COAXIAL

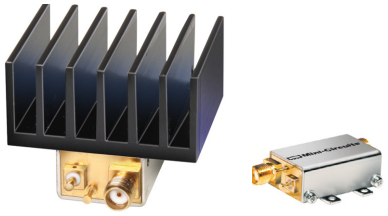
Medium High Power Amplifier

ZX60-100VH+
ZX60-100VHX+

50Ω 0.3 to 100 MHz

THE BIG DEAL

- Single +12V operation
- Wide bandwidth, 0.3 to 100 MHz, usable to 110 MHz
- Excellent Gain Flatness, ±30 dBm typ.
- Low Noise Figure, 4 dB typ.
- Output Power, up to +30 dBm typ.
- Small size



Generic photo used for illustration purposes only

Model No.	ZX60-100VH+	ZX60-100VHX+
Option	with heatsink	without heatsink
Case Style	MM1750	GA955
Connectors	SMA Female	

APPLICATIONS

- Buffer amplifier
- Driver amplifier
- HF communication
- Lab
- Instrumentation
- Test equipment

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

PRODUCT OVERVIEW

ZX60-100VH+ is a Class-A, high dynamic range, unconditionally stable amplifier. It features a very small ruggedized case, the ability to withstand accidental open or short at output and reverse bias protection for added reliability under difficult conditions.

KEY FEATURES

Feature	Advantages
Frequency Range, 0.3 to 100MHz	Covers HF and partially VHF frequency bands, could be used in FM broadcast up to 110MHz. Great for the radio amateur enthusiasts.
Excellent Gain Flatness: ±0.3dB, typ.	Excellent gain flatness minimizes distortion of amplified signals, including multi-tone, complex modulation, very wide frequency range and noise-like signals
Output Power 1W (+30dBm, typ)	High output power in very small package
Noise Figure	Low noise figure, 4dB typ. and high OIP3, +43dBm typ. defines the high dynamic range of the amplifier.

REV. B
ECO-015740
ZX60-100VH+
MM/CP/AM
231115

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Condition (MHz)	ZX60-100VH+ ZX60-100VHX+**			Units
		Min.	Typ.	Max.	
Frequency Range		0.3		100	MHz
Gain	0.3 - 100	33	36	—	dB
Gain Flatness	0.3 - 100	—	±0.3	—	dB
Output Power at 1dB Compression	0.3 - 100	—	+30	—	dBm
Output third order intercept point	0.3 - 100	—	+43	—	dBm
Noise Figure	0.3 - 100	—	4	—	dB
Input VSWR	0.3 - 100	—	1.6	—	:1
Output VSWR	0.3 - 100	—	1.5	—	:1
Active Directivity (Isolation-Gain)	0.3 - 100	—	14	—	dB
DC Supply Voltage		—	+12*	—	V
Supply Current		—	320	370	mA

*Recommended Operating Voltage.

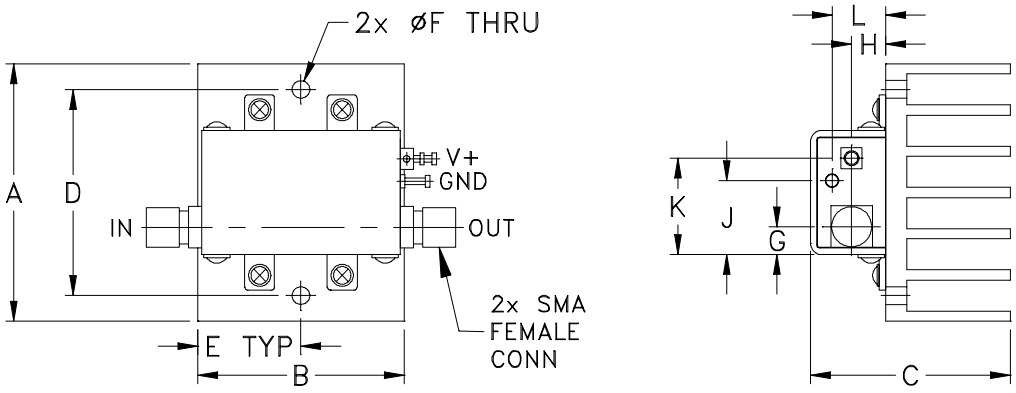
**Heat sink not included. Alternative heat sinking and heat removal must be provided by the user to limit maximum base-plate temperature to 85°C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heat sink to be 3.3°C/W max.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature (ground lead)	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Dissipation	4.4 W
Input RF Power (no damage)	+15 dBm
DC Voltage	+13V

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

OUTLINE DRAWING FOR MODEL WITH HEATSINK (ZX60-100VH+)

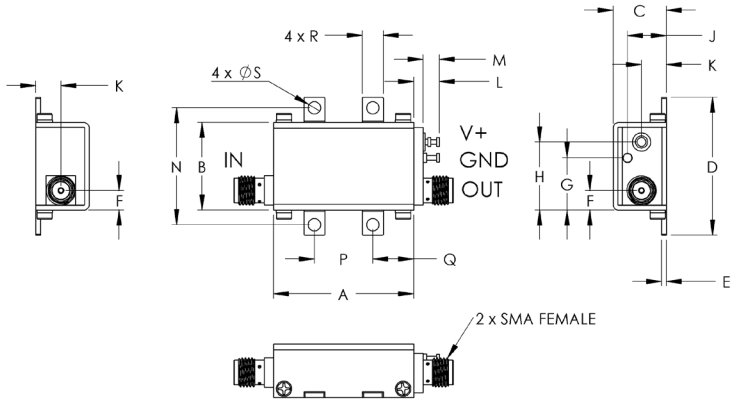


⚠ NOTE: When soldering the DC connections, caution must be used to avoid overheating the DC terminal. See Application Note. AN-40-010.

OUTLINE DIMENSIONS (Inches / mm)

A	B	C	D	E	F	G	H	J	K	L	wt
1.56	1.25	1.21	1.250	0.63	0.106	0.17	0.21	0.45	0.59	0.33	grams
39.62	31.75	30.73	31.75	16.00	2.69	4.32	5.33	11.43	14.99	8.38	61.4

OUTLINE DRAWING FOR MODEL WITHOUT HEATSINK (ZX60-100VHX+)



OUTLINE DIMENSIONS (Inches / mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	wt
1.20	.75	.46	1.18	.04	.17	.45	.58	.33	.21	.22	.14	1.00	.50	.35	.18	.106	grams
30.48	19.05	11.68	29.97	1.02	4.32	11.43	14.73	8.38	5.33	5.59	3.56	25.40	12.70	8.89	4.57	2.69	35.00

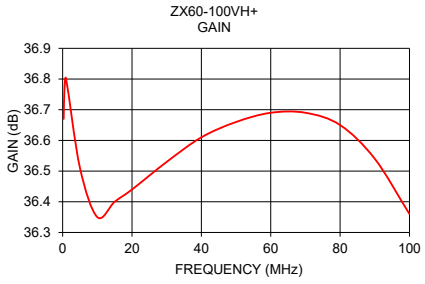
Medium High Power Amplifier

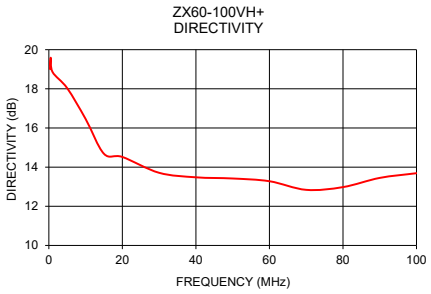
ZX60-100VH+
ZX60-100VHX+

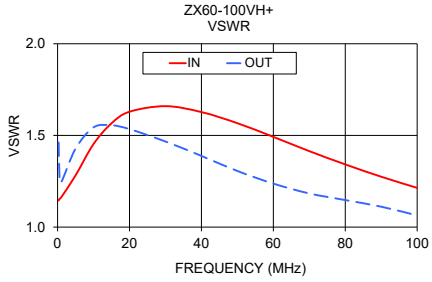
50Ω 0.3 to 100 MHz

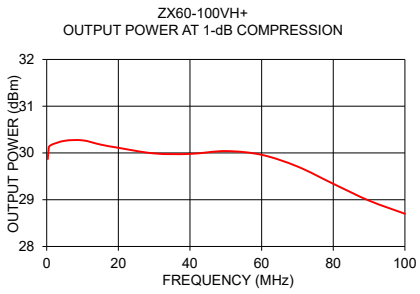
TYPICAL PERFORMANCE DATA/CURVES

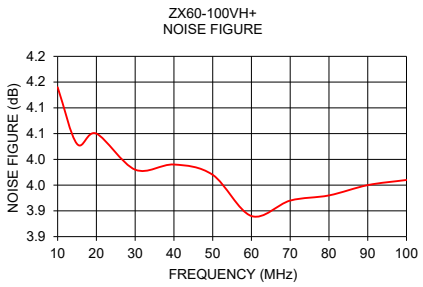
Frequency (MHz)	Gain (dB)	Directivity (dB)	VSVR (:1)		Power Out @1 dB COMPR. (dBm)	Noise Figure (dB)	IP3 (dBm)
	12V	12V	IN	OUT	12V	12V	12V
0.30	36.67	19.01	1.14	1.46	29.87	—	40.86
0.50	36.76	19.59	1.15	1.30	30.05	—	42.65
1.00	36.80	18.86	1.16	1.25	30.16	—	44.39
5.00	36.51	18.03	1.28	1.43	30.26	—	44.51
10.00	36.35	16.46	1.45	1.54	30.27	4.14	43.98
15.00	36.40	14.68	1.57	1.56	30.18	4.03	43.65
20.00	36.44	14.52	1.63	1.53	30.11	4.05	43.45
30.00	36.53	13.71	1.66	1.47	29.99	3.98	43.33
40.00	36.61	13.48	1.63	1.39	29.98	3.99	43.23
50.00	36.66	13.42	1.57	1.31	30.04	3.97	43.21
60.00	36.69	13.28	1.49	1.24	29.96	3.89	43.21
70.00	36.69	12.84	1.41	1.18	29.71	3.92	43.11
80.00	36.65	12.98	1.34	1.15	29.34	3.93	42.94
90.00	36.54	13.45	1.27	1.11	28.98	3.95	42.64
100.00	36.36	13.69	1.21	1.06	28.70	3.96	42.38

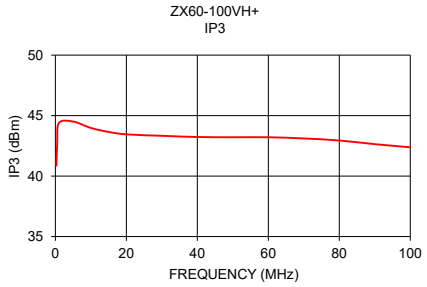












NOTES

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/terms/viewterm.html

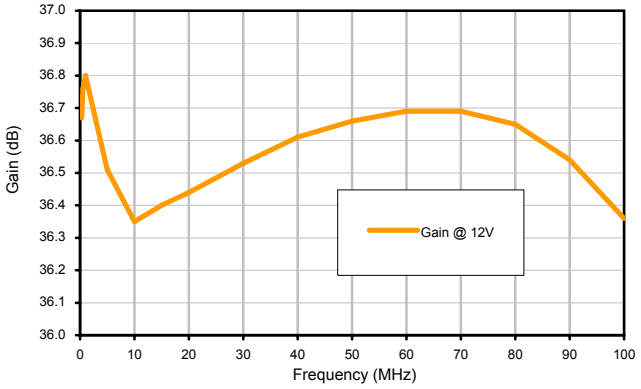
Coaxial Amplifier ZX60-100VH+

Typical Performance Data

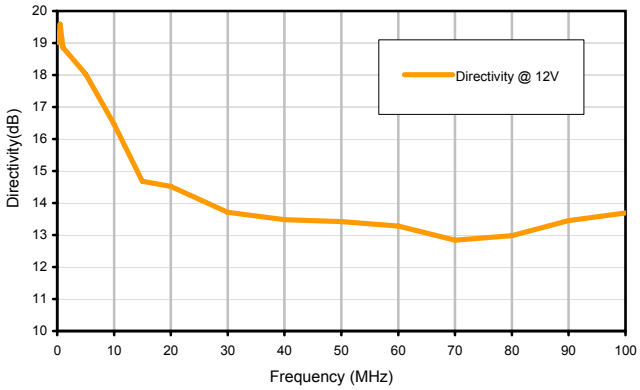
FREQ. (MHz)	GAIN (dB) 12V	DIRECTIVITY (dB) 12V	VSWR (:1) IN 12V	VSWR (:1) OUT 12V	NOISE FIGURE (dB) 12V	POUT @ 1 dB COMPRESSION (dBm) 12V	OUTUPUT IP3 (dBm) 12V
0.3	36.67	19.01	1.14	1.46	--	29.87	40.86
0.5	36.76	19.59	1.15	1.30	--	30.05	42.65
1.0	36.80	18.86	1.16	1.25	--	30.16	44.39
5.0	36.51	18.03	1.28	1.43	--	30.26	44.51
10.0	36.35	16.46	1.45	1.54	4.14	30.27	43.98
15.0	36.40	14.68	1.57	1.56	4.03	30.18	43.65
20.0	36.44	14.52	1.63	1.53	4.05	30.11	43.45
30.0	36.53	13.71	1.66	1.47	3.98	29.99	43.33
40.0	36.61	13.48	1.63	1.39	3.99	29.98	43.23
50.0	36.66	13.42	1.57	1.31	3.97	30.04	43.21
60.0	36.69	13.28	1.49	1.24	3.89	29.96	43.21
70.0	36.69	12.84	1.41	1.18	3.92	29.71	43.11
80.0	36.65	12.98	1.34	1.15	3.93	29.34	42.94
90.0	36.54	13.45	1.27	1.11	3.95	28.98	42.64
100.0	36.36	13.69	1.21	1.06	3.96	28.70	42.38

Typical Performance Curves

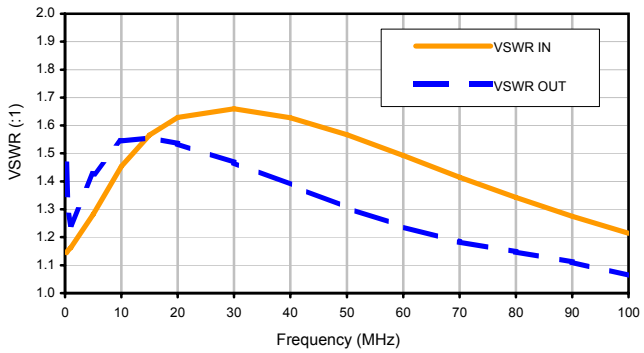
Gain



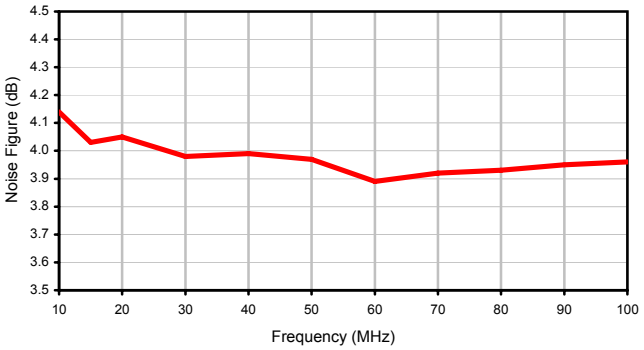
Directivity



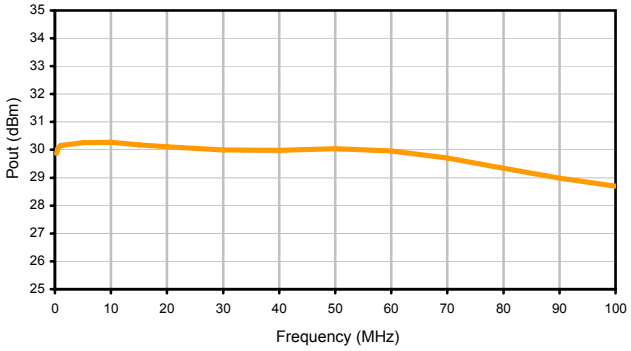
VSWR @ 12V



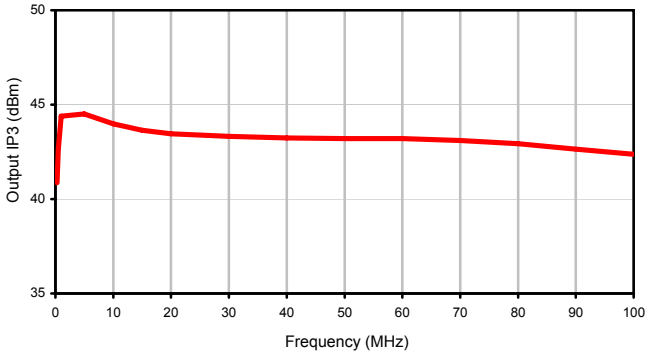
Noise Figure @ 12V



Pout @ 1dB Compression @ 12V



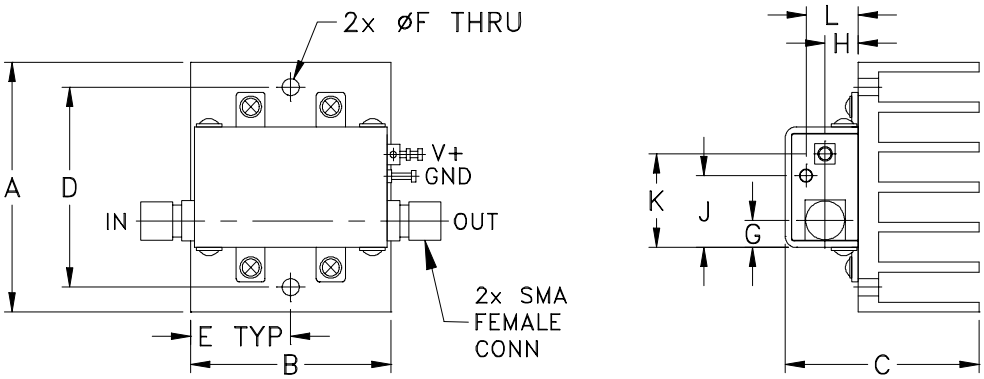
Output IP3 @12V



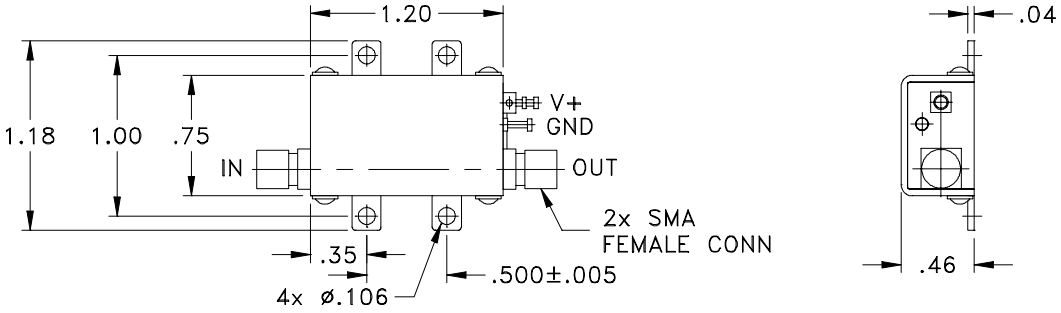
Case Style MM

Outline Dimensions

MM1750



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK.



CASE#	A	B	C	D	E	F	G	H	J	K	L
MM1750	1.56 (39.62)	1.25 (31.75)	1.21 (30.73)	1.250 (31.75)	.63 (15.88)	.106 (2.69)	.17 (4.32)	.21 (5.33)	.45 (11.43)	.59 (14.99)	.33 (8.38)

CASE#	M	N	P	Q	R	WT. GRAMS	WT. WITHOUT HEATSINK GRAMS
MM1750	-- --	-- --	-- --	-- --	-- --	61.4	35.0

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

Notes:

1. Case material: Brass.
2. Case finish: Nickel plate.
3. Heat sink finish: Black anodize.

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Environmental Specifications ENV23T10

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 85° C Case Temperature	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