EMI SUPPRESSION FILTERS

muRata

Block Type EMIFIL® **BNP/BNX** Series

Completely Eliminates Noise in a Wide Range of Complex Circuits from 0.5MHz to 1GHz Mountable on Any Type of P.C. Board

Murata's new block type EMIFIL® BNP/BNX series completely eliminate noise from extremely wide frequency bands. The BNX is perfect for use in DC power circuits, while the BNP is ideal for eliminating noise in logic signal circuits. Both are designed to perform superbly the result of Murata's wide expertise in the fields of through-type barrier layer capacitors, monolithic chip capacitors and bead inductors.
Each block contains a number of compact EMI suppression filters. In addition, the input/output terminals and the grounding terminal are aligned in the same direction, thus permitting fast and easy assembly on any type of P.C. board.

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BNP [for signal circuit]


BNP002-02


BNP002-03


BNP004-02

■FEATURES

1. The EMIFIL® BNP002 incorporates through-type barrier layer capacitors and π circuits, allowing it to obtain significantly large insertion losses throughout an extremely wide frequency range from 15MHz up to 1GHz.
2. The cut-off frequency is designed to be at several MHz, which is ideal for eliminating noise from any circuit in which the signal frequency and the noise frequency are relatively close together.
3. Since all noise in plural signal lines can be eliminated by one filter block, the filter is extremely compact.
4. There are no connection routes in the current circuits, thus ensuring highly reliable performance.
5. Both the input/output terminals and the grounding terminal are aligned in the same direction, permitting fast and easy installation on any type of P.C. board.

■APPLICATIONS

Noise elimination from signal lines and DC power sources in engine control units, digital equipment and computer terminals.

BNX [for DC power supply]


BNX002-01


BNX003-01


BNX005-01

■FEATURES

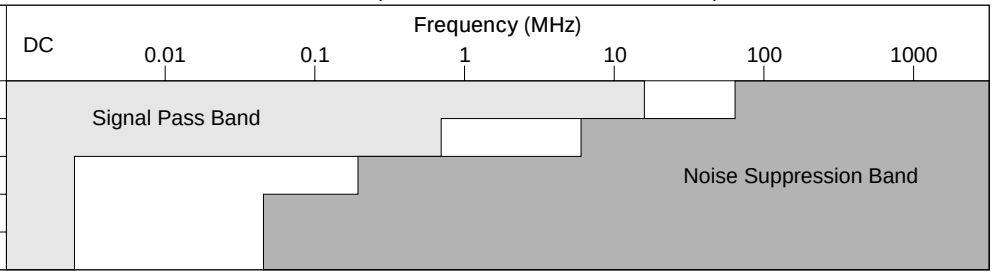
1. The EMIFIL® BNX002 incorporates a through-type barrier layer capacitor and a four-terminal capacitor which are interconnected. This combination enables the BNX002 to achieve a significantly large insertion loss throughout the extremely wide frequency range of 0.5MHz to 1GHz which covers the AM and UHF-TV broadcast frequency bands.
2. The filter is extremely compact since only one filter block is needed to completely eliminate noise from both the positive and negative lines.
3. There are no connection routes in the current circuits, thus ensuring highly reliable performance.
4. Both the input/output terminals and the grounding terminal are aligned in the same direction, permitting fast and easy installation on any type of P.C. board.
5. BNX003-01 features high dielectric constant, that is the rated voltage 150V.

■APPLICATIONS

Noise elimination from DC power sources in a variety of switching power sources, engine control units, digital equipment and computer terminals.

■EFFECTIVE FREQUENCY RANGE OF BNP/BNX SERIES (IN CASE OF LINE IMPEDANCE 50Ω)

Series	Rated voltage
BNP004	50V
BNP002	50V
BNX003	150V
BNX002	50V
BNX005	50V

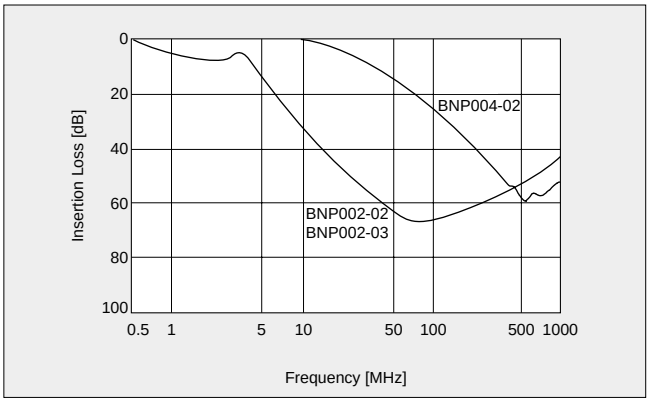


πType EMI Suppression Filter BNP Series

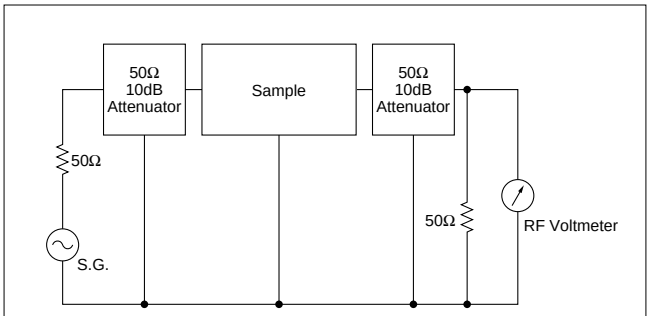
■SPECIFICATIONS

Part Number	BNP002-02	BNP002-03	BNP004-02
Number of Circuits	2	3	2
Circuit Construction	π		
Operating Temp. Range	−40 to +100℃		
Rated Voltage	50Vdc		
Withstand Voltage	300Vdc		125Vdc
Rated Current	10Adc		
Insulation Resistance	1000MΩ min.		
DC Resistance	0.05Ω max. (20 to 25℃)		
Insertion Loss	20MHz to 500MHz : 40dB min. (20 to 25℃)		300MHz to 1000MHz : 40dB min. (20 to 25℃)

■INSERTION LOSS CHARACTERISTICS



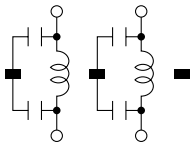
■INSERTION LOSS MEASURING CIRCUIT



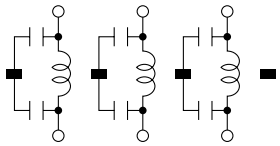
∗ Method of measurement based on MIL-STD-220.

■EQUIVALENT CIRCUIT

BNP002-02
BNP004-02



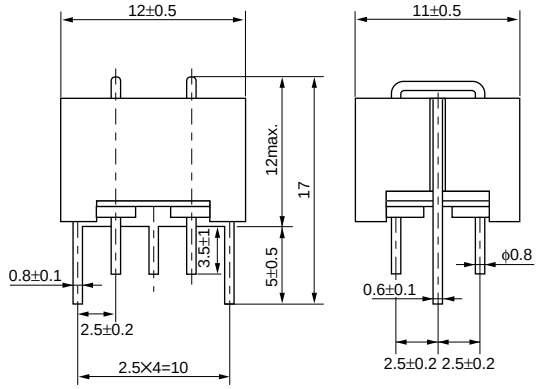
BNP002-03



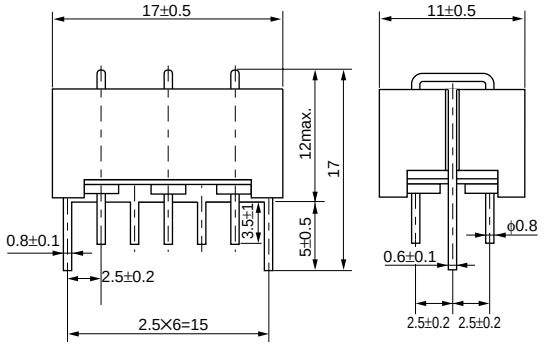
■ : Earth Terminal

■EXTERNAL DIMENSIONS

BNP002-02
BNP004-02



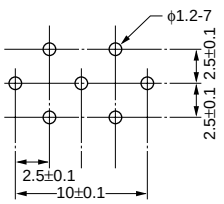
BNP002-03



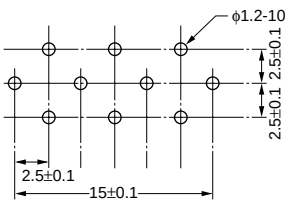
(in mm)

■DIMENSIONS OF MOUNTING HOLES

BNP002-02
BNP004-02



BNP002-03



(in mm)

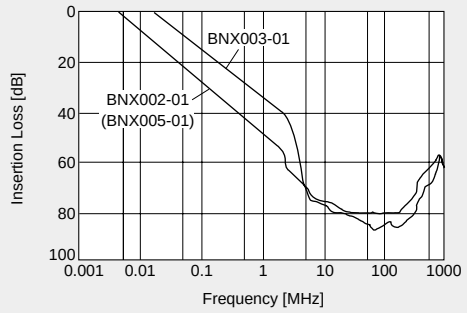
3

Wide Band Noise Suppression Filters for DC Power Line BNX Series

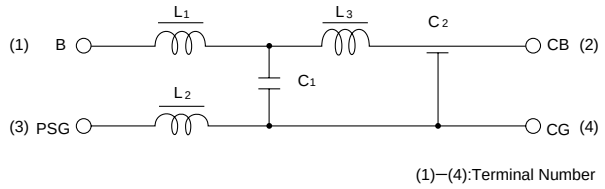
■SPECIFICATIONS

Part Number	BNX002-01	BNX003-01	BNX005-01
Operating Temp. Range	−30 to +85℃		
Rated Volt.	50Vdc	150Vdc	50Vdc
Withstand Volt.	125Vdc	375Vdc	125Vdc
Rated Current	10Adc		15Adc
Insulation Resistance	100MΩ min.		
Insertion Loss	1MHz to 1GHz : 40dB min.	5MHz to 1GHz : 40dB min.	1MHz to 1GHz : 40dB min.
	20 to 25℃ (line impedance=50Ω)		

■INSERTION LOSS CHARACTERISTICS



■EQUIVALENT CIRCUIT

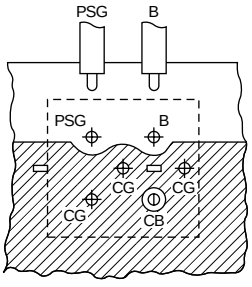


(1)−(4):Terminal Number

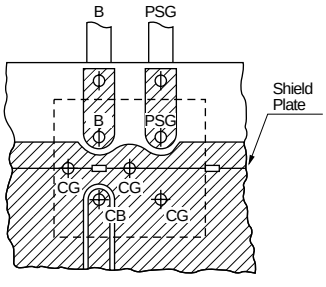
■P. C. BOARD PATTERNS

Use a bilateral P. C. board. Insert the BNX into the P. C. board until the root of the terminal is secured, then solder.

(1) FRONT VIEW

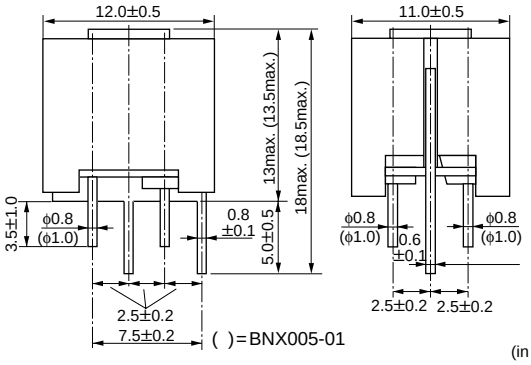


(2) BOTTOM VIEW



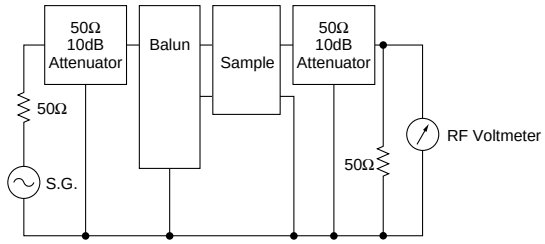
PSG : Power supply ground
CG : Load circuit ground
CB : Load circuit + Bias

■EXTERNAL DIMENSIONS



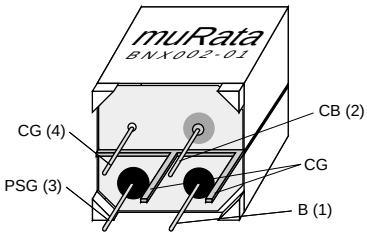
(in mm)

■INSERTION LOSS MEASURING CIRCUIT



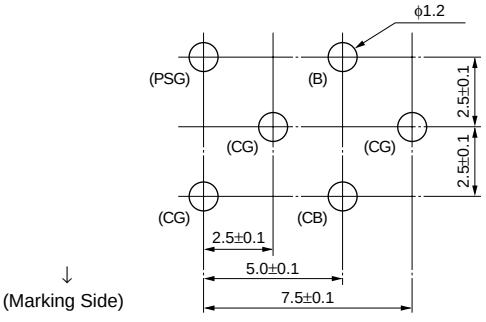
∗Method of measurement based on MIL-STD-220.

■TERMINAL LAYOUT (BOTTOM FIGURE)



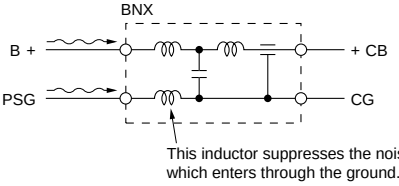
(1) - (4) Terminal Number

■DIMENSIONS OF INSTALLATION HOLES



(in mm)

■APPLICATION CIRCUIT OF BNX SERIES



Method of using the BNP and BNX filter blocks, and applications.

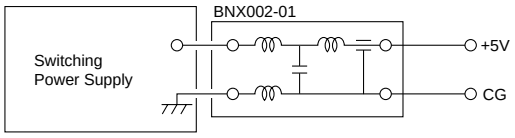
■USING EMIFIL® EFFECTIVELY

The block type EMIFIL® effectively prevents unwanted reflections and external noise from entering the equipment circuitry and power lines by grounding all the high frequency components which make up the noise.
Therefore, if grouding is improperly done, the filters may be unable to achieve the performance they are capable of. To prevent this, be sure to observe the following instructions.

1. When designing the P.C. board, use all the available grounding terminals, and arrange the grounding circuit so that the area of the foil for the grounding circuit is maximized.
2. Minimize the distance between the P.C. board ground and the filter's grounding plate. Use of through-hole P.C. boards.
3. Whichever P.C. board is used, push the filter into the P.C. board up to the terminal roots.
4. Do not connect PSG to CG by any other means except through the filter.

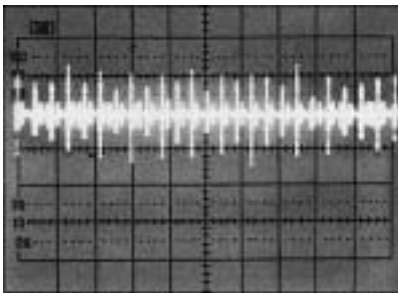
■APPLICATION 1

●Suppression of DC side ripple of the switching power supply



●When BNX002 is not used

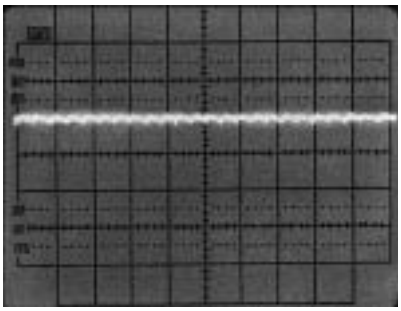
(High frequency noise, max. 0.5V, can be seen.)



+5.0V →
50µs/DIV
0.2V/DIV

●When BNX002 is used

(Noise can be almost suppressed by BNX002.)



+5.0V →
50µs/DIV
0.2V/DIV

■PART NUMBERING

(Please specify the part number when ordering.)

(Ex.) **BNP** **002** - **02**
❶ ❷ ❸

❶Type : BNP—BNP Series
: BNX—BNX Series
❷Construction : The series number shows the circuit construction or the filter characteristics.
❸Number of Circuits : Shows the number of circuits, which are constructed one product.

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