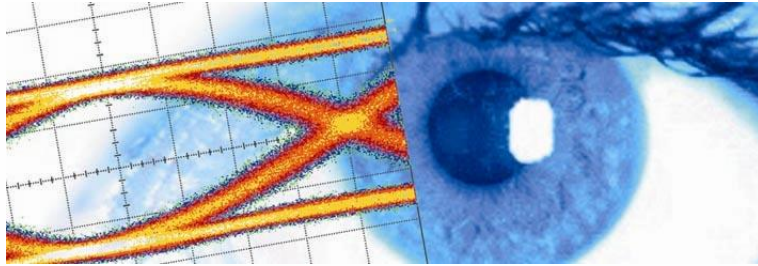




# Passive Microwave Components, RF Connectors & RF Cables



Up to  
110 GHz

**Bias Tees**

**DC Blocks**

**Adapters & Connectors**

**Cable Assemblies**





# Bias Tees and its variants



## Bias Tees

SHF offers a range of broadband bias tees with excellent specifications and performance. Based on a new air line construction (patent pending) technique, all our bias tees have resonance-free transmission over the whole specified operating frequency range. In addition to the low pass-band loss, all products have an extremely low group delay ripple.

P/N or Option	Bandwidth	Max. DC Voltage	Max. DC Current
<b>SHF BT45</b>			
w/o option	20 kHz – 45 GHz	16 V	400 mA
Opt. HV100	400 kHz – 45 GHz	100 V	
Opt. HV200	2 MHz – 45 GHz	200 V	600 mA
Opt. HC600	1MHz – 45 GHz	16 V	
Opt. HC1000	300MHz – 45 GHz		1000 mA
Opt. HC2000	1 GHz – 45 GHz	2000 mA	
Opt. HVC100/1000	300 MHz – 45 GHz	100 V	1000 mA
<b>SHF BT65</b>			
w/o option	50 kHz – 65 GHz	16 V	400 mA
Opt. HV100	40 MHz – 65 GHz	100 V	
<b>SHF BT110</b>			
w/o option	50 kHz – 110 GHz	10 V	400 mA
HV25	1 MHz – 110 GHz	25 V	

## Diplexers

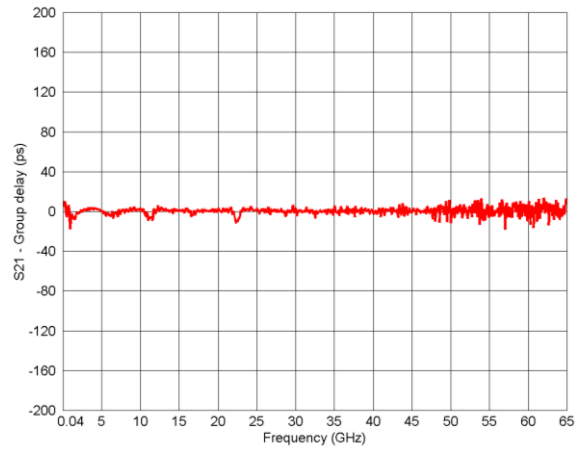
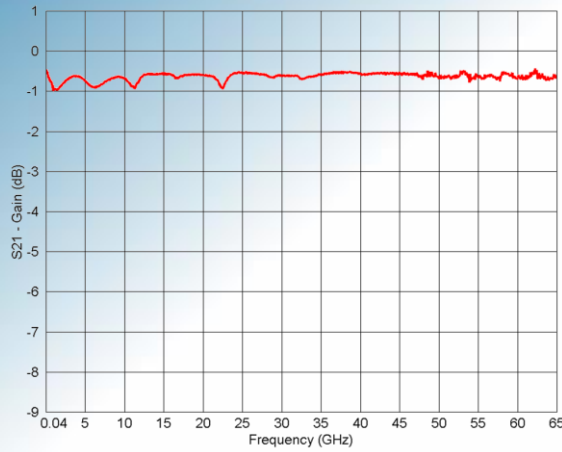
Diplexers are bias tees with a certain bandwidth in the low frequency path to combine or separate high frequency and low frequency signals into or from a single line.

P/N or Option	BW HF-Path	BW LF-Path	Max. LF Voltage	Max. LF Current
<b>SHF DX45</b>				
w/o option	90 MHz – 45 GHz	DC – 45 MHz	16 V	400 mA
Opt. HV100		DC – 40 MHz	100 V	
Opt. HVC100/1000				1000 mA
Opt. HVC100/2000		2000 mA		
Opt. X01	1200 MHz – 32 GHz	DC – 600 MHz		1000 mA
Opt. X02	3000 MHz – 40 GHz	DC – 1000 MHz		2000 mA
<b>SHF DX65</b>				
w/o option	100 MHz – 65 GHz	DC – 45 MHz	16 V	400 mA
Opt. HV100			100 V	
<b>SHF DX110</b>				
w/o option	500 MHz – 110 GHz	DC – 100 MHz	16 V	400 mA

## DC-Feeders

DC- Feeders are bias tees without the capacitor. Therefore it provides slightly lower insertion loss in case it is connected to an AC-coupled device which already has a capacitor on its input.

P/N	Bandwidth	Max. DC Voltage	Max. DC Current
SHF DF45	DC – 45 GHz	16 V	400 mA
SHF DF65	DC – 65 GHz		



Typical insertion loss and group delay (aperture 100 MHz) of a SHF BT65 bias tee

## DC Blocks and its variant

### DC Blocks

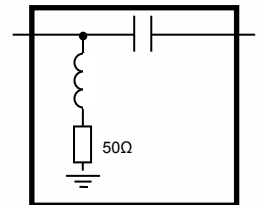
Compact, high performance DC blocks with an extremely broad bandwidth covering 20 kHz to greater than 110 GHz. As with our range of bias tees, the SHF DC blocks offer low group delay and low insertion loss.



P/N or Option	Bandwidth	Max. DC Voltage	Max. RF Power
<b>SHF DCB45</b>			
w/o option	30 kHz – 45 GHz	16 V	30 dBm
Opt. HV100	400 kHz – 45 GHz	100 V	30 dBm
Opt. HV200	2 MHz- 45 GHz	200 V	30 dBm
<b>SHF DCB65</b>			
w/o option	30 kHz – 65 GHz	16 V	30 dBm
Opt. HV100	40 MHz – 65 GHz	100 V	30 dBm
<b>SHF DCB110</b>			
w/o option	50 kHz – 110 GHz	10 V	30 dBm

### DC Returns

Some modules need a DC current to flow (which is not possible in case a DC Block is inserted). A DC Return is basically a DC Block providing a 50 Ohm path to ground so that a DC current can flow.



P/N	Bandwidth	Max. DC Voltage	Max. DC Current
SHF DCR45	20 kHz – 45 GHz	16 V	100 mA
SHF DCR65	20 kHz – 65 GHz	16 V	100 mA



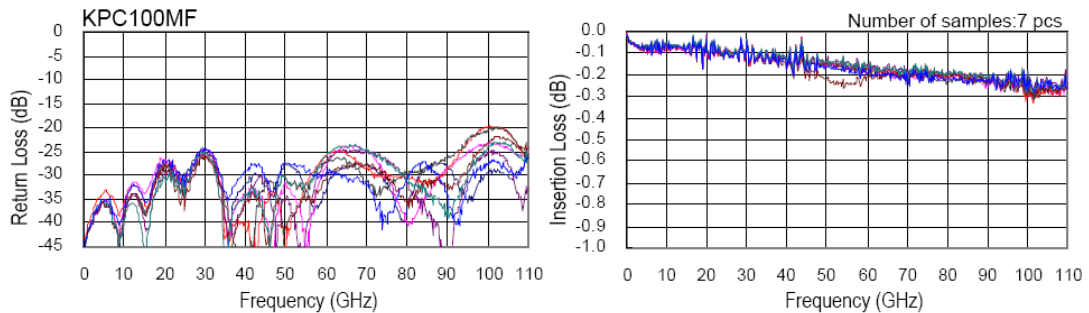
# Adapters & Connectors

## Adapters

For many years now, we are working together with our Japanese partner KMCO. Our customers can benefit from KMCO's excellent expertise in designing RF connectors when using our RF adapters. The extensive product range covers all adaptation applications beyond 18 GHz and up to 110 GHz. In addition to the excellent product quality, the competitive pricing and the fast delivery, below 3 weeks, has helped our customers to obtain cost effective adapters.



The adapters come along with an individual inspection report, showing the insertion loss and the return loss plotted over the whole specified frequency range. The diagrams below show an example for our KPC100MF 1mm in-series adapters up to 110 GHz.



P/N <sup>1</sup>	Connector 1	Connector 2	BW
KPC100□□	1.00mm	1.00mm	110 GHz
KPC185□100□	1.85mm (V)	1.00mm	67 GHz
KPC185□□	1.85mm (V)	1.85mm (V)	65 GHz
KPC185□-SMPM-FD, KPC185□-SMPM-SB	1.85mm (V)	SMPM	65 GHz
KPC240□□	2.40mm	2.40mm	50 GHz
KPC240□185□	2.40mm	1.85mm (V)	50 GHz
KPC292□□	2.92mm (K)	2.92mm (K)	40 GHz
KPC292□185□	2.92mm (K)	1.85mm (V)	40 GHz
KPC292□240□	2.92mm (K)	2.40mm	40 GHz
KPC350□□	3.50mm	3.50mm	26.5 GHz
KPC350□240□	3.50mm	2.40mm	26.5 GHz

<sup>1</sup> □ represents the connector configuration (M: male, F: female)



## Panel Adapter

Coaxial panel adapters are an ideal product for panel mounting of broadband measurement devices and instruments. The customer can choose between the standard version, and a ruggedized version which offers very high robustness combined with easy handling. The hermetically sealed coaxial adapters are supposed to be the RF interface between different environments, for instance vacuum and atmosphere in a cryogenic environment.



Ruggedized Front Panel Adapter



Panel Adapter



Hermetically Sealed Panel Adapter

P/N <sup>2</sup>	Connector 1	Connector 2	Bandwidth
<b>Panel Adapter</b>			
KPC185□□PA	1.85mm (V)	1.85mm (V)	65 GHz
KPC292□□PA	2.92mm (K)	2.92mm (K)	40 GHz
KPC185□SMPMFDA	1.85mm (V)	SMPM	65 GHz
KPC292□SMPMFDA	2.92mm (K)	SMPM	40 GHz
<b>Ruggedized Front Panel Adapter</b>			
KPC185□□FPA	1.85mm (V)	1.85mm (V)	65 GHz
KPC292□□FPA	2.92mm (K)	2.92mm (K)	40 GHz
<b>Hermetically Sealed Panel Adapter</b>			
KPC185□□HA	1.85mm (V)	1.85mm (V)	65 GHz
KPC292□□HA	2.92mm (K)	2.92mm (K)	40 GHz

## Sparkplug- & Flange Launcher

For module application, SHF offers RF & microwave sparkplug and flange launcher coaxial connectors from DC up to 110 GHz. In addition to the connectors themselves, glass beads to connect the inner circuitry of an RF module with the outer connector can be ordered independently. Full mechanical compatibility enables an easy replacement of connectors from other vendors without changing the mechanical design of existing housings.



2.92 mm Sparkplug Launcher



2.92 mm Flange Launcher

P/N <sup>2</sup>	Connector 1	Connector 2	Bandwidth
<b>Flange Launcher</b>			
KPC100□311	1.00mm	Pin	110 GHz
KPC185□302	1.85mm (V)	Glass Bead or Pin	65 GHz
KPC292□302	2.92mm (K)		40 GHz
<b>Sparkplug Launcher</b>			
KPC185□301	1.85mm (V)	Glass Bead or Pin	65 GHz
KPC292□301	2.92mm (K)		40 GHz

<sup>2</sup> □ represents the connector configuration (M: male, F: female)



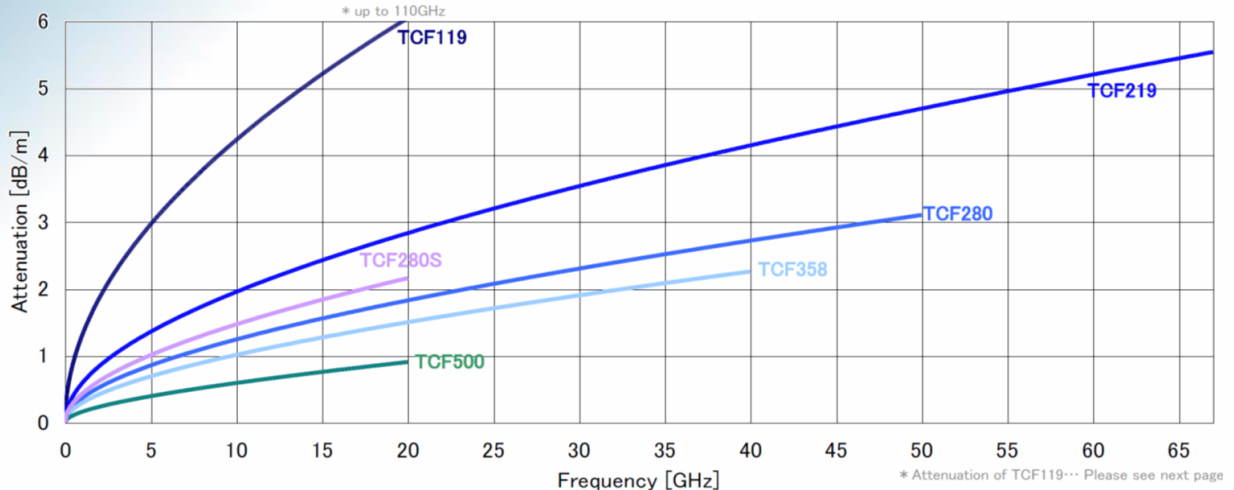
# Cable Assemblies

## Flexible Cable Assemblies up to 110 GHz (made by Totoku of Japan)

Totoku's cable assemblies exhibit excellent flexibility and maintain their phase stability over temperature and bending. The extremely low attenuation (see chart below) is realized by using silver plated copper and E-PTFE with a low dielectric constant.



All cable assemblies are provided with an individual inspection report which shows the insertion loss and the input return loss plotted for the whole specified frequency range.



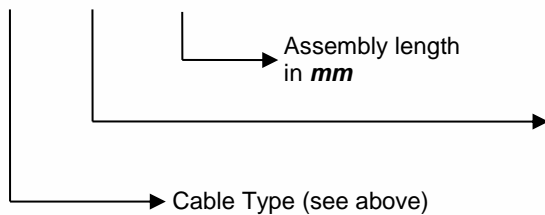
### Options

- Phase matched (accuracy  $\leq 1$  ps)
- Right angle connectors
- Armored and soft armored cables

P/N	Connector 1	Connector 2	Bandwidth
TCF119□□	1.00mm	1.00mm	110 GHz
TCF219□□	1.85mm (V) 2.40mm	1.85mm (V)	65 GHz 50 GHz
TCF280□□	2.40mm 2.92mm (K)	2.40mm	50 GHz 40 GHz
TCF358□□	2.92mm (K) 3.50mm	2.92mm (K) 3.50mm	40 GHz 26.5 GHz
TCF500□□	SMA N	SMA N	20 GHz 18 GHz

### Configuration Example:

TCFXXX □ □ ○ ○ ○ ○



### Connector Configuration:

- |                        |                          |
|------------------------|--------------------------|
| <b>A:</b> male SMA     | <b>B:</b> female SMA     |
| <b>D:</b> male N       | <b>E:</b> female N       |
| <b>F:</b> male 3.50 mm | <b>G:</b> female 3.50 mm |
| <b>K:</b> male 2.92 mm | <b>M:</b> female 2.92 mm |
| <b>Q:</b> male 2.40 mm | <b>R:</b> female 2.40 mm |
| <b>T:</b> male 1.85 mm | <b>U:</b> female 1.85 mm |
| <b>X:</b> male 1.00 mm | <b>Y:</b> female 1.00 mm |



## RF Semi-rigid Cable Assemblies

Whenever reliable coaxial RF connections between modules and instruments are required, our semi-rigid cable assemblies are the right choice. Cable assemblies up to 110 GHz can be provided with a very fast delivery at a competitive pricing.



Semi-rigid cable assemblies, which can be customized in length and shape, are the ideal solution for volume use and system prototyping. These come from our Japanese partner KMCO, and are used in SHF's own measurement instruments after extensive tests.

All cable assemblies are precisely manufactured and have very good physical length accuracy (phase matched cables are available on request). Furthermore, they are provided with an individual measurement report which shows the insertion- and the input return loss for the whole specified frequency range.

P/N <sup>3</sup>	Connector 1	Connector 2	Bandwidth
CA100	1.00mm	1.00mm	110 GHz
CA185□119SMPM	1.85mm (V)	SMPM (GPPO™)	65 GHz
CA185□□	1.85mm (V)	1.85mm (V)	60 GHz
CA240□□	2.40mm	2.40mm	50 GHz
CA240□185□	2.40mm	1.85mm (V)	50 GHz
CA240□119SMPM	2.40mm	SMPM (GPPO™)	50 GHz
CA292□□	2.92mm (K)	2.92mm (K)	40 GHz
CA292□185□	2.92mm (K)	1.85mm (V)	40 GHz
CA292□240□	2.92mm (K)	2.40mm	40 GHz
CA292□119SMPM	2.92mm (K)	SMPM (GPPO™)	40 GHz

Product Number example:

A CA240FM0125 is a 125 mm cable assembly with one female and one male 2.40 mm connector.

## RF Semi-Flexible Cable Assemblies

All semi-flexible cable assemblies are precisely manufactured and have very good physical length accuracy (phase matched cables are available on request). Furthermore they are provided with an individual measurement report which shows the insertion- and the input return loss for the whole specified frequency range.

P/N <sup>3</sup>	Connector 1	Connector 2	Bandwidth
SFCA185119□□	1.85mm (V)	1.85mm (V)	65 GHz
SFCA119SMPM	SMPM (GPPO™)	SMPM (GPPO™)	65 GHz
SFCA185□119SMPM	1.85mm (V)	SMPM (GPPO™)	65 GHz
SFCA292119□□	2.92mm (K)	2.92mm (K)	40 GHz
SFCA292□119SMPM	2.92mm (K)	SMPM (GPPO™)	40 GHz

Product Number example:

A SFCA119SMPM 0100 is a 100 mm semi-flexible cable assembly with SMPM connectors.

<sup>3</sup> □ represents the connector configuration (M: male, F: female)



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