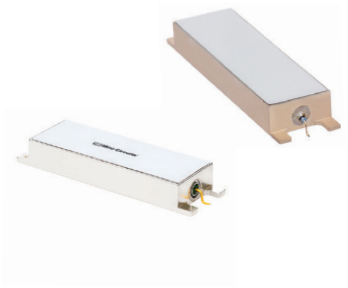
Surface Mount

Gross-Leak-Sealed Metal Package Filters

50Ω DC to 6 GHz



The Big Deal

- Gross-leak-sealed package
- Excellent rejection
- Sharp roll-off
- Resistant to vibration
- Can modify for Hermeticity

Product Overview

Mini-Circuits' *Gross-Leak-Sealed Metal Package filters* offer low insertion loss and wide stop band in a very small form factor. Bandpass and Low pass designs use these construction technique. Small package size combined with sharp roll-off and excellent rejection characteristics make these filters ideal for military or other high performance applications. The product line is standardized by design and package to provide engineers with filters that ideally suit their high performance requirement.

All our Gross-leak-sealed metal package filters are built with durable construction. Excellent repeatability across units is achieved through precise tuning and process control.

All our Gross-leak-sealed metal package filters can be modified to meet fine-leak specification.

Key Features

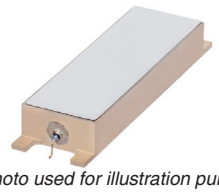
Feature	Advantages
Gross-leak-sealed metal package	Water and dust resistance; can modify for resistance to fine-leak.
Sharp roll-off	Sharp roll-off helps in adjacent channel rejection and hence increased selectivity
Excellent rejection	Rejects unwanted spurious in the adjacent band
Resistant to vibration	Withstand harsh environmental condition
Small Size	Very well suited for high performance applications where small package size is required.
Temperature stability	Very minimal change in electrical performance across temperature makes these filters suitable for a wide range of operating conditions and applications.

Surface Mount - Sealed Metal Package

Bandpass Filter

MBPA-693+

50Ω 673 to 713 MHz



Generic photo used for illustration purposes only

CASE STYLE: QN2178-3

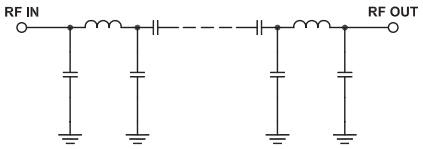
Features

- Low passband IL , 2.2 dB typ.
- Fast Rejection roll-off
- Excellent rejection floor, 80 dB typ.
- Wider stopband performance up to 5GHz
- Good Return loss, 18 dB typ.
- Rugged Metal package
- Gross Leak Sealed

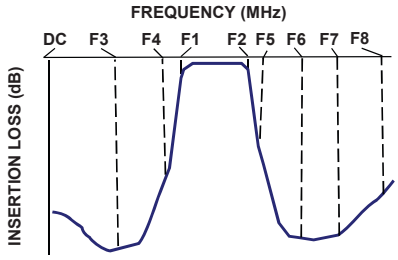
Applications

- Defense systems
- Transmitters and receivers

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

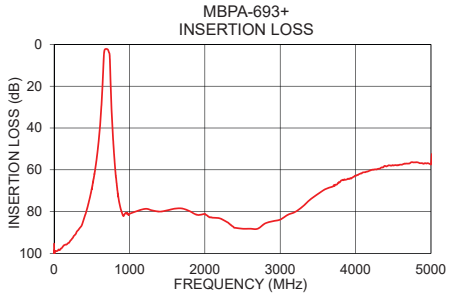
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	-	-	-	693	-	MHz
	Insertion Loss	F1-F2	673 - 713	-	2.2	3.0	dB
	VSWR	F1-F2	673 - 713	-	1.3	1.8	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 450	60	80	-	dB
		F3-F4	450 - 575	40	60	-	dB
Stop Band, Upper	Insertion Loss	F5-F6	790 - 900	40	60	-	dB
		F6-F7	900 - 2500	60	80	-	dB
		F7-F8	2500 - 5000	40	60	-	dB

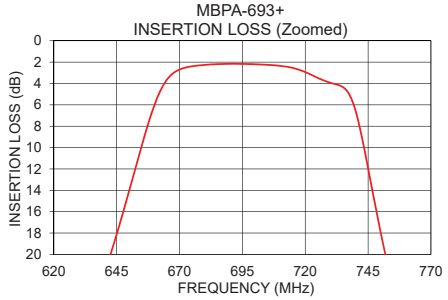
Maximum Ratings[2]	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 105°C
RF Power Input[1]	5W max. @25°C

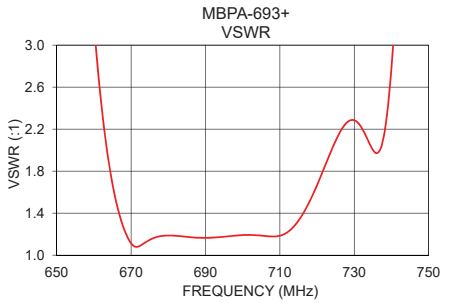
1. Passband rating derates linearly to 1.25W at 85°C ambient.
2. Permanent damage may occur if any of these limits are exceeded.

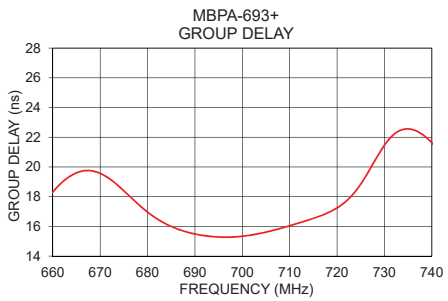
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
1	95.38	321.11	673	18.96
50	98.65	450.40	675	18.40
450	77.06	54.17	677	17.79
575	51.88	46.94	679	17.22
626	30.87	29.70	681	16.72
641	21.17	18.56	683	16.32
666	3.36	1.51	685	16.00
673	2.47	1.10	687	15.75
680	2.26	1.19	689	15.56
693	2.16	1.17	691	15.43
700	2.20	1.19	693	15.34
713	2.44	1.25	695	15.29
724	3.36	2.01	697	15.28
753	21.27	13.70	699	15.31
763	30.75	20.01	701	15.38
790	49.08	29.76	703	15.48
900	80.45	45.04	705	15.61
2500	88.19	73.45	707	15.78
4000	62.88	112.12	709	15.95
5000	57.42	68.83	713	16.34









Notes

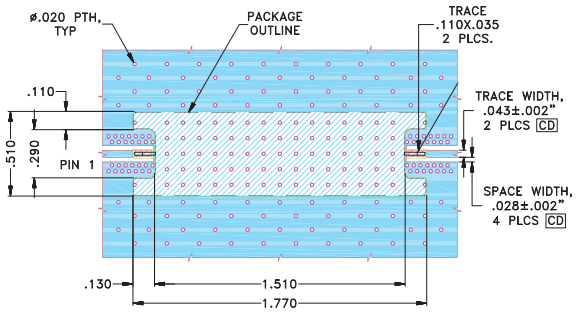
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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

Pad Connections

INPUT	1
OUTPUT	2

Demo Board MCL P/N: TB-MBPA-693+
Suggested PCB Layout (PL-701)

SUGGESTED MOUNTING CONFIGURATION FOR QN2178-3 CASE STYLE



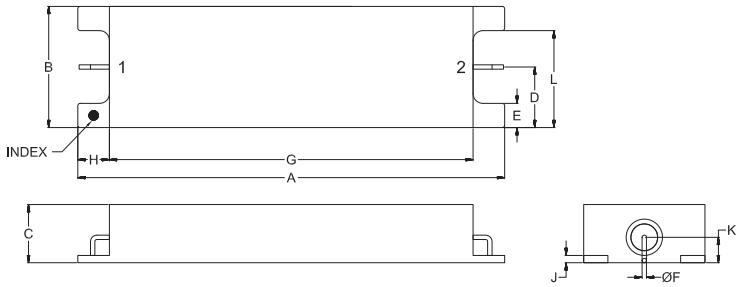
NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS(RO4350B), WITH DIELECTRIC THICKNESS .020"±.0015". COPPER: 1/2 Oz EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C		D	E	F	G	H	J
		Min	Max						
1.76	**.50**	**.24**	**.26**	**.25**	**.10**	**.018**	**1.50**	**.13**	**.03**
44.70	12.70	6.10	6.60	6.35	2.54	0.46	38.10	3.30	.76

K	L	Wt.
.11	**.40**	grams
2.79	10.16	14(APPROX)

Note: Please refer to case style drawing for details