

Tiny YIG FILTERS

Screen Portable Systems

This series of diminutive tunable filters is ideal for rejecting unwanted signals in compact receivers and VXI instruments.

Portable System and subsystem designs require innovative engineering solutions from component suppliers. With the growth in VXI instrumentation, miniature receivers, and portable microwave test equipment, Micro Lambda has responded with a series of miniature yttrium-iron-garnet (YIG) tuned bandpass filters that feature low passband loss and high rejection from 1 to 8 GHz. The filters can be specified in four and six-stage versions, both measuring only 1.0 X 1.0 X 0.5 in. (2.54 X 2.54 X 1.27 cm).

The MLFI series of miniature YIG bandpass filters (see figure) provides 3 dB passbands from 20 to 40 MHz, depending on the model, with as little as 4 dB insertion loss and typical passband ripple of only 2 dB. The four four-stage models include the 1 to 2 GHz MLFI-41002 with 20 MHz passband, the 2 to 4 GHz MLFI-42004 with 30 MHz passband, the 4 to 8 GHz MLFI-44008 with 40 MHz passband, as well as the 2 to 8 GHz MLFI-42008 with 30 MHz passband. The maximum passband insertion loss occurs for the two lower frequency models, at 6 dB. Passband ripple and passband spurious content is controlled within a tolerance of 2 dB in all four-stage models.

The minimum off-resonance isolation for all four stage models is 80 dB, while off-resonance spurious products are better than -50 dBc. The typical selectivity for all four-stage models is 24 dB/octave. Tuning linearity ranges from ± 2 MHz in the 1 to 2 GHz model MLFI-41002 to ± 6 MHz in the 2 to 8 GHz model MLFI-42008. Hysteresis ranges from 2 MHz in the MLFI-41002 to 6 MHz in the MLI-42008.

HIGH REJECTION

Six stage filter models include the 1 to 2 GHz MLFI-61002 with 25 MHz passband, the 2 to 4 GHz MLFI-62004 with 40 MHz passband, the 4 to 8 GHz MLFI-64008 with 45 MHz passband, and the 2 to 8 GHz MLFI-62008 with 40 MHz passband. Passband insertion loss ranges from only 4 dB in the MLFI-64008 to 6 dB in the lower-frequency models. The MLFI-62008 filter exhibits maximum insertion loss of 5 dB from 2 to 8 GHz. Passband ripple and spurious levels are only 2 dB in all six-stage models. Off-resonance isolation is at least 100 dB for the six stage filters, with off-resonance spurious levels of -70 dBc or better.

For the six-stage models, linearity is as good as ± 2 MHz in the MLFI-61002 with a worst-case tuning linearity of ± 5 MHz in the MLFI-62008. Hysteresis ranges from 2 MHz in the MLFI-61002 to 6 MHz in the MLFI-62008.



The MLFI series of miniature YIG-tuned bandpass filters is available in four and six stage designs for compact applications.

The typical selectivity for all six-stage models is 36 dB/octave. The maximum passband VSWR for all models is 2.0:1, while the tuning sensitivity for all models is 20 MHz/mA. The miniature YIG bandpass filters are designed for operating temperatures from 0 to +70°C. The worst-case frequency drift with temperature for any model is 15 MHz.

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