



Mini-Circuits

COAXIAL

High Power Amplifier

ZHL-100W-13+

50Ω 100W 800 to 1000 MHz

FEATURES

- Saturated Power 100W typ.
- Wide bandwidth, usable 750 to 1050 MHz
- High Gain, 50 dB typ.
- Good Gain Flatness, ± 1 dB typ.
- Unconditionally stable
- Self protected against excessive drive, high case temp., reverse polarity and shorting/unshorting
- Can withstand short and open circuit at output while delivering 100 watts

APPLICATIONS

- AM/FM
- Multi-carrier amplification
- Broadband swept signal
- Linear pulse
- Feed-forward



Generic photo used for illustration purposes only

Model No.	ZHL-100W-13+
Case Style	BT1689
Connectors	IN-SMA, OUT-N Type

+RoHS Compliant

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

ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		800		1000	MHz
Gain ¹	800 - 1000	45	50	57	dB
Gain Flatness ¹	800 - 1000	-	± 1.0	± 1.5	dB
Output Power at 1dB compression	800 - 1000	+47.5	+49	-	dBm
Output Power at 3dB compression	800 - 1000	+48.5	+50	-	dBm
Noise Figure	800 - 1000	-	7	10	dB
Output third order intercept point ²	800 - 1000	+52	+60	-	dBm
Input VSWR ¹	800 - 1000	-	1.3	1.6	:1
Output VSWR ¹	800 - 1000	-	1.4	1.6	:1
DC Supply Voltage		-	+28 ⁴	+30	V
Supply Current ³		-	10	14.5	A

1. Small signal input power -15 dBm typ.

2. Two tones, 40 dBm/tone, 1 MHz spacing.

3. Power supply should be capable of delivering 17A at start up.

4. Recommended Operating Voltage.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-20 °C to +45 °C
Storage Temperature	-55 °C to +100 °C
DC Voltage	+30 V
Input RF Power (no damage)	+7 dBm

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

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ZHL-100W-13+
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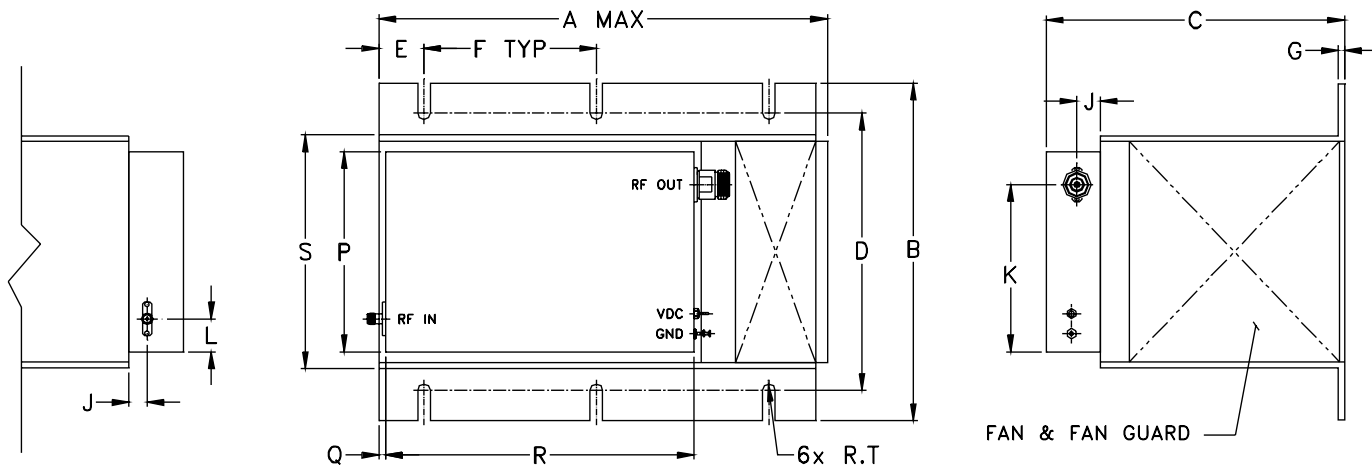
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OUTLINE DRAWING

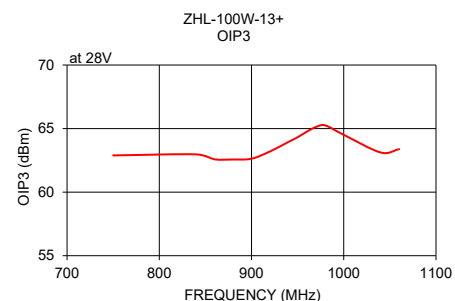
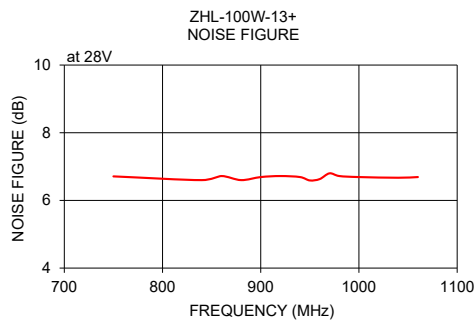
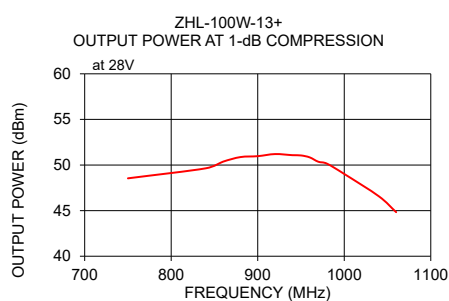
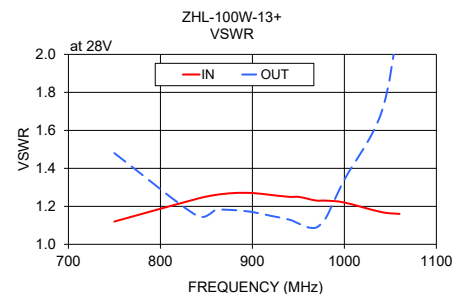
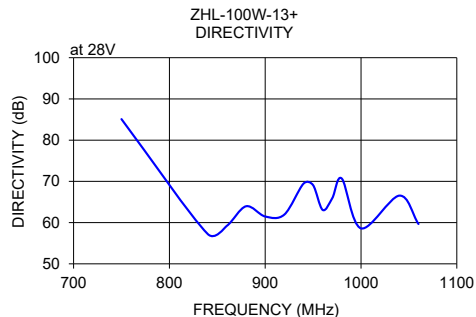
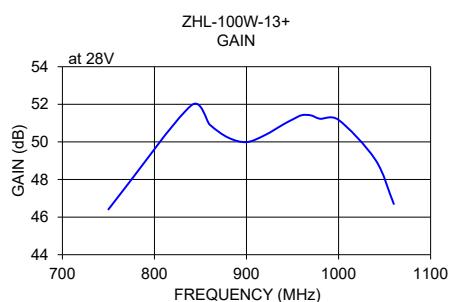


OUTLINE DIMENSIONS (Inch mm)

A	B	C	D	E	F	G	J	K	L	P	Q	R	S	T	wt
9.85	7.3	6.5	6.00	.98	3.75	.13	.51	3.62	.72	4.33	.2	6.69	5.1	.136	grams
250.19	185.42	165.10	152.40	24.89	95.25	3.30	12.95	91.95	18.29	109.98	5.08	169.93	129.54	3.45	4565

TYPICAL PERFORMANCE DATA AND CHARTS

Frequency (MHz)	Gain (dB)	Directivity (dB)	VSWR (:1)		P _{OUT} at 1 dB Compr. (dBm)	Noise Figure (dB)	OIP3 (dBm)
	30V	30V	IN	OUT	30V	30V	30V
750.00	46.41	85.10	1.12	1.48	48.54	6.71	62.89
840.00	51.94	57.24	1.24	1.15	49.64	6.60	62.97
860.00	50.92	59.22	1.26	1.18	50.37	6.72	62.58
880.00	50.23	63.96	1.27	1.18	50.87	6.60	62.57
900.00	49.99	61.48	1.27	1.17	50.97	6.69	62.63
920.00	50.36	61.95	1.26	1.15	51.20	6.72	63.20
940.00	50.93	69.45	1.25	1.13	51.08	6.69	63.95
950.00	51.19	69.08	1.25	1.11	51.05	6.59	64.32
960.00	51.42	63.07	1.24	1.09	50.84	6.63	64.76
970.00	51.41	65.92	1.23	1.09	50.36	6.80	65.13
980.00	51.23	70.67	1.23	1.14	50.15	6.72	65.25
1000.00	51.17	58.60	1.22	1.34	49.02	6.69	64.51
1040.00	49.05	66.54	1.17	1.69	46.57	6.67	63.12
1060.00	46.70	59.66	1.16	2.18	44.83	6.69	63.38



NOTES

- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/terms/viewterm.html



High Power Amplifier

ZHL-100W-13+

Typical Performance Data

Frequency (MHz)	Gain (dB) 28V	Directivity (dB) 28V	VSWR In (:1) 28V	VSWR Out (:1) 28V	Noise Figure (dB) 28V	Pout at 1dB Compression (dBm) 28V	Output IP3 (dBm) 28V
750.0	46.41	85.10	1.12	1.48	6.71	48.54	62.89
800.0	50.15	70.40	1.21	1.11	6.72	49.56	63.77
810.0	51.10	58.85	1.22	1.10	6.61	49.58	64.73
820.0	51.88	66.96	1.23	1.11	6.62	49.33	63.48
830.0	52.05	57.66	1.24	1.13	6.71	49.38	63.06
840.0	51.94	57.24	1.24	1.15	6.60	49.64	62.97
850.0	51.58	75.49	1.25	1.17	6.80	50.01	62.74
860.0	50.92	59.22	1.26	1.18	6.72	50.37	62.58
870.0	50.66	61.50	1.27	1.18	6.77	50.68	62.49
880.0	50.23	63.96	1.27	1.18	6.60	50.87	62.57
890.0	50.05	60.69	1.27	1.18	6.69	50.77	63.00
900.0	49.99	61.48	1.27	1.17	6.69	50.97	62.63
910.0	50.22	62.16	1.27	1.16	6.74	51.08	62.87
920.0	50.36	61.95	1.26	1.15	6.72	51.20	63.20
930.0	50.62	58.29	1.26	1.14	6.71	51.22	63.52
940.0	50.93	69.45	1.25	1.13	6.69	51.08	63.95
950.0	51.19	69.08	1.25	1.11	6.59	51.05	64.32
960.0	51.42	63.07	1.24	1.09	6.63	50.84	64.76
970.0	51.41	65.92	1.23	1.09	6.80	50.36	65.13
980.0	51.23	70.67	1.23	1.14	6.72	50.15	65.25
990.0	51.32	67.06	1.22	1.23	6.73	49.58	65.05
1000.0	51.17	58.60	1.22	1.34	6.69	49.02	64.51
1020.0	49.96	66.47	1.20	1.55	6.76	48.00	63.58
1040.0	49.05	66.54	1.17	1.69	6.67	46.57	63.12
1060.0	46.70	59.66	1.16	2.18	6.69	44.83	63.38



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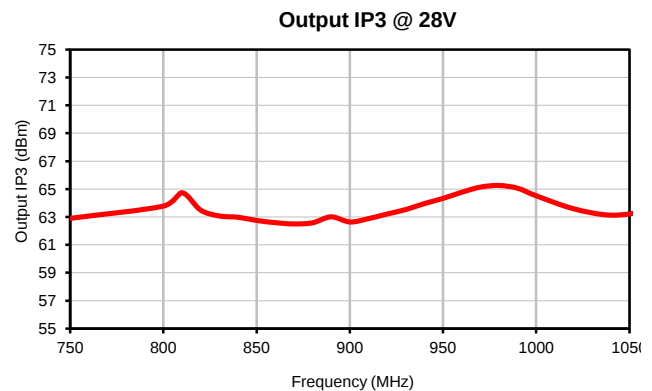
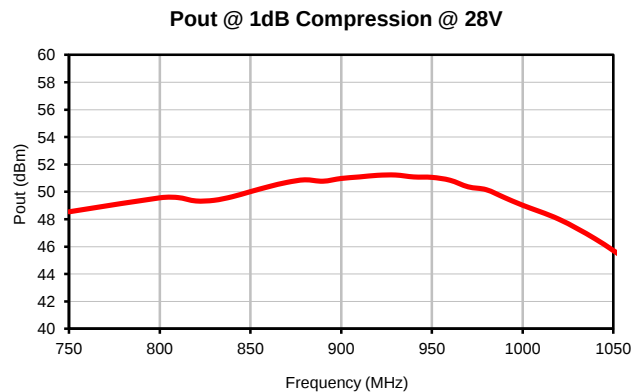
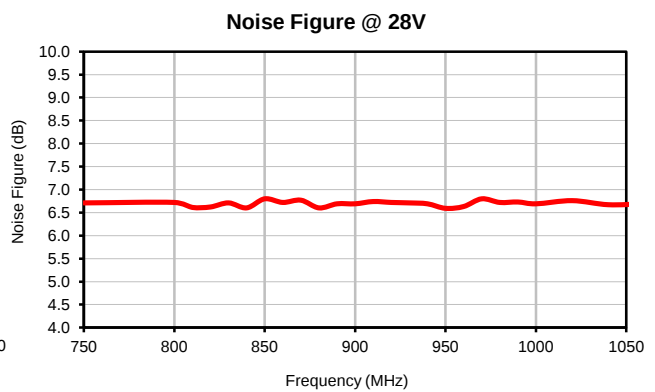
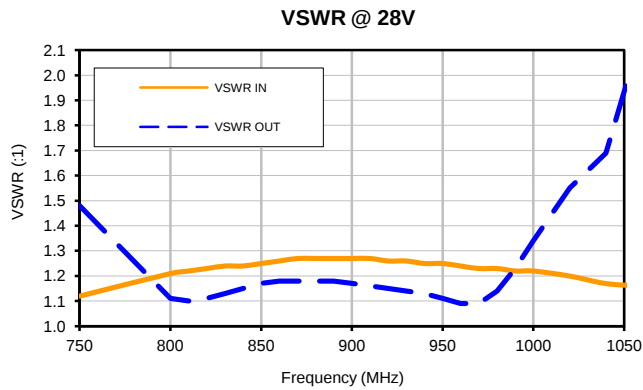
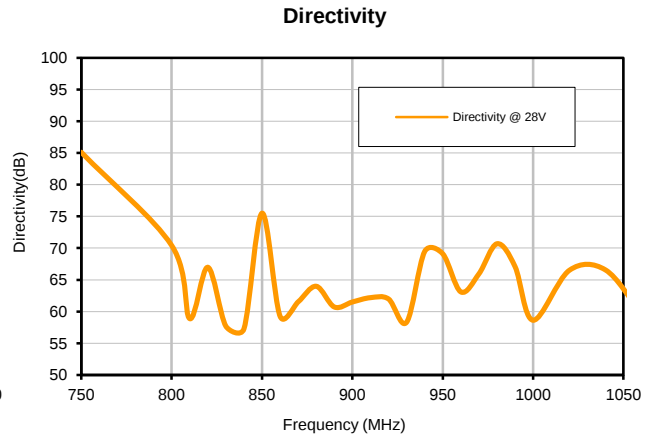
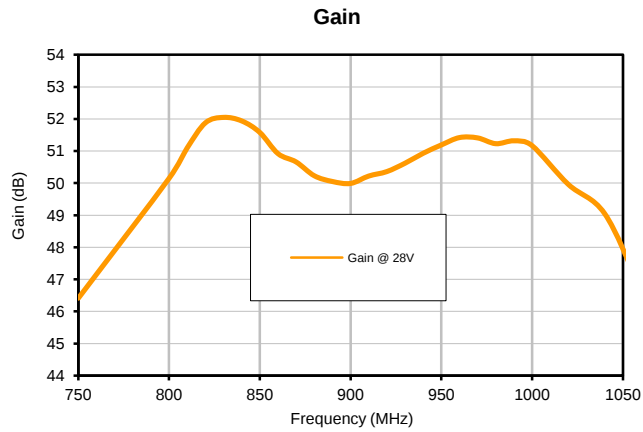
IF/RF MICROWAVE COMPONENTS

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High Power Amplifier

Typical Performance Curves

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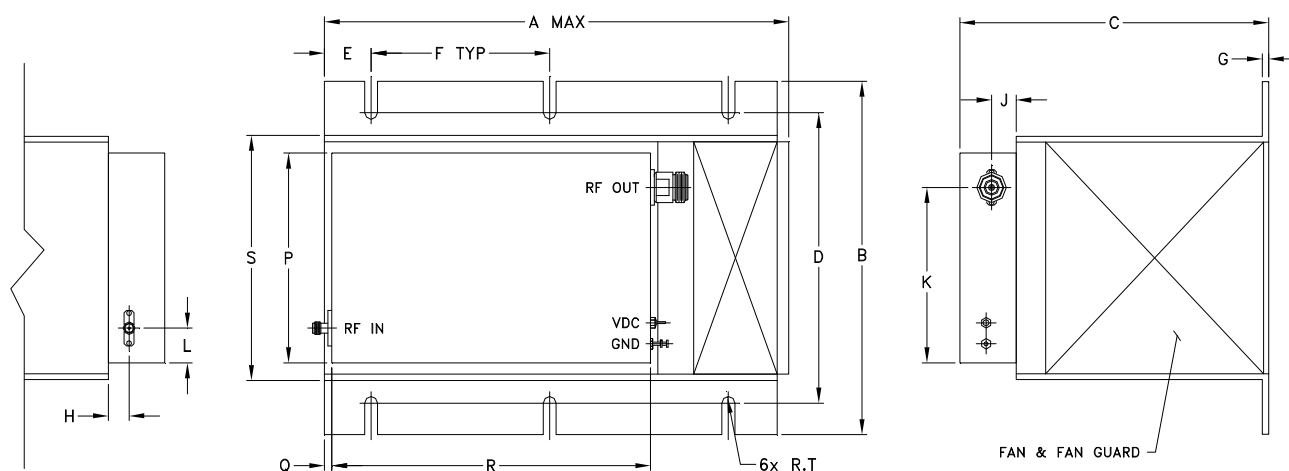


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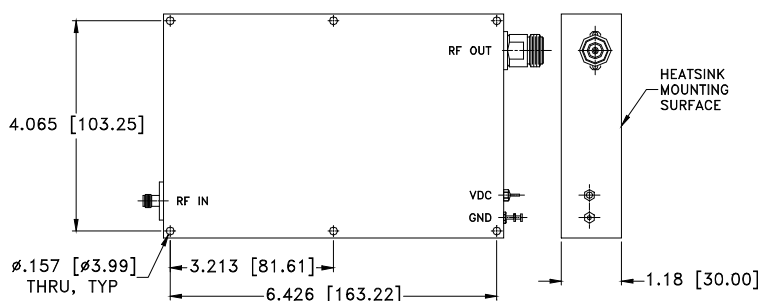


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Outline Dimensions



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
BT1689	9.85 (250.19)	7.3 (185.42)	6.5 (165.10)	6.00 (152.40)	.98 (24.89)	3.75 (95.25)	.13 (3.30)	.43 (11.0)	.51 (13.00)	3.34 (84.83)	.72 (18.29)	-	-

CASE#	P	Q	R	S	T	WT, GRAM	WT WITHOUT HEATSINK, GRAM
BT1689	4.33 (109.98)	.2 (5.08)	6.69 (169.93)	5.1 (129.54)	.136 (3.45)	4565	880

Dimensions in inches (mm). Tolerances: 1 Pl. $\pm .1$; 2Pl. $\pm .03$; 3 Pl. $\pm .015$

Notes:

- Case material: Aluminum alloy.
- Finish:
For RoHS Case Styles: Clear Chemical conversion coating, non-chrome or trivalent chrome based.
- Heatsink finish: Black anodize.
- Refer to the individual model data sheet for the type of connectors available.
- Recommended screws for mounting model without heat sink on 3/32" thick sheet: #6-32, 1.50" Length.
- Shape of connector flange may vary.



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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	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 40°C, 96 hours; Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103, Condition B
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11ms half-sine, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition A