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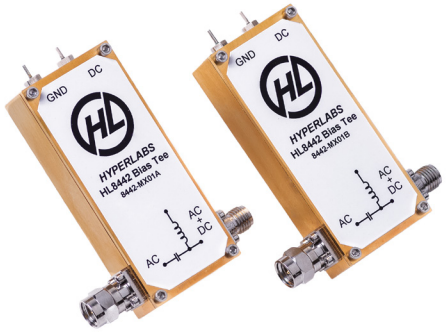
HL8442 Broadband Bias Tee (7.5 kHz to 23 GHz)

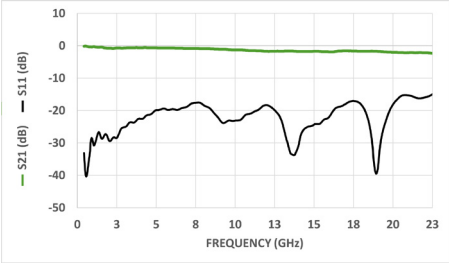
Features and Technical Specifications[1]

Bandwidth	7.5 kHz to 23 GHz, typical 10 kHz to 20 GHz, min.
Insertion Loss	< 1 dB, 7.5 kHz < f ≤ 10 GHz < 2 dB, f > 10 GHz
Amplitude Match (opt. -M only)	± 0.2 dB
Phase Match (opt. -M only)	± 4°, f = 15 GHz
Return Loss	>10 dB
Breakdown Voltage	50 V, max
Maximum RF Power	2 W (+33 dBm)
Maximum Current	2000 mA
Group Delay	195 ps
Rise Time (10-90%)	< 15.2 ps, typical
Connectors	SMA Standard configuration is jack/plug See page 2 for other configurations
Temperature Limits	-40° to +70° C, operating
RoHS Compliant	Yes, assembled with lead-free solder
REACH Compliant	Yes
Warranty	1 year, see website

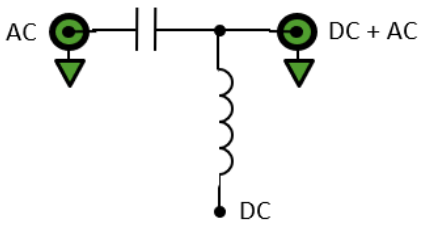
NOTE 1 - Unless otherwise noted, the specifications in this table are typical using the standard connector configuration (-JP). Full specifications are available on Page 2 of this datasheet.



HL8442, option -M-PJ shown



Typical HL8442 Insertion and Return Loss



HL8442 Schematic and Port Assignments

PRODUCT SUMMARY

The HL8442 is an ultra-broadband bias tee with a typical insertion loss under 1 dB and a bandwidth of 7.5 kHz to 23 GHz.

The HL8442 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 configurationss are available:

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

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

HL8442 Full Specifications

Parameter	HL8442	Comments
Upper Frequency Limit	> 23 GHz	3 dB roll-off point, relative to nominal insertion loss
Lower Frequency Limit See *Fig. 2*	7.5 kHz	3 dB roll-off point
Maximum Current	2000 mA	
Amplitude Match See *Fig. 5*	± 0.2 dB	Typical, opt. -M only
Phase Match	± 4°, f = 15 GHz	Typical, opt. -M only
Insertion Loss See *Fig. 1*	< 1 dB, 7.5 kHz < f ≤ 10 GHz < 2 dB, f > 10 GHz	Typical
Return Loss See *Fig. 3*	> 10 dB	Typical
Rise Time	< 15.2 ps	Typical
Group Delay See *Fig. 4*	195 ps	All options
Impedance	50 Ω	Input and Output
Capacitance	0.50 µF, ± 25%	
Inductance	6.20 mH, ± 30%	
DC Resistance	1.25 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 -JP*	Specify option -JJ, -JP, -PJ, or -PP
Dimensions (W x D x H)	2.375” x 1.74” x 0.67” 60.3 x 44.2 x 17.1 mm	Package including connectors
Weight	53 g (1.87 oz.)	
Operating Temperature	-40° to +70° 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.

HL8442 Performance Characteristics

Figures 1-5 show the typical performance characteristics of the HL8442 from 10 MHz to 22.5 GHz, except *Figure 3* which shows low-frequency response to 100 Hz. Other models show similar performance within their specified bandwidth.

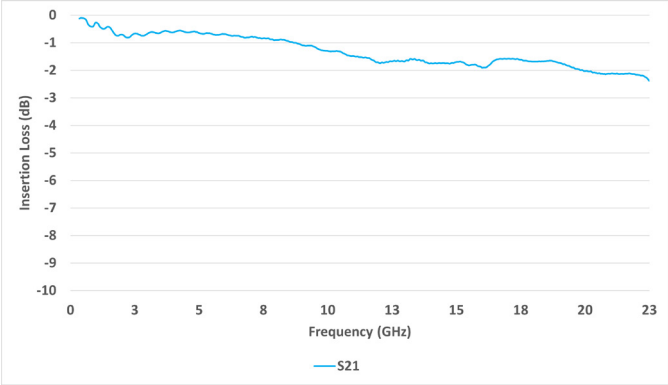


Fig. 1: Typical HL8442 Bandwidth and Insertion Loss

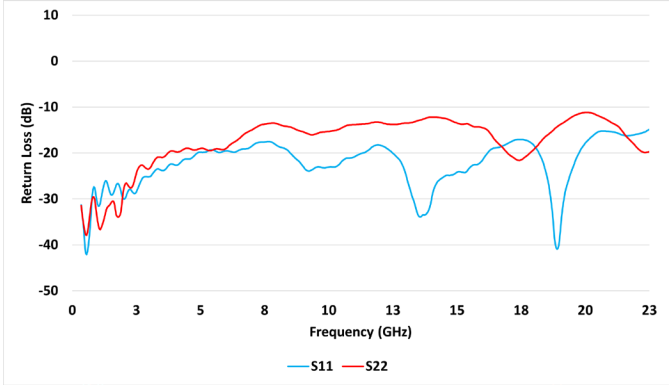


Fig. 2: Typical HL8442 Return Loss

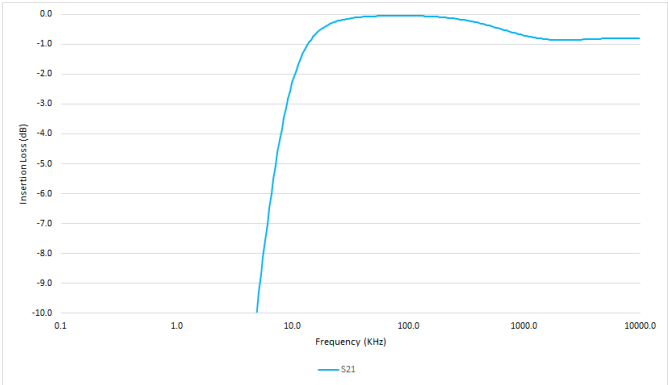


Fig. 3: Typical HL8442 Low Frequency Performance

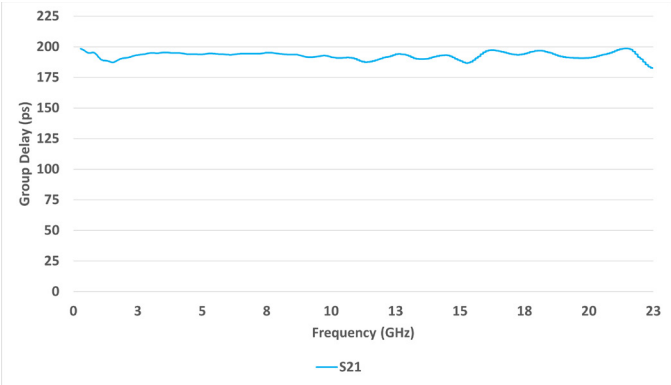


Fig. 4: Typical HL8442 Group Delay

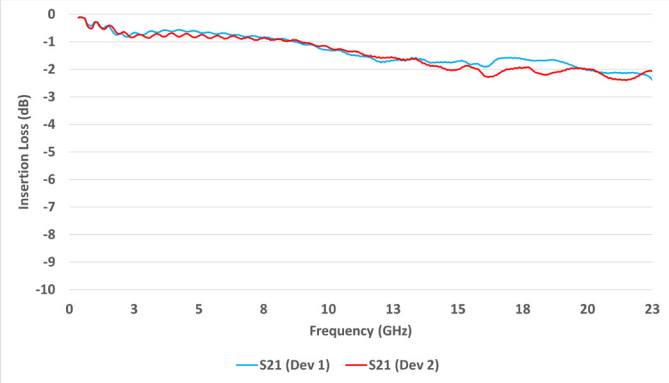


Fig. 5: Typical HL8442 Amplitude Matching (opt. -M)

HL8442 Dimensional Drawing

Figure 6 shows a mechanical drawing of the HL8442 (opt. -JJ). Unless otherwise noted, all units are in inches. See page 2 for full dimensions.

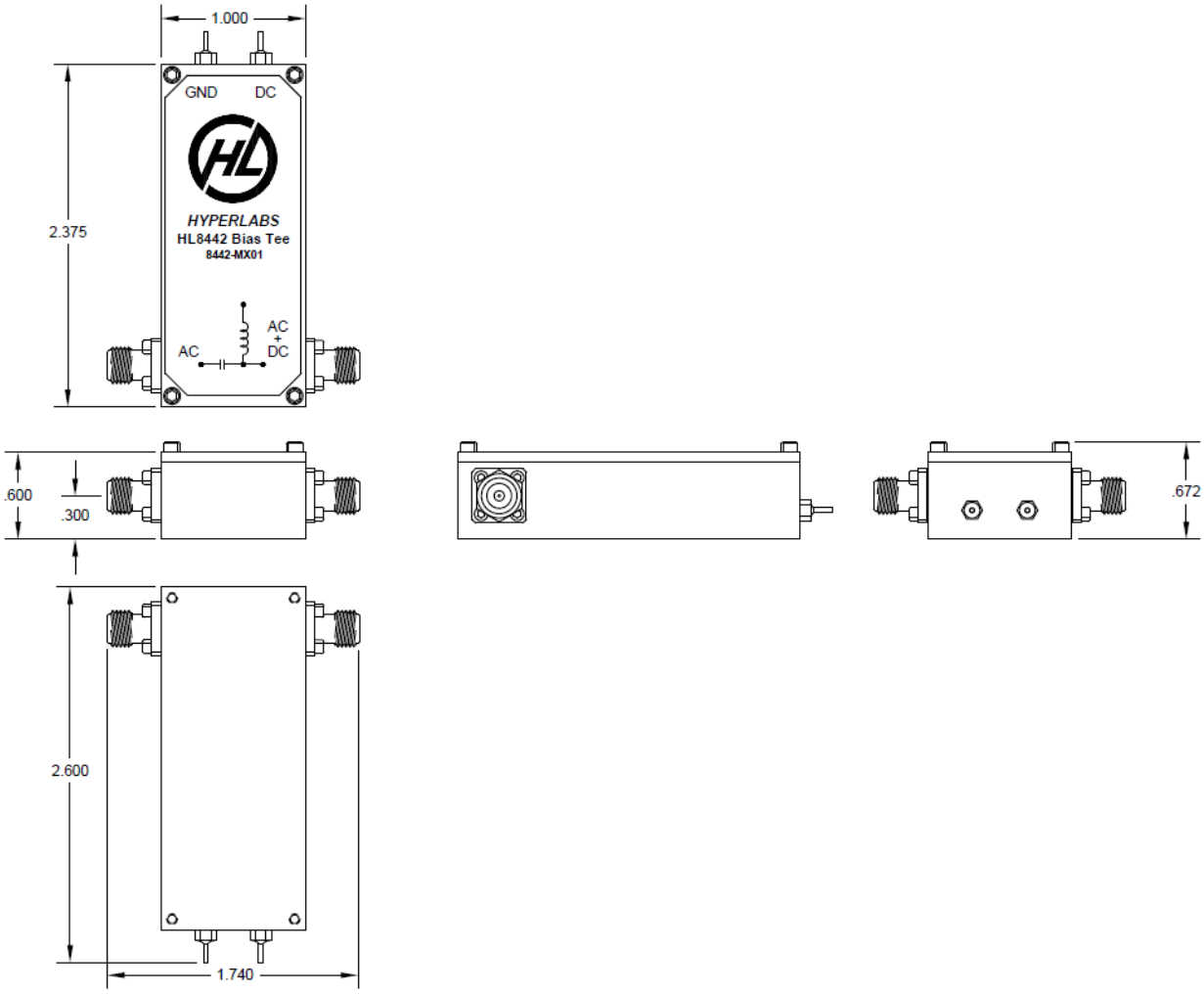


Fig 6: HL8442 Mechanical Drawing