

2.5 dB NF Input Protected Low Noise Amplifier,
Operating from 26.5 GHz to 40 GHz with
35 dB Gain, 11 dBm P1dB and 2.92mm



FMAM63021

Features

- Ka Band Low Noise Amplifier
- Frequency Range 26.5 GHz to 40 GHz
- GaAs pHEMT MMIC Semiconductor Technology
- DC Blocking Capacitors on Input/Output RF Ports
- Small Signal Gain 35 dB
- 2.5 dB Noise Figure
- Output P1dB +11.0 dBm
- Maximum RF Input Power +10 dBm
- Nominal DC Voltage +12 Vdc
- DC Current 110 mA
- 50 Ohm Design
- -40°C to +85°C Operating Temperature
- 2.92mm Female Connectors
- Rugged Mil Grade Aluminum Package Design

Applications

- Military & Commercial Communication Systems
- Microwave Radio Systems
- Radar Systems
- Test & Measurement
- Research & Development
- RF Wideband Front Ends

Description

The FMAM63021 is a Low Noise Ka Band Amplifier that covers a wide frequency range from 26.5 to 40 GHz. The 50 ohm 2 gain stage design uses GaAs pHEMT MMIC semiconductors with series DC blocking capacitors on the input/output RF ports. Impressive typical performance includes 35 dB small signal gain with excellent gain flatness, 2.5 dB noise figure, and output P1dB of +11.0 dBm. The amplifier requires a single +12 Vdc Supply, and has internal voltage regulation. The rugged Mil Grade aluminum package supports K-female connectors, DC feedthru pin, and has an operational temperature range of -40°C to +85°C. Absolute maximum RF input power is +10 dBm.

Electrical Specifications (TA = +25°C , DC Voltage = +12Vdc , DC Current = 110mA)

Description	Min	Typ	Max	Unit
Frequency Range	26.5		40	GHz
Small Signal Gain	32	35	37	dB
Gain Flatness		2	2.5	dB
Gain Variance at OTR*		2		dB
Output at 1 dB Compression Point*	+9	+11		dBm
Output 3rd Intercept Point*	+16	+20		dBm
Noise Figure* (26.5 GHz to 40 GHz)		2.5	3	dB
Input VSWR*		1.7:1	2.5:1	
Output VSWR*		1.7:1	2.5:1	
Reverse Isolation*		45		dB
Spurious			-70	dBc
Input Power (CW)			+10	dBm
Operating DC Voltage	+10	+12	+15	Volts
Operating DC Current	90	110	140	mA
Operating Temperature Range	-40		+85	°C

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Absolute Maximum Rating

Parameter	Rating
DC Voltage	+18V
RF Input Power	+10dBm
Storage Temperature	-55~+125°C
Operating Temperature	-40~+85°C



ESD Sensitive Material, Transport material in
Approved ESD bags. Handle only in approved
ESD Workstation.

Mechanical Specifications

Size

Length	1.5 in [38.1 mm]
Width	1 in [25.4 mm]
Height	0.4 in [10.16 mm]
Weight	0.061 lbs [27.67 g]
Input Connector	2.92mm Female
Output Connector	2.92mm Female

Environmental Specifications

Temperature

Operating Range	-40 to +85 deg C
Storage Range	-55 to +125 deg C

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

Plotted and Other Data

Notes:

- Values at 25 °C, sea level

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Amplifier Power-up Precautions

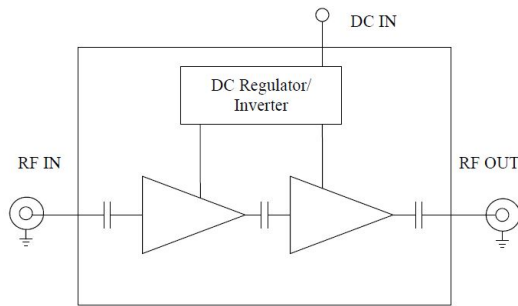
- 1.) Confirm that proper ESD precautions and controls are always in place before handling any Amplifier module.
- 2.) Confirm adequate thermal management is in place to effectively dissipate heat away from the Amplifier package. The Amplifier operational baseplate temperature must be within the operational temperature range stated in the Amplifier datasheet. Depending on the design and thermal requirements, using a heatsink with cooling fan is always recommended for safe reliable operation. A heat sink without a cooling fan may also be used. Damage caused from overheating will void the warranty.
- 3.) Confirm adequate system grounding is established. The DC power supply and Amplifier must have a common ground in order to operate properly.
- 4.) Power Amplifiers may require additional DC Current when initially powered-up. Depending on the design, the input current draw could range from an additional 10% to 100% above the maximum rated DC current of the Amplifier. This varies based on product part number.
- 5.) Confirm the DC power supply, if limited, is set to allow for additional start-up current that's rated for the Power Amplifier.
- 6.) Confirm the system is designed and calibrated for 50 ohms. Any impedance mismatch may cause performance issues.
- 7.) Perform a CALIBRATION (if required) with the loads before connecting the Amplifier to the Network Analyzer to ensure proper performance.
- 8.) Use a fixed attenuator between the signal source and input port of the Amplifier to optimize the input VSWR match.
- 9.) Confirm the input power level at the input port of the amplifier does not exceed the maximum rated limit for input power (as stated in the Amplifier datasheet).
 P_{in} for Small Signal Gain = P1dB-SSG-10 dB
 P_{in} for P1dB = P1dB-SSG+1 dB
- 10.) Confirm the Network Analyzer is always connected to the Amplifier first before DC power is applied to the Amplifier.
- 11.) As long as the input and output ports of the amplifier are connected to a 50Ohm load and RF signal power is applied, the Amplifier can be powered up with DC voltage.
- 12.) Confirm the Amplifier output load is matched for a 50 Ohm impedance and will not exceed the maximum rated VSWR or Return Loss limit for the Amplifier. Exceeding the maximum rated VSWR or Return Loss limit will result in reflected signal power that could damage the Amplifier and void the warranty.
- 13.) **Power Amplifier connected to an Antenna for signal transmission** - It's strongly recommended to use a high power fixed attenuator pad or an Isolator between the output port of the Amplifier and input port to the antenna. Any reflected signal power due to impedance mismatch will likely damage the Amplifier and void the warranty.
- 14.) The attenuator or isolator used at the output port of the Amplifier must be rated to handle the output power level and operational frequency band of the amplifier.

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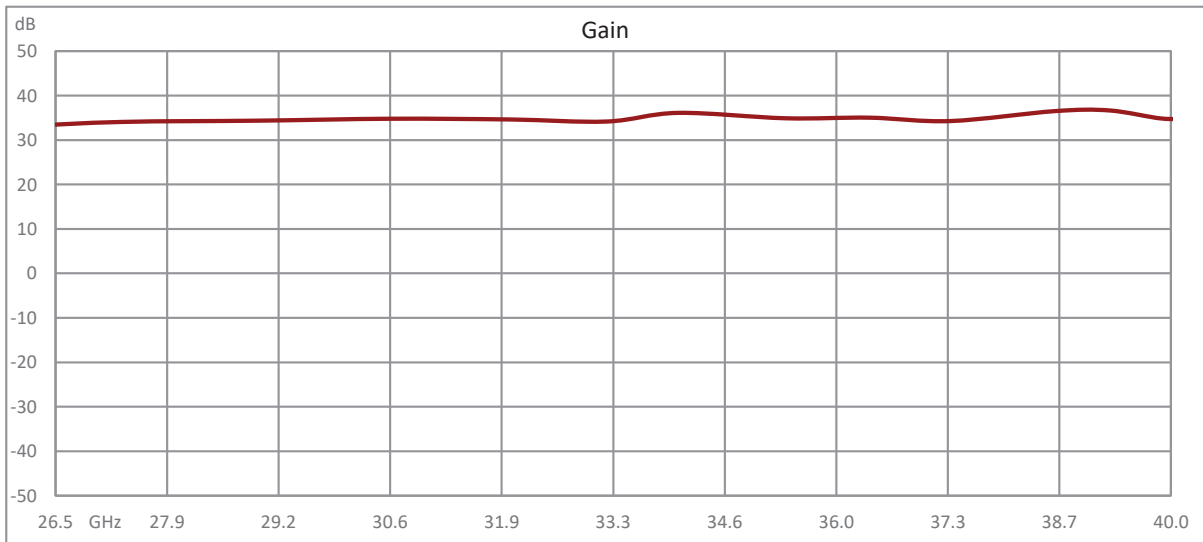


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Functional Block Diagram



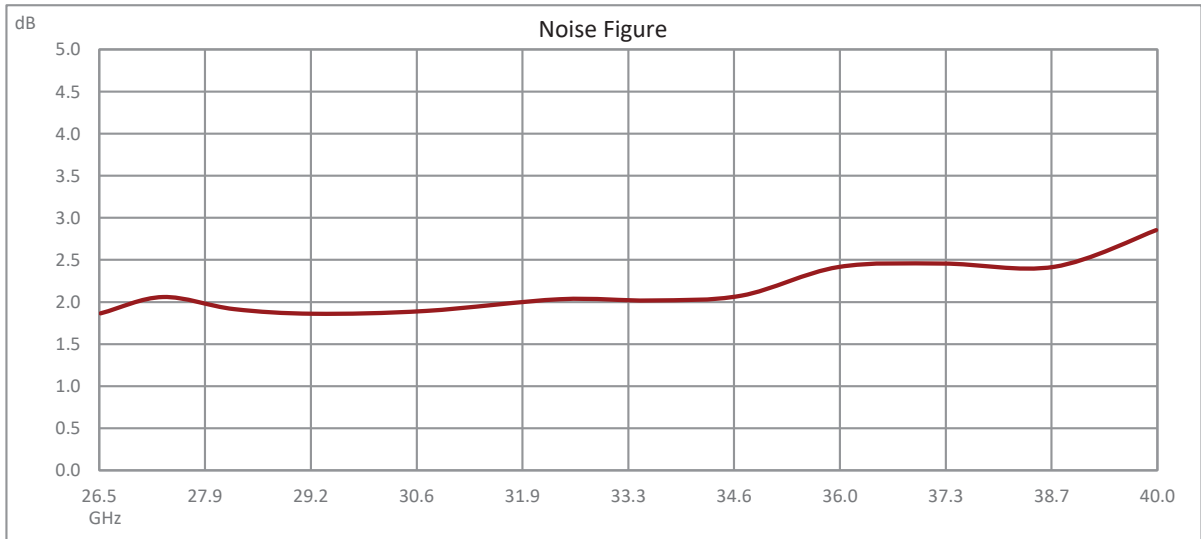
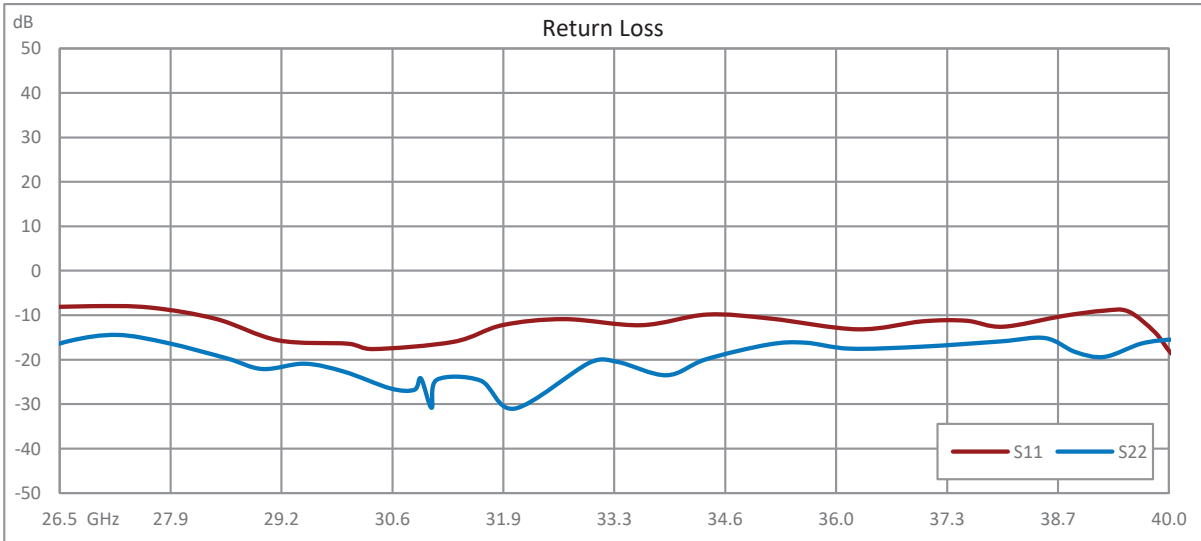
Typical Performance Data



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2.5 dB NF Input Protected Low Noise Amplifier, Operating from 26.5 GHz to 40 GHz with 35 dB Gain, 11 dBm P1dB and 2.92mm 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 Lewisville, Texas. Fairview Microwave is RF on-demand.

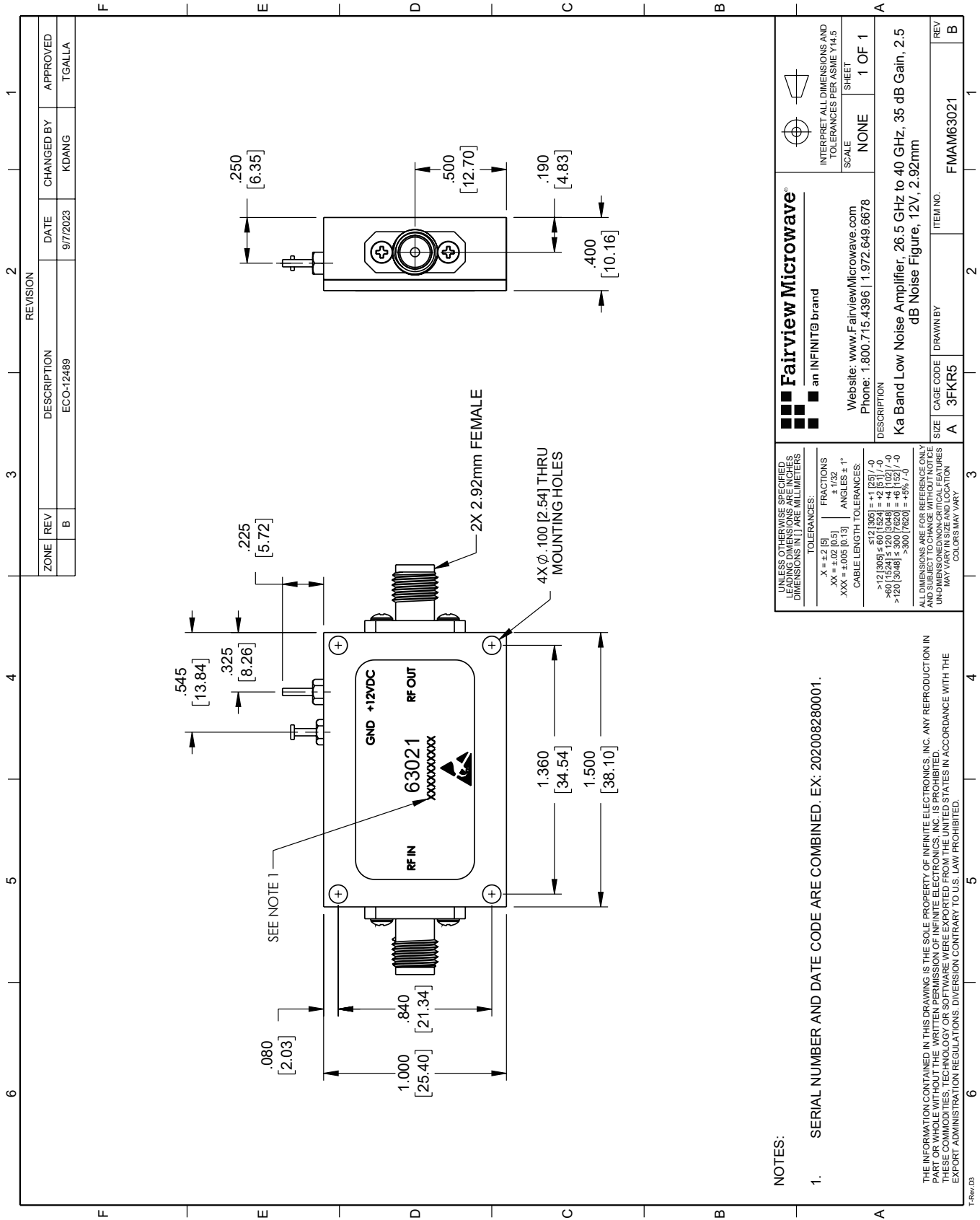
For additional information on this product, please click the following link: [2.5 dB NF Input Protected Low Noise Amplifier, Operating from 26.5 GHz to 40 GHz with 35 dB Gain, 11 dBm P1dB and 2.92mm FMAM63021](https://www.fairviewmicrowave.com/2.5db-nf-low-noise-amplifier-35db-fmam63021-p.aspx)

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FMAM63021 CAD Drawing

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Fairview Microwave®
an INFINITI® brand

Website: www.FairviewMicrowave.com
Phone: 1.800.715.4396 | 1.972.649.6678

DESCRIPTION: Ka Band Low Noise Amplifier, 26.5 GHz to 40 GHz, 35 dB Gain, 2.5 dB Noise Figure, 12V, 2.92mm

UNLESS OTHERWISE SPECIFIED, LEADING DIMENSIONS ARE IN INCHES. DIMENSIONS IN [] ARE MILLIMETERS.

TOLERANCES:
 .X = ±.2 [5]
 .XX = ±.02 [0.5]
 .XXX = ±.005 [0.13]
 FRACTIONS ± 1/32
 ANGLES ± 1°
 CABLE LENGTH TOLERANCES:
 <12 [305] ±.60 [15.24] = ±.2 [5] / -0
 >12 [305] ±.60 [15.24] = ±.2 [5] / -0
 >40 [1524] ±.120 [30.48] = ±.4 [10.27] / -0
 >120 [3048] ±.300 [76.20] = ±.9 [22.86] / -0

ALL DIMENSIONS ARE FOR REFERENCE ONLY. UNDIMENSIONED NON-CRITICAL FEATURES MAY VARY IN SIZE AND LOCATION. COLORS MAY VARY.

INTERPRET ALL DIMENSIONS AND TOLERANCES PER ASME Y14.5

SCALE: NONE

SHEET: 1 OF 1

CAGE CODE: 3FKR5

ITEM NO.: FMAM63021

REV: B