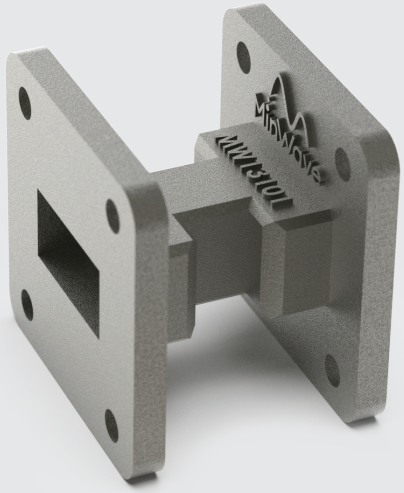
MinWave

Miniaturized Microwave Solutions



Miniaturized Ku-band Waveguide Filters

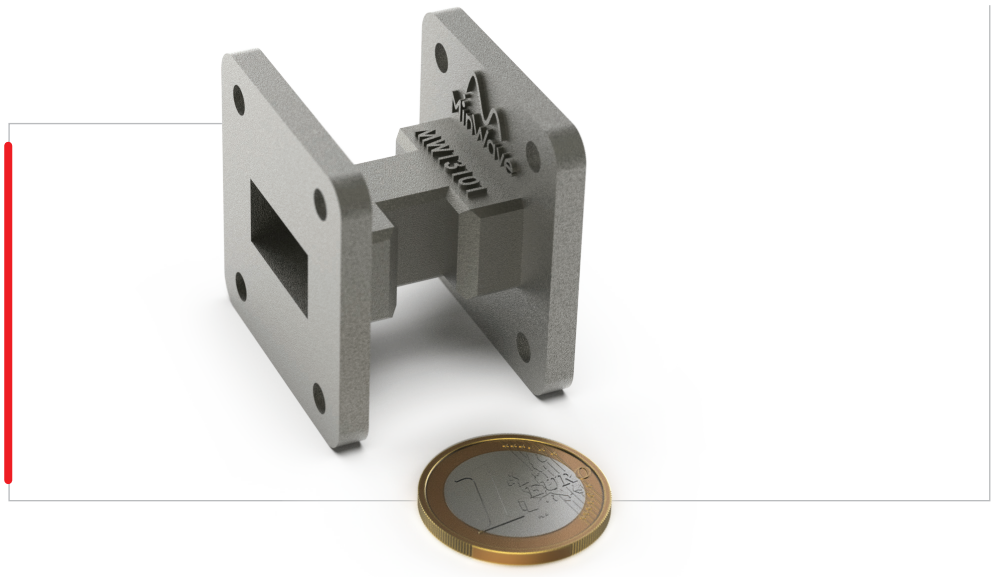
MW13100 and 13101

www.miwave.ch

Miniaturized Ku-band Waveguide Filters:MW13100 and 13101

Product Overview

MW13100 is an ultra-compact Ku-band waveguide filter with a passband frequency from 10.7 to 12.7 GHz and a rejection band from 13.5 to 17.5 GHz. Typically, this waveguide filter is utilized in the downlink channel of satellite communication. The metamaterial nature of the design results in a sharp roll-off and deep level of rejection on the right side of the passband. A DC to 8.5 GHz rejection range is present on the left side of the passband. The same specifications apply to the Ku-band filter, the MW13101, which has a notch at 10.58 GHz with rejection of 43.8 dB. Theses filter provide a typical insertion loss less than 0.3 dB across their passband (silver-plated filter) and a minimum rejection of 60 dB in the stopband. The insertion loss for the Aluminum filter is less than 0.5 dB.
The length of the main section of these filters, excluding the ports, is 12.2 mm. Considering two WR75 ports with a length of 10 mm, the total length of fabricated samples will be 32.2 mm. SMA and SMP coaxial connectors can be used in place of the WR75 ports to create a connectorized version that has a reduced overall footprint and is lighter than its waveguide counterpart.
Using the RF design of MW13100 and MW13101, custom solutions from C-band to Ka-band are available, which are considerably smaller and lighter than conventional waveguide filters.



Features

- Ultra-lightweight
- Small physical size
- Sharp roll-off
- High level of rejection
- No tunning screws
- Low insertion loss
- Wide stopband

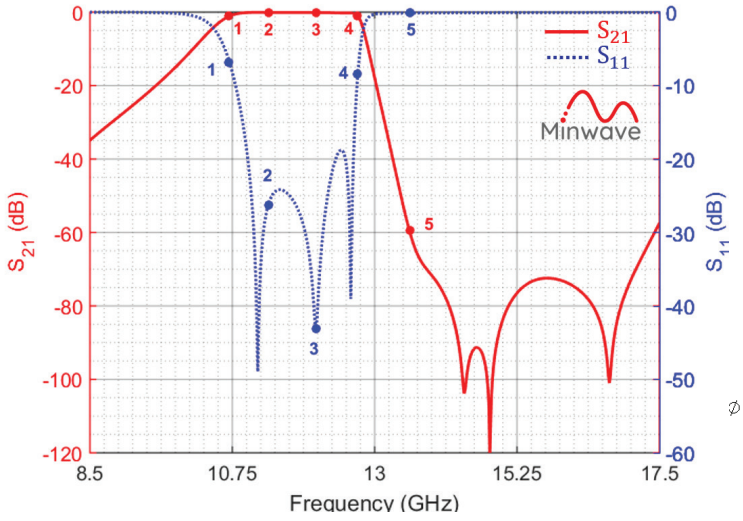
Applications

- Satellite Communication
- Microwave Point to Point
- Radio
- Internet Over Sat

Filter specifications of MW13100

Parameter		Frequency Range (GHz)	Min.	Typ.	Max.
Passband	1 dB	10.7 to 12.7	---	---	---
	3 dB	10.54 to 12.79			
Insertion loss (dB)		10.7 to 12.7	0.07	0.26	1
Return loss (dB)			6.79	15.13	48.94
Lower stopband rejection (dB)		DC to 8.5	40	---	---
Upper stopband rejection (dB)		13.53 to 17.5	60	---	---
Group delay variation (ns)		10.7 to 12.7	1.16		
Peak Power (Watts)		230			
CW Power (Watts)		65			
Multipaction		Free			
Tempreture (°C)		-30 to 70			
Interface		Waveguide			
Material		Aluminum alloy			
Surface coat		Silver			
Physical size (L×W×H)		1.26×1.53×1.53 (in)			
		32.2×38.83×38.83 (mm)			
Weight (gr)		35± 1			
Tuning screws		No			

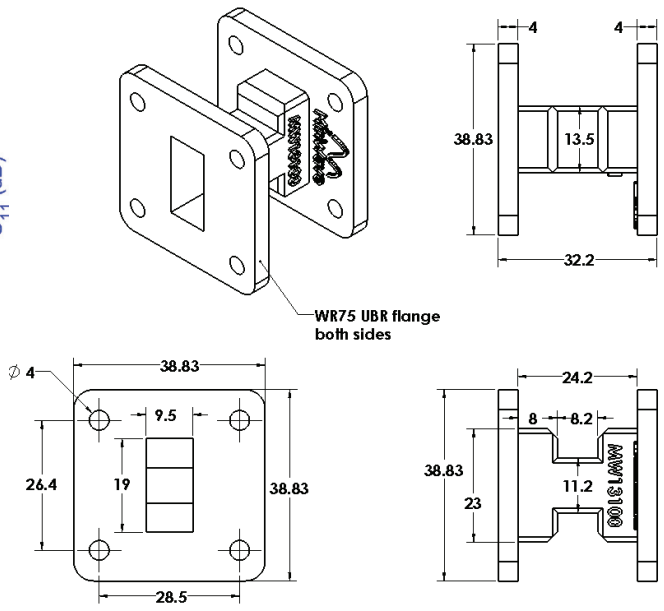
Typical Preformance of MW13100 *



Marker	1	2	3	4	5
Frequency (GHz)	10.7	11.32	12.07	12.7	13.55
Insertion loss (dB)	-1	-0.07	-0.1	-1	-59.33
Return loss (dB)	-6.79	-26.19	-43.06	-8.38	-0.13

* Simulation Results

Phisycal dimenstions of MW13100

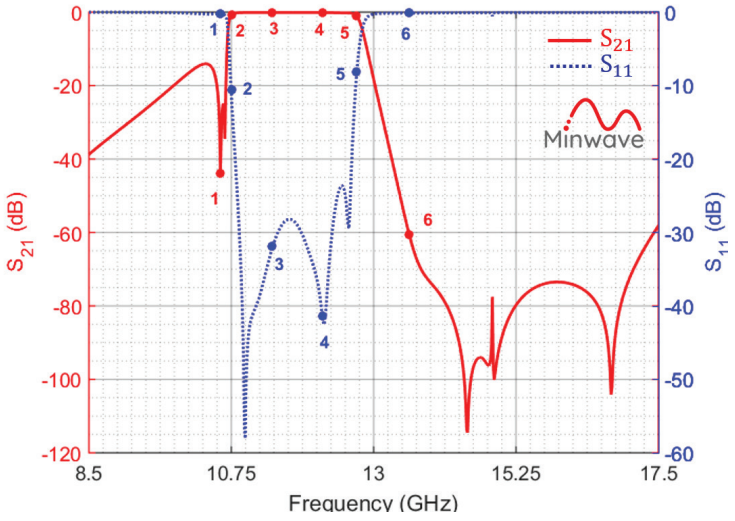


All dimensions are in mm

Filter specifications of MW13101

Parameter		Frequency Range (GHz)	Min.	Typ.	Max.
Passband	1 dB	10.7 to 12.7	---	---	---
	3 dB	10.68 to 12.79			
Insertion loss (dB)		10.7 to 12.7	0.07	0.28	1
Return loss (dB)			8.06	17.95	58.3
Lower stopband rejection (dB)		DC to 8.5	40	---	---
Upper stop band rejection (dB)		13.56 to 17.5		---	---
Group delay variation (ns)		10.7 to 12.7	1.34		
Peak Power (Watts)		230			
CW Power (Watts)		65			
Multipaction		Free			
Tempreture (°C)		-30 to 70			
Interface		Waveguide			
Material		Aluminum alloy			
Surface coat		Silver			
Physical size (L×W×H)		1.27×1.53×1.53 (in)			
		32.2×38.83×38.83 (mm)			
Weight (gr)		35± 1			
Tuning screws		No			

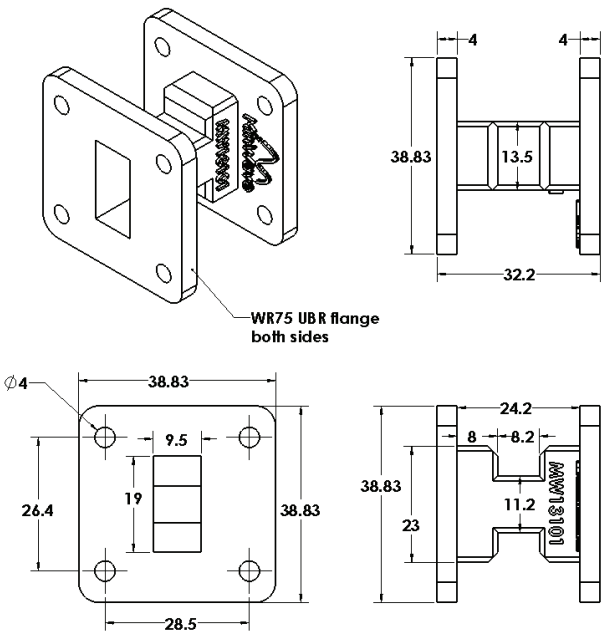
Typical Preformance of MW13101 *



Marker	1	2	3	4	5	6
Frequency (GHz)	10.58	10.7	11.4	12.19	12.7	13.56
Insertion loss (dB)	-43.8	-1.00	-0.07	-0.11	-1.00	-60.00
Return loss (dB)	-0.22	-10.58	-31.94	-41.34	-8.06	-0.13

* Simulation Results

Phisycal dimenstions of MW13101



All dimensions are in mm

MinWave

Miniaturized Microwave Solutions

More information:

www.miwave.ch

+41 78 638 0709

info@minwave.ch