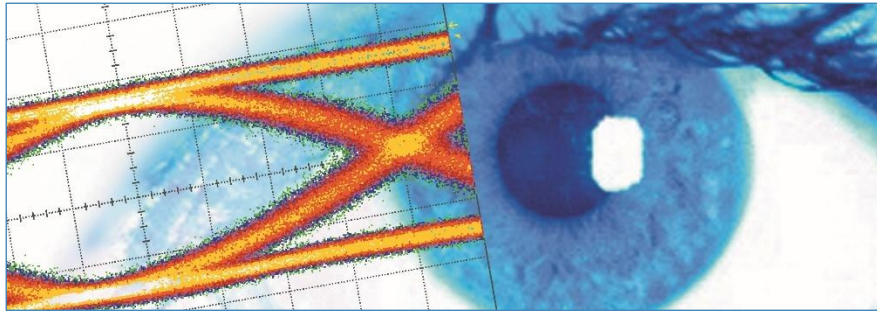
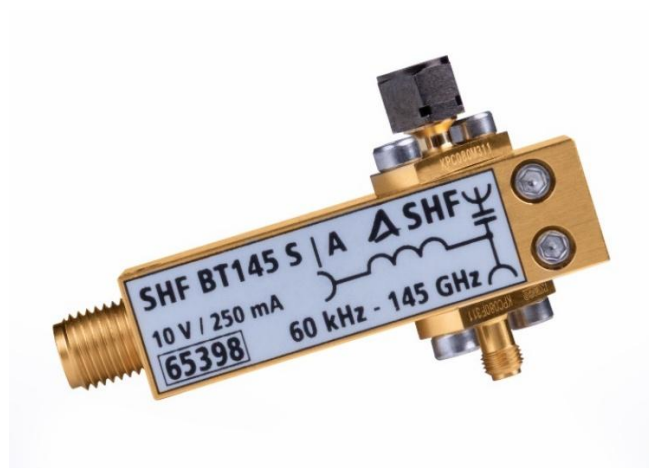




Data Sheet

SHF BT145 S



Broadband Bias-Tee



Description

The SHF BT145 S is a RoHS compliant bias tee offering resonance-free transmission up to at least 145 GHz at low insertion loss. 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.

Individual Inspection

Each bias tee 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 BT145 S is available in one of the following configurations:

- A:** AC port: 0.8 mm Male, AC+DC port: 0.8 mm Female
- B:** AC port: 0.8 mm Female, AC+DC port: 0.8 mm Male
- C:** AC port: 0.8 mm Male, AC+DC port: 0.8 mm Male
- D:** AC port: 0.8 mm Female, AC+DC port: 0.8 mm Female

The DC-port is always SMA.

Options

MP: Matched Pair of two bias tees¹

Product Code Example

- SHF BT145 S | A
Brand: SHF Type: 145 Bias Tee Revision: S Configuration A

¹ Please, contact SHF's Sales Department for specifications of matched pairs.



Specifications

Absolute Maximum Ratings

Parameter	Unit	Symbol	Min	Typ	Max	Comment
Maximum RF Input	dBm	$P_{in\ max}$			27	average power of a continuous ² signal, 50 Ω load and $f \geq 60$ kHz
Maximum DC Voltage	V		-10		10	difference between ports and between ports to ground
Maximum DC Current	mA		-250		250	
Case Temperature	T_{case}	$^{\circ}C$	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}	145			
Low Frequency 3 dB Point w/o option	kHz	f_{LOW}			60 150	with 0 V _{DC} applied with 10 V _{DC} applied
Insertion loss	dB	IL			2 2.5 3	2 MHz < f ≤ 50 GHz 50 GHz < f ≤ 100 GHz 100 GHz < f ≤ 145 GHz
Return Loss	dB	RL	15 10 8 5			2 MHz < f ≤ 10 GHz 10 GHz < f ≤ 50 GHz 50 GHz < f ≤ 100 GHz 100 GHz < f ≤ 145 GHz
DC-Resistance	Ohm			2.5		DC Port to AC+DC Port

Mechanical Characteristics

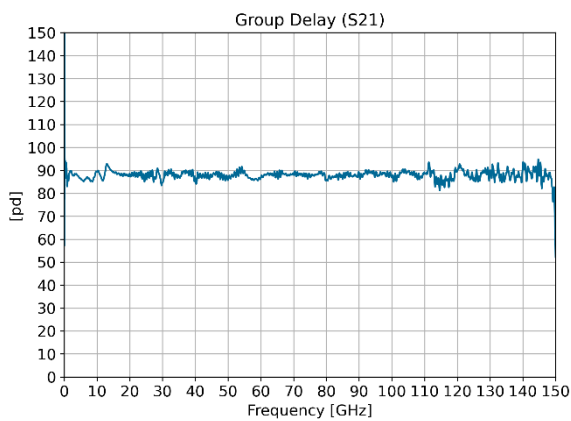
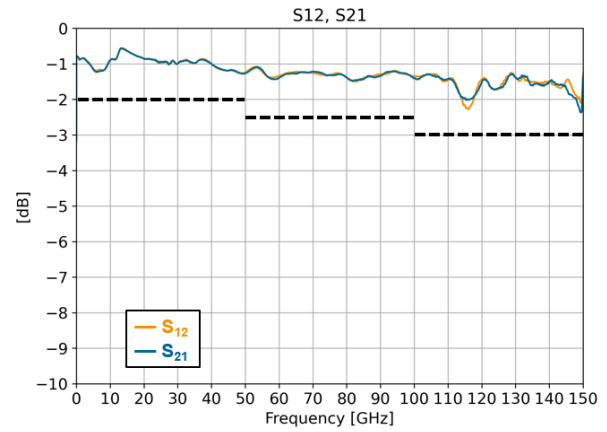
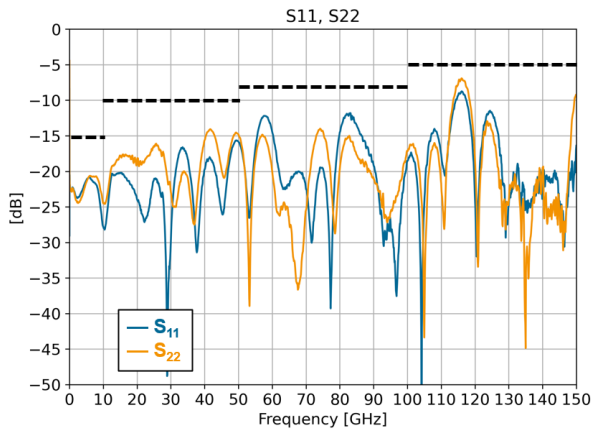
Parameter	Unit	Symbol	Min	Typ	Max	Conditions
Connector	Ω			50		0.8 mm ³
Dimensions	mm					see outline drawing on page 7
Weight	g			15		

² 27 dBm (0.5 W) equals ~14.1 V peak-to-peak for continuous sinusoidal signals. A pulsed excitation with an average of 0.5 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.

³ Gender configurations according to selected configuration.



Typical S-Parameters



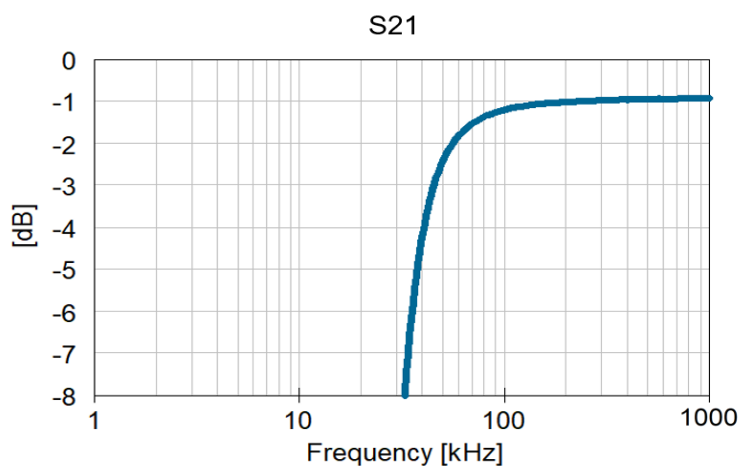
- Solid lines: Measurements
- Black dashed lines: Specifications



Typical Low Frequency Response of AC Path

Measurements without applied DC voltage.

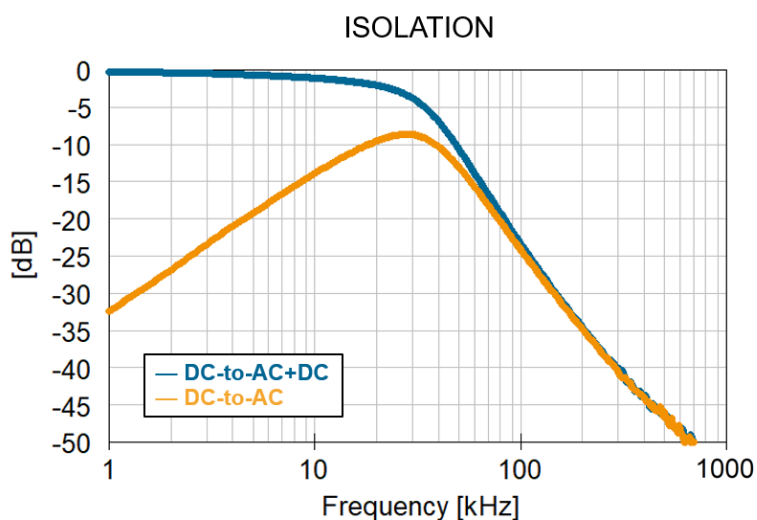
The DC Port has been left open.



Typical Low Frequency Response of DC Paths

Measurements without applied DC voltage.

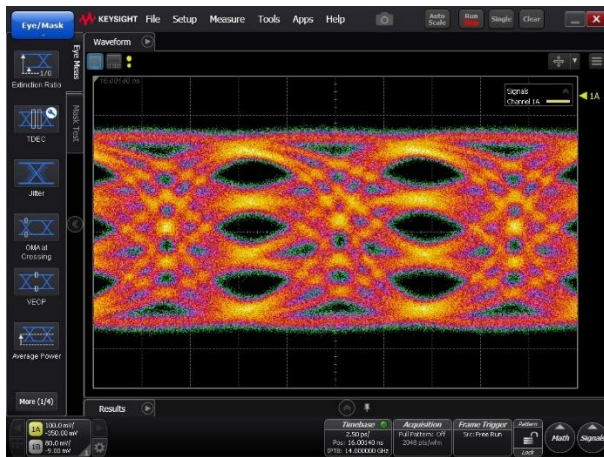
For each measurement, the remaining high-frequency port has been terminated on 50 Ω .



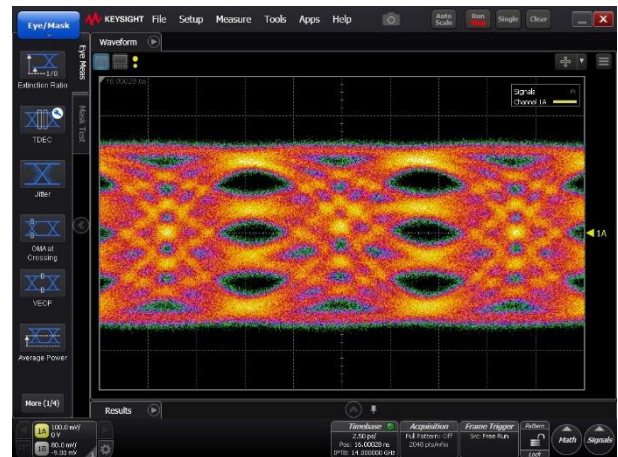


Typical Multilevel Waveforms

Measurements⁴ at 112 GBaud have 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

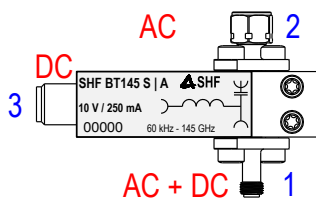
⁴ These measurements include 0.8 mm to 1 mm adapters.



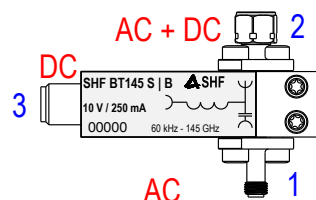
Mechanical Drawing

Configurations

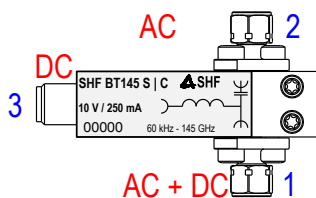
Conf. A



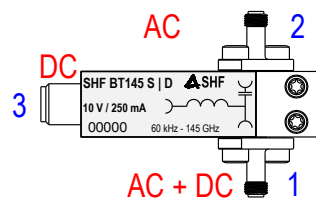
Conf. B



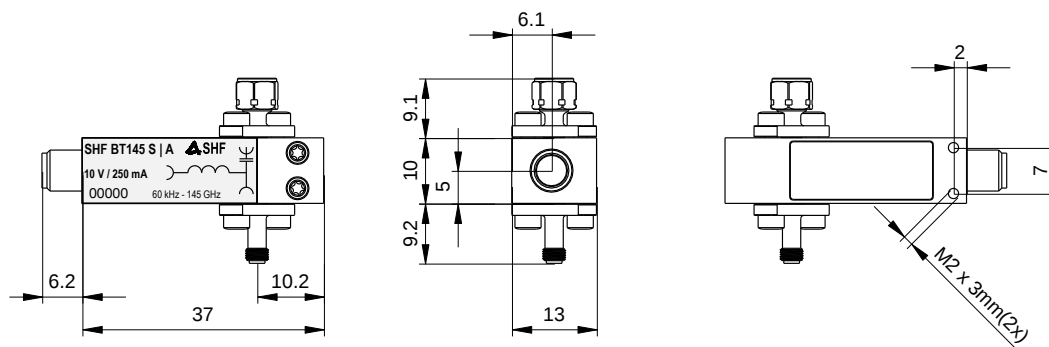
Conf. C



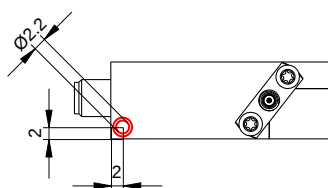
Conf. D



Dimensions



All dimensions in mm



Functional earth holes for 2mm banana plug

valid for all options



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