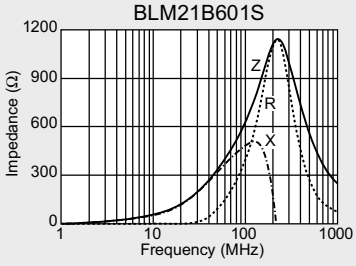

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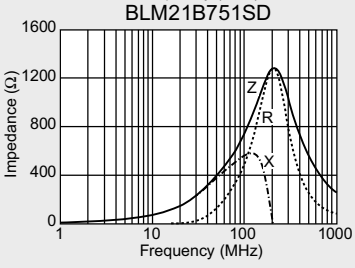
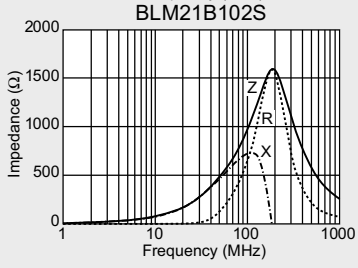
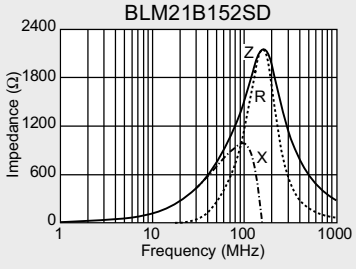


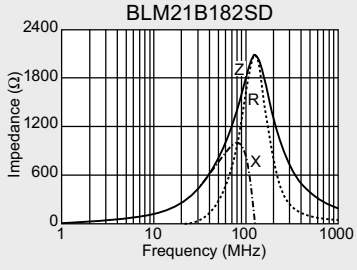
BLM21B102S



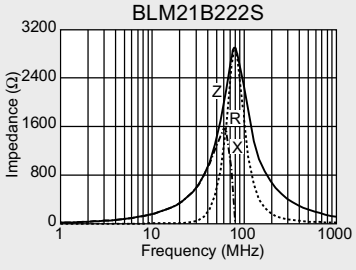
BLM21B152SD



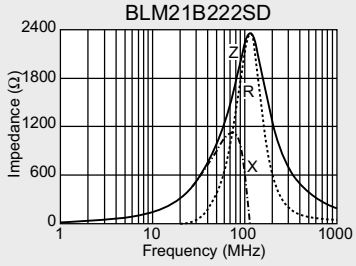
BLM21B182SD



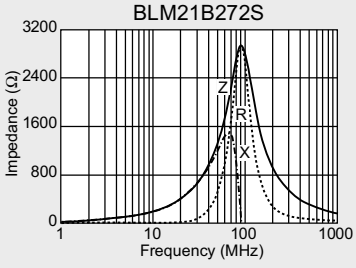
BLM21B222S



BLM21B222SD



BLM21B272S



CHIP EMIFIL®

muRata

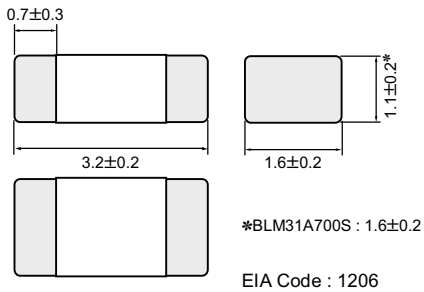
Chip Ferrite Bead Inductor **BLM31** Series

■SPECIFICATIONS

Part Number	Maximum Signal Frequency (MHz)	Rated Current (m A)	DC Resistance (Ω max.)	Operating Temp. Range (°C)
BLM31P500S	50	3000*2	0.015	−55 to +125
BLM31A260S	26	500	0.05	
BLM31A700S	70	200	0.15	
BLM31A601S	600		0.90	
BLM31B601S	600*1	200		

*1 has sharp impedance characteristic suitable for high speed lines.
*2 BLM31P series : Please derate the maximum current, as shown in previous page, for temperatures above +85°C.

■DIMENSIONS

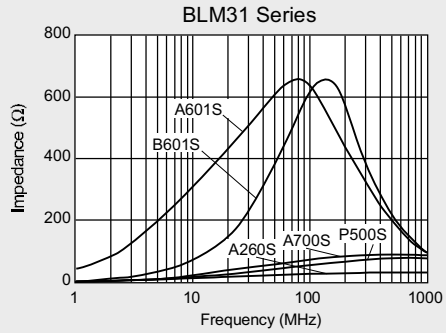


*BLM31A700S : 1.6±0.2

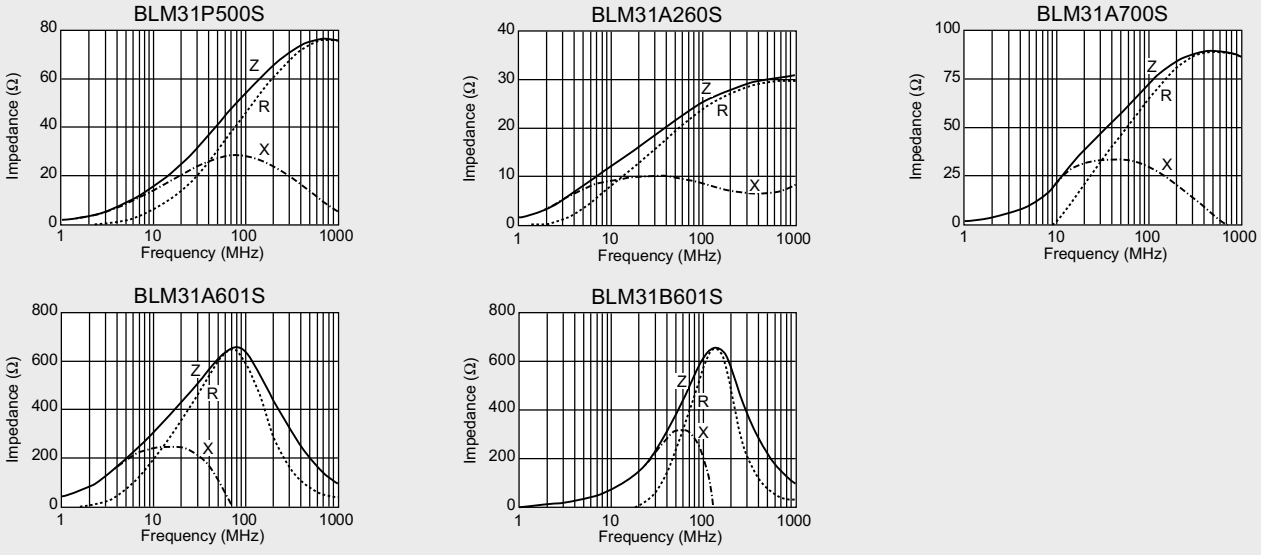
EIA Code : 1206

(in mm)

■IMPEDANCE-FREQUENCY CHARACTERISTICS (TYPICAL)



■IMPEDANCE-FREQUENCY CHARACTERISTICS (DETAILS)



CHIP EMIFIL®

muRata

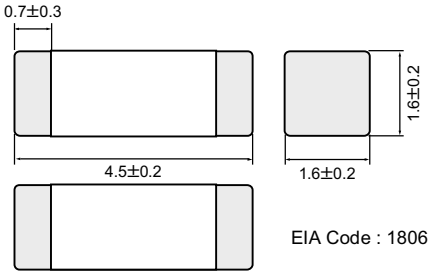
Chip Ferrite Bead Inductor **BLM41** Series

■SPECIFICATIONS

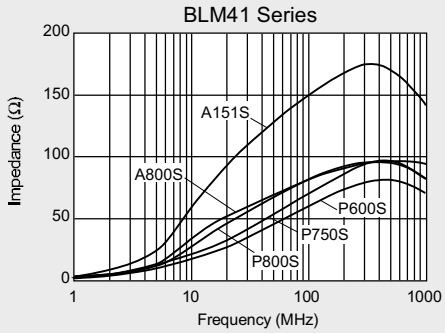
Part Number	Impedance (Ω) (Typ.) at 100MHz	Rated Current (mA)	DC Resistance (Ω max.)	Operating Temp. Range (°C)
BLM41P600S	60	6000*	0.01	−55 to +125
BLM41P750S	75	3000*	0.025	
BLM41P800S	80	1000*	0.10	
BLM41A800S	80	500		
BLM41A151S	150	200	0.50	

* BLM41P series : Please derate the maximum current, as shown in previous page, for temperatures above +85°C.

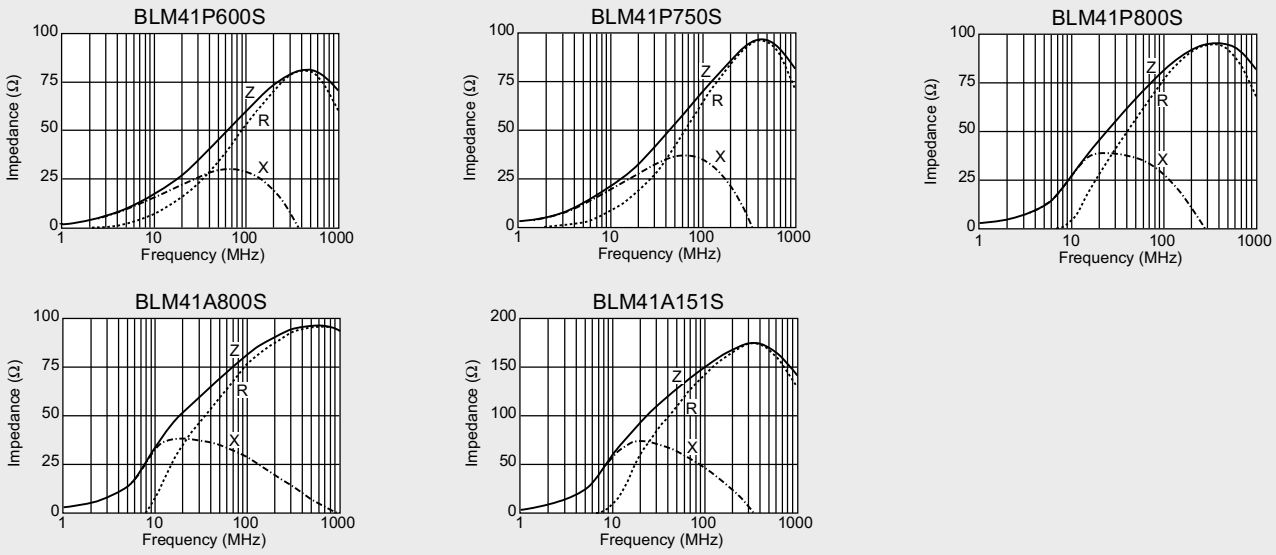
■DIMENSIONS



■IMPEDANCE-FREQUENCY CHARACTERISTICS (TYPICAL)



■IMPEDANCE-FREQUENCY CHARACTERISTICS (DETAILS)



1. Standard Land Pattern Dimensions

The capacitor type chip EMI suppression filters (NFM/NFA series) suppress noise by conducting the high-frequency noise element to ground. Therefore,to obtain maximum performance from these filters,the ground pattern should be made as large as possible during the PCB design stage.

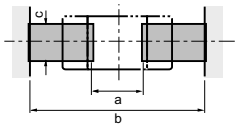
As shown below,one side of the PCB is used for chip mounting,and the other is used for grounding. Small diameter feedthrough holes are then used to connect the grounds on each side of the PCB. This reduces the high-frequency impedance of the grounding and maximizes the filter's performance.

Copper Foil Pattern Resist (in mm)

BLM10/11/21/31/41

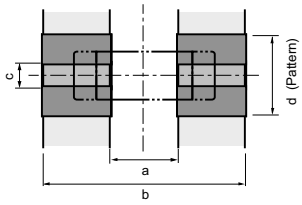
● Reflow and Flow for Mounting Alone

BLM Series
(Except 21P300S, 31P500S, 41P600S/750S)



Type	Size (mm)				
	L	W	a	b	c
BLM10	1.0	0.5	0.4	1.2—1.4	0.5
BLM11 (Flow)	1.6	0.8	0.7	2.2—2.6	0.7
BLM11 (Reflow)	1.6	0.8	0.7	1.8—2.0	0.7
BLM21	2.0	1.25	1.2	3.0—4.0	1.0
BLM31	3.2	1.6	2.0	4.2—5.2	1.2
BLM41	4.5	1.6	3.0	5.5—6.5	1.2

BLM21P300S/31P500S
BLM41P600S/750S



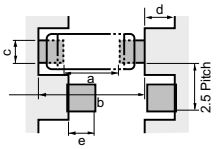
Type	Size (mm)					
	a	b	c	Land pad thickness and Dimension d		
				18 μm	35 μm	70 μm
BLM21P300S	1.2	3.0-4.0	1.0	2.4	1.2	1.00
BLM31P500S	2.0	4.2-5.2	1.2			1.20
BLM41P600S	3.0	5.5-6.5		6.4	3.3	1.65
BLM41P750S				2.4	1.2	1.20

• Please contact us if using thinner land pad than 18μm.

• Don't apply narrower pattern than listed above to BLM□□P. Narrow pattern can cause excessive heat or open circuit.

● Flow Mounting in High Density

BLM31/41

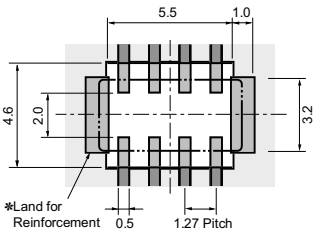


Type	Size (mm)				
	a	b	c	d	e
BLM31	2.0	4.2 to5.2	1.2	1.3	1.35
BLM41	3.0	5.5 to6.5	1.2	1.8	1.5

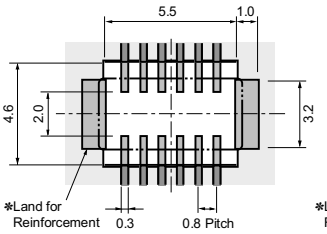
BLA41/BLA62 BLA81

● Reflow and Flow

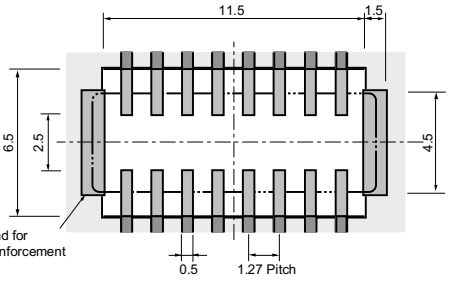
BLA41



BLA62



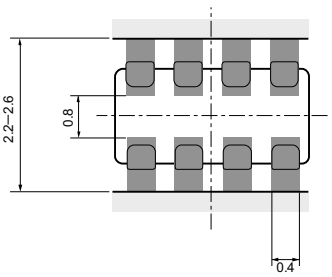
BLA81



*The land for reinforcing electrode should be electrically isolated.

BLA3216

● Reflow and Flow



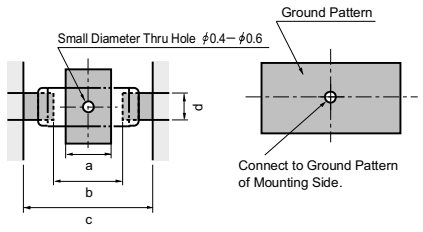
*The excessive heat by land pads may cause deterioration at joint of products with substrate.

Notice of Chip EMIFIL®/Chip Varistor

Copper Foil Pattern Resist (in mm)

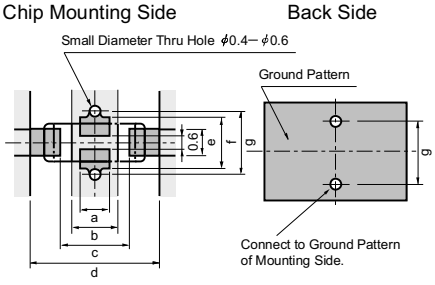
NFM39R/40R/41R NFM40P/41P NFM839R VFM41R

● Reflow Soldering



Type	Dimensions (mm)			
	a	b	c	d
NFM39R/839R	0.8	1.4	2.6	0.6
NFM40R/40P	1.4	2.5	4.4	1.0
NFM41R/41P VFM41R	2.0	3.5	6.0	1.2

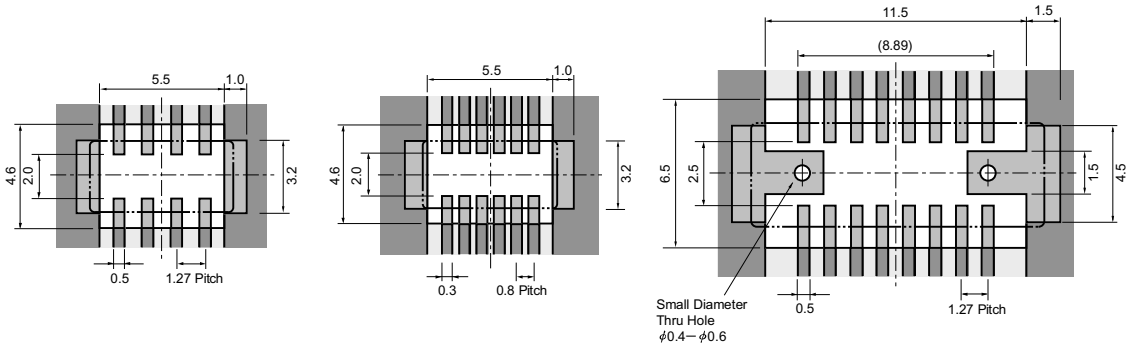
● Flow Soldering



Type	Dimensions (mm)						
	a	b	c	d	e	f	g
NFM39R/839R	0.6	0.8	1.4	2.6	0.6	1.9	2.3
NFM40R/40P	1.0	1.4	2.5	4.4	1.0	2.0	2.4
NFM41R/41P VFM41R	1.5	2.0	3.5	6.0	1.2	2.6	3.0

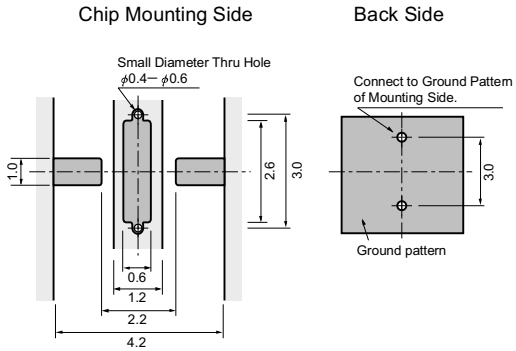
NFA41R NFA62R NFA81R

● Reflow and Flow



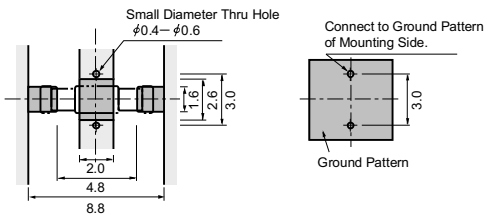
NFM51R NFM60R

● Reflow and Flow

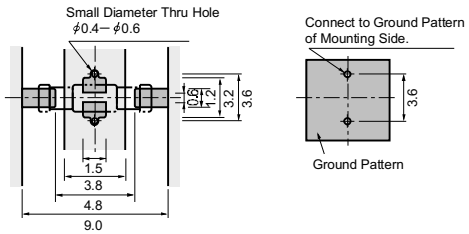


NFM61R NFM61RH

● Reflow Soldering



● Flow Soldering



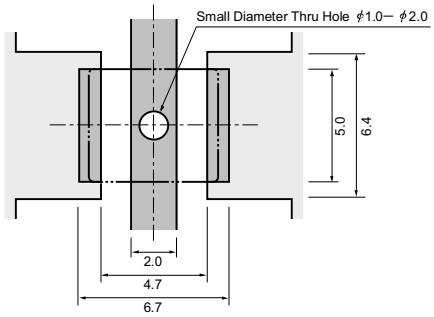
Notice of Chip EMIFIL®/Chip Varistor

Copper Foil Pattern Resist (in mm)

NFM46P

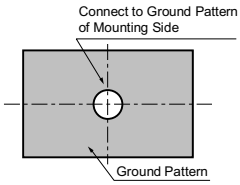
● Reflow Soldering

Chip Mounting Side



Back Side

Ground on back side should be designed to be as large as possible.

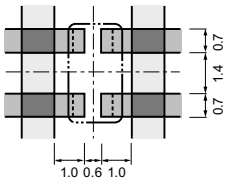


- NFM46P is specially adapted for reflow soldering.
- Please contact us if using thinner land pad than 18 μm.

PLM3216K PLM250

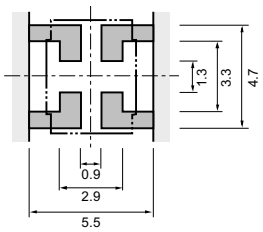
● Reflow and Flow

PLM3216K

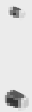


● Reflow Soldering

PLM250

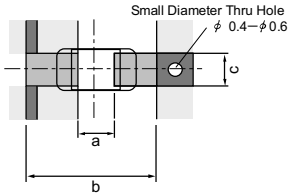


VCM11R VCM21R



● Reflow and Flow

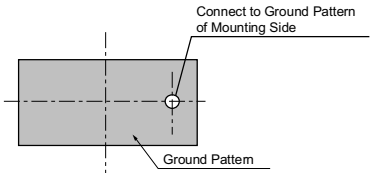
Chip Mounting Side



Type		Size (mm)		
		a	b	c
VCM11R	Flow	0.7	2.2–2.6	0.7
	Reflow	0.7	1.8–2.0	0.7
VCM21R		1.2	3.0–4.0	1.0

Back Side

Ground on back side should be designed to be as large as possible.

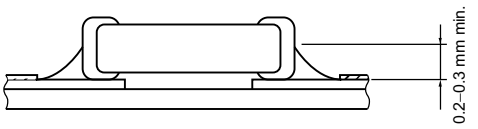
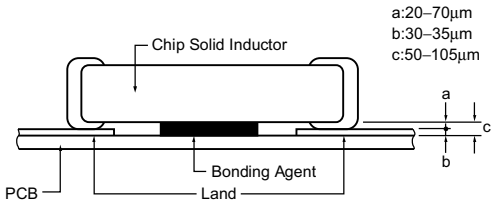
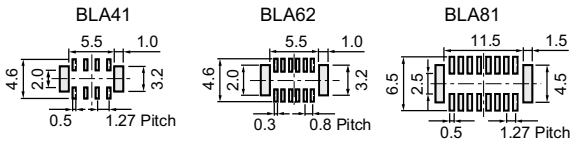
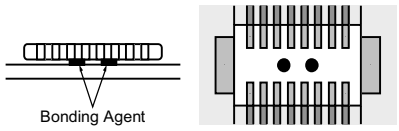
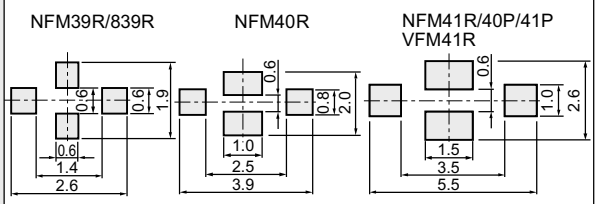
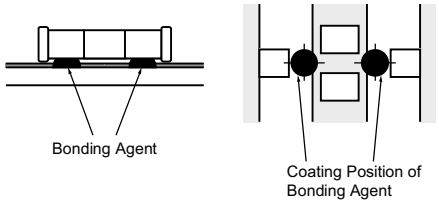
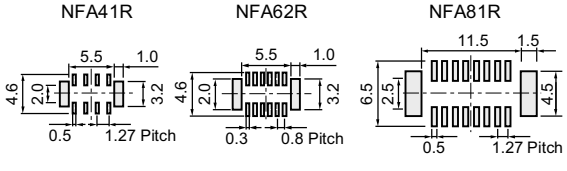
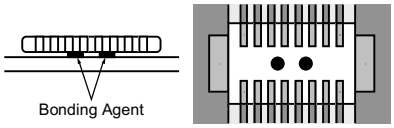


2. Solder Paste Printing and Adhesive Application

When reflow soldering the chip EMI suppression filter/Chip Varistor, the printing must be conducted in accordance with the following cream solder printing conditions.
If too much solder is applied, the chip will prone to be damaged by mechanical and thermal stress from the PCB and may crack.
In contrast, if too little solder is applied, there is the potential that the termination strength will be insufficient, creating the potential for detachment.

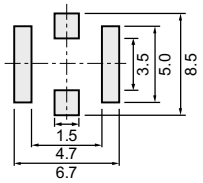
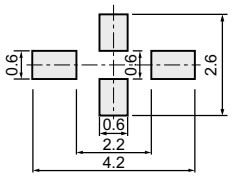
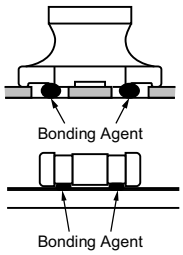
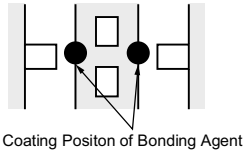
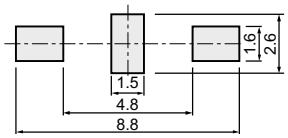
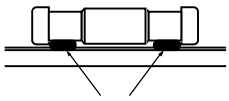
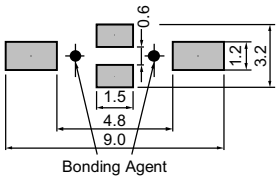
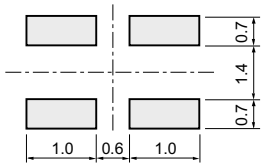
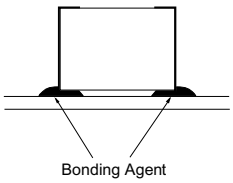
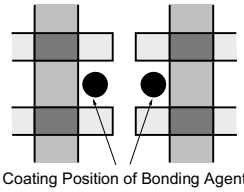
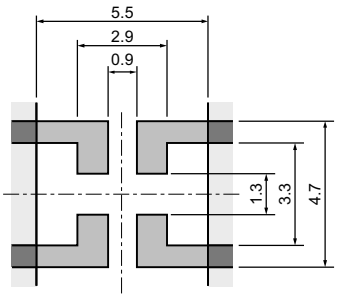
Standard land dimensions should be used for resist and copper foil patterns.
When flow soldering the EMI suppression filter/Chip Varistor, apply the adhesive in accordance with the following conditions.
If too much adhesive is applied, then it may overflow into the land or termination areas and yield poor solderability.
In contrast, if insufficient adhesive is applied, or if the adhesive is not sufficiently hardened, then the chip may become detached during flow soldering.

(in mm)

Series	Solder Paste Printing	Adhesive Application
BLM10/11/21/31/41 **BLA3216** **VCM11R/21R** 	● Ensure that solder is applied smoothly to a minimum height of 0.2mm to 0.3mm at the end surface of the part. ● Coat the solder paste a thickness of 100 μm to 200 μm. 	● Coating amount is illustrated in the following diagram. 
BLA41/62/81 	● Coat the solder paste a thickness of 100 μm to 200 μm (BLA41), 150 μm (BLA62), and 200 μm (BLA81). ● Use H60A solder for pattern printing. 	● Apply 0.5mg to 0.9mg for BLA81 and 0.25mg to 0.6mg for BLA41/62 of bonding agent at each chip, and ensure not to cover electrodes. 
NFM39R/40R/41R **NFM40P/41P** **NFM839R** **VFM41R** 	● Coat the solder paste a thickness of 100 μm to 150 μm (NFM39R/40R/839R/40P) and 100 μm to 200 μm (NFM41R/41P,VFM41R). ● Use H60A solder for pattern printing. 	● Apply 0.1mg for NFM41R/41P,VFM41R and 0.06mg for NFM40R/40P and 0.05mg for NFM39R/839R of bonding agent at each chip. 
NFA41R/62R/81R 	● Coat the solder paste a thickness of 150 μm (NFA62R/41R) and 200 μm (NFA81R). ● Use H60A solder for pattern printing. 	● Apply 0.5mg to 0.9mg for NFA81R and 0.25mg to 0.6mg for NFA62R/41R of bonding agent at each chip, and ensure not to cover electrodes. 

Notice of Chip EMIFIL®/Chip Varistor

(in mm)

Series	Solder Paste Printing	Adhesive Application
NFM46P 	● Coat the solder paste a thickness of 200 μm. ● Use H60A solder for pattern printing. 	
NFM51R **NFM60R** 	● Coat the solder paste a thickness of 200 μm (NFM51R) and 150 μm (NFM60R). ● Use H60A solder for pattern printing. 	● Apply 0.2mg of bonding agent at each chip.  
NFM61R/61RH 	● Coat the solder paste a thickness of 200 μm. ● Use H60A solder for pattern printing. 	● Apply 1.0mg of bonding agent at each chip.  
PLM3216K 	● Coat the solder paste a thickness of 150 μm. ● Use H60A solder for pattern printing. 	● Apply 0.3mg of bonding agent at each chip.  
PLM250 	● Coat the solder paste a thickness of 200 μm. ● Use H60A solder for pattern printing. 	

3. Standard Soldering Conditions

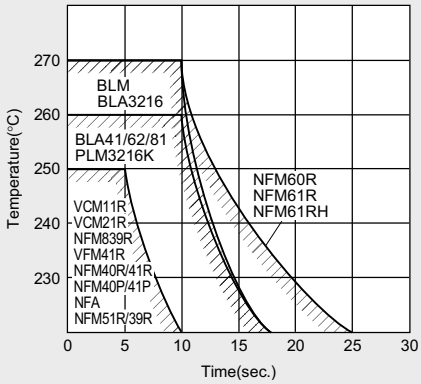
(1)Soldering Methods

Use flow and reflow soldering methods only.
Use standard soldering conditions when soldering chip EMI suppression filters, Chip Varistor.
In cases where several different parts are soldered, each having different soldering conditions, use those conditions requiring the least heat and minimum time.

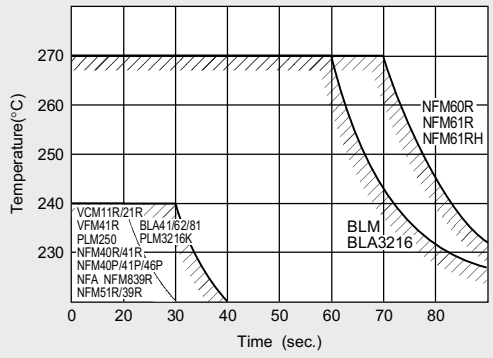
(2)Soldering Temperature and Time

To prevent external electrode solder leaching and performance deterioration, solder within the temperature and time combinations illustrated by the slanted lines in the following graphs. If soldering is repeated, please note that the allowed time is the accumulated time.

● Allowable Flow Soldering Temperature and Time



● Allowable Reflow Soldering Temperature and Time



(3)Solder and Flux

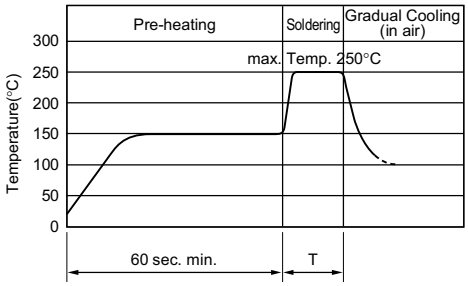
Solder : H60A solder.
Flux : Use Rosin-based flux, but not strong acidic flux (with chlorine content exceeding 0.20wt%).
When using RA type solder, clean products sufficiently to avoid remaining flux.

(4)Reworking with Soldering Iron

The following conditions must be strictly followed when using a soldering iron.
Soldering iron : 30W max.
Tip Temperature : 280˚C max.
Soldering Time : 10 seconds max.
Do not allow the tip of the soldering from to directly contact the chip.

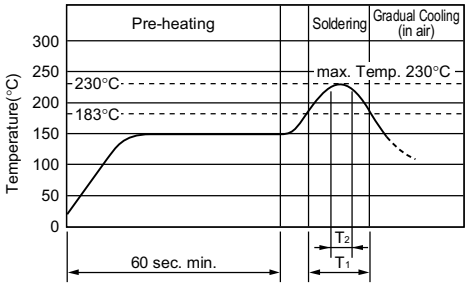
(5)Soldering Conditions

● Flow Solder



Series	Pre-heating (150˚C)	Soldering Time (T)	Soldering Temp. (˚C)
BLM,BLA3216	60sec. min.	10sec. max.	250
BLA41/62/81,NFA NFM40R/41R NFM40P/41P NFM51R/39R NFM839R NFM61R(H)/60R VFM41R PLM3216K		5sec. max.	

● Reflow Solder



Series	Pre-heating (150˚C)	Soldering Time	
		(T1) (183˚C)	(T2) (230˚C)
NFM61R(H)/60R	60sec. min.	60sec. max.	250˚C, 20sec. max.
BLM,BLA3216			20sec. max.
BLA41/62/81,NFA NFM39R/40R/41R NFM40P/41P/46P NFM51R VFM41R PLM3216K/250 VCM11R/21R NFM839R			10sec. max.

4. Cleaning

Following conditions should be observed when cleaning chip EMIFIL®.

(1) Cleaning temperature : 60˚C max. (40˚C max. for CFC alternatives and alcohol cleaning agents)

(2) Ultrasonic
Output : 20W/l max.
Duration : 5 minutes max.
Frequency : 28 to 40kHz

(3) Cleaning agent
The following list of cleaning agents have been tasted on the individual components. Evaluation of final assembly should be completed prior to production.

1. CFC alternatives and alcohol cleaning agents
   - Isopropyl alcohol (IPA)
   - HCFC-225
2. Aqueous cleaning agent (PLM250 cannot be cleaned)
   - Surface active agent (Clean Thru 750H)
   - Hydrocarbon (Techno Cleaner 335)
   - High grade alcohol (Pine Alpha ST-100S)✻

   ✻ VFM41R/VCM11R/21R series cannot be cleaned with high grade alcohol type aqueous cleaning agent.
   - Alkaline saponifier (Aqua Cleaner 240-cleaner should be diluted within 20% using deionized water.)

(4) Ensure that flux residue is completely removed.
Component should be thoroughly dried after aqueous agent has been removed with deionized water.

(5) Some products may become slightly whitened.
However, product performance or usage is not affected.
For additional cleaning methods, please contact Murata engineering.

5. Operating Environment

Do not use products in corrosive gas such as chlorine gas, acid or sulfide gas.

6. Storage and Handling Requirements

(1) Storage conditions
Storage temperature : −10 to +40˚C
Relative humidity : 30 to 70%
Avoid sudden changes in temperature and humidity.

(2) Do not store products in corrosive gas such as chlorine gas, acid or sulfide gas.

■WARNING

1. Rated Current/Rated Voltage/Operating Temperature
   - Don't use products beyond the rated current, the rated voltage and the operating temperature range, or, a fire may result due to the deterioration of the insulation resistance, excessive heat, etc.
2. Mounting Density
   - Give special attention when mounting products close to other product that radiate heat. The excessive heat by other products may cause deterioration of insulation resistance and excessive heat at this product, resulting in the fire.

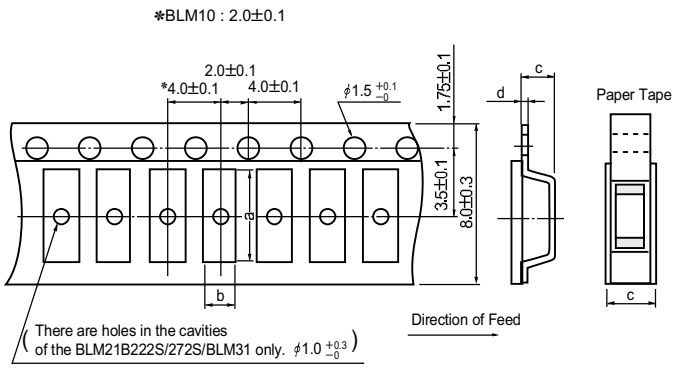
Tape Dimensions of Chip EMIFIL®/Chip Varistor (EIA-J:RC-1009B)

Missing components number

The number of missing components are less than which-ever greater, 1piece or 0.1% of specified quantity per reel.

The missing components are not continued. The specified quantity per reel are kept.

BLM10/11/21/31,BLA3216,NFM39R/839R/40R/40P/51R/60R,VCM11R/21R,PLM3216K (8mm width paper/plastic tape)

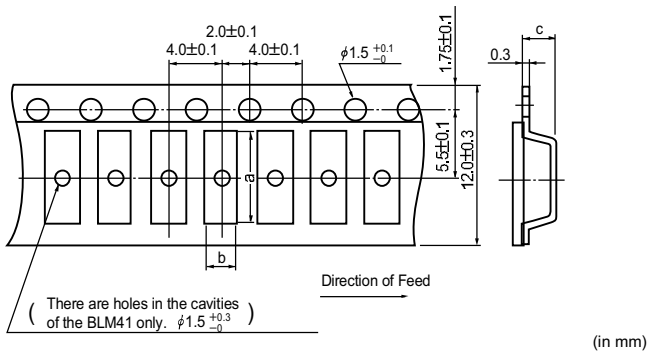


Please contact us for BLM10/11 in bulk case.

(in mm)

Part Number	Cavity Size a	b	c	d	Minimum Quantity(pcs/reel) φ180mm	φ330mm	Type
BLM10	1.15	0.65	0.8	—	10,000	—	Paper
BLM11	1.85	1.05	1.1		4,000	10,000	
BLM21 (Except B222S/B272S)	2.25	1.45	1.1		4,000	10,000	
BLA3216	3.25	1.8	1.1	—	4,000	—	
BLM21 B222S/B272S	2.25	1.45	1.3	0.2	3,000	10,000	Plastic
BLM31 (A700S)	3.5	1.9	1.3 (1.75)		3,000 (2,500)	10,000 (8,000)	
NFM39R/839R	2.3	1.55	0.7	0.25	4,000	—	
NFM40R/40P	3.4	1.4	0.85	0.2	4,000	—	
NFM51R/60R	3.6	1.9	2.0		2,000	—	
VCM11R	1.85	1.05	0.95	0.25	4,000	—	
VCM21R	2.25	1.45	1.3	0.3	3,000	—	
PLM3216K	3.5	1.9	1.3	0.25	3,000	—	

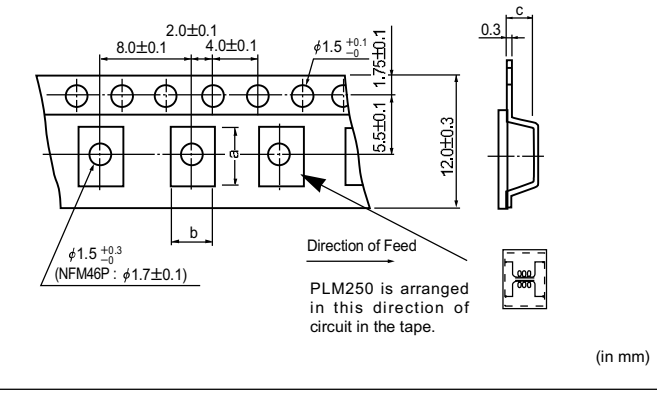
BLM41,NFM41R/41P,NFM61R/61RH,VFM41R (12mm width plastic tape)



(in mm)

Part Number	Cavity Size a	b	c	Minimum Quantity(pcs/reel) ø180mm	ø330mm
BLM41	4.8	1.9	1.75	2,500	8,000
NFM41R/41P	4.8	1.8	1.1	4,000	—
NFM61R/61RH	7.2	1.9	1.75	2,500	8,000
VFM41R	4.8	1.8	1.35	2,500	—

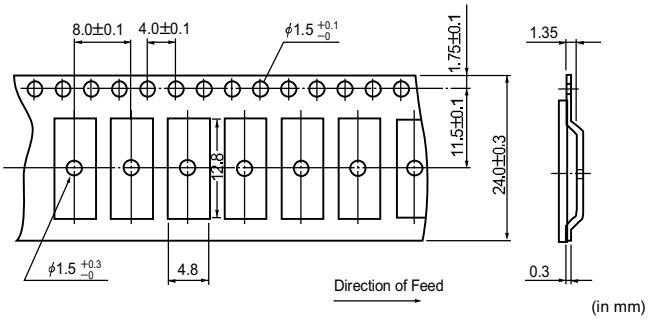
BLA62/41,NFA62R/41R,NFM46P,PLM250 (12mm width plastic tape)



(in mm)

Part Number	Cavity Size a	b	c	Minimum Quantity(pcs/reel) φ180mm	φ330mm
BLA62/41 NFA62R/41R	6.6	3.5	1.13	1,000	—
NFM46P	6.0	5.3	2.5	500	—
PLM250S (PLM250H)	5.5 (5.4)	5.4 (4.1)	4.7 (4.4)	400	1,500

BLA81/NFA81R (24mm width plastic tape)



(in mm)

Minimum Quantity (order in sets only) : 1,000pcs./reel (ø180mm)