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

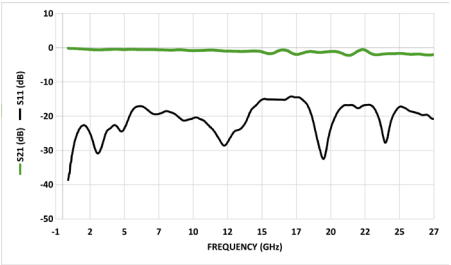
Features and Technical Specifications[1]

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	< 1 dB, 5 kHz < f ≤ 15 GHz < 2 dB, f > 15 GHz. typical (opt. -50)
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 (AC / AC+DC)	SMA Standard configuration is jack/jack See page 2 for other configurations
Temperature Limits	-40° to +40° C, operating
RoHS Compliant	Yes, assembled with lead-free solder
REACH Compliant	Yes
Warranty	1 year, see website

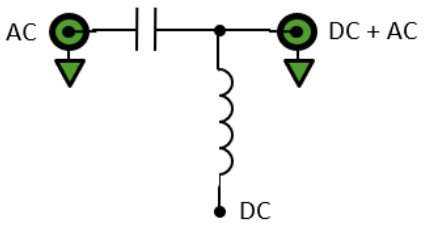
NOTE 1 - Unless otherwise noted, the specifications in this table are typical using the standard connector configuration (-JJ). Full specifications are available on Page 2 of this datasheet.



HL8342, option -M-PJ shown



Typical HL8342 Insertion and Return Loss



HL8342 Schematic and Port Assignments

PRODUCT SUMMARY

The HL8342 is an ultra-broadband bias tee with a typical insertion loss under 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

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*	< 1 dB, 5 kHz < f ≤ 15 GHz < 2 dB, f > 15 GHz	< 1 dB, 16 kHz < f ≤ 15 GHz < 2 dB, f > 15 GHz	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	Port 1 (AC): jack (J) or plug (P) Port 2 (AC+DC): jack (J) or plug (P) *Standard configuration is -JJ*		Specify 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		

Note: All specifications are based on test results using the standard connector configuration. Specifications may vary slightly for other configurations.

HL8342 Performance Characteristics

Figures 1-5 show the typical performance characteristics of the HL8342-50 from 10 MHz to 27.5 GHz, except *Figure 3* which shows low-frequency response to 100 Hz. Other models show similar performance within their specified bandwidth.

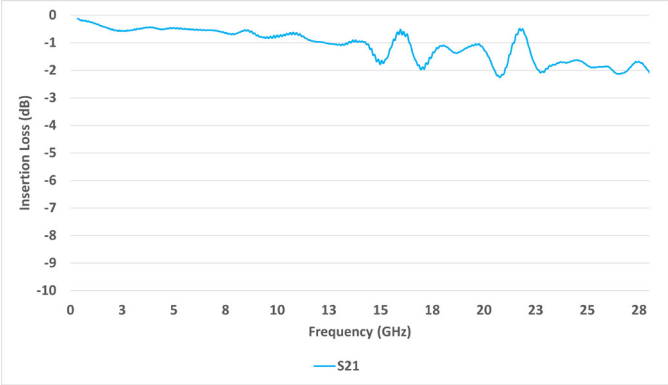


Fig. 1: Typical HL8342 Bandwidth and Insertion Loss

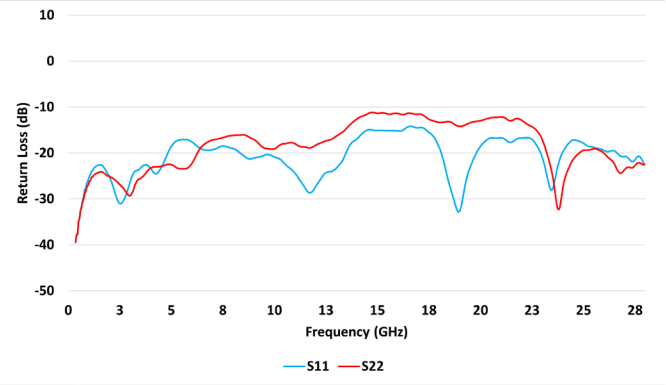


Fig. 2: Typical HL8342 Return Loss

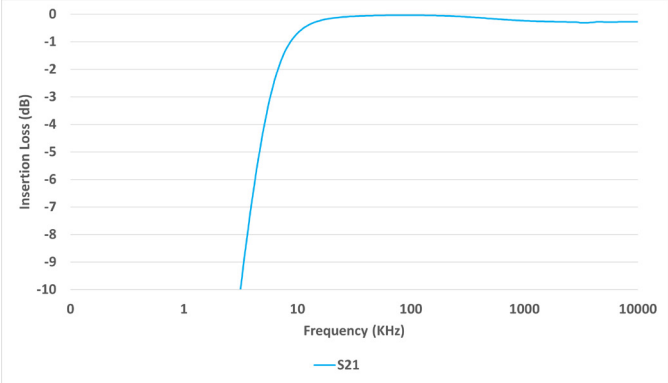


Fig. 3: Typical HL8342 Low Frequency Performance

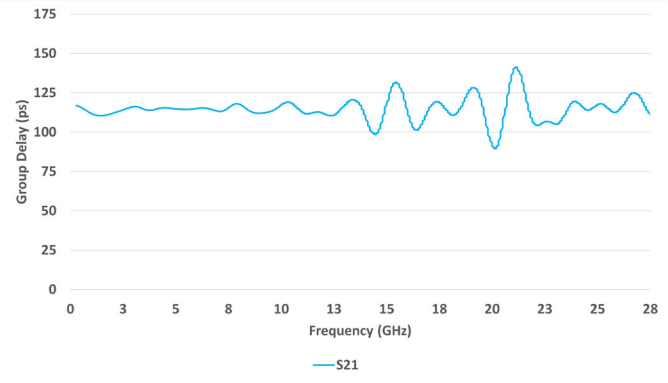


Fig. 4: Typical HL8342 Group Delay

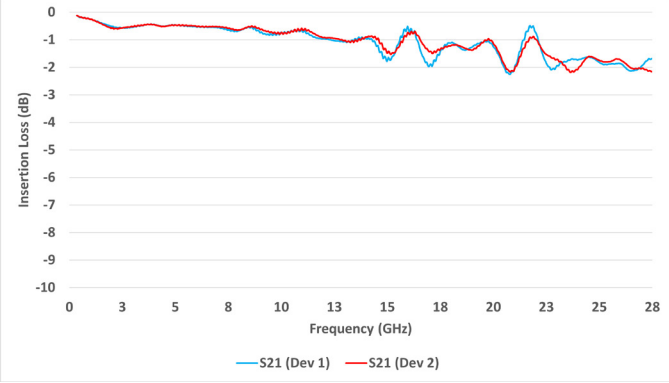


Fig. 5: Typical HL8342 Amplitude Matching (opt. -M)

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.

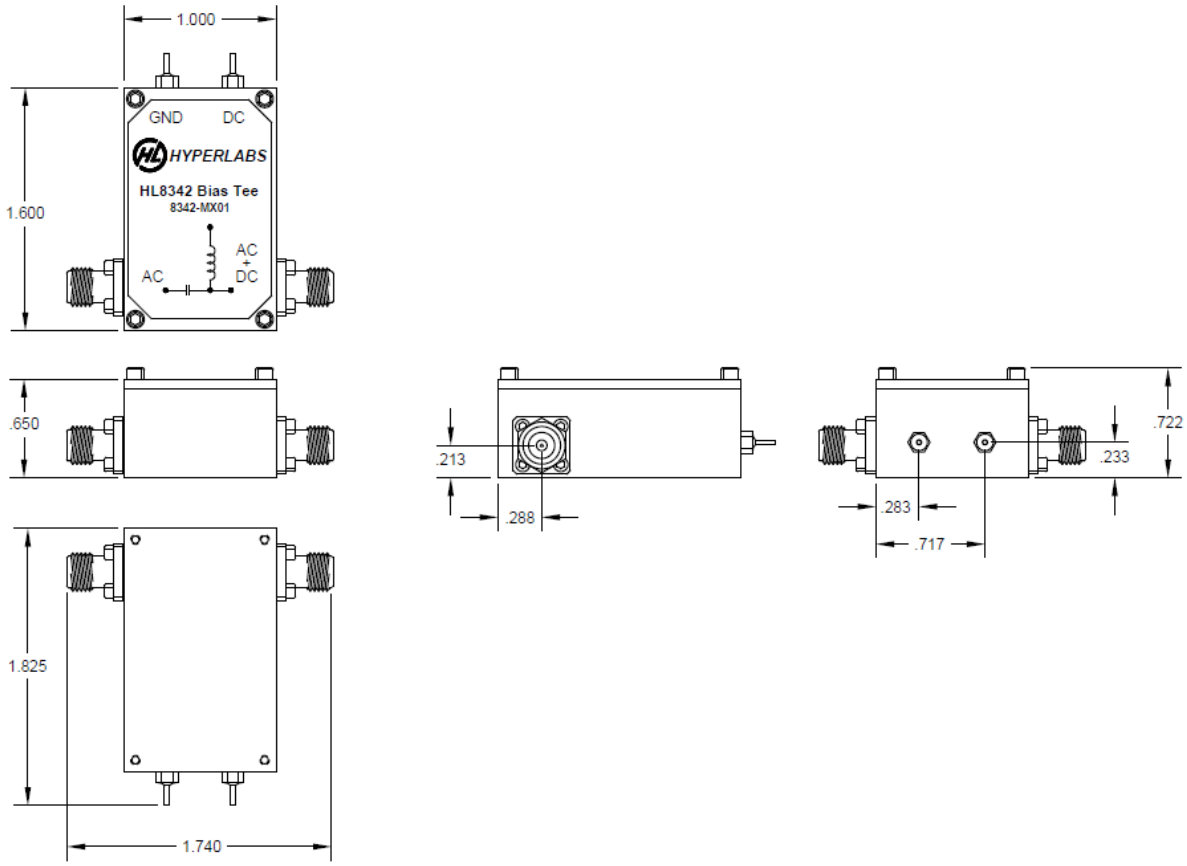


Fig 6: HL8342 Mechanical Drawing