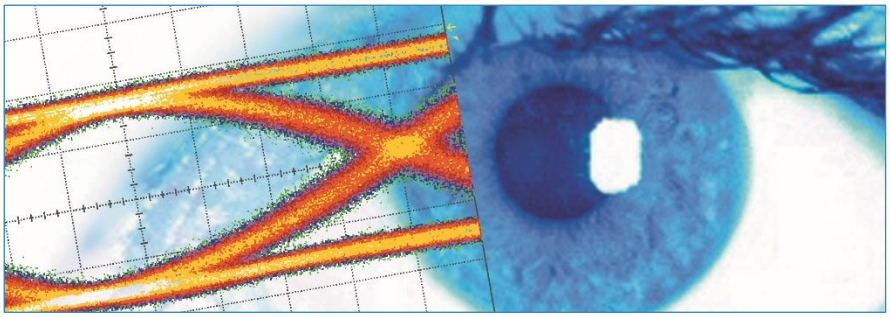


Data Sheet

SHF DCB110R

Broadband DC-Block

Description

The SHF DCB110R is a compact, high performance DC-Block with a small footprint and a bandwidth of more than 110 GHz.

Individual Inspection

Each DCB110R will be furnished with an individual inspection report showing the compliance to the data sheet as well as the frequency domain performance. This data (including the touchstone® s2p-file) is accessible on-line. The specific link dedicated to each serial number will be provided with the delivery and is printed as a QR code.

Configurations

The SHF DCB110R is to be selected in one of the following configurations.

A:	1.0 mm Male to 1.0 mm Female
B:	1.0 mm Female to 1.0 mm Female
C:	1.0 mm Male to 1.0 mm Male

Options

HV50:	High Voltage (maximum DC Voltage extended to 50 V)
MP:	Phase Matching of two DC Blocks (Matched Pair)

Specifications

Absolute Maximum Ratings

Parameter	Unit	Symbol	Min	Typ	Max	Comment
Maximum RF Input w/o option	dBm	$P_{in\ max}$			30	average power of a continuous[1] signal, 50 Ω load and f ≥ 300 kHz
Maximum RF Input with Opt. HV50	dBm	$P_{in\ max}$			30	average power of a continuous[1] signal, 50 Ω load and f ≥ 3 MHz
Maximum DC Voltage w/o option with Opt. HV50	V		 -16 -50		 16 50	difference between ports and between ports to ground
Case Temperature	T_{case}	°C	10	25	50	

Electrical Characteristics (At 25°C case temperature, unless otherwise specified)

Parameter	Unit	Symbol	Min	Typ	Max	Comment
High Frequency 3 dB Point	GHz	f_{HIGH}	110			
Low Frequency 3 dB Point w/o option	kHz	f_{LOW}			40 150	with 0 V_{DC} applied with 16 V_{DC} applied
Low Frequency 3 dB Point Opt. HV50	MHz	f_{LOW}			0.25 1.1	with 0 V_{DC} applied with 50 V_{DC} applied
Insertion loss	dB	IL			1.4 1.7	2 MHz < f ≤ 60 GHz 60 GHz < f ≤ 110 GHz
Return Loss	dB	RL	16 12			2 MHz < f ≤ 60 GHz 60 GHz < f ≤ 110 GHz
Phase Delay Difference[2]	deg	Δ PD			±3 ±5	1 GHz ≤ f ≤ 60 GHz 60 GHz < f ≤ 110 GHz If option MP is chosen
Insertion Loss Difference[3]	db	Δ IL			±0.3	1 to 110 GHz If option MP is chosen

[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 is possible.

[2] The phase delay difference is defined as the phase difference in degrees of the output signals of both dc blocks. It is calculated as: *ΦDC-Block1 – ΦDC-Block2*, where *ΦDC-Block1* and *ΦDC-Block2* indicate the unwrapped phase of S21 *DC-Block*1 and S21 *DC-Block*2, respectively.

[3] The insertion loss difference is defined as the insertion loss difference in dB of the output signals of both bias tees. It is calculated as: *|S21 DC-Block1|dB - |S21 DC-Block2|dB*.

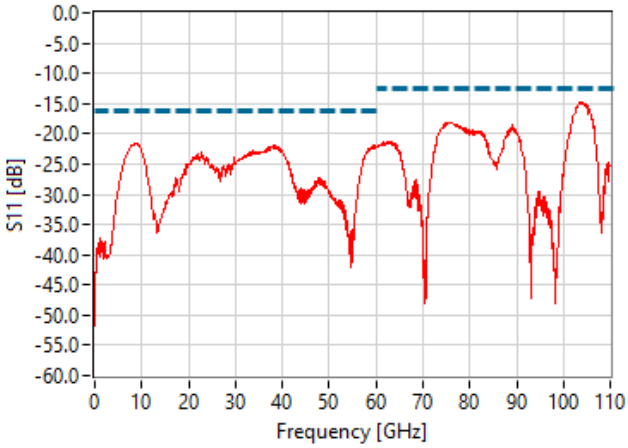
Mechanical Characteristics

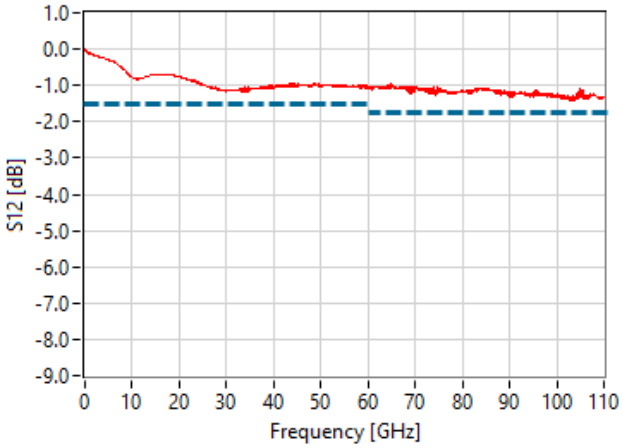
Parameter	Unit	Symbol	Min	Typ	Max	Conditions
Connector	Ω			50		1.0 mm[4]
Dimensions	mm					see outline drawing on page 7
Weight	g			8		

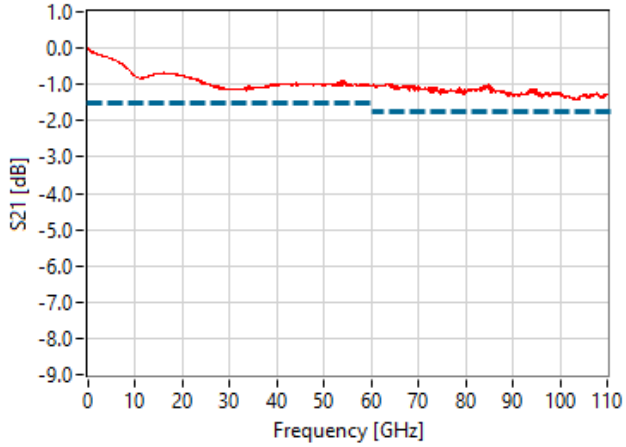
[4] Gender configurations according selected option

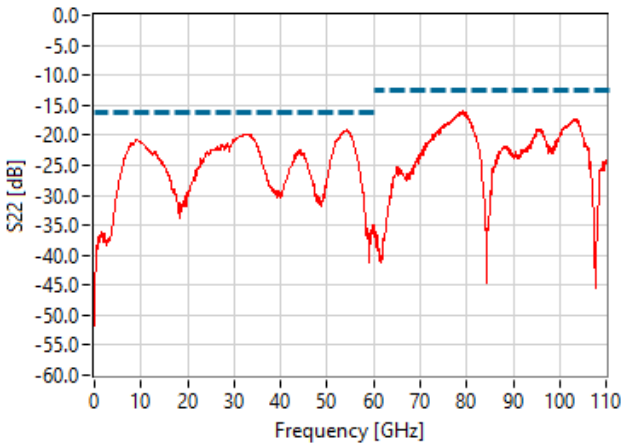
Typical S-Parameters

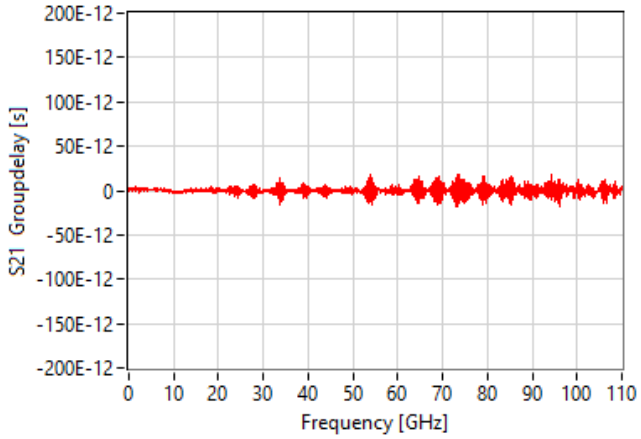
W/o option

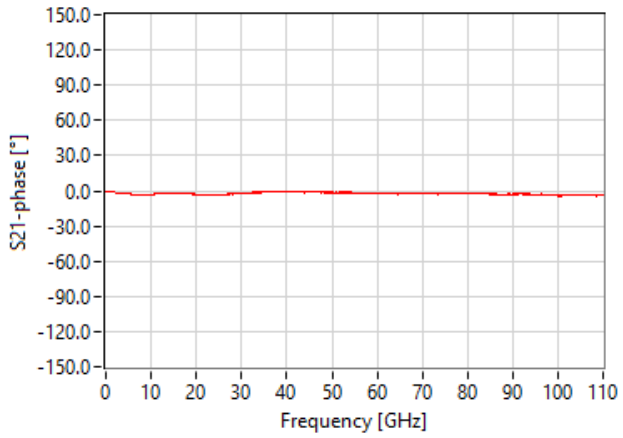










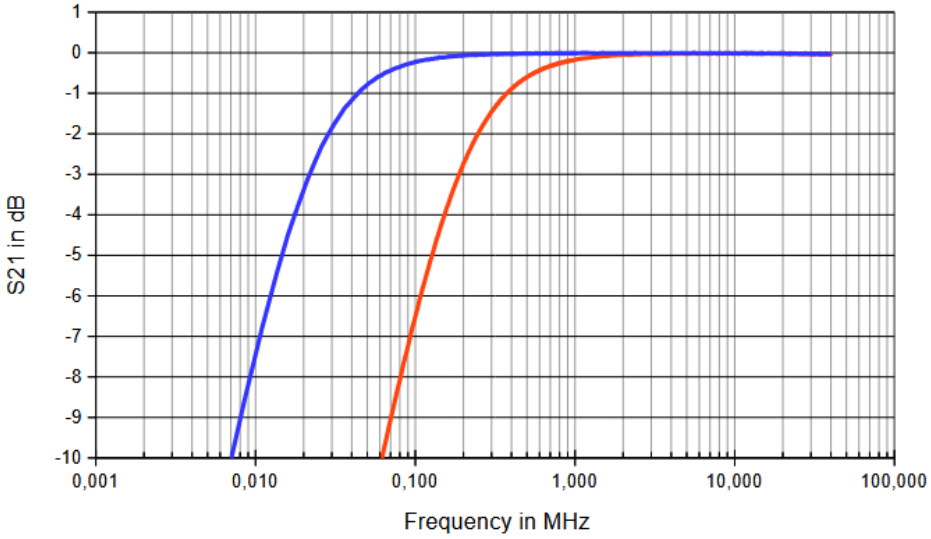


Blue dashed lines = Specifications

Typical Low Frequency Response

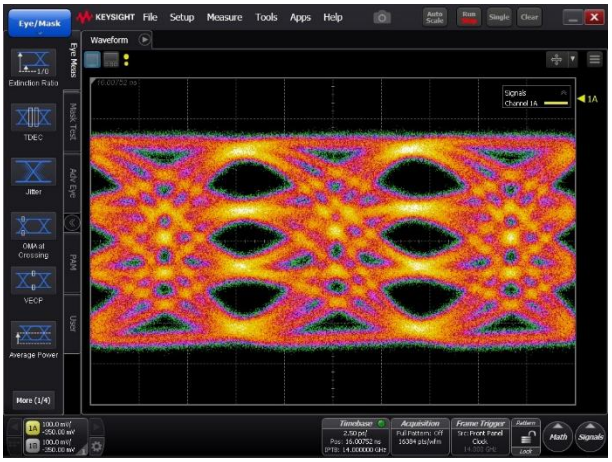
Measurements without applied DC voltage.

W/o option: *blue****; Option HV50:*** *red*

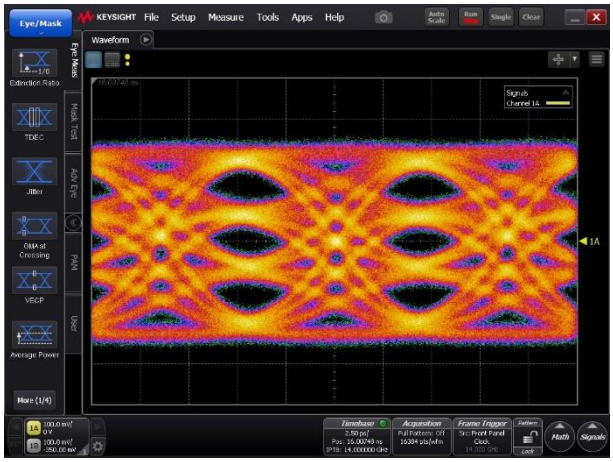


Typical Multilevel Waveforms

Measurements at 112 GBaud had been performed using a SHF 12105 A with SHF 616 C PAM-Mux and a Keysight DCA-X N1000A with a 100 GHz Sampling Module (N1046A).

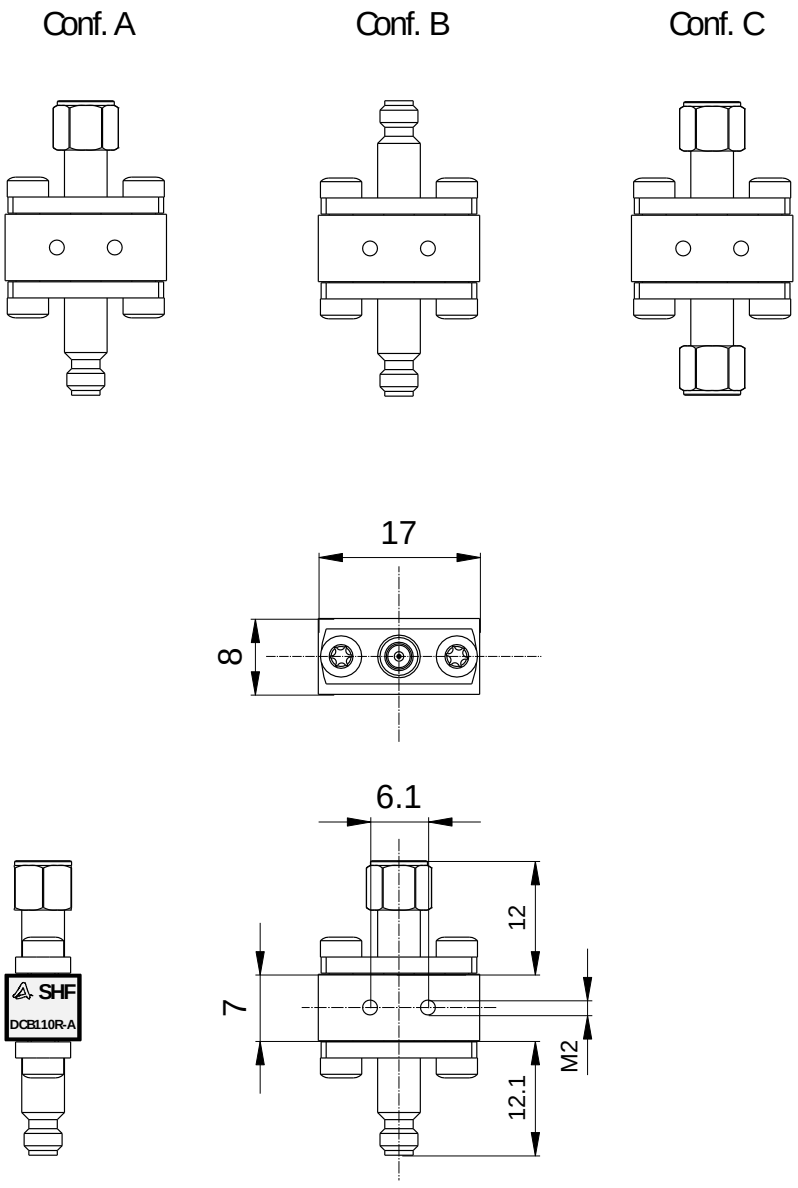


112 GBaud (224 Gbps) Input Signal



112 GBaud (224 Gbps) Output Signal

Mechanical Drawing



All dimensions in mm

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