

# Multilayer Band Pass Filters

For 2.4GHz W-LAN/Bluetooth

## DEA Series

Type:            **DEA162450BT-1241A1 (1.6×0.8×0.6mm)**  
                     **DEA162450BT-1260B2 (1.6×0.8×0.6mm)**  
                     **DEA162450BT-1262B1 (1.6×0.8×0.6mm)**  
                     **DEA162450BT-1271A3 (1.6×0.8×0.6mm)**  
                     **DEA162450BT-1247C1 (1.6×0.8×0.6mm max.)**  
                     **DEA162450BT-1247B1 (1.6×0.8×0.6mm max.)**  
                     **DEA162450BT-2092A1-H (1.6×0.8×0.6mm max.)**  
                     **DEA162450BT-2096A1-H (1.6×0.8×0.6mm max.)**  
                     **DEA162450BT-1210A1 (1.6×0.8×0.65mm max.)**

Issue date:     December 2010

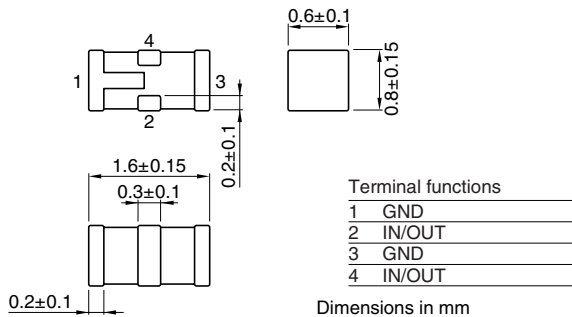
- All specifications are subject to change without notice.
  - Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.
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# Multilayer Chip Band Pass Filters For Bluetooth & 2.4GHz W-LAN

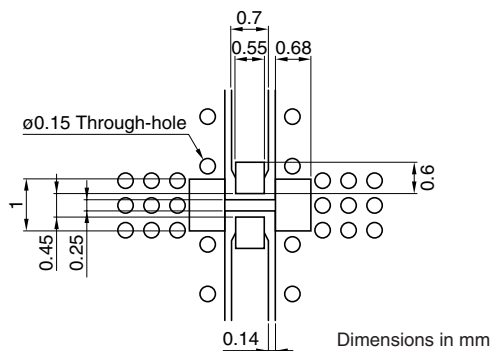
Conformity to RoHS Directive

DEA Series DEA162450BT-1241A1

## SHAPES AND DIMENSIONS



## RECOMMENDED PC BOARD PATTERNS



Line width be designed to mach 50Ω characteristic impedance depending on PCB material and thickness

## ELECTRICAL CHARACTERISTICS

| Item              |                   |      | Minimum value | Typical value | Maximum value |
|-------------------|-------------------|------|---------------|---------------|---------------|
| Insertion loss    | [2400 to 2500MHz] | (dB) | —             | —             | 2             |
| Return loss       | [2400 to 2500MHz] | (dB) | 10            | —             | —             |
| Attenuation       | [824 to 915MHz]   | (dB) | 25            | —             | —             |
|                   | [1710 to 1910MHz] | (dB) | 25            | —             | —             |
|                   | [4800 to 5000MHz] | (dB) | 20            | —             | —             |
| Temperature range | [7200 to 7500MHz] | (dB) | 25            | —             | —             |
|                   | Operating         | (°C) | -40           | —             | +85           |
|                   | Storage           | (°C) | -40           | —             | +85           |

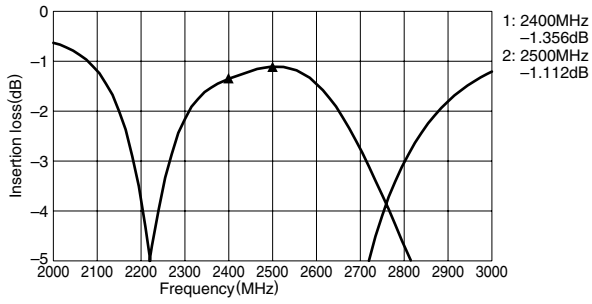
• Ta: +25°C

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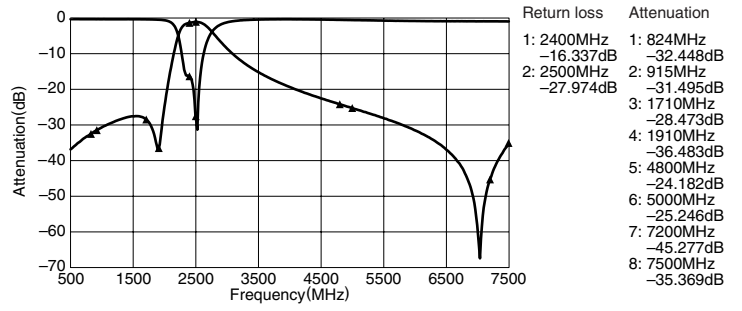
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### FREQUENCY CHARACTERISTICS

#### INSERTION LOSS



#### ATTENUATION



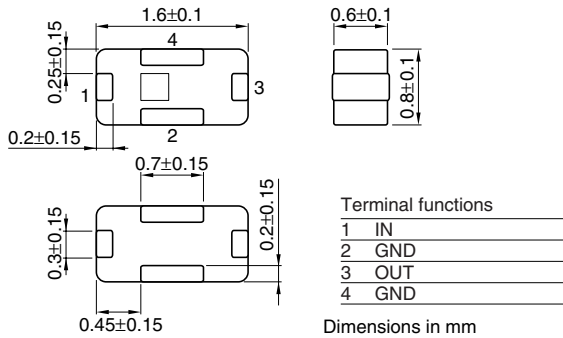
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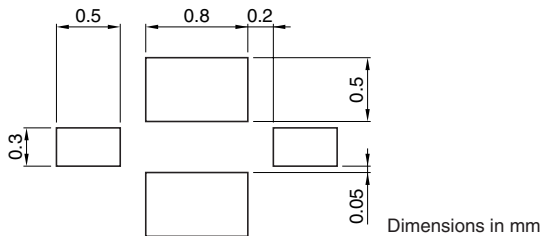
Conformity to RoHS Directive

DEA Series DEA162450BT-1260B2

## SHAPES AND DIMENSIONS



## RECOMMENDED PC BOARD PATTERNS



## ELECTRICAL CHARACTERISTICS

| Item                                |                   | Typical value  |
|-------------------------------------|-------------------|----------------|
| Frequency range(Pass band)          | 2400 to 2500MHz   | —              |
| Characteristic impedance(Pass band) | 50Ω (Nominal)     | —              |
| Insertion loss(Pass band)           | 2.2dB max.        | 1.7dB          |
| VSWR(Pass band)                     | 2.1 max.          | 1.4            |
| Attenuation                         | [960MHz]          | 25dB min. 34dB |
|                                     | [1600MHz]         | 15dB min. 27dB |
|                                     | [3200MHz]         | 22dB min. 41dB |
|                                     | [4800 to 5000MHz] | 25dB min. 31dB |
| Temperature range                   | Operating         | -40 to +85°C   |
|                                     | Storage           | -40 to +85°C   |

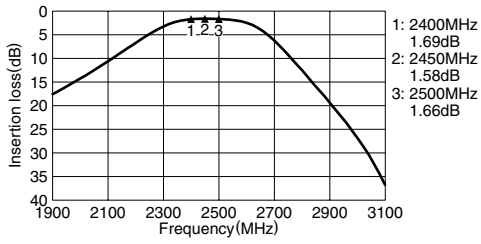
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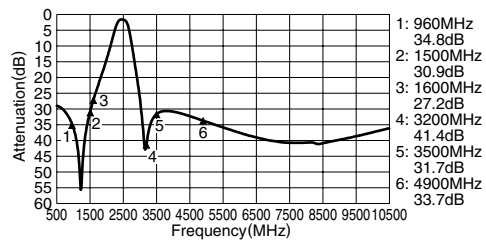
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### FREQUENCY CHARACTERISTICS

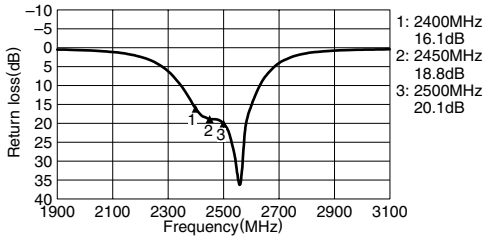
#### INSERTION LOSS



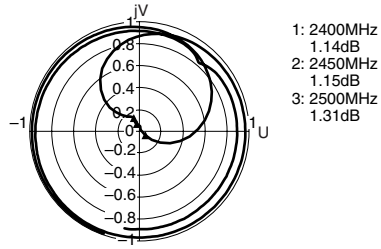
#### ATTENUATION



#### RETURN LOSS



#### VSWR



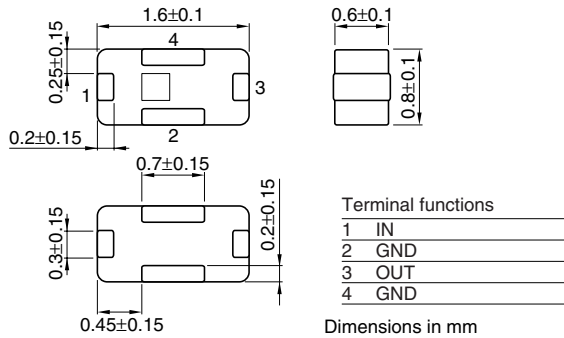
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# Multilayer Chip Band Pass Filters For Bluetooth & 2.4GHz W-LAN

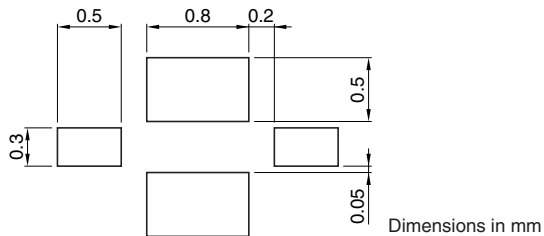
Conformity to RoHS Directive

DEA Series DEA162450BT-1262B1

## SHAPES AND DIMENSIONS



## RECOMMENDED PC BOARD PATTERNS



## ELECTRICAL CHARACTERISTICS

| Item                                |                   | Minimum value | Typical value | Maximum value |
|-------------------------------------|-------------------|---------------|---------------|---------------|
| Frequency range(Pass band)          | (MHz)             | 2400          | —             | 2500          |
| Characteristic impedance(Pass band) | ( $\Omega$ )      | —             | 50[Nominal]   | —             |
| Insertion loss(Pass band)           | [+25°C] (dB)      | —             | 1.5           | 2.4           |
| Ripple(Pass band)                   | (dB)              | —             | 0.3           | 1.5           |
| VSWR(Pass band)                     |                   | —             | 1.2           | 2.1           |
| Attenuation                         | [880 to 960MHz]   | (dB)          | 24.5          | 30            |
|                                     | [1710 to 1990MHz] | (dB)          | 20            | 27            |
|                                     | [2170MHz]         | (dB)          | 8.5           | 11            |
|                                     | [4800 to 5000MHz] | (dB)          | 15.5          | 21            |
|                                     | [7200 to 7500MHz] | (dB)          | 20            | 28            |
| Temperature range                   | Operating         | (°C)          | -40           | +85           |
|                                     | Storage           | (°C)          | -40           | +85           |

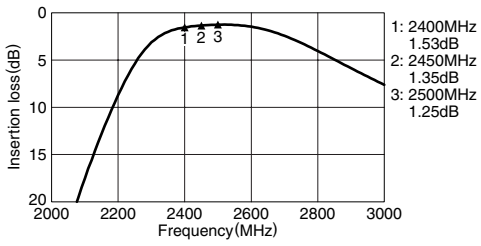
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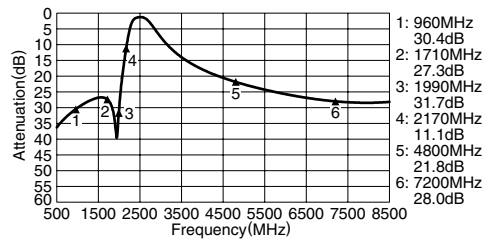
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### FREQUENCY CHARACTERISTICS

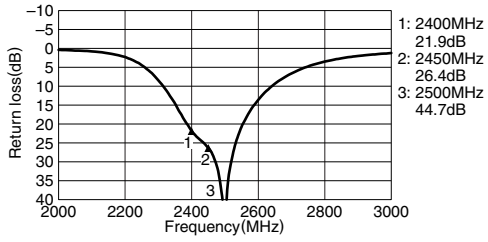
#### INSERTION LOSS



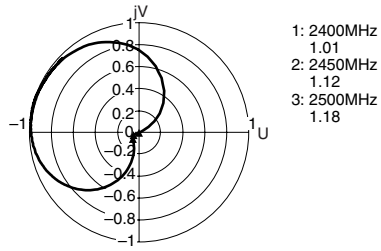
#### ATTENUATION



#### RETURN LOSS



#### VSWR

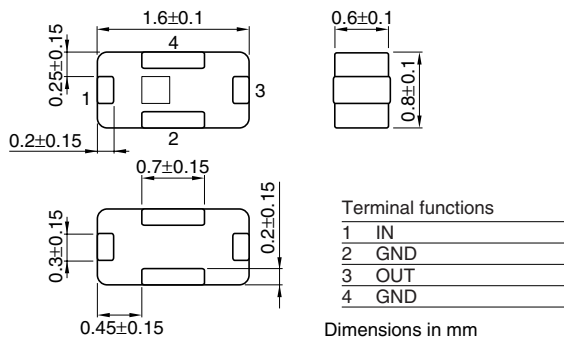


# Multilayer Chip Band Pass Filters For Bluetooth & 2.4GHz W-LAN

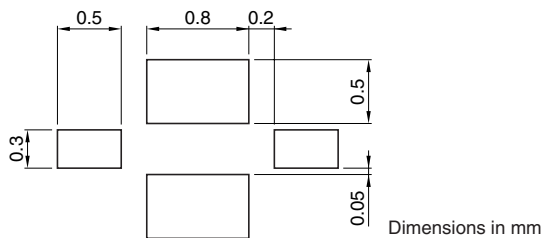
Conformity to RoHS Directive

DEA Series DEA162450BT-1271A3

## SHAPES AND DIMENSIONS



## RECOMMENDED PC BOARD PATTERNS



## ELECTRICAL CHARACTERISTICS

| Item                                |                   | Minimum value | Typical value | Maximum value |
|-------------------------------------|-------------------|---------------|---------------|---------------|
| Frequency range(Pass band)          | (MHz)             | 2400          | —             | 2500          |
| Characteristic impedance(Pass band) | ( $\Omega$ )      | —             | 50[Nominal]   | —             |
| Insertion loss(Pass band)           | [+25°C]           | (dB)          | 2.3           | 3.0           |
| Return loss(Pass band)              |                   | (dB)          | 10            | 16            |
| Attenuation                         | [695 to 800MHz]   | (dB)          | 25            | 45            |
|                                     | [1910MHz]         | (dB)          | 22            | 28            |
|                                     | [3200MHz]         | (dB)          | 35            | 46            |
|                                     | [4800 to 5000MHz] | (dB)          | 20            | 27            |
|                                     | [7200 to 7500MHz] | (dB)          | 20            | 27            |
| Temperature range                   | Operating         | (°C)          | -40           | +85           |
|                                     | Storage           | (°C)          | -40           | +85           |

• Ta:+25°C

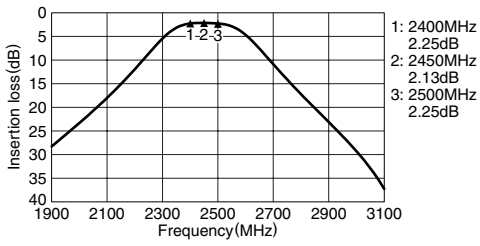
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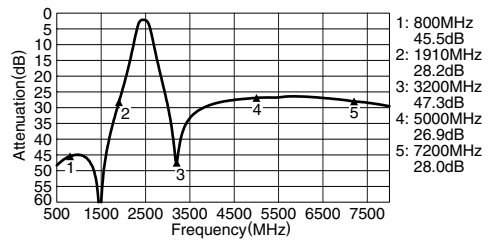


### FREQUENCY CHARACTERISTICS

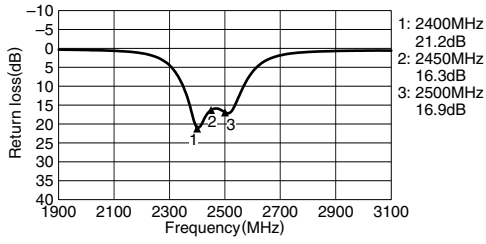
#### INSERTION LOSS



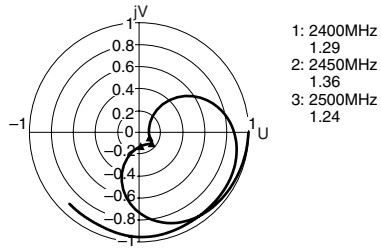
#### ATTENUATION



#### RETURN LOSS



#### VSWR

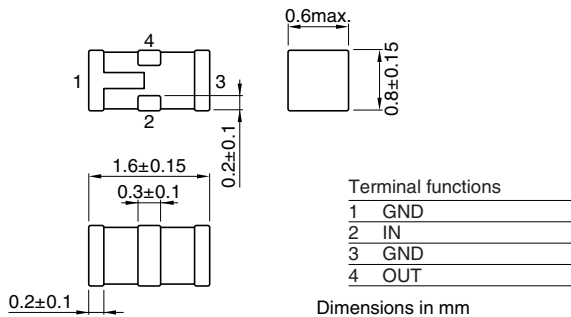


# Multilayer Chip Band Pass Filters For Bluetooth & 2.4GHz W-LAN

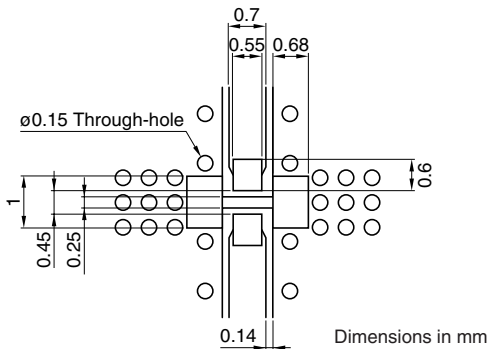
Conformity to RoHS Directive

DEA Series DEA162450BT-1247C1

## SHAPES AND DIMENSIONS



## RECOMMENDED PC BOARD PATTERNS



Line width be designed to mach 50Ω characteristic impedance depending on PCB material and thickness

## ELECTRICAL CHARACTERISTICS

| Item              |                   |      | Minimum value | Typical value | Maximum value |
|-------------------|-------------------|------|---------------|---------------|---------------|
| Insertion loss    | [2400 to 2500MHz] | (dB) | —             | —             | 2.5           |
| Return loss       | [2400 to 2500MHz] | (dB) | 8             | —             | —             |
| Attenuation       | [824 to 915MHz]   | (dB) | 25            | —             | —             |
|                   | [1710 to 1910MHz] | (dB) | 20            | —             | —             |
|                   | [4800 to 5000MHz] | (dB) | 25            | —             | —             |
|                   | [7200 to 7500MHz] | (dB) | 15            | —             | —             |
| Temperature range | Operating         | (°C) | -40           | —             | +85           |
|                   | Storage           | (°C) | -40           | —             | +85           |

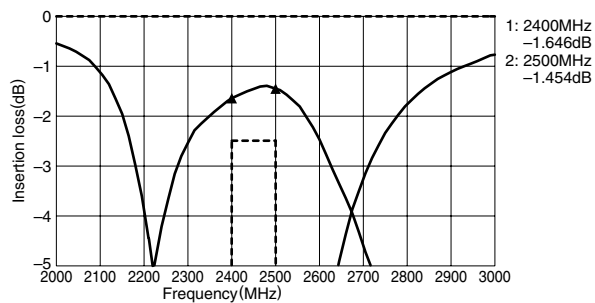
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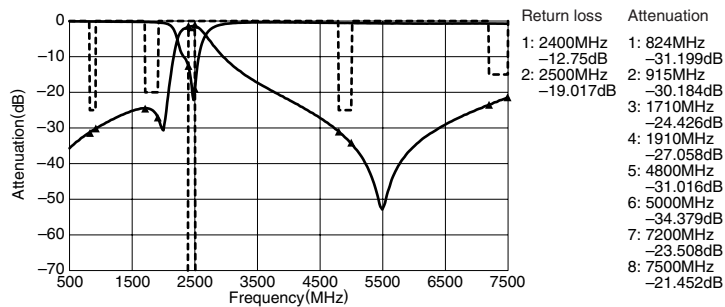
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### FREQUENCY CHARACTERISTICS

#### INSERTION LOSS



#### ATTENUATION



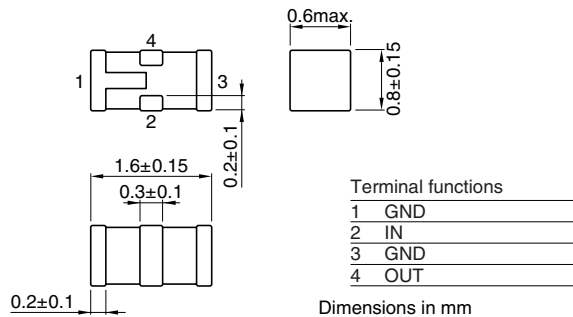
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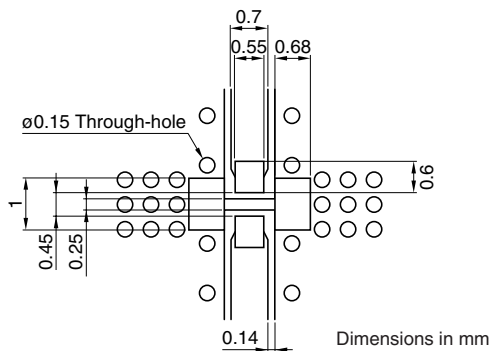
Conformity to RoHS Directive

DEA Series DEA162450BT-1247B1

## SHAPES AND DIMENSIONS



## RECOMMENDED PC BOARD PATTERNS



Line width be designed to mach 50Ω characteristic impedance depending on PCB material and thickness

## ELECTRICAL CHARACTERISTICS

| Item              |                   |      | Minimum value | Typical value | Maximum value |
|-------------------|-------------------|------|---------------|---------------|---------------|
| Insertion loss    | [2400 to 2500MHz] | (dB) | —             | —             | 2.0           |
| Return loss       | [2400 to 2500MHz] | (dB) | 10            | —             | —             |
| Attenuation       | [824 to 915MHz]   | (dB) | 25            | —             | —             |
|                   | [1710 to 1910MHz] | (dB) | 20            | —             | —             |
|                   | [4800 to 5000MHz] | (dB) | 20            | —             | —             |
|                   | [7200 to 7500MHz] | (dB) | 30            | —             | —             |
| Temperature range | Operating         | (°C) | -40           | —             | +85           |
|                   | Storage           | (°C) | -40           | —             | +85           |

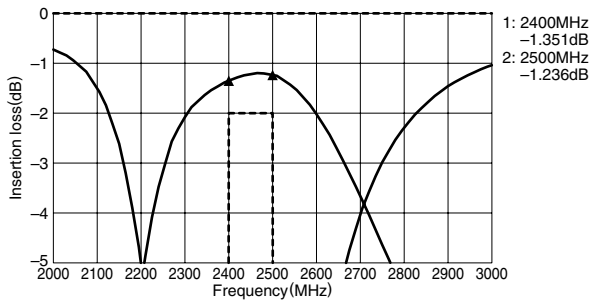
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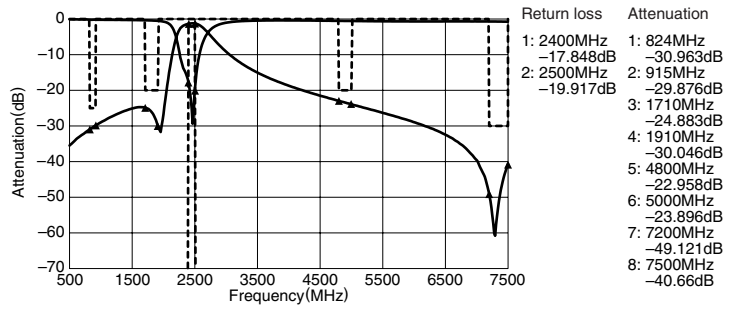
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### FREQUENCY CHARACTERISTICS

#### INSERTION LOSS



#### ATTENUATION



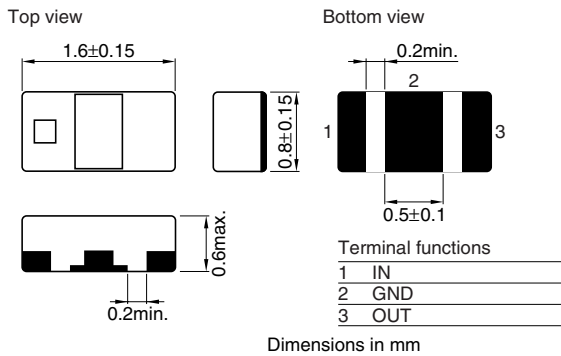
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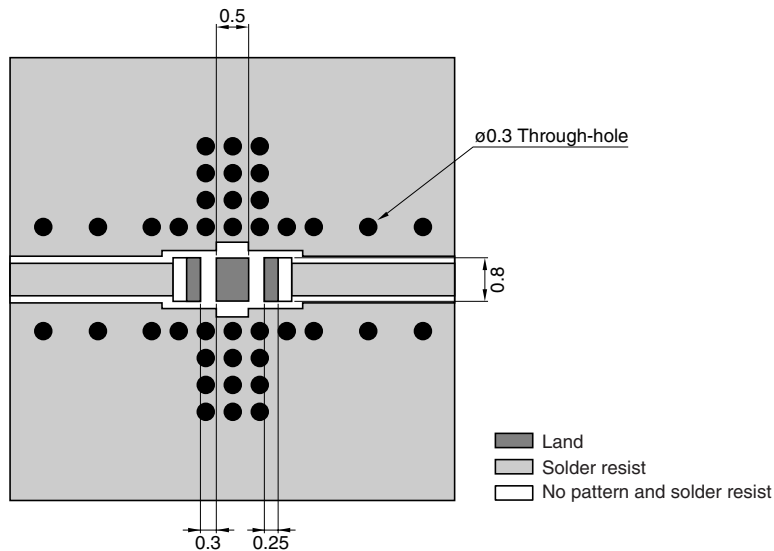
Conformity to RoHS Directive

DEA Series DEA162450BT-2092A1-H

## SHAPES AND DIMENSIONS



## RECOMMENDED PC BOARD PATTERNS



Line width be designed to mach  $50\Omega$  characteristic impedance depending on PCB material and thickness

Dimensions in mm

## ELECTRICAL CHARACTERISTICS

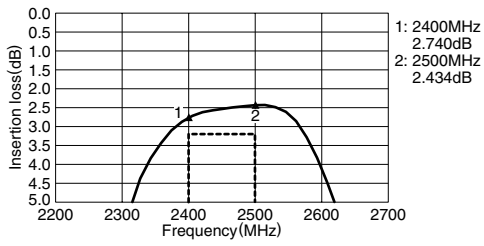
| Item                       |                   |                 |
|----------------------------|-------------------|-----------------|
| Frequency range(Pass band) |                   | 2400 to 2500MHz |
| Insertion loss             | [+25°C]           | 3.2dB max.      |
|                            | [-40 to +85°C]    | 3.5dB max.      |
| Return loss                | [2400 to 2500MHz] | 10dB min.       |
|                            | [880 to 915MHz]   | 40dB min.       |
|                            | [1710 to 1850MHz] | 40dB min.       |
|                            | [1850 to 1910MHz] | 40dB min.       |
|                            | [1920 to 1990MHz] | 40dB min.       |
|                            | [2110 to 2170MHz] | 35dB min.       |
| Attenuation                | [4800 to 5000MHz] | 30dB min.       |
|                            | [7200 to 7500MHz] | 30dB min.       |
|                            | Operating         | -40 to +85°C    |
| Temperature range          | Storage           | -40 to +85°C    |

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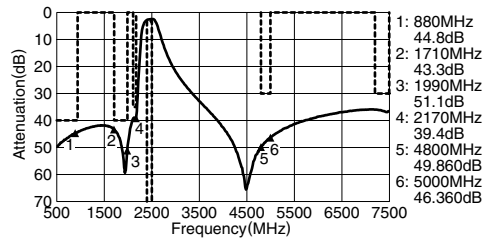
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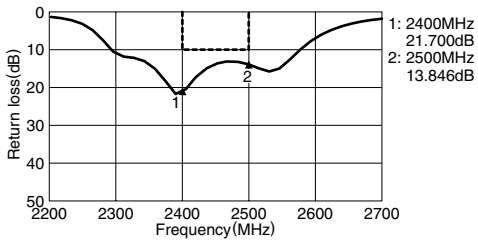
#### INSERTION LOSS



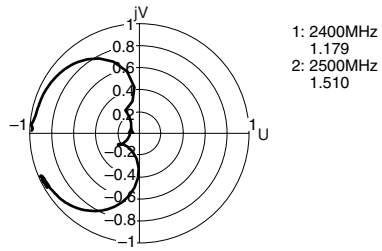
#### ATTENUATION



#### RETURN LOSS



#### VSWR

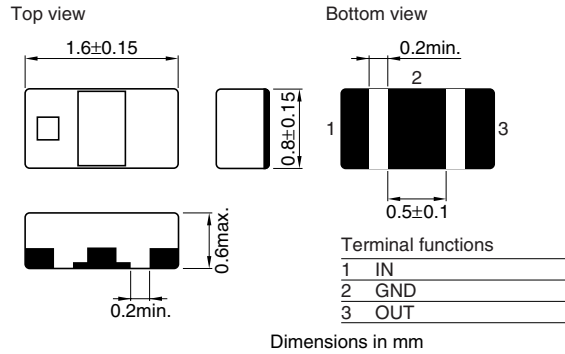


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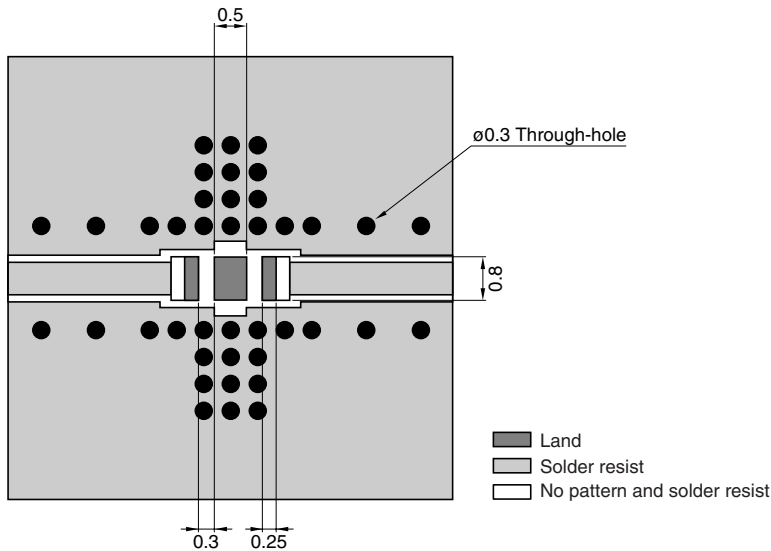
Conformity to RoHS Directive

DEA Series DEA162450BT-2096A1-H

## SHAPES AND DIMENSIONS



## RECOMMENDED PC BOARD PATTERNS



Line width be designed to mach 50Ω characteristic impedance depending on PCB material and thickness

## ELECTRICAL CHARACTERISTICS

| Item                       |                   |                 |
|----------------------------|-------------------|-----------------|
| Frequency range(Pass band) |                   | 2400 to 2500MHz |
| Insertion loss             | [+25°C]           | 2.5dB max.      |
|                            | [-40 to +85°C]    | 2.8dB max.      |
| Return loss                | [2400 to 2500MHz] | 10dB min.       |
|                            | [880 to 915MHz]   | 40dB min.       |
|                            | [1710 to 1850MHz] | 40dB min.       |
|                            | [1850 to 1910MHz] | 40dB min.       |
|                            | [1920 to 1990MHz] | 40dB min.       |
|                            | [2110 to 2170MHz] | 25dB min.       |
| Attenuation                | [4800 to 5000MHz] | 30dB min.       |
|                            | [7200 to 7500MHz] | 20dB min.       |
| Temperature range          | Operating         | -40 to +85°C    |
|                            | Storage           | -40 to +85°C    |

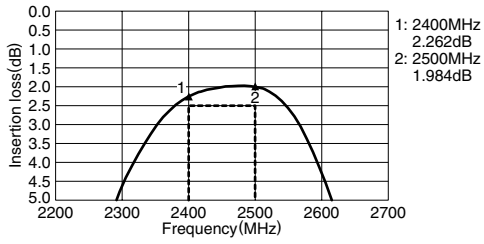
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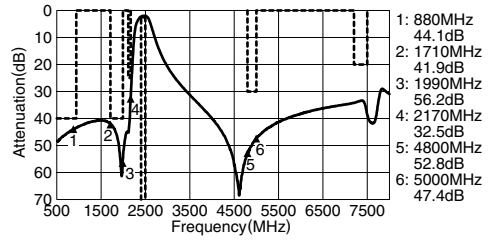


### FREQUENCY CHARACTERISTICS

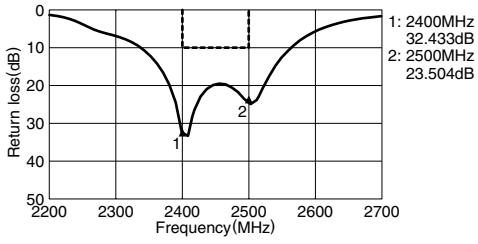
#### INSERTION LOSS



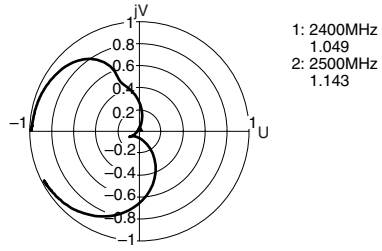
#### ATTENUATION



#### RETURN LOSS



#### VSWR



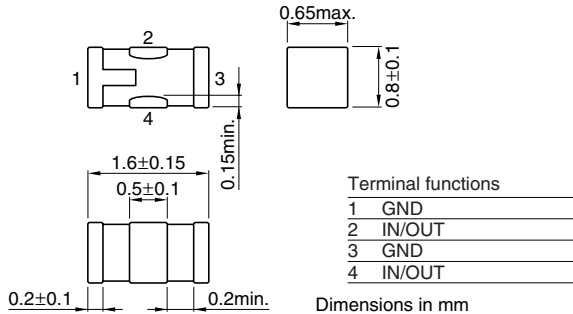
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# Multilayer Chip Band Pass Filters For Bluetooth & 2.4GHz W-LAN

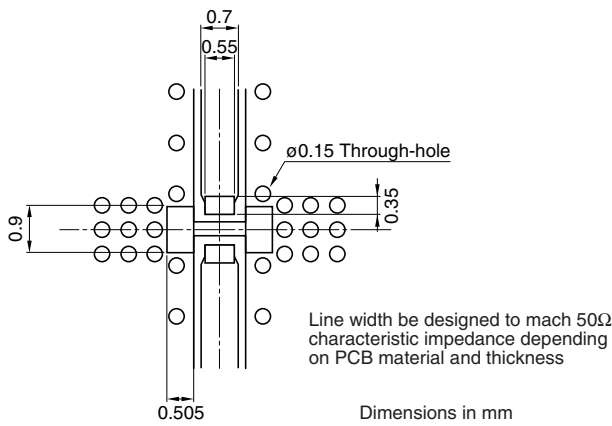
Conformity to RoHS Directive

DEA Series DEA162450BT-1210A1

## SHAPES AND DIMENSIONS



## RECOMMENDED PC BOARD PATTERNS

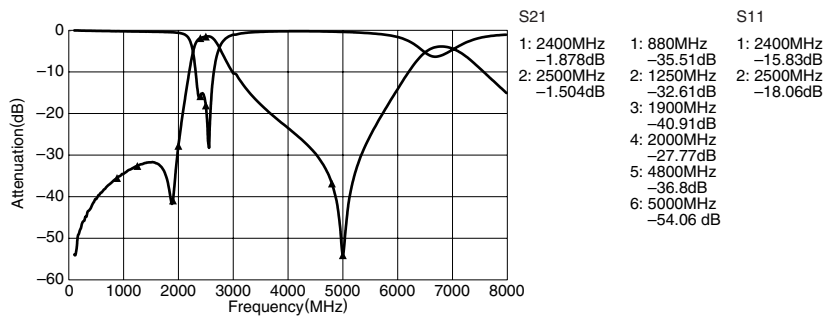


## ELECTRICAL CHARACTERISTICS

| Item             |                   |                   | Minimum value | Typical value | Maximum value |
|------------------|-------------------|-------------------|---------------|---------------|---------------|
| Center frequency |                   | [2450MHz]         |               |               |               |
| Insertion loss   | [25°C]            | [2400 to 2500MHz] | (dB)          | —             | 3.0           |
|                  | [-40 to +85°C]    | [2400 to 2500MHz] | (dB)          | —             | 3.3           |
| Return loss      |                   | [2400 to 2500MHz] | (dB)          | 7             | —             |
|                  |                   | [880 to 915MHz]   | (dB)          | 32            | —             |
| Attenuation      |                   | [915 to 1250MHz]  | (dB)          | 30            | —             |
|                  |                   | [1710 to 1900MHz] | (dB)          | 30            | —             |
|                  |                   | [1900 to 2000MHz] | (dB)          | 20            | 24            |
|                  |                   | [4800 to 5000MHz] | (dB)          | 25            | —             |
|                  | Temperature range | Operating         | (°C)          | -40           | —             |
| Storage          |                   | (°C)              | -40           | —             | +85           |

• Ta: +25°C

## FREQUENCY CHARACTERISTICS



• Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

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