

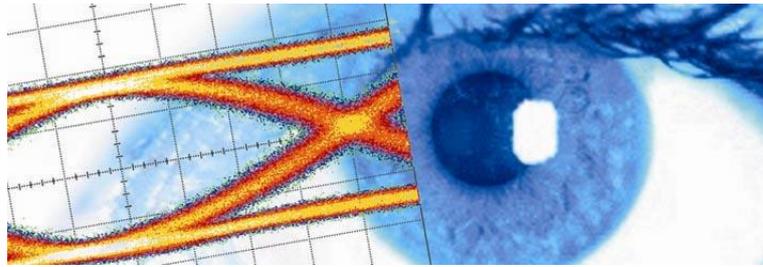


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Datasheet

SHF C652 A

67 GHz

1:2 Clock Buffer





Description

The SHF C652 A 1:2 Clock Buffer operates at frequencies up to 67 GHz and can be used in broadband test setups and telecom transmission systems. The AC-coupled differential input can also be driven single-ended by terminating the unused port. This renders the device perfectly suited to generate two in-phase differential copies of the input clock signal. In a typical application the single input is split to clock and synchronize four further modules.

For single ended input signals >150 mV the output voltage will be clipped to a fixed output voltage. All RF in- and output ports are AC-coupled and internally terminated with 50 Ohm to GND. Unused in- or output ports should be terminated with 50 Ohm.

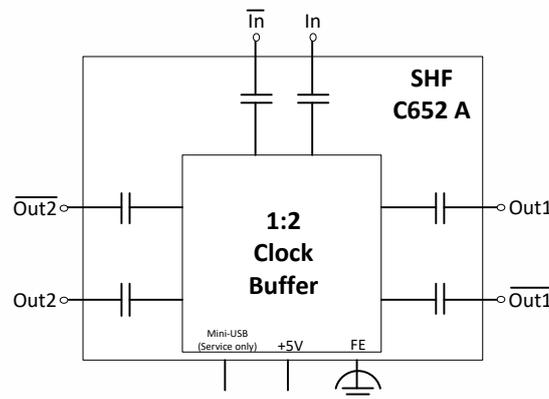
Features

- Broadband operation up to 67 GHz
- Two differential output ports
- Single ended or differential operation (either In or In! or both can be used)

Applications

- Clock signal amplification
- Splitting one clock signal into 2 differential output signals
- 100G Ethernet development and prototyping
- OC-768 / STM-256 applications
- Telecom transmission
- Fibre Channel®
- Broadband test and measurement equipment

Block Diagram



Accessories¹

- +5V power supply desktop adapter
- Functional earth cable → Connection to test setup ground has to be set up first before any other connection to prevent instrument damage!

[®] Fibre Channel is a registered trademark of the Fibre Channel Industry Association

¹ Mini-USB port is only for service purposes, no USB cable will be provided



Absolute Maximum Ratings

Parameter	Unit	Symbol	Min.	Typ.	Max.	Comment
Input Parameters						
Clock Input Voltage	mV	$V_{\text{clk in}}$			900	Peak-to-Peak
External DC Voltage on RF Input Ports	V	V_{DCin}	-6		+6	AC coupled input
External DC Voltage on RF Output Ports	V	V_{DCout}	-6		+6	AC coupled output
DC Supply Voltage	V	V_{cc}	0		+6	

Specifications

Parameter	Unit	Symbol	Min.	Typ.	Max.	Comment
Input Parameters						
Minimum Input Frequency	MHz	$f_{\text{in min}}$			1	
Maximum Input Frequency	GHz	$f_{\text{in max}}$	67 ²			
Clock Input Voltage	mV _{pp}	$V_{\text{clk in}}$	150		850	Peak-to-Peak; Single-ended
Output Parameters						
Clock Output Voltage	mV _{pp}	V_{out}	400 280	600 400		≤ 50 GHz > 50 GHz Peak-to-Peak; Single-ended; See page 4
Power Requirements						
Supply Voltage	V	V_{cc}	4.8	5.0	5.2	2.5 x 0.7 mm DC Power Jack
Supply Current	mA	I_{ee}		370	400	
Power Dissipation	W	P_{d}		1.85		@ $V_{\text{cc}} = +5\text{V}$
Mechanical Characteristic						
Connectors	Ω			50		1.85 mm (V) female
Dimensions	mm					see page 6
Weight	g			90		
Conditions						
Operating Temperature	°C	T_{ambient}	15		35	

² Small signal bandwidth of the module is ~30 GHz



Typical Output Voltage

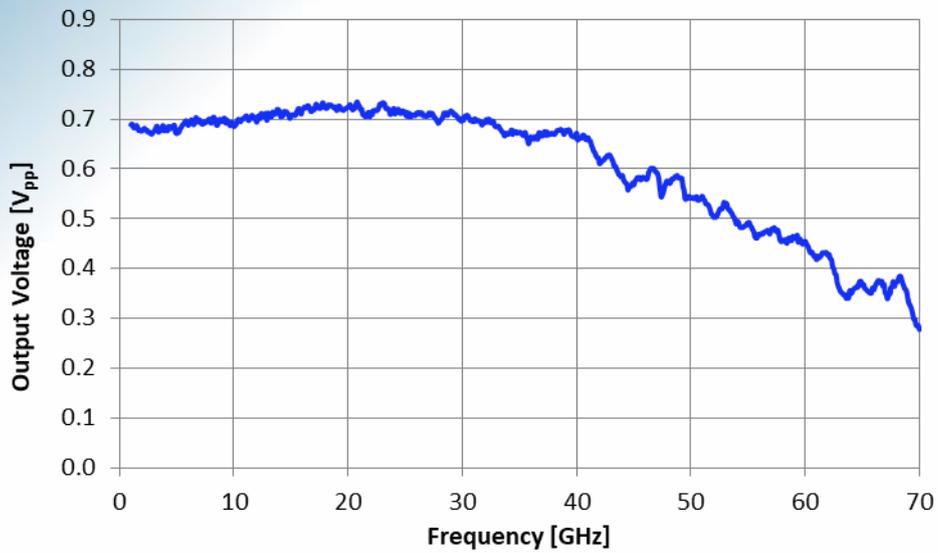


Fig.1: Output voltage @ $V_{in} = 200 \text{ mV}_{pp}$

Typical S-Parameters

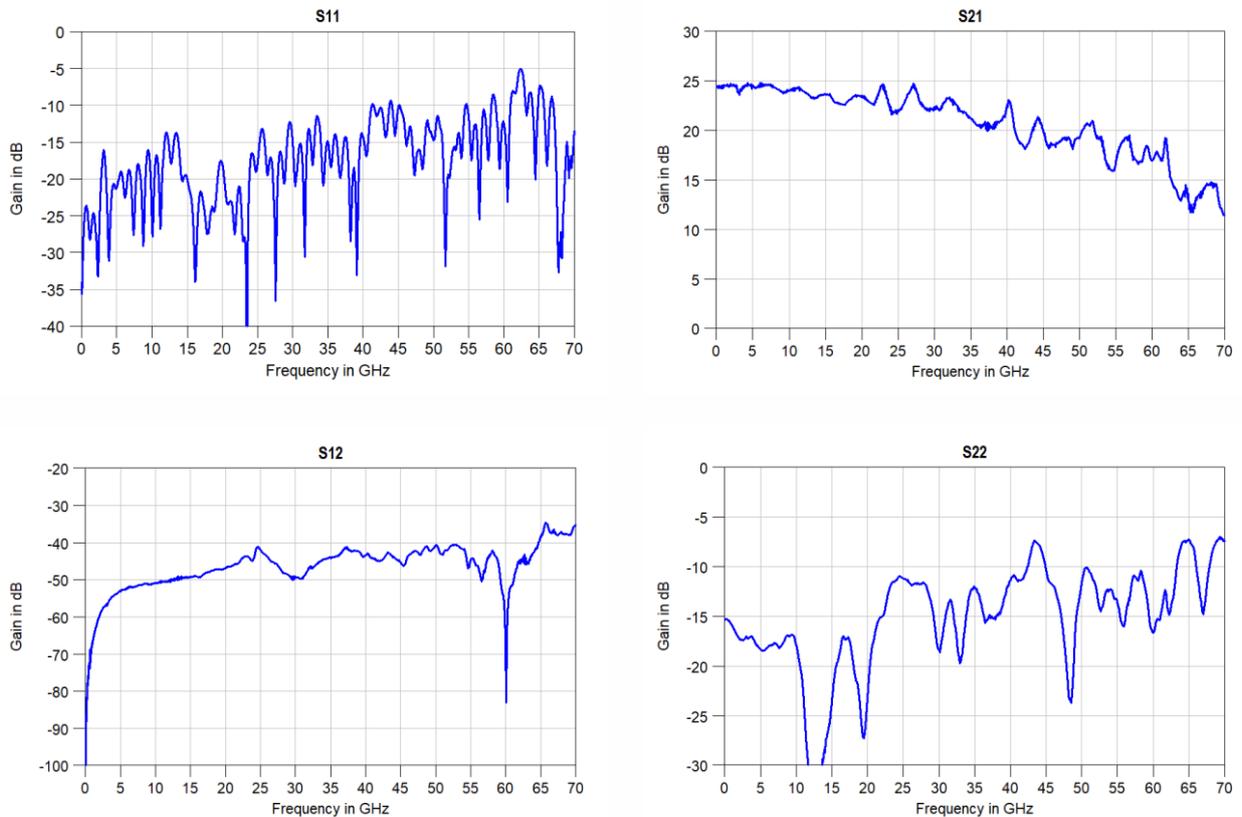
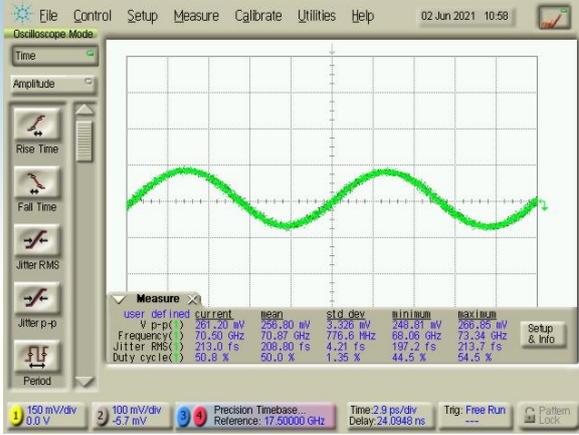


Fig.2: S-Parameter measurements @ $P_{in} = -30 \text{ dBm}$

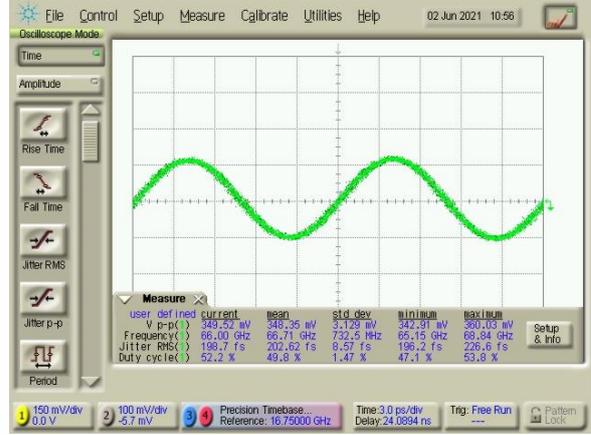


Typical Output Waveform

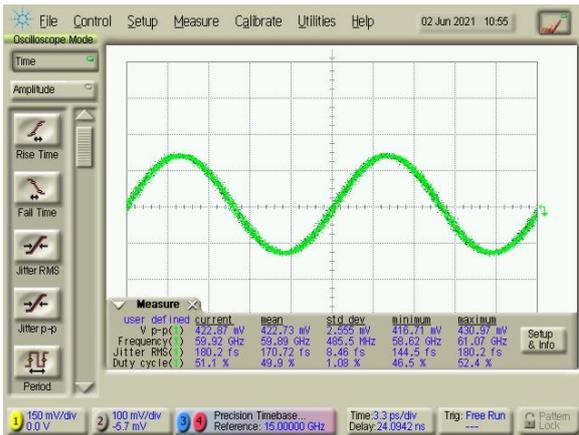
The measurements below had been performed using an Agilent 86100B DCA with Precision Time Base Module (86107A) and 70 GHz Sampling Head (86118A). The outputs of the clock buffer module had been connected by 6 dB attenuators to the DCA input.



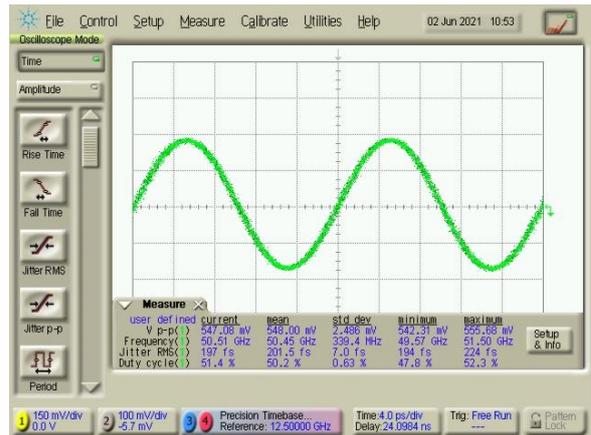
Output Signal @ $f_{in}= 70$ GHz



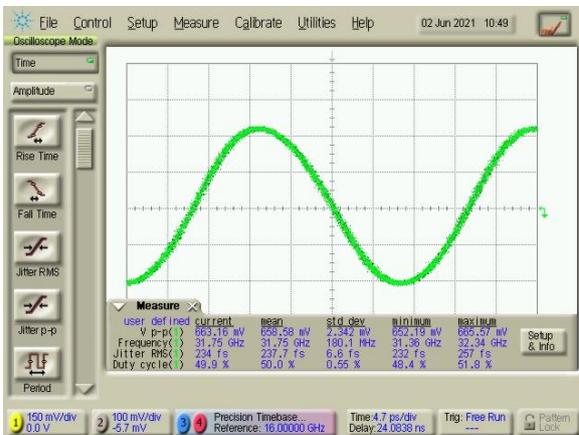
Output Signal @ $f_{in}= 67$ GHz



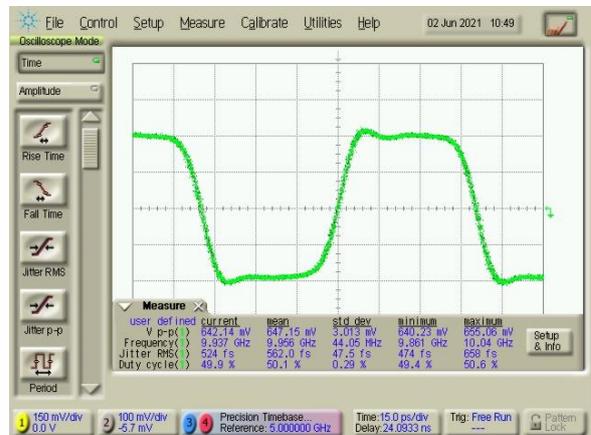
Output Signal @ $f_{in}= 60$ GHz



Output Signal @ $f_{in}= 50$ GHz



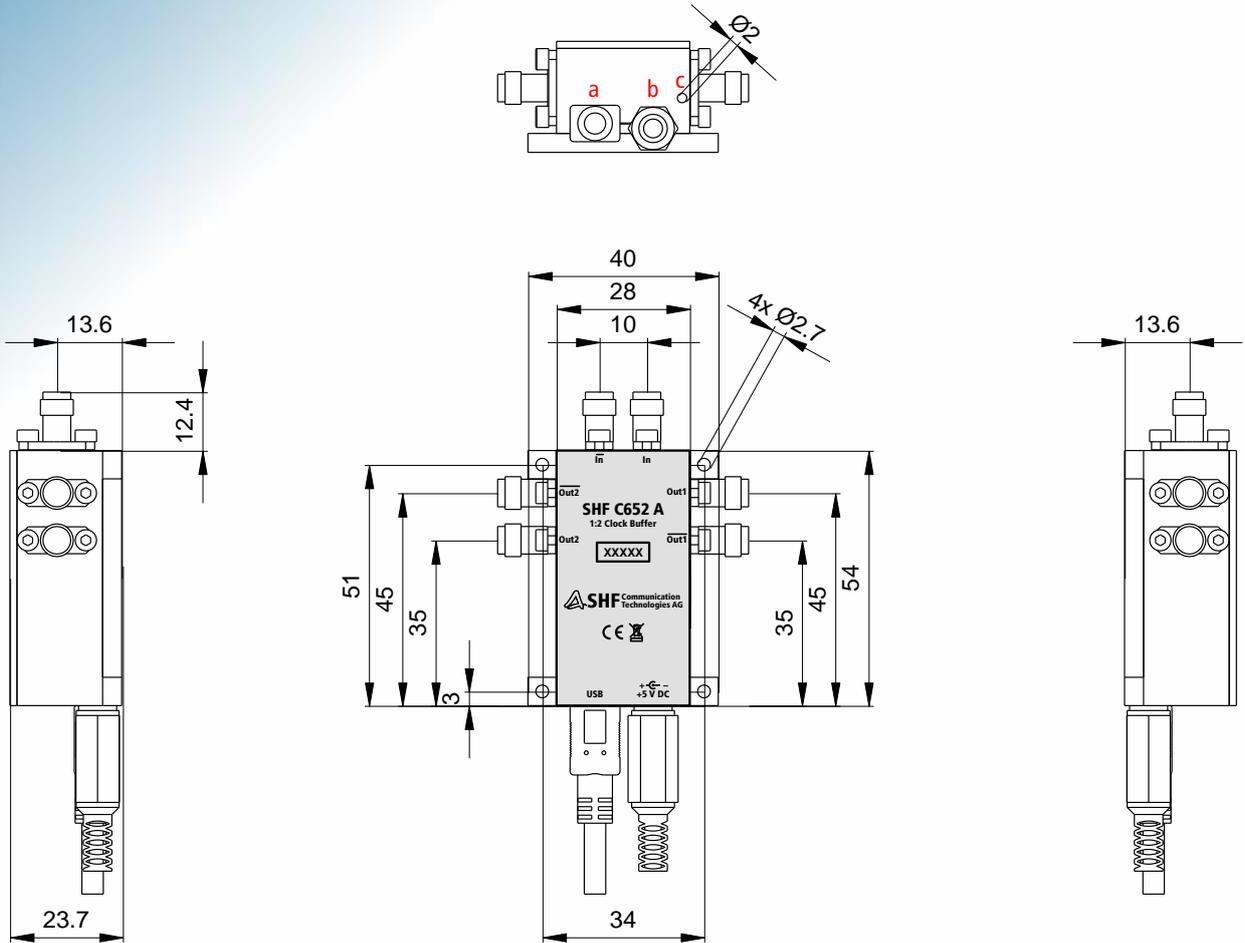
Output Signal @ $f_{in}= 32$ GHz



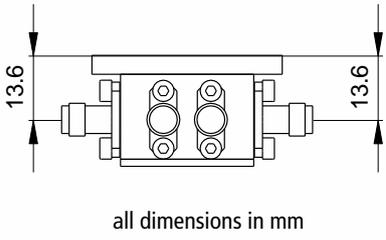
Output Signal @ $f_{in}= 10$ GHz



Outline Drawing – Module



Port	Connector
In	1.85mm (V) female
In	1.85mm (V) female
Out1	1.85mm (V) female
Out1	1.85mm (V) female
Out2	1.85mm (V) female
Out2	1.85mm (V) female



Port	Connector
a	Mini-USB
b	Power
c	Functional earth (FE)