Coaxial

High Power Amplifier

LZY-22+

50Ω 30W 0.1 to 200 MHz

The Big Deal

- High Power Output, 30W typ., from 100 KHz to 200 MHz
- Digitally controlled blanking, isolation 70 dB typ.
- Designed to withstand open or short output load at full rated power

LZY-22+

LZY-22X+

Product Overview

This ruggedized High Power Amplifier is capable of delivering 30W output signals across its entire operating bandwidth, from 0.1-200 MHz. Extensive safety features to prevent amplifier damage include over-temperature protection and the ability to handle short and open loads. The LZY-22+, including heat-sink and cooling fan, is designed for a 24V/5.5A DC power supply.

Key Features

Feature	Advantages
30 W Output Power @ 3 dB compression across 0.1-200 MHz bandwidth	High power output across broad frequency range supports a wide array of applications, from avionics, broadcasting, medical, and high-power lab testing to marine band, public safety, and aircraft communications
High Gain, 43 dB typ.	High, consistent gain across entire operating range (flatness ±1.36 dB) for predictable performance and signal level strength
Blanking Isolation 70dB	Manual or TTL-controlled signal blanking (OFF 0.4 ms; ON 64 ms)
Internal open/short Protection Circuitry	Antenna mismatches or damaged output cables will not cause amplifier damage
Overheat Protection	Automatic shutdown at baseplate temperature of +85 ± 5°C prevents thermal runaway, even during remote, unmonitored operation in difficult thermal environments.
Unconditionally Stable	No risk of damage to other components from impedance mismatch or internal oscillations

Notes
A. 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.
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.
C. 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/MCLStore/terms.jsp

Coaxial

High Power Amplifier

LZY-22+

50Ω 30W 0.1 to 200 MHz

Model No.	LZY-22+	LZY-22X+▲
Case Style	BT1598	
Connectors	SMA Female	

Features

- Saturated Output Power, 30 W typ.
- High Gain, 43 dB typ.
- Excellent IP3, +52 dBm typ.
- Blanking isolation, 70 dB typ.
- Unconditionally stable
- Overheat-protection automatic shuts off when base plate temperature exceeds 85±5°C

Applications

- Avionics
- Broadcast radio and TV
- Medical-MRI
- Lab Use - High Power Test

+RoHS Compliant

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

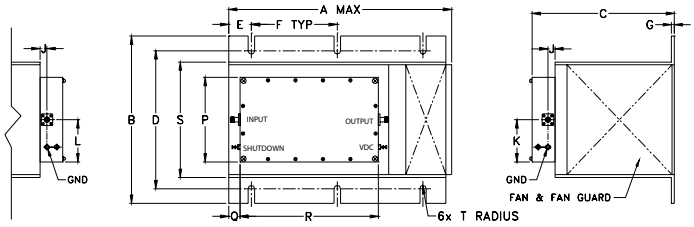
Electrical Specifications[1] at 25°C

Parameter	Frequency (MHz)	LZY-22+ LZY-22X+▲ Min	Typ.	Max.	Units
Frequency Range		0.1	—	200	MHz
Gain	0.1 - 200	40	43	—	dB
Gain Flatness			±1.36	±1.6	dB
Output Power at 1dB compression	0.1	40	42	—	dBm
	100	40	42	—	
	200	40	41.5	—	
Saturated Output Power at 3dB compression (Pin=8 dBm)	0.1	42	44	—	dBm
	100	44	45	—	
	200	44	45	—	
Noise Figure	10 - 200	—	8.9	10	dB
Output third order intercept point[2]	0.1 - 200	—	+52	—	dBm
Input VSWR	0.1 - 200	—	1.4	2.0	:1
Output VSWR	0.1 - 200	—	4.0	—	:1
Blanking Isolation	0.1 - 50	—	60	—	dB
	50 - 200	—	70	—	
DC Supply Voltage			24	25	V
Supply Current[3]		—	5.3	6.0	A

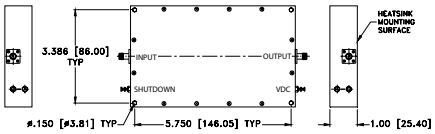
1. All specifications are for a single input CW signal. At nominal output load, 24V nominal supply voltage.
2. 2 Tones, 0.5W/tone, 1MHz spacing
3. Addition of heat sink and fan to the LZY-22+ results in 0.2A additional current.

▲ Heat sink and fan not included. Alternative heat sinking and heat removal must be provided by the user to limit maximum base-plate temperature to 50°C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heat sink to be 0.08°C/W max.

Outline Drawing



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK.



Maximum Ratings

Parameter	Ratings
Operating Temperature	-10°C to 50°C
Storage Temperature	-30°C to 100°C
Base Plate Temperature	50°C
Input RF Power (no damage)	20 dBm
DC Supply Voltage	30V

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

Blanking Shutdown / Turn On	Min.	Typ.	Max.	Units
ON Voltage	0	—	0.8	V
OFF Voltage	4	—	5	V
Shutdown (90 to 10%)	—	0.4	—	ms
Turn ON (10 to 90%)	—	64	—	ms

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	J	K	L	P	Q	R	S	T	wt
9.85	7.3	6.3	6.00	.98	3.75	.13	.31	1.84	1.84	3.68	.5	6.05	5.1	.135	grams*
250.19	185.42	160.02	152.40	24.89	95.25	3.30	7.87	46.74	46.74	93.47	12.70	153.67	129.54	3.43	4185

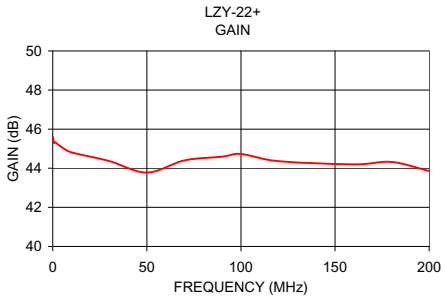
*500 grams without heatsink

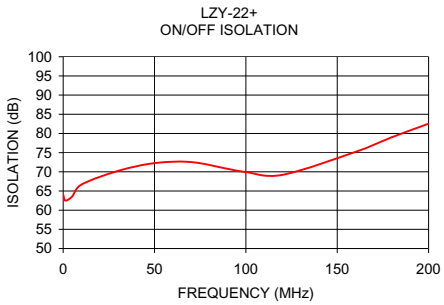
Notes

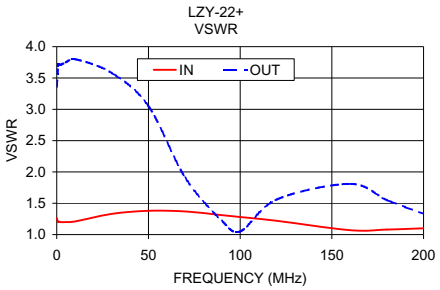
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. 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/MCLStore/terms.jsp

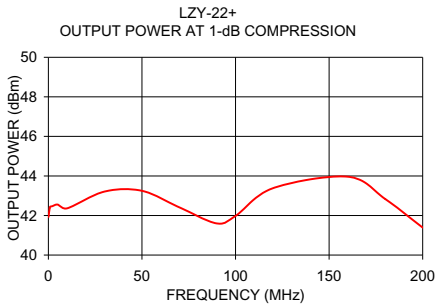
Mini-Circuits®
www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

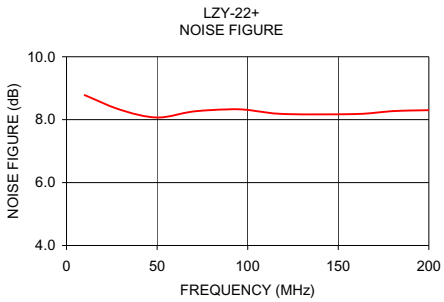
FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1) IN	VSWR (:1) OUT	ISOLATION (dB)	NOISE FIGURE (dB)	POUT at 1 dB COMPR. (dBm)	OUTPUT IP3 (dBm)
0.10	45.61	22.22	1.26	3.36	64.0	--	41.93	53.37
0.70	45.30	21.72	1.20	3.72	62.6	--	42.38	55.84
1.00	45.34	21.74	1.21	3.72	62.5	--	42.45	55.89
2.00	45.28	22.68	1.20	3.71	62.5	--	42.47	55.96
5.00	45.06	25.54	1.20	3.75	63.6	--	42.55	56.00
10.00	44.81	23.79	1.21	3.80	66.7	8.78	42.36	56.03
30.00	44.37	24.74	1.33	3.58	70.2	8.31	43.21	55.23
50.00	43.78	25.79	1.38	3.05	72.3	8.07	43.25	53.09
70.00	44.40	24.81	1.37	1.91	72.5	8.26	42.41	51.20
90.00	44.59	24.14	1.31	1.22	70.8	8.33	41.60	50.17
100.00	44.73	24.08	1.28	1.05	69.9	8.31	41.98	50.22
120.00	44.36	25.25	1.22	1.56	69.2	8.18	43.38	51.61
160.00	44.20	26.43	1.07	1.81	75.2	8.18	43.96	52.27
180.00	44.32	26.07	1.08	1.55	79.0	8.27	42.83	51.66
200.00	43.86	28.10	1.10	1.33	82.5	8.30	41.39	50.36

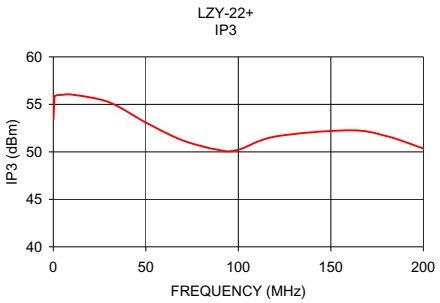












Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. 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/MCLStore/terms.jsp

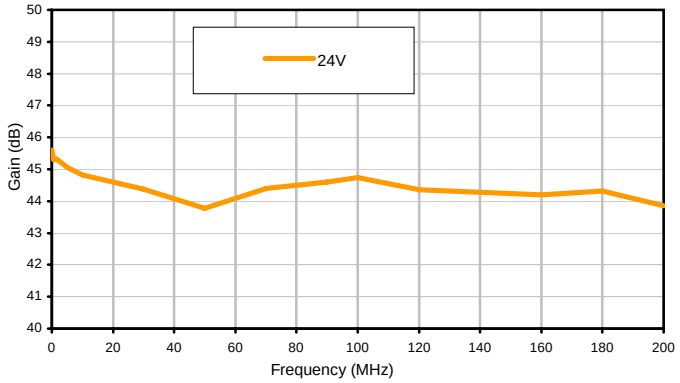
High Power Amplifier LZY-22+

Typical Performance Data

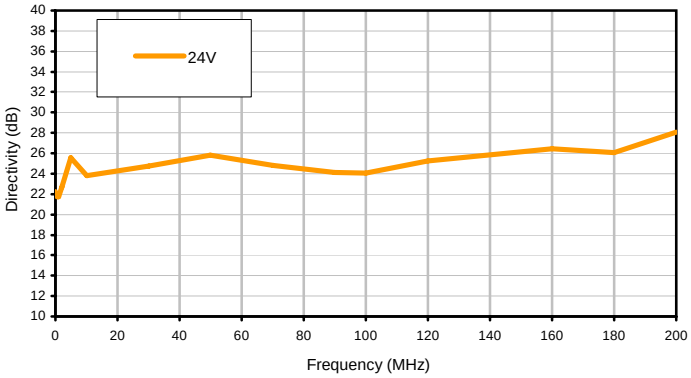
FREQ. (MHz)	GAIN (dB) 24V	DIRECTIVITY (dB) 24V	VSWR (:1) IN 24V	VSWR (:1) OUT 24V	NOISE FIGURE (dB) 24V	POUT @ 1 dB COMPRESSION (dBm) 24V	OUTPUT IP3 (dBm) 24V
0.1	45.61	22.22	1.26	3.36	--	41.93	53.37
0.7	45.30	21.72	1.20	3.72	--	42.38	55.84
1.0	45.34	21.74	1.21	3.72	--	42.45	55.89
2.0	45.28	22.68	1.20	3.71	--	42.47	55.96
5.0	45.06	25.54	1.20	3.75	--	42.55	56.00
10.0	44.81	23.79	1.21	3.80	8.78	42.36	56.03
30.0	44.37	24.74	1.33	3.58	8.31	43.21	55.23
50.0	43.78	25.79	1.38	3.05	8.07	43.25	53.09
70.0	44.40	24.81	1.37	1.91	8.26	42.41	51.20
90.0	44.59	24.14	1.31	1.22	8.33	41.60	50.17
100.0	44.73	24.08	1.28	1.05	8.31	41.98	50.22
120.0	44.36	25.25	1.22	1.56	8.18	43.38	51.61
160.0	44.20	26.43	1.07	1.81	8.18	43.96	52.27
180.0	44.32	26.07	1.08	1.55	8.27	42.83	51.66
200.0	43.86	28.10	1.10	1.33	8.30	41.39	50.36

Typical Performance Curves

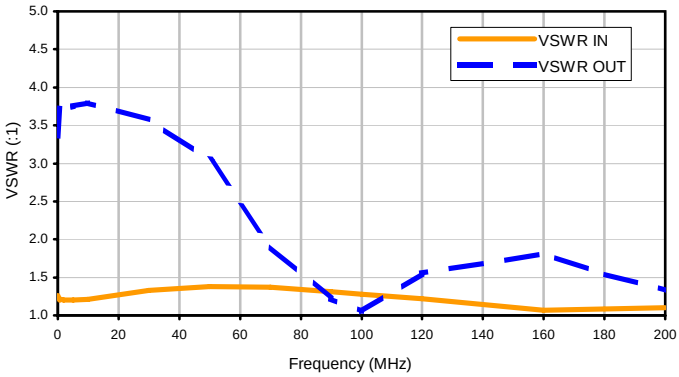
Gain



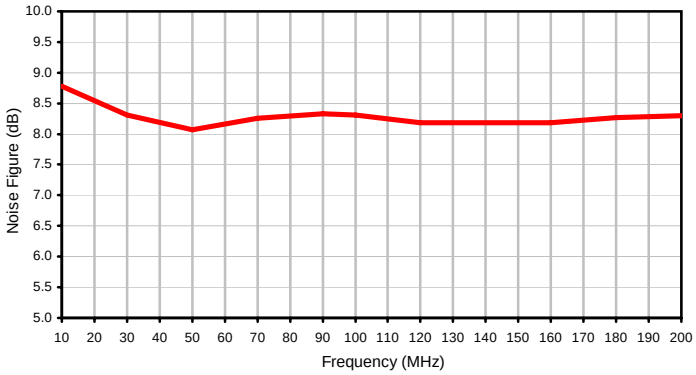
Directivity



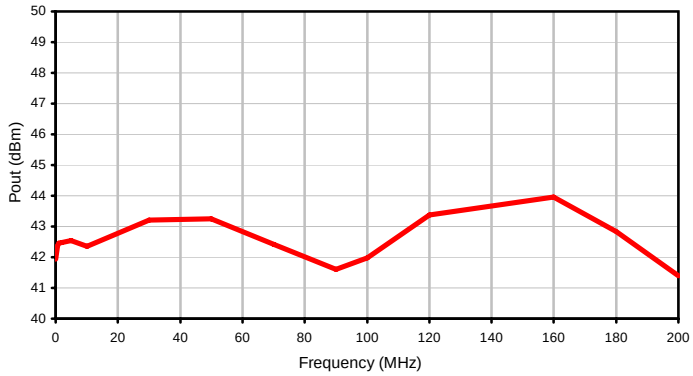
VSWR @ 24V



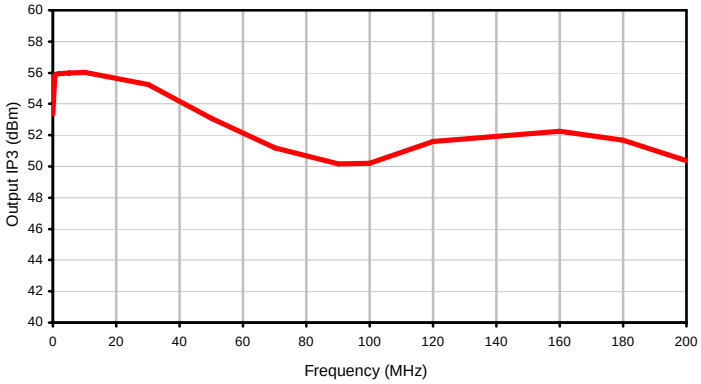
Noise Figure @ 24V



Pout at 1dB Compression @ 24V



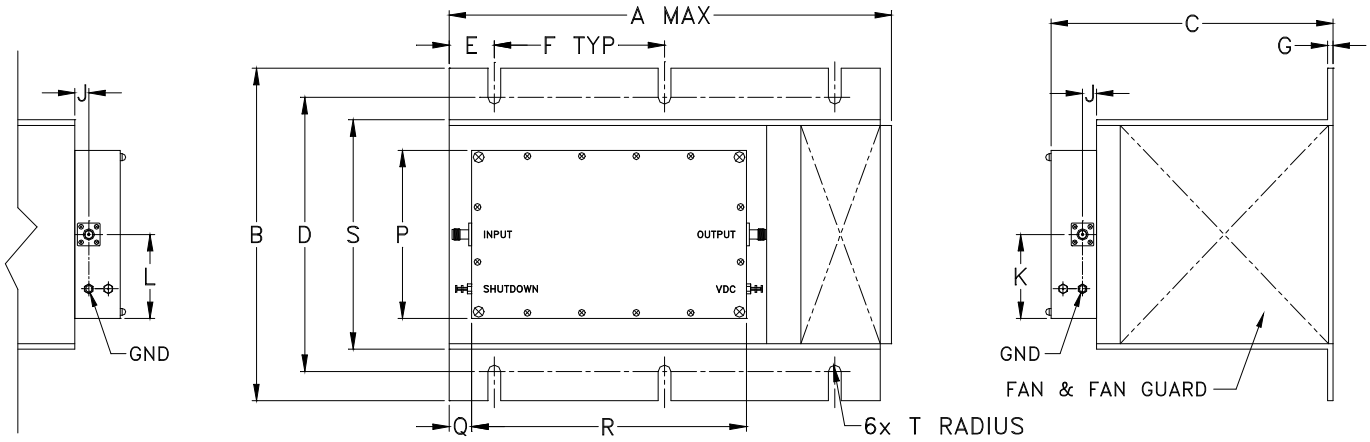
Output IP3 @ 24V



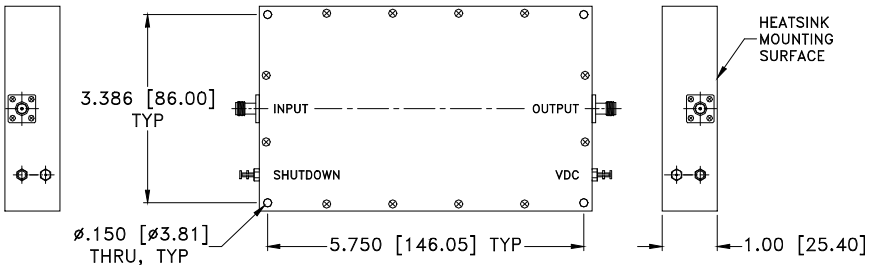
Case Style BT

BT1598

Outline Dimensions



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK.



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
BT1598	9.85 (250.19)	7.3 (185.42)	6.3 (160.02)	6.00 (152.40)	.98 (24.89)	3.75 (95.25)	.13 (3.30)	- -	.31 (7.87)	1.84 (46.74)	1.84 (46.74)	- -	- -

CASE#	P	Q	R	S	T	WT, GRAM	WT WITHOUT HEATSINK, GRAM
BT1598	3.68 (93.47)	.5 (12.70)	6.05 (153.67)	5.1 (129.54)	.135 (3.43)	4185	500

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

Notes:

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

Mini-Circuits®
ISO 9001 ISO 14001 CERTIFIED
minicircuits.com
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com
RF/IF MICROWAVE COMPONENTS

This document and its contents are the property of Mini-Circuits

Mini-Circuits

Environmental Specifications ENV23T8

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	-10° to 50° 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

This document and its contents are the property of Mini-Circuits.