



HL9452 Low Pass Rise Time Filter (1-15 GHz)

Features and Technical Specifications

PRODUCT SUMMARY

The HL9452 family of low-pass absorptive rise time filters provide superior return loss and flat group delay.

Designed using a proprietary absorptive filtering, these filters offer similar frequency response as 4th order Bessel-Thompson filters.

These filters are suitable for OEM use in high-speed telecom and digital networks, as anti-aliasing filters in digital oscilloscopes, and to limit the RF bandwidth to known values.

DEPLOYMENT NOTES

All specifications contained herein are typical unless otherwise noted.

S-parameter files and higher resolution versions of the plots on the following pages are available on our website.

CUSTOM FILTERS

In addition to the options listed in this datasheet, HYPERLABS offers customers quick-turn custom filter designs up to 45 GHz.

The full-turn service includes design, manufacturing, and assembly and small quantities are typically available within a few weeks.

Please contact us for more information about these custom designs.

Rise Time (10-90%)	28 ps (opt. -28)
	47 ps (opt. -47)
	60 ps (opt. -60)
	100 ps (opt. -100)
	150 ps (opt. -150)
	200 ps (opt. -200)
	See Fig. 1 below

Bandwidth (-3 dB fc)	12.5 GHz (opt. -28)
	7.46 GHz (opt. -47)
	5.83 GHz (opt. -60)
	3.50 GHz (opt. -100)
	2.33 GHz (opt. -150)
	1.75 GHz (opt. -200)
	See Fig. 3 below

Group Delay (100 MHz to fc)	260 ps (opt. -28)
	280 ps (opt. -47)
	400 ps (opt. -60)
	415 ps (opt. -100)
	480 ps (opt. -150)
	535 ps (opt. -200)
	See Fig. 2 below

Return Loss (DC to 3 fc)	-15 dB (all options) See Fig. 4 below
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Max Input Power	1 W
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Impedance	50 Ω
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Connectors	SMA, 1x plug, 1x jack
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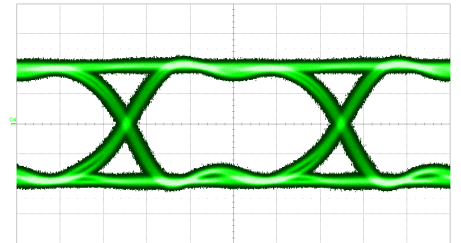
Dimensions	45.72 x 15.24 x 10.16 mm 1.80" x 0.60" x 0.40"
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Weight	14 g (0.49 oz.)
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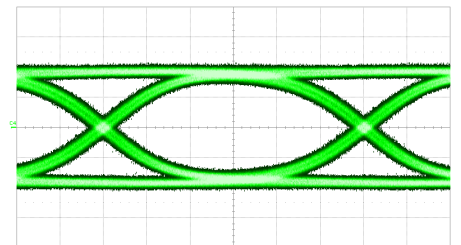
Temperature Limits	-40° to +40° C, operating
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RoHS Compliance	RoHS compliant; made with lead-free solder
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Warranty	1 year, see website
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16 Gbps PRBS31 pattern at RF Input of HL9452-28; see also Figs. 5-6 below



16 Gbps PRBS31 pattern at RF Output of HL9452-28

HL9452 Rise Time and Group Delay

Figure 1 shows the 1 V step response for various HL9452 options. Figure 2 shows the group delay (ps) over the operating frequency range of these same options.

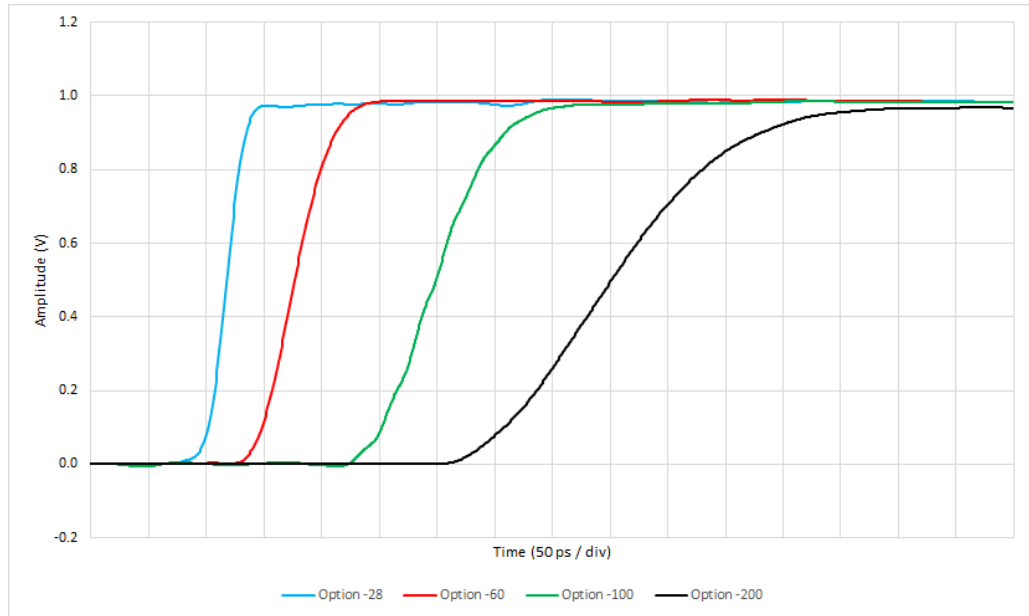


Figure 1: Typical HL9452 step response, various options

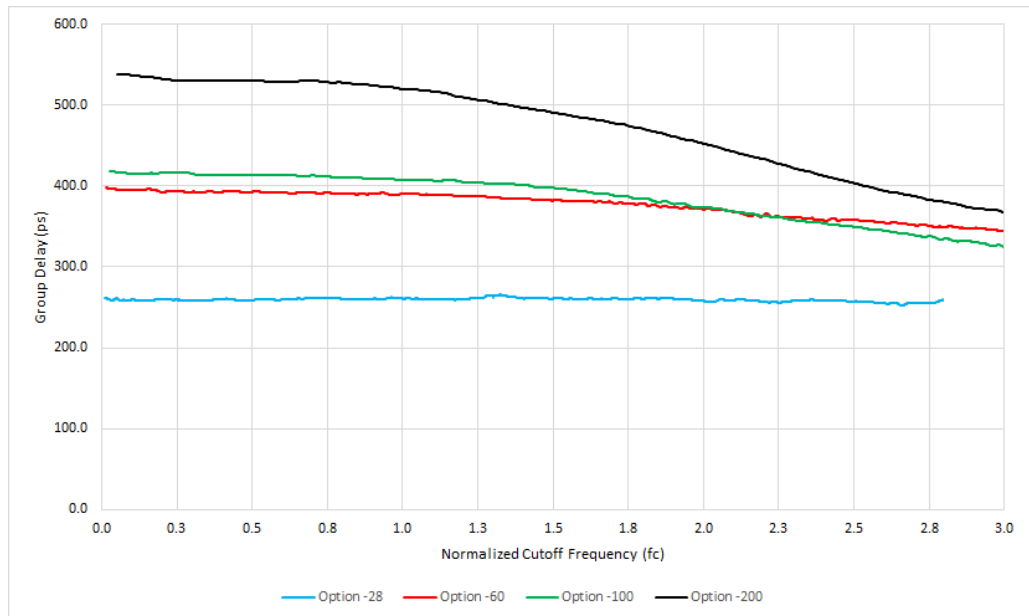


Figure 2: Typical HL9452 group delay, various options

HL9452 Insertion Loss and Return Loss

Figure 3 shows the Insertion Loss and Figure 4 shows the Return Loss on various HL9452 options over the operating frequency range.

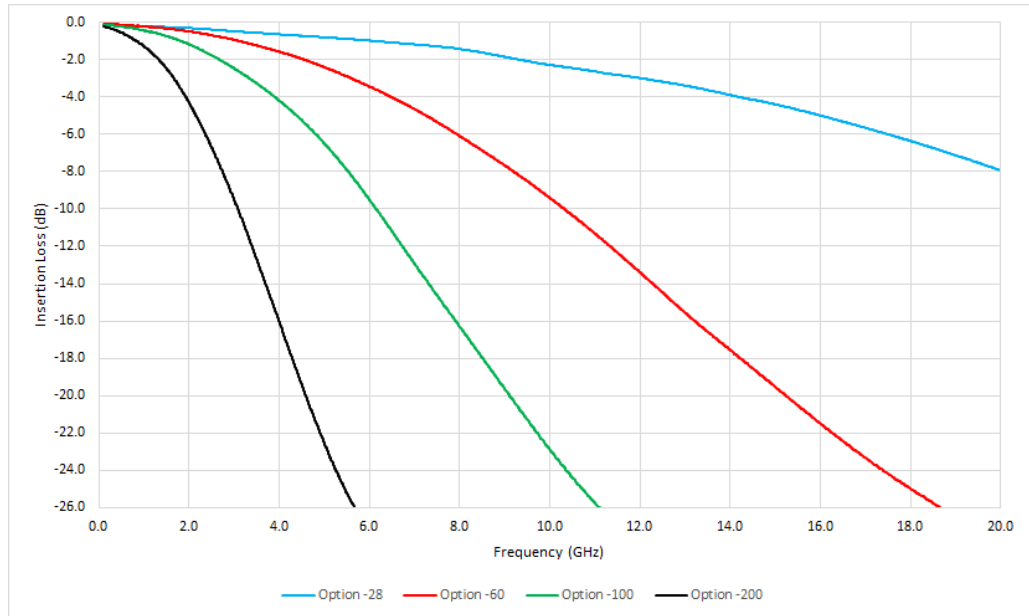


Figure 3: Typical HL9452 insertion loss, various options

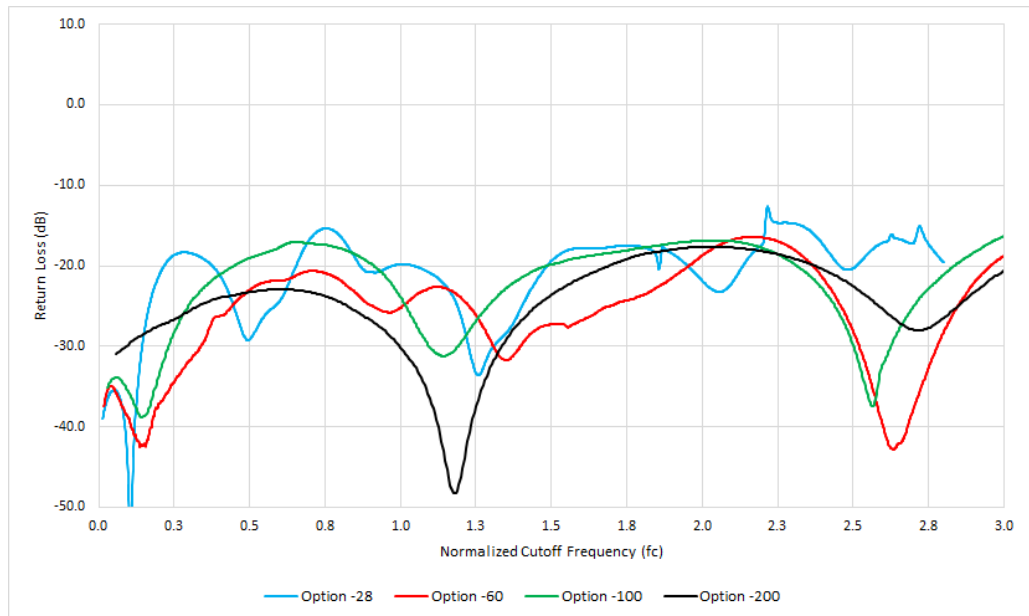


Figure 4: Typical HL9452 return loss, various options



HL9452 Eye Diagrams

Figure 5 shows a 16 Gbps PRBS31 pattern on the RF Input of option HL9452-28 and Figure 6 shows the same pattern at the RF Output.

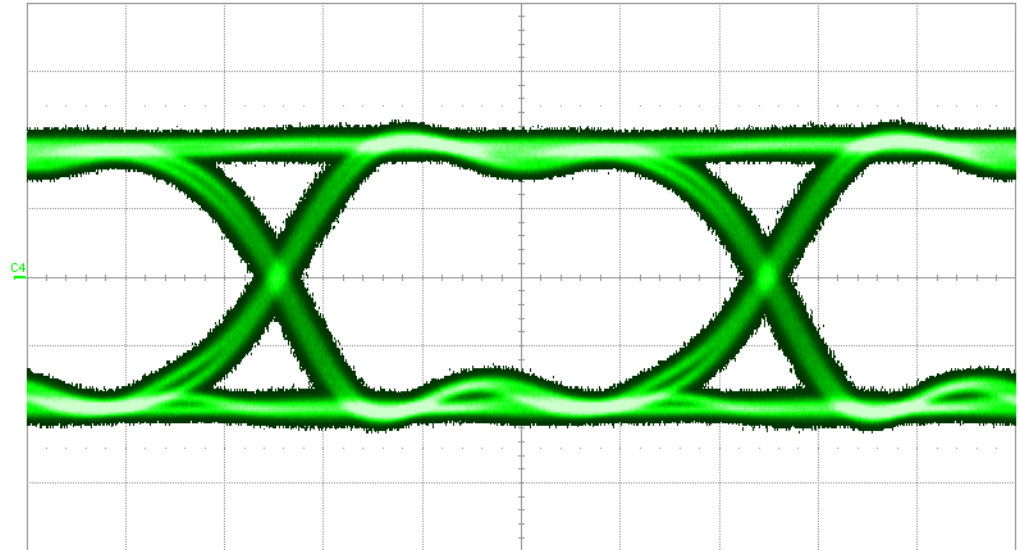


Figure 5: Typical eye diagram of a 16 Gbps PRBS31 pattern on option HL9452-28, RF In

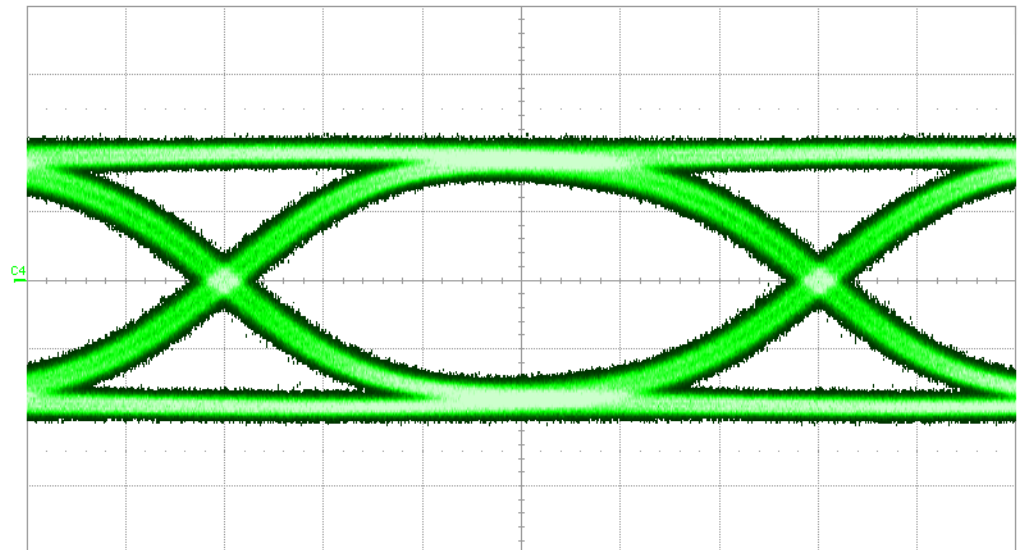


Figure 6: Typical eye diagram of a 16 Gbps PRBS31 pattern on option HL9452-28, RF Out