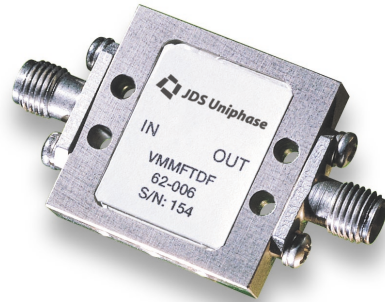


Product Bulletin



5-Pole Reflectionless Bessel Low-Pass Filters VMMFTDF Series

These unique, high-performance filters provide reflectionless, low-loss phase-linear band limiting. Their amplitude response is typical of 5-pole Bessel filters. In digital communications systems, their use permits control of system noise bandwidth or optimization of pulse shape.

Because these products absorb rather than reflect energy, matching attenuators normally needed with reactive filters are unnecessary. This eliminates the requirement for additional expensive and dispersive gain stages.

Key Features

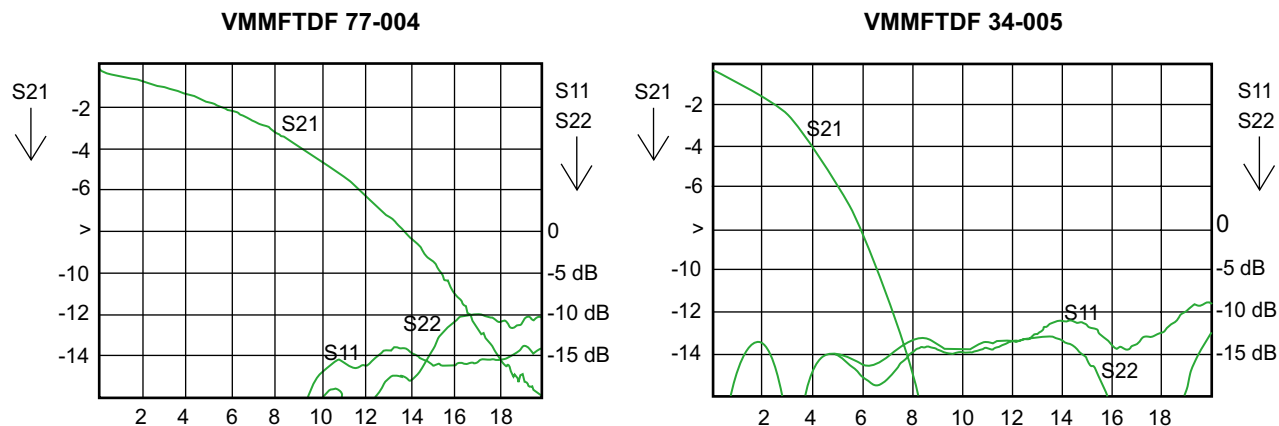
- Cut-off frequencies available from 1.3 to 15 GHz
- Phase linear, with low reflections from DC to 3 times F3 dB
- Low frequency loss <0.5 dB
- Operation at 2.5, 5, 10 or 20 Gb/s

Applications

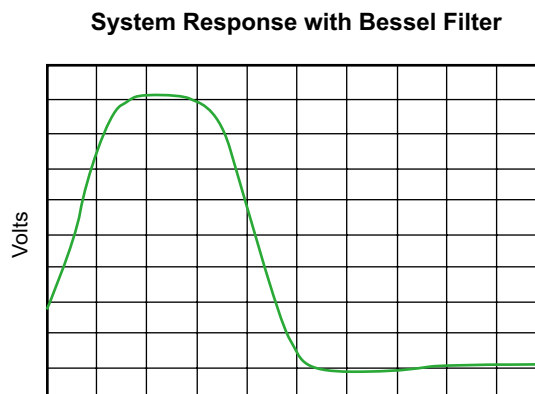
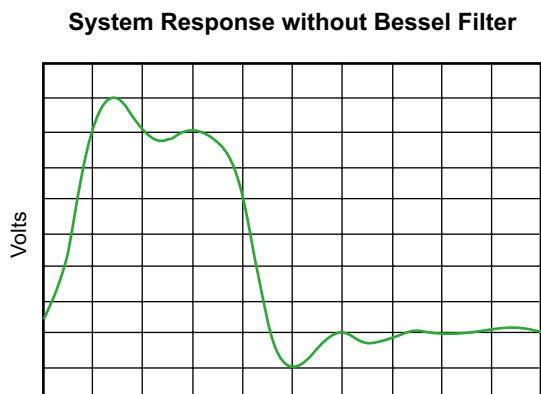
- Bit error rate (BER) optimization in digital telecom systems where conventional filters cannot be used
- System noise bandwidth control
- Pulse shape optimization

Typical Performance

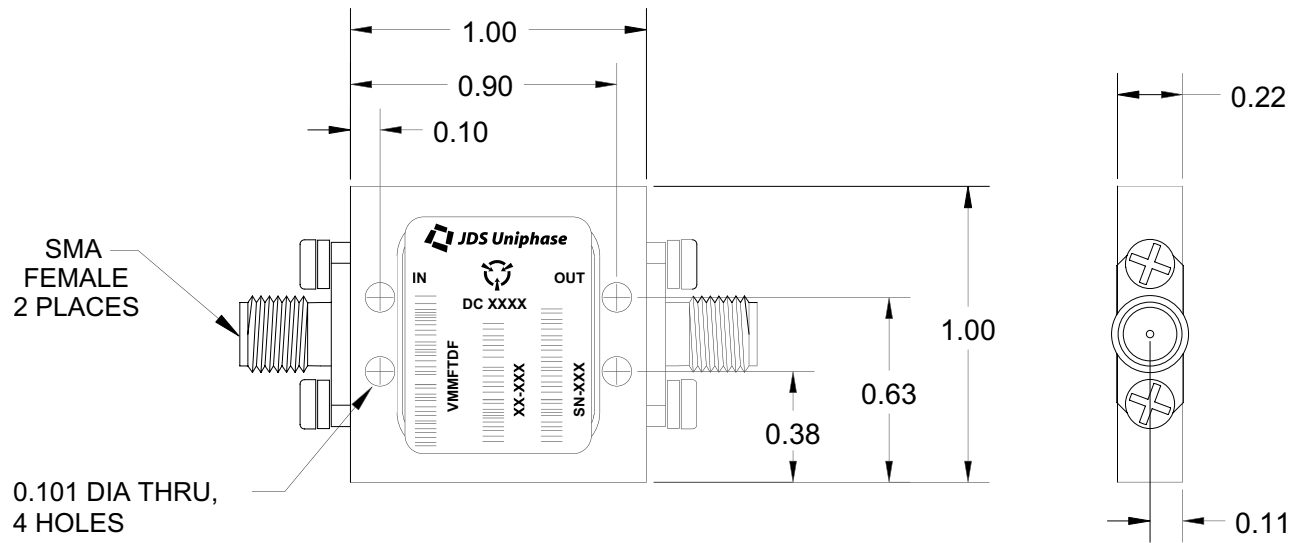
Measured Performance: S11, S22, S21 from 0.01 to 20.00 GHz



Computer-modeled response of 5 Gb/s digital telecom system without (left) and with (right) reflectionless Bessel filter. Internal dispersive effects and amplifier overshoots can be corrected using properly chosen filters. The result is a BER decrease and an EYE opening increase.



Package Dimensions (in inches)



Specifications

Bessel Filter Performance

Model Number VMMFTDF-xxx-xxx	Fc 3 dB	Fc Tolerance	F2 (note ¹)	F3 (note ¹)
-013-006	1.3 GHz	±0.10 GHz	2.6 GHz	3.9 GHz
-017-006	1.7 GHz	±0.13 GHz	3.4 GHz	5.1 GHz
-034-005	3.4 GHz	±0.26 GHz	6.8 GHz	10.2 GHz
-043-005	4.3 GHz	±0.30 GHz	8.6 GHz	12.9 GHz
-062-006	6.2 GHz	±0.45 GHz	12.4 GHz	18.0 GHz
-077-004	7.7 GHz	±0.55 GHz	15.4 GHz	18.0 GHz
-106-002	10.6 GHz	±0.60 GHz	18.0 GHz	18.0 GHz
-150-001	15.0 GHz	±0.90 GHz	18.0 GHz	18.0 GHz

Other Specifications

S11, S22 <-13 dB to F2 <-10 dB to F3

Phase nonlinearity <20° to F3

Loss <0.5 dB at Fc/10

Shape factor typically 1.8:1 at 10 dB/3 dB

Maximum pin 0.25 W

Options

Cut-off frequencies different from the standard can be special-ordered. These filters may also be combined with amplifiers, variable attenuators and other JDS Uniphase products as special-order assemblies. A version of this filter with electrically adjustable bandwidth is also available.

Mechanical Data

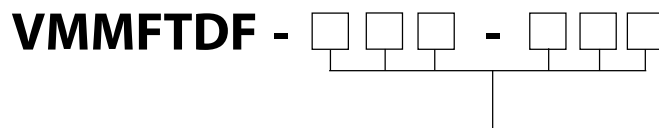
Housing is aluminum 6061-T6, nickel plated in outline LP1-1.0, but without DC connector. RF pins are SMA-F, removable to expose 0.015" diameter gold-plated pins. May be PC board mounted.

1. Upper frequencies F2 and F3 are guaranteed only to 18 GHz because of connector mismatches, although good results can typically be expected to 26 GHz.

Ordering Information

For more information on this or other products and their availability, please contact your local JDS Uniphase account manager or JDS Uniphase directly at 800-871-8537 in North America and 1-800-8735-5378 worldwide or via e-mail at jdsu.sales@us.jdsuniphase.com.

Sample: VMMFTDF-013-006



Code	Frequency (Fc) at 3 dB
013-006	1.3 GHz
017-006	1.7 GHz
034-005	3.4 GHz
043-005	4.3 GHz
062-006	6.2 GHz
077-004	7.7 GHz
106-002	10.6 GHz
150-001	15.0 GHz



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