

Block Type EMIFIL BNP Series Specification

1. Scope

This specification applies to Block Type EMIFIL .

2. Rating

Customer Part Number	Murata Part Number	Rated Voltage	Dielectric Strength	Rated Current	Insulation Resistance	DC Resistance	Inserion Loss
	BNP002-02	50 V (DC)	300 V(DC)	10 A (DC)	1000MΩ min.	0.05 Ω max.	40dB min at 20 to 500MHz
	BNP002-03						40dB min at 300 to 1000MHz
	BNP004-02		125 V(DC)				

· Operating Temperature : - 40 °C to + 100 °C

· Storage Temperature : - 40 °C to + 100 °C

3. Standard Testing Condition

<Unless otherwise specified>

Temperature : Ordinary Temp. 15 °C to 35 °C

Humidity : Ordinary Humidity 25 %(RH) to 85 %(RH)

<In case of doubt>

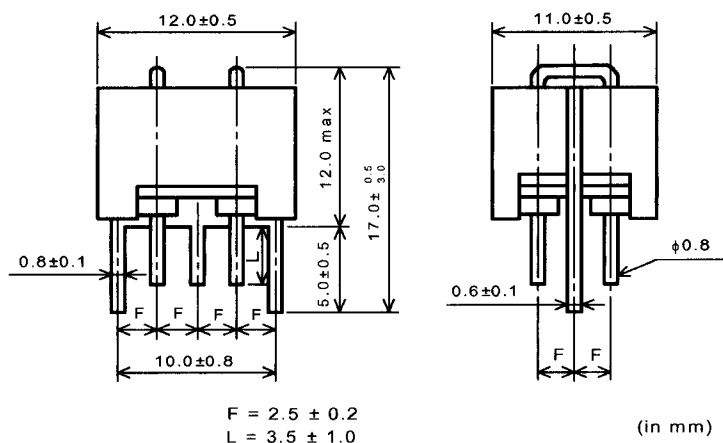
Temperature : 20 °C ± 2 °C

Humidity : 60 %(RH) to 70 %(RH)

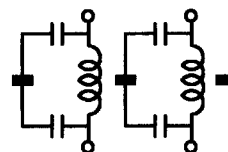
Atmospheric pressure : 86 kPa to 106 kPa

4. Style and Dimensions

BNP002-02/BNP004-02 TYPE

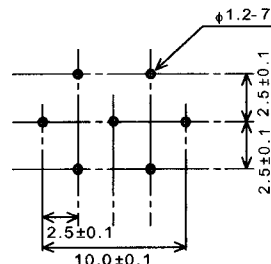


• EQUIVALENT CIRCUIT

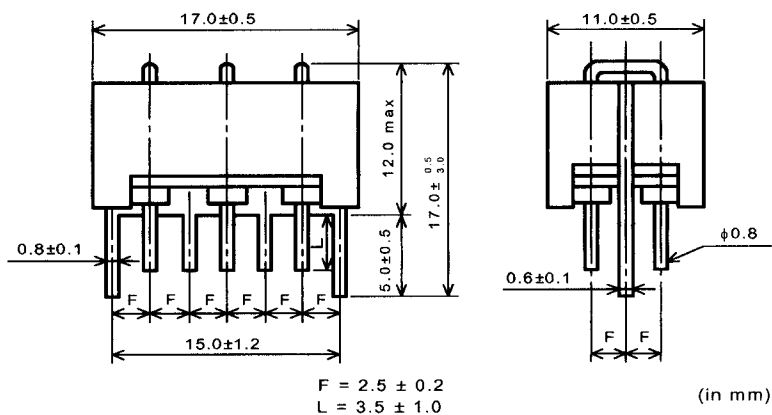


■ : Earth Terminal

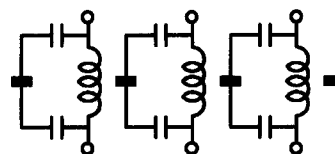
• DIMENSIONS OF MOUNTING HOLES



BNP002-03 TYPE

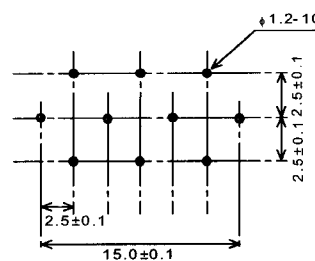


• EQUIVALENT CIRCUIT



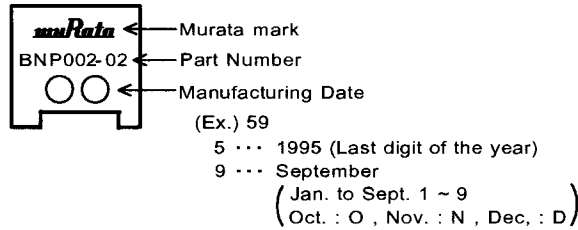
■ : Earth Terminal

• DIMENSIONS OF MOUNTING HOLES



5. Marking

Filter shall be marked as follows.



6. Electrical Performance

No.	Item	Specification	Test Method
6.1	Insulation Resistance	Meet item 2.	Measured at DC rated voltage. Time : 1 minute Suitable resistor : 1MΩ.
6.2	Dielectric Strength	Filter shall be no failure.	Test voltage specified in Rating (item 2) shall be applied between terminals. Time : 1 to 5 seconds. Charging current : 10 mA max.
6.3	DC Resistance	Meet item 2.	DC Resistance shall be measured between terminals.
6.4	Insertion Loss		<p>*Method of measurement based on MIL-STD-220</p> <p>Insertion Loss = 20 log (E₀ / E₁) E₀ : Level without FILTER (short) E₁ : Level with FILTER</p>

7. Mechanical Performance

No.	Item	Specification	Test Method								
7.1	Appearance and Dimensions	Meet item 4.	Visual Inspection and measured with Slide Calipers.								
7.2	Marking	Marking is able to be read easily.	It is inspected Visually.								
7.3	Vibration	Meet Table 1. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Appearance</th> <th>No damaged.</th> </tr> </thead> <tbody> <tr> <td>Insulation Resistance</td> <td>1000 MΩ min.</td> </tr> <tr> <td>Dielectric Strength</td> <td>No failure.</td> </tr> <tr> <td>Insertion Loss</td> <td>Meet item 2.</td> </tr> </tbody> </table>	Appearance	No damaged.	Insulation Resistance	1000 MΩ min.	Dielectric Strength	No failure.	Insertion Loss	Meet item 2.	It shall be soldered on the substrate. Acceleration : 66.7 m / s ² Range of Vibration Frequency : 66.7Hz or 33.3Hz Double Amplitude : 0.8 mm (in case of 66.7Hz) 3.0 mm (in case of 33.3Hz) Testing Time : Up and Down 4 hours Right and Left 2 hours Before and Behind 2 hours
Appearance	No damaged.										
Insulation Resistance	1000 MΩ min.										
Dielectric Strength	No failure.										
Insertion Loss	Meet item 2.										
7.4	Solderability	The lead is covered with a continuous new solder coating at least 75% along the circumference of the immersed part.	Flux : Ethanol solution of rosin, 25(wt)% Solder Temperature : 230 ± 5 °C Immersion Time : 2 ± 0.5 seconds 								

No.	Item	Specification	Test Method						
7.5	Resistance to soldering heat	Meet Table 2. <u>Table 2</u> <table border="1"> <tr> <td>Appearance</td> <td>No damaged.</td> </tr> <tr> <td>Dielectric Strength</td> <td>No failure.</td> </tr> <tr> <td>Insertion Loss</td> <td>Meet item 2.</td> </tr> </table>	Appearance	No damaged.	Dielectric Strength	No failure.	Insertion Loss	Meet item 2.	Immersion Depth : 2 to 2.5 mm from the bottom of the body Flux : Ethanol solution of rosin, 25(wt)% Solder Temperature : 350 ± 10 °C Immersion Time : $3 \pm 1_0$ seconds Then measured after exposure in the room condition for 2 to 24 hours.
Appearance	No damaged.								
Dielectric Strength	No failure.								
Insertion Loss	Meet item 2.								

8. Environmental Performance

No.	Item	Specification	Test Method														
8.1	Temperature Cycle	Meet Table 3. <u>Table 3</u> <table border="1"> <tr> <td>Appearance</td> <td colspan="2">No damaged.</td> </tr> <tr> <td rowspan="2">I.R.</td> <td>BNP002 Type</td> <td>800 MΩ min.</td> </tr> <tr> <td>BNP004 Type</td> <td>500 MΩ min.</td> </tr> <tr> <td>Dielectric Strength</td> <td colspan="2">No failure.</td> </tr> <tr> <td>Insertion Loss</td> <td colspan="2">Meet item 2.</td> </tr> </table>	Appearance	No damaged.		I.R.	BNP002 Type	800 MΩ min.	BNP004 Type	500 MΩ min.	Dielectric Strength	No failure.		Insertion Loss	Meet item 2.		1 Cycle 1 step : -40 °C \pm 0_3 °C / 30 minutes 2 step : Room Temperature / 5 within. 3 step : $+125$ °C \pm 3_0 °C / 30 minutes 4 step : Room Temperature / 5 within. Total of 10 cycle Then measured after exposure in the room condition for 2 to 24 hours.
Appearance	No damaged.																
I.R.	BNP002 Type	800 MΩ min.															
	BNP004 Type	500 MΩ min.															
Dielectric Strength	No failure.																
Insertion Loss	Meet item 2.																
8.2	Humiidity	Meet Table 4. <u>Table 4</u> <table border="1"> <tr> <td>Appearance</td> <td colspan="2">No damaged.</td> </tr> <tr> <td rowspan="2">I.R.</td> <td>BNP002 Type</td> <td>800 MΩ min.</td> </tr> <tr> <td>BNP004 Type</td> <td>500 MΩ min.</td> </tr> <tr> <td>Insertion Loss</td> <td colspan="2">Meet item 2.</td> </tr> </table>	Appearance	No damaged.		I.R.	BNP002 Type	800 MΩ min.	BNP004 Type	500 MΩ min.	Insertion Loss	Meet item 2.		Temperature : 85 ± 2 °C Humidity : 80 ~ 85 %(RH) Time : $240 \pm 1_0^2$ hours Then measured after exposure in the room condition for 2 to 24 hours.			
Appearance	No damaged.																
I.R.	BNP002 Type	800 MΩ min.															
	BNP004 Type	500 MΩ min.															
Insertion Loss	Meet item 2.																
8.3	Humidity Load	<table border="1"> <tr> <td rowspan="2">I.R.</td> <td>BNP002 Type</td> <td>800 MΩ min.</td> </tr> <tr> <td>BNP004 Type</td> <td>500 MΩ min.</td> </tr> <tr> <td>Insertion Loss</td> <td colspan="2">Meet item 2.</td> </tr> </table>	I.R.	BNP002 Type	800 MΩ min.	BNP004 Type	500 MΩ min.	Insertion Loss	Meet item 2.		Temperature : 85 ± 2 °C Humidity : 80 ~ 85 %(RH) Rated Voltage : 50 V Time : $240 \pm 1_0^2$ hours Then measured after exposure in the room condition for 2 to 24 hours.						
I.R.	BNP002 Type	800 MΩ min.															
	BNP004 Type	500 MΩ min.															
Insertion Loss	Meet item 2.																
8.4	Heat Life		Temperature : 125 ± 3 °C Voltage : Rated Voltage \times 1.5 Time : $500 \pm 2_0^4$ hours Then measured after exposure in the room condition for 2 to 24 hours.														

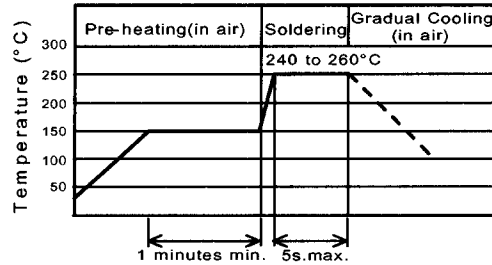
9.  Caution**Limitation of Applications**

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects which might deirectly cause damage to the third party's life,body or property.

- (1)Aircraft equipment (2)Aerospace equipment (3)Undersea equipment (4)Power plant control equipment
(5)Medical equipment (6)Transportation equipment(automobiles,trains,ships,etc.) (7)Traffic signal equipment
(8)Disaster prevention / crime prevention equipment (9)Data-processing equipment
(10)Applications of similar complexity or with reliability requirements comparable to the applications listed in the above

10. Notice**10.1. Soldering**

- (1) Use Rosin-based flux. Do not use strong acidic flux with halide content exceeding 0.2 (wt)% (chlorine conversion value).
- (2) Standard flow soldering profile.



Pre-heating	150 °C , 60 seconds min.
Solder Temperature	240 ~ 260 °C , 5 seconds within

- (3) Products and the leads should not be subjected to any mechanical stress during soldering process. (and also while subjected to the equivalent high temperature.)

10.2. Cleanig

Products shall be cleaned on the following conditions.

- (1) Cleaning temperature shall be limited to 60 °C max. (40 °C max. for fluoride and alcohol type cleaner.)
- (2) Ultrasonic cleaning shall comply with the following conditions, with avoiding the resonance phenomenon at the mounted products and P.C.B.

Power : 20 W / l max. Frequency : 28 kHz to 40 kHz Time : 5 minutes max.

(3) Cleaner**1. Cleaner**

- Isopropyl alcohol (IPA)
- HCFC-225

2. Aqueous agent

- Surface Active Agent Type (CLEANTHROUGH-750H)
- Hydrocarbon Type (TECHNOCLEANER-335)
- Higher Alcohol Type (PINE ALPHA ST-100S)
- Alkali Saponification Type (* AQUACLEANER-240)

* Alkali saponification shall be diluted to 20% volume with de-ionized water.

- (4) There shall be no residual flux and residual cleaner after cleaning.
In the case of using aqueous agent, products shall be dried completely after rinse with de-ionized water in order to remove the cleaner.
- (5) The surface of products may become dirty whitely after cleaning.
But there is no deterioration on mechanical, electrical characteristics and reliability.
- (6) Other cleaning
Please contact us.

10.3. Operating Environment

- (1) Do not use products in corrosive gases such as chlorine gas, acid or sulfide gas.
- (2) Do not use products in the environment where water, oil or organic solvents may adhere to product.

10.4. Storage condition**(1) Storage period**

Products which inspected in MURATA over 12 months ago should be examined and used, which can be confirmed with inspection No. marked on the container.

« Expression of Inspection No. » □□ 0000 xxx

(1) (2) (3)

(1) Factory Code (2) Date of outgoing inspection (3) Serial No.

First digit : Year / Last digit of year

Second digit : Month / Jan. to Sep. → 1 ~ 9

Oct. ~ Dec. → O,N,D

Third, Fourth digit : Day

(2) Storage environment condition

· Products should be storage in the warehouse on the following conditions.

Temperature : -10 °C to + 40 °C

Humidity : 30 % to 70 % relative humidity No rapid change on temperature and humidity

· Don't keep products in corrosive gases such as sulfur, chlorine gas or acid, or it may cause oxidization of electrode, resulting in poor solderability.

· Products should be stored on the palette for the prevention of the influence from humidity, dust and so on.

· Products should be stored in the warehouse without heat shock, vibration, direct sunlight and so on.

· Products should be stored under the airtight packaged condition.

(3) Delivery

Care should be taken when transporting or handling product to avoid excessive vibration or mechanical shock.

11.  Notes

- (1) Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.
- (2) All the items and parameters in this approval sheet for product specification have been prescribed on the premise that our product is used for the purpose, under the condition and in the environment agreed upon between you and us. You are requested not to use our product deviating from such agreement.
- (3) Please return one duplicate of this product specification to us with your receipt signature.
If the duplicate is not returned by two month after issued date, this product specification will be deemed to have been received by you.
- (4) We consider it not appropriate to include other terms and conditions for transaction warranty in product specifications, drawings or other technical documents. Therefore, if your original part of this product specification includes such terms and conditions as warranty clause, product liability clause, or intellectual property infringement liability clause, we will not be able to accept such terms and conditions unless they are based on the governmental regulation or they are stated in a separate contract agreement.