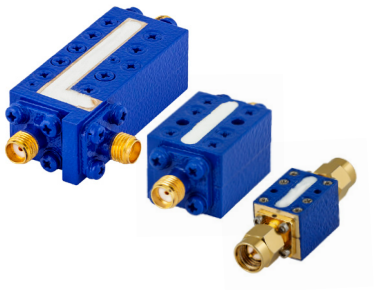
Suspended Substrate Stripline Filters and Multiplexers

50Ω DC to 26 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 26 GHz
- Stopband up to 26.5 GHz can extend 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-11G+

50Ω DC to 11000 MHz

CASE STYLE: RA2456

Connectors	Model
SMA-F	ZLSS-11G-S+

Features

- Very sharp roll-off
- High rejection of 90 dB typ.
- Stop band up to 33 GHz
- Low passband IL
- Connectorized package and small size

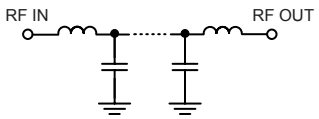
Applications

- Harmonic rejection
- Transmitters / Receivers
- Lab use

Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC-11000	—	2.0	3.0	dB
	VSWR	DC-F1	DC-11000	—	2.0	—	:1
Stop Band	Insertion Loss	F2-F3	12500-14500	20	30	—	dB
		F3-F4	14500-26500	60	90	—	dB
		F4-F5	26500-33000	—	20	—	dB
	VSWR	F2-F5	12500-33000	—	20	—	:1

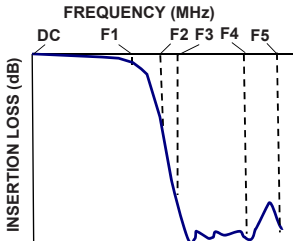
Functional Schematic



Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	1W max. at 25°C

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

Typical Frequency Response

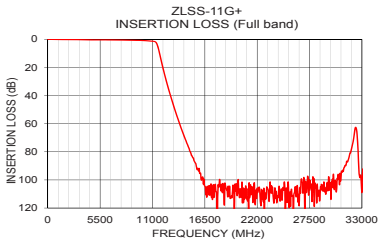


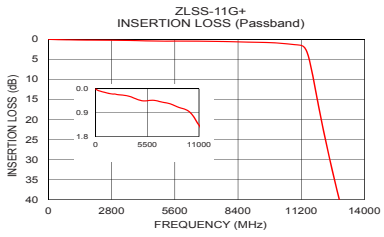
Typical Performance Data at 25°C

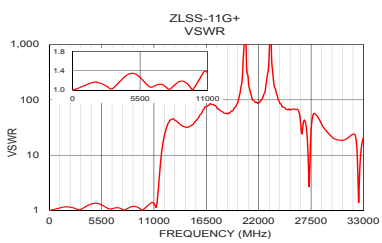
Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
10	0.01	1.00	10	0.27
100	0.03	1.01	100	0.27
1000	0.14	1.10	1000	0.27
5000	0.45	1.34	1500	0.27
11000	1.37	1.35	2000	0.27
11450	3.13	2.31	2500	0.27
11600	6.11	4.82	3000	0.27
11800	11.73	11.07	3500	0.27
12100	20.41	22.88	4000	0.28
12500	30.86	38.08	4500	0.28
13000	42.54	45.43	5000	0.28
14500	71.91	32.30	5500	0.29
15000	80.48	35.27	6000	0.30
17500	103.93	76.97	6500	0.30
20000	99.68	123.97	7000	0.31
25000	114.63	66.62	7500	0.32
26500	105.28	24.47	8000	0.33
30000	95.97	19.59	9000	0.37
31500	87.12	21.39	10000	0.43
33000	108.78	20.96	11000	0.59

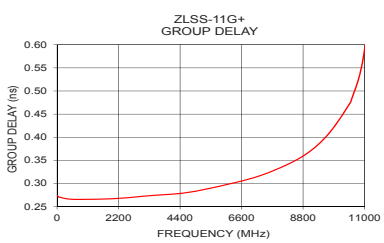
+RoHS Compliant

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









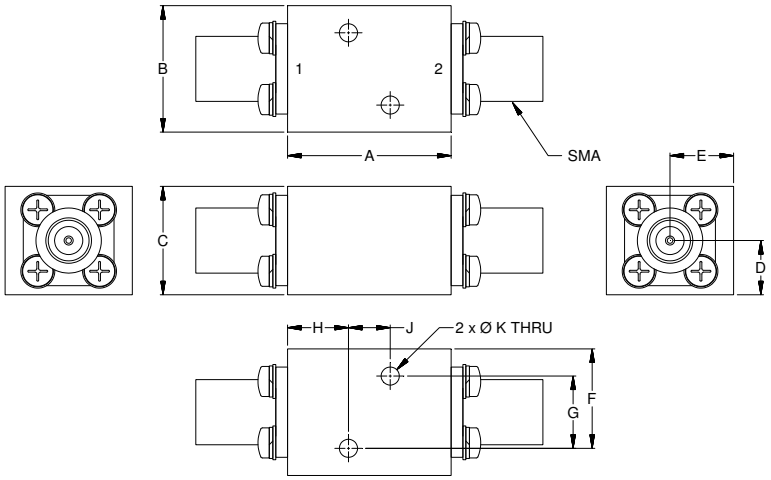
Notes

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

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