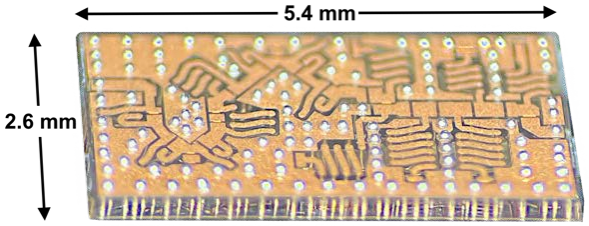
DATASHEET

High Q SMT RF Filters

MMG Series

Spectrum Control has developed a new family of ultraminiature high Q RF filters in surface- mount, BGA packages. Available in frequencies from 0.5 to 10 GHz, these filters are ideal for use in lowpass, highpass, bandpass, bandstop, and diplexer applications.

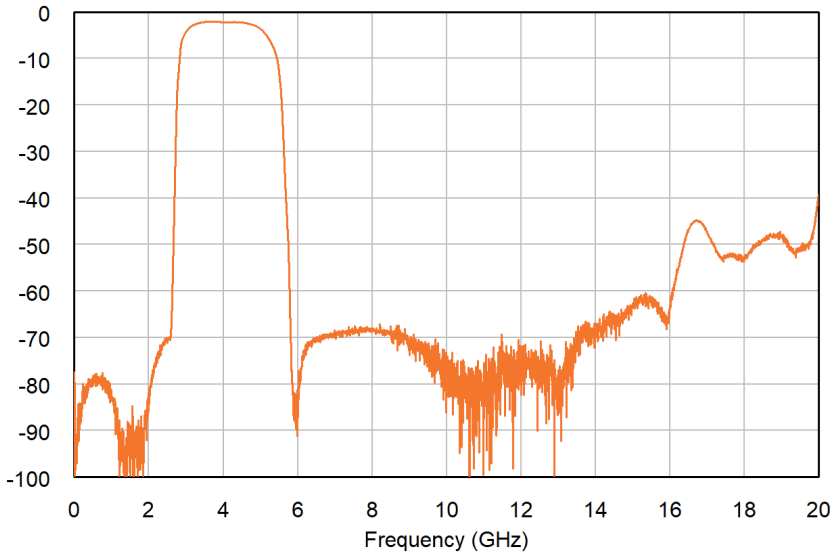


The new High Q RF filter family from Spectrum Control achieves dramatic size reduction while maintaining high performance

Applications such as aerospace and defense are driving demand for high quality surface mount RF components to reduce the size and cost of RF systems.

Spectrum Control has been a leading provider of high quality, RF filters for A&D applications for more than 40 years. We have applied our RF filtering expertise to deliver a dramatic reduction in filter size while delivering exceptional performance. The new MMG series filters deliver high selectivity with low insertion loss and temperature stability in a small form factor with BGA mounting.

To achieve this size and performance breakthrough we have employed a novel manufacturing approach using integrated passive devices in glass. This 3D process allows us to build unique solenoid inductor structures that offer superior Q performance from 0.5 to 10 GHz compared to other filter technologies of similar size. The wafer-scale process also provides an extremely high correlation between filter simulations and the manufactured product giving us high predictability for custom filters. The performance and quality are also highly consistent, run-to-run.



Performance graph above is typical of all MMG filters in the family.
See following pages for the performance data for all released filters.

Specifications

MMG_4000_2000_B Filter
3-5 GHz Band

- Passband return loss of 15 dB typ.
- Passband VWSR 1.4:1 typ.
- Mid-band insertion loss of 2.2 dB
- Group delay of 1.0 ns nominal over -55 to 125 degrees C
- >70 dB @ DC to 2.5 GHz
- >60 dB @ 5.8 to 15 GHz
- Physical dimensions: 2.6 mm x 5.4 mm

sales@spectrumcontrol.com
Approved for Release: August 2024/Brown

MMG – 4000-2000-B

Parameter	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Nominal	Max	Unit
Passband Insertion Loss	3.0	5.0	2.2	2.6	3.75	dB
Passband Return Loss	3.0	5.0	14	18		dB
Stopband Rejection	0	2.5	60	65		dB
Stopband Rejection	5.8	15	60	65		dB
Stopband Rejection	15	20	45	55		dB
Group Delay			0.8	1	2	nS
Power Handling					30	dBm
Impedance				50		Ω
Temperature			-55	25	125	˚ C

MMG – 3750-2000-B

Parameter	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Nominal	Max	Unit
Passband Insertion Loss	2.75	4.75	2.5	2.8	4.0	dB
Passband Return Loss	2.75	4.75	14	18		dB
Stopband Rejection	0	2.25	55	60		dB
Stopband Rejection	5.25	15	60	65		dB
Stopband Rejection	15	20	45	55		dB
Group Delay			0.8	1	2	nS
Power Handling					30	dBm
Impedance				50		Ω
Temperature			-55	25	125	˚ C

sales@spectrumcontrol.com
Approved for Release: August 2024/Brown

MMG – 4500-2400-B

Parameter	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Nominal	Max	Unit
Passband Insertion Loss	3.3	5.7	2.0	2.6	4.5	dB
Passband Return Loss	3.3	5.7	14	18		dB
Stopband Rejection	0	2.42	55	60		dB
Stopband Rejection	6.3	15	55	60		dB
Stopband Rejection	15	20	45	55		dB
Group Delay			0.6	0.8	1.6	nS
Power Handling					30	dBm
Impedance				50		Ω
Temperature			-55	25	125	˚ C

MMG – 4250-2000-B

Parameter	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Nominal	Max	Unit
Passband Insertion Loss	3.25	5.25	2.5	2.8	4.25	dB
Passband Return Loss	3.25	5.25	14	18		dB
Stopband Rejection	0	2.42	55	60		dB
Stopband Rejection	6.05	15	55	60		dB
Stopband Rejection	15	20	45	55		dB
Group Delay			0.8	0.9	1.5	nS
Power Handling					30	dBm
Impedance				50		Ω
Temperature			-55	25	125	˚ C

sales@spectrumcontrol.com
Approved for Release: August 2024/Brown

MMG – 8000-4000-B

Parameter	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Nominal	Max	Unit
Passband Insertion Loss	6.0	10.0	2.0	2.2	2.6	dB
Passband Return Loss	6.0	10.0	14	18		dB
Stopband Rejection	0	5.0	50	55		dB
Stopband Rejection	12	20	50	55		dB
Group Delay			0.4	0.6	1.0	nS
Power Handling					30	dBm
Impedance				50		Ω
Temperature			-55	25	125	˚ C
Passband Insertion Loss	6.0	10.0	2.0	2.2	2.6	dB

sales@spectrumcontrol.com
Approved for Release: August 2024/Brown