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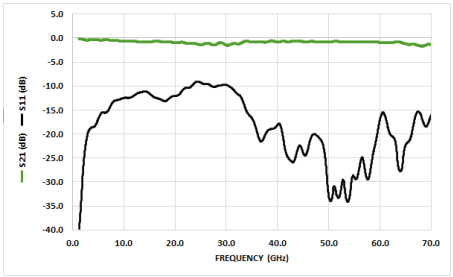
HL843x Series DC Blocks (20 kHz to 67 GHz)

Features and Technical Specifications[1] (HL8437 shown)

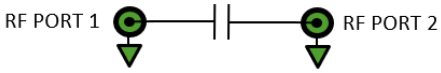
Bandwidth	7 kHz to > 67 GHz
Amplitude Match	± 0.1 dB, typ., (opt. -M) See *Fig. 1*
Phase Match	± 4°, f = 40 GHz (opt. -M)
Insertion Loss	< 1.5 dB See *Figs. 1-2*
Return Loss	10 dB, f ≤ 35 GHz 15 dB, f > 35 GHz See *Fig. 3*
Breakdown Voltage	10 V, max
Group Delay	≈ 125 ps See *Fig. 4*
Rise Time (10-90%)	5 ps, all options
Connectors (PORT 1 / PORT 2)	1.85 mm, jack/jack (opt. -JJ) 1.85 mm, jack/plug (opt. -JP) 1.85 mm, plug/plug (opt. -PP)
Temperature Limits	-40° to +70° C, operating
RoHS Compliant	Yes, assembled with lead-free solder
REACH Compliant	Yes
Warranty	1 year, see website

NOTE 1 - Unless otherwise noted, the specifications in this table are typical for Model Number HL8437. Full specifications for this and related models are available on Page 2 of this datasheet.

HL8437, opt. -M-JP shown



Typical HL8437 Insertion and Return Loss



HL843x Schematic and Port Assignments

PRODUCT SUMMARY

The HL843x series are ultra-broadband DC Blocks with a typical insertion loss of < 1.5 dB throughout the specified bandwidth range.

The DC block will remove DC bias from the input signal to prevent damage to DC-sensitive devices or equipment.

These devices are suitable for use in 112 Gbps PAM4 communications systems, optical communication systems, high-speed data systems, level shifting, cascading, and interfacing between devices with incompatible DC operating points.

They can also be used to improve RF power measurements when a power meter with DC sensitivities is used.

These DC blocks use ceramic-based capacitors that provide a low frequency cutoff, but with less thermal and voltage stability.

MODELS & OPTIONS

The following models are available:

HL8435, 50 GHz
HL8437, 67 GHz

The following options need to be specified:

-M, matched pair
-U, unmatched part(s)

-220, 220 nF

-JJ, jack RF 1 and RF 2
-JP, jack RF 1, plug RF 2
-PP, plug RF 1 and RF 2

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HL843x Full Specifications

Parameter	HL8435	HL8437	Comments
Upper Frequency Limit	50 GHz	67 GHz	
Lower Frequency Limit See *Fig. 2*	7 kHz	7 kHz	
Amplitude Match See *Fig. 1*	± 0.1 dB	± 0.1 dB	opt. -M
Phase Match	± 4°, f = 40 GHz	± 4°, f = 40 GHz	opt. -M
Insertion Loss *See Fig. 1*	< 1.5 dB typ, < 2 dB max 20 kHz ≤ f ≤ 50 GHz	< 1.5 dB typ, < 2 dB max 20 kHz ≤ f ≤ 67 GHz	
Return Loss *See Fig. 3*	10 dB, f ≤ 35 GHz 15 dB, f > 35 GHz	10 dB, f ≤ 35 GHz 15 dB, f > 35 GHz	
Rise Time	7 ps	5 ps	
Group Delay *See Fig. 4*	100 ps	125 ps	
Breakdown Voltage	10 V, max	10 V, max	
Capacitance	220 nF ± 15%	220 nF ± 15%	Ceramic
Impedance	50 Ω	50 Ω	Input and Output
Maximum Input Power	+30 dBm	+30 dBm	
Connectors (PORT 1 / PORT 2)	2.4 mm, jack-jack 2.4 mm, jack-plug 2.4 mm, plug-plug	1.85 mm, jack-jack 1.85 mm, jack-plug 1.85 mm, plug-plug	According to specified option -JJ, -JP, or -PP
Dimensions (W x D x H)	1.29” x 0.535” x 0.525” 32.8 x 13.59 x 13.34 mm	1.11” x 0.535” x 0.525” 28.2 x 13.59 x 13.34 mm	Package including connectors
Weight	8 g (0.28 oz.)	8 g (0.28 oz.)	
Operating Temperature	-40° to +70° C	-40° to +70° C	Case temperature
RoHS Compliant	Yes, assembled with lead-free solder		
REACH Compliant	Yes		
Warranty	1 year, repair or replacement; see website for details		

NOTE - The values above are typical unless otherwise specified

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HL843x Bandwidth and Insertion Loss

Figure 1 shows the insertion loss and amplitude match of a pair of HL8437 from 10 MHz to 67 MHz.

Figure 2 shows the low-frequency response to 100 Hz.

Other models show similar performance within their respective specified bandwidths.

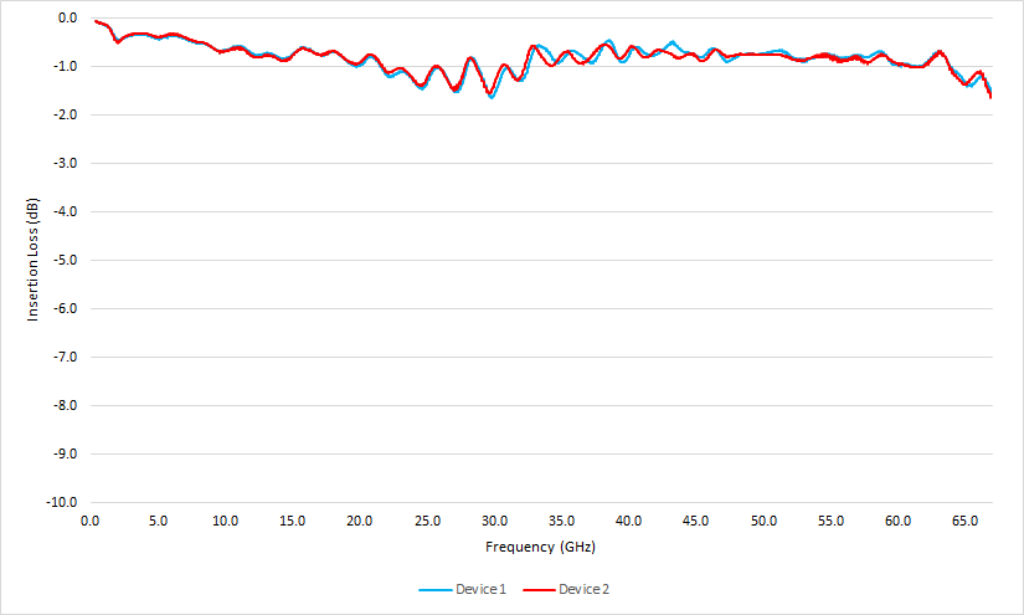

Figure 1: Typical HL8437 Bandwidth and Insertion loss

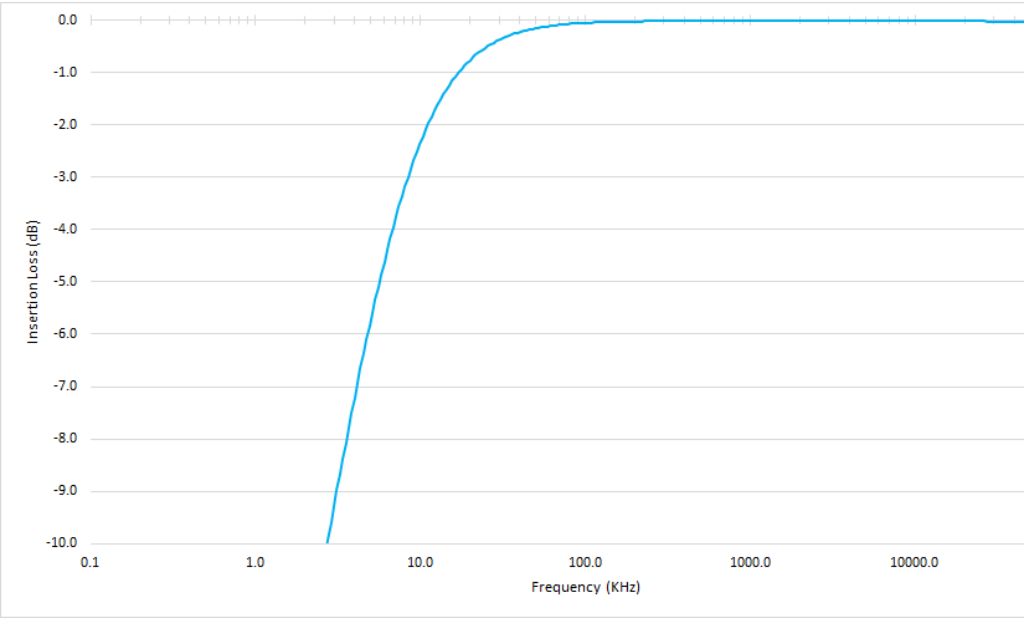

Figure 2: Typical HL8437 Low-frequency Performance

HL843x Return Loss and Group Delay

Figure 3 shows return loss and *Figure 4* shows the typical HL8437 Group Delay from 10 MHz to 67 MHz.

Other models show similar performance within their respective specified bandwidths.

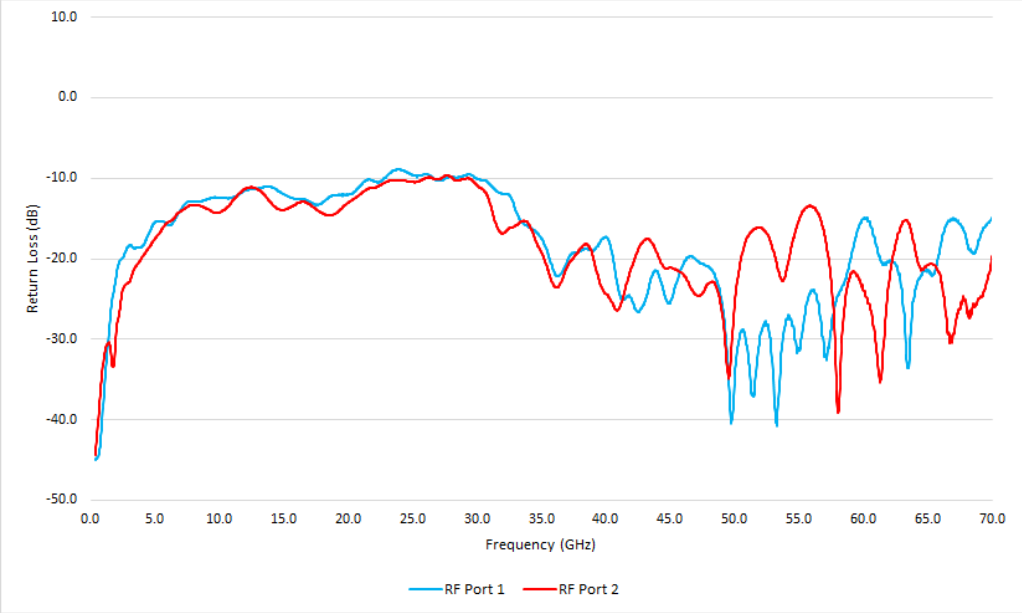

Figure 3: Typical HL8437 Return Loss

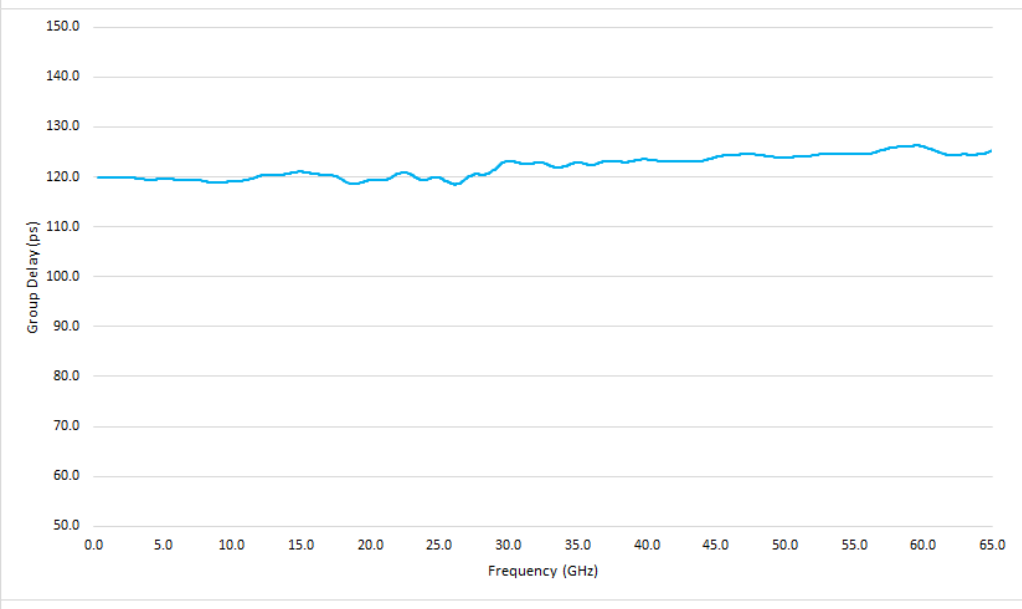

Figure 4: Typical HL8437 Group Delay

HL843x Eye Diagrams

The eye diagrams in *Figures 5-6* show a 56 Gbps PRBS11 pattern passed through an HL8437.

All plots have an input signal amplitude of 278 mV and are shown at 65 mV/div.

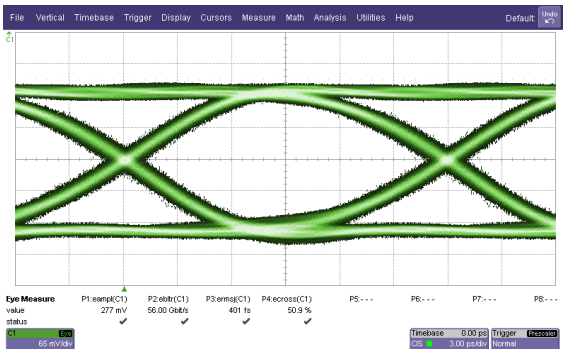

Figure 5: HL8437 56 Gpbs PRBS 11, RF Input

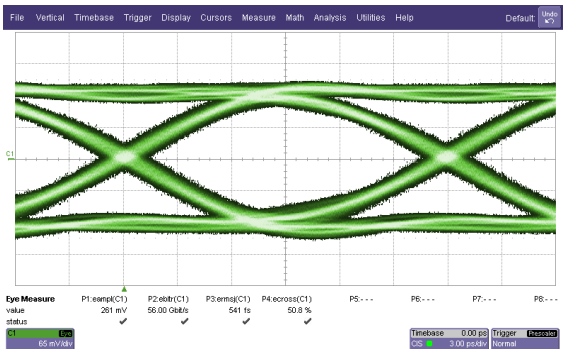

Figure 6: HL8437 56 Gpbs PRBS 11, RF Output

HL843x Dimensional Drawing

Figure 7 shows a mechanical drawing of an HL8437. Unless otherwise noted, all units are in inches. Other models vary in width based on connectors. See page 2 for full dimensions.

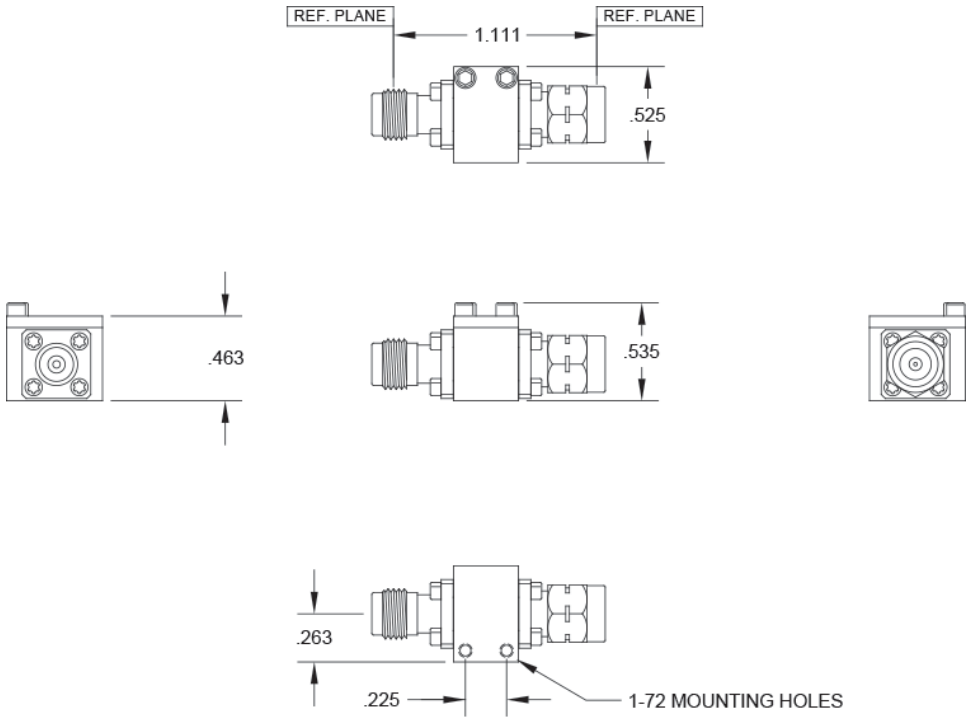

Fig 7: HL8437 Mechanical Drawing