

Wideband Amplifier

ZHL-22LM-75+

75Ω

5 to 200 MHz



Case Style: S860

The Big Deal

- Ultra low second harmonic, very high output IP2, 85 dBm typ.
- Excellent output IP3, 42 dBm typ.
- Output power at 1 dB compression, +25 dBm typ.

Product Overview

The ZHL-22LM-75+ is a high-performance, push-pull amplifier featuring very low second-and third-order distortion products across its 5-200 MHz bandwidth. Designed for a 6V/300 mA typ. power supply, with F connectors in/out, it's a high-value, low-cost solution providing a 15-dB gain for CATV return path applications under DOCSIS 2.0 and 3.0. The rugged, aluminum alloy case measures 3.75 x 2.0 x 0.80" high.

Feature	Advantages
Ultra low second harmonic, -86 dBc typ. at 0 dBm output	Exceptionally low second order harmonic distortion, optimized for CATV return path frequencies
Very high output IP2, 85 dBm typ	Very high linearity across entire 5-200 MHz bandwidth
Excellent output IP3, 42 dBm typ	Excellent suppression of unwanted intermods in the presence of multi carriers
Output power, 25 dBm typ	Very consistent output power across entire bandwidth
Flat gain, 15.5 ± 0.5 dB	Ideal for applications requiring consistent, repeatable amplification across a wide range of frequencies

Notes

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 B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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Connectorized Push-Pull

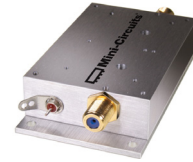
Wideband Amplifier

ZHL-22LM-75+**75Ω 5 to 200 MHz****Features**

- Ultra low second harmonic, -86 dBc typ. at 0 dBm output
- Very high output IP2, 85 dBm typ.
- Excellent output IP3, 42 dBm typ.
- Output power, 25.0 dBm typ.

Applications

- Cable TV



Case Style: S860

Connectors Model

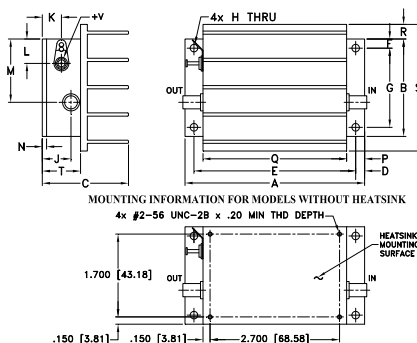
F-Female ZHL-22LM-75-F+**+RoHS Compliant**

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Electrical Specifications at 25°C

Parameter	Condition (MHz)	Min	Typ.	Max.	Units
Frequency Range	—	5	—	200	MHz
Gain	5-200	14	15.5	—	dB
Output Power at 1dB compression	5-200	23	25.0	—	dBm
Output third order intercept point IP3*	5 100 200	36 40 40	40 42 42	— — —	dBm
Output second order intercept point IP2*	5-200	60	85	—	dBm
Noise Figure	10-200	—	3.7	7	dB
Input VSWR	5-200	—	1.3	1.5	:1
Output VSWR	5-200	—	1.4	1.7	:1
DC Supply Voltage	—	—	6.0	6.2	V
Supply Current at +6V supply	—	215	300	400	mA

*Two tones, spaced 1 MHz apart, 0 dBm/tone at output.

Outline Drawing**Outline Dimensions (inch mm)**

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	wt
3.75	2.00	2.700	.19	3.375	.19	1.625	.144	.50	.40	.50	1.30	.10	.38	3.00	.15	.15	.80	1.700	grams
95.25	50.80	68.58	4.83	85.73	4.83	41.28	3.66	12.70	10.16	12.70	33.02	2.54	9.65	76.20	3.81	3.81	20.32	43.18	150.0

Maximum Ratings

Parameter	Ratings
Operating Temperature	-40°C to 65°C Case
Storage Temperature	-55°C to 100°C
DC Voltage	6.5V
Input RF Power (no damage)	24dBm

Permanent damage may occur if any of these limits are exceeded.

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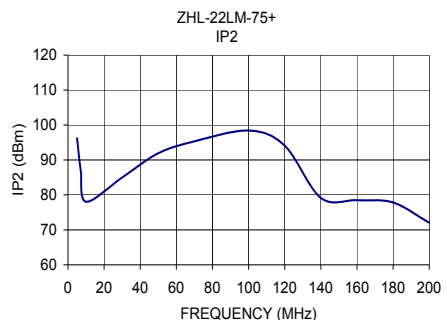
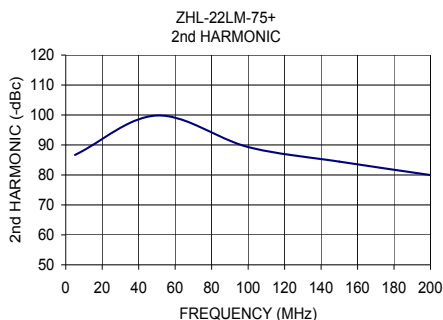
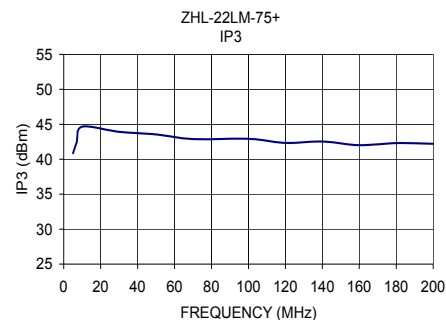
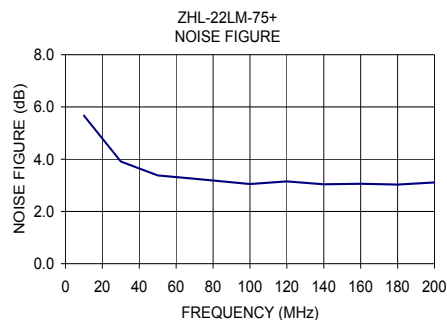
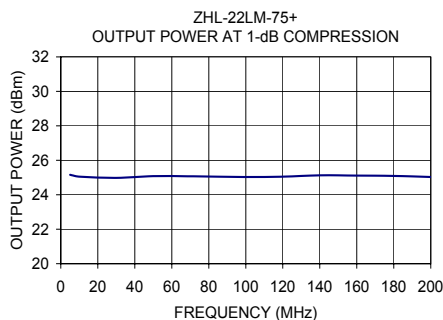
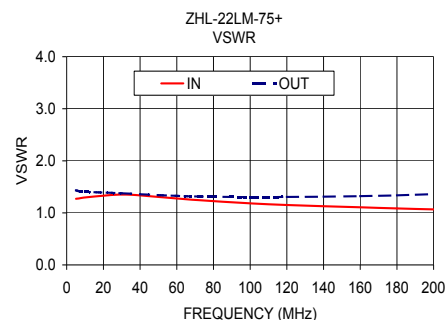
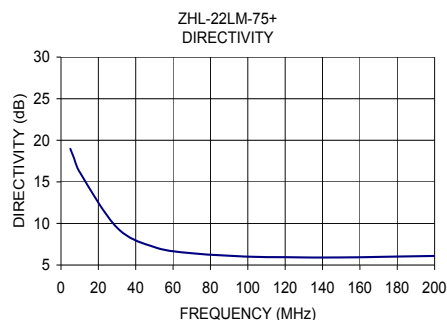
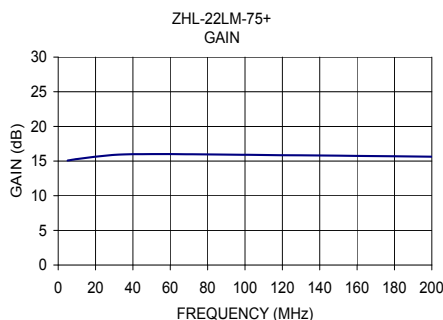
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M162646
ZHL-22LM-75+
ED-13628/8
WZ/CP/AM
170809

NON-CATALOG

Typical Performance Data/Curves

ZHL-22LM-75+

FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		NOISE FIGURE (dB)	POUT at 1dB COMPR. (dBm)	OUTPUT IP3 (dBm)
	6V	6V	IN 6V	OUT 6V	6V	6V	6V
5.00	15.08	18.98	1.27	1.43		25.16	40.85
7.00	15.17	17.83	1.28	1.41		25.11	42.41
10.00	15.29	16.18	1.29	1.40	5.67	25.05	44.66
30.00	15.89	9.49	1.35	1.38	3.91	24.98	43.92
50.00	16.01	7.16	1.31	1.34	3.38	25.08	43.55
70.00	15.98	6.42	1.25	1.32	3.25	25.07	42.89
100.00	15.91	6.01	1.18	1.30	3.05	25.03	42.92
120.00	15.85	5.95	1.15	1.31	3.15	25.05	42.33
140.00	15.81	5.90	1.13	1.31	3.04	25.13	42.54
160.00	15.75	5.94	1.11	1.32	3.06	25.11	42.01
180.00	15.70	6.02	1.09	1.34	3.03	25.09	42.31
200.00	15.63	6.09	1.07	1.36	3.11	25.03	42.21



Notes

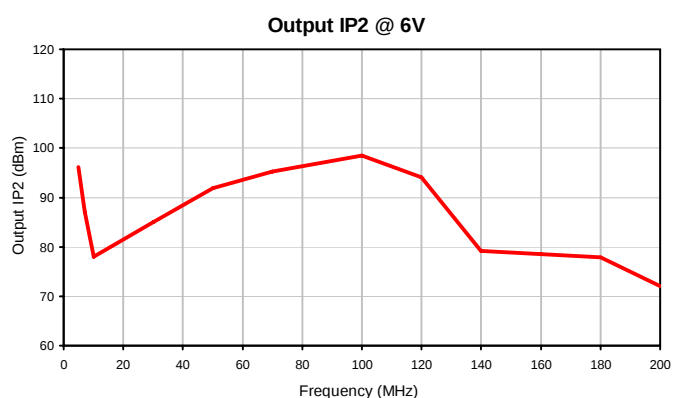
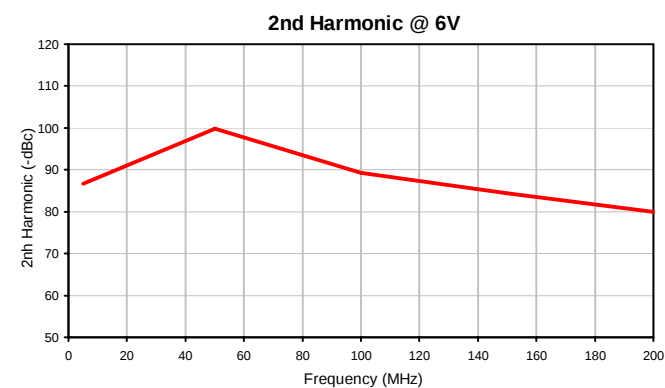
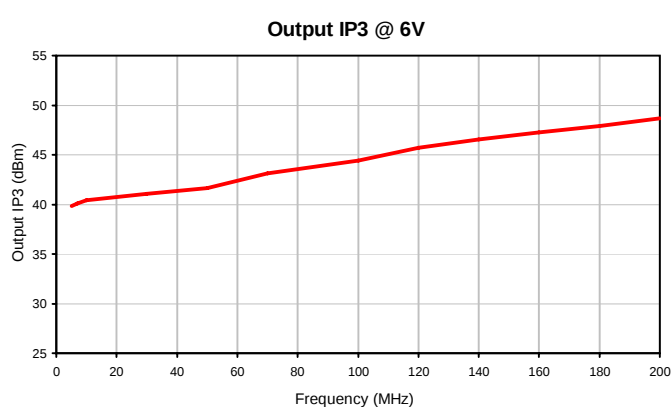
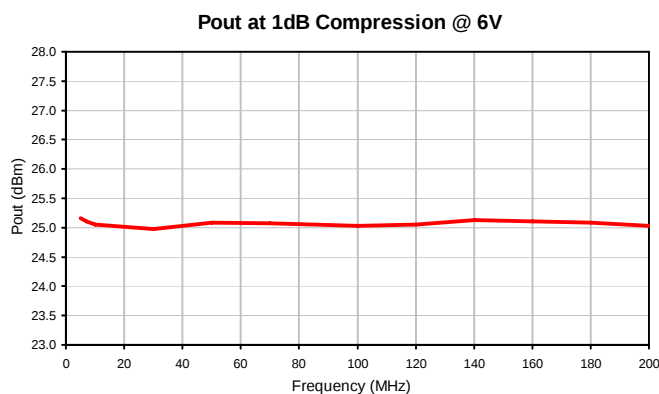
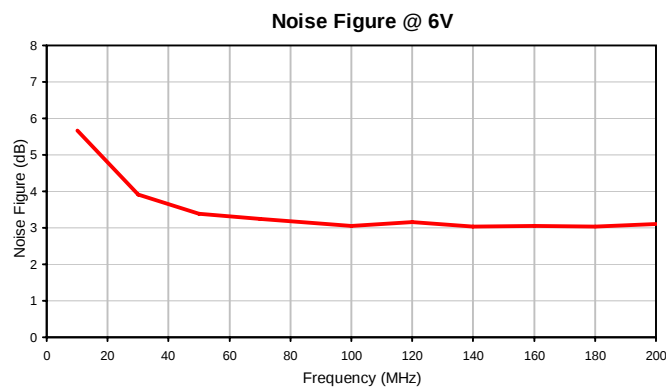
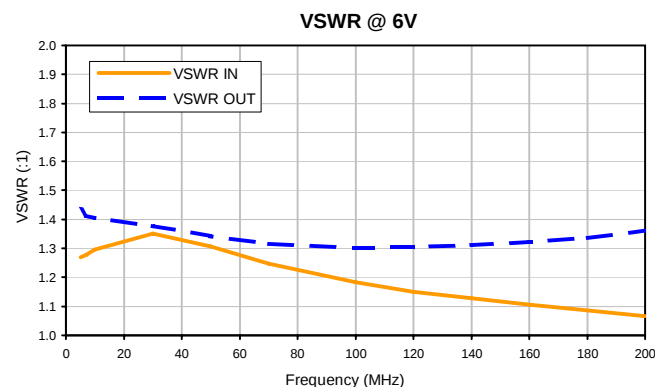
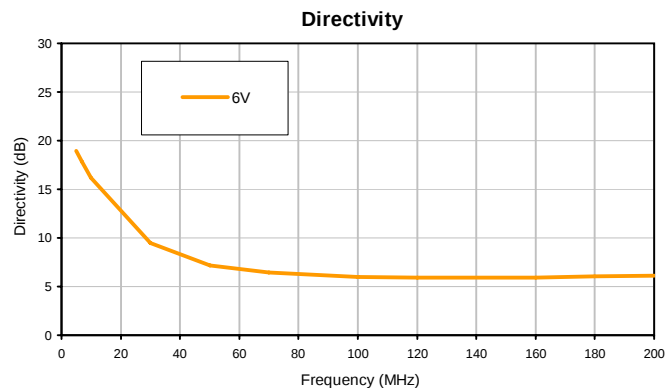
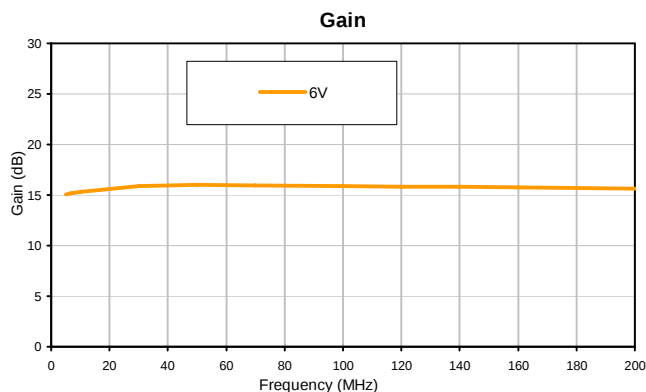
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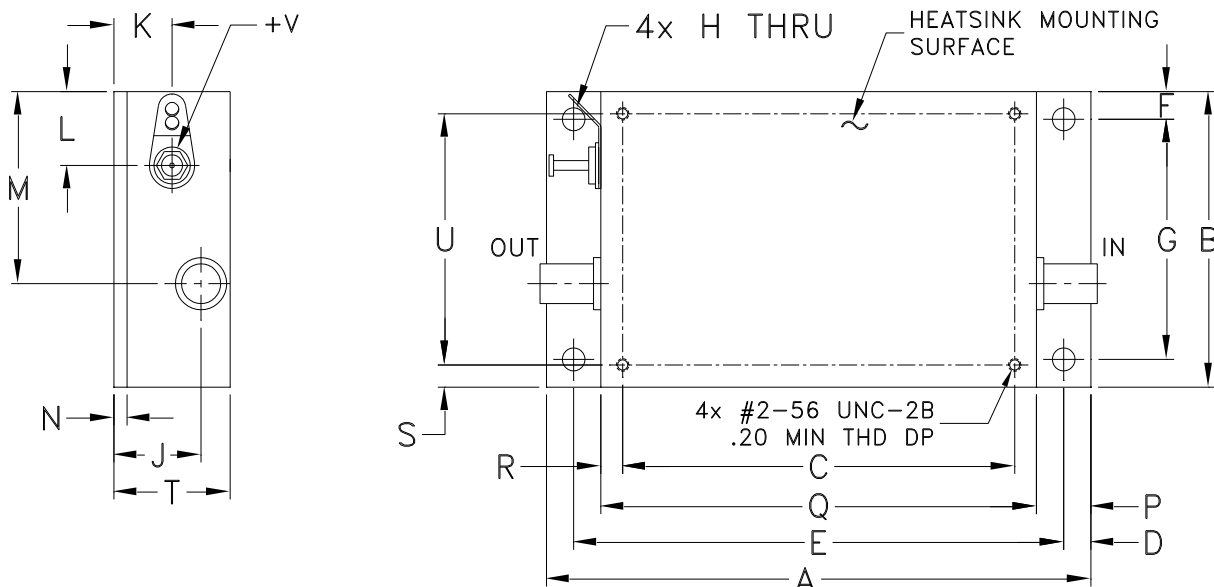
Push-Pull**Wideband Amplifier****ZHL-22LM-75+****Typical Performance Data**

FREQ.	GAIN	DIRECTIVITY	VSWR (:1)		NOISE	POUT @ 1 dB	OUTPUT	OUTPUT	FREQ.	2nd
(MHz)	(dB)	(dB)	IN	OUT	FIGURE	COMPRESSION	IP2	IP3	(MHz)	HARMONIC
	6V	6V	6V	6V	(dB)	(dBm)	(dBm)	(dBm)		(-dBc)
					6V	6V	6V	6V		6V
5.0	15.08	18.98	1.27	1.43	--	25.16	96.22	39.82	5.0	86.65
7.0	15.17	17.83	1.28	1.41	--	25.11	87.14	40.13	50.0	99.82
10.0	15.29	16.18	1.29	1.40	5.67	25.05	78.05	40.43	100.0	89.31
30.0	15.89	9.49	1.35	1.38	3.91	24.98	84.99	41.05	150.0	84.44
50.0	16.01	7.16	1.31	1.34	3.38	25.08	91.92	41.66	200.0	79.97
70.0	15.98	6.42	1.25	1.32	3.25	25.07	95.31	43.11		
100.0	15.91	6.01	1.18	1.30	3.05	25.03	98.43	44.44		
120.0	15.85	5.95	1.15	1.31	3.15	25.05	94.08	45.74		
140.0	15.81	5.90	1.13	1.31	3.04	25.13	79.14	46.54		
160.0	15.75	5.94	1.11	1.32	3.06	25.11	78.49	47.235		
180.0	15.70	6.02	1.09	1.34	3.03	25.09	77.83	47.93		
200.0	15.63	6.09	1.07	1.36	3.11	25.03	72.05	48.70		

Typical Performance Curves



Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
S860	3.75 (95.25)	2.00 (50.80)	2.700 (68.58)	.19 (4.83)	3.375 (85.73)	.19 (4.83)	1.625 (41.28)	.144 (3.66)	.54 (13.72)	.40 (10.16)	.50 (12.70)	1.30 (33.02)	.10 (2.54)

CASE#	P	Q	R	S	T	U	WT. GRAMS
S860	.38 (9.65)	3.00 (76.20)	.15 (3.81)	.15 (3.81)	.84 (21.34)	1.700 (43.18)	150.0

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .03$; 3 Pl. $\pm .015$

Notes:

- Case material: Aluminum alloy.
- Case finish:

For RoHS Case Styles:

Clear chemical conversion coating, non-chrome or trivalent chrome based.



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The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-40° to 65° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Stabilization Bake	(non-operating) 125°C, 24 hours	- - -
Burn-in at Elevated Temp.	(DC on) 160 hours at 85° C	MIL-STD-202, Method 108
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, except 100°C