COAXIAL

X3 Active Frequency Multiplier ZXF90A-3-34X+

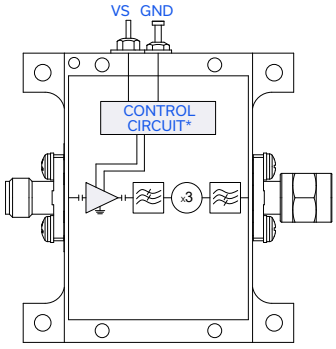
50Ω Output 18 to 36 GHz SMA-Female to 2.92 mm-Male

KEY FEATURES

- Wideband Output, 18 to 36 GHz
- Wide Input Power Range, -3.5to +1.5 dBm
- Excellent Conversion Gain, -5 dB Typ.
- Excellent Fundamental and Harmonic Suppression: F1 < -55 dBc; F2 < -55 dBc; F4 < -35 dBc.
- Wide DC Operating Voltage, +10 to +15 V
- Over Voltage and Reverse Voltage Protected

Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



APPLICATIONS

- 5G MIMO and Back Haul Radio Systems
- Satellite Communications
- Test and Measurement Equipment
- Radar, EW, and ECM Defense Systems

PRODUCT OVERVIEW

Mini-Circuits' ZXF90A-3-34X+ is a wideband active frequency multiplier, converting input frequencies from 6 to 12 GHz into output frequencies from 18 to 36 GHz. Its wide output range makes this model suitable for broadband systems, as well as a wide variety of narrow-band applications. The ZXF90A-3-34X+ utilizes MCLs' own GaAs HBT LVA-273PN-D+ MMIC amplifier to drive MCLs' own GaAs HBT CY3-453-D+ frequency tripler. The fundamental, 2nd and 4th harmonics are suppressed further through use of MCLs' integrated reflectionless filters, XLF-962-DG+ & XHF-1832-DG+. The ultra-low additive phase noise of the LVA-273PN-D+ (-167 dBc/Hz @ 10 kHz Offset) makes this a great LO driver, or source for chipset testing.

ELECTRICAL SPECIFICATIONS[1] AT +25°C AND Zo = 50Ω, UNLESS NOTED OTHERWISE

Parameter		Input Frequency (GHz)	Min.	Typ.	Max.	Unit
Multiplication Factor				3		
Frequency Range, Input (F1)			6		12	GHz
Frequency Range, Output (F3)			18	-	36	GHz
Input Power			-3.5		+1.5	dBm
Conversion Gain[1]		6 - 12	-9	-5		dB
Harmonic Output[2]	F1	6 - 12	-	55	-	dBc
	F2	6 - 12	-	55	-	
	F4	6 - 12	-	35	-	
DC Supply Voltage (Vs)			+10	-	+15	V
DC Current at Vs = +10 V			-	120	175	mA

1. Open and short-circuit loads are not recommended at the modules' output. Ensure proper 50 Ω before turning the module on.
2. Harmonics of input frequency below the power level of F3.

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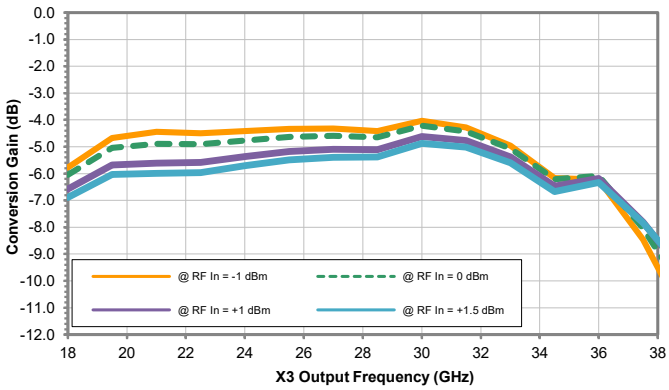
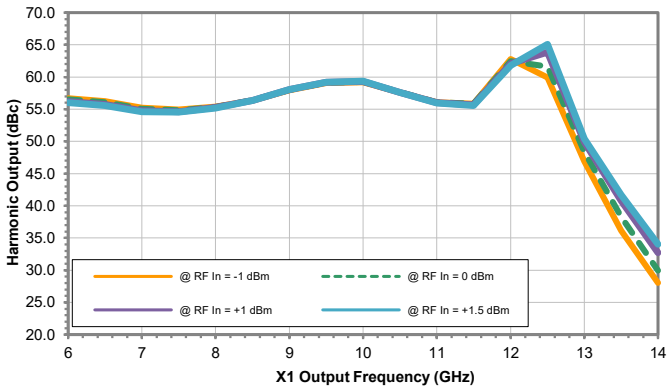
TYPICAL PERFORMANCE CURVES

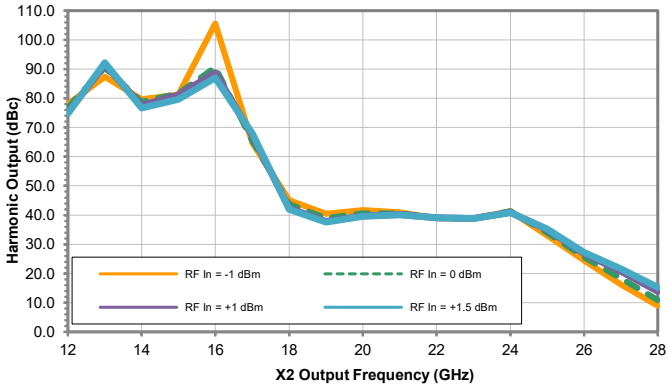
Conversion Gain X3 Output Vs Pin



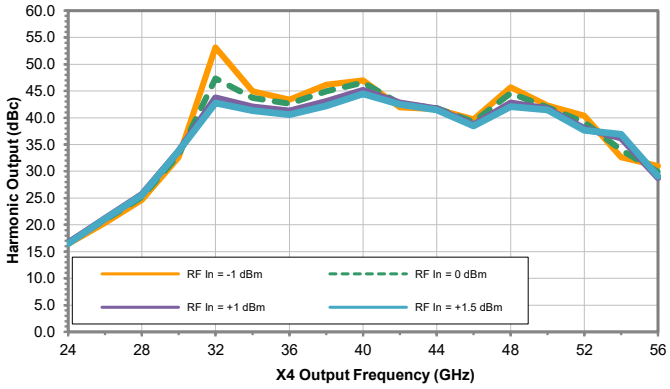
Harmonic X1 Output Vs Pin



Harmonic X2 Output Vs Pin



Harmonic X4 Output Vs Pin



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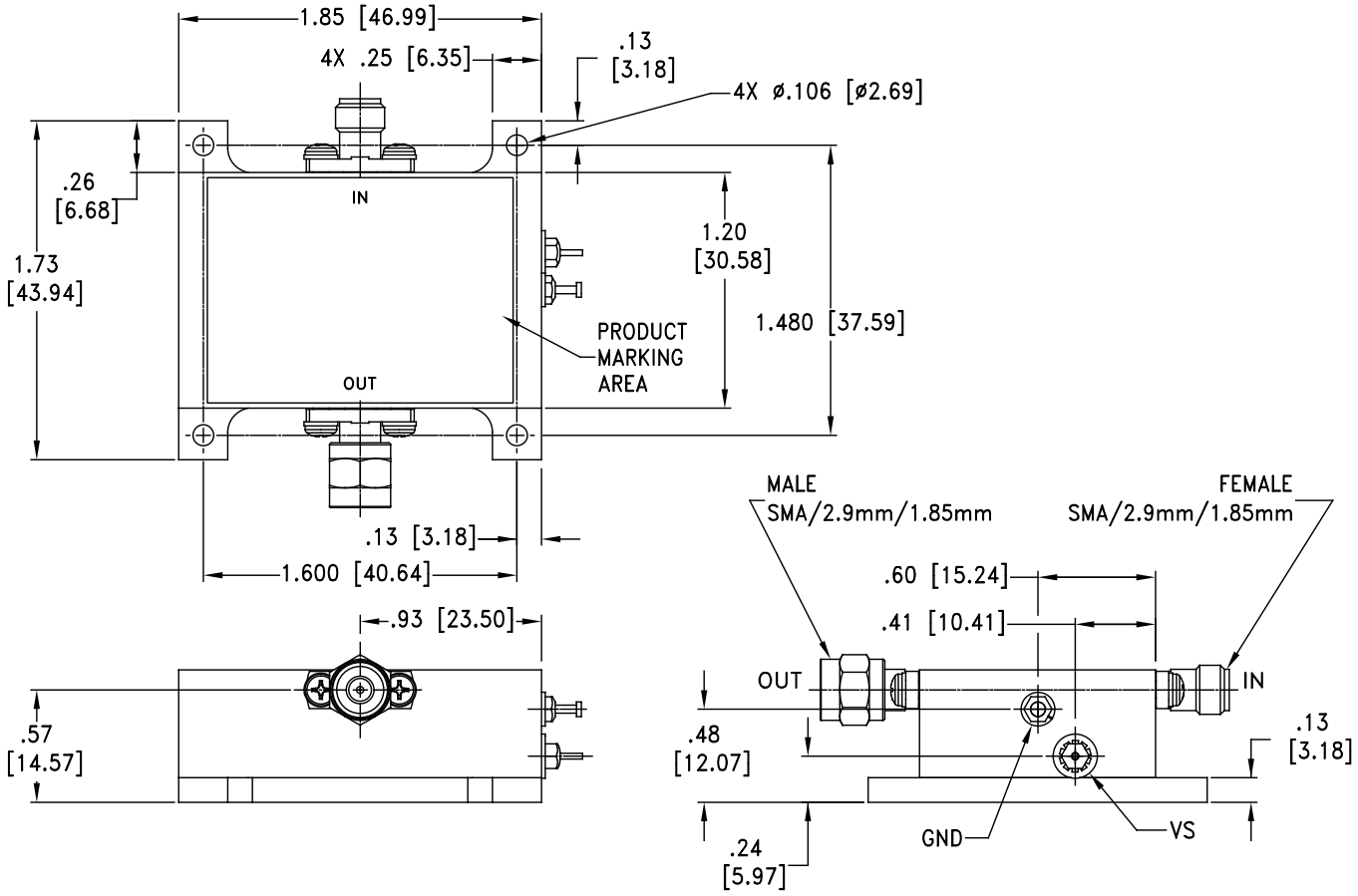
ABSOLUTE MAXIMUM RATINGS[3]

Parameter	Ratings
Operating Temperature	-40°C to +60°C Baseplate
Storage Temperature	-40°C to +85°C
Total Power Dissipation	2 W
RF Input Power[4]	+2 dBm
DC Operating Voltage (Vs)	+16 V

3. Permanent damage may occur if any of these limits are exceeded.
4. Specified under matched 50Ω load.

CASE STYLE DRAWING



Weight: 60 grams
Dimensions are in inches [mm]. Tolerances: 2 Pl.±.03; 3 Pl.±.015 Inch

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ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD.

Performance Data & Graphs	Data Graphs
RoHS Status	Compliant
Environmental Ratings	ENV130
Export Information	EAR99

ORDERING INFORMATION

Model No. Links	ZXF90A-3-34X+
Product Marking	ZXF90A-3-34X+
Case Style	WC3071-8
Connector	SMA-Female to 2.92 mm-Male

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

Frequency Multiplier ZXF90A-3-34X+

Typical Performance Data

Frequency (GHz)		Conversion Gain (dB) at X3 Output			
Rf Input	**X3 Output**	**-1 dBm**	**0 dBm**	+1 dBm	+1.5 dBm
6.0	18.0	-5.8	-6.0	-6.6	-6.9
6.5	19.5	-4.7	-5.0	-5.7	-6.0
7.0	21.0	-4.4	-4.9	-5.6	-6.0
7.5	22.5	-4.5	-4.9	-5.6	-6.0
8.0	24.0	-4.4	-4.8	-5.4	-5.7
8.5	25.5	-4.3	-4.6	-5.2	-5.5
9.0	27.0	-4.3	-4.6	-5.1	-5.4
9.5	28.5	-4.4	-4.6	-5.1	-5.4
10.0	30.0	-4.0	-4.2	-4.6	-4.9
10.5	31.5	-4.3	-4.4	-4.8	-5.0
11.0	33.0	-5.0	-5.1	-5.4	-5.6
11.5	34.5	-6.2	-6.2	-6.5	-6.7
12.0	36.0	-6.2	-6.1	-6.2	-6.3
12.5	37.5	-8.5	-8.0	-7.8	-7.8
13.0	39.0	-11.6	-10.6	-9.9	-9.8
13.5	40.5	-17.9	-16.1	-14.3	-13.7
14.0	42.0	-25.1	-23.4	-21.1	-20.0

Frequency (GHz)		Harmonic Output (dBc) at X1 Output			
Rf Input	**X1 Output**	**-1 dBm**	**0 dBm**	+1 dBm	+1.5 dBm
6.0	6.0	56.7	56.5	56.2	56.0
6.5	6.5	56.2	56.1	55.7	55.6
7.0	7.0	55.2	55.0	54.7	54.6
7.5	7.5	54.9	54.8	54.6	54.5
8.0	8.0	55.4	55.3	55.3	55.2
8.5	8.5	56.3	56.4	56.4	56.4
9.0	9.0	57.9	58.0	58.1	58.0
9.5	9.5	59.1	59.1	59.2	59.2
10.0	10.0	59.2	59.3	59.3	59.3
10.5	10.5	57.6	57.7	57.6	57.6
11.0	11.0	56.1	56.1	56.0	56.0
11.5	11.5	55.9	55.8	55.7	55.6
12.0	12.0	62.8	62.4	62.1	61.8
12.5	12.5	59.9	61.6	63.9	65.1
13.0	13.0	46.9	48.4	49.9	50.4
13.5	13.5	36.2	38.3	40.8	41.7
14.0	14.0	28.0	29.9	32.7	34.0

Note: Harmonics data is presented as the harmonic of input frequency below the power of F3

Typical Performance Data

Frequency (GHz)		Harmonic Output (dBc) at X2 Output			
Rf Input	**X2 Output**	**-1 dBm**	**0 dBm**	+1 dBm	+1.5 dBm
6.0	12.0	78.0	76.7	75.2	74.8
6.5	13.0	87.3	90.5	91.4	92.2
7.0	14.0	79.7	78.8	77.5	76.6
7.5	15.0	81.3	81.6	81.1	79.7
8.0	16.0	105.6	90.6	88.7	87.0
8.5	17.0	64.6	65.4	67.2	67.9
9.0	18.0	45.0	43.7	42.4	41.9
9.5	19.0	40.4	39.0	37.8	37.5
10.0	20.0	41.7	40.6	39.8	39.6
10.5	21.0	40.9	40.5	40.2	40.1
11.0	22.0	39.0	39.1	39.1	39.1
11.5	23.0	38.8	38.8	38.8	38.8
12.0	24.0	41.3	41.3	40.9	40.8
12.5	25.0	32.9	34.0	34.9	35.2
13.0	26.0	24.5	25.6	26.8	27.2
13.5	27.0	16.2	18.3	20.7	21.6
14.0	28.0	9.0	10.9	13.9	15.3

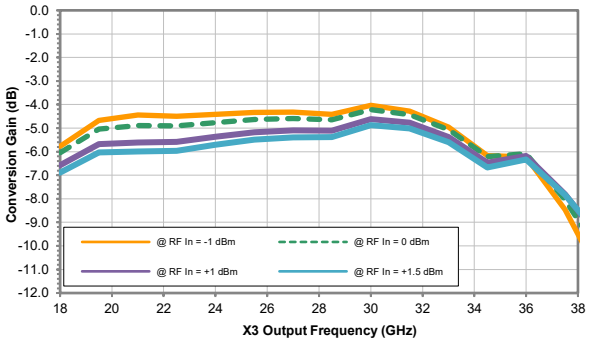
Frequency (GHz)		Harmonic Output (dBc) at X4 Output			
Rf Input	**X4 Output**	**-1 dBm**	**0 dBm**	+1 dBm	+1.5 dBm
6.0	24.0	16.4	16.7	16.6	16.5
6.5	26.0	20.4	20.9	21.2	21.1
7.0	28.0	24.6	25.2	25.6	25.6
7.5	30.0	32.6	33.1	33.7	33.8
8.0	32.0	53.1	47.3	43.7	42.8
8.5	34.0	45.0	43.7	42.0	41.3
9.0	36.0	43.4	42.6	41.2	40.6
9.5	38.0	46.2	44.9	43.0	42.2
10.0	40.0	47.0	46.6	45.1	44.5
10.5	42.0	42.0	42.6	42.8	42.5
11.0	44.0	41.6	41.8	41.7	41.5
11.5	46.0	39.7	39.2	38.7	38.4
12.0	48.0	45.7	44.6	42.8	42.1
12.5	50.0	42.2	42.0	41.7	41.5
13.0	52.0	40.3	39.1	38.0	37.7
13.5	54.0	32.6	34.0	36.2	36.9
14.0	56.0	31.0	29.9	28.8	29.1

Note: Harmonics data is presented as the harmonic of input frequency below the power of F3

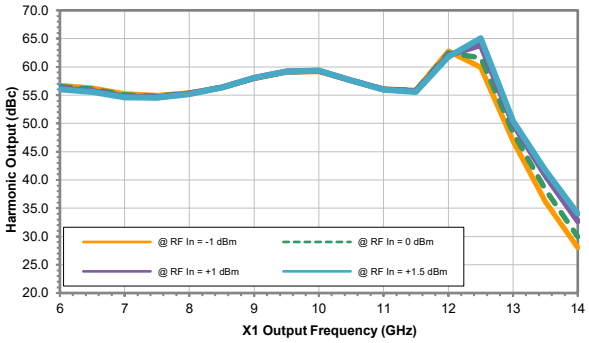
Typical Performance Curves

Note: Harmonics data is presented as the harmonic of input frequency below the power of F3

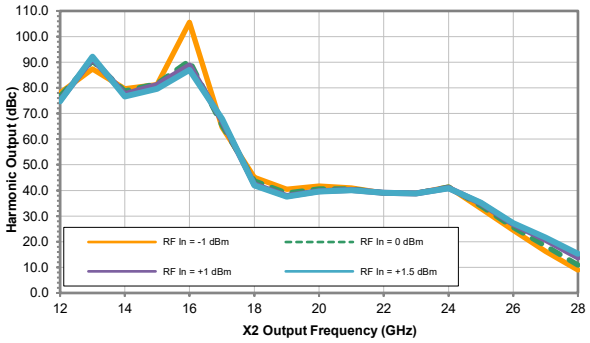
Conversion Gain X3 Output Vs Pin



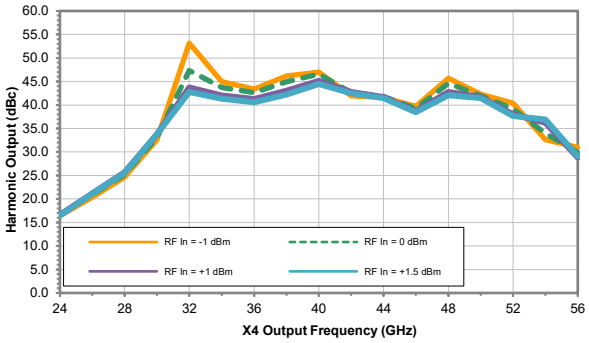
Harmonic X1 Output Vs Pin



Harmonic X2 Output Vs Pin

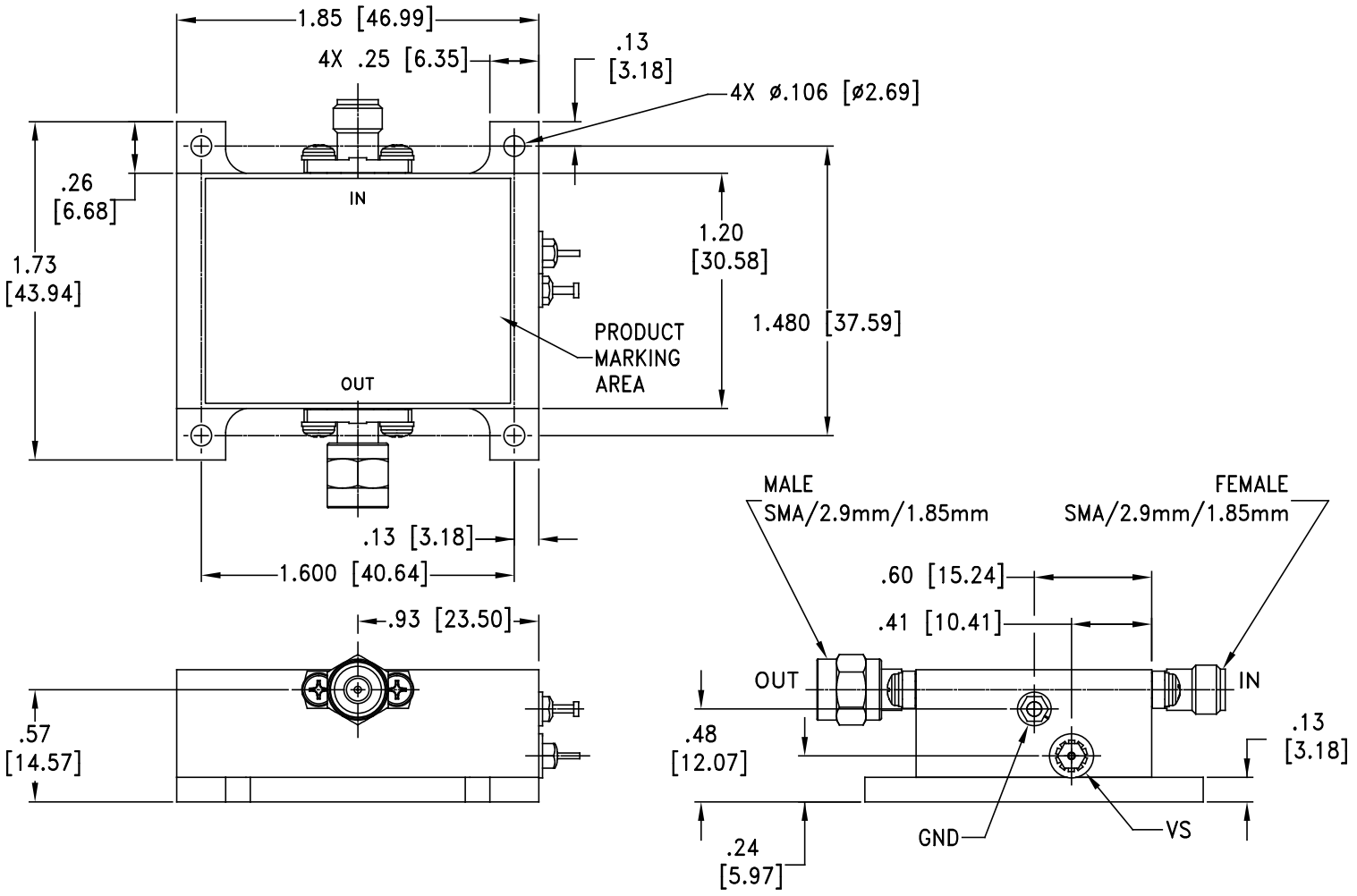


Harmonic X4 Output Vs Pin



Case Style WC

WC3071-8



Weight: 60 grams

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

Notes:
1. Case material: Aluminum alloy
2. Case finish: Gold plated

Mini-Circuits

Environmental Specifications ENV130

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 +60° C Baseplate Temp	Individual Model Data Sheet
Storage Temperature	-40° to +85° C Ambient Environment	Individual Model Data Sheet
Burn-in	(DC on) 72 hours at 25°C	----
Thermal Shock	-40° C to +85°C, 100 cycles	Transition time = 5 mins, Dwell time = 30 mins
Vibration	Random Vibration (non-operating)	MIL-STD-883K, Method 2025, Cond. 1A