Fairview Microwave
an INFINITE brand

FMAM63017
DATA SHEET

1.7 dB NF Input Protected Low Noise Amplifier, Operating from 30 MHz to 3 GHz with 30 dB Gain, 15 dBm P1dB and SMA

The FMAM63017 is an Input Protected Low Noise RF amplifier operating across a broad octave bandwidth from 30 MHz to 3000 MHz and is rated up to 1 Watt RF input power handling. The 50 ohm design uses a PIN Diode limiter circuit on the input stage and 2 enhancement mode pHEMT transistor gain stages, along with series DC blocking capacitors on the input/output RF ports. Impressive typical performance includes 30 dB small signal gain with excellent gain flatness, 1.7 dB noise figure, and an output P1dB of +15 dBm. The amplifier requires a single +12 Vdc Supply, and has internal voltage regulation and low DC power consumption. The rugged Mil Grade aluminum package supports SMA female connectors, DC feedthru pin, and has an operational temperature range of-40°C to +85°C.

Electrical Specifications (TA = +25°C , DC Voltage = +12Vdc , DC Current = 80mA)

Description	Min	Typ	Max	Unit
Frequency Range	0.03		3	GHz
Small Signal Gain	28	30	33	dB
Gain Flatness		±0.5	±1	dB
Gain Variance at OTR*		1.25		dB
Output at 1 dB Compression Point	+13	+15		dBm
Output 3rd Intercept Point	+24	+28		dBm
Noise Figure		1.7	2	dB
Input VSWR		1.5:1	1.75:1	
Output VSWR		1.5:1	1.75:1	
Reverse Isolation	40	45		dB
Spurious			-70	dBc
Input Power (CW)			+30	dBm
Operating DC Voltage	+10	+12	+13	Volts
Operating DC Current	65	80	95	mA
Operating Temperature Range	-40		+85	°C

*OTR= Base Plate Operating Temperature Range

Absolute Maximum Rating

Parameter	Rating
DC Voltage	+15V
RF Input Power	+30dBm
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.

Features:

- Input Protected Low Noise Amplifier
- Frequency Range 30 MHz to 3000 MHz
- 1 Watt Input Power Handling
- PIN Diode Limiter and Enhancement Mode pHEMT Semiconductor Technology
- DC Blocking Capacitors on the Input/Output RF Ports
- Small Signal Gain 30 dB
- 1.7 dB Noise Figure
- Output P1dB +15 dBm
- Nominal DC Voltage +12Vdc
- DC Current 80 mA
- 50 Ohm design
- -40°C to +85°C Operating Temperature
- SMA 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

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Mechanical Specifications

Size

Length	1.5 in [38.1 mm]
Width	0.85 in [21.59 mm]
Height	0.375 in [9.53 mm]
Input Connector	SMA Female
Output Connector	SMA 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

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.

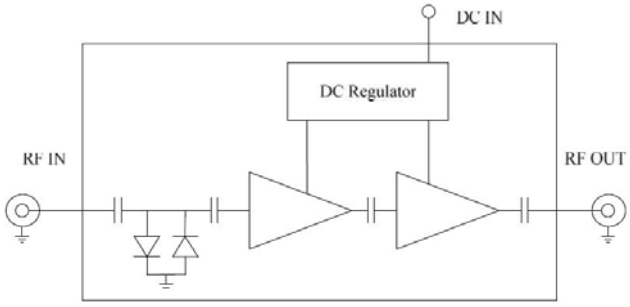
11.) As long as the input and output ports of the amplifier are connected to a 50Ohm load and RF signal power is applied, the Amplifier can be powered up with DC voltage.

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.

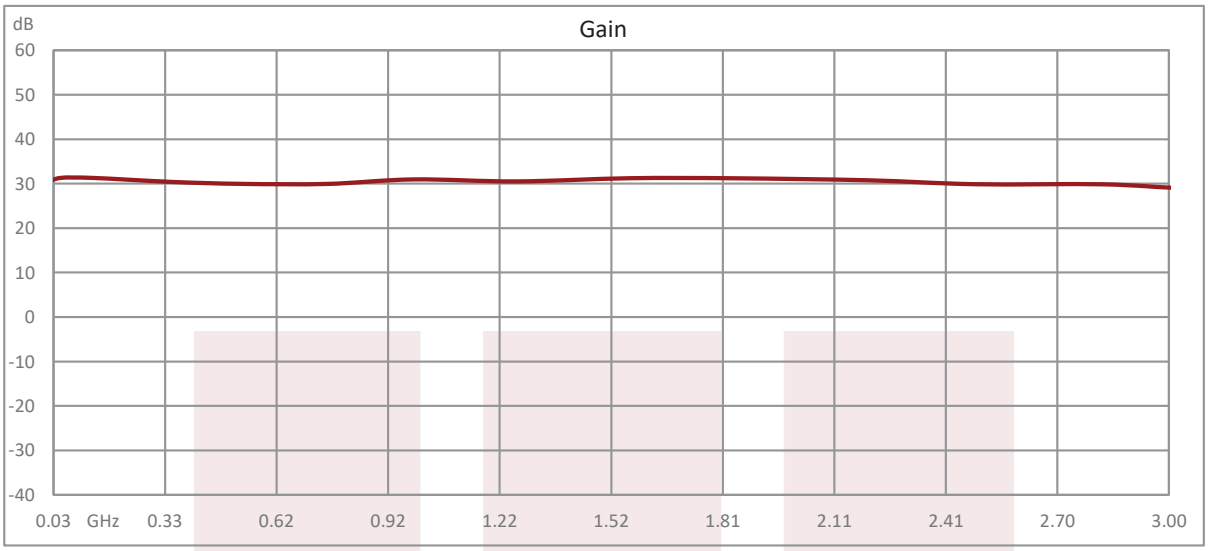
13.) **Power Amplifier connected to an Antenna for signal transmission** - It's strongly recommended to use a high power fixed attenuator pad or an Isolator between the output port of the Amplifier and input port to the antenna. Any reflected signal power due to impedance mismatch will likely damage the Amplifier and void the warranty.

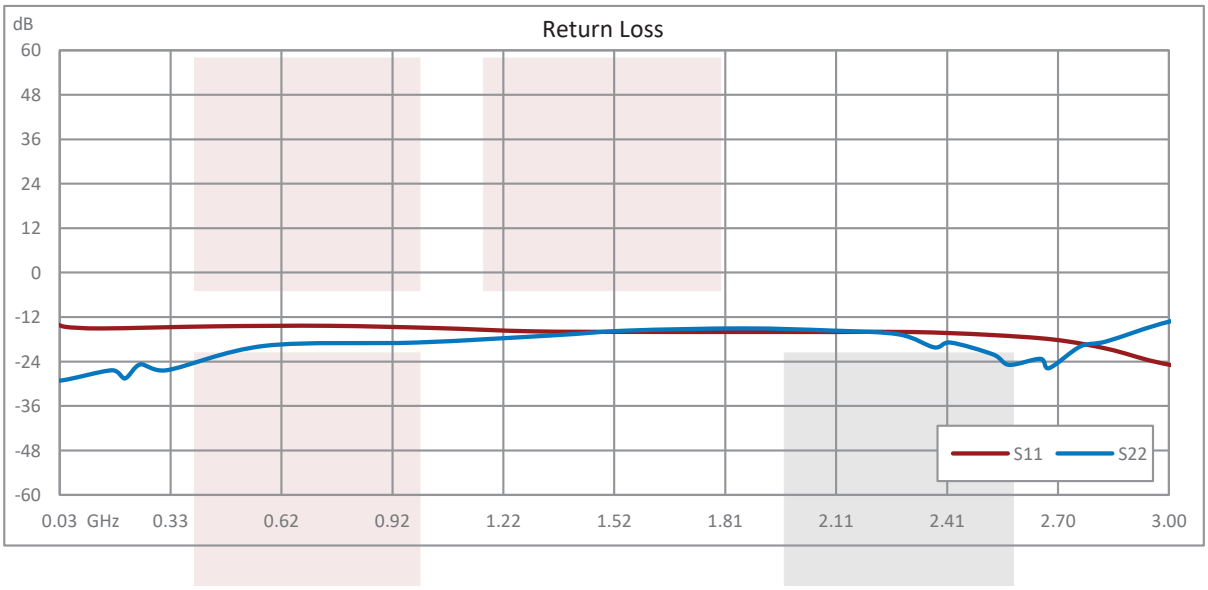
14.) The attenuator or isolator used at the output port of the Amplifier must be rated to handle the output power level and operational frequency band of the amplifier.

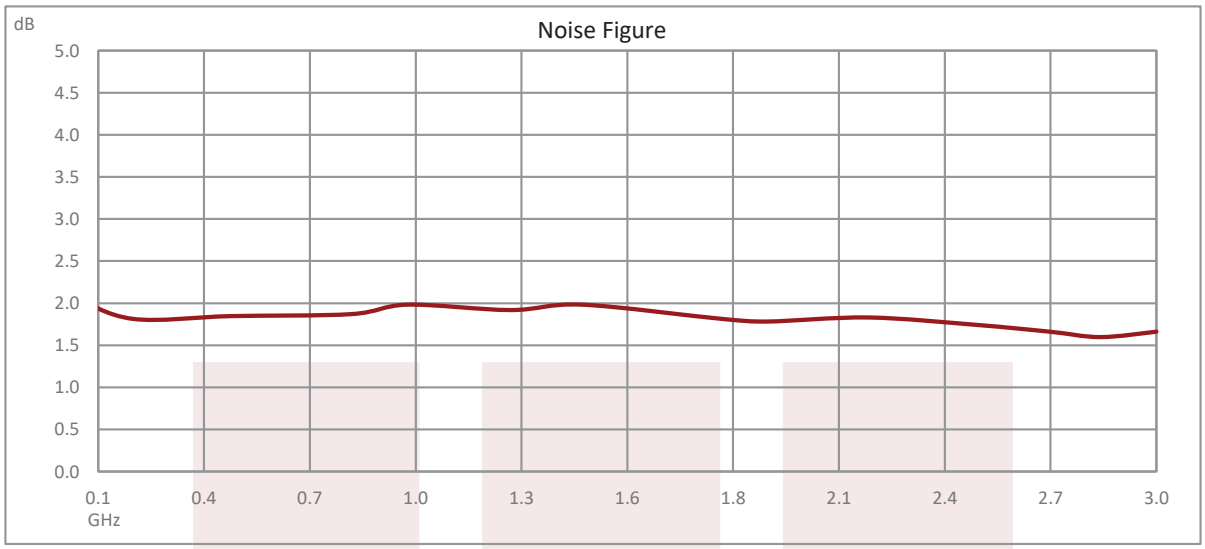
Functional Block Diagram



Typical Performance Data





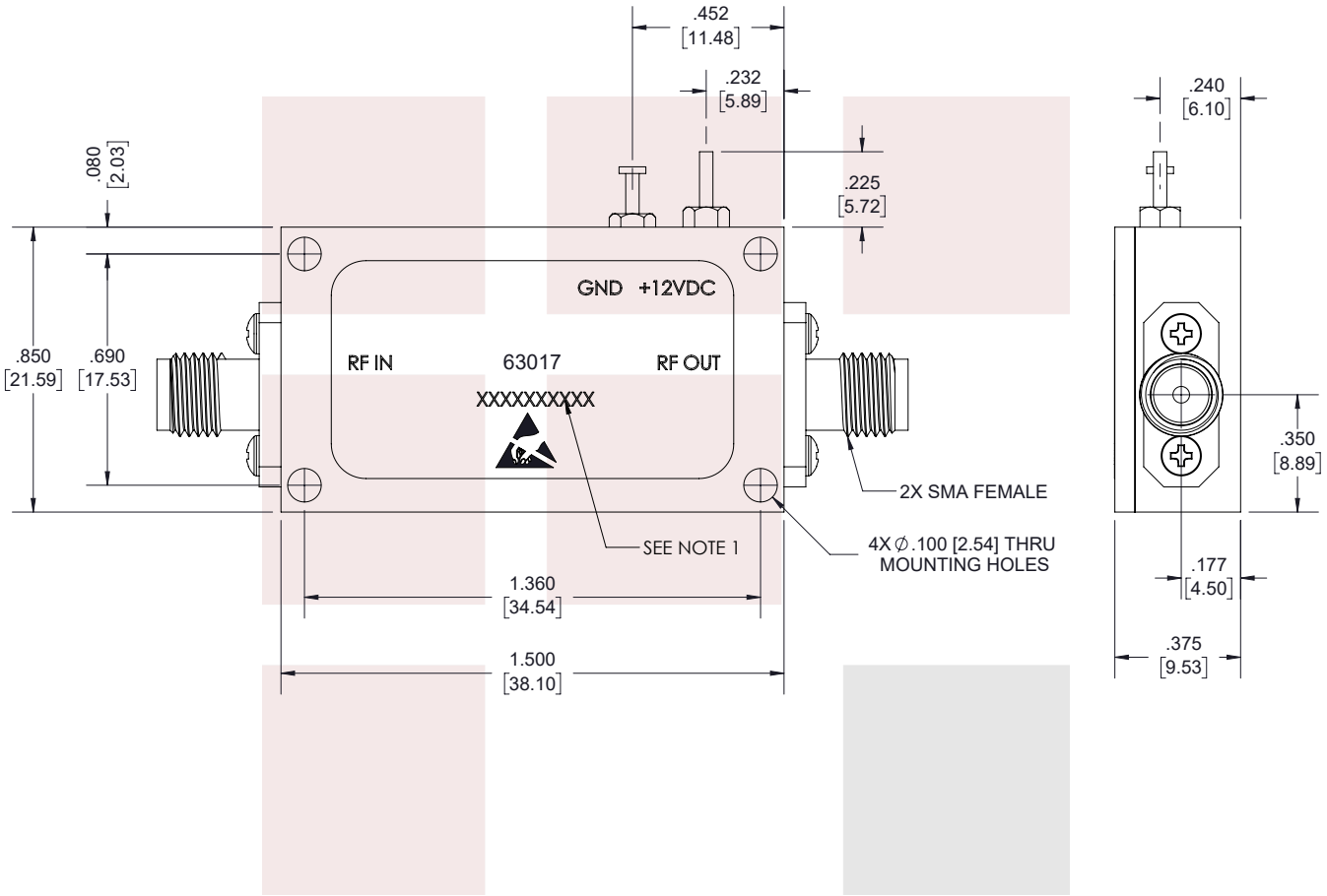


1.7 dB NF Input Protected Low Noise Amplifier, Operating from 30 MHz to 3 GHz with 30 dB Gain, 15 dBm P1dB and SMA from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Lewisville, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: 1.7 dB NF Input Protected Low Noise Amplifier, Operating from 30 MHz to 3 GHz with 30 dB Gain, 15 dBm P1dB and SMA FMAM63017

URL: https://www.fairviewmicrowave.com/1.7db-nf-low-noise-amplifier-30db-fmam63017-p.aspx

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	07/12/2021	TGALLA



NOTES:

1. SERIAL NUMBER AND DATE CODE ARE COMBINED. EX: 202008280001.

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TITLE

1.7 dB NF Input Protected Low Noise Amplifier, Operating from 30 MHz to 3 GHz with 30 dB Gain, 15 dBm P1dB and SMA

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

TOLERANCES:

.X = ± .2 [5.08]
.XX = ± .02 [.51]
.XXX = ± .005 [.13]
FRACTIONS ± 1/32
ANGLES ± 1°

CABLE LENGTH (L) TOLERANCES:

L ≤ 12 [305] = +1 [25] / -0
12 [305] < L ≤ 60 [1524] = +2 [51] / -0
60 [1524] < L ≤ 120 [3048] = +4 [102] / -0
120 [3048] < L ≤ 300 [7620] = +6 [152] / -0
300 [7620] < L = +5%L / -0

ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

THIRD-ANGLE PROJECTION

SHEET	OF
1	1

SCALE: N/A

SIZE	CAGE CODE	DRAWN BY	ITEM NO.	REV
A	3FKR5	MVEERAPPAN	FMAM63017	A

T-Rev.D