

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

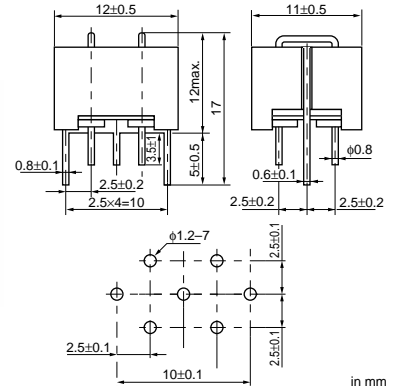


Block Type EMIFIL® BNP/BNX Series

BNP Series

■ Features

1. The "EMIFIL" BNP002 incorporates through-type barrier layer capacitors and p 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.



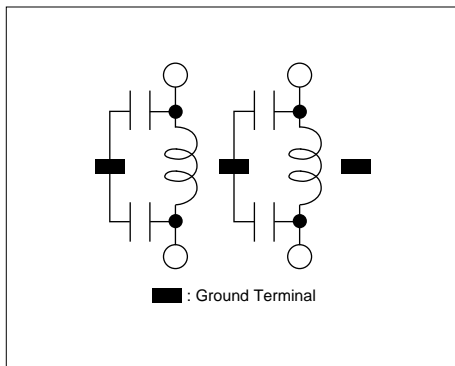
■ Applications

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

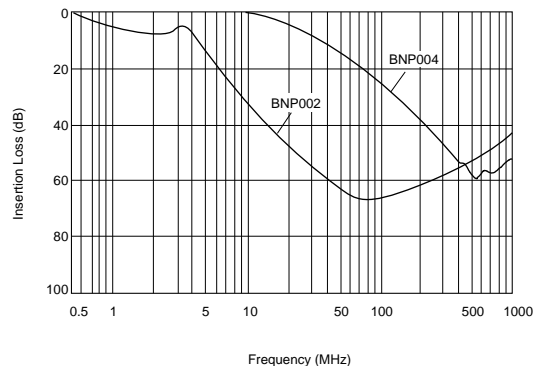
| Part Number | Rated Voltage (Vdc) | Withstand Voltage (Vdc) | Rated Current (A) | Insulation Resistance(min.) (M ohm) | DC Resistance(max.) (ohm) | Insertion Loss | Number of Circuit |
|-------------|---------------------|-------------------------|-------------------|-------------------------------------|---------------------------|---|-------------------|
| BNP002-02 | 50 | 300 | 10 | 1000 | 0.05 (20 to 25°C) | 20MHz to 500MHz:40dB min.(20 to 25°C) | 2 |
| BNP002-03 | 50 | 300 | 10 | 1000 | 0.05 (20 to 25°C) | 20MHz to 500MHz:40dB min.(20 to 25°C) | 3 |
| BNP004-02 | 50 | 125 | 10 | 1000 | 0.05 (20 to 25°C) | 300MHz to 1000MHz:40dB min.(20 to 25°C) | 2 |

Operating Temperature Range : -40°C to 100°C

■ Equivalent Circuit



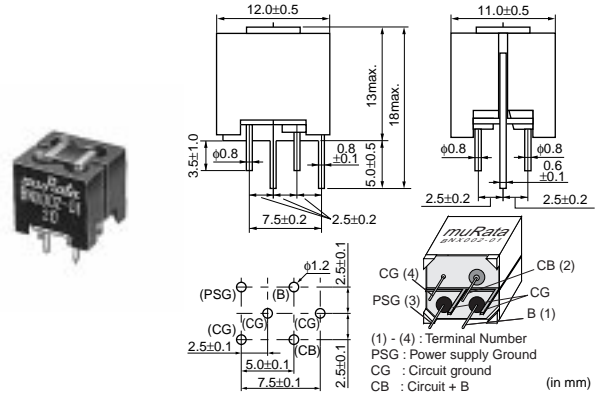
■ Insertion Loss Characteristics (Typical)



BNX Series

■ 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.



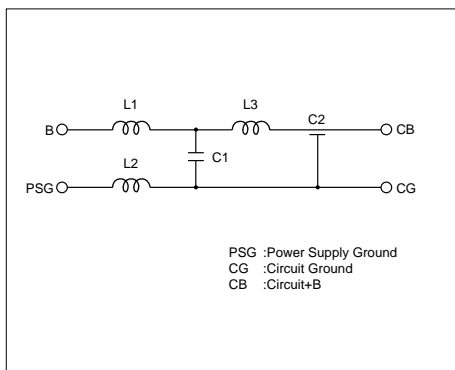
■ Application

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

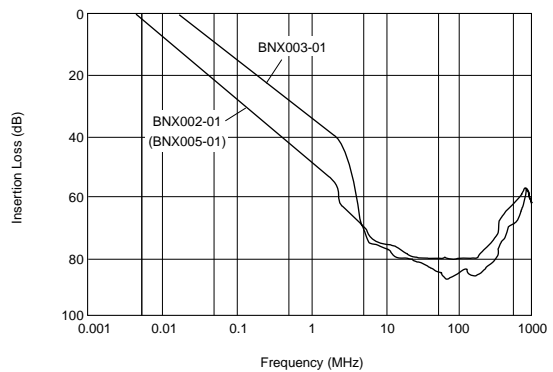
| Part Number | Rated Voltage (Vdc) | Withstand Voltage (Vdc) | Rated Current (A) | Insulation Resistance(min.) (M ohm) | Insertion Loss |
|------------------|---------------------|-------------------------|-------------------|-------------------------------------|--|
| BNX002-01 | 50 | 125 | 10 | 100 | 1MHz to 1GHz:40dB min.(20 to 25°C line impedance=50 ohm) |
| BNX003-01 | 150 | 375 | 10 | 100 | 5MHz to 1GHz:40dB min.(20 to 25°C line impedance=50 ohm) |
| BNX005-01 | 50 | 125 | 15 | 100 | 1MHz to 1GHz:40dB min.(20 to 25°C line impedance=50 ohm) |

Operating Temperature Range : -30°C to 85°C

■ Equivalent Circuit

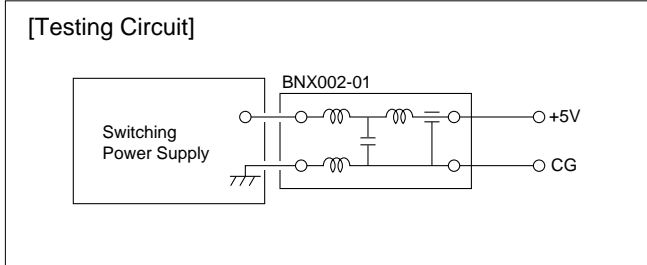


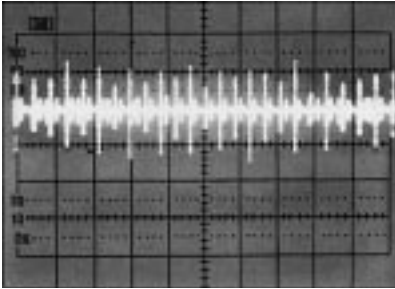
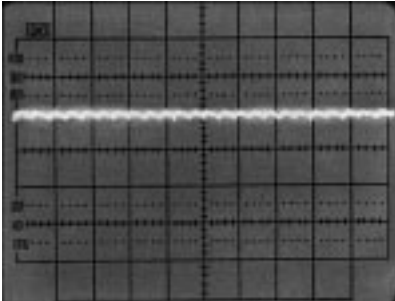
■ Insertion Loss Characteristics (Typical)



Noise Suppression Effect of BNX Series

■ Suppression of DC Side Ripple of the Switching Power Supply



| Type of Filter | EMI Suppression Effect | Description |
|--------------------------------|--|---|
| When BNX002 is not used | <p>+5.0V → 50μs/div 0.2V/div</p>  | High frequency noise, max. 0.5V, can be seen. |
| When BNX002 is used | <p>+5.0V → 50μs/div 0.2V/div</p>  | Noise can be almost suppressed by BNX002. |

Outlines of EMI Suppression Filter (EMIFIL®) for DC line

●Block Type EMIFIL®

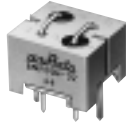
Block Type EMIFIL®P.145-146



BNP002-02



BNP002-03



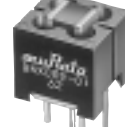
BNP004-02



BNX002-01



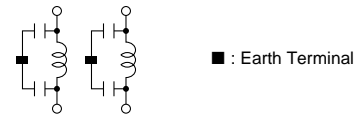
BNX003-01



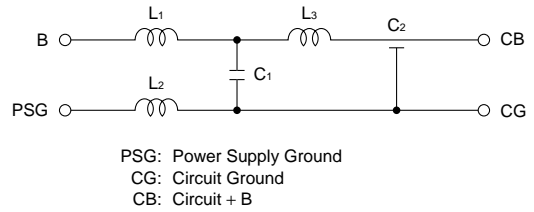
BNX005-01

- Block type EMIFIL® are resin encased, built-in, high performance EMI suppression filters, which use a feed-thru capacitor having excellent high frequency characteristics.
- Used when the noise frequency is high, or when extreme countermeasures are required.
- The BNP filter series features high performance filters, which are used to suppress noise with frequencies greater than several megahertz in signal circuits. With a current capacity of up to 10A, however, this filter can also be used in DC power circuits (available with 2 or 3 circuits per block).
- The high performance EMIFIL® BNX series exhibits significant noise suppression effects over a wide frequency band (extending from 100kHz to 1GHz) in DC power lines.

[Equivalent Circuit (BNP Series)]



[Equivalent Circuit (BNX Series)]



[Insertion Loss Characteristics(BNX Series)]

