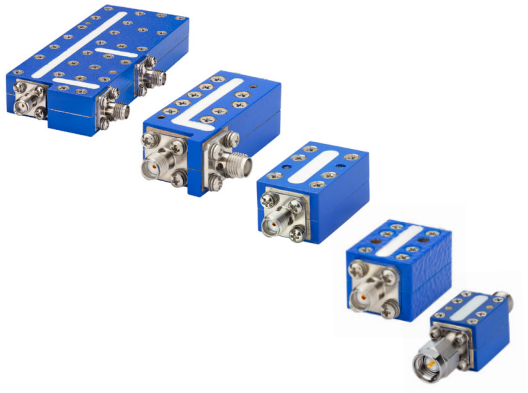
SUSPENDED SUBSTRATE STRIPLINE

Filters and Multiplexers

50Ω DC to 40 GHz

THE BIG DEAL

- Low Insertion Loss
- Ultra-Wide Passband
- 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 help 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-6R9G-S+

50Ω DC to 6900 MHz SMA-Female

FEATURES

- Low Insertion Loss, 0.6dB Typ.
- High Rejection of 90dB Typ.
- Stopband Up to 20 GHz
- Connectorized Package
- Small Size, 22.86 x 17.78 x 15.24 mm

APPLICATIONS

- Test and Measurement Equipment
- Radar, EW, and ECM Defense Systems



Generic photo used for illustration purposes only

Model No.	ZLSS-6R9G-S+
Case Style	RA2456
Connectors	SMA-FEMALE

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

ELECTRICAL SPECIFICATIONS AT 25°C

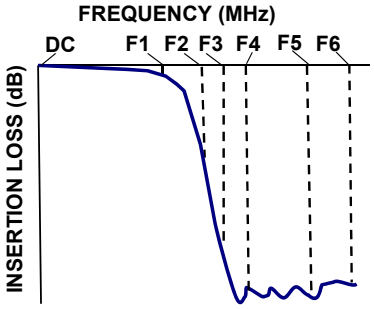
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Insertion Loss	DC-F1	DC - 6900	—	0.6	2.0	dB
	Return Loss	DC-F1	DC - 6900	—	15.5	—	dB
Stopband	Rejection	F2-F3	9800 - 11500	20	40	—	dB
		F3-F4	11500 - 13600	40	60	—	
		F4-F5	13600 - 18000	60	80	—	
		F5-F6	18000 - 20000	—	90	—-	

ABSOLUTE MAXIMUM RATINGS

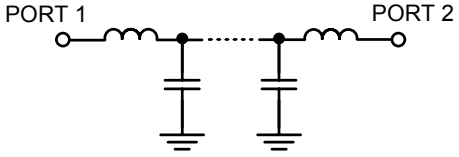
Parameter	Ratings
Operating temperature	-40°C to +85°C
Storage temperature	-55°C to +100°C
RF Power Input at Passband	10W max. at 25°C

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

TYPICAL FREQUENCY RESPONSE



FUNCTIONAL DIAGRAM



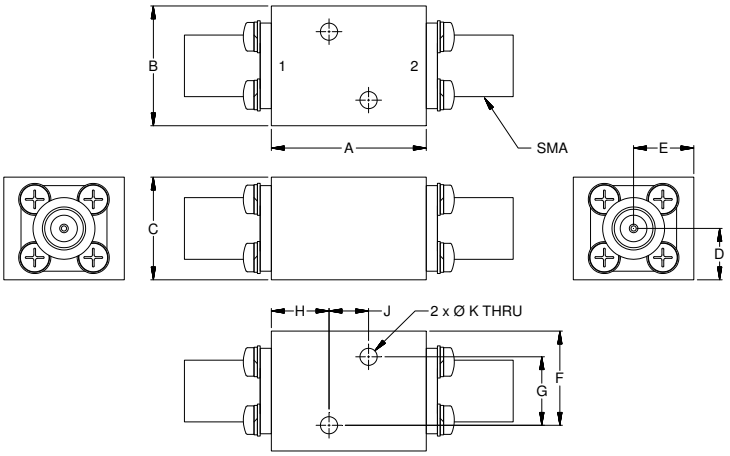
Low Pass Filter

ZLSS-6R9G-S+

COAXIAL CONNECTIONS

PORT 1	SMA-Female
PORT 2	SMA-Female

OUTLINE DRAWING



OUTLINE DIMENSIONS (Inches / 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

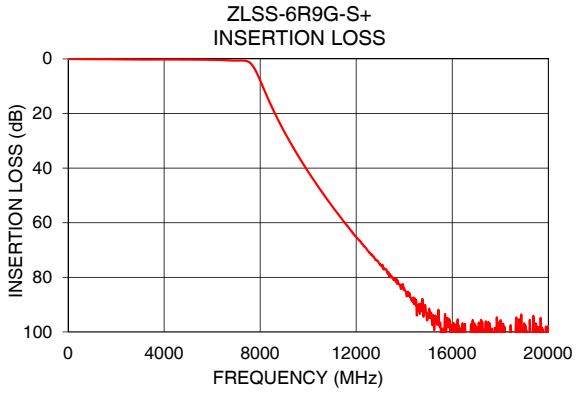
SUSPENDED SUBSTRATE STRIPLINE

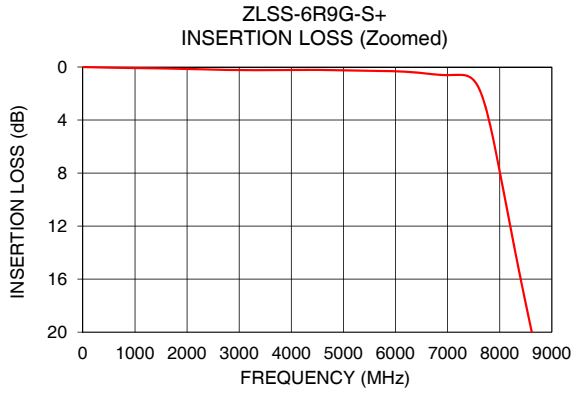
Low Pass Filter

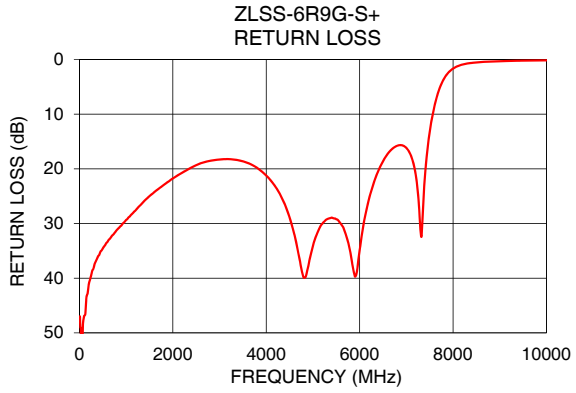
ZLSS-6R9G-S+

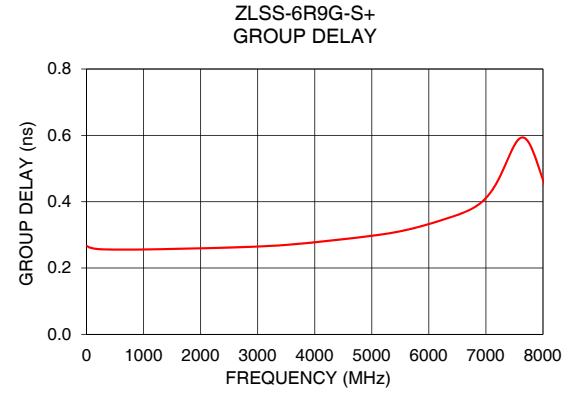
TYPICAL PERFORMANCE DATA AT 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	Frequency (MHz)	GROUP DELAY (ns)
10	0.00	46.99	10	0.27
100	0.01	46.93	100	0.26
1000	0.08	29.35	700	0.26
4500	0.22	28.91	1000	0.26
5000	0.25	34.07	1400	0.26
6900	0.60	15.69	1800	0.26
7750	3.32	4.47	2200	0.26
8700	21.49	0.42	2600	0.26
9800	38.57	0.17	3000	0.26
10000	41.32	0.15	3400	0.27
11500	59.68	0.08	3800	0.27
13600	81.04	0.09	4000	0.28
14000	84.13	0.09	5000	0.30
18000	95.85	0.18	6000	0.33
20000	97.84	0.22	6900	0.40









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