

HL8342 Broadband Bias Tee (5/16 kHz to 28 GHz)

Features and Technical Specifications¹

PRODUCT SUMMARY

The HL8342 is an ultra-broadband bias tee with a typical insertion loss under 0.05 - 0.1 dB and a bandwidth of 5/16 kHz to 28 GHz.

The HL8342 blocks any existing DC signal and allows for the insertion of a DC bias current into a circuit with minimal perturbation of the impedance of a 50 ohm transmission line.

These devices can be used for biasing amplifiers, lasers, optical modulators, and other devices.

Applications include optical communication systems, high-speed data systems, level shifting, cascading, and interfacing between devices with incompatible DC operating points.

AVAILABLE OPTIONS

The following options and configurations are available:

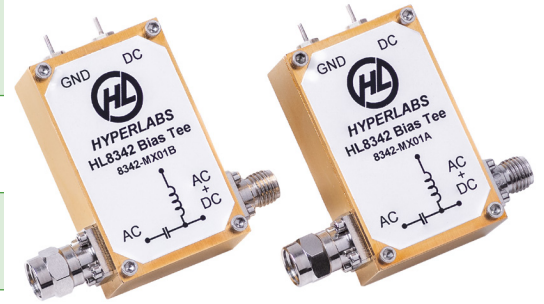
- M, matched pair
- U, unmatched part(s)

- 50, 50 V breakdown
- 100, 100 V breakdown

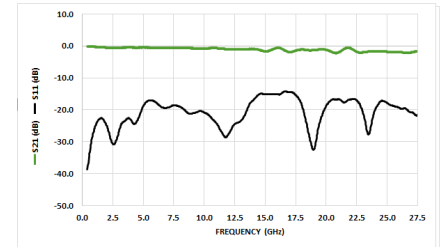
- JJ, jack AC, AC+DC
- JP, jack AC, plug AC+DC
- PJ, plug AC, jack AC+DC
- PP, plug AC, AC+DC

Bandwidth	5 kHz to 28 GHz, typical (opt. -50) 6 kHz to 25 GHz, min. 16 kHz to 28 GHz, typical (opt. -100) 20 kHz to 25 GHz, min.
Insertion Loss	0.1 dB (opt. -50) 0.05 dB (opt. -100)
Amplitude Match (opt. -M only)	± 0.1 dB
Phase Match (opt. -M only)	± 4°, f = 20 GHz
Return Loss	>15 dB (opt. -50) > 10 dB (opt. -100)
Breakdown Voltage	50 V, max (opt. -50) 100 V, max (opt. -100)
Maximum RF Power	2 W (+33 dBm)
Maximum Current	500 mA
Group Delay	115 ps
Rise Time (10-90%)	< 12.5 ps, typical
Connectors	SMA, jack/jack (opt. -JJ) SMA, jack/plug (opt. -JP) SMA, plug/jack (opt. -PJ) SMA, plug/plug (opt. -PP)
Temperature Limits	-40° to +40° C, operating
RoHS Compliant	Yes, assembled with lead-free solder
REACH Compliant	Yes
Warranty	1 year, see website

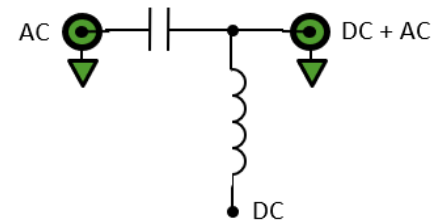
NOTE 1 - Unless otherwise noted, the specifications in this table are typical. Full specifications are available on Page 2 of this data-sheet.



HL8342, option -M-PJ shown



Typical HL8342 Insertion and Return Loss



HL8342 Schematic and Port Assignments

HL8342 Full Specifications

Parameter	HL8342 (opt. -50)	HL8342 (opt. -100)	Comments
Upper Frequency Limit	> 25 GHz	> 25 GHz	3 dB roll-off point, relative to nominal insertion loss
Lower Frequency Limit See Fig. 2	5 kHz	16 kHz	3 dB roll-off point
Maximum Current	500 mA	500 mA	
Breakdown Voltage	50 V	100 V	
Maximum RF Power	2 W (+33 dBm)	2 W (+33 dBm)	
Amplitude Match See Fig. 5	± 0.1 dB	± 0.1 dB	Typical, opt. -M only
Phase Match	± 4°, f = 20 GHz	± 4°, f = 20 GHz	Typical, opt. -M only
Insertion Loss See Fig. 1	0.1 dB	0.05 dB	Typical
Return Loss See Fig. 3	> 30 dB, f = 100 MHz >15 dB, f < 25 GHz	> 30 dB, f = 100 MHz >10 dB, f < 25 GHz	Typical
Rise Time	< 12.5 ps	< 12.5 ps	Typical
Group Delay See Fig. 4	115 ps	115 ps	All options
Impedance	50 Ω	50 Ω	Input and Output
Capacitance	0.50 μF, ± 25%	0.10 μF, ± 10%	
Inductance	1.34 mH, ± 30%	1.34 mH, ± 30%	
DC Resistance	3 Ω		DC to AC+DC
Connectors	SMA		According to specified option -JJ, -JP, -PJ, or -PP
Dimensions (W x D x H)	1.85" x 1.74" x 0.67" 47.0 x 44.2 x 17.1 mm		Package including connectors
Weight	33 g (1.16 oz.)		
Operating Temperature	-40° to +40° C		Case temperature
RoHS Compliant	Yes		
REACH Compliant	Yes		
Warranty	1 year, see website		

HL8342 Bandwidth and Insertion Loss

Figure 1 shows the insertion loss and bandwidth of the HL8342-50 from 10 MHz to 27.5 GHz.

Figure 2 shows the low-frequency response of this same configuration to 100 Hz.

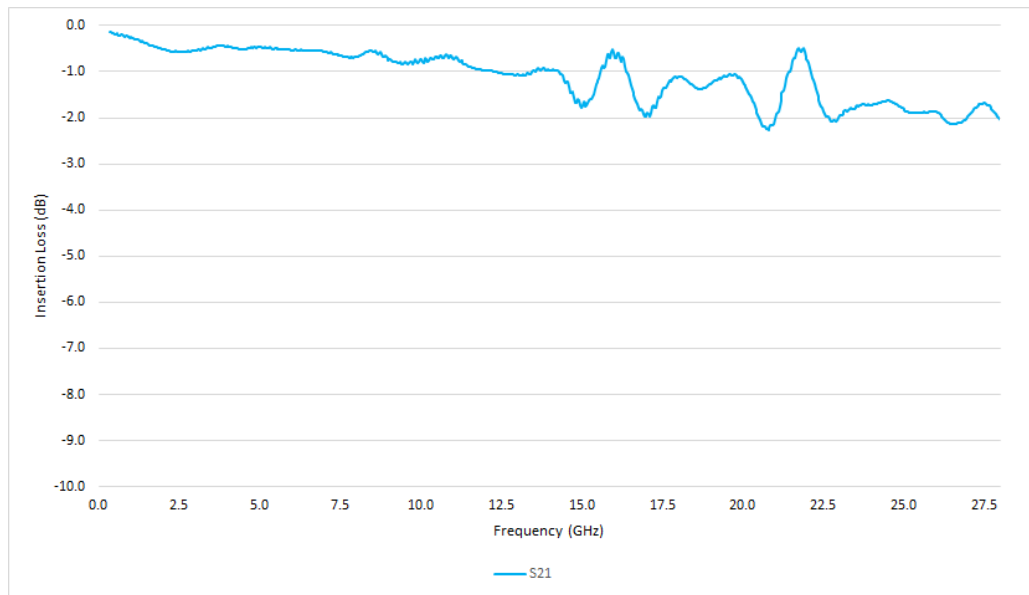


Figure 1: Typical HL8342 Bandwidth and Insertion Loss

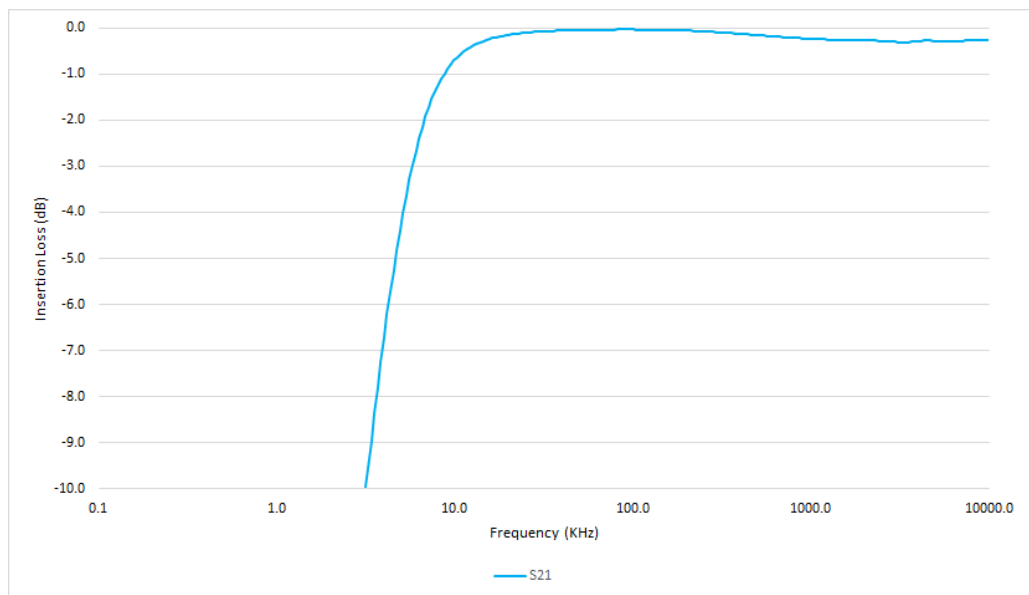


Figure 2: Typical HL8342 Low-frequency Performance

HL8342 Return Loss and Group Delay

Figure 3 shows Return Loss and Figure 4 shows the Group Delay on a typical HL8342-50 from 10 MHz to 27.5 GHz.

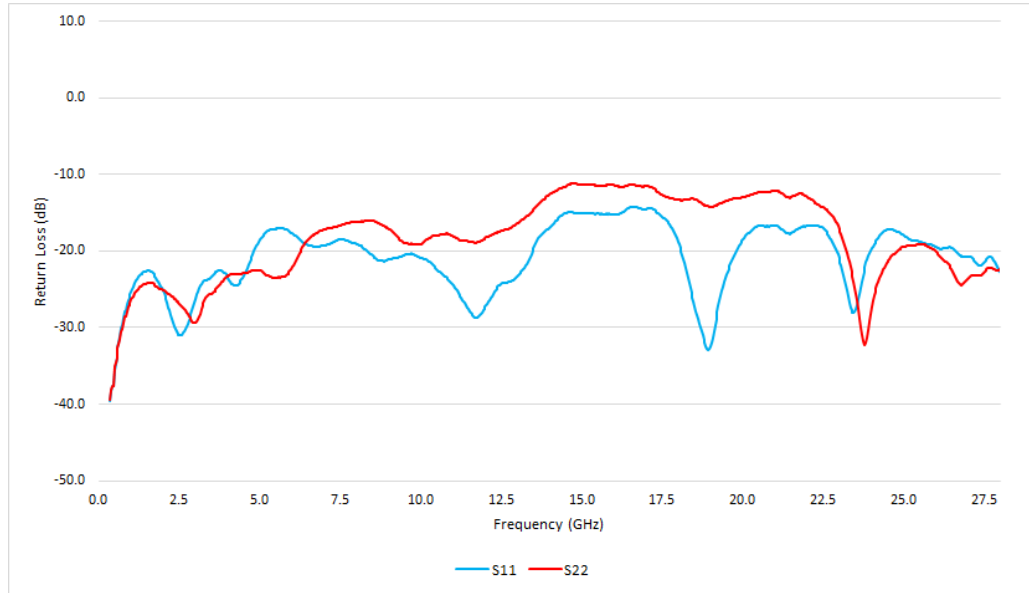


Figure 3: Typical HL8342 Return Loss

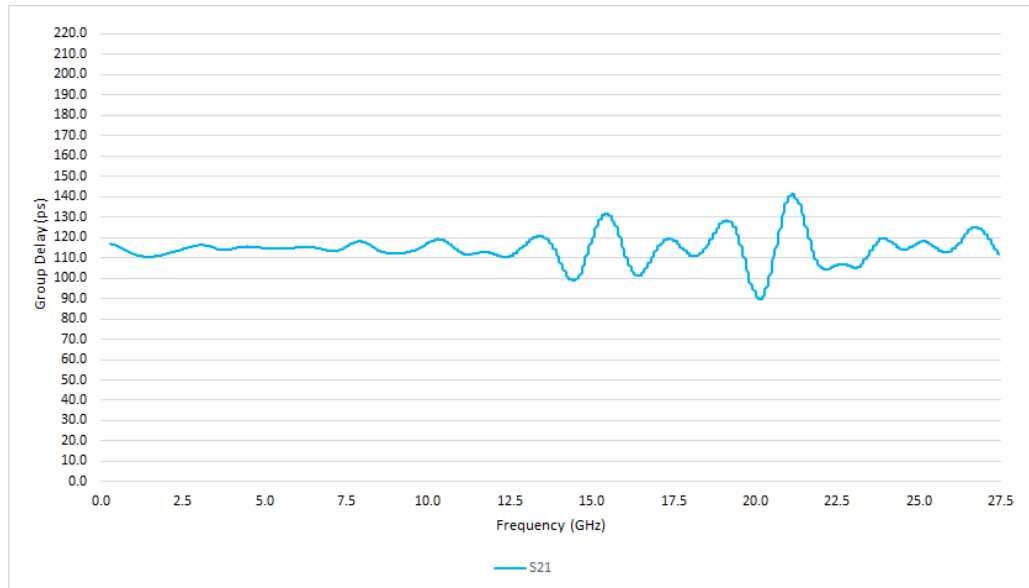


Figure 4: Typical HL8342 Group Delay

HL8342 Matching

Figure 5 shows the typical amplitude match between a matched pair of HL8342-50 devices from 10 MHz to 27.5 GHz.

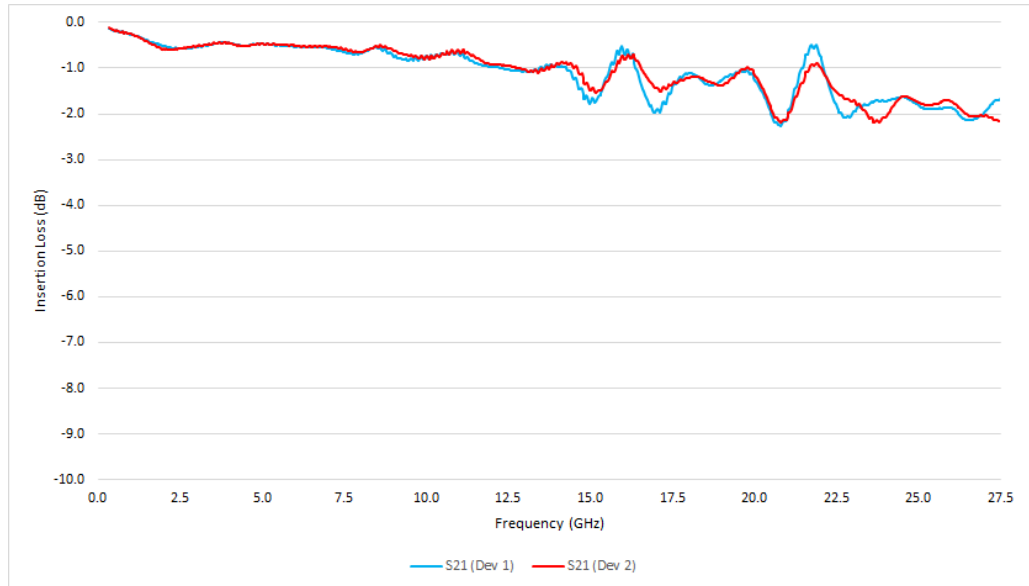


Figure 5: Typical HL8342 Amplitude Matching (opt. -M)

HL8342 Dimensional Drawing

Figure 6 shows a mechanical drawing of an HL8342 (opt. -JJ). Unless otherwise noted, all units are in inches. See page 2 for full dimensions.

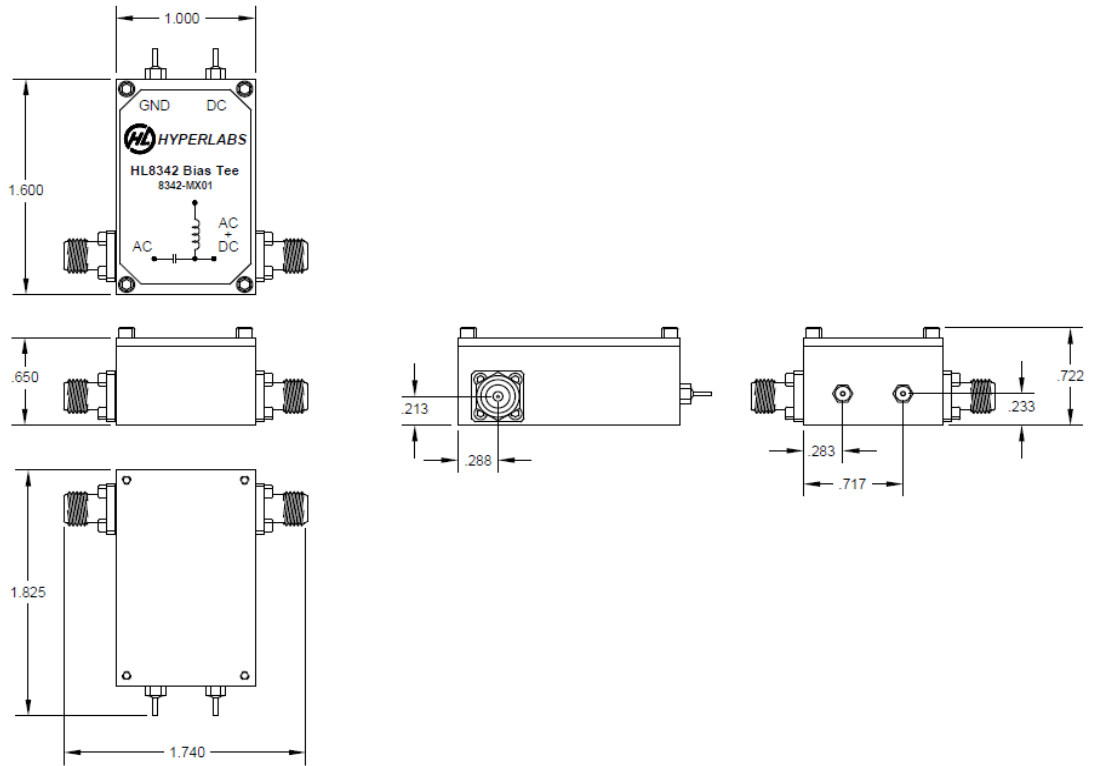


Fig 6: HL8342 Mechanical Drawing