

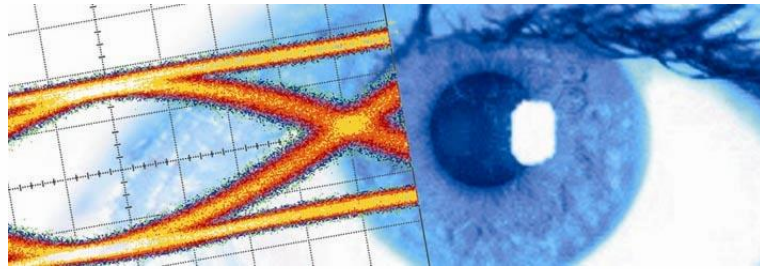


SHF Communication Technologies AG

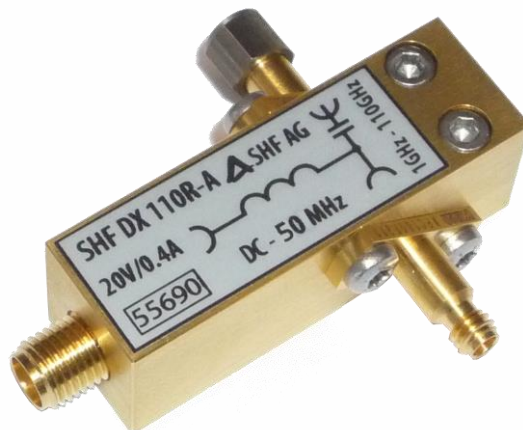
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Datasheet SHF DX110R Diplexer





Description

The SHF DX110R diplexer is the RoHS compliant successor of the SHF DX110. A diplexer is essentially a bias tee with a certain bandwidth in the low frequency path to combine or separate high frequency and low frequency signals into or from a single line.

Any existing DC content is blocked from its HF input. 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 - HF port: 1.0 mm male, HF+LF port: 1.0 mm female
- B - HF port: 1.0 mm female, HF+LF port: 1.0 mm male
- C - HF port: 1.0 mm male, HF+LF port: 1.0 mm male
- D - HF port: 1.0 mm female, HF+LF port: 1.0 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 low frequency port is always SMA female.



Specifications - SHF DX110R

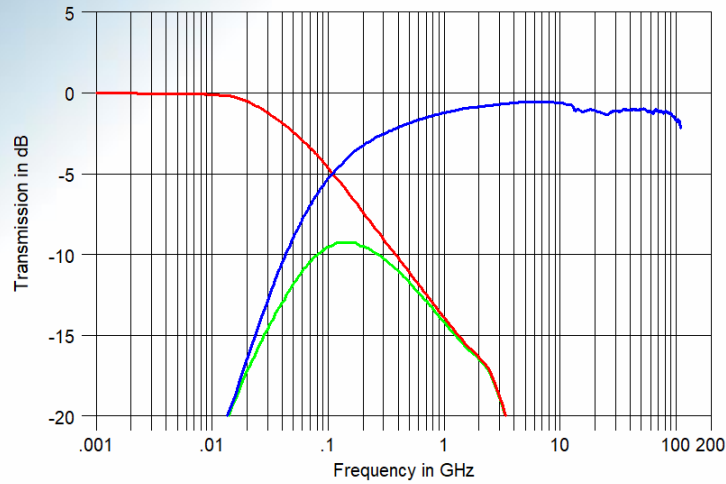
Parameter	Unit	Symbol	Min	Typ	Max	Conditions
Absolute Maximum Ratings for SHF DX110R						
Maximum HF Input	dBm	$P_{in\ max}$			30	average power of a continuous ¹ signal, 50 Ω load and $f \geq 2 \times f_{Low}$
Maximum Voltage	V				± 20	voltage across the coupling capacitor between HF and HF+LF port and between ports and GND
Maximum LF Current	mA				± 400	
Case Temperature	T_{case}	$^{\circ}C$	10	25	50	
Electrical Characteristics SHF DX110R (At 25$^{\circ}C$ case temperature)						
High Frequency 3 dB Point HF-Path	GHz	f_{HIGH}	110			reference is insertion loss at 5 GHz
Low Frequency 3 dB Point HF-Path	GHz	f_{LOW}			1	reference is insertion loss at 5 GHz
High Frequency 3 dB Point LF-Path	MHz	f_{HIGH}	50			reference is insertion loss at 5 GHz
Low Frequency 3 dB Point LF-Path	Hz	f_{LOW}			0	DC ²
Insertion loss	dB	HF+LF/HF			2	>2 GHz <90 GHz
					2.5	<110 GHz
Reflection	dB	HF			-10	>1 GHz <110 GHz
		HF+LF			-10	>40 MHz <110 GHz
		LF			-10	<100 MHz
Group Delay Ripple	ps				± 50	1 GHz ... 100 GHz, 160 MHz Aperture
DC Resistance	Ω			1		LF to HF+LF Port
Mechanical Characteristics						
Connector HF ; HF+LF LF	Ω			50		1.0 mm SMA
Dimensions	mm					please see page 5
Weight	g			22		

¹ 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 may be possible. The maximum RF input power does not change in case a signal is applied to the LF port.

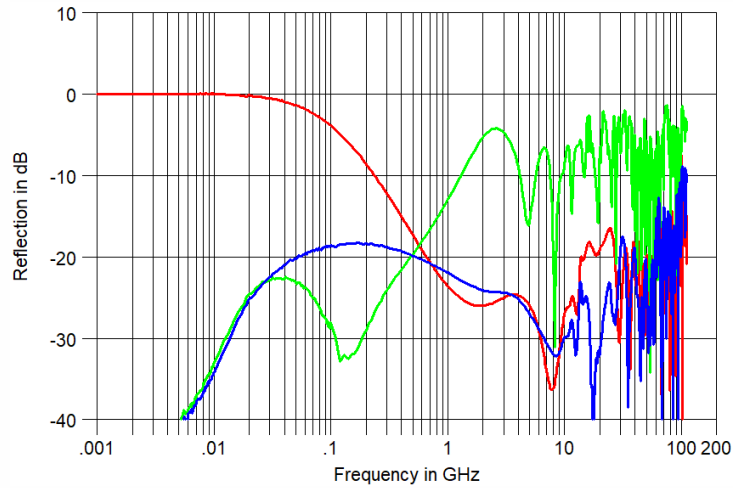
² For resonance-free transmission the LF port requires a 50 Ω termination.



Typical S-Parameters for a DX110R

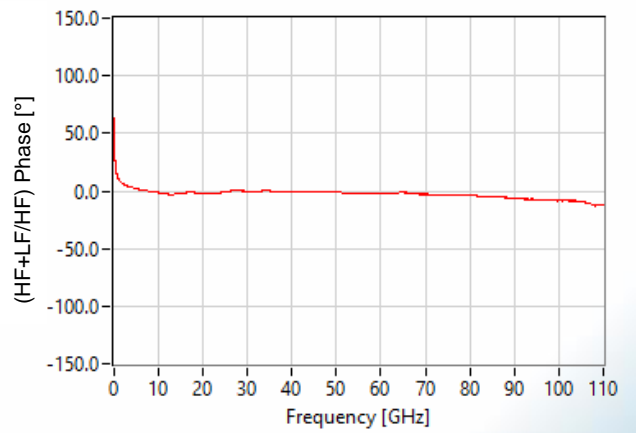
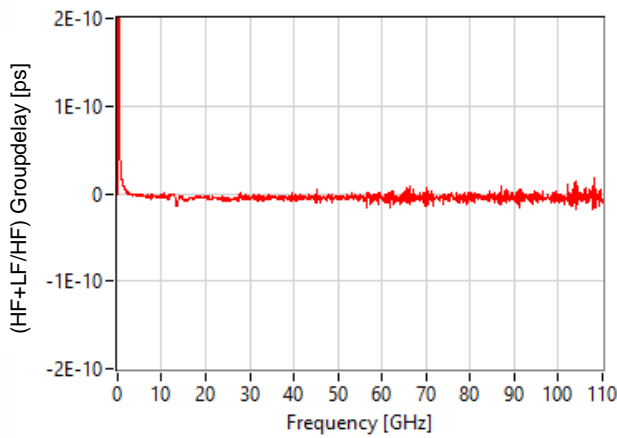


HF+LF/HF: blue ; HF+LF/LF: red ; HF/LF: green



HF+LF: blue ; HF: red ; LF: green

Please refer to the mechanical drawing for the pin assignment.

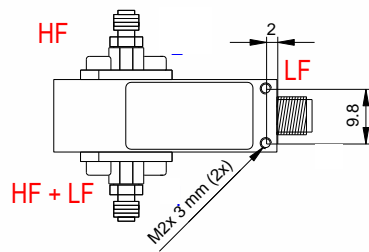
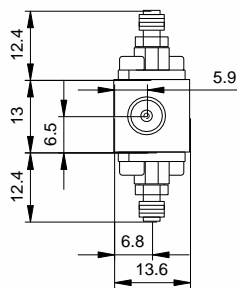
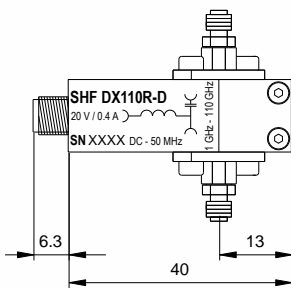
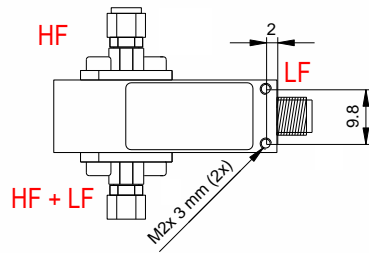
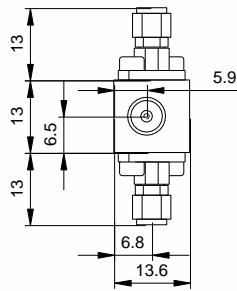
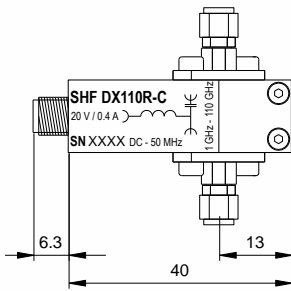
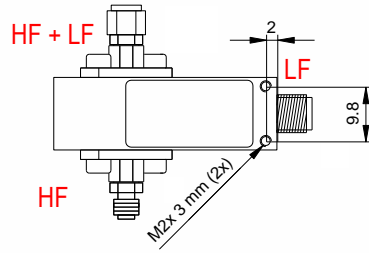
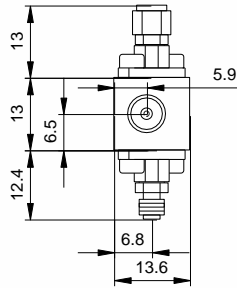
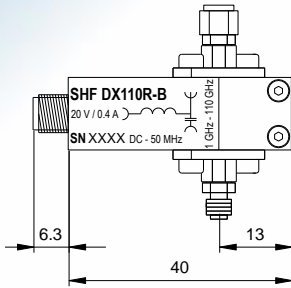
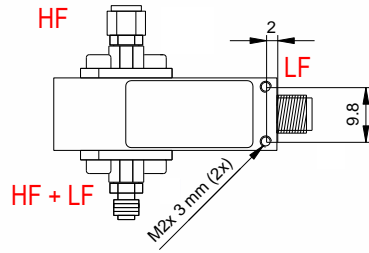
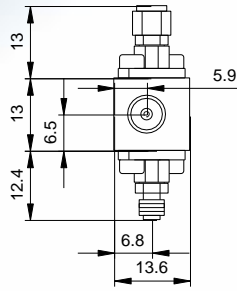
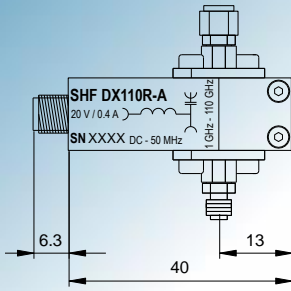


Aperture of group delay measurement: 160 MHz

Phase measurement has been compensated by propagation delay to visualize phase linearity.



Mechanical Drawing



All dimensions in mm