

HL8438/9 Series DC Blocks (16 kHz to 110 GHz)

Features and Technical Specifications¹

Bandwidth	16 kHz to > 110 GHz
Amplitude Match	± 0.1 dB, typ., (opt. -M) See Fig. 4
Phase Match	± 4°, f = 40 GHz (opt. -M)
Insertion Loss	< 2 dB See Fig. 1
Return Loss	15 dB, f ≤ 80 GHz 10 dB, f > 80 GHz See Fig. 2
Breakdown Voltage	10 V, max
Capacitance	100 nF ± 20%
Group Delay	≈ 103 ps See Fig. 5
Rise Time (10-90%)	5 ps, all options
Connectors (PORT 1 / PORT 2)	1.0 mm, jack/jack (opt. -JJ) 1.0 mm, jack/plug (opt. -JP) 1.0 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 HL8439. Full specifications for this and related models are available on Page 2 of this datasheet.	

PRODUCT SUMMARY

The HL8439 is an ultra-broadband DC Blocks with a typical insertion loss of < 2 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 224 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.

MODELS & OPTIONS

The following models are available:

- HL8438**, 95 GHz
- HL8439**, 110 GHz

The following options need to be specified:

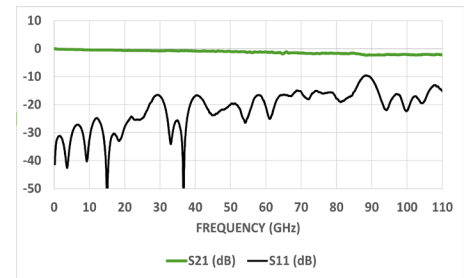
- M**, matched pair
- U**, unmatched part(s)

-100, 100 nF

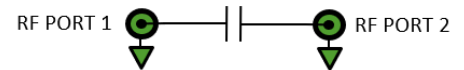
- JJ**, jack RF 1 and RF 2
- JP**, jack RF 1, plug RF 2
- PP**, plug RF 1 and RF 2



HL8439, opt. -M-JP shown



Typical HL8439 Insertion and Return Loss



HL843x Schematic and Port Assignments



HL8438/9 Full Specifications

Parameter	HL8438	HL8439	Comments
Upper Frequency Limit	95 GHz	110 GHz	
Lower Frequency Limit See Fig. 3	16 kHz	16 kHz	
Amplitude Match See Fig. 5	± 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	< 2 dB typ, < 2.5 dB max 16 kHz ≤ f ≤ 95 GHz	< 1.5 dB typ, < 2.5 dB max 16 kHz ≤ f ≤ 110 GHz	
Return Loss See Fig. 2	15 dB, f ≤ 80 GHz 10 dB, f > 80 GHz	15 dB, f ≤ 80 GHz 10 dB, f > 80 GHz	
Rise Time	7 ps	5 ps	
Group Delay See Fig. 4	103 ps	103 ps	
Breakdown Voltage	10 V, max	10 V, max	
Capacitance	100 nF ± 20%	100 nF ± 20%	Ceramic
Impedance	50 Ω	50 Ω	Input and Output
Maximum Input Power	+30 dBm	+30 dBm	
Connectors (PORT 1 / PORT 2)	1.0 mm, jack-jack 1.0 mm, jack-plug 1.0 mm, plug-plug	1.0 mm, jack-jack 1.0 mm, jack-plug 1.0 mm, plug-plug	According to specified option -JJ, -JP, or -PP
Dimensions (W x D x H)	1.41" x 0.377" x 0.377" 35.8 x 9.57 x 9.57 mm	1.41" x 0.377" x 0.377" 35.8 x 9.57 x 9.57 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

HL8439 Plot Diagrams

Figures 1-5 show the typical S-parameter characteristics for the HL8439 through 110 GHz. The HL8438 shows similar performance within its specified bandwidth of 95 GHz.

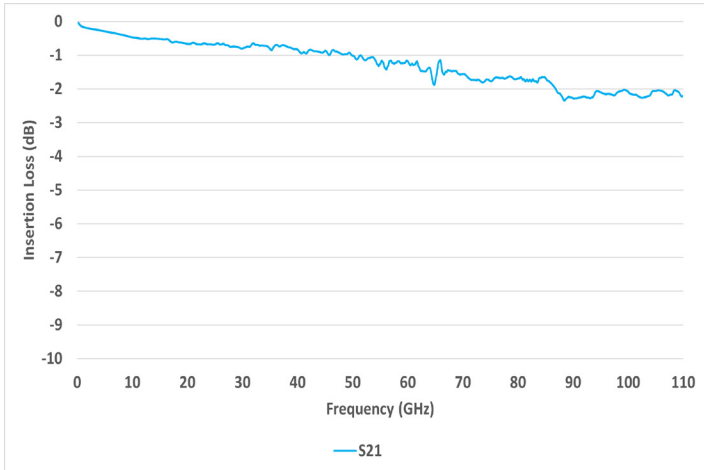


Figure 1: HL8439 Insertion Loss

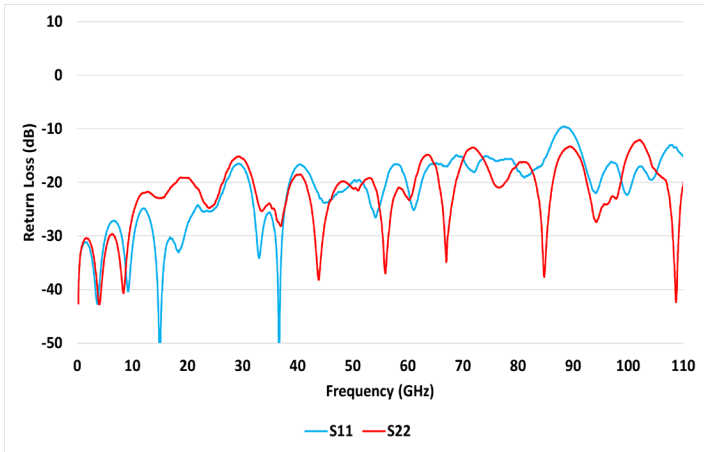


Figure 2: HL8439 Return Loss

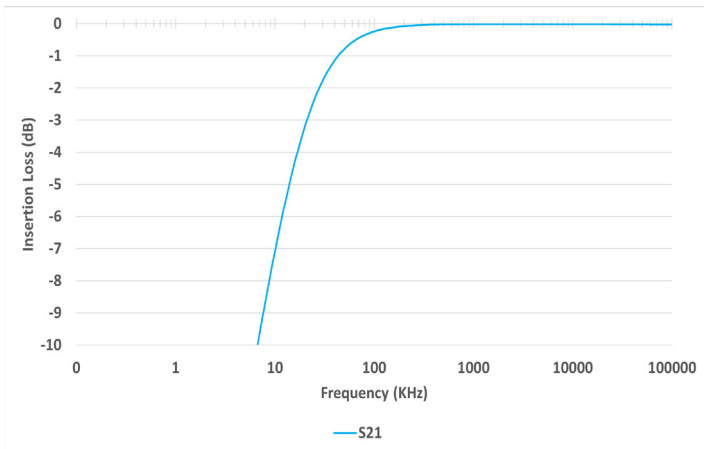


Figure 3: HL8439 Low Frequency Performance

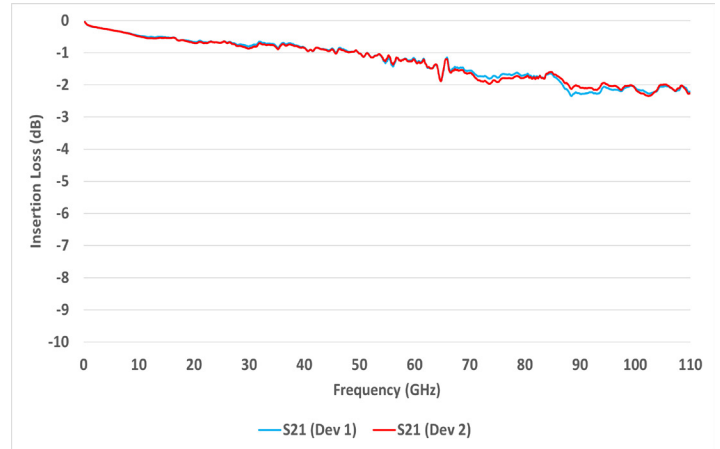


Figure 4: HL8439 Amplitude Match

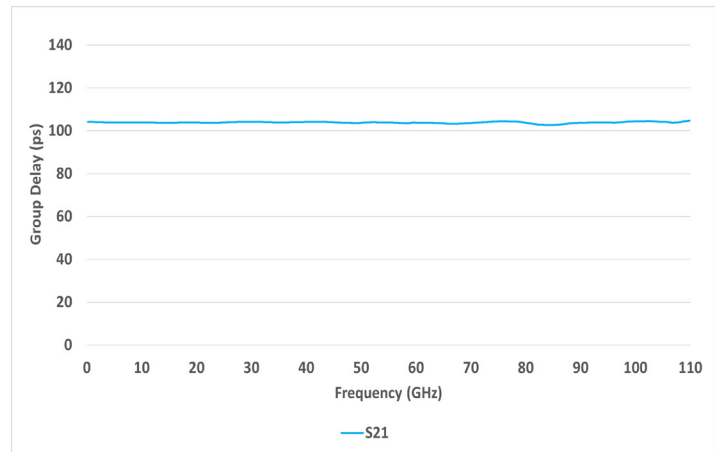


Figure 5: HL8439 Group Delay

HL8439 Dimensional Drawing

Figure 6 shows a mechanical drawing of an HL8439. Unless otherwise noted, all units are in inches. Other models vary in width based on connectors. See page 2 for full dimensions.

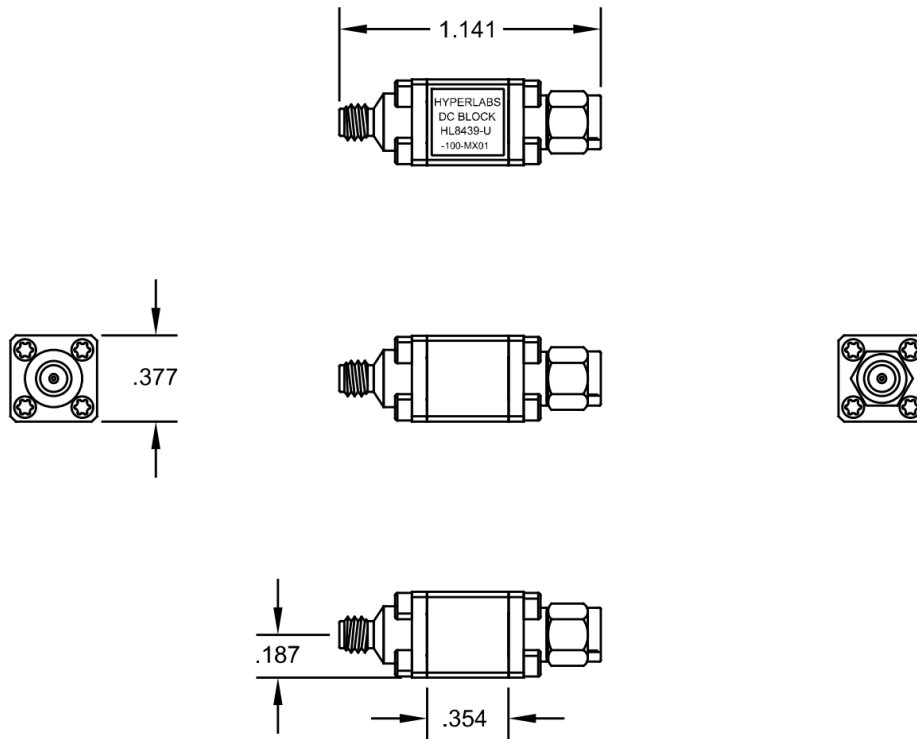


Fig 6: HL8437 Mechanical Drawing