



Mini-Circuits

SUPER ULTRA

Wideband Amplifier

ZVA-183G-S+
ZVA-183GX-S+

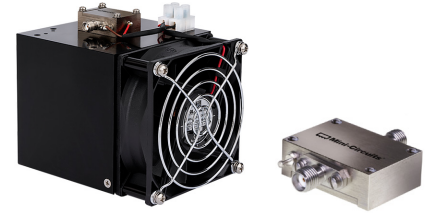
50Ω 0.5 to 18 GHz SMA Female

THE BIG DEAL

- Extremely Wideband, 0.5 to 18 GHz
- Flat Gain, 38 ± 2 dB
- High IP3, +36 dBm
- Medium Power Output, +36 dBm
- +27 dBm P_{OUT}

APPLICATIONS

- Radar and Military
- Test Instrumentation
- Satellite Repeaters
- Communication



Generic photo used for illustration purposes only

Model No.	ZVA-183G-S+	ZVA-183GX-S+▲
Case Style	CP1755	
Connectors	SMA Female	

+RoHS Compliant

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

PRODUCT OVERVIEW

Mini-Circuits' ZVA-183G(X)+ is a Class-A, four-stage, unconditionally stable amplifier providing flat gain over an extremely wide frequency range from 0.5 to 18 GHz. This model is capable of delivering up to $\frac{1}{2}$ W output power at P_{SAT} with low noise and high IP3 supporting a wide range of sensitive, high-dynamic range receiver applications and many systems where high performance over a wide bandwidth is needed. It operates on a +15 V supply and features built-in safety features including protection against reverse bias and immunity to accidental open or short loads. The amplifier comes in a rugged, compact case ($4.18 \times 3.36 \times 3.57$ ") with SMA connectors and an optional heatsink for efficient cooling.

KEY FEATURES

Feature	Advantages
Ultra-Wideband, 0.5 to 18 GHz	Enables a single amplifier to be used in a wide range of applications.
Excellent Gain Flatness, ± 2.0 dB Across Full Frequency Range	Provides consistent performance across its operating frequency, minimizing the need for external equalizing networks in wideband applications.
High Gain, 38 dB Typ.	Reduces the number of gain stages, lowering component count and overall system cost.
Class A Amplifier	Provides good linearity with low signal distortion.
Low Noise and High IP3: •NF, 3 dB Typ. •IP3, +36 dBm Typ.	The combination of low noise and high IP3 makes the ZVA-183G-S+ ideal for use in low-noise receiver front-end (RFE) as it gives the user the advantages of sensitivity and two-tone IM performance at both ends of the dynamic range.
Rugged Design	Built-in protection against reverse bias and accidental open and short loads provides added reliability for demanding operating conditions.

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ELECTRICAL SPECIFICATIONS AT +25 °C

Parameter	Condition (MHz)	ZVA-183G-S+ ZVA-183GX-S+ [▲]			Units
		Min.	Typ.	Max.	
Frequency Range		500		18000	MHz
Gain	500-18000	33	38	43	dB
Gain Flatness	500-18000	-	±2.0	±3.0	dB
Output Power at 1 dB Compression	500-18000	+23	+25	-	dBm
Output Power at 3 dB Compression	500-18000	+25	+27	-	dBm
Noise Figure	500-18000	-	3	5.5	dB
Output Third Order Intercept Point	500-18000	-	+36	-	dBm
Input VSWR	500-18000	-	1.9	3.0	:1
Output VSWR	500-18000	-	2.0	3.0	:1
DC Supply Voltage	-	+14	+15 ²	+16	V
Supply Current ¹	-	-	700	770	mA

1. Power Supply should be capable of delivering 1 A at startup.

2. Recommended Operating Voltage.

[▲] Heatsink not included. Alternative heat sinking and heat removal must be provided by the user to limit maximum baseplate temperature to +85 °C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heatsink to be 1.79 °C/W max.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	ZVA-183G+ -55 °C to +60 °C Ambient
	ZVA-183GX+ -55 °C to +85 °C Baseplate Temp.
Storage Temperature	-65 °C to +150 °C
DC Voltage	+18 V
CW Input RF Power (No Damage)	+10 dBm

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





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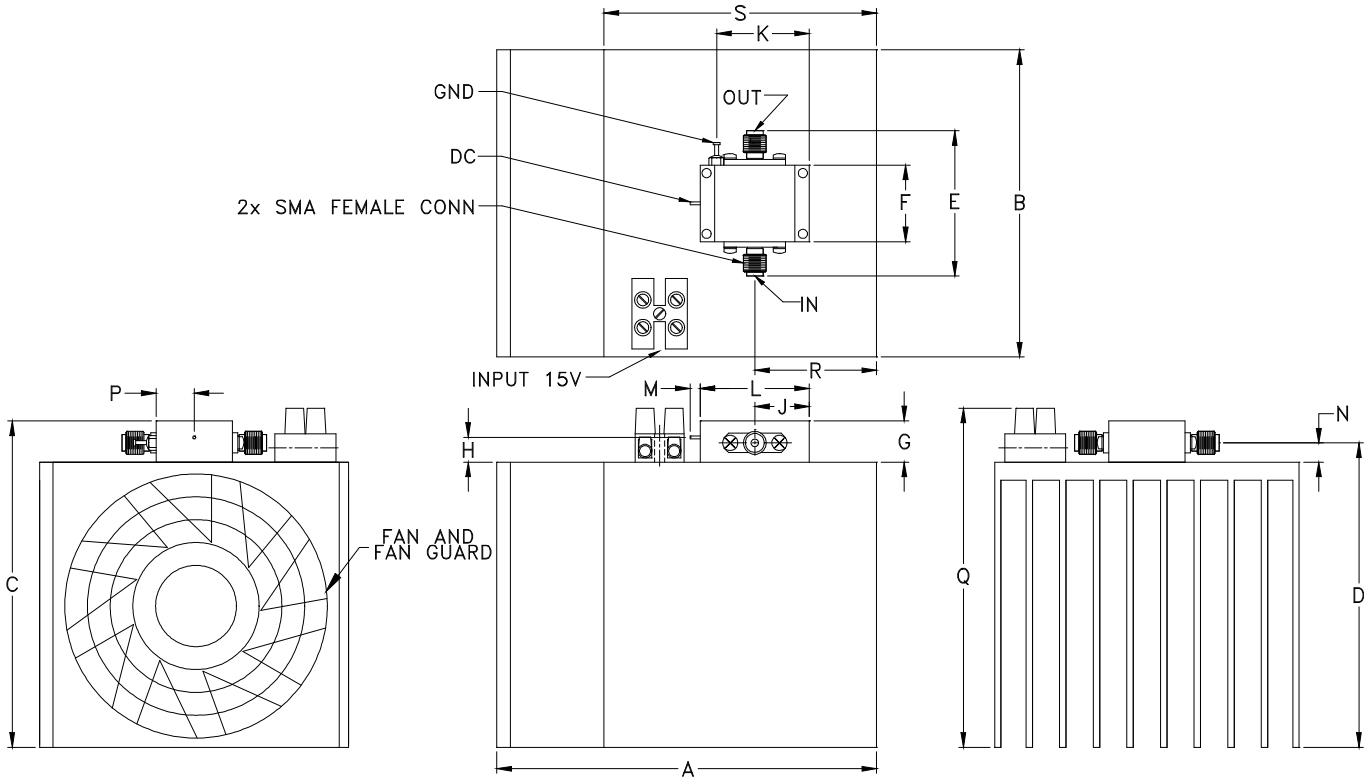
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Wideband Amplifier

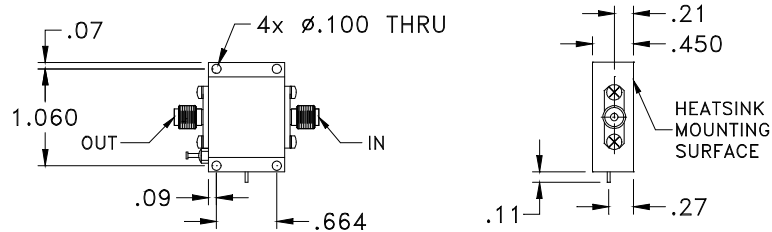
ZVA-183G-S+
ZVA-183GX-S+

50Ω 0.5 to 18 GHz SMA Female

OUTLINE DRAWING FOR MODEL WITH HEATSINK



OUTLINE DRAWING FOR MODEL WITHOUT HEATSINK



OUTLINE DIMENSIONS (INCH/MM)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	wt
4.18	3.36	3.57	3.33	1.59	.840	.45	0.27	.600	1.02	1.200	.11	.21	.420	3.71	1.34	3.00	grams*
106.17	85.34	90.68	84.58	40.39	21.34	11.43	6.86	15.24	25.91	30.48	2.79	5.33	10.67	94.23	34.04	76.20	480

*18.2 grams without heatsink





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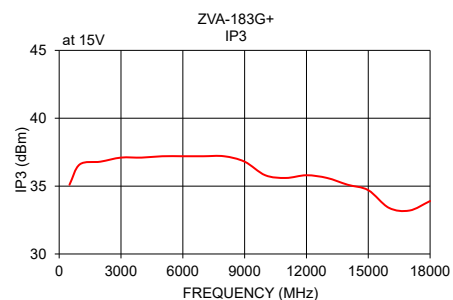
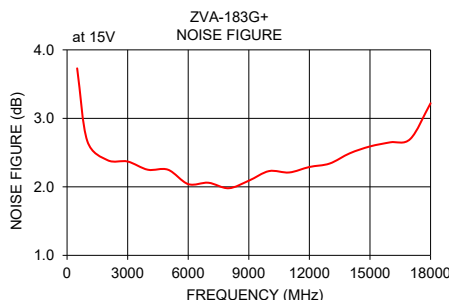
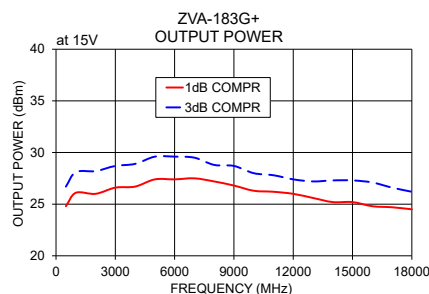
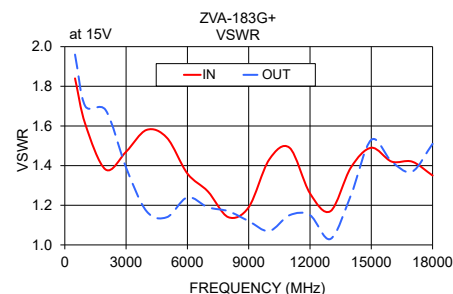
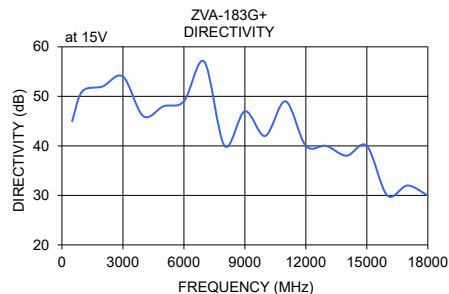
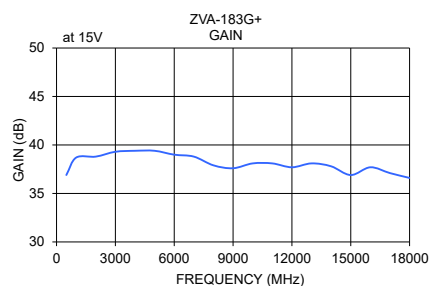
Wideband Amplifier

ZVA-183G-S+
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TYPICAL PERFORMANCE DATA/CURVES

Frequency (MHz)	Gain (dB)	Directivity (dB)	VSWR (:1)		P _{OUT} at 1 dB COMPR. (dBm)	P _{OUT} at 3 dB COMPR. (dBm)	Noise Figure (dB)	IP3 (dBm)
	+15 V	+15 V	IN	OUT	+15 V	+15 V	+15 V	+15 V
500	36.90	45.00	1.84	1.96	24.80	26.70	3.73	35.10
1000	38.70	51.00	1.61	1.70	26.10	28.10	2.67	36.60
2000	38.80	52.00	1.38	1.68	26.00	28.20	2.39	36.80
3000	39.30	54.00	1.47	1.39	26.60	28.70	2.37	37.10
4000	39.40	46.00	1.58	1.17	26.70	28.90	2.25	37.10
5000	39.40	48.00	1.54	1.14	27.40	29.60	2.25	37.20
6000	39.00	49.00	1.36	1.24	27.40	29.60	2.04	37.20
7000	38.80	57.00	1.27	1.19	27.50	29.50	2.06	37.20
8000	37.90	40.00	1.14	1.17	27.20	28.80	1.98	37.20
9000	37.60	47.00	1.19	1.12	26.80	28.70	2.09	36.80
10000	38.10	42.00	1.43	1.07	26.30	28.00	2.23	35.80
11000	38.10	49.00	1.49	1.15	26.20	27.80	2.21	35.60
12000	37.70	40.00	1.26	1.15	26.00	27.40	2.29	35.80
13000	38.10	40.00	1.17	1.03	25.60	27.20	2.34	35.60
14000	37.80	38.00	1.39	1.25	25.20	27.30	2.49	35.10
15000	36.90	40.00	1.49	1.53	25.20	27.30	2.59	34.70
16000	37.70	30.00	1.42	1.42	24.80	27.10	2.65	33.40
17000	37.10	32.00	1.42	1.37	24.70	26.60	2.70	33.20
18000	36.60	30.00	1.35	1.51	24.50	26.20	3.22	33.90



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-Circuits' applicable established test performance criteria and measurement instructions.
- 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



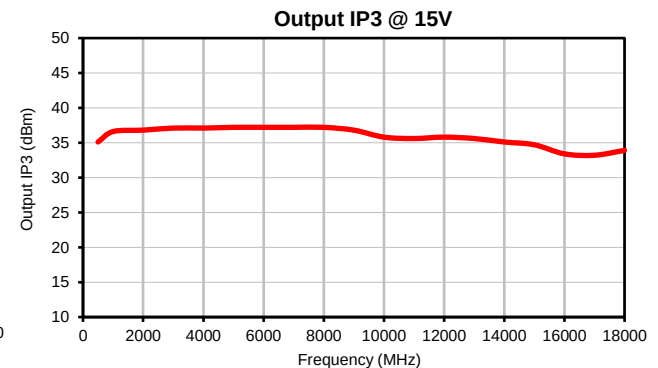
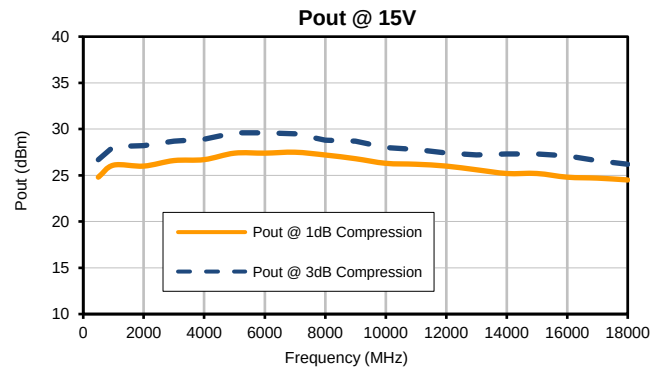
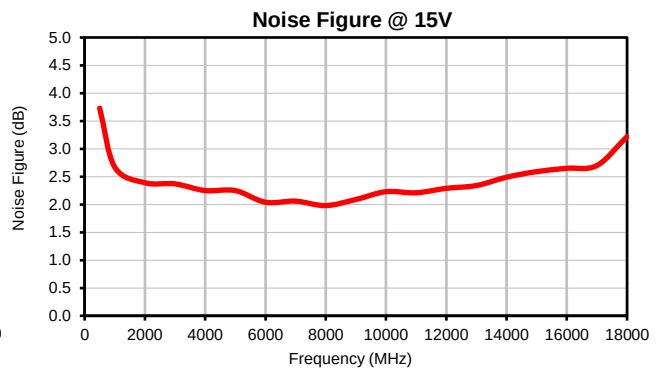
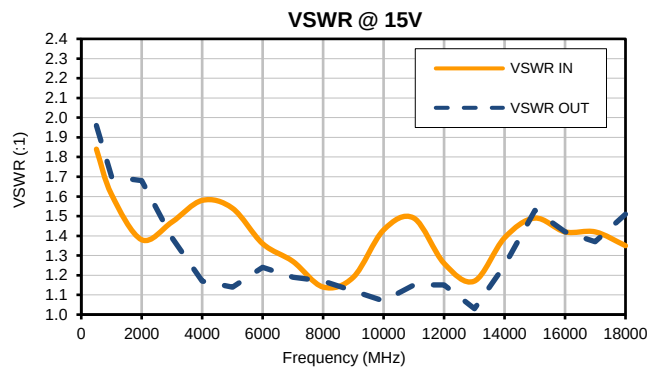
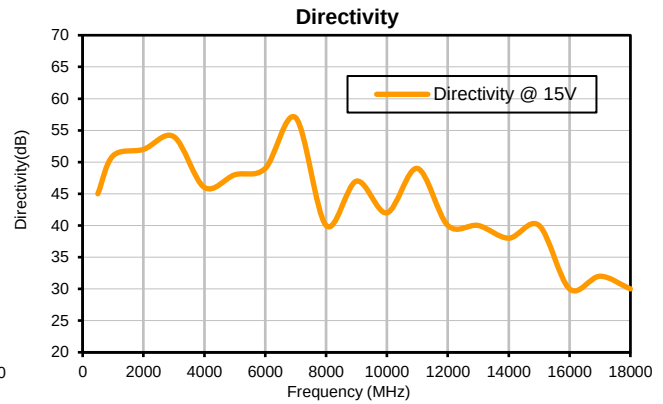
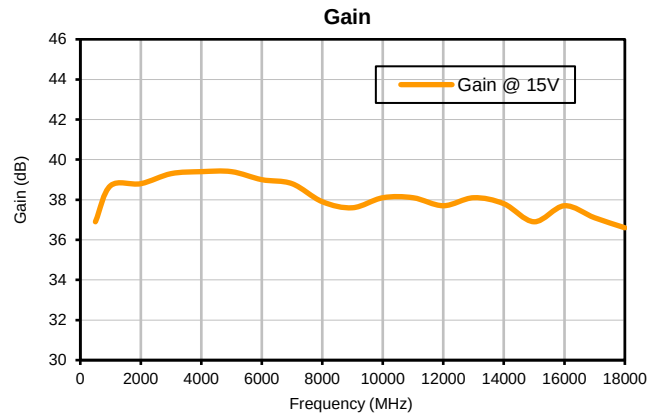
Typical Performance Data

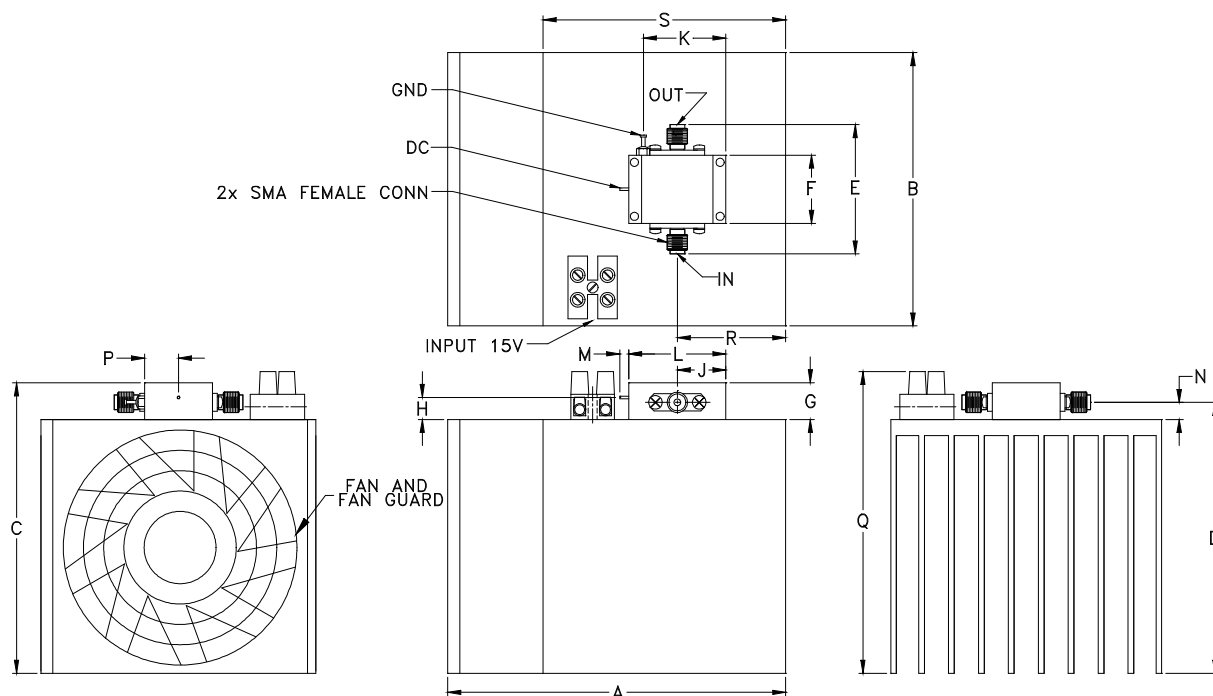
Frequency (MHz)	Gain (dB) 15V	Directivity (dB) 15V	VSWR In (:1) 15V	VSWR Out (:1) 15V	Noise Figure (dB) 15V	Pout at 1dB Compression (dBm) 15V	Pout at 3dB Compression (dBm) 15V	Output IP3 (dBm) 15V
500	36.90	45.00	1.84	1.96	3.73	24.80	26.70	35.10
1000	38.70	51.00	1.61	1.70	2.67	26.10	28.10	36.60
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14000	37.80	38.00	1.39	1.25	2.49	25.20	27.30	35.10
15000	36.90	40.00	1.49	1.53	2.59	25.20	27.30	34.70
16000	37.70	30.00	1.42	1.42	2.65	24.80	27.10	33.40
17000	37.10	32.00	1.42	1.37	2.70	24.70	26.60	33.20
18000	36.60	30.00	1.35	1.51	3.22	24.50	26.20	33.90

Wideband Amplifier

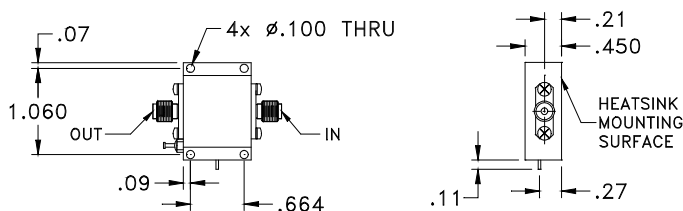
Typical Performance Curves

ZVA-183G+





MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
CP1755	4.18 (106.17)	3.36 (85.34)	3.57 (90.69)	3.33 (84.58)	1.59 (40.39)	.840 (21.34)	.45 (11.43)	.27 (6.86)	.600 (15.24)	1.02 (25.91)	1.200 (30.48)	.11 (2.79)	.21 (5.33)

CASE#	P	Q	R	S	T	WT. GRAMS	WT. WITHOUT HEATSINK GRAMS
CP1755	.420 (10.67)	3.71 (94.23)	1.34 (34.04)	3.00 (85.34)	-- --	480	18.2

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

Notes:

- Case material: Aluminum alloy.
- Case finish: Electroless Nickel.
- Heat sink finish: Black anodize if supplied with heat sink.



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



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RF/IF MICROWAVE COMPONENTS



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	-55° to 85°C base plate temp	Individual Model Data Sheet
Storage Temperature	-65° to 150°C	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107
Vibration (High Frequency)	Category 24, Exposure level figures 514C-17 General use, random, 20-2000Hz, 1 hr per axis	MIL-STD-810, Method 514.5
Mechanical Shock	40Gs,11ms, 18 shocks: 3 each direction), each axis	MIL-STD-810, Method 516-5-II