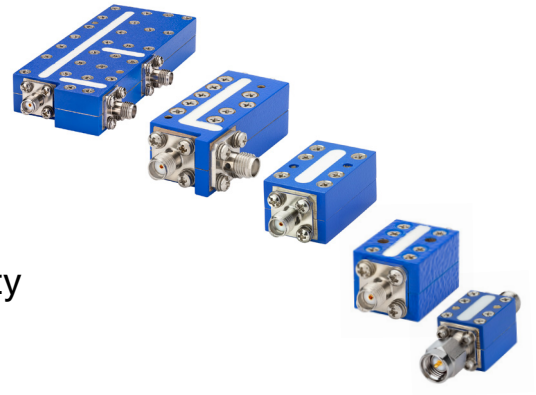
Suspended Substrate Stripline Filters and Multiplexers

50Ω DC to 40 GHz



The Big Deal

- Low insertion loss
- Ultra-wide passband width
- Fast roll-off with wide stopband
- Good power handling and temperature stability
- Passband up to 40 GHz
- Stopband up to 40 GHz

Product Overview

Mini-Circuits' Suspended Substrate Stripline filters offer low insertion loss by implementing printed circuit board suspended between two parallel ground planes, providing high Q. Low insertion loss combined with wide stopband makes them an excellent choice for wideband instruments and systems like ECM, ECCM, ELINT and ultra-broadband receivers.

Low pass, high pass, band pass, band stop, diplexer and multiplexer designs can be realized with this technology. Advanced filter design and construction can achieve stopband width greater than 6x the center frequency, and temperature stability will be better than other printed circuit realizations because the fields are mainly in the air rather than in a dielectric. The inside walls of the housing hold the circuit and prevent movement that could be caused by vibration or mechanical shock, making these designs excellent candidates for harsh operating environments.

Suspended substrate stripline filters can be realized in small form factors with high-quality, precise machining for applications where size is critical. Excellent repeatability across units is achieved through precise tuning and process control.

Key Features

Feature	Advantages
Low insertion loss	Low signal loss results in better SNR in receiver front end and better power delivery to antenna in transmitters
Fast roll-off	Higher selectivity results in better adjacent channel rejection and dynamic range
Wide stopband	Wide, spur-free stop band results in better receiver sensitivity
High power handling	Well suited for transmitter applications
Excellent temperature stability	Ensures minimal variation in electrical performance across temperature

Suspended substrate stripline

Low Pass Filter

ZLSS-6G-S+

50Ω DC to 6000 MHz

Generic photo used for illustration purposes only

CASE STYLE: RA2456

Connectors	Model
SMA-F	ZLSS-6G-S+

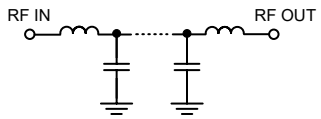
Features

- Low passband IL
- High rejection of 90 dB typ.
- Wider stopband
- Connectorized package and small size

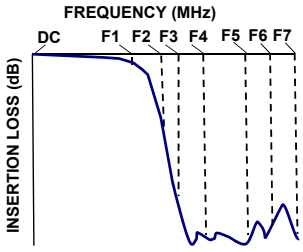
Applications

- Harmonic rejection
- Transmitters / Receivers
- Lab use

Functional Schematic



Typical Frequency Response



+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Electrical Specifications at 25°C

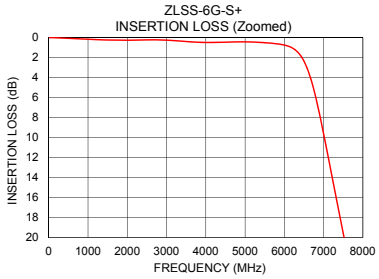
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC-6000	—	1.0	2.0	dB
	VSWR	DC-F1	DC-6000	—	2.1	—	:1
Stop Band	Insertion Loss	F2-F3	8200-9600	20	30	—	dB
		F3-F4	9600-11200	40	50	—	dB
		F4-F5	11200-13500	60	80	—	dB
		F5-F6	13500-20000	—	90	—	dB
		F6-F7	20000-26500	—	80	—	dB
	VSWR	F2-F7	8200-26500	—	20	—	:1

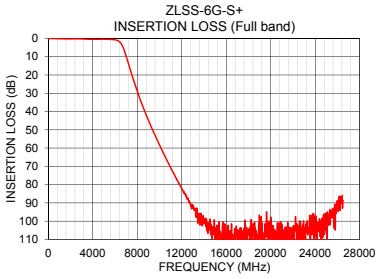
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input at Passband	15W max. at 25°C

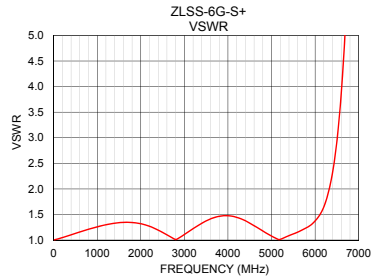
Permanent damage may occur if any of these limits are exceeded.

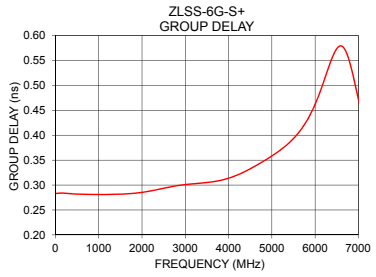
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
10	0.00	1.00	10	0.28
100	0.00	1.02	100	0.28
1000	0.16	1.26	250	0.28
4000	0.48	1.48	500	0.28
6000	0.75	1.37	1000	0.28
6600	3.27	3.87	1500	0.28
7000	9.63	13.60	2000	0.29
7550	20.58	37.02	2500	0.29
8100	30.58	49.25	3000	0.30
8200	32.31	51.38	3500	0.31
9600	52.96	44.46	4000	0.31
10000	58.28	45.33	4250	0.32
11200	73.10	47.52	4500	0.33
12000	82.22	54.57	4750	0.34
13000	92.22	60.80	5000	0.36
13500	97.61	67.51	5250	0.37
15000	110.03	98.79	5500	0.39
20000	98.02	1749.64	5750	0.42
25000	96.54	40.48	5800	0.43
26500	88.72	22.56	6000	0.46









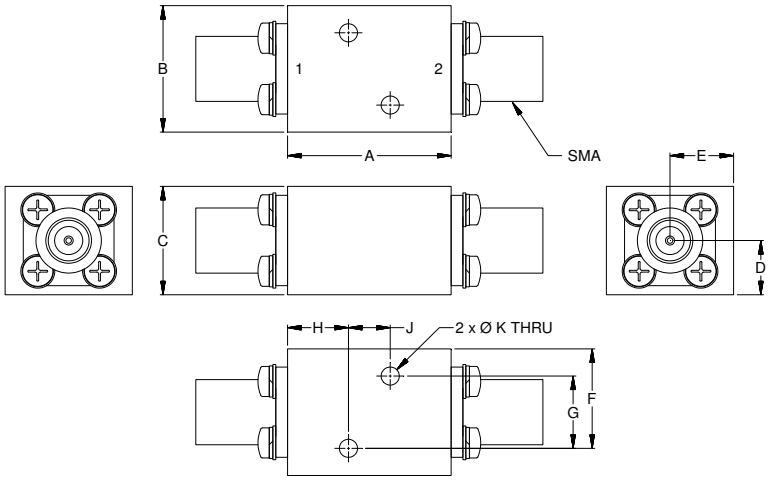
Notes

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

Coaxial Connections

PORT - 1	SMA FEMALE
PORT - 2	SMA FEMALE

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	K	Wt.
.90	**.70**	**.60**	**.30**	**.35**	**.55**	**.400**	**.34**	**.230**	**.100**	grams
22.86	17.78	15.24	7.62	8.89	13.97	10.16	8.51	5.84	2.54	55

Note: Please refer to case style drawing for details

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