

# 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

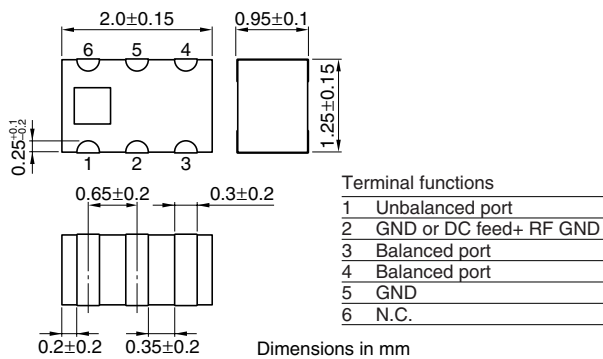
- All specifications are subject to change without notice.
  - Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.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

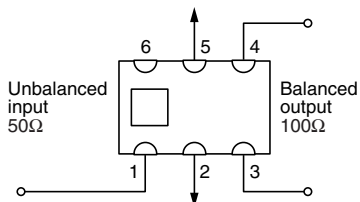
Conformity to RoHS Directive

HHM Series HHM1591A1

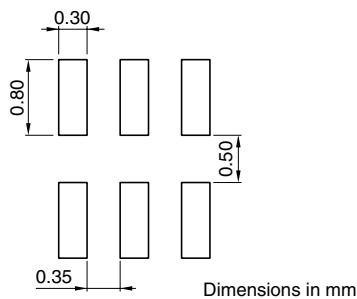
## SHAPES AND DIMENSIONS



## 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

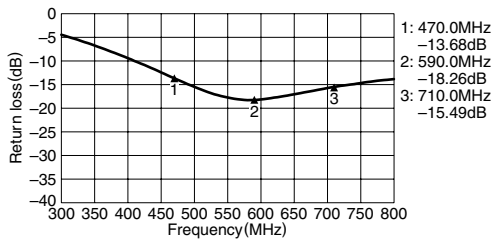
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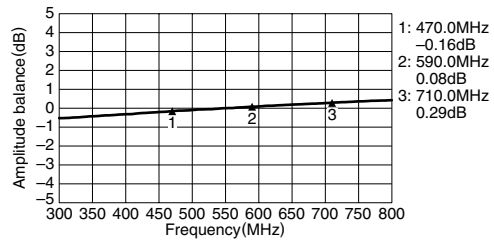
### FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 100Ω

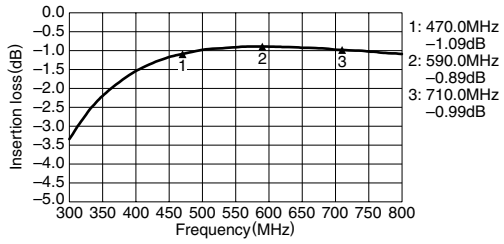
#### RETURN LOSS



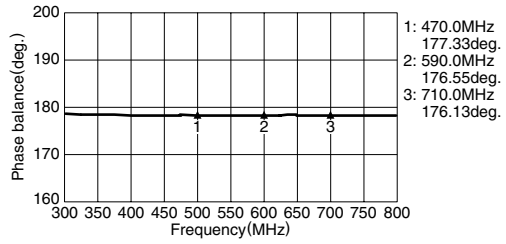
#### AMPLITUDE BALANCE



#### INSERTION LOSS



#### PHASE BALANCE



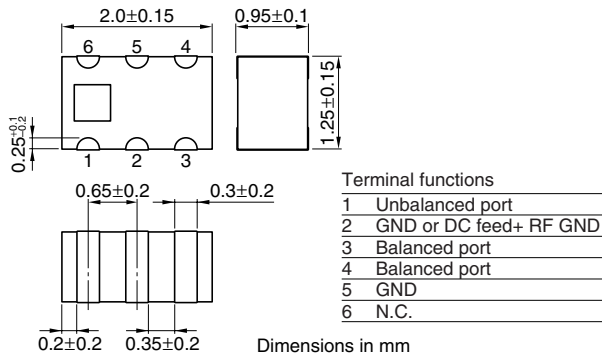
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# Multilayer Chip Baluns For DVB-H/ISDB-T

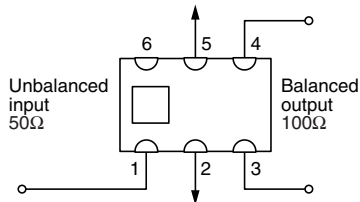
Conformity to RoHS Directive

HHM Series HHM1591A2

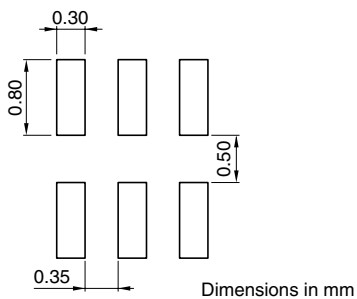
## SHAPES AND DIMENSIONS



## 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

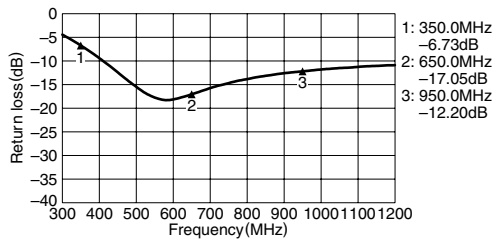
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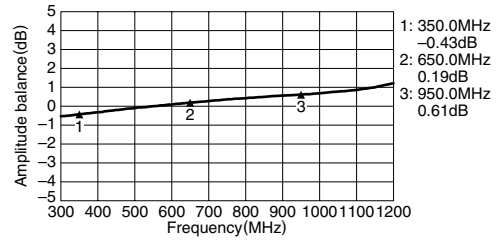
### FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 100Ω

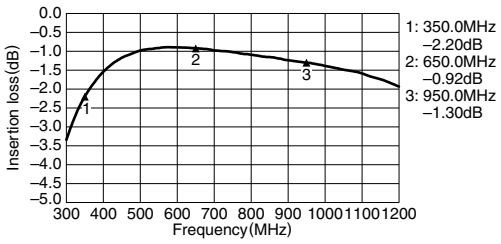
#### RETURN LOSS



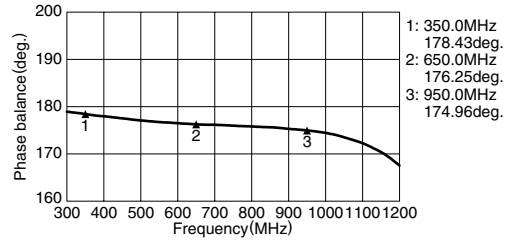
#### AMPLITUDE BALANCE



#### INSERTION LOSS



#### PHASE BALANCE



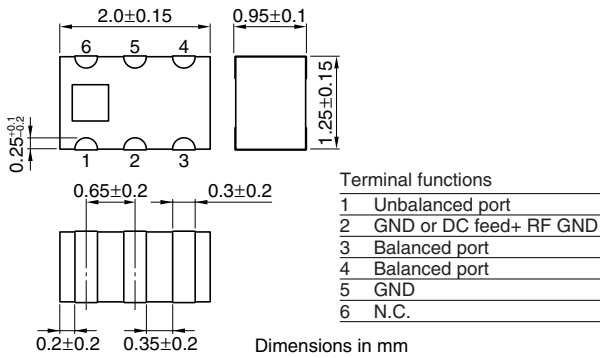
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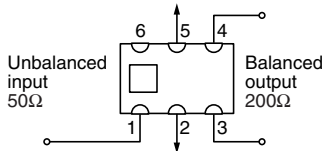
Conformity to RoHS Directive

HHM Series HHM1589B1

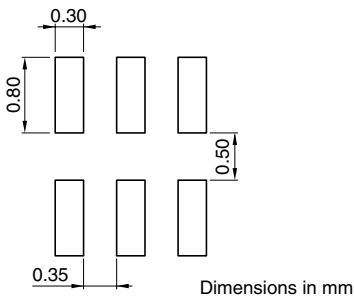
## SHAPES AND DIMENSIONS



## 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	

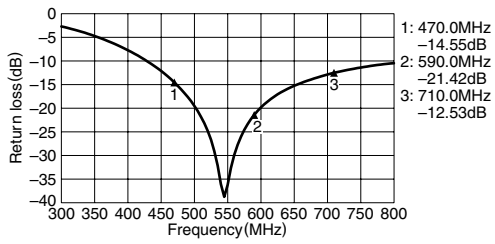
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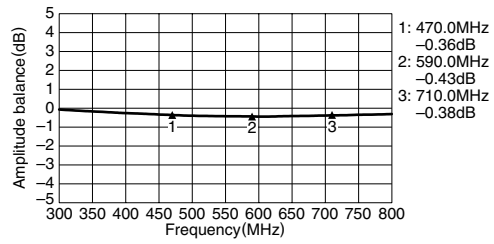
### FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 200Ω

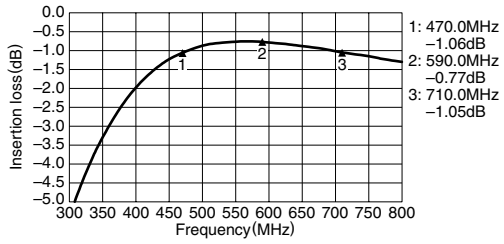
#### RETURN LOSS



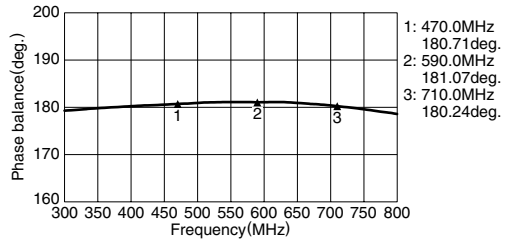
#### AMPLITUDE BALANCE



#### INSERTION LOSS



#### PHASE BALANCE



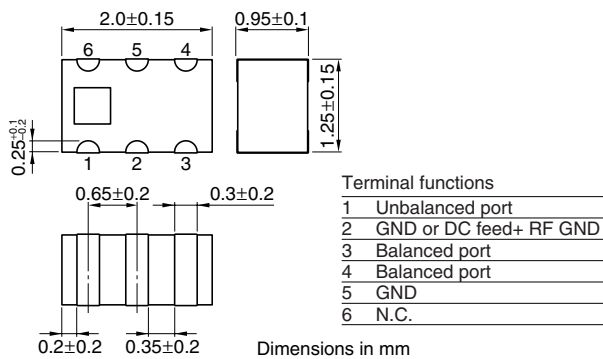
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# Multilayer Chip Baluns For DVB-H/ISDB-T

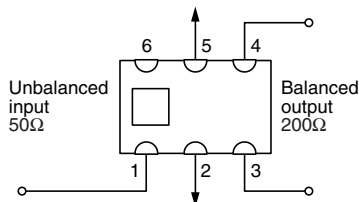
Conformity to RoHS Directive

HHM Series HHM1589D1

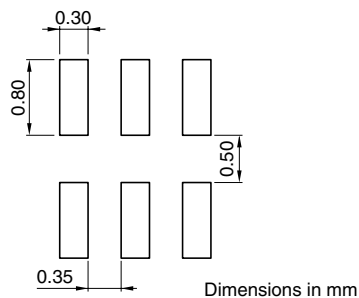
## SHAPES AND DIMENSIONS



## 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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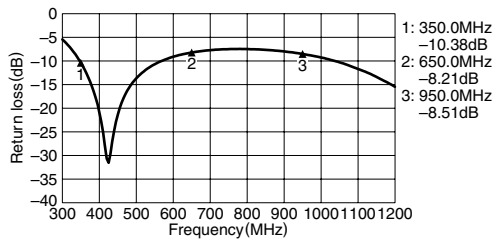
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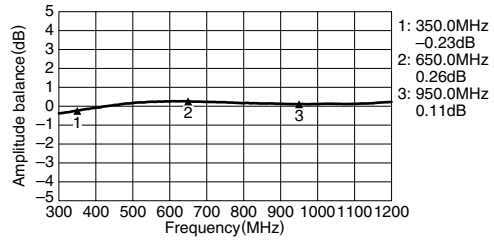
### FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 200Ω

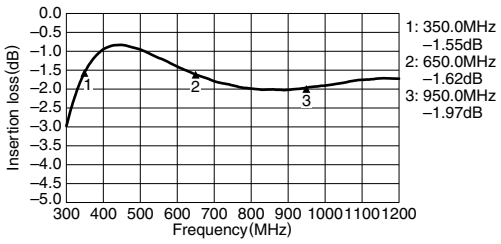
#### RETURN LOSS



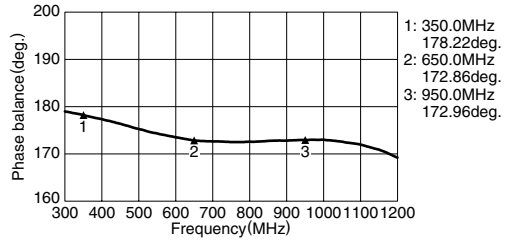
#### AMPLITUDE BALANCE



#### INSERTION LOSS



#### PHASE BALANCE



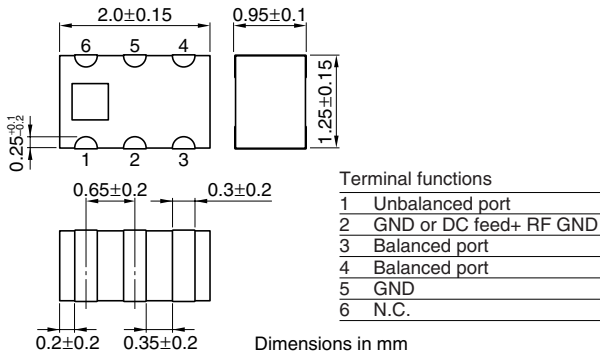
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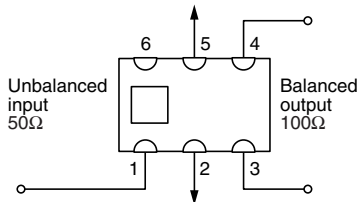
Conformity to RoHS Directive

HHM Series HHM1591D1

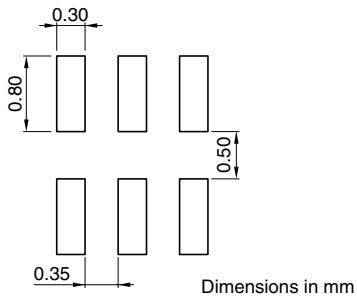
## SHAPES AND DIMENSIONS



## 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

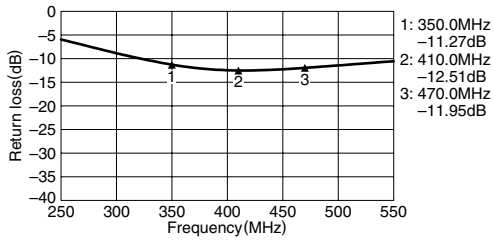
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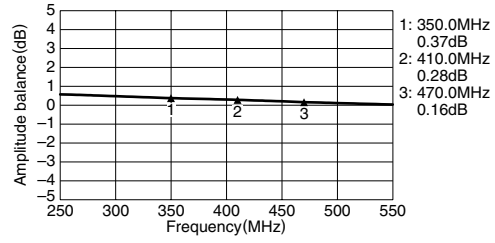
### FREQUENCY CHARACTERISTICS

Unbalance 50Ω/Balance 200Ω

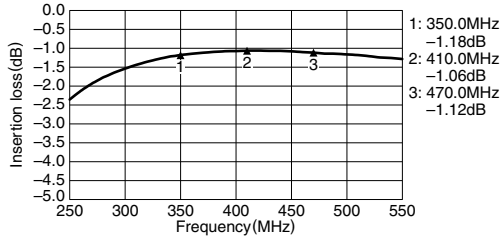
#### RETURN LOSS



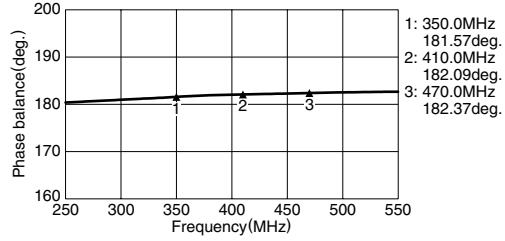
#### AMPLITUDE BALANCE



#### INSERTION LOSS



#### PHASE BALANCE



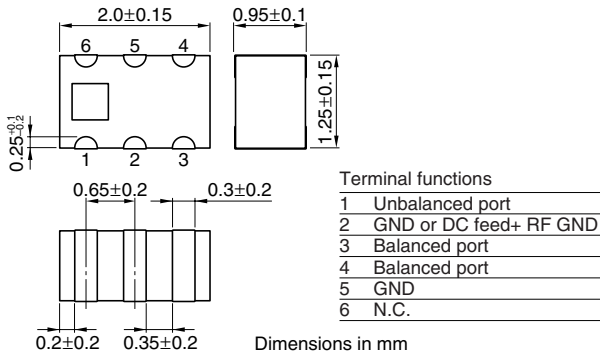
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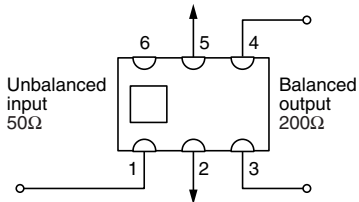
Conformity to RoHS Directive

HHM Series HHM1589E1

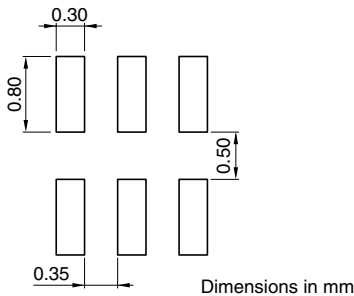
## SHAPES AND DIMENSIONS



## 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

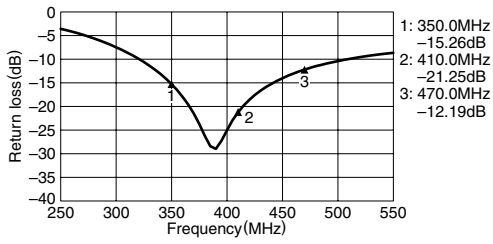
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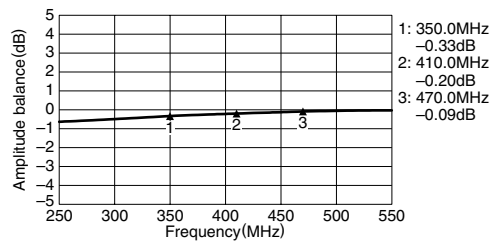
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Unbalance 50Ω/Balance 200Ω

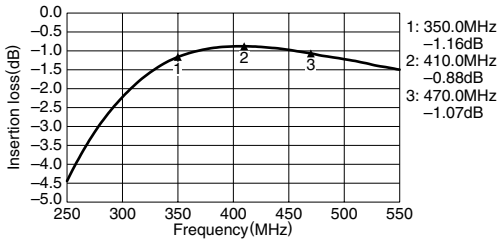
#### RETURN LOSS



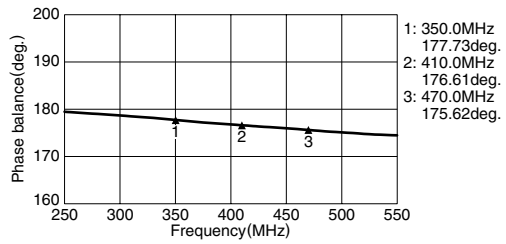
#### AMPLITUDE BALANCE



#### 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

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**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.