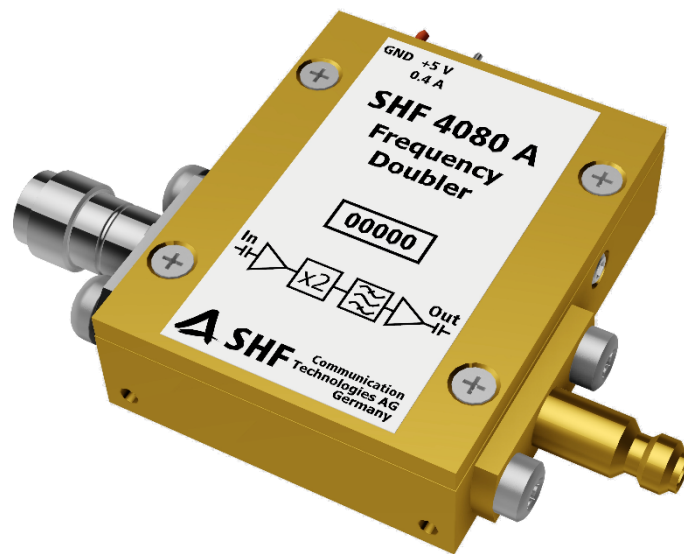


# Data Sheet

## SHF 4080 A



## Frequency Doubler

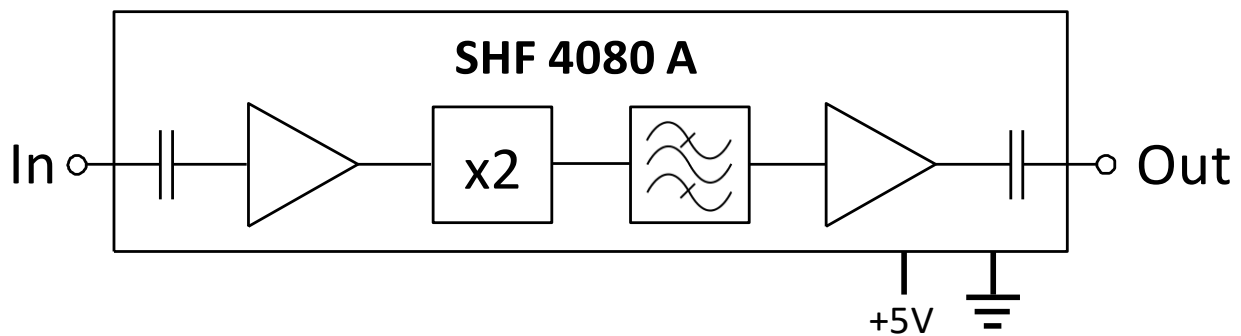
## Description

The SHF 4080 A is a frequency doubler with integrated input and output buffer amplifier. It features a conversion gain of more than +3 dB in the output frequency range between 58 GHz and 82 GHz. Beyond those limits the frequency doubler operates with slightly worse characteristic. An integrated bandpass ensures a good suppression of the fundamental frequency.

## Features

- Low Input Power Drive
- Fundamental Suppression > 25 dBc
- Single Power Supply: +5V @ 370 mA

## Block Diagram





## Specifications

### Absolute Maximum Ratings

Parameter	Unit	Symbol	Min	Typ	Max	Comment
Input Voltage	mV	$V_{in}$			1000	Peak-to-Peak
External DC Voltage on RF Ports	V	$V_{DCin}$	-10		+10	AC coupled input
DC Supply Voltage	V	$V_{cc}$	0		+6	

### Input & Output Parameters

Parameter	Unit	Symbol	Min	Typ	Max	Comment
Minimum Input Frequency	GHz	$f_{in,min}$			29	
Maximum Input Frequency	GHz	$f_{in,max}$	41			
Minimum Output Frequency	GHz	$f_{out,min}$			58	
Maximum Output Frequency	GHz	$f_{out,max}$	82			
Input Power	dBm	$P_{in}$	-7		+3	
Output Power	dBm	$P_{out}$		+4		see page 4
Suppression of Fundamental	dBc		25			see page 4

### Power Requirements

Parameter	Unit	Symbol	Min	Typ	Max	Comment
Supply Voltage	V	$V_{cc}$	+5.0		+5.5	
Supply Current	mA	$I_{cc}$		370	400	
Power Dissipation	W	$P_d$			2.0	@ $V_{cc} = +5V$

### Mechanical Characteristics

Parameter	Unit	Symbol	Min	Typ	Max	Comment
Input Connector	$\Omega$			50		1.85 mm (V) female
Output Connector	$\Omega$			50		1.0 mm (W) female
Dimensions	mm					See pages 7-8
Weight	g			30		module
	g			90		module + heat sink

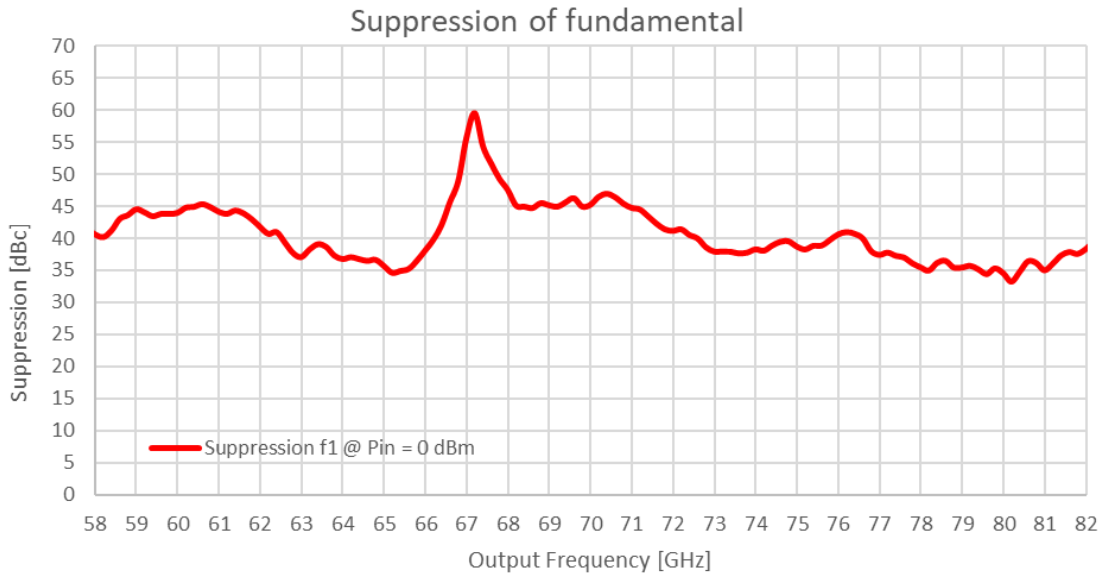
### Conditions

Parameter	Unit	Symbol	Min	Typ	Max	Comment
Operating Temperature	$^{\circ}C$	$T_{ambient}$	15		35	



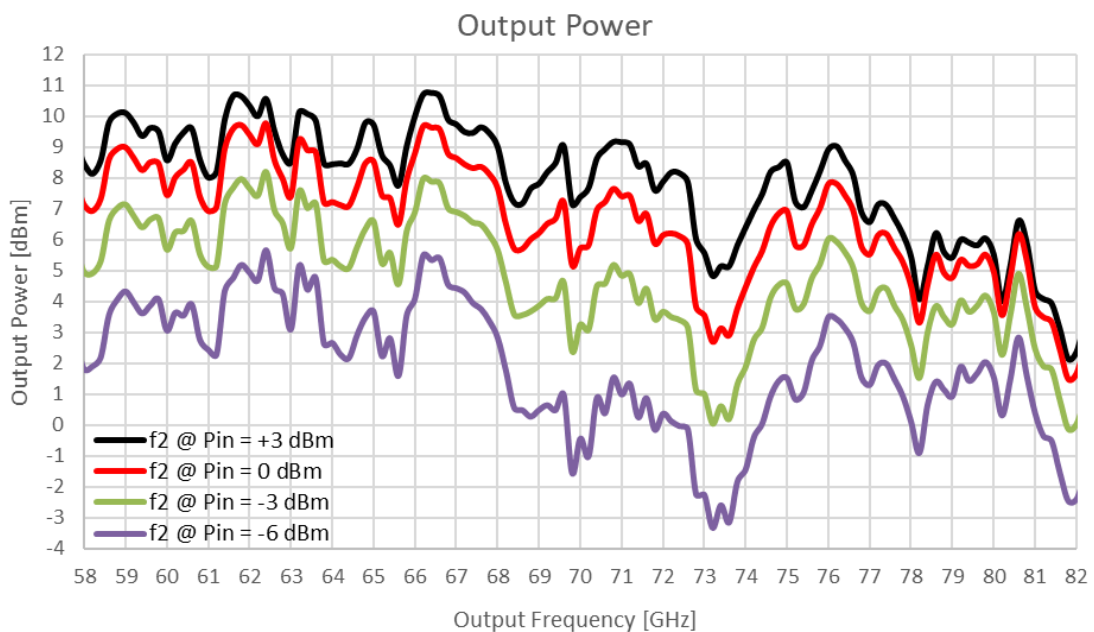
## Typical Fundamental Suppression

The output of the doubler module is measured with Rohde & Schwarz FSW85 and connected directly to the input.



## Typical Output Power

The output of the doubler module is measured with Rohde & Schwarz FSW85 and connected directly to the input.



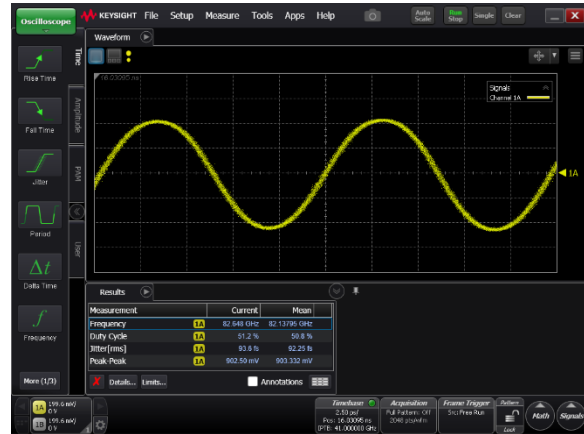


## Typical Output Signals

The measurements below is performed using a Keysight DCA N1000A with Precision Timebase and 122 GHz Sampling Module (N1046A). The output of the module is connected directly to the DCA input with a SHF ATT110 A 6 dB attenuator.



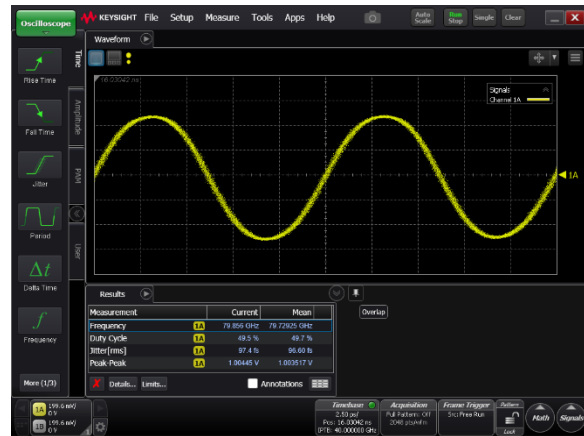
In @ 41 GHz



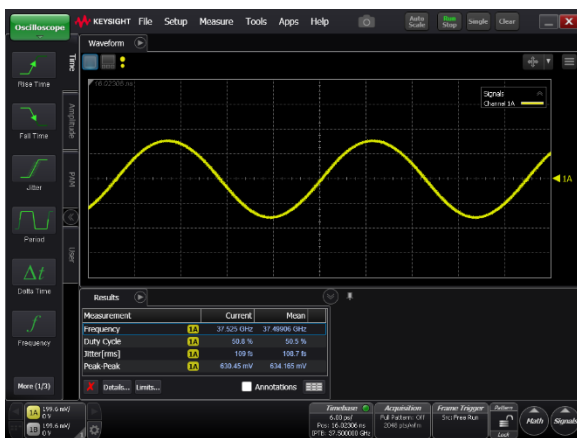
Out @ 82 GHz



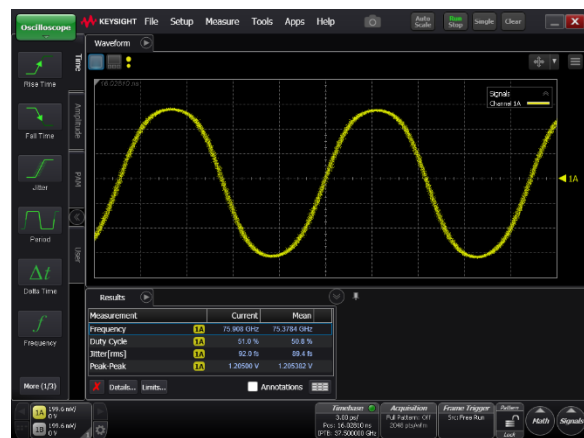
In @ 40 GHz



Out @ 80 GHz



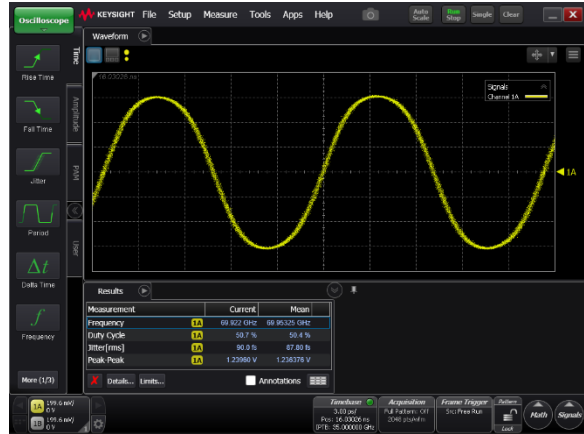
In @ 37.5 GHz



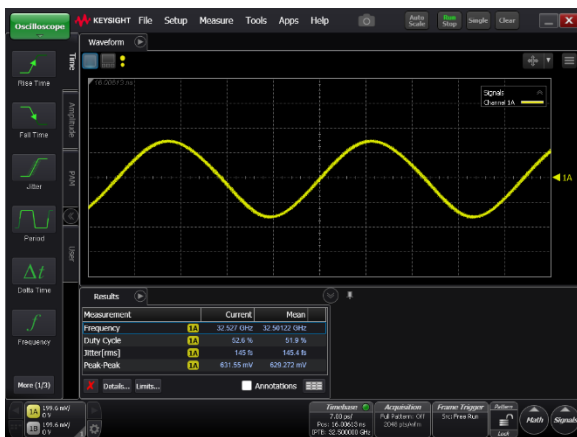
Out @ 75 GHz



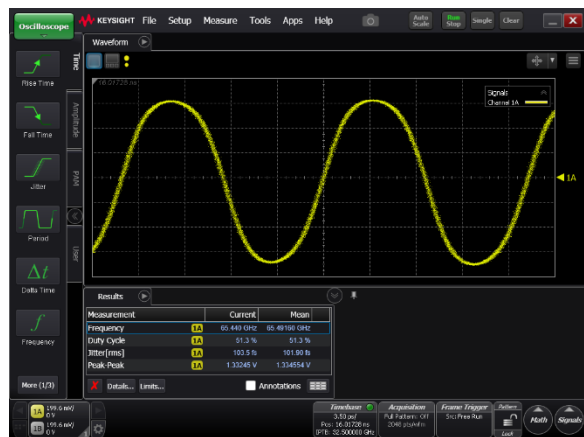
In @ 35 GHz



Out @ 70 GHz



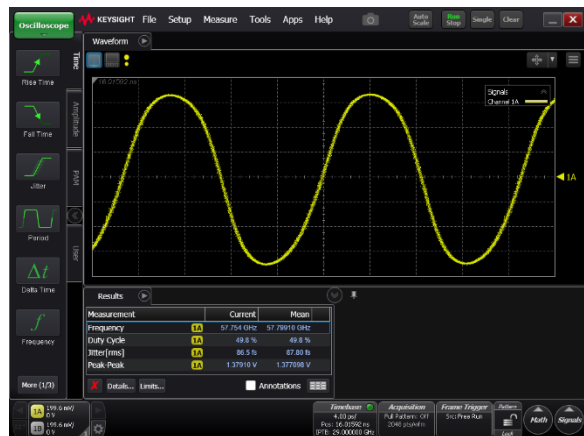
In @ 32.5 GHz



Out @ 65 GHz



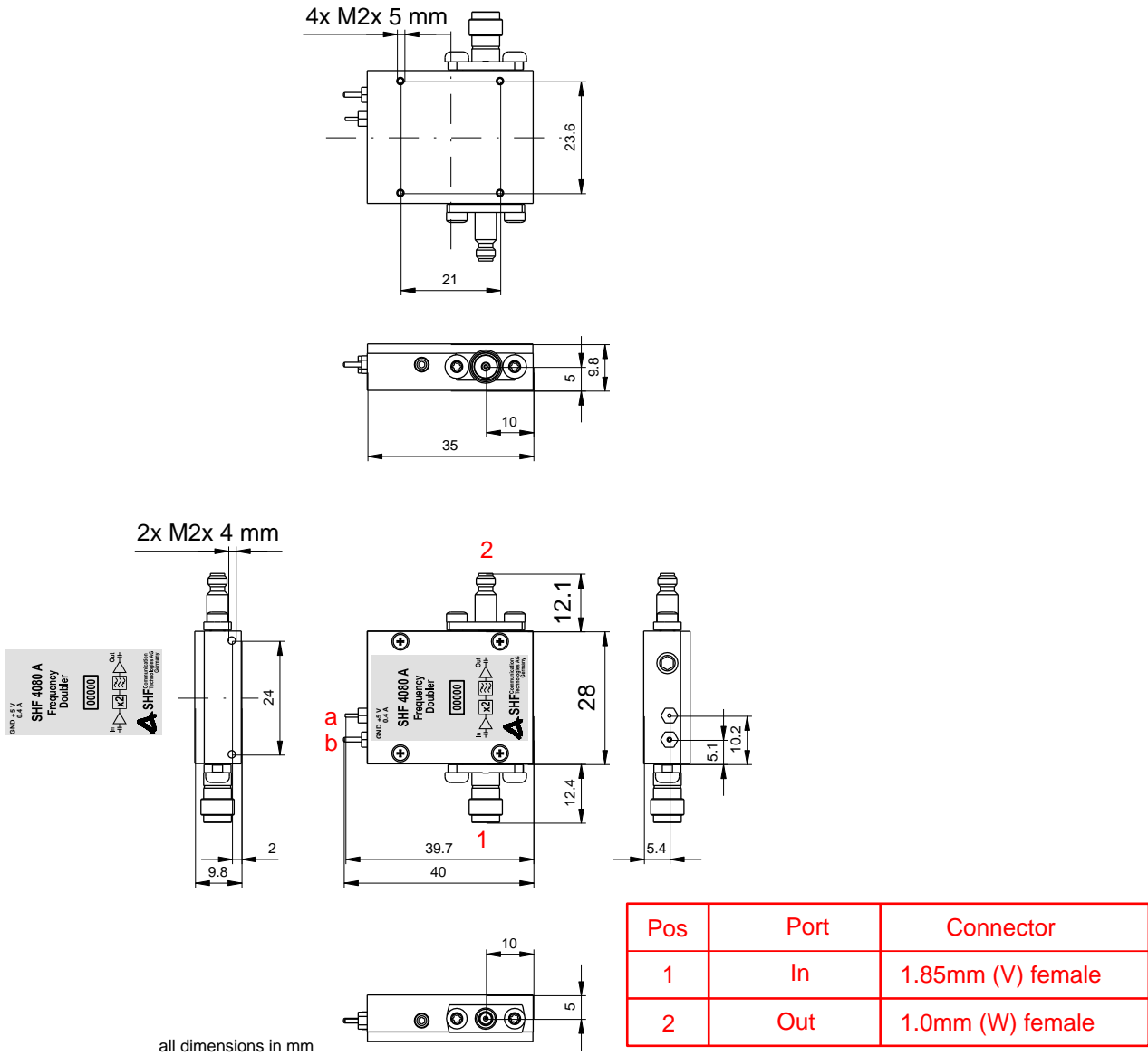
In @ 29 GHz



Out @ 58 GHz



## Mechanical Drawing

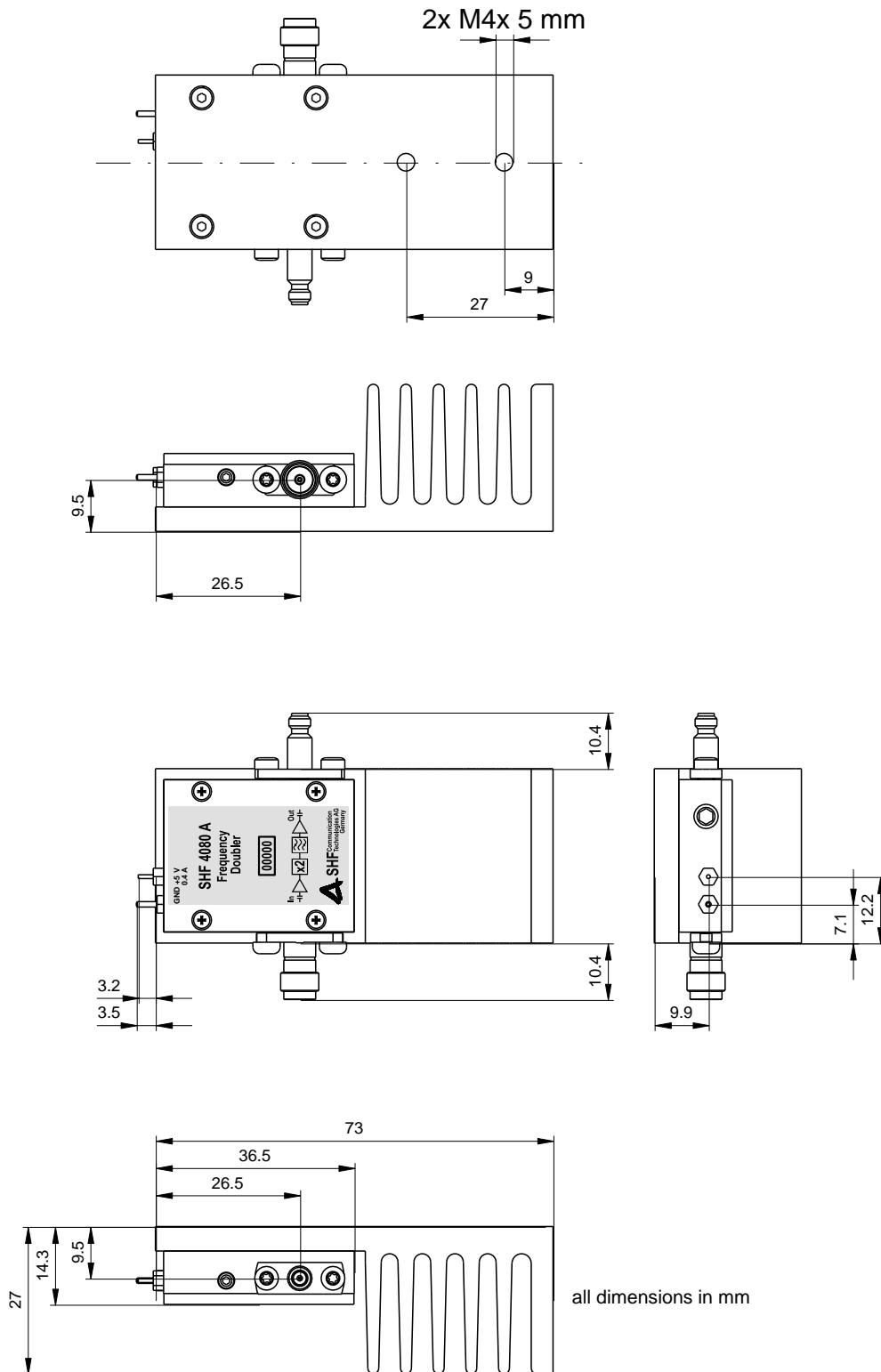


Port	Connector	Designation
a	Mini Bushing EMI Filter	Power
b	1 mm Soldering Pin	GND



## Mechanical Drawing with Heat Sink

The heat-sink is part of the delivery. Upon delivery it is mounted to the frequency doubler. In case the heat-sink is removed adequate cooling will be required.







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