

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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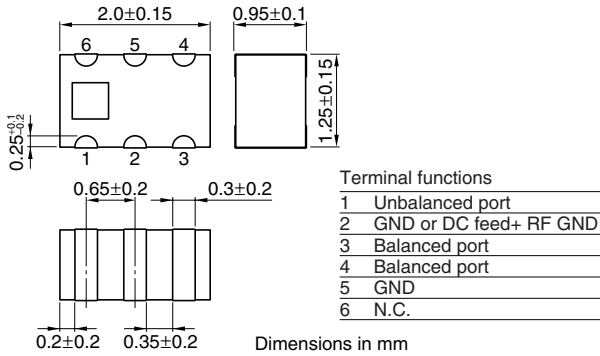
Multilayer Chip Baluns

For Bluetooth & 2.4GHz W-LAN

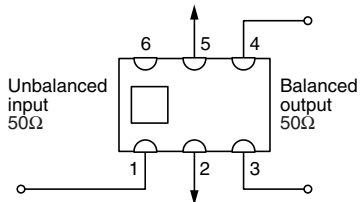
Conformity to RoHS Directive

HHM Series HHM1517

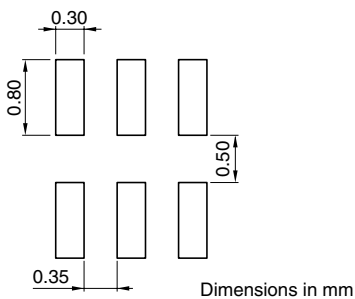
SHAPES AND DIMENSIONS



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

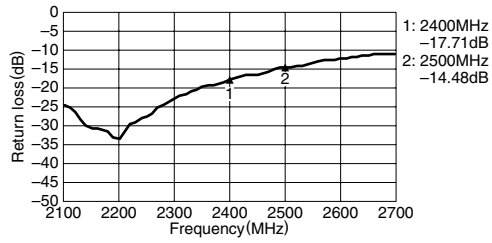
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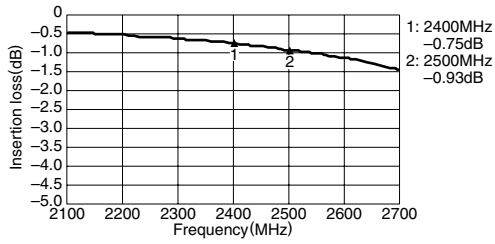
FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 50Ω

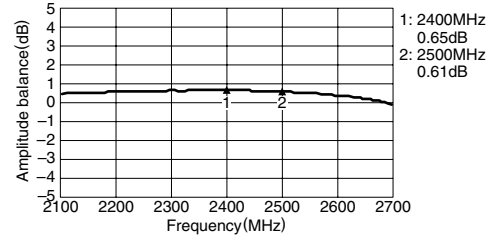
RETURN LOSS



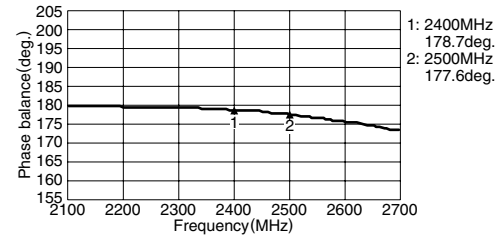
INSERTION LOSS



AMPLITUDE BALANCE



PHASE BALANCE



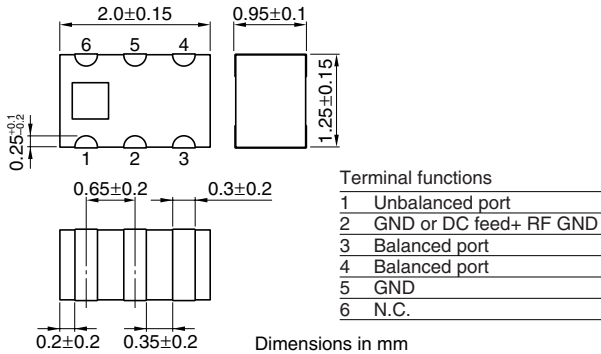
Multilayer Chip Baluns

For Bluetooth & 2.4GHz W-LAN

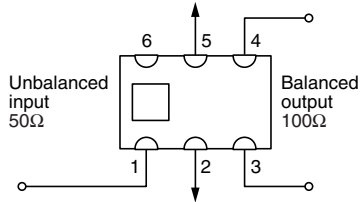
Conformity to RoHS Directive

HHM Series HHM1520

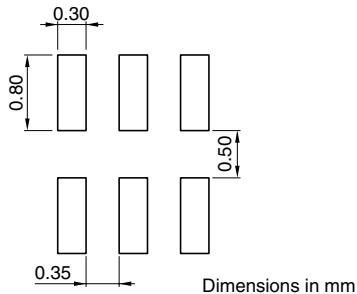
SHAPES AND DIMENSIONS



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

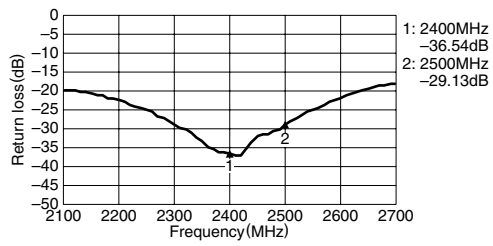
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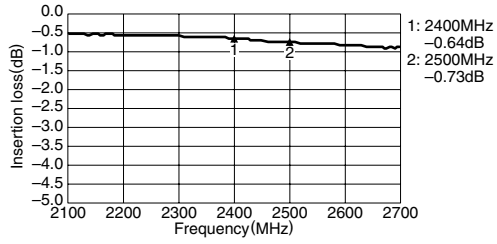
FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 100Ω

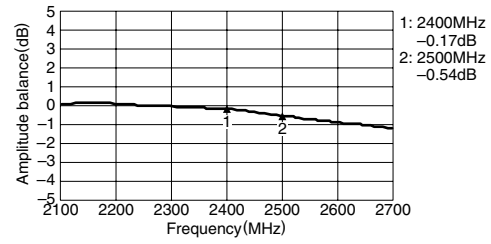
RETURN LOSS



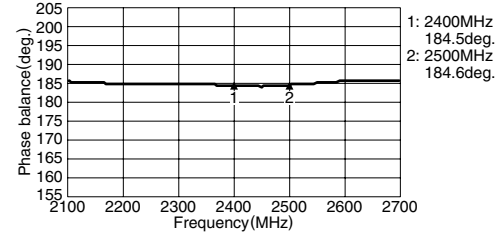
INSERTION LOSS



AMPLITUDE BALANCE



PHASE BALANCE



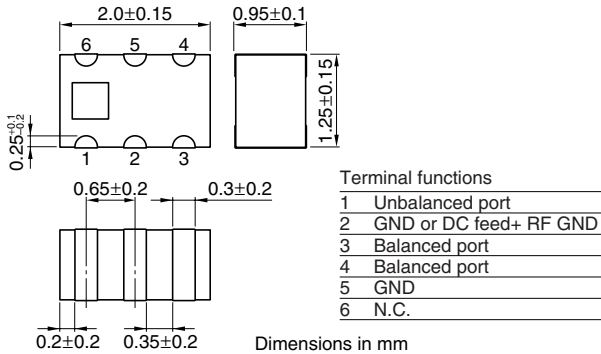
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For Bluetooth & 2.4GHz W-LAN

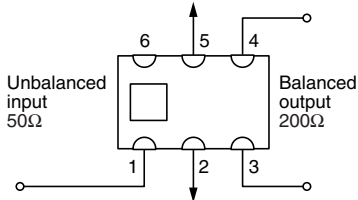
Conformity to RoHS Directive

HHM Series HHM1521

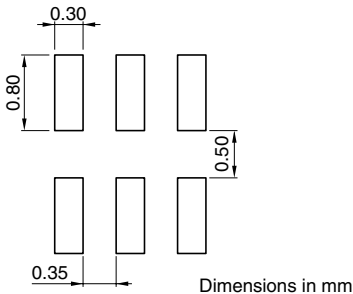
SHAPES AND DIMENSIONS



CIRCUIT DIAGRAM



RECOMMENDED PC BOARD PATTERNS



ELECTRICAL CHARACTERISTICS

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

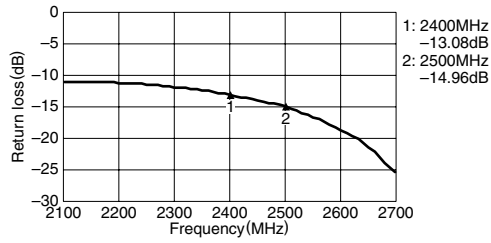
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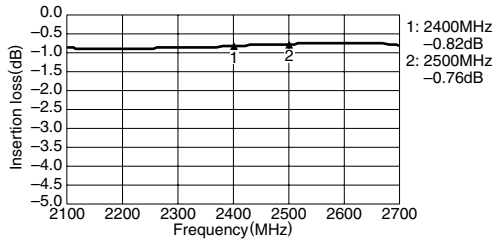
FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 200Ω

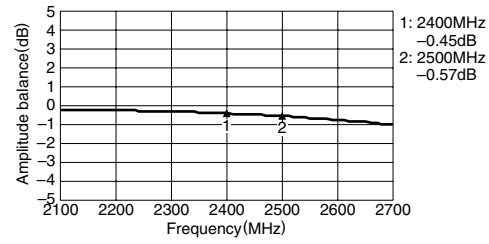
RETURN LOSS



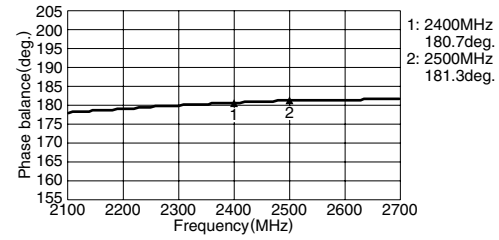
INSERTION LOSS



AMPLITUDE BALANCE



PHASE BALANCE



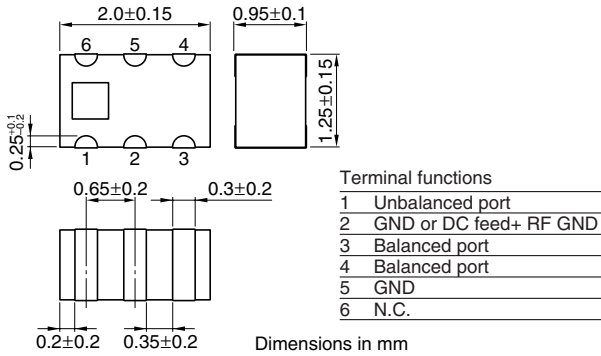
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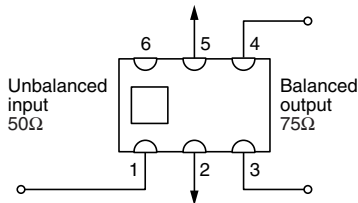
Conformity to RoHS Directive

HHM Series HHM1541E1

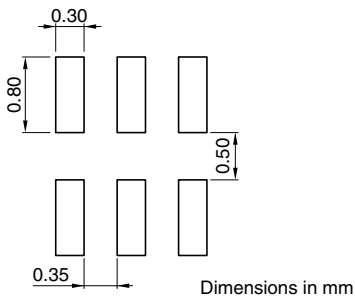
SHAPES AND DIMENSIONS



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

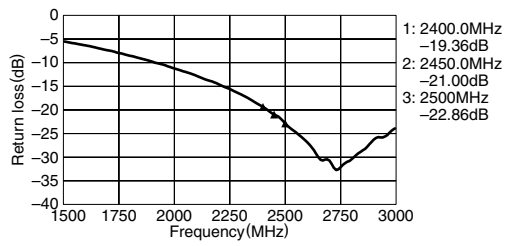
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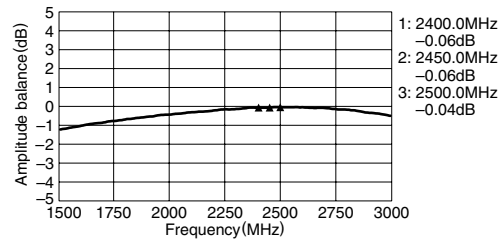
FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 75Ω

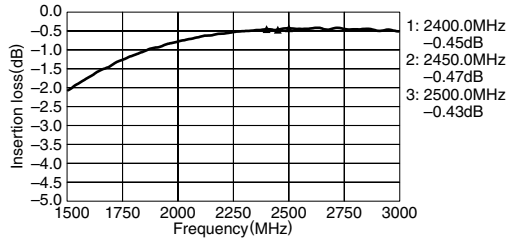
RETURN LOSS



AMPLITUDE BALANCE



INSERTION LOSS



PHASE BALANCE

