

Coaxial Wideband Amplifier

ZVM-273HP+
ZVM-273HPX+

50Ω 13 to 26.5GHz

The Big Deal

- Wideband 13 – 26.5 GHz
- Output power up to +27dBm
- Excellent directivity, 36 dB typ. @ 20 GHz
- Unconditionally stable
- Excellent gain flatness, ± 1 dB



ZVM-273HP+



ZVM-273HPX+

Product Overview

Mini-Circuits ZVM-273HP+ is a three stage balanced, wideband coaxial amplifier delivering up to 0.5W power and operating over 13 to 26.5 GHz. It is unconditionally stable. Its outstanding isolation enables it to be used as a wideband isolation amplifier or buffer amplifier in a variety of microwave systems including point to point radios, military EW and radar, DBS, and VSAT.

Key Features

Feature	Advantages
Wideband	Wide frequency coverage up to 26.5 GHz supports many microwave applications.
Pout up to +27 dBm	Can be used as a low-cost driver for high power amplifiers.
Excellent active directivity, 36 dB @ 20 GHz (directivity = isolation – gain)	Can be used as an inter-stage isolation amplifier, minimizing interaction of adjacent components.
Unconditionally stable	Eliminates the need for any compensating network to prevent unintended oscillation.

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ZVM-273HP+
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Features

- Wideband, 13 to 26.5 GHz
- Output Power up to +27 dBm
- Excellent Directivity, 36 dB typ. at 20 GHz
- Unconditionally stable
- Excellent Gain Flatness, ± 1 dB

Applications

- Point to point radio
- Military and radar
- DBS
- VSAT
- Wideband isolation amplifier



Generic photo used for illustration purposes only

Model No.	ZVM-273HP+	ZVM-273HPX+*
Case Style	CP1973	
Connectors	2.92 mm	

+RoHS Compliant

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

Electrical Specifications at 25°C

Parameter	Condition (GHz)	ZVM-273HP+ ZVM-273HPX+*			Units
		Min.	Typ.	Max.	
Frequency Range		13.0		26.5	GHz
DC Voltage (+)		—	12	—	V
DC Voltage (-)		—	-5	—	V
DC Current (+)		—	559	590	mA
DC Current (-)		—	0.5	—	mA
Gain	13 - 17	—	13	—	dB
	17 - 20	—	14.5	—	
	20 - 26.5	—	13	—	
Input Return Loss	13 - 17	—	18	—	dB
	17 - 19	—	24	—	
	19 - 26.5	—	15	—	
Output Return Loss	13 - 14	—	10	—	dB
	14 - 22	—	14	—	
	22 - 26.5	—	18	—	
Directivity (Isolation- Gain)	20	—	36	—	dB
Output Power @ 1 dB compression	13 - 14	—	23	—	dBm
	14 - 16	—	25	—	
	16 - 26.5	—	26.5	—	
OIP3	13 - 14	—	30	—	dBm
	14 - 20	—	34	—	
	20 - 26.5	—	30	—	
Noise Figure	13 - 15	—	9.5	—	dB
	15 - 18	—	9.0	—	
	18 - 22	—	8.5	—	
	22 - 26.5	—	8.0	—	

*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 1.3°C/W max.

Maximum Ratings

Parameter	Ratings
Operating Temperature (Base Plate)	-40°C to 75°C
Storage Temperature	-55°C to 100°C
DC Voltage (+)	+14 V
DC Voltage (-)	-6 V
Operating Current at 12V	620 mA
Input RF Power (no damage)	+16 dBm

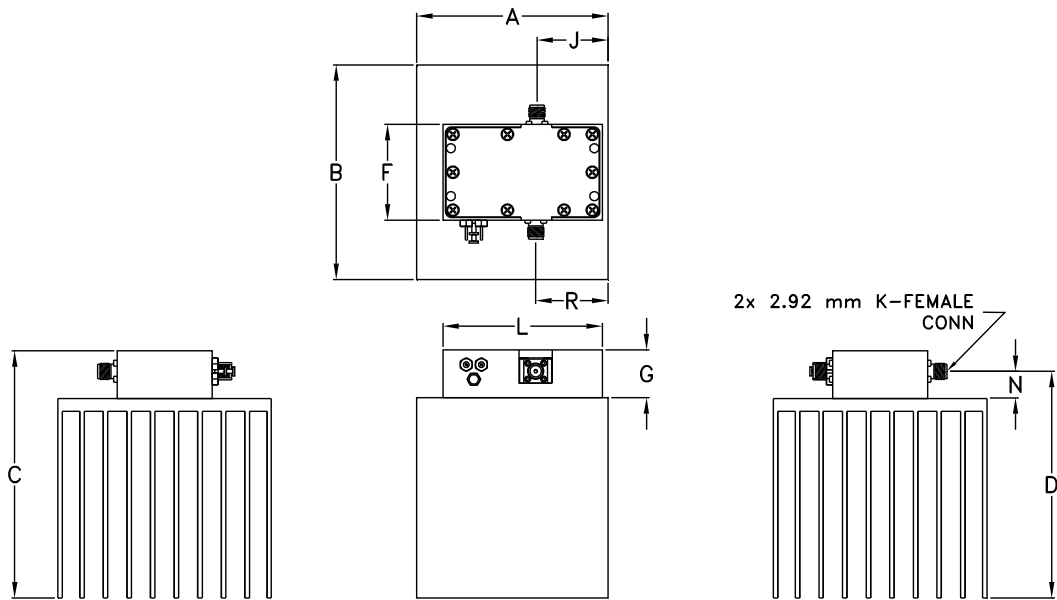
Permanent damage may occur if any of these limits are exceeded.



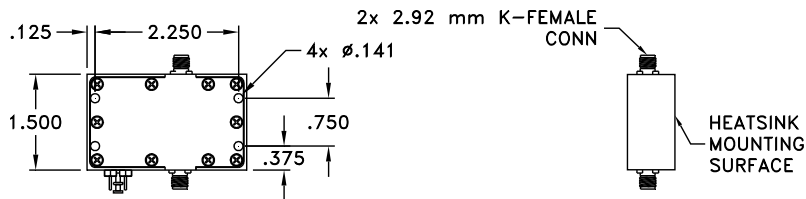
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ZVM-273HP+
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Outline Drawing



MOUNTING INFORMATION OF MODEL WITHOUT HEATSINK



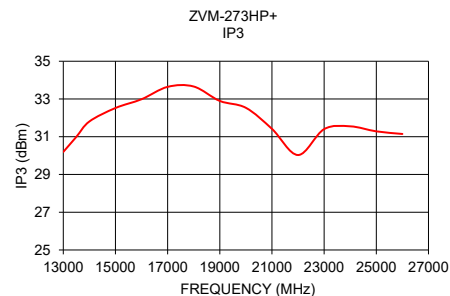
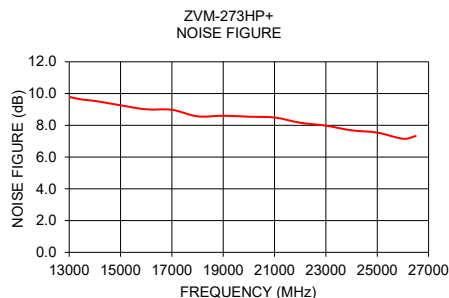
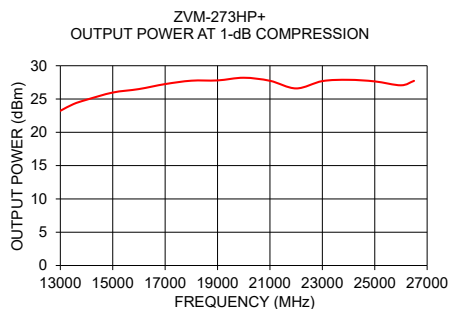
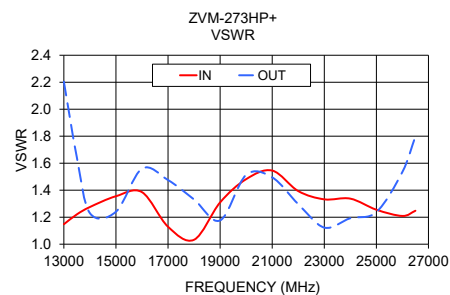
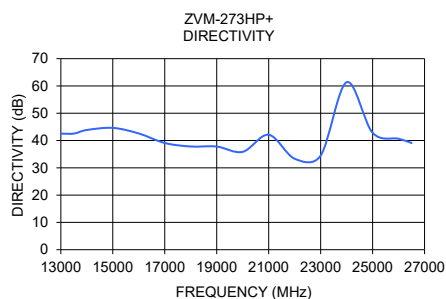
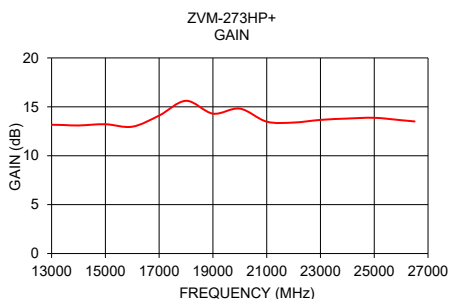
Outline Dimensions (inch mm)

A	B	C	D	E	F	G	H	J	K
3.00	3.36	3.87	3.55	--	1.50	.747	--	1.15	--
76.20	85.34	98.30	90.17	--	38.10	18.97	--	29.21	--
L	M	N	P	Q	R	S	T	wt	
2.50	--	.415	--	--	1.17	--	--	grams*	
63.50	--	10.54	--	--	29.72	--	--	595.0	

*135 grams without heatsink

Typical Performance Data

FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		POUT at 1 dB COMPR. (dBm)	NOISE FIGURE (dB)	IP3 (dBm)
	12V	12V	IN	OUT	12V	12V	
13000	13.17	42.53	1.15	2.20	23.23	9.79	30.20
13500	13.14	42.55	1.22	1.64	24.24	9.62	30.99
14000	13.09	43.86	1.28	1.23	24.89	9.54	31.81
15000	13.22	44.63	1.36	1.24	25.97	9.26	32.52
16000	12.97	42.58	1.39	1.56	26.49	9.01	32.99
17000	14.11	39.10	1.13	1.48	27.24	8.98	33.64
18000	15.61	37.82	1.03	1.33	27.75	8.56	33.66
19000	14.30	37.80	1.31	1.18	27.79	8.60	32.90
20000	14.82	35.86	1.48	1.51	28.19	8.54	32.53
21000	13.48	42.12	1.55	1.49	27.74	8.49	31.42
22000	13.39	33.33	1.39	1.30	26.59	8.16	30.03
23000	13.66	34.48	1.33	1.12	27.69	7.98	31.40
24000	13.80	61.37	1.34	1.19	27.88	7.68	31.55
25000	13.88	42.84	1.26	1.24	27.65	7.54	31.28
26000	13.63	40.66	1.21	1.54	27.06	7.15	31.15
26500	13.51	39.09	1.25	1.80	27.73	7.32	—



Additional 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.
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Wideband Amplifier

ZVM-273HP+

Typical Performance Data

Frequency (MHz)	Gain (dB) -5V/12V	Directivity (dB) -5V/12V	VSWR In (:1) -5V/12V	VSWR Out (:1) -5V/12V	Noise Figure (dB) -5V/12V	Pout at 1dB Compression (dBm) -5V/12V	Output IP3 (dBm) -5V/12V
13000.0	13.17	42.53	1.15	2.20	9.79	23.23	30.20
13500.0	13.14	42.55	1.22	1.64	9.62	24.24	30.99
14000.0	13.09	43.86	1.28	1.23	9.54	24.89	31.81
14500.0	13.09	42.92	1.32	1.06	9.37	25.49	32.33
15000.0	13.22	44.63	1.36	1.24	9.26	25.97	32.52
16000.0	12.97	42.58	1.39	1.56	9.01	26.49	32.99
16500.0	12.75	36.34	1.28	1.37	8.94	26.60	33.04
17000.0	14.11	39.10	1.13	1.48	8.98	27.24	33.64
17500.0	15.03	44.71	1.07	1.36	8.77	27.53	33.94
18000.0	15.61	37.82	1.03	1.33	8.56	27.75	33.66
18500.0	15.14	36.41	1.13	1.33	8.61	27.90	33.25
19000.0	14.30	37.80	1.31	1.18	8.60	27.79	32.90
19500.0	15.14	35.17	1.39	1.22	8.40	27.97	32.61
20000.0	14.82	35.86	1.48	1.51	8.54	28.19	32.53
20500.0	14.32	40.57	1.53	1.54	8.67	28.18	32.20
21000.0	13.48	42.12	1.55	1.49	8.49	27.74	31.42
21500.0	12.81	38.68	1.50	1.29	8.53	26.77	30.09
22000.0	13.39	33.33	1.39	1.30	8.16	26.59	30.03
22500.0	13.01	32.41	1.28	1.06	8.14	26.83	30.59
23000.0	13.66	34.48	1.33	1.12	7.98	27.69	31.40
23500.0	13.58	41.74	1.37	1.12	7.76	27.84	31.33
24000.0	13.80	61.37	1.34	1.19	7.68	27.88	31.55
24500.0	13.92	46.17	1.30	1.23	7.55	27.90	31.41
25000.0	13.88	42.84	1.26	1.24	7.54	27.65	31.28
25500.0	13.74	42.01	1.22	1.33	7.25	27.55	31.78
26000.0	13.63	40.66	1.21	1.54	7.15	27.06	31.15
26500.0	13.51	39.09	1.25	1.80	7.32	27.73	----



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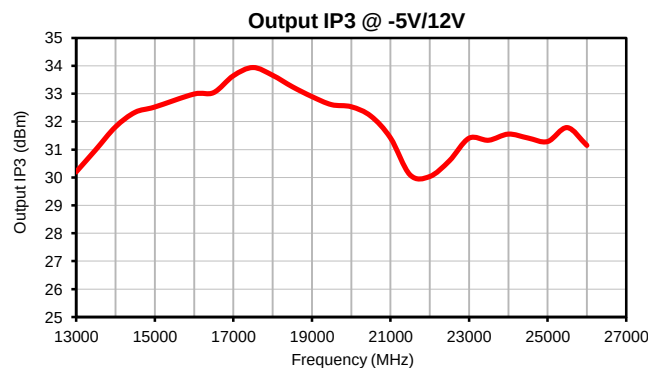
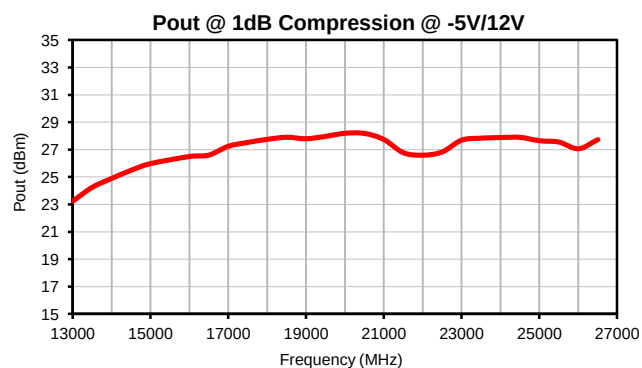
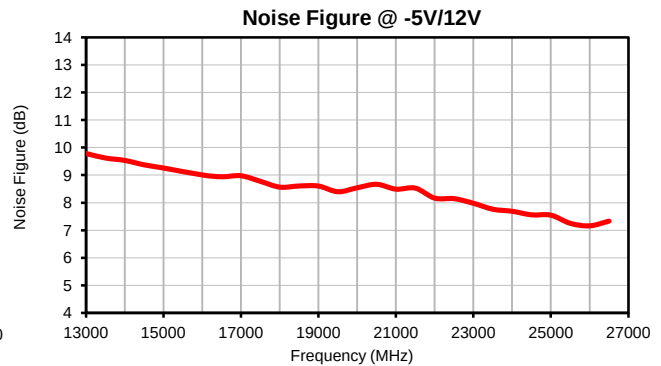
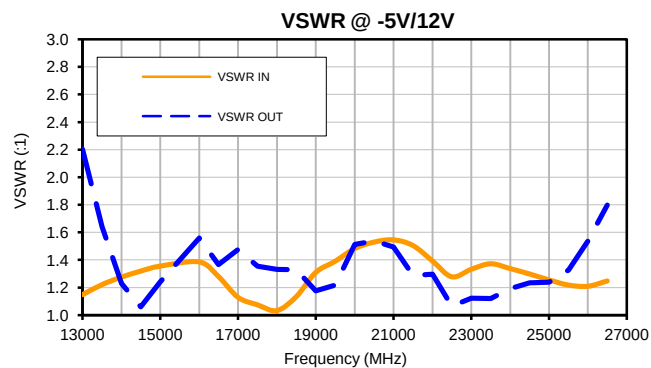
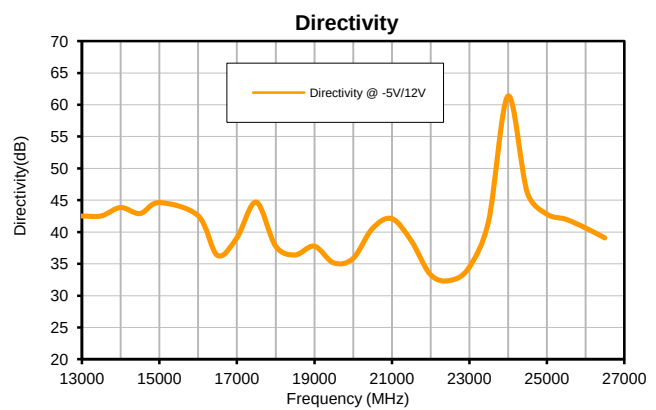
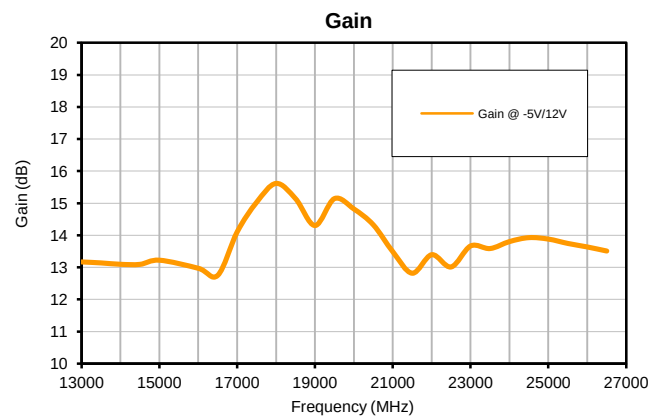
IF/RF MICROWAVE COMPONENTS

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Wideband Amplifier

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Typical Performance Curves



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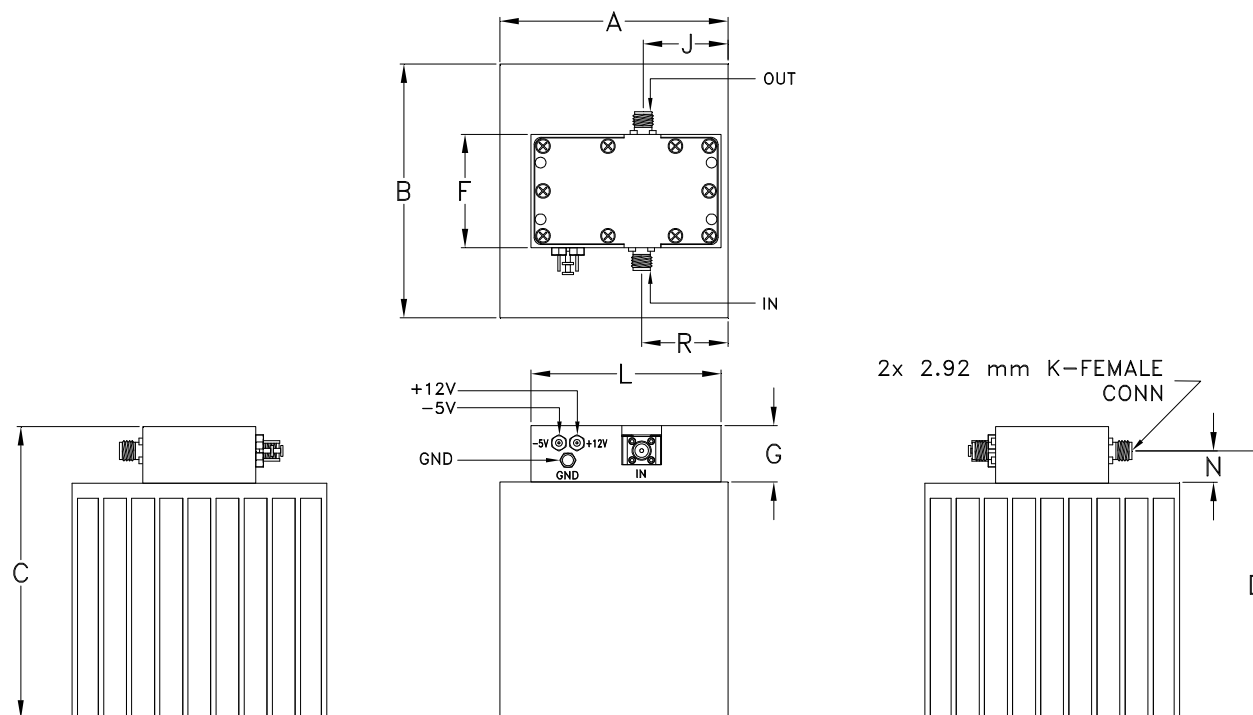
IF/RF MICROWAVE COMPONENTS



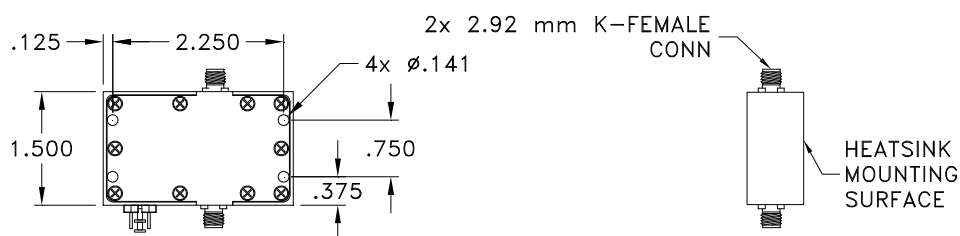
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Outline Dimensions

CP1973



MOUNTING INFORMATION OF MODEL WITHOUT HEATSINK



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
CP1973	3.00 (76.20)	3.36 (85.34)	3.87 (98.30)	3.55 (90.17)	-- --	1.50 (38.10)	.747 (18.97)	-- --	1.15 (29.21)	-- --	2.50 (63.5)	-- --	.415 (10.54)

CASE#	P	Q	R	S	T	WT. GRAMS	WT. WITHOUT HEATSINK GRAMS
CP1973	-- --	-- --	1.17 (29.72)	-- --	-- --	595	135

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 base.
- Heat sink finish: Black anodize if supplied with heat sink.



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