

Multilayer Balun Transformers

For DVB-H/ISDB-T

HHM Series

Type: **HHM1591A1 (2.0×1.25×0.95mm)**
 HHM1591A2 (2.0×1.25×0.95mm)
 HHM1589B1 (2.0×1.25×0.95mm)
 HHM1589D1 (2.0×1.25×0.95mm)
 HHM1591D1 (2.0×1.25×0.95mm)
 HHM1589E1 (2.0×1.25×0.95mm)

Issue date: December 2010

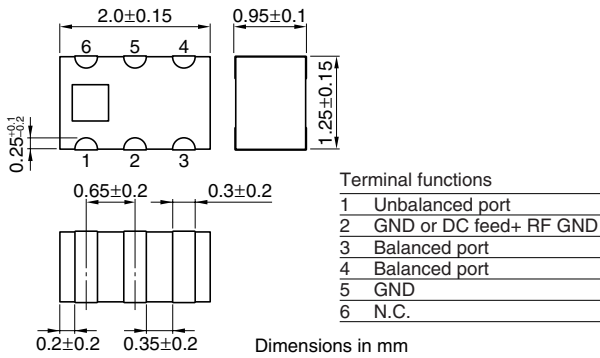
- All specifications are subject to change without notice.
 - Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.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

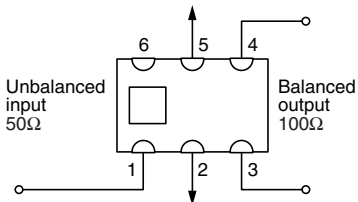
Conformity to RoHS Directive

HHM Series HHM1591A1

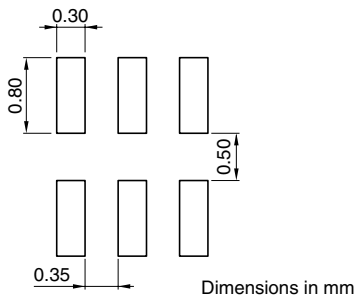
SHAPES AND DIMENSIONS



CIRCUIT DIAGRAM



RECOMMENDED PC BOARD PATTERNS



ELECTRICAL CHARACTERISTICS

Unbalanced impedance	50Ω
Balanced impedance	100Ω
Frequency range	470 to 710MHz
Unbalanced port return loss	9.0dB min.
Phase imbalance at balanced port	180±10deg.
Amplitude imbalance at balanced port	0±1.5dB
Insertion loss	1.4dB max.
Temperature range	Operating -40 to +85°C
	Storage -40 to +85°C
Packaging style and quantities	2000pieces/reel

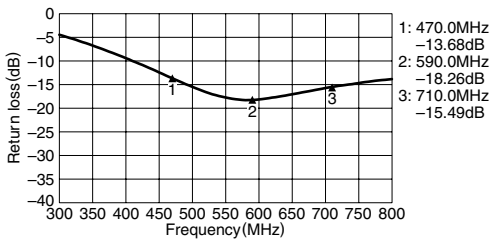
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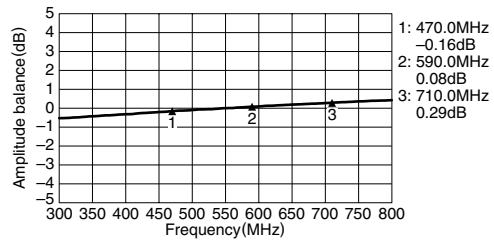
FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 100Ω

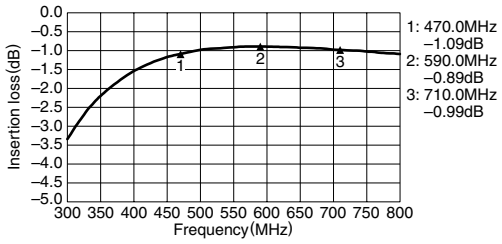
RETURN LOSS



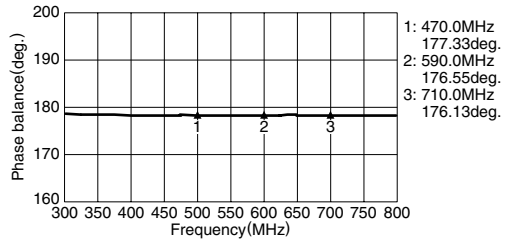
AMPLITUDE BALANCE



INSERTION LOSS



PHASE BALANCE



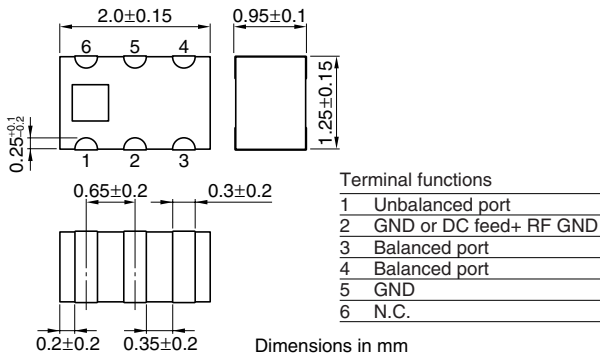
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Multilayer Chip Baluns For DVB-H/ISDB-T

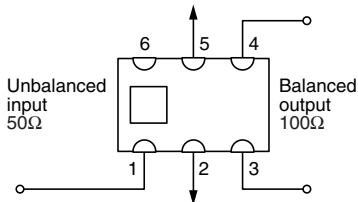
Conformity to RoHS Directive

HHM Series HHM1591A2

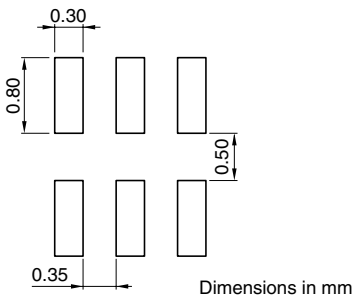
SHAPES AND DIMENSIONS



CIRCUIT DIAGRAM



RECOMMENDED PC BOARD PATTERNS



ELECTRICAL CHARACTERISTICS

Unbalanced impedance	50Ω
Balanced impedance	100Ω
Frequency range	350 to 950MHz
Unbalanced port return loss	4.5dB min.
Phase imbalance at balanced port	180±20deg.
Amplitude imbalance at balanced port	0±2.0dB
Insertion loss	2.8dB max.
Temperature range	Operating -40 to +85°C
	Storage -40 to +85°C
Packaging style and quantities	2000pieces/reel

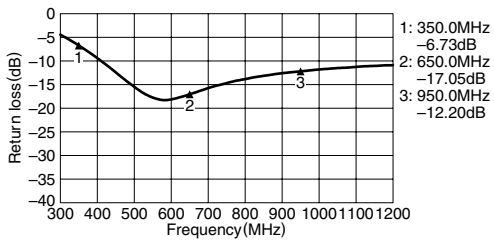
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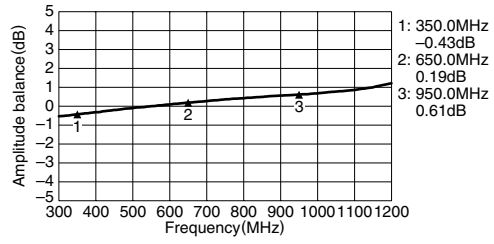
FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 100Ω

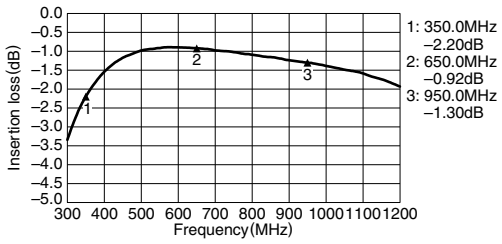
RETURN LOSS



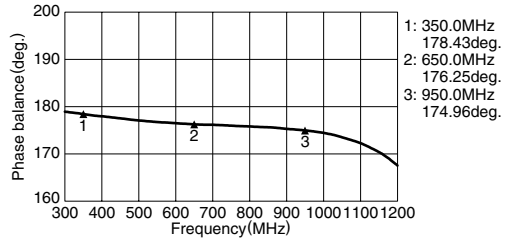
AMPLITUDE BALANCE



INSERTION LOSS



PHASE BALANCE



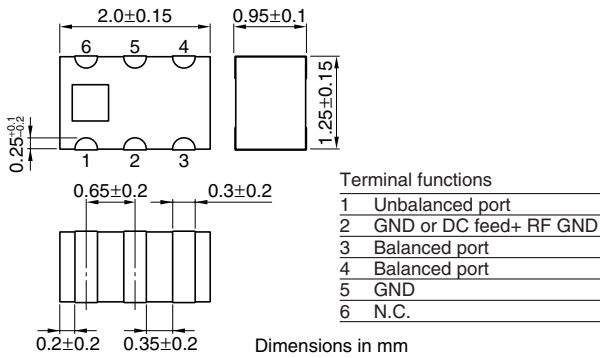
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Multilayer Chip Baluns For DVB-H/ISDB-T

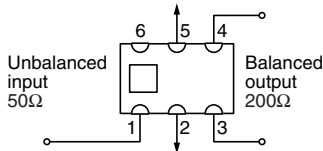
Conformity to RoHS Directive

HHM Series HHM1589B1

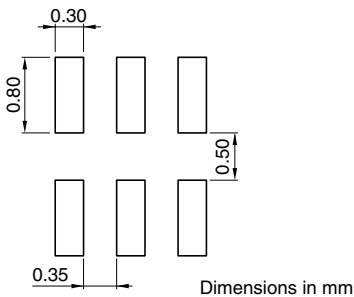
SHAPES AND DIMENSIONS



CIRCUIT DIAGRAM



RECOMMENDED PC BOARD PATTERNS



ELECTRICAL CHARACTERISTICS

Unbalanced impedance	50Ω	
Balanced impedance	200Ω	
Frequency range	470 to 710MHz	
Unbalanced port return loss	9.5dB min.	
Phase imbalance at balanced port	180±10deg.	
Amplitude imbalance at balanced port	0±1.5dB	
Insertion loss	1.4dB max.	
Temperature range	Operating	-40 to +85°C
	Storage	-40 to +85°C
Packaging style and quantities	2000pieces/reel	

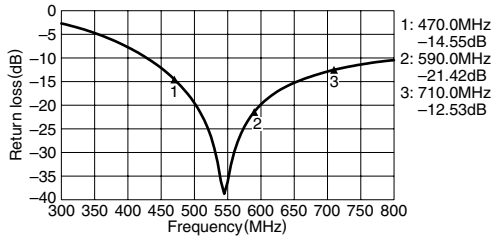
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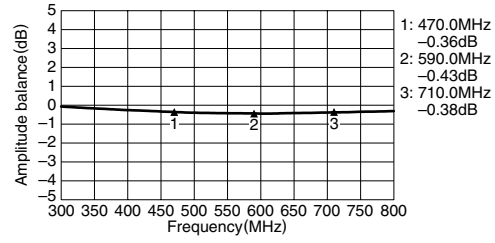
FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 200Ω

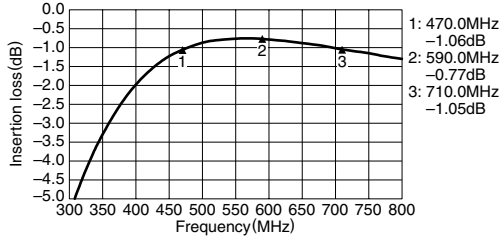
RETURN LOSS



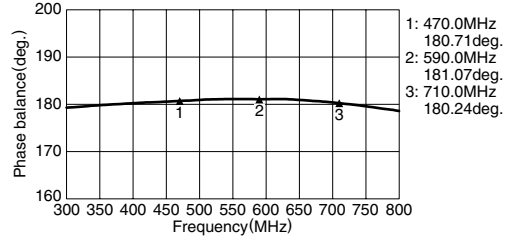
AMPLITUDE BALANCE



INSERTION LOSS



PHASE BALANCE



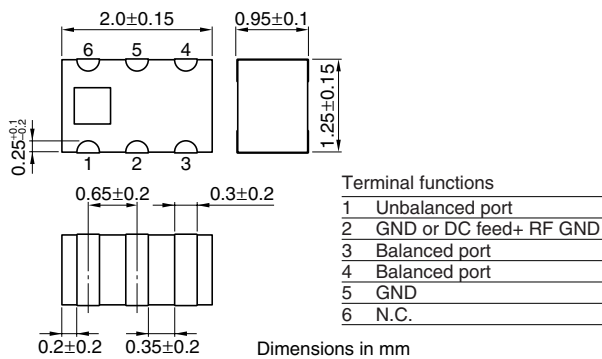
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Multilayer Chip Baluns For DVB-H/ISDB-T

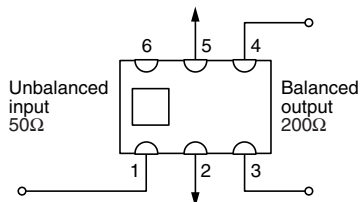
Conformity to RoHS Directive

HHM Series HHM1589D1

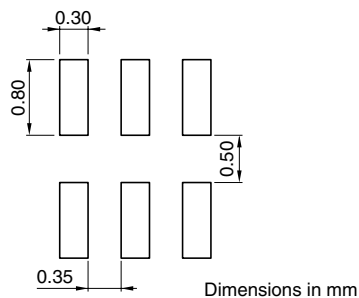
SHAPES AND DIMENSIONS



CIRCUIT DIAGRAM



RECOMMENDED PC BOARD PATTERNS



ELECTRICAL CHARACTERISTICS

Unbalanced impedance	50Ω
Balanced impedance	200Ω
Frequency range	350 to 950MHz
Unbalanced port return loss	5dB min.
Phase imbalance at balanced port	180±20deg.
Amplitude imbalance at balanced port	0±2.0dB
Insertion loss	2.6dB max.
Temperature range	Operating -40 to +85°C
	Storage -40 to +85°C
Packaging style and quantities	2000pieces/reel

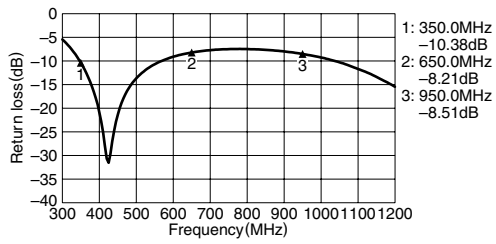
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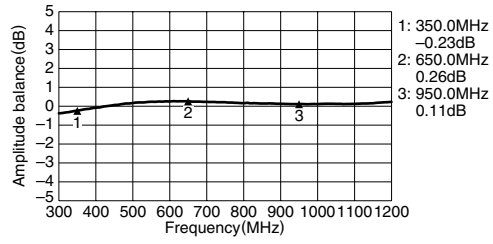
FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 200Ω

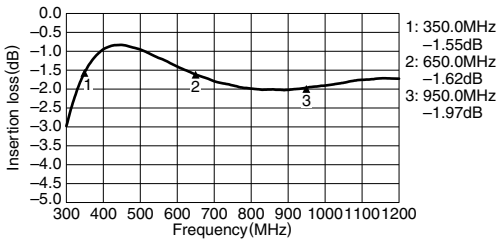
RETURN LOSS



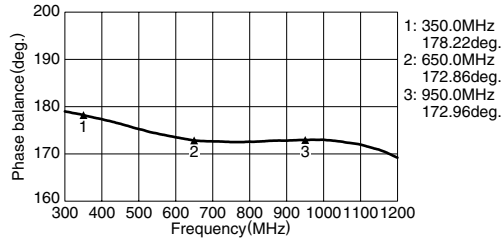
AMPLITUDE BALANCE



INSERTION LOSS



PHASE BALANCE



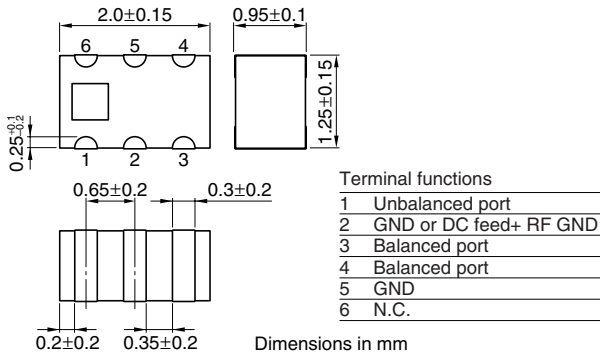
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Multilayer Chip Baluns For DVB-H/ISDB-T

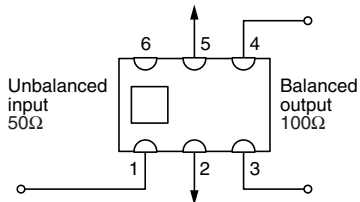
Conformity to RoHS Directive

HHM Series HHM1591D1

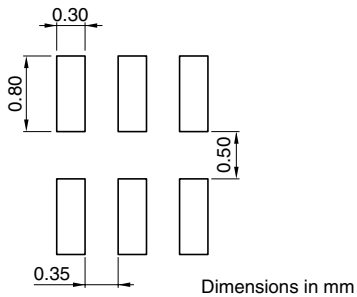
SHAPES AND DIMENSIONS



CIRCUIT DIAGRAM



RECOMMENDED PC BOARD PATTERNS



ELECTRICAL CHARACTERISTICS

Unbalanced impedance	50Ω	
Balanced impedance	100Ω	
Frequency range	350 to 470MHz	
Unbalanced port return loss	8.5dB min.	
Phase imbalance at balanced port	180±10deg.	
Amplitude imbalance at balanced port	0±1.0dB	
Insertion loss	1.5dB max.	
Temperature range	Operating	-40 to +85°C
	Storage	-40 to +85°C
Packaging style and quantities	2000pieces/reel	

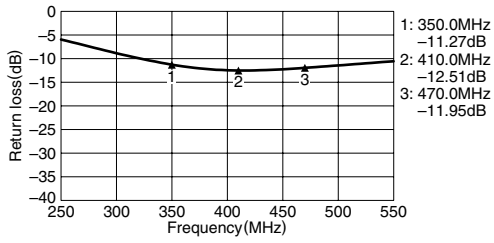
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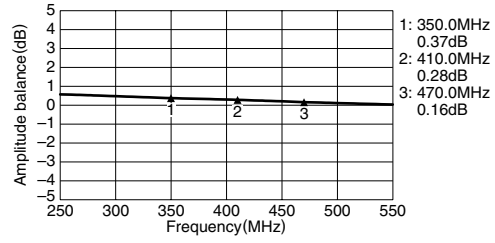
FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 200Ω

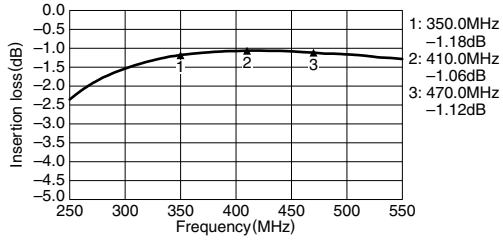
RETURN LOSS



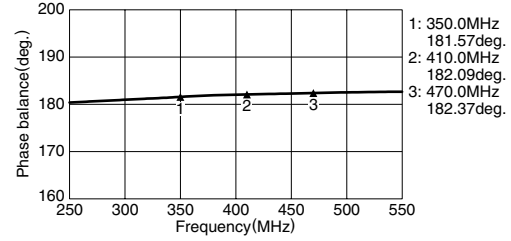
AMPLITUDE BALANCE



INSERTION LOSS



PHASE BALANCE



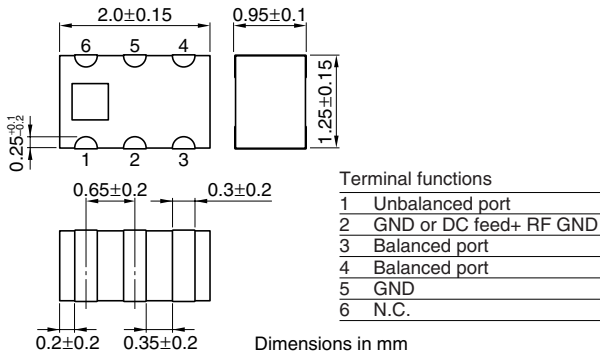
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Multilayer Chip Baluns For DVB-H/ISDB-T

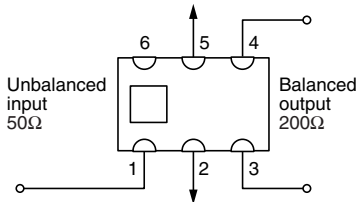
Conformity to RoHS Directive

HHM Series HHM1589E1

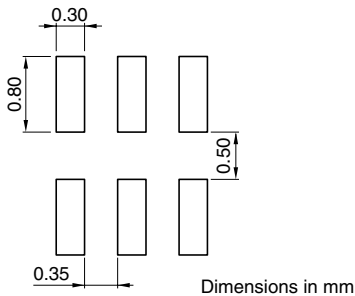
SHAPES AND DIMENSIONS



CIRCUIT DIAGRAM



RECOMMENDED PC BOARD PATTERNS



ELECTRICAL CHARACTERISTICS

Unbalanced impedance	50Ω
Balanced impedance	200Ω
Frequency range	350 to 470MHz
Unbalanced port return loss	9.54dB min.
Phase imbalance at balanced port	180±10deg.
Amplitude imbalance at balanced port	0±1.0dB
Insertion loss	1.5dB max.
Temperature range	Operating -40 to +85°C
	Storage -40 to +85°C
Packaging style and quantities	2000pieces/reel

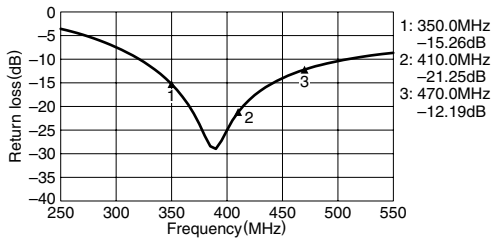
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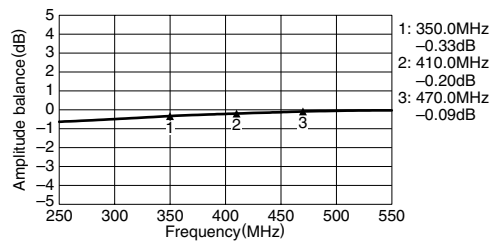
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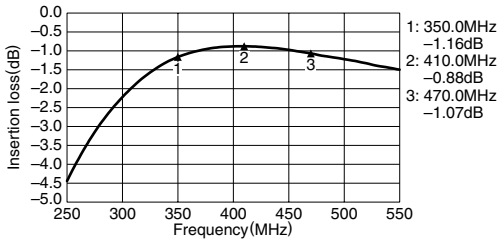
RETURN LOSS



AMPLITUDE BALANCE



INSERTION LOSS



PHASE BALANCE

