COAXIAL

Low Noise Amplifier ZVE-0234LNX-K+

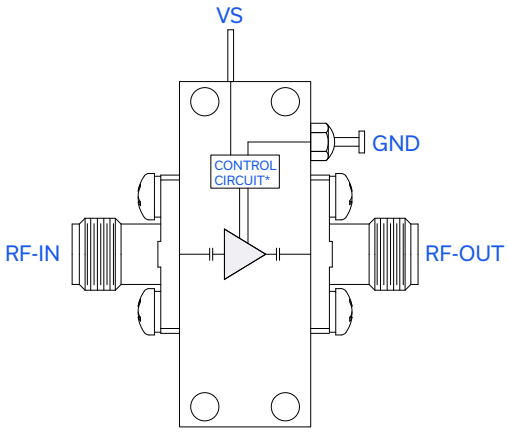
50Ω 2 to 30 GHz NF 2.5 dB 2.92 mm Female

KEY FEATURES

- Broadband Coverage, 2 to 30 GHz
- Excellent Gain Flatness, ±0.4 dB Typ.
- Low Noise Figure, 2.5 dB Typ.
- Single Supply Range: +5.7 to +10 V
- Reverse Voltage Protected
- Compact Case for Ease of System Integration

Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



APPLICATIONS

- Radar and Military
- Test and Instrumentation
- 5G FR2 Infrastructure
- Aerospace and Defense

PRODUCT OVERVIEW

Mini-Circuits' ZVE-0234LNX-K+ is a coaxial, broadband amplifier utilizing Mini-Circuits' own GaAs, pHEMT, distributed amplifier, AVA-0233LN-D+. The amplifier offers extremely flat gain across a wide frequency range from 2 to 30 GHz, operates on a single supply range of +5.7 to +10 V with just 58 mA typical current consumption and can deliver up to 6-19 mW output power at 1 dB compression. The amplifier comes in a rugged, compact case (1.2" x 0.46" x 0.45") with 2.92 mm connectors. This model also serves as an excellent evaluation module for AVA-0233LN-D+.

ELECTRICAL SPECIFICATIONS AT +25 °C BASEPLATE AND V_S = +6 V

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Units
Frequency Range		2		30	GHz
Gain	2	15	16		dB
	10	15	16		
	20	15	16		
	28	13	16		
	30	13	15		
Gain Flatness	2-30		±0.4		dB
Noise Figure	2		4.0		dB
	10		1.7		
	20		2.5		
	28		4.0		
	30		4.5		

ELECTRICAL SPECIFICATIONS AT +25 °C BASEPLATE AND V_S = +6 V (CONTINUED)

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Units
Input Return Loss	2		23		dB
	10		17		
	20		15		
	28		15		
	30		18		
Output Return Loss	2		11		dB
	10		22		
	20		22		
	28		14		
	30		20		
Output Power at 1 dB Compression (P1dB)	2		+15		dBm
	10		+14		
	20		+13		
	28		+12		
	30		+12		
Output Third Order Intercept Point (OIP3)	2		+26		dBm
	10		+25		
	20		+24		
	28		+21		
	30		+21		
DC Supply Voltage (VS)		+5.7	+6.0	+10.0	V
DC Current			58	100	mA

ABSOLUTE MAXIMUM RATINGS[1]

Parameter	Ratings
Operating Temperature	-40 °C to +85 °C Baseplate
Storage Temperature	-55 °C to +100 °C
Total Power Dissipation	1 W
RF Input Power[2] (CW)	+10 dBm
DC Operating Voltage V_S	+12 V

1. Continuous operation is not recommended at these extremes. Permanent damage may occur if any of these limits are exceeded.
2. Specified under matched load to 50 ohms.

DETERMINING MAXIMUM THERMAL RESISTANCE OF USERS' EXTERNAL HEAT SINK

$$\textit{MAXIMUM THERMAL RESISTANCE} = \frac{\textit{MAXIMUM OPERATING CASE TEMP} - \textit{MAXIMUM USER AMBIENT TEMP}}{\textit{POWER DISSIPATION}}$$

Example:	MAXIMUM OPERATING CASE TEMP = +50 °C (CHECK MAXIMUM RATINGS TABLE FOR THIS VALUE) MAXIMUM USER AMBIENT TEMP = +30 °C (USER DEFINED) POWER DISSIPATION = 10 WATTS (CHECK MAXIMUM RATINGS TABLE FOR THIS VALUE) THEN MAXIMUM ALLOWABLE THERMAL RESISTANCE = 2 °C/W

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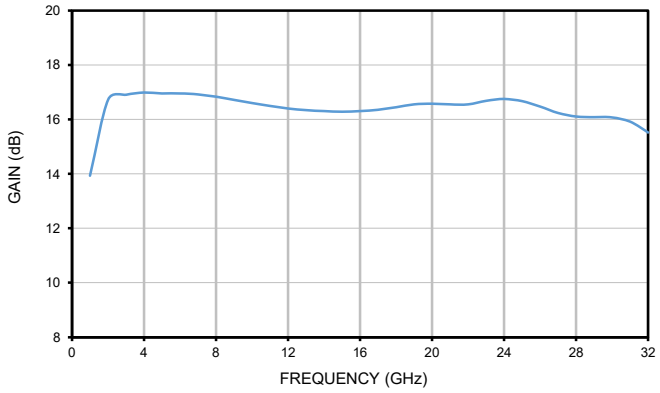
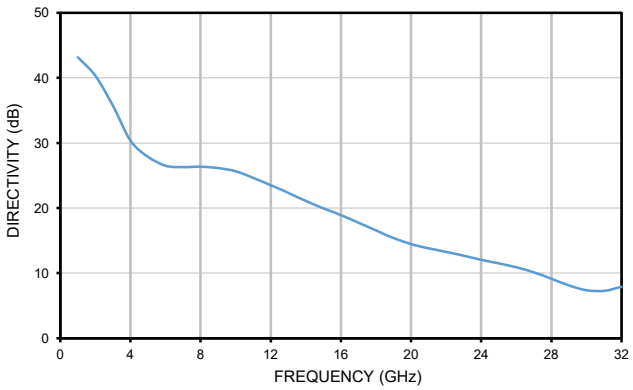
TYPICAL PERFORMANCE GRAPHS

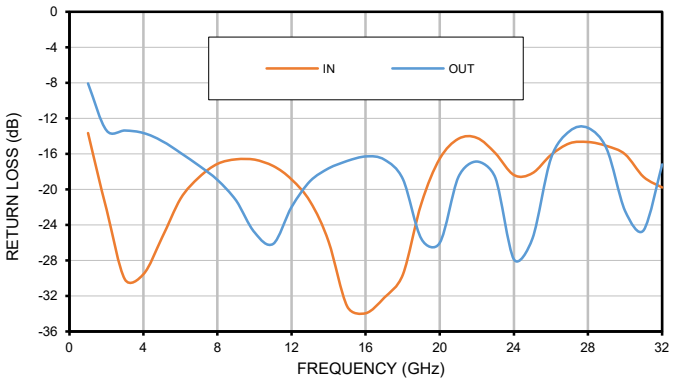
GAIN



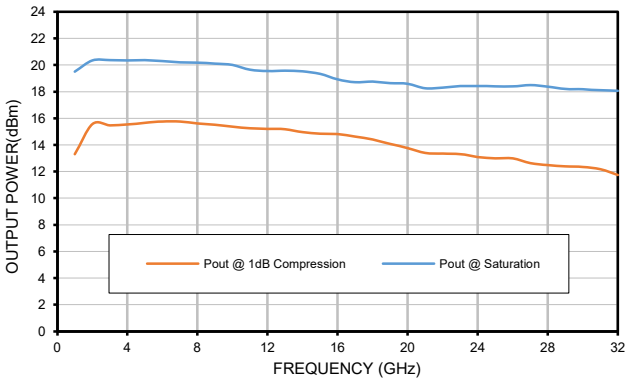
DIRECTIVITY



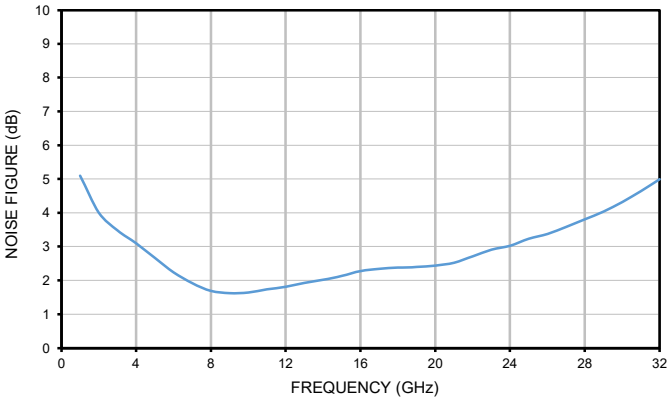
RETURN LOSS



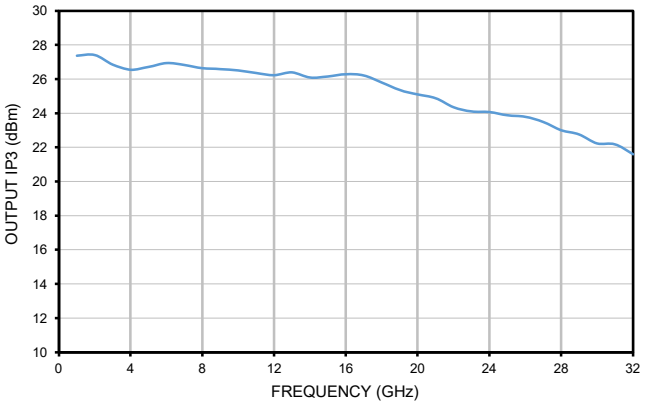
OUTPUT POWER



NOISE FIGURE



OUTPUT IP3



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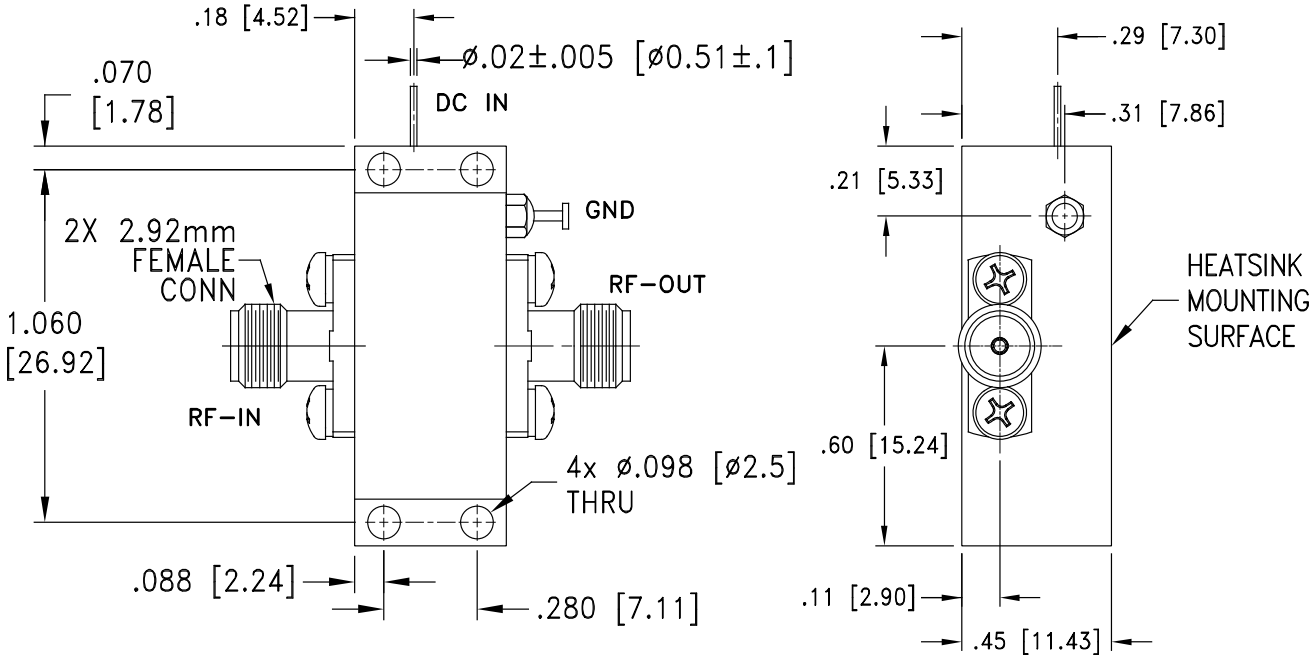
CASE STYLE DRAWING



Weight: 15 grams
Dimensions are in inches [mm]. Tolerances: 2 Pl.±.03; 3 Pl.±.015 Inch

Model ZVE-0234LNX-K+ is not available with a heatsink.

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ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD.

Performance Data & Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file)
RoHS Status	Compliant
Environmental Ratings	ENV141

ORDERING INFORMATION

Model No. Links	ZVE-0234LNX-K+
Case Style	AV1280-4
Connector	2.92 mm Female

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 ZVE-0234LNX-K+

Typical Performance Data

Definitions:
Input Return Loss = -S11 (dB)
Gain(Power Gain) = S21 (dB)
Reverse Isolation = -S12 (dB)
Output Return Loss = -S22 (dB)

TEST CONDITIONS: V_S = 6V, Id = 58mA @ Temperature = +25°C

FREQUENCY	GAIN	DIRECTIVITY	RETURN LOSS (dB)		Pout @ 1 dB COMPRESSION	P_{SAT}	NOISE FIGURE	OIP3
(GHz)	(dB)	(dB)	IN	OUT	(dBm)	(dBm)	(dB)	(dBm)
1	13.9	43	13.6	8.0	13.3	19.5	5.1	27.4
2	16.7	40	22.3	13.4	15.6	20.4	4.0	27.4
3	16.9	36	30.1	13.4	15.5	20.4	3.5	26.9
4	17.0	30	29.6	13.6	15.5	20.4	3.1	26.6
5	17.0	28	25.4	14.5	15.7	20.4	2.7	26.7
6	17.0	27	21.0	15.9	15.8	20.3	2.2	26.9
7	16.9	26	18.6	17.3	15.8	20.2	1.9	26.8
8	16.8	26	17.1	18.9	15.6	20.2	1.7	26.6
9	16.7	26	16.6	21.3	15.5	20.1	1.6	26.6
10	16.6	26	16.6	24.9	15.4	20.0	1.6	26.5
11	16.5	25	17.4	26.1	15.3	19.7	1.7	26.4
12	16.4	24	18.9	22.0	15.2	19.6	1.8	26.2
13	16.3	22	21.4	19.1	15.2	19.6	1.9	26.4
14	16.3	21	25.9	17.6	15.0	19.5	2.0	26.1
15	16.3	20	33.2	16.8	14.8	19.3	2.1	26.2
16	16.3	19	33.9	16.3	14.8	18.9	2.3	26.3
17	16.4	18	32.2	16.6	14.6	18.7	2.3	26.2
18	16.5	17	29.6	18.8	14.4	18.8	2.4	25.8
19	16.6	15	21.5	25.6	14.1	18.7	2.4	25.4
20	16.6	14	16.5	26.0	13.8	18.6	2.4	25.1
21	16.6	14	14.3	18.6	13.4	18.3	2.5	24.9
22	16.6	13	14.2	16.8	13.4	18.3	2.7	24.4
23	16.7	13	15.9	18.7	13.3	18.4	2.9	24.1
24	16.8	12	18.4	27.9	13.1	18.4	3.0	24.1
25	16.7	12	18.2	25.5	13.0	18.4	3.2	23.9
26	16.5	11	16.1	16.5	13.0	18.4	3.4	23.8
27	16.2	10	14.8	13.4	12.6	18.5	3.6	23.5
28	16.1	9	14.7	13.1	12.5	18.4	3.8	23.0
29	16.1	8	15.1	15.4	12.4	18.2	4.0	22.8
30	16.1	7	16.0	22.4	12.4	18.2	4.3	22.2
31	15.9	7	18.6	24.6	12.2	18.1	4.6	22.2
32	15.5	8	19.8	17.2	11.8	18.1	5.0	21.6

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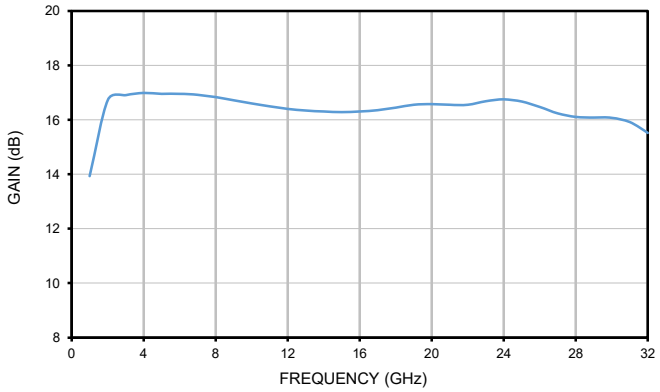
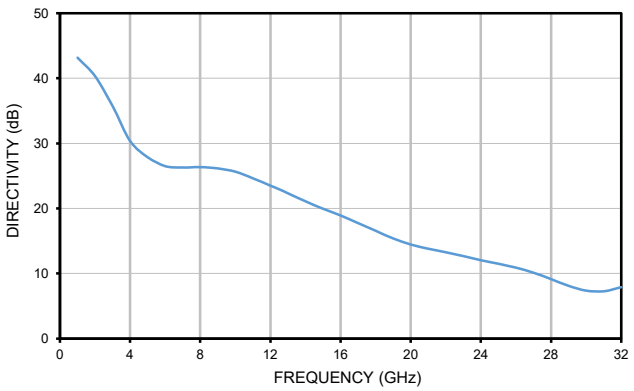
Typical Performance Curves

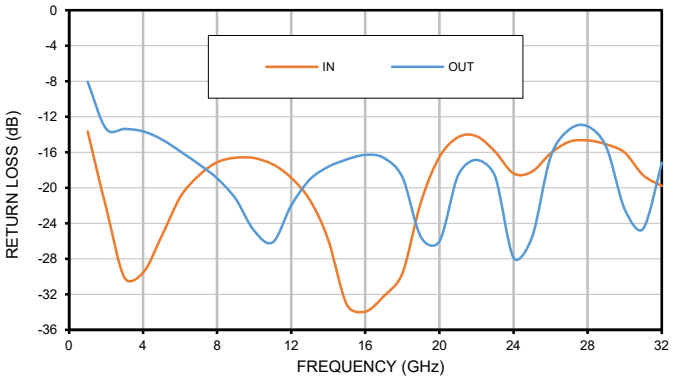
GAIN



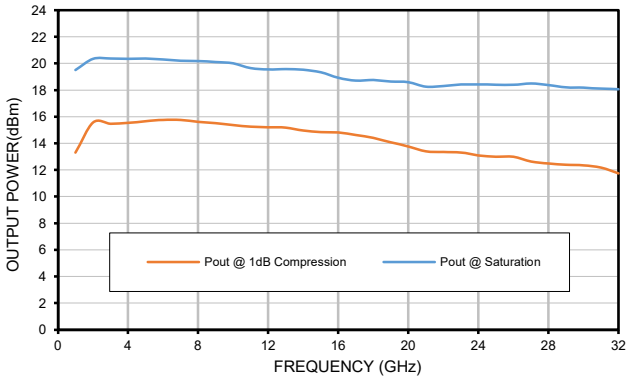
DIRECTIVITY



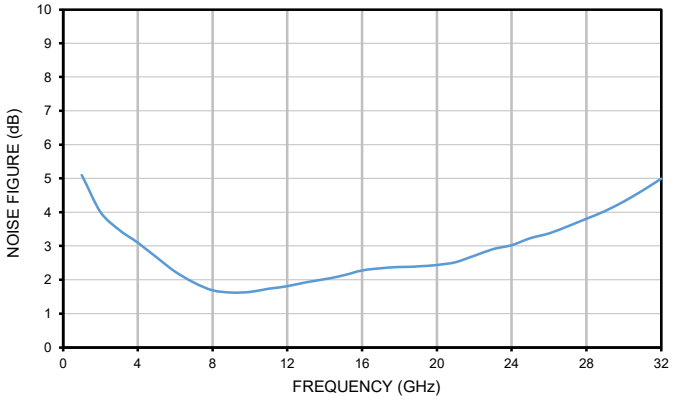
RETURN LOSS



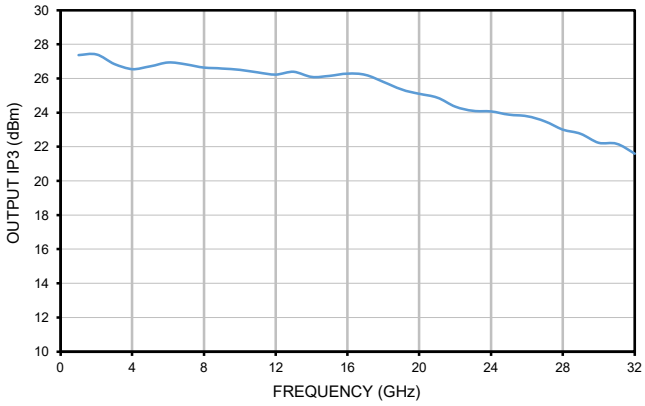
OUTPUT POWER



NOISE FIGURE

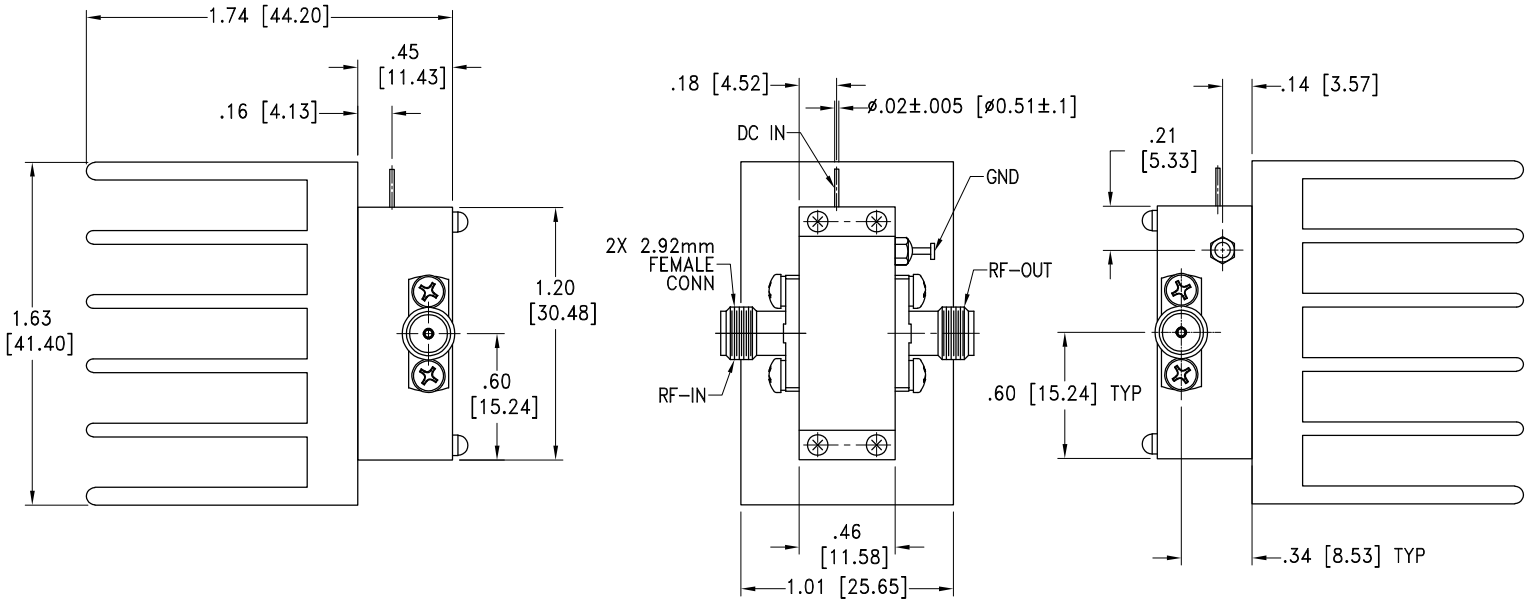


OUTPUT IP3

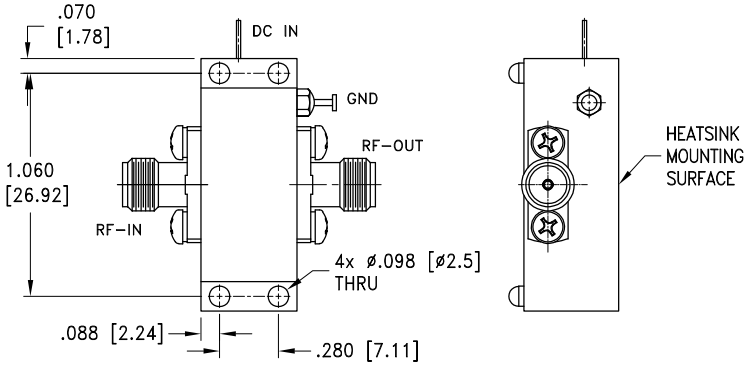


Case Style AV

AV1280-4



MOUNTING INFORMATION OF MODEL WITHOUT HEATSINK



Weight: 56 gram; Weight without heatsink: 15 gram

Dimensions are in inches [mm]. Tolerances: 2 Pl.± .03; 3 Pl.± .015 Inch

Notes:

1. Case material: Aluminum alloy
2. Case finish: Gold plated.
3. Heat sink finish: Black anodized.

Mini-Circuits

Environmental Specifications ENV141

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	See Data Sheet	Individual Model Data Sheet
Storage Temperature	See Data Sheet	Individual Model Data Sheet
Burn-in	(DC on) 72 hours at 25°C	----
Thermal Shock	-55 °C to +100 °C, 5 cycles	MIL-STD-202, Method 108
Vibration	Random Vibration (non-operating)	MIL-STD-883K, Method 2025, Cond. 1A