

# Multilayer Balun Transformers

For 2.4GHz W-LAN/Bluetooth

## HHM Series

Type:            **HHM1517 (2.0×1.25×0.95mm)**  
                     **HHM1520 (2.0×1.25×0.95mm)**  
                     **HHM1521 (2.0×1.25×0.95mm)**  
                     **HHM1541E1 (2.0×1.25×0.95mm)**

Issue date:     December 2010

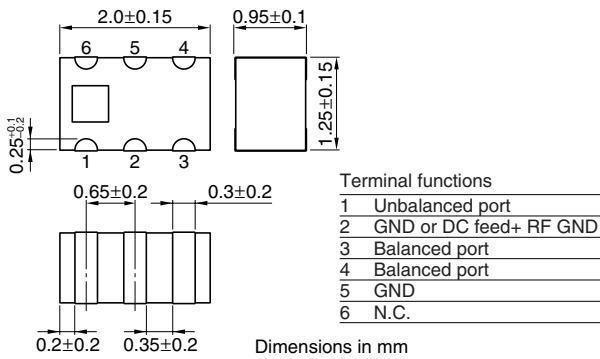
- All specifications are subject to change without notice.
  - Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.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

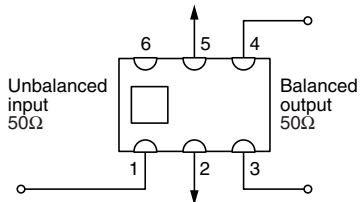
Conformity to RoHS Directive

HHM Series HHM1517

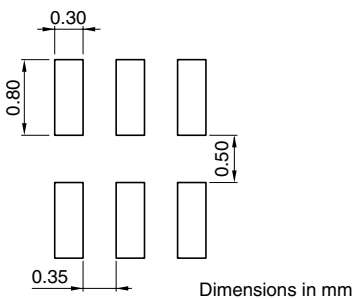
## SHAPES AND DIMENSIONS



## CIRCUIT DIAGRAM



## RECOMMENDED PC BOARD PATTERNS



## ELECTRICAL CHARACTERISTICS

Unbalanced impedance	50Ω
Balanced impedance	50Ω
Frequency range	2400 to 2500MHz
Unbalanced port return loss	10dB min.
Phase imbalance at balanced port	180±10deg.
Amplitude imbalance at balanced port	0±2.0dB
Insertion loss	1.2dB max.
Temperature range	Operating -40 to +85°C
	Storage -40 to +85°C
Packaging style and quantities	2000pieces/reel

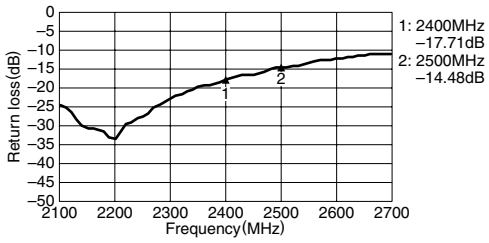
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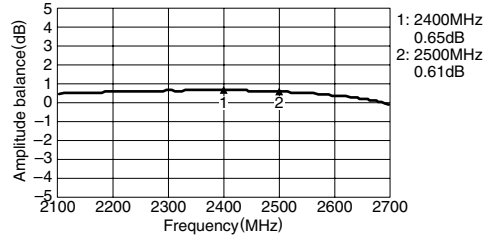
### FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 50Ω

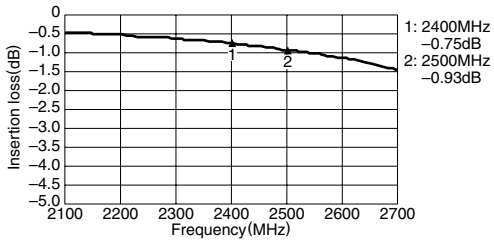
#### RETURN LOSS



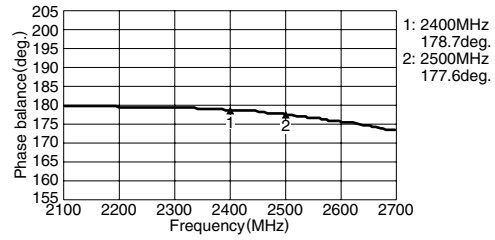
#### AMPLITUDE BALANCE



#### INSERTION LOSS



#### PHASE BALANCE

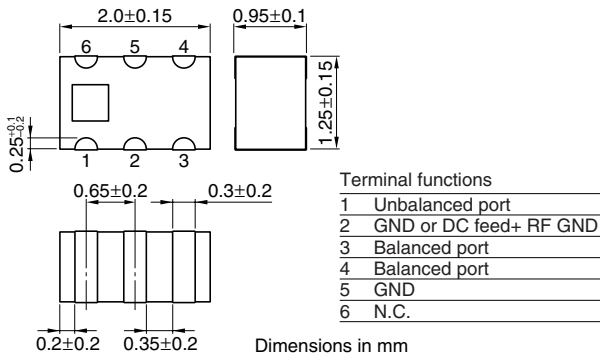


# Multilayer Chip Baluns For Bluetooth & 2.4GHz W-LAN

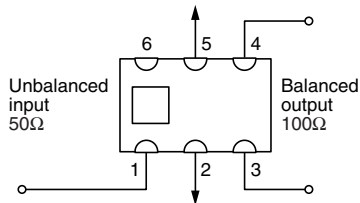
Conformity to RoHS Directive

HHM Series HHM1520

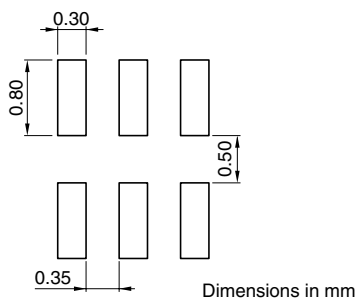
## SHAPES AND DIMENSIONS



## CIRCUIT DIAGRAM



## RECOMMENDED PC BOARD PATTERNS



## ELECTRICAL CHARACTERISTICS

Unbalanced impedance	50Ω
Balanced impedance	100Ω
Frequency range	2400 to 2500MHz
Unbalanced port return loss	10dB min.
Phase imbalance at balanced port	180±10deg.
Amplitude imbalance at balanced port	0±2.0dB
Insertion loss	1.0dB max.
Temperature range	Operating -40 to +85°C
	Storage -40 to +85°C
Packaging style and quantities	2000pieces/reel

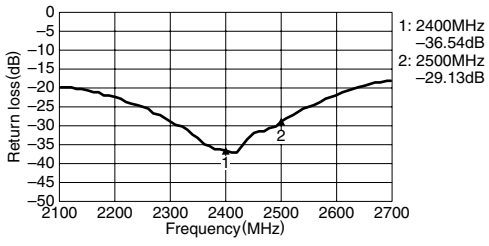
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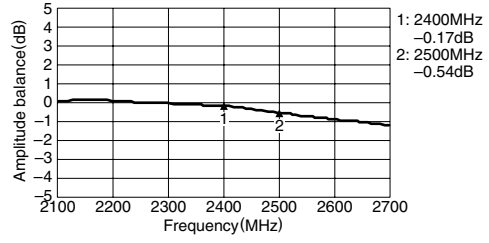
### FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 100Ω

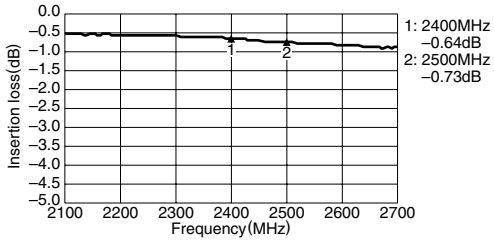
#### RETURN LOSS



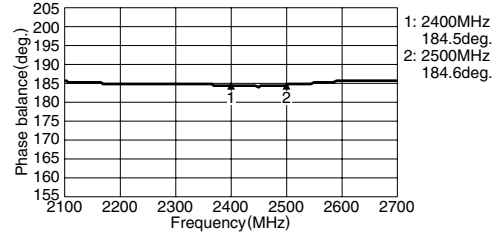
#### AMPLITUDE BALANCE



#### INSERTION LOSS



#### PHASE BALANCE

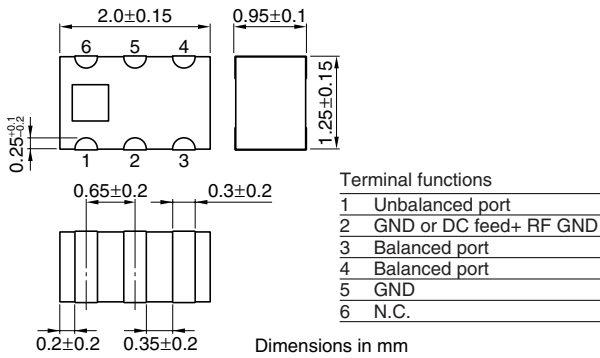


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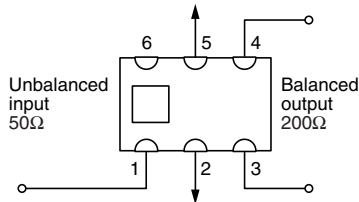
Conformity to RoHS Directive

HHM Series HHM1521

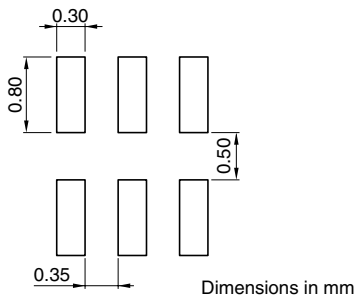
## SHAPES AND DIMENSIONS



## CIRCUIT DIAGRAM



## RECOMMENDED PC BOARD PATTERNS



## ELECTRICAL CHARACTERISTICS

Unbalanced impedance	50Ω
Balanced impedance	200Ω
Frequency range	2400 to 2500MHz
Unbalanced port return loss	10dB min.
Phase imbalance at balanced port	180±10deg.
Amplitude imbalance at balanced port	0±2.0dB
Insertion loss	1.0dB max.
Temperature range	Operating -40 to +85°C
	Storage -40 to +85°C
Packaging style and quantities	2000pieces/reel

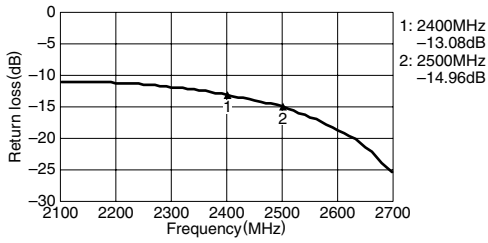
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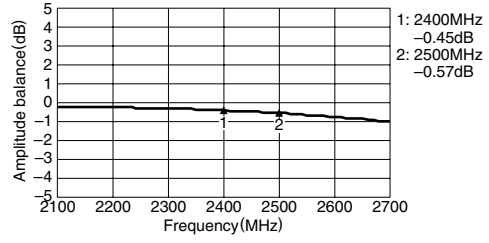
### FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 200Ω

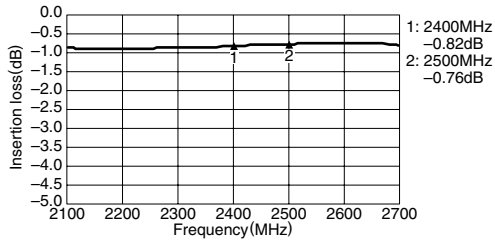
#### RETURN LOSS



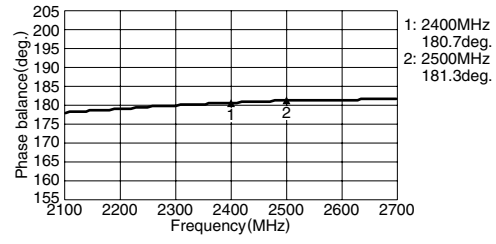
#### AMPLITUDE BALANCE



#### INSERTION LOSS



#### PHASE BALANCE

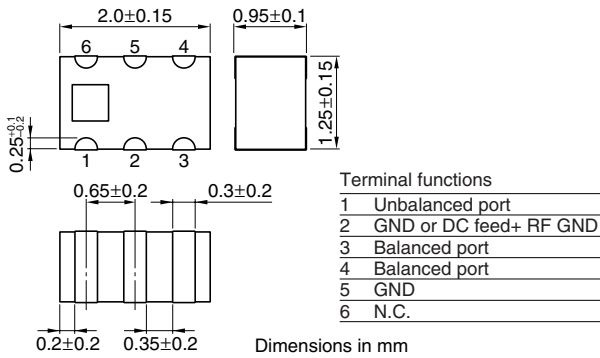


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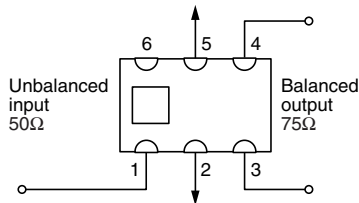
Conformity to RoHS Directive

HHM Series HHM1541E1

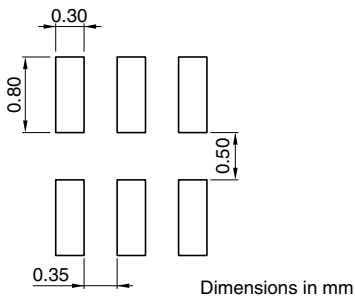
## SHAPES AND DIMENSIONS



## CIRCUIT DIAGRAM



## RECOMMENDED PC BOARD PATTERNS



## ELECTRICAL CHARACTERISTICS

Unbalanced impedance	50Ω
Balanced impedance	75Ω
Frequency range	2400 to 2500MHz
Unbalanced port return loss	10dB min.
Phase imbalance at balanced port	180±10deg.
Amplitude imbalance at balanced port	0±1.5dB
Insertion loss	1.0dB max.
Temperature range	Operating -40 to +85°C
	Storage -40 to +85°C
Packaging style and quantities	2000pieces/reel

• 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.

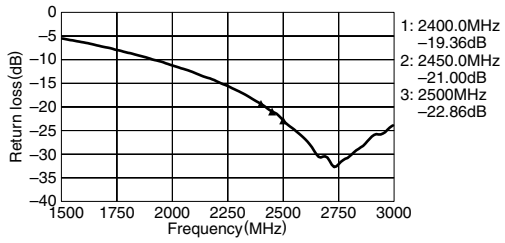
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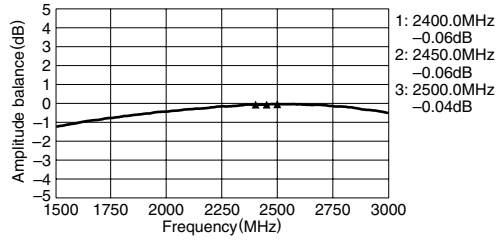
### FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 75Ω

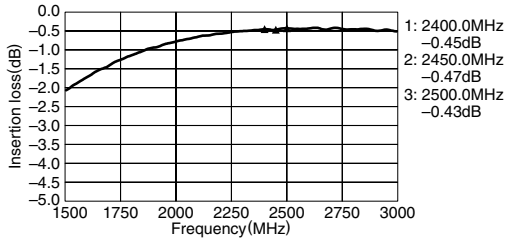
#### RETURN LOSS



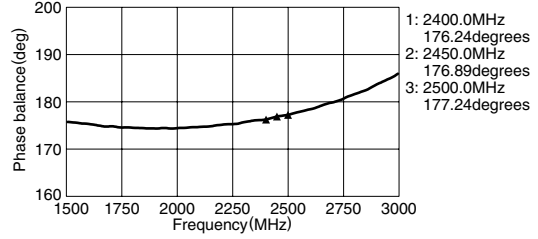
#### AMPLITUDE BALANCE



#### INSERTION LOSS



#### PHASE BALANCE





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.