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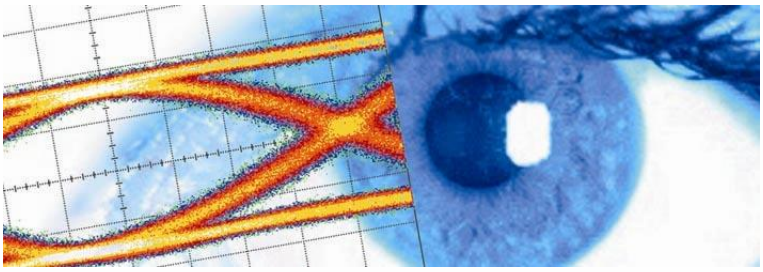
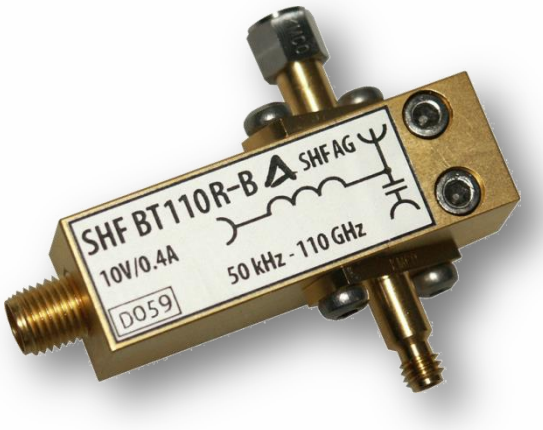


Datasheet

SHF BT110R

110 GHz Broadband Bias-Tee



Description

The SHF BT110R bias tee is the RoHS compliant successor of the SHF BT110. It outputs the superposition of the signals applied to the AC and to the DC port. Any existing DC content is blocked from its AC input while the DC input is practically only allowing transmission of pure DC[1].

Based on SHF's air line construction, it offers resonance-free transmission up to 110 GHz. In addition to the low insertion loss, all products have an extremely low group delay ripple.

Applications

- Optical Communications
- High-Speed Pulse Experiments
- Satellite Communications
- Research and Development
- Antenna Measurements
- Data Transmission

Configurations

- A - AC port: 1.00 mm male, AC+DC port: 1.00 mm female
- B - AC port: 1.00 mm female, AC+DC port: 1.00 mm male
- C - AC port: 1.00 mm male, AC+DC port: 1.00 mm male
- D - AC port: 1.00 mm female, AC+DC port: 1.00 mm female

One of above configurations has to be chosen. For more information, please be referred to the mechanical drawing on the last page of this data sheet. The DC-port is always SMA female.

Options

- HV25 - High Voltage (maximum DC voltage extended to 25 V)

[1] In case a low- and a high frequency signal should be combined a SHF Diplexer (essentially a bias tee with a certain bandwidth in the low frequency path) would be the right choice.

Specifications - SHF BT110R

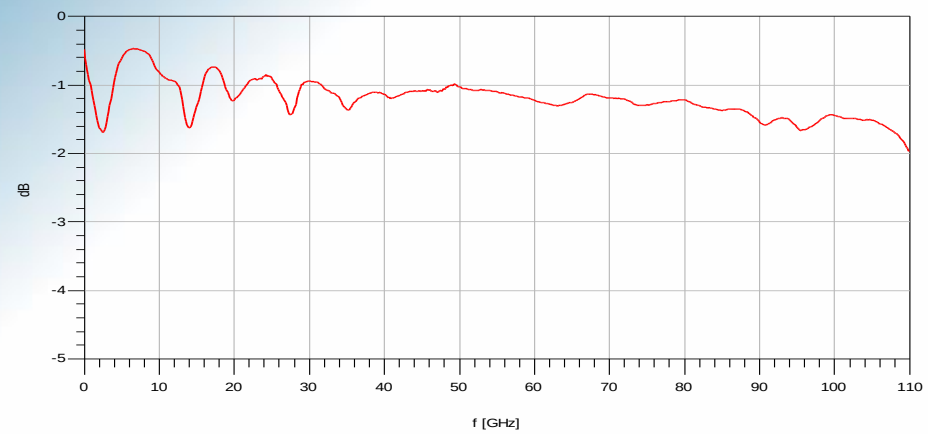
Parameter	Unit	Symbol	Min	Typ	Max	Conditions
Absolute Maximum Ratings						
Maximum RF Input w/o option	dBm	$P_{in\ max}$			30	average power of a continuous [2] signal, 50 Ω load and f ≥ 300 kHz
Maximum RF Input with Opt. HV25	dBm	$P_{in\ max}$			30	average power of a continuous [2] signal, 50 Ω load and f ≥ 6 MHz
Maximum DC Voltage w/o option	V		-10		10	difference between ports and between ports to ground
Maximum DC Voltage with Opt. HV25	V		-25		25	difference between ports and between ports to ground
Maximum DC Current	mA		-400		400	
Case Temperature	T_{case}	°C	10	25	50	
Electrical Characteristics (At 25°C case temperature, unless otherwise specified)						
High Frequency 3 dB Point	GHz	f_{HIGH}	110			
Low Frequency 3 dB Point w/o option	kHz	f_{LOW}			50 150	with 0 V_{DC} applied with 10 V_{DC} applied
Low Frequency 3 dB Point opt. HV25	MHz	f_{LOW}			1.0	with 0 V_{DC} applied
Insertion loss	dB	S_{21}		1.5		>20 GHz <70 GHz
Input Reflection	dB	S_{11}			-15 -10	>40 MHz <10 GHz >10 GHz <90 GHz
DC Resistance	Ω			3.5		DC to RF port
Mechanical Characteristics						
Connector	Ω			50		1.00 mm
Dimensions	mm					please see page 5

[2] 30 dBm (1 W) equals 20 V peak to peak for continuous sinusoidal signals. A pulsed excitation with an average of 1 W and thus having significantly higher peaks is possible.

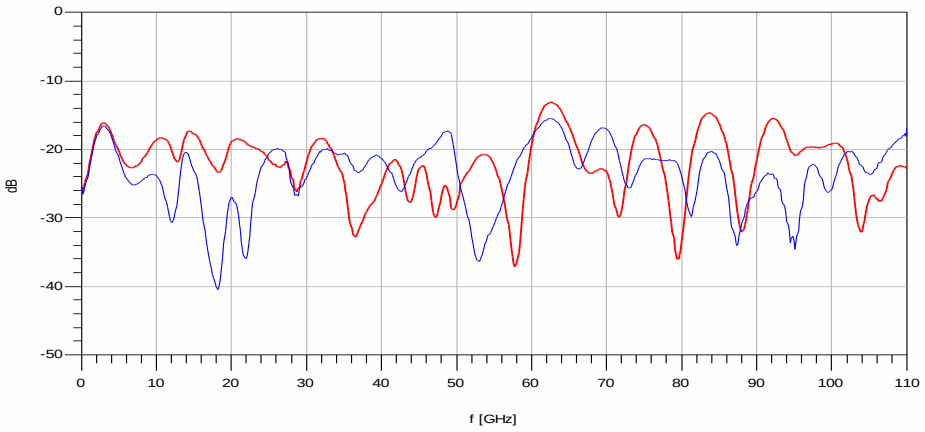
The maximum RF input power does not change in case a signal is applied to the DC port.

Typical S-Parameters for a BT110R without Option

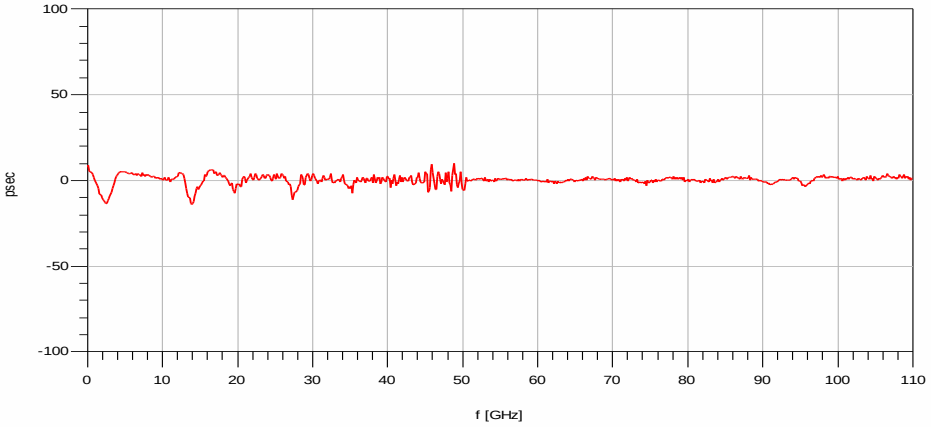
Insertion Loss (S_{21})



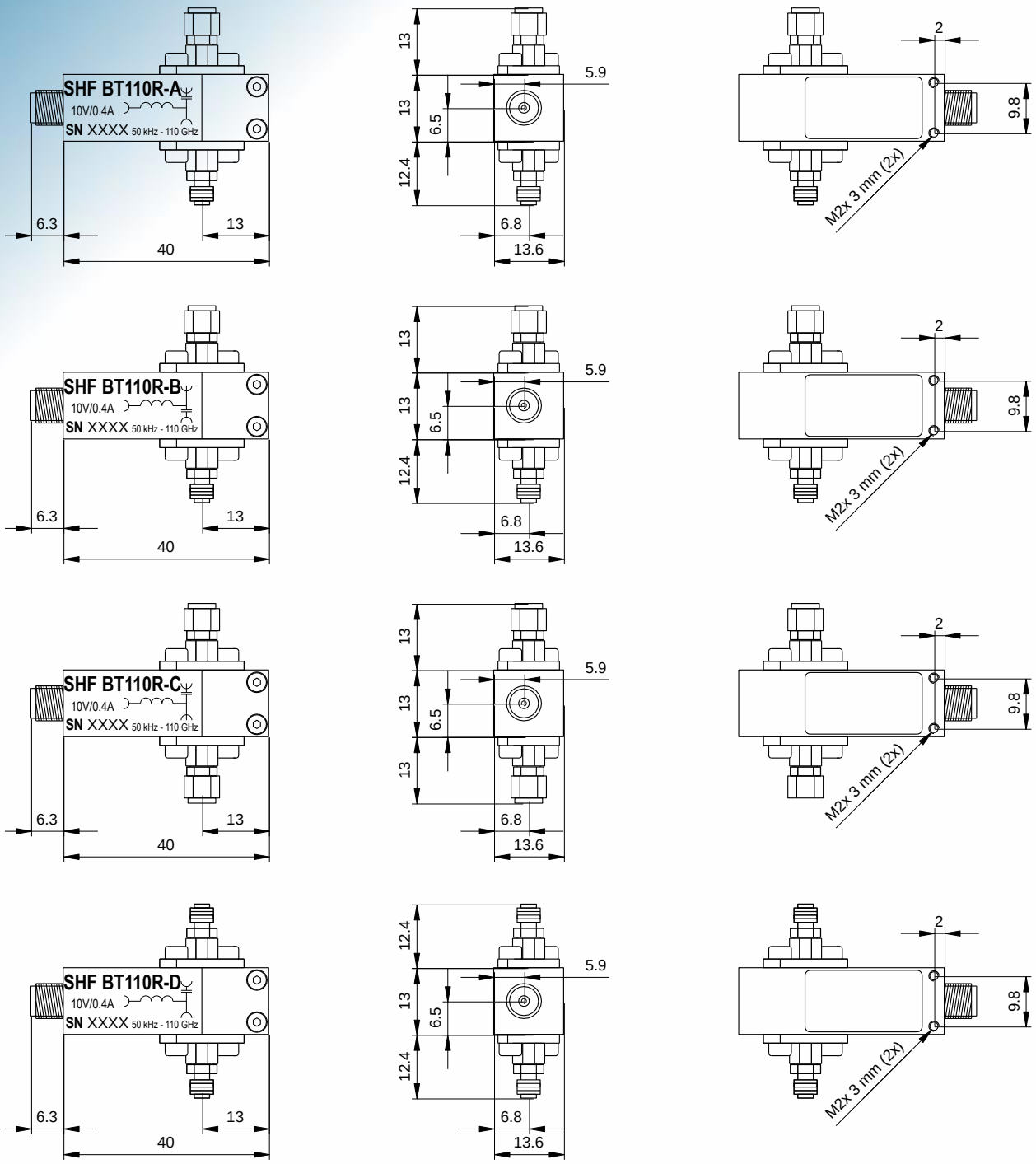
Return Loss (S_{11} red, S_{22} blue)



Group Delay



Mechanical Drawing



All dimensions in mm