

4.5 dB NF Low Phase Noise Amplifier Operating From 1.5 GHz to 5 GHz with 14 dB Gain, 17 dBm P1dB and SMA

FMAM1034 is a low phase noise amplifier that operates across the frequency range from 1.5 GHz to 5 GHz. The design utilizes leading edge GaAs HBT MMIC technology and exhibits ultra-low phase noise of -163 dBc/Hz @ 1 kHz offset frequency. The design also exhibits high dynamic range with typical performance that includes 14 dB of small signal gain, 4.5 dB noise figure, up to +17 dBm of output power at P1dB, +27 dBm output IP3, while using a +7V single DC supply.

The wideband distributed amplifier design input/output ports are internally matched to 50 ohms and are DC blocked. The drop-in package is hermetically sealed with field replaceable SMA connectors and has an operating temperature range of -55°C to +85°C. And for added confidence, this rugged package assembly is designed to meet MIL-STD-883 test conditions for Hermeticity and Temperature Cycle.

This Broadband Low Noise Amplifier Module is part of Fairview Microwave's expanding line of Amplifier offerings. These modules offer very wide Frequency Range coverage and outstanding electrical performance in the band.

Electrical Specifications (TA = +25°C , DC Voltage = 7Vdc , DC Current = 170mA)

Description	Min	Typ	Max	Unit
Frequency Range	1.5		5	GHz
Small Signal Gain		14		dB
Output at 1 dB Compression Point		+17		dBm
Output 3rd Intercept Point		+27		dBm
Noise Figure		4.5		dB
Operating DC Voltage		7	9	Volts
Operating DC Current		170		mA
Operating Temperature Range	-55		+85	°C



Features:

- Low Phase Noise Amplifier
- Wide Frequency Band
- Highly Linear GaAs HBT MMIC Technology
- Phase Noise -163 dBc/Hz @ 1KHz offset
- Gain 14 dB typ
- Output IP3 +27 dBm
- P1dB up to +17 dBm
- Hermetically Sealed Module
- Mil Spec Compliant
- Field Replaceable SMA Connectors
- -55°C to +85°C Operating Temperature

Applications:

- Electronic Warfare
- Microwave Radio
- VSAT
- Radar
- Space Systems
- Test Instrumentation
- Telecom Infrastructure

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Performance by Frequency

Description	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range		1.5 - 5			2.0 - 4.0		GHz
Gain	9	14		11	14		dB
Gain Flatness		±3.5			±1.5		dB
Gain Variation Over Temperature		0.01			0.01		dB/ °C
Noise Figure		4.5			4		dB
Input Return Loss		19			19		dB
Output Return Loss		15			15		dB
Output Power For P1dB	15	17		15	17		dBm
Output Power			22			22	dBm
Output Third Order Intercept (IP3)		27			27		dBm
Phase Noise @ 1 KHz, Pout = +22 dBm		-163			-163		dBc/Hz
Phase Noise @ 10 KHz, Pout = +22 dBm		-171			-171		dBc/Hz
Phase Noise @ 100 KHz, Pout = +22 dBm		-175			-175		dBc/Hz
Supply Current (All Conditions)		170	240		170	240	mA

Mechanical Specifications

Size

Length	1.14 in [28.96 mm]
Width	1.9 in [48.26 mm]
Height	0.56 in [14.22 mm]
Weight	0.3966 lbs [179.89 g]
Connector Option	Field Replaceable
Input Connector	SMA Female
Output Connector	SMA Female

Environmental Specifications

Temperature

Operating Range	-55 to +85 deg C
Storage Range	-65 to +150 deg C

Temperature Cycling	MIL-STD-883, Method 101C, Cond B
Hermetic Seal	Gross Leak MIL-STD-883 Method 1014C1/Fine Leak MIL-STD-883, Method 1014A2, 5 x 10 ⁻⁸ atm cc
ESD Sensitivity	ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in ESD Workstation.



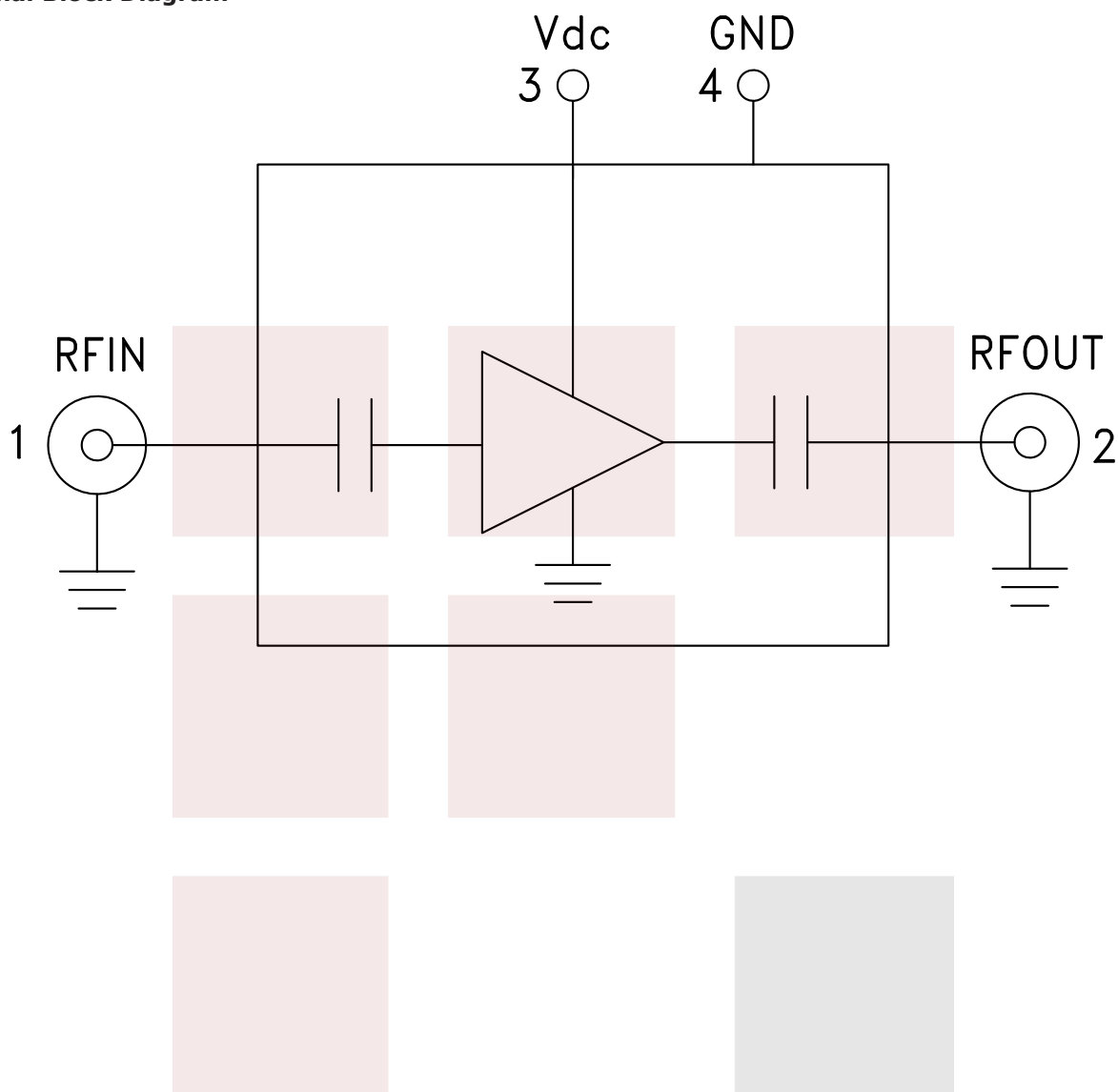
Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

Notes:

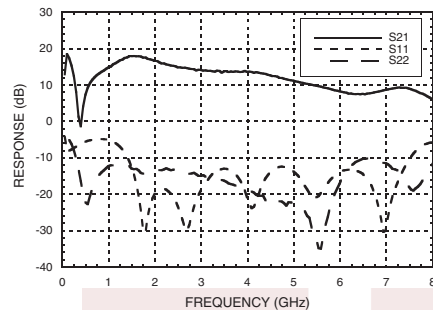
- Values at 25 °C, sea level

Functional Block Diagram

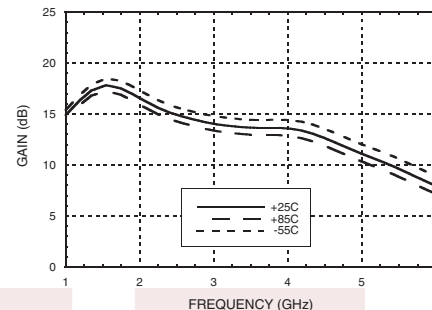


Typical Performance Data

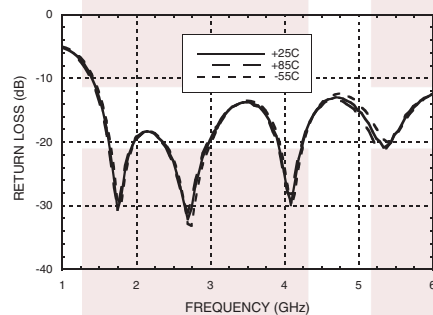
Gain & Return Loss



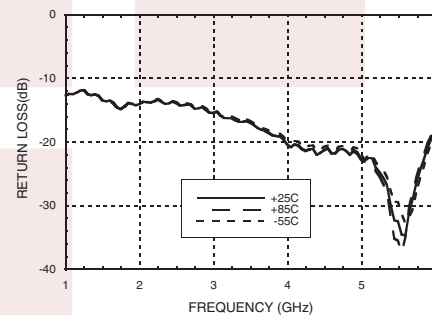
Gain vs. Temperature



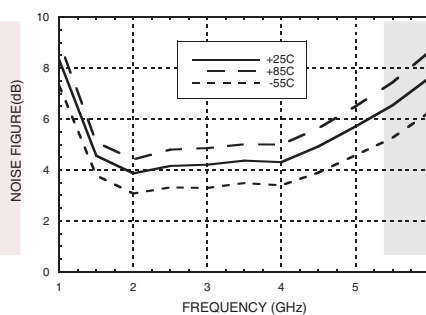
Input Return Loss vs. Temperature



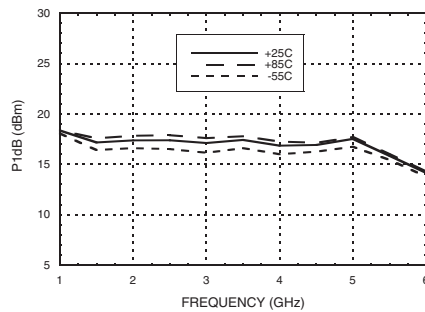
Output Return Loss vs. Temperature



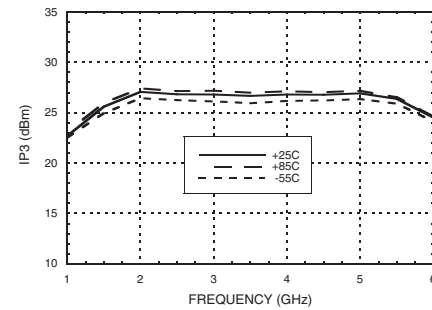
Noise Figure vs. Temperature



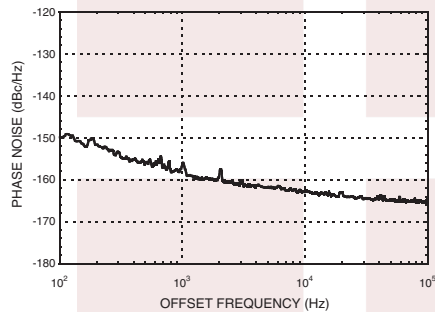
Output P1dB vs. Temperature



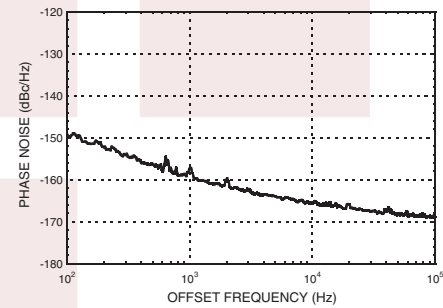
Output IP3 vs. Temperature



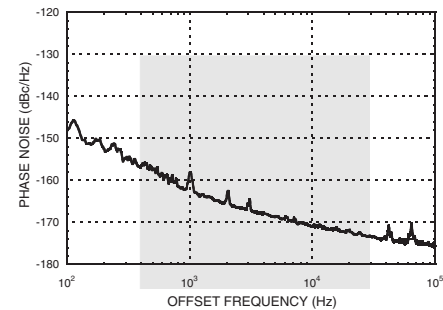
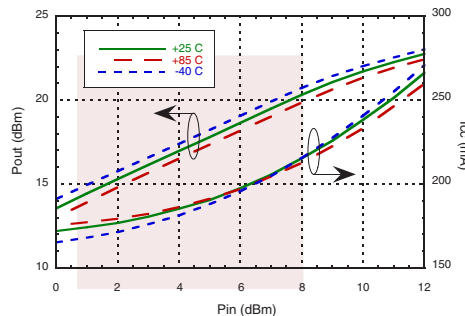
Phase Noise at Pout = +10 dBm @ 3 GHz



Phase Noise at Pout = P1dB @ 3 GHz



Pout & Icc vs. Temperature

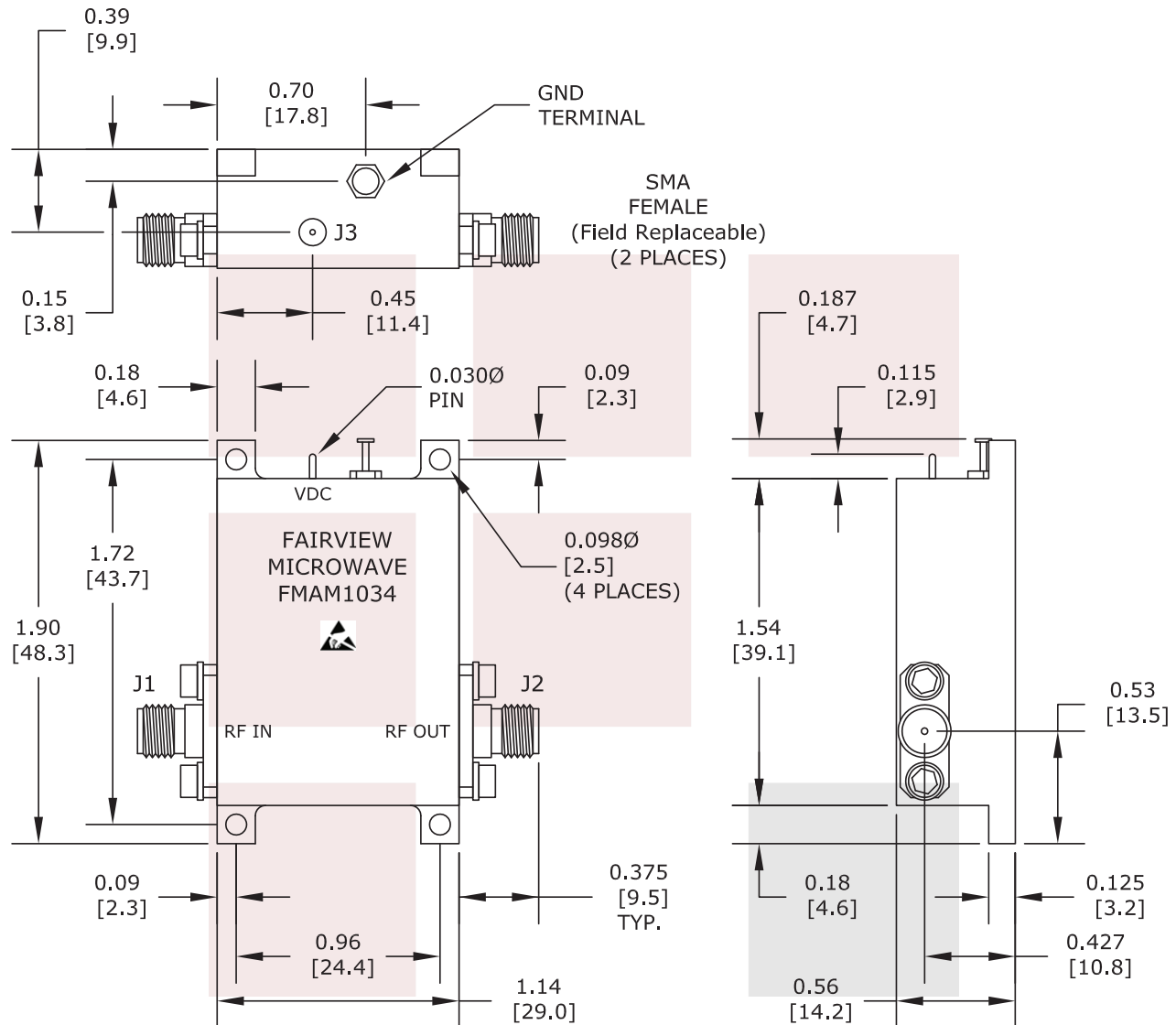


4.5 dB NF Low Phase Noise Amplifier Operating From 1.5 GHz to 5 GHz with 14 dB Gain, 17 dBm P1dB and SMA from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Allen, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [4.5 dB NF Low Phase Noise Amplifier Operating From 1.5 GHz to 5 GHz with 14 dB Gain, 17 dBm P1dB and SMA FMAM1034](https://www.fairviewmicrowave.com/4.5db-nf-low-phase-noise-amplifier-14db-fmam1034-p.aspx)

URL: <https://www.fairviewmicrowave.com/4.5db-nf-low-phase-noise-amplifier-14db-fmam1034-p.aspx>

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NOTE:
HEAT SINK REQUIRED FOR PROPER OPERATION,
UNIT IS COOLED BY CONDUCTING TO HEAT SINK.

FAIRVIEW MICROWAVE INC. ALLEN, TX 75013 WWW.FAIRVIEWMICROWAVE.COM		NOTES: 1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL. 2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME. 3. DIMENSIONS ARE IN INCHES [mm].			
TITLE 4.5 dB NF Low Phase Noise Amplifier Operating From 1.5 GHz to 5 GHz with 14 dB Gain, 17 dBm P1dB and SMA		DWG NO FMAM1034		CAGE CODE 3FKR5	
CAD FILE	070816	SHEET	SCALE	N/A	SIZE A 2233