COAXIAL

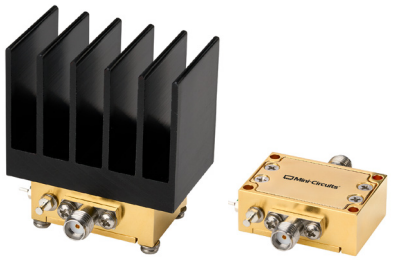
Wideband Amplifier

ZVA-06183LN+
ZVA-06183LNX+

50Ω 6 to 18 GHz NF 1.9 dB SMA Female

KEY FEATURES

- Wideband Coverage, 6 to 18 GHz
- Excellent Gain Flatness, ±1.5 dB Typ.
- Low Noise Figure, 1.9 dB Typ.
- Single Supply Range: +7.5 to +10 V
- Reverse Voltage Protected
- Rugged, Compact Case for Ease of System Integration

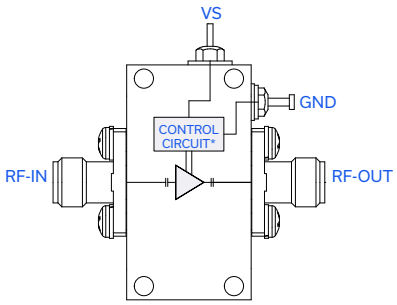


Generic photo used for illustration purposes only

APPLICATIONS

- Fiber Optics
- Wideband Test and Instrumentation
- Military EW and Radar
- Satellite Systems
- WiFi 6E & WiFi 7
- Aerospace and Defense
- Microwave Point to Point Radio

FUNCTIONAL DIAGRAM



* Voltage regulation, over-voltage, and reverse voltage protection circuits.

PRODUCT OVERVIEW

Mini-Circuits' ZVA-06183LN(X)+ is a low noise, coaxial, wideband amplifier offering 43 dB of gain and excellent gain flatness across a wide frequency range from 6 to 18 GHz. This model operates on a single supply range of +7.5 to +10 V with 280 mA typical current consumption and can deliver up to 19.5 dBm output power at saturation. The amplifier incorporates DC-protection features, including over-voltage and reverse voltage protection, to safeguard the device against potential damage if mishandled during operation. The ZVA-06183LN(X)+ comes in a rugged, compact case (1.20" x 0.84" x 0.45") with SMA-F RF connectors.

ELECTRICAL SPECIFICATIONS AT +25 °C BASEPLATE AND V_S = +9 V

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range	—	6	—	18	GHz
Gain	6 – 18	37.5	43.0	—	dB
Gain Flatness	6 – 12	—	±0.6	±1.25	dB
	6 – 18	—	±1.5	±2.25	
Noise Figure	6 – 12	—	1.6	—	dB
	12 – 18	—	2.2	—	
Input Return Loss	6 – 18	—	13.0	—	dB
Output Return Loss	6 – 18	—	15.0	—	dB
Output Power at 1 dB Compression (P1dB)	6 – 12	+15.0	+17.5	—	dBm
	12 – 18	+14.0	+16.0	—	
Saturated Output Power (P_{SAT})[1]	6 – 18	—	+19.5	—	dBm
Output Third Order Intercept Point (Output Power = 0 dBm/tone)	6 – 12	—	+27.5	—	dBm
	12 – 18	—	+25.0	—	
DC Supply Voltage (V_S)	—	+7.5	+9.0	+10.0	V
DC Current[2]	—	—	280	295	mA

1. At P_{SAT}, P_{OUT} changes less than 0.1 dB for a 1 dB change in P_{IN}.
2. Typical current measured under small signal conditions. Max DC current measured at P_{SAT}. DC current increases as amplifier is driven into compression.

REV. OR
ECO-027037
ZVA-06183LN+
MCL NY
250929

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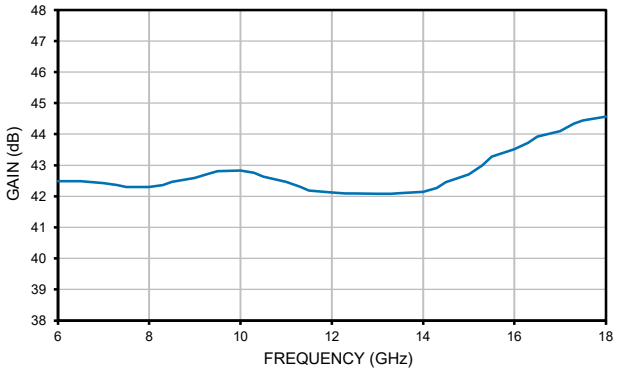
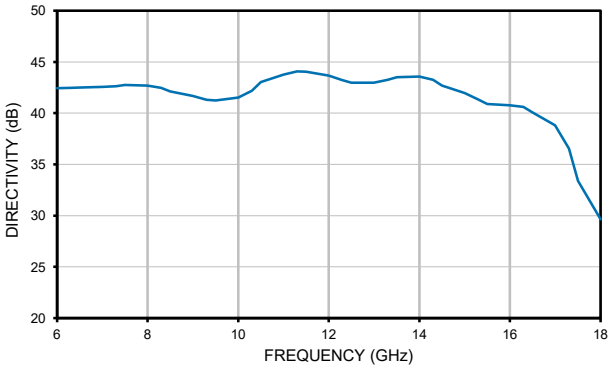
TYPICAL PERFORMANCE GRAPHS

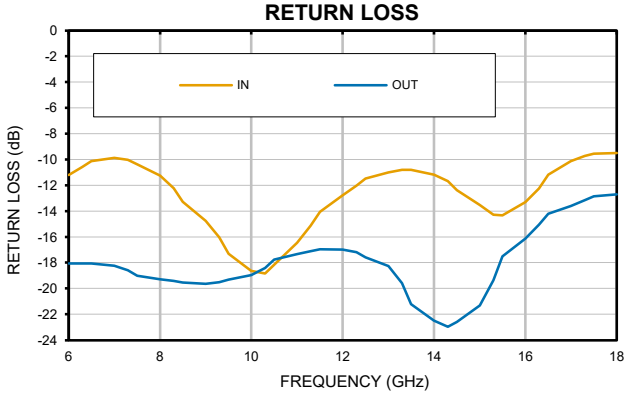
GAIN



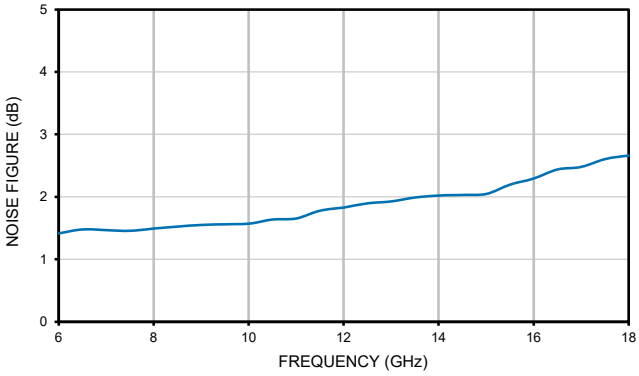
DIRECTIVITY



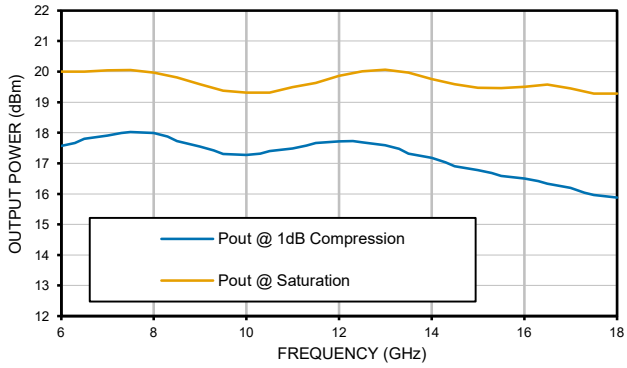
RETURN LOSS



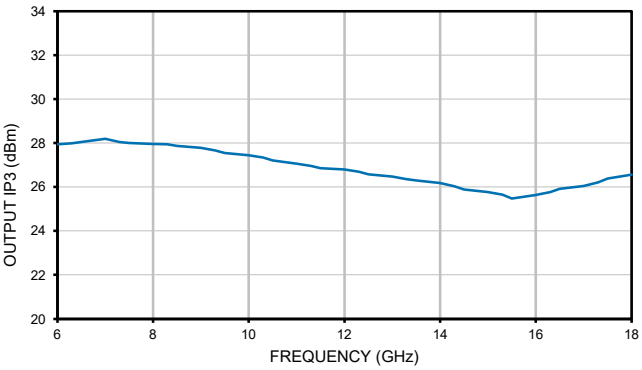
NOISE FIGURE



OUTPUT POWER



OIP3



ABSOLUTE MAXIMUM RATINGS[3,4]

Parameter	Ratings
Operating Temperature	ZVA-06183LN+ -40°C to +75 °C Ambient ZVA-06183LNX+ -40 °C to +85 °C Baseplate
Storage Temperature	-55 °C to +100 °C
Total Power Dissipation	3.0 W
RF Input Power (CW)	+10.0 dBm
DC Operating Voltage	+12.0 V

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

DETERMINING MAXIMUM THERMAL RESISTANCE OF USERS' EXTERNAL HEAT SINK

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

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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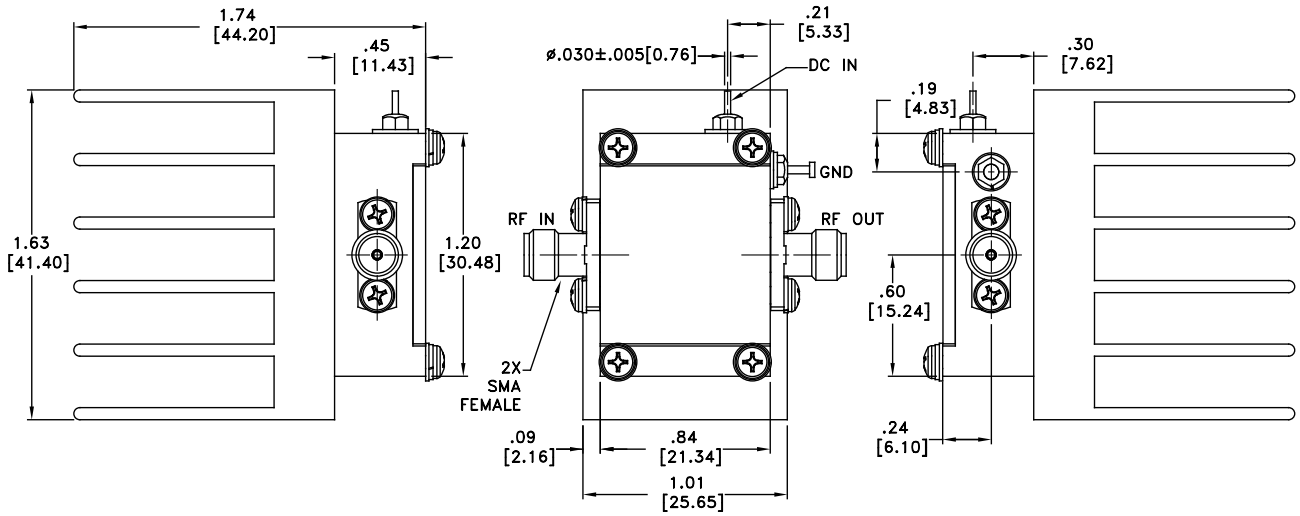
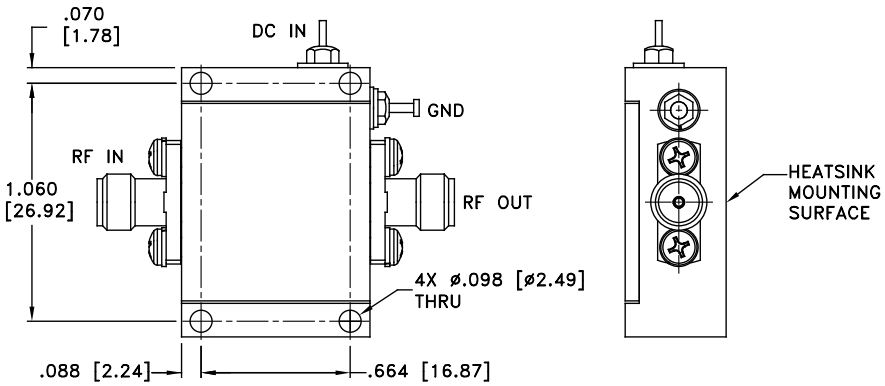
CASE STYLE DRAWING FOR MODELS WITH HEATSINK (ZVA-06183LN+)



CASE STYLE DRAWING FOR MODELS WITHOUT HEATSINK (ZVA-06183LNX+)



Weight: 60 grams
Weight without heatsink: 21 grams
Dimensions are in inches [mm]. Tolerances: 2 PL±.03; 3 PL ±.015 Inches

Wideband Amplifier

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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
Export Information	ECCN# EAR99

ORDERING INFORMATION

Model No. Links	ZVA-06183LN+	ZVA-06183LNX+
Option	With heatsink	Without heatsink
Product Marking	ZVA-06183LN+	ZVA-06183LNX+
Case Style	AV3668	
Connector	SMA-Female	

NOTES

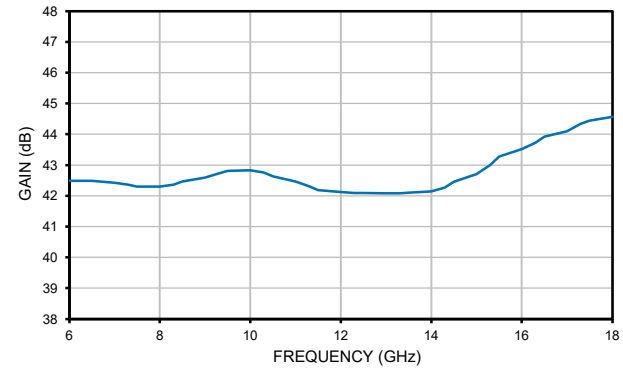
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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

Typical Performance Data

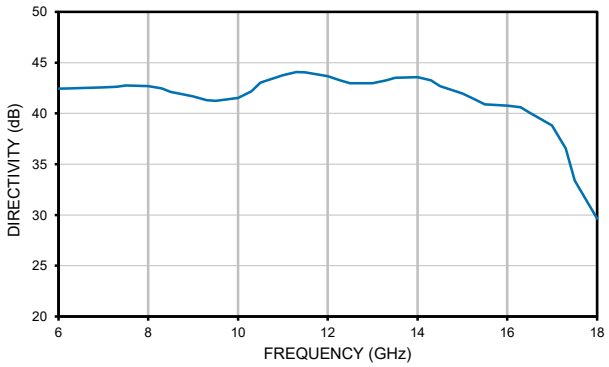
FREQUENCY (GHz)	GAIN (dB)	DIRECTIVITY (dB)	RETURN LOSS (dB)		Pout @ 1 dB COMPRESSION (dBm)	NOISE FIGURE (dB)	OIP3 dBm
			IN	OUT			
6.0	42.48	42.44	10.37	18.20	17.6	1.4	27.94
6.5	42.48	42.50	10.37	18.20	17.8	1.5	28.04
7.0	42.43	42.55	10.20	18.39	17.9	1.5	28.20
7.5	42.30	42.74	10.75	18.91	18.0	1.5	28.32
8.0	42.30	42.69	11.44	19.17	18.0	1.5	28.16
8.5	42.46	42.11	13.52	19.48	17.7	1.5	28.00
9.0	42.60	41.68	14.73	19.49	17.6	1.5	28.01
9.5	42.81	41.24	17.11	19.17	17.3	1.6	27.77
10.0	42.83	41.52	17.79	18.79	17.3	1.6	27.42
10.5	42.63	43.04	17.44	17.91	17.4	1.6	27.65
11.0	42.47	43.74	16.53	17.52	17.5	1.7	27.17
11.5	42.19	44.04	14.09	17.12	17.7	1.8	26.83
12.0	42.12	43.67	13.09	17.17	17.7	1.8	26.78
12.5	42.09	42.96	11.62	17.92	17.7	1.9	26.70
13.0	42.08	42.96	11.22	18.77	17.6	1.9	26.26
13.5	42.10	43.51	11.10	20.90	17.3	2.0	26.31
14.0	42.15	43.57	11.37	21.77	17.2	2.0	26.34
14.5	42.46	42.70	12.61	21.75	16.9	2.0	26.24
15.0	42.71	41.96	13.24	20.75	16.8	2.0	26.12
15.5	43.27	40.89	13.54	17.87	16.6	2.2	25.62
16.0	43.51	40.76	13.07	16.46	16.5	2.3	25.91
16.5	43.92	40.06	11.32	14.44	16.3	2.4	24.78
17.0	44.10	38.80	10.57	13.78	16.2	2.5	24.96
17.5	44.44	33.40	11.69	14.18	16.0	2.6	24.54
18.0	44.57	29.65	13.77	15.58	15.9	2.7	24.22

Typical Performance Curves

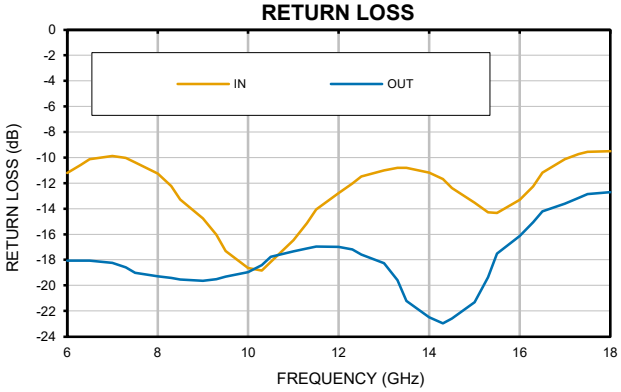
GAIN



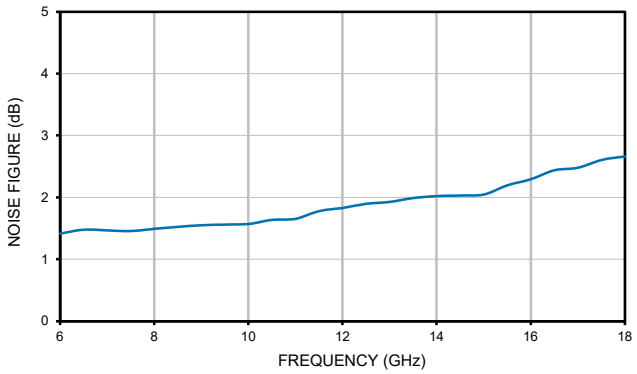
DIRECTIVITY



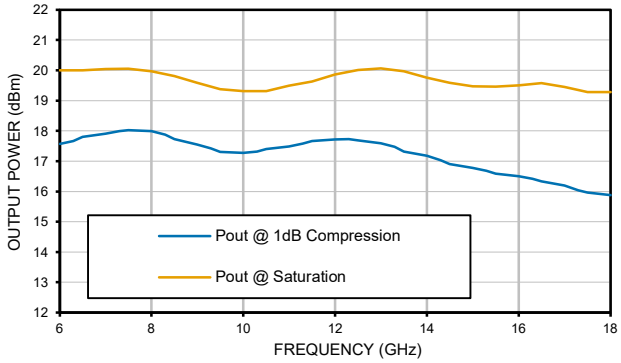
RETURN LOSS



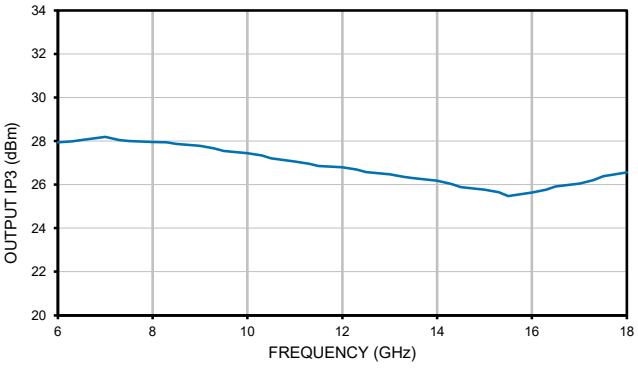
NOISE FIGURE



OUTPUT POWER



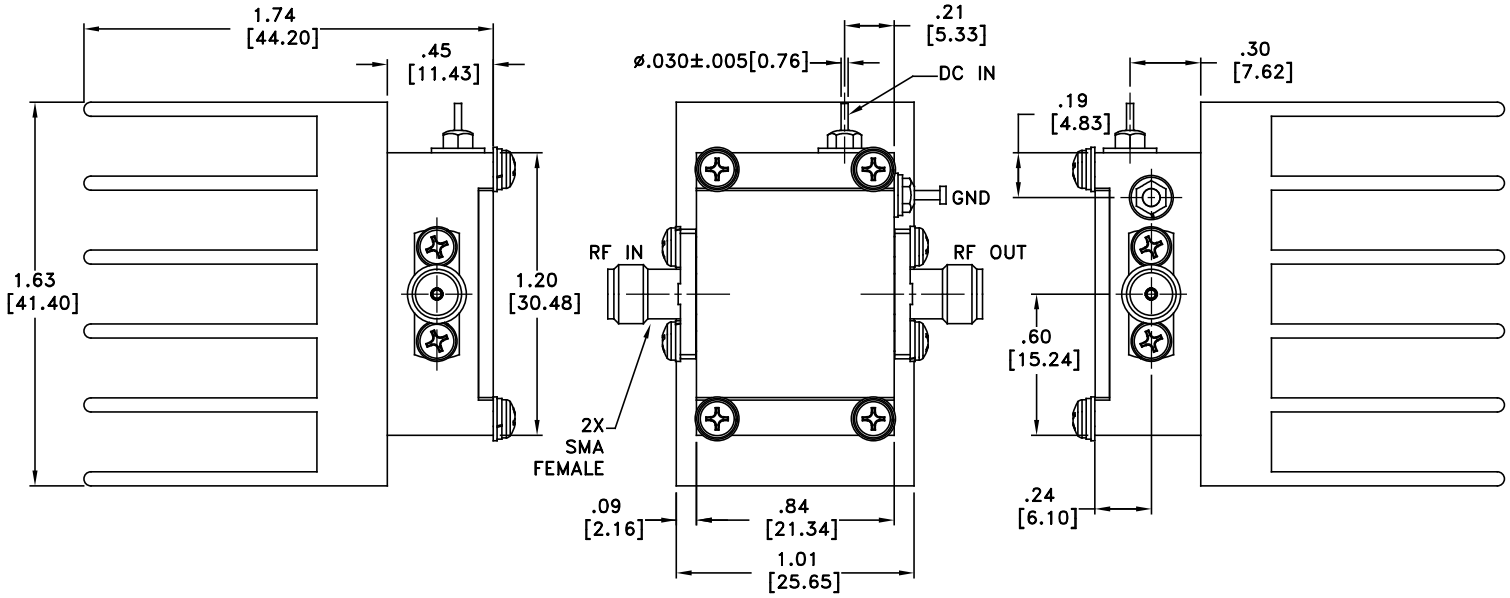
OIP3



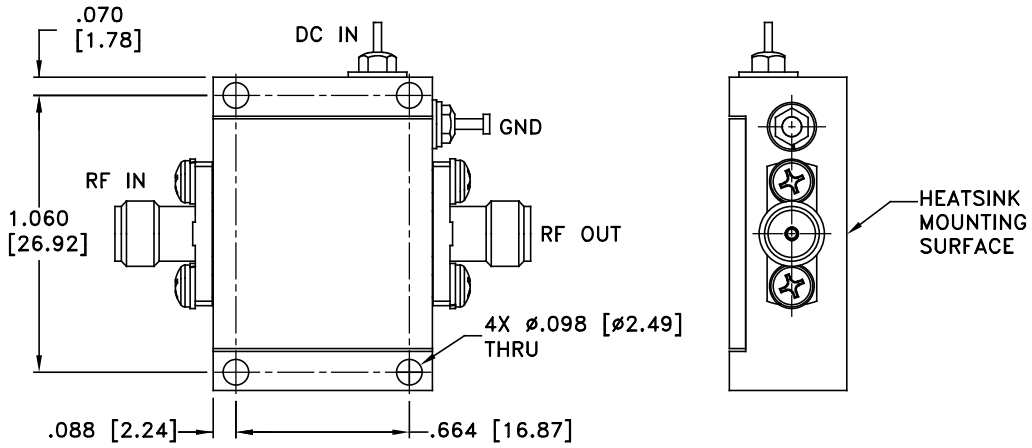
Case Style AV

Outline Dimensions

AV3668



MOUNTING INFORMATION OF MODEL WITHOUT HEATSINK



Notes:
1. Case material: Aluminum
2. Case finish: Gold
3. Heat sink finish: Black anodize

Weight: 60 grams; Without Heatsink 21 grams

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

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