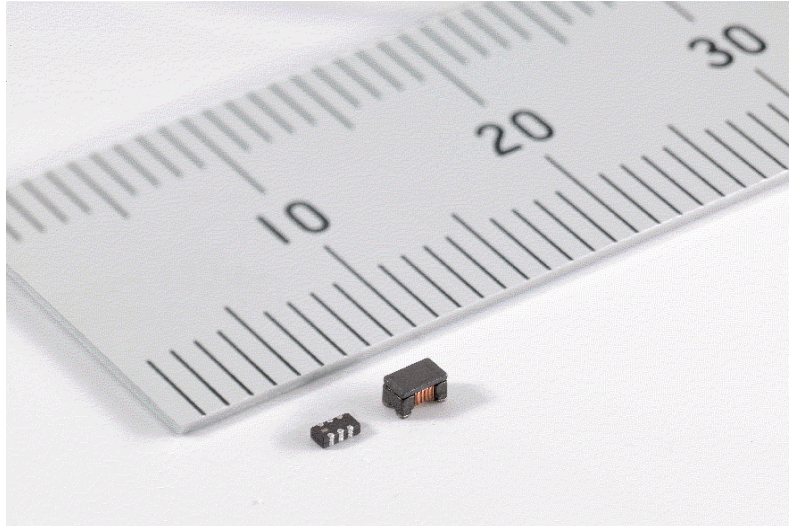


**Commercialization of Microchip Transformers
(Balun Transformers) for Digital TV Tuners
-DXW21BN, DXP18BN Series-**



[Text]

Murata Manufacturing Co., Ltd. has commercialized microchip transformers (balun transformers), which are used to convert between unbalanced-balanced signals in the antenna inputs of TV tuner circuits for terrestrial digital broadcast compatible compact mobile devices.

Up to now balun transformers for TV tuners have been made by winding wire around a spectacle-shaped ferrite core, and are widely used in large-scale devices such as TVs and desktop PCs. However, these kinds of transformers are about 5 x 5 mm in size, and therefore unsuited for usage in compact mobile devices such as mobile phones, notebook PCs, and portable gaming devices. Murata's newly developed balun transformers represent the industry's smallest microchip transformers, featuring an ultra small, ultra low-profile design achieved through optimized internal circuits, utilizing wire wound and film forming technologies developed by Murata. The wire wound type model is 2.0 x 1.2 mm (EIA Code: 0805), and the film type is 1.6 x 0.8 mm (EIA Code: 0603). Note that since the film type does not connect externally to the transformer and has a conversion rate of 1:4, it is suited to a variety of circuits.

Compared to conventional balun transformers made with wire wound around a spectacle-shaped ferrite core, the wire wound type reduces the required mounting space by approximately 75%, and height by approximately 40%, while the film type can cut mounting space by 95%, and height by 80%. Thus, these microchip transformers can contribute significantly to enabling smaller, slimmer mobile device for terrestrial digital broadcasts, which are expected to become increasingly popular.

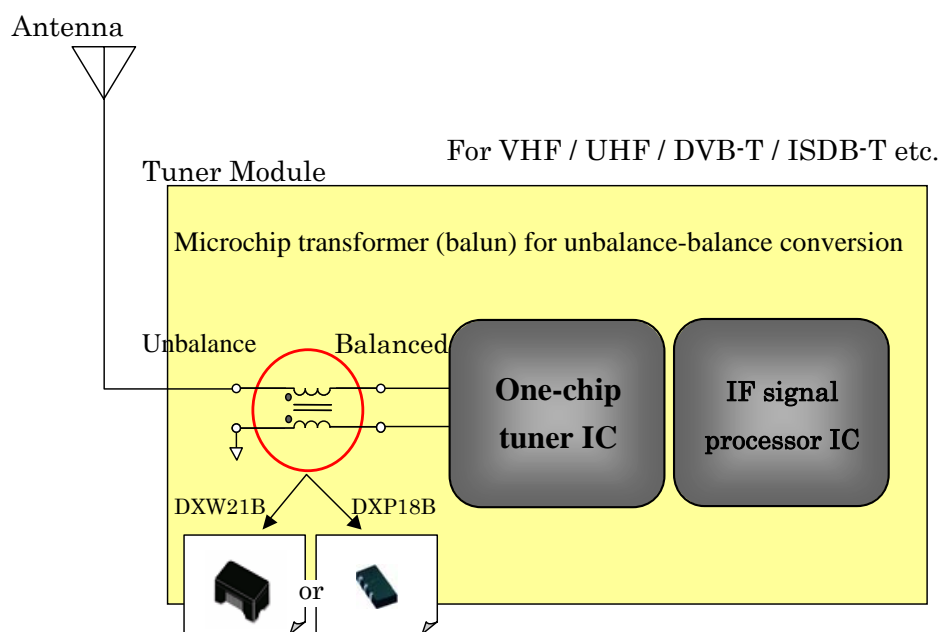
This new product line can make a major contribution to space savings in tuner block circuits as balun transformers for unbalance-balance conversion of antenna inputs, for products such as tuner ICs for terrestrial digital broadcasts. In addition, these components can also be used as balun transformers for analog TV tuner circuits.

These new products are free of all substances controlled by RoHS regulations.

Mass production of the wire wound type commenced in November 2006 at the rate of 4 million units per month, while mass production of the film type is set to commence in December 2006, at 3 million units per month. Sample price is set at 20 yen per unit for each type.

[Background]

The antenna inputs of tuner ICs use balanced input signals, but the output of the antenna is unbalanced. For this reason, balun transformers are generally used to convert unbalanced signals to balanced signals. However, due to their construction, conventional balun transformers are large—approximately 5 mm x 5 mm. Since this has presented a hindrance to enabling more compact, space-saving tuner modules, it became necessary to develop more compact balun transformers.



[Terminology]

- Balun transformer

A part that converts signals between balanced and unbalanced. It is also known as a balanced-unbalanced converter. The name “balun” is derived from the first letters of the two words, “balanced” and “unbalanced.”

- Balanced

A method of transmitting signals using two signal lines. One line carries the source signal; the other carries a signal of opposite phase (antiphase).

- Unbalanced

A method of transmitting signals using one signal line, with a ground line providing a reference potential.

[Features]

1. Greatly reduced mounting space (compared to conventional balun transformers), enabling far more compact, slimmer mobile devices to be fitted with TV tuners
2. The DXW21BN Series is a wire wound type microchip transformer of size 2.0 x 1.2 x 1.2 mm (1:1 balun)
3. The DXP18BN Series is a film type microchip transformer featuring an impedance conversion function, of size 1.6 x 0.8 x 0.45 mm (1:4 balun)
4. Low insertion loss and high output balance over a wide frequency band
5. Compatible with reflow soldering for surface mounting
6. Totally free of all RoHS-regulated substances

[Applications]

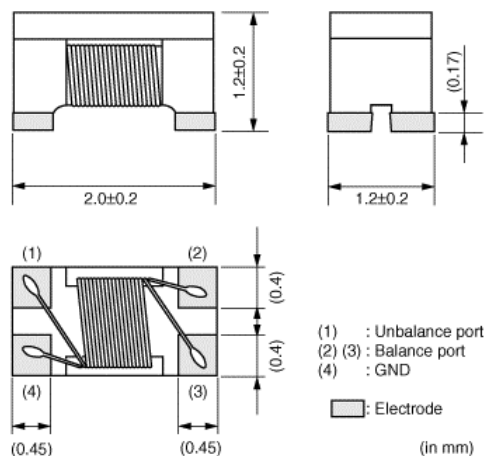
- TV Tuner, Cable Tuner which needs to convert between unbalanced-balanced signals
- Terrestrial digital broadcast tuner ICs, Tuner Module

[Parts Number]

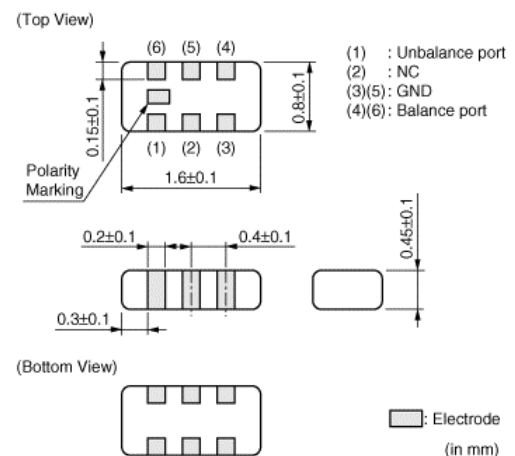
- DXW21BN Series wire wound type: DXW21BN7511T
- DXP18BN Series film type: DXP18BN5014H / DXP18BN5014T / DXP18BN7514T

[External Dimensional Diagram]

• DXW21BN wire wound type

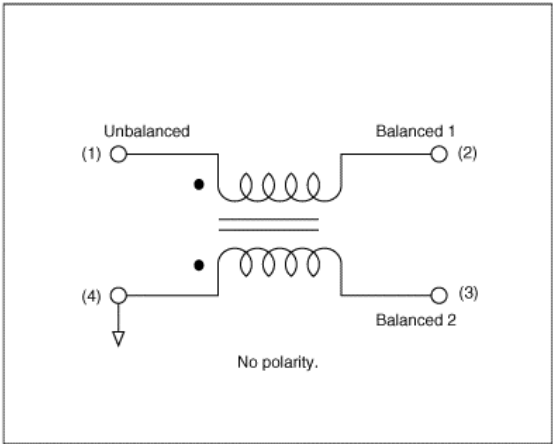


• DXP18BN film type

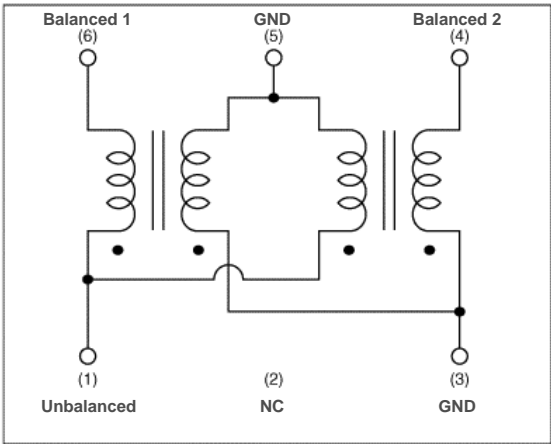


[Equivalent Circuit]

•DXW21BN wire wound type



•DXP18BN film type



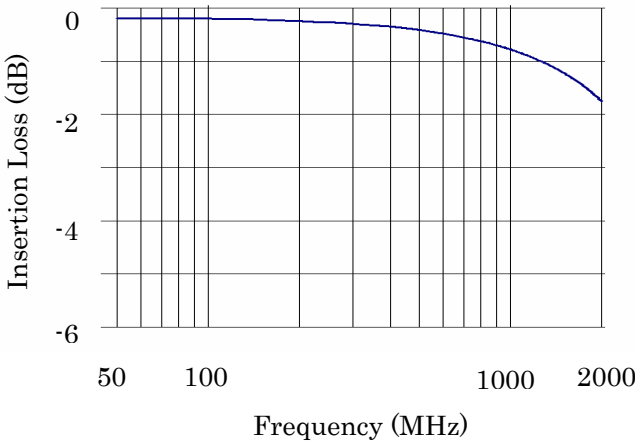
[Part Number and Specification]

Part Number	Freq.Range (MHz)	Unbalanced Impedance(ohm)	Balanced Impedance(ohm)	Insertion Loss (dB)	CMRR (dB)
DXW21BN7511T	50 to 860	75	75	1.0max	20min
DXP18BN5014H	470 to 790	50	200	1.2max	25min
DXP18BN5014T	50 to 870	50	200	1.5max	25min
DXP18BN7514T	50 to 870	75	300	1.5max	25min

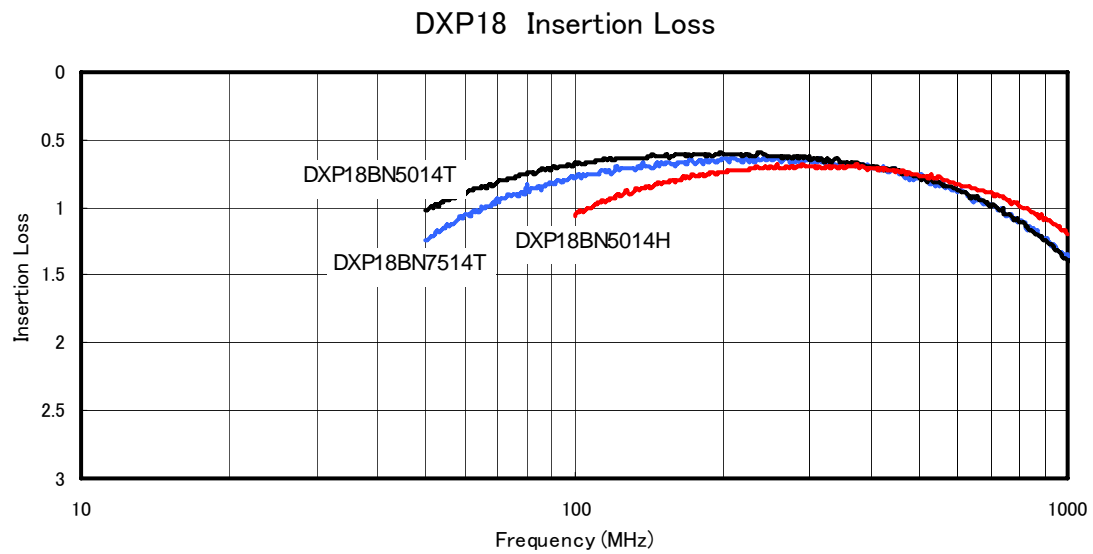
Operating Temp. Range: -40~85°C

[Characteristics]

•DXW21BN $\frac{1}{2}$ Insertion Loss Characteristics



- DXP18BN $\frac{\text{H}}{\text{L}}$ Insertion Loss Characteristics



[Sample Price]

- DXW21BN Series : 20YEN per unit
- DXP18BN Series : 20YEN per unit

[Production]

DXW21BN Series: 4 million units per month in November 2006

DXP18BN Series: 3 million units per month in December 2006

[Patents]

Three patents pending