



COAXIAL

# High Power Amplifier ZHL-16W-43-S+

50Ω 16W 1800 to 4000 MHz

## THE BIG DEAL

- High Power, 16 Watt
- Low Current consumption, 3A typ.
- High IP3, +47 dBm typ.
- Usable over 800 to 4200 MHz
- Good Gain Flatness, ±1.5 dB typ.
- No damage with an open or short output load under full CW output power
- Overheat-protection automatic shuts off when base plate temperature exceeds +80°C



Generic photo used for illustration purposes only

## APPLICATIONS

- PCN
- GSM
- ISM
- WiMax
- Lab test

Model No.	ZHL-16W-43-S+
Case Style	BT1344
Connectors	SMA/D-Sub Male

## PRODUCT OVERVIEW

Mini-Circuits' ZHL-16W-43-S+ offers high power (16W) with rugged reliability over a broad frequency range from 1800 to 4000 MHz. This model includes temperature sensing circuits for automatic shutdown and output load protection to operate into a short or an open load making it ideal for use in laboratory or field applications.

## KEY FEATURES

Feature	Advantages
Combination of Power and Bandwidth	Offering a unique combination of output power over a broad frequency range, the ZHL-16W-43-S+ is ideal for laboratory and other test applications which require a high degree of flexibility to delivery power over a wide array of applications including: <ul style="list-style-type: none"> <li>• PCS, UMTS, LTE and wireless</li> <li>• WiMAX</li> <li>• Radar</li> <li>• Microwave radio and ISM</li> </ul>
Excellent Input and Output VSWR	With 1.3:1 output VSWR, the ZHL-16W-43-S+ is designed for use in driving circuits with a variety of impedances and still provide consistent, reliable output power.
Over Temp Shutdown	The ZHL-16W-43-S+ includes internal temperature monitoring circuits to automatically shut down the amplifier in the event of over temperature operation. Set for approximately +85°C shutdown (with auto recovery at 70°C), this feature ensures that users who have difficulty in controlling their thermal environment or need to operate in a remote mode and cannot monitor the amplifier real time, can function with the security that a thermal run-away condition will be avoided through this self management feature. Furthermore, the ZHL-16W-43-S+ provides a TTL output to indicate thermal shutdown for remote automated systems.
Output Load Protection	A high root cause for damage to power amplifiers is the operation into highly reflective loads. The ZHL-16W-43-S+ power amplifier includes circuits to enable the amplifier to operate without damage in the presence of an open or short over all phases.





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## ELECTRICAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Units
Frequency Range	1800		4000	MHz
Gain	40	45	50	dB
Gain Flatness	—	—	±2.0	dB
Output Power at 1dB compression	+39	+41	—	dBm
Saturated Output Power at 3 dB compression	+40	+42	—	dBm
Noise Figure		6.0		dB
Output third order intercept point		+47		dBm
Input VSWR		1.5		:1
Output VSWR		1.3		:1
DC Supply Voltage	—	28	30	V
Supply Current	—	—	4.3	A

## ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-20 °C to 47 °C
Storage Temperature	-55 °C to 100 °C
Input RF Power (no damage) <sup>1</sup>	+9 dBm

1. Peak envelop power. (Refer to Application Note AN-60-037 for PEP calculation). Permanent damage may occur if any of these limits are exceeded.

## D-SUB MALE CONNECTOR PIN CONNECTIONS<sup>2</sup>

Pin Function	Label on unit	Pin #	Color	Gauge
None	N/C1, N/C2 N/C4, N/C5	1,2,4,5	None	None
Thermal Shut-Off Indication: Shut-Off: +2 to +5V Not Shut-Off: 0 to +0.8V	TTL Out	3	Orange	26 AWG
DC Input (+)	Vdc	6,7	Red	18 AWG
Ground	GND	8,9	Black	18 AWG

2. Each amplifier will come packaged with an additional D-Sub connector for mating with the amplifier.





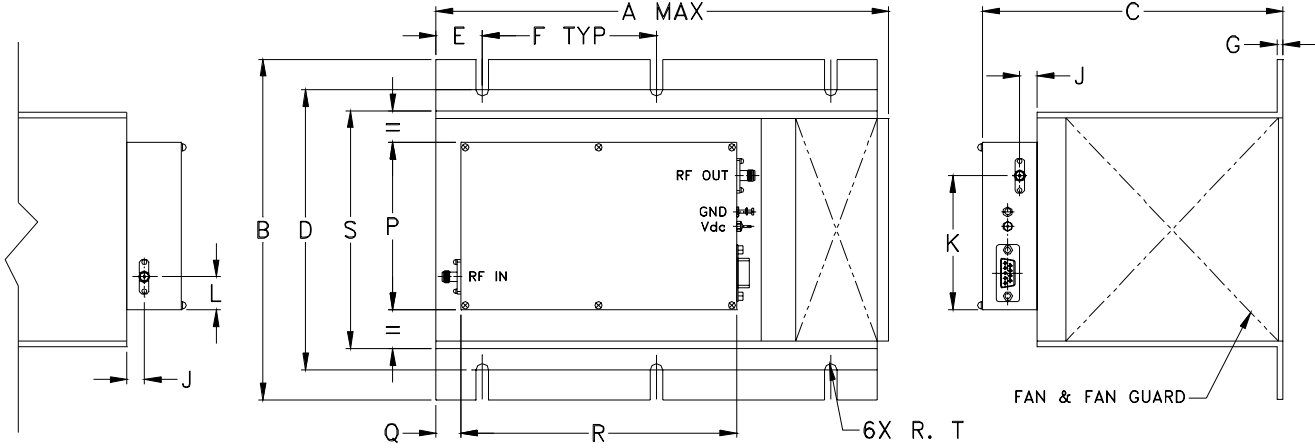
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Mini-Circuits

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## CASE STYLE 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	1.00	3.75	.13	.37	2.87	.71	3.58	.5	5.95	5.1	.135	grams*
250.19	185.42	165.10	152.40	25.40	95.25	3.30	9.40	72.90	18.03	90.93	12.70	151.13	129.54	3.43	4265





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### TYPICAL PERFORMANCE DATA / GRAPHS

Frequency (MHz)	Gain (dB)	Directivity (dB)	VSWR (:1)		Noise Figure (dB)	POUT (dBm) at 28V		Output IP3 (dBm)
	28V	28V	IN	OUT	28V	1 dB Compr.	3 dB Compr.	28V
1800.00	44.98	46.72	1.74	1.33	5.15	41.96	42.36	46.75
2000.00	45.59	39.51	1.41	1.23	5.13	43.36	43.49	48.47
2200.00	44.40	47.84	1.20	1.12	5.04	42.86	43.04	49.45
2400.00	44.13	44.94	1.03	1.22	5.26	42.11	42.76	48.98
2600.00	44.62	38.25	1.28	1.07	5.30	42.08	42.77	48.61
2800.00	45.59	50.27	1.56	1.06	5.41	42.08	43.09	48.29
3000.00	46.48	52.87	1.60	1.25	5.33	42.96	43.47	48.45
3200.00	45.96	45.87	1.36	1.23	5.76	42.80	43.38	48.76
3400.00	44.84	48.76	1.34	1.26	5.50	42.26	42.94	49.01
3600.00	44.42	52.45	1.48	1.16	5.72	42.00	43.26	49.11
3800.00	45.36	46.80	1.47	1.13	5.82	43.55	44.24	49.56
4000.00	45.13	48.58	1.21	1.13	6.18	41.91	42.87	47.76

