Sales: 408-778-9952 | General: 408-778-4200 | Fax: 408-778-4300
Sales & Customer Support: sales@markimicrowave.com
Tech Support: support@markimicrowave.com

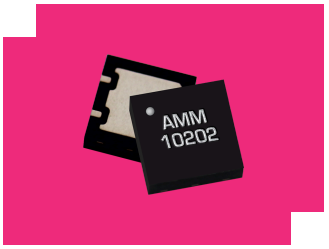
AMM-10202PSM

15-50 GHz GaAs Surface Mount LO Driver Amplifier

DEVICE OVERVIEW

General Description

The AMM-10202PSM is a surface-mount LO driver amplifier that is designed to provide sufficient LO drive for an H or S diode mixer such as the MM1-1850HSM or MM1-1850SSM across temperature with input power from 0-10 dBm. The AMM-10202PSM provides high 23 dB gain, +19 dBm saturated output power, and +24 dBm OIP3. This amplifier offers a compact, stable, wideband LO driver solution. The AMM-10202PSM is packaged in a compact 4mm package for surface mount integration onto printed circuit boards.



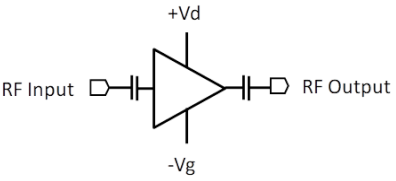
Features

- High 23 dB gain
- 15-50 GHz broadband performance
- +19 dBm output power
- Compact 4mm package

Applications

- SATCOM
- Radar
- Mobile test and measurement equipment
- 5G transceivers
- Optimal LO driver amp for Marki S-diode mixers

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification
AMM-10202PSM	15-50 GHz GaAs Surface Mount LO Driver Amplifier	DFN	REACH RoHS	Released	3A001.b.2.d
EVB-AMM-10202P	Evaluation Board, AMM-10202PSM, 15-50 GHz GaAs Surface Mount LO Driver Amplifier	EVB	REACH RoHS	Released	-

Table Of Contents

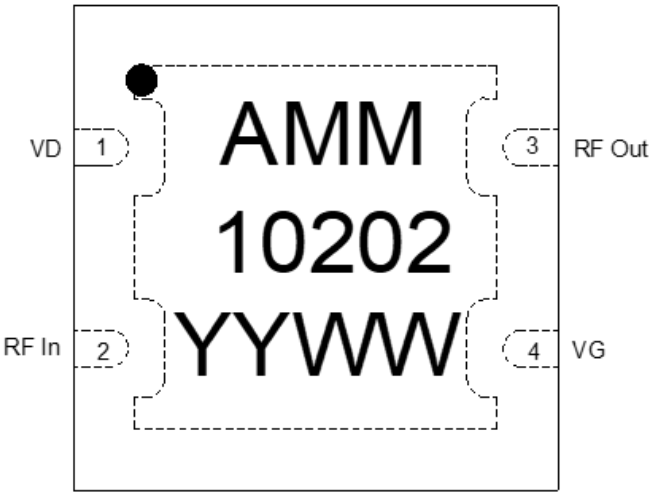
Revision History

Revision Code	Revision Date	Comment
-	2025-07-23	Initial Release
A	2026-02-13	MTTF Table Added.

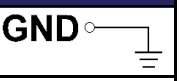
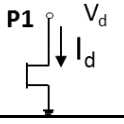
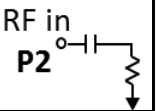
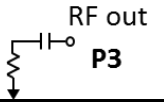
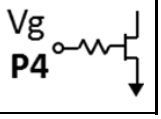
Port Configuration and Functions

Port Diagram

A top-down (x-ray) view of the AMM-10202PSM's DFN package is shown below.



Port Functions

Port	Function	Description	DC Equivalent Circuit
GND	Ground	Bottom side must be connected to a DC/RF ground potential with high thermal and electrical conductivity.	
Pin 1	Positive DC Supply Vd	Pin 1 provides +2V to +4V DC voltage and drain current to the amplifier. Negative voltage must be supplied to Pin 4 before turning on the positive supply voltage.	
Pin 2	RF Input	Pin 2 is the RF input of the amplifier. It is internally DC blocked.	
Pin 3	RF Output	Pin 3 is the RF output of the amplifier. It is internally DC blocked.	
Pin 4	Negative DC Supply Vg	Pin 4 provides -0.15V to -0.35V of DC voltage. This must be turned on before turning on the positive supply voltage to Pin 1.	

Specifications

Absolute Maximum Ratings

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If these limits are exceeded, the device may be inoperable or have a reduced lifetime.

Parameter	Maximum Rating	Unit
Continuous Power Dissipation (PDISS)	1.2	W
Maximum Operating Temperature	85	°C
Maximum Storage Temperature	150	°C
Max Junction Temperature for MTTF > 1E6 Hours	175	°C
Minimum Operating Temperature	-40	°C
Minimum Storage Temperature	-65	°C
Negative Bias Current (Pin 4)	10	µA
Negative Bias Voltage (Pin4)	-2	V
Positive Bias Current (Pin1) [1]	300	mA
Positive Bias Voltage (Pin1)	4	V
RF Input Power	15	dBm
Thermal Resistance, θJC	78.5	°C/W

Maximum Continuous Power Dissipation indicates power that will maintain an MTTF > 1E6 hours under typical operating conditions at max operating temperature. Specific use cases may differ, contact support for more detailed information.

[1] Maximum current draw is 400 mA when not limited by continuous power dissipation rating

FIT and MTTF Table

T (°C)	λ (TIF)	MTTF (hr)	MTTF (yr)
105	2,441.45	4.10E+05	47
85	310.48	3.22E+06	368
55	8.79	1.14E+08	12,992
25	0.12	8.24E+09	941,063

Package Information

Parameter	Details	Rating
ESD	< 250 Volts	HBM Class 0
Dimensions	-	4 x 4 mm
Moisture Sensitivity Level	-	MSL 1

Recommended Operating Conditions

The Recommended Operating Conditions indicate the limits, inside which the device should be operated, to guarantee the performance given in Electrical Specifications. Operating outside these limits may not necessarily cause damage to the device, but the performance may degrade outside the limits of the Electrical Specifications. For limits, above which damage may occur, see Absolute Maximum Ratings.

Parameter	Min	Nominal	Max	Unit
Ambient Temperature	-55	25	85	°C
Positive DC Current	100	200	300	mA
Positive DC Voltage	2	4	4	V
Negative DC Voltage	-0.15	-0.25	-0.35	V

Sequencing Requirements

Turn-on Procedure:
1. Apply <-0.4V to Vg (Pin 4)
2. Apply Vd (Pin 1)
3. Increase Vg towards -0.15V until Id=200mA

Turn-off Procedure:

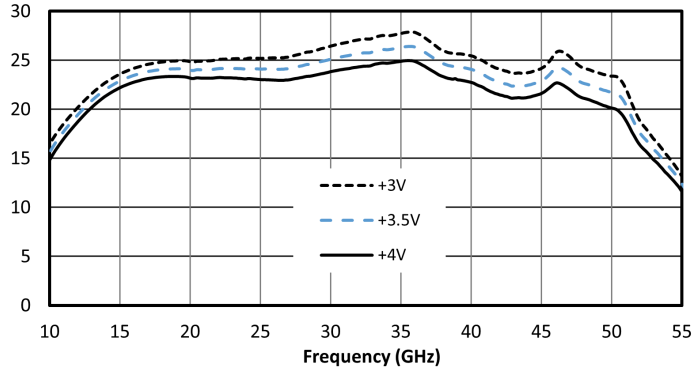
Electrical Specifications

The electrical specifications apply at TA=+25°C in a 50Ω system. DFNs are 100% RF tested.

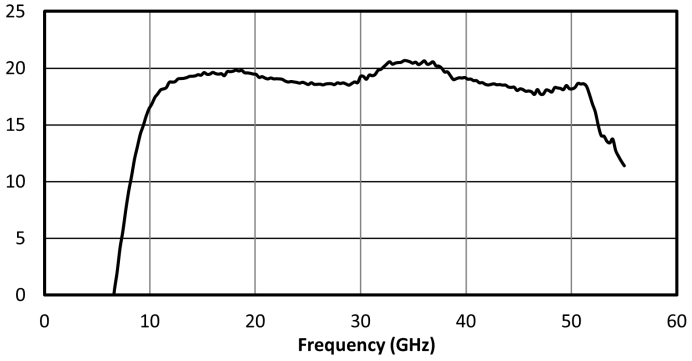
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Small Signal Gain	4V/200mA bias, -25 dBm Input Power	15	50	-	23	-	dB
Input Return Loss	4V/200mA bias, -25 dBm Input Power	15	50	-	8	-	dB
Output P1dB	4V/200mA bias	15	50	-	17.5	-	dBm
Saturated Output Power	4V/200mA bias	15	50	-	19	-	dBm
Output Return Loss	4V/200mA bias, -25 dBm Input Power	15	50	-	7	-	dB
Input IP3	4V/200mA bias, -25 dBm Input Power	15	50	-	1.5	-	dBm
Output IP3	4V/200mA bias, -25 dBm Input Power	15	50	-	24	-	dBm
Input IP2	4V/200mA bias, -25 dBm Input Power	7.5	25	-	10.5	-	dBm
Output IP2	4V/200mA bias, -25 dBm Input Power	7.5	25	-	31	-	dBm
Noise Figure	4V/200mA bias, -25 dBm Input Power	15	50	-	6.5	-	dB
Reverse Isolation	4V/200mA bias, -25 dBm Input Power	15	50	-	55	-	dB
Saturated Output Power	4V/200mA bias	15	20	-	20	-	dBm
Input Power for Saturation	4V/200mA bias	15	50	-	3	-	dBm

Typical Performance Plots, Over Bias

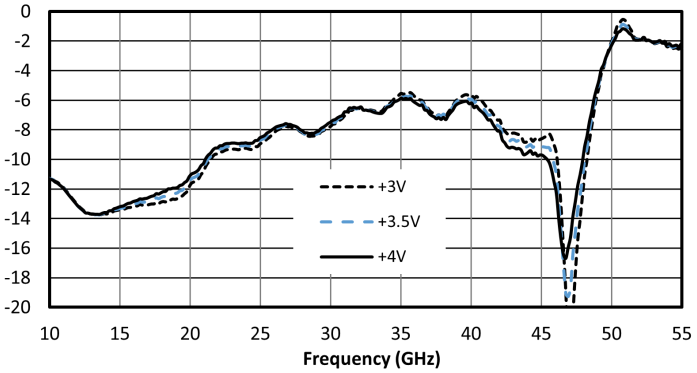
Small Signal Gain (dB) vs Frequency, Over Bias



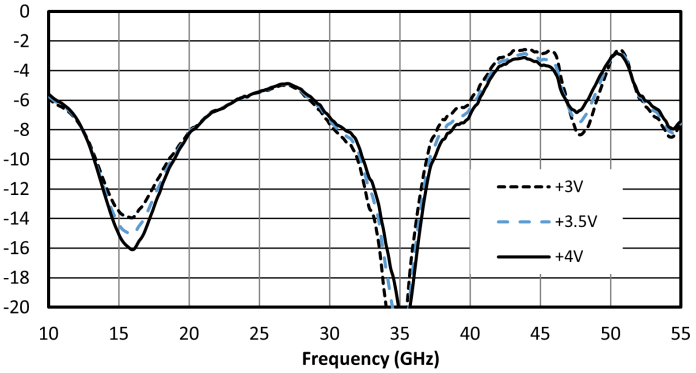
PSAT (dBm) vs Frequency, 4V 200mA Bias



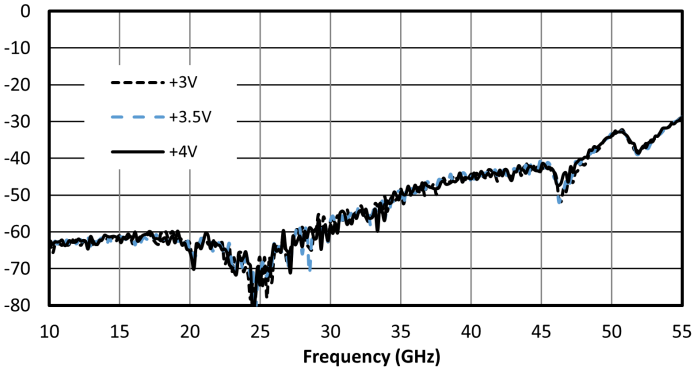
Input Return Loss (dB) vs Frequency, Over Bias



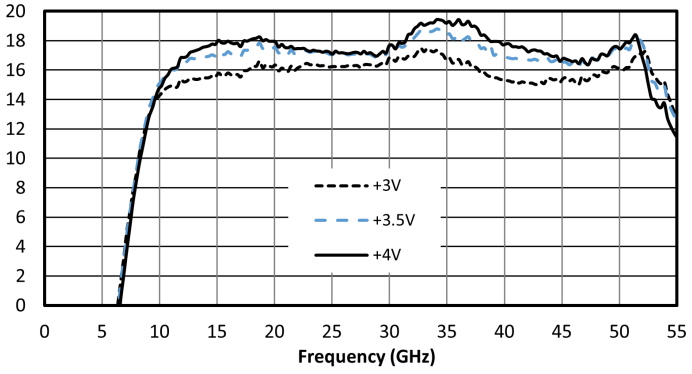
Output Return Loss vs Frequency, Over Bias



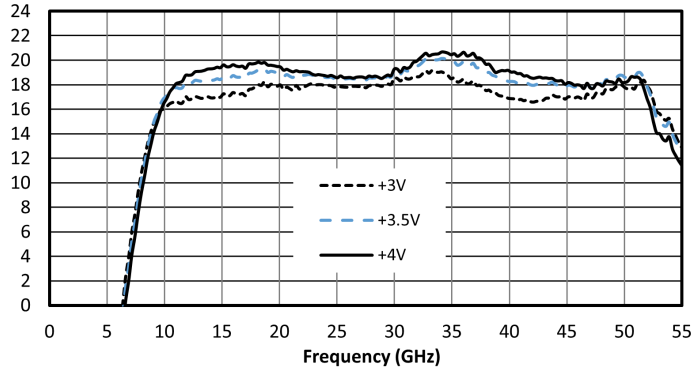
Reverse Isolation (dB) vs Frequency, Over Bias



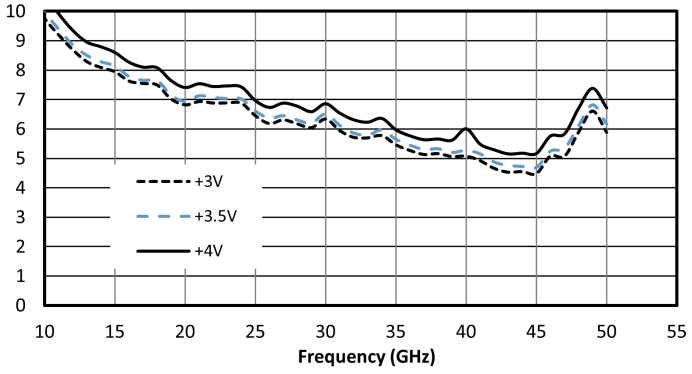
P1dB vs Frequency, Over Bias



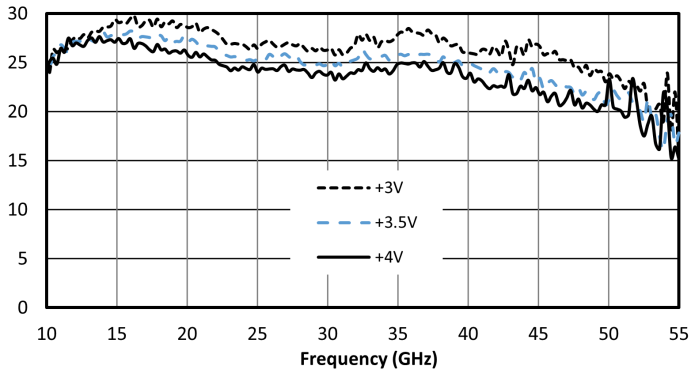
P3dB vs Frequency, Over Bias



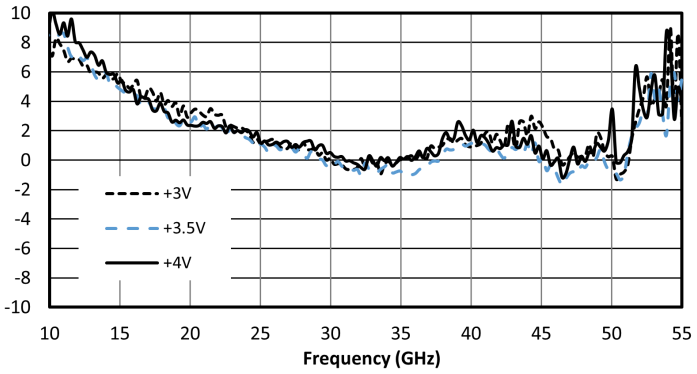
Noise Figure (dB) vs Frequency, Over Bias



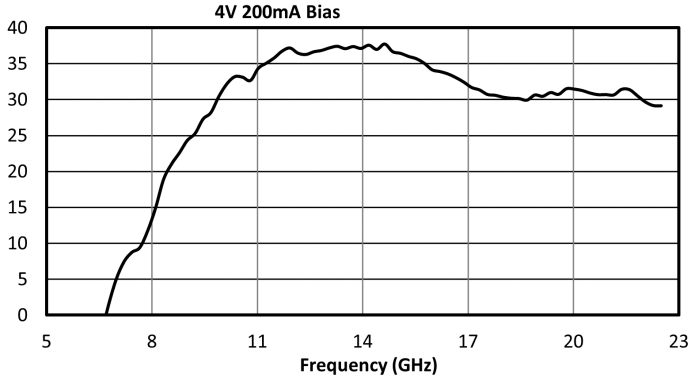
OIP3 (dBm) vs Frequency, Over Bias



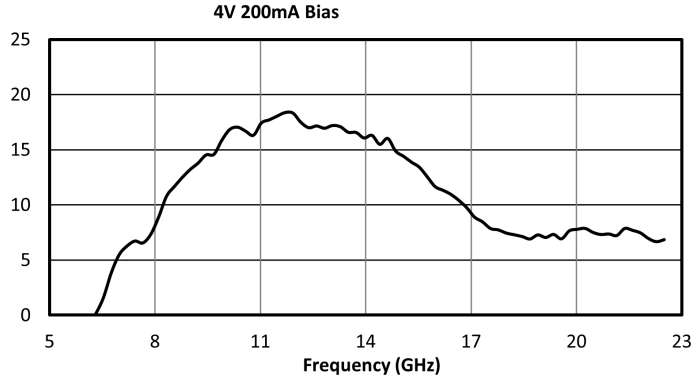
IIP3 (dBm) vs Frequency, Over Bias



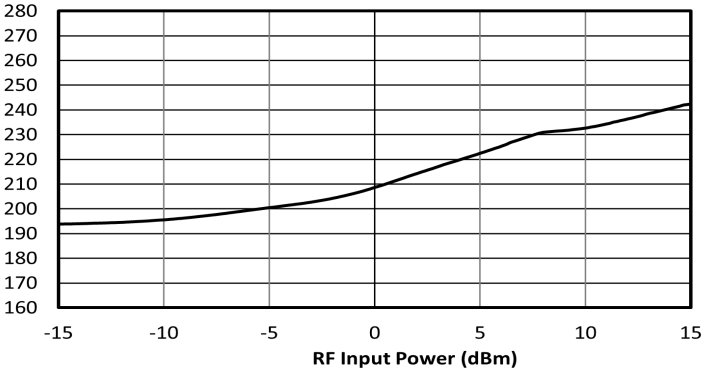
OIP2 (dBm) vs Frequency, 4V 200mA Bias



IIP2 (dBm) vs Frequency, 4V 200mA Bias



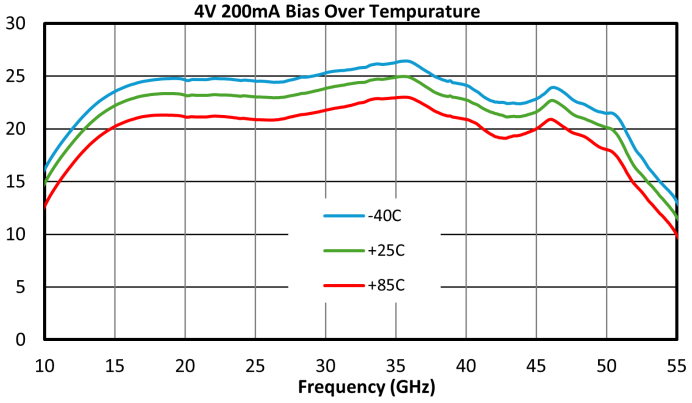
DC current (mA) vs RF Input Power, 4V Bias



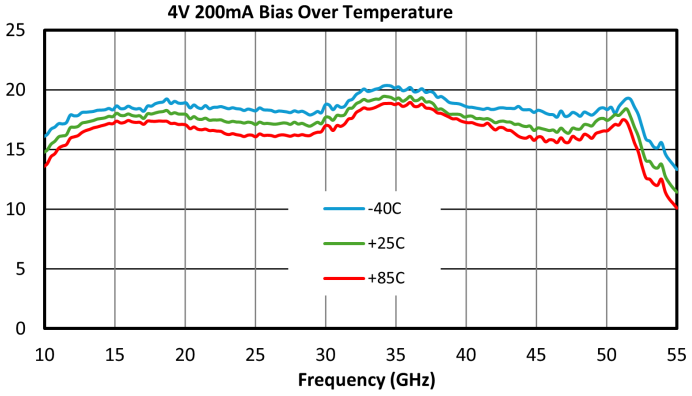
Typical Performance Plots, Over Temp

Performance Plots have PCB trace losses de-embedded.

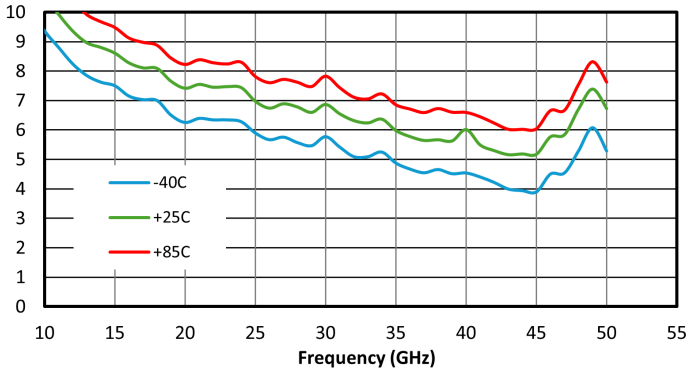
Small Signal Gain (dB) vs Frequency,
4V 200mA Bias Over Tempurature



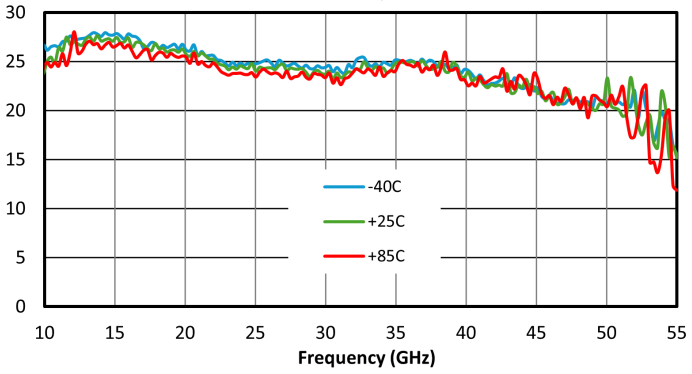
P1dB (dBm) vs Frequency,
4V 200mA Bias Over Temperature



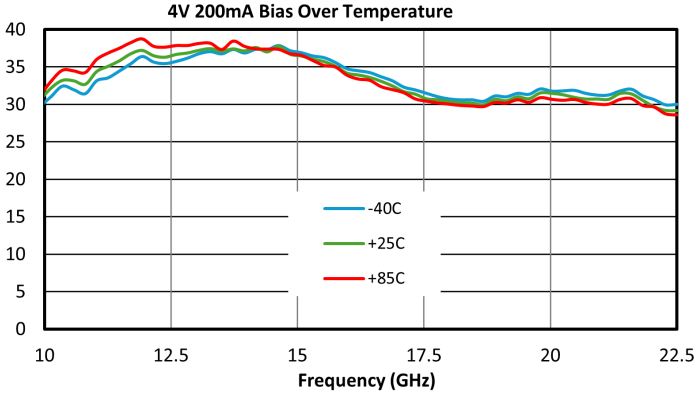
Noise Figure (dB) vs Frequency,
4V 200mA Bias Over Temperature



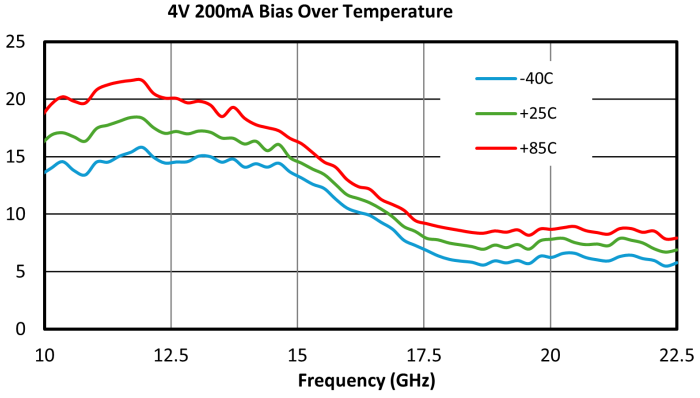
OIP3 (dBm) vs Frequency,
4V 200mA Bias Over Temperature



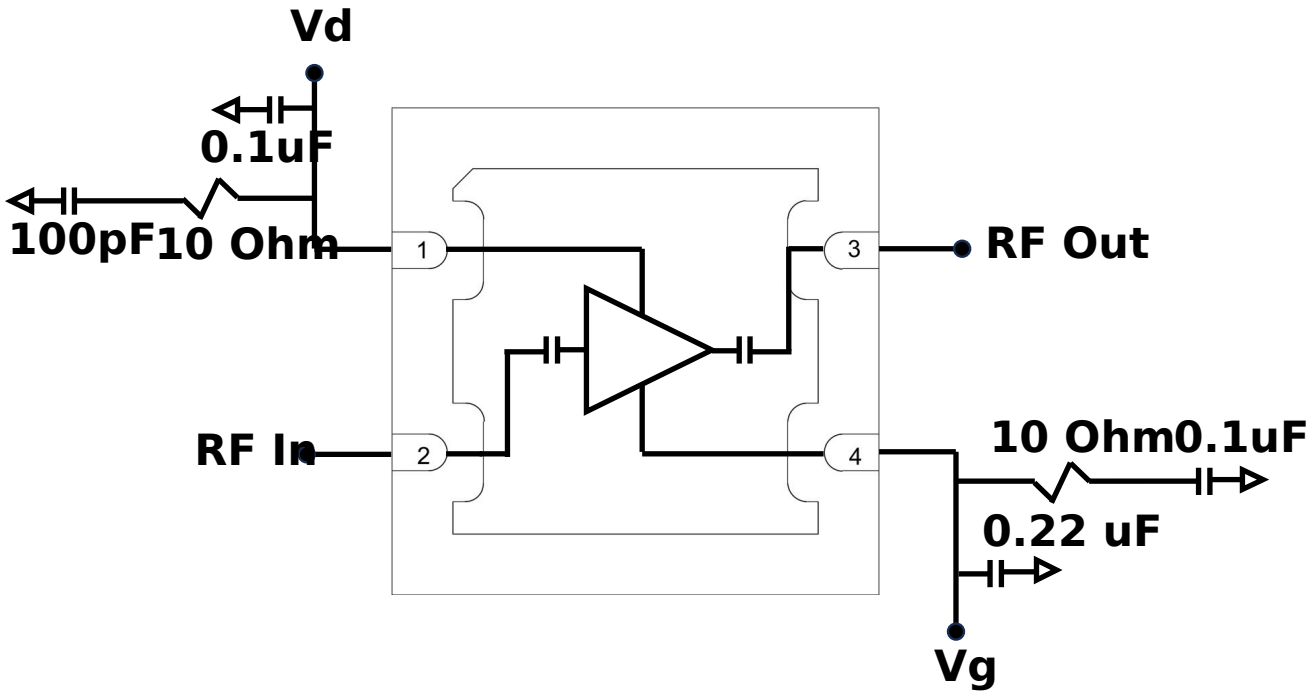
OIP2 (dBm) vs Frequency,
4V 200mA Bias Over Temperature



IIP2 (dBm) vs Frequency,
4V 200mA Bias Over Temperature



Application Circuit



Application Circuit Description

The AMM-10202PSM is internally DC blocked on the RF input and output pads. The drain line requires a 0.1uF bypass capacitor and bypass RC network comprised of 100pF capacitor and 10Ω resistor. The gate line requires a 0.22uF bypass capacitor and bypass RC network comprised of 100pF capacitor and 10Ω resistor. For optimal performance, ensure bypass networks are physically close to the amplifier and the RC network is closest to the device pads.

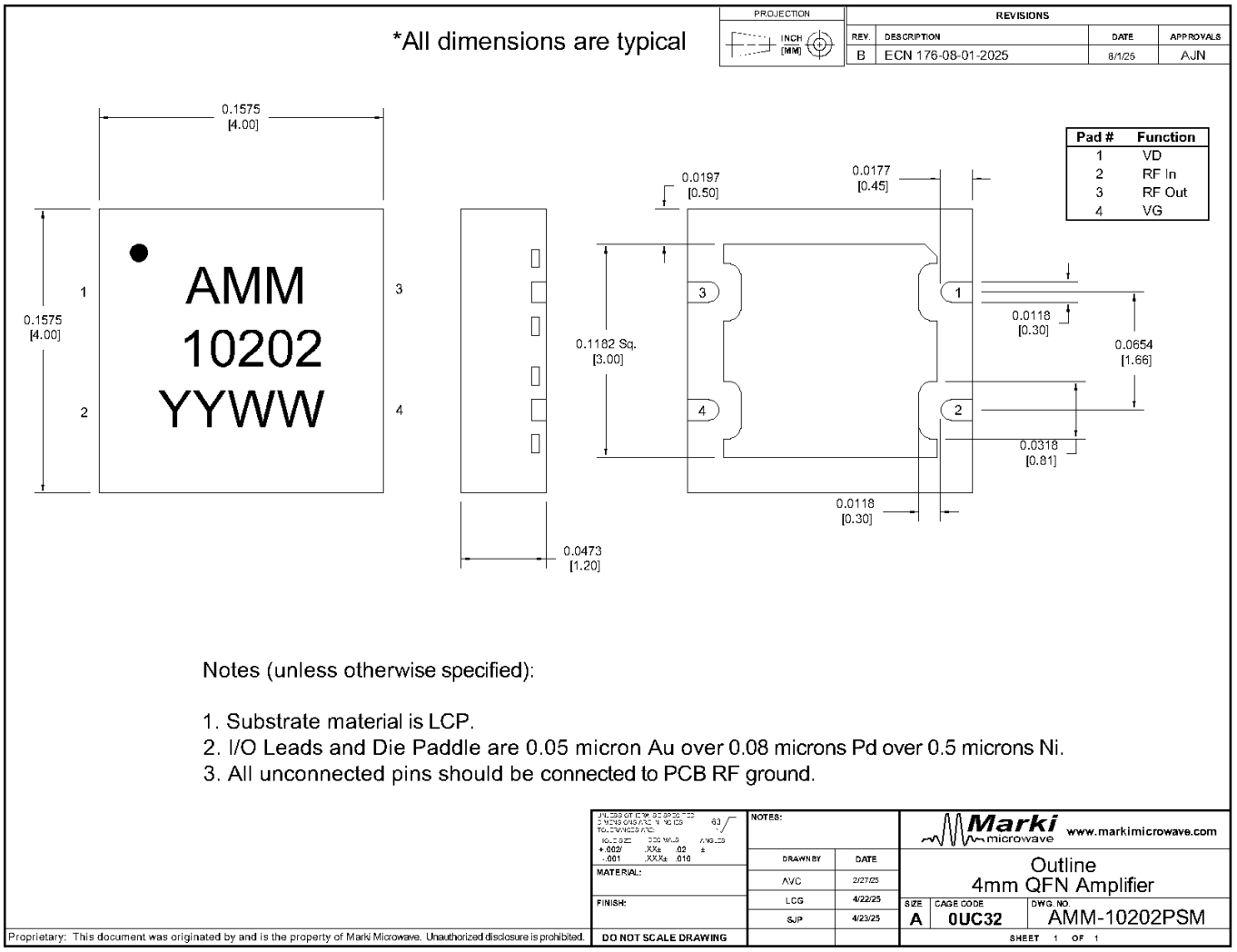
AMM-10202PSM

15-50 GHz GaAs Surface Mount LO Driver Amplifier

Mechanical Data

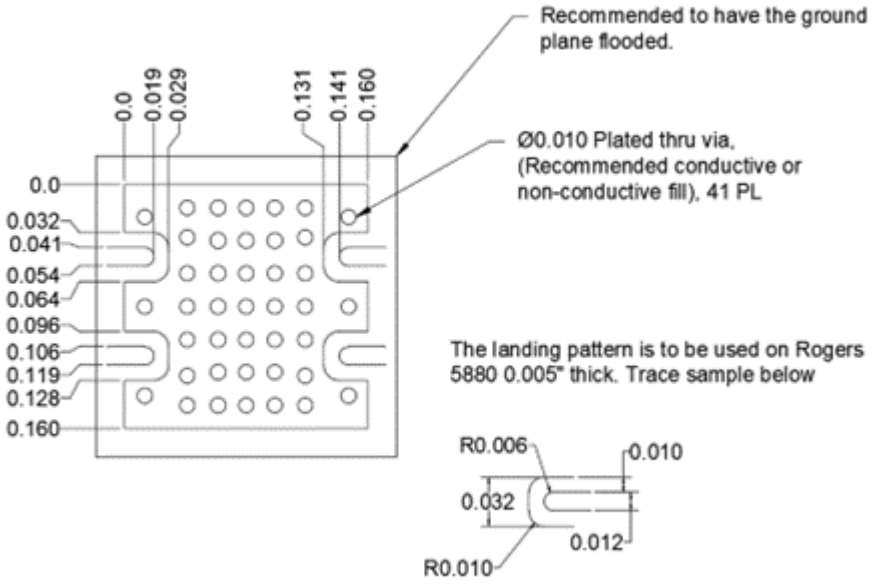
Outline Drawing

Download : Outline 2D Drawing | Outline 3D Drawing | Outline 3D STP



Footprint Image

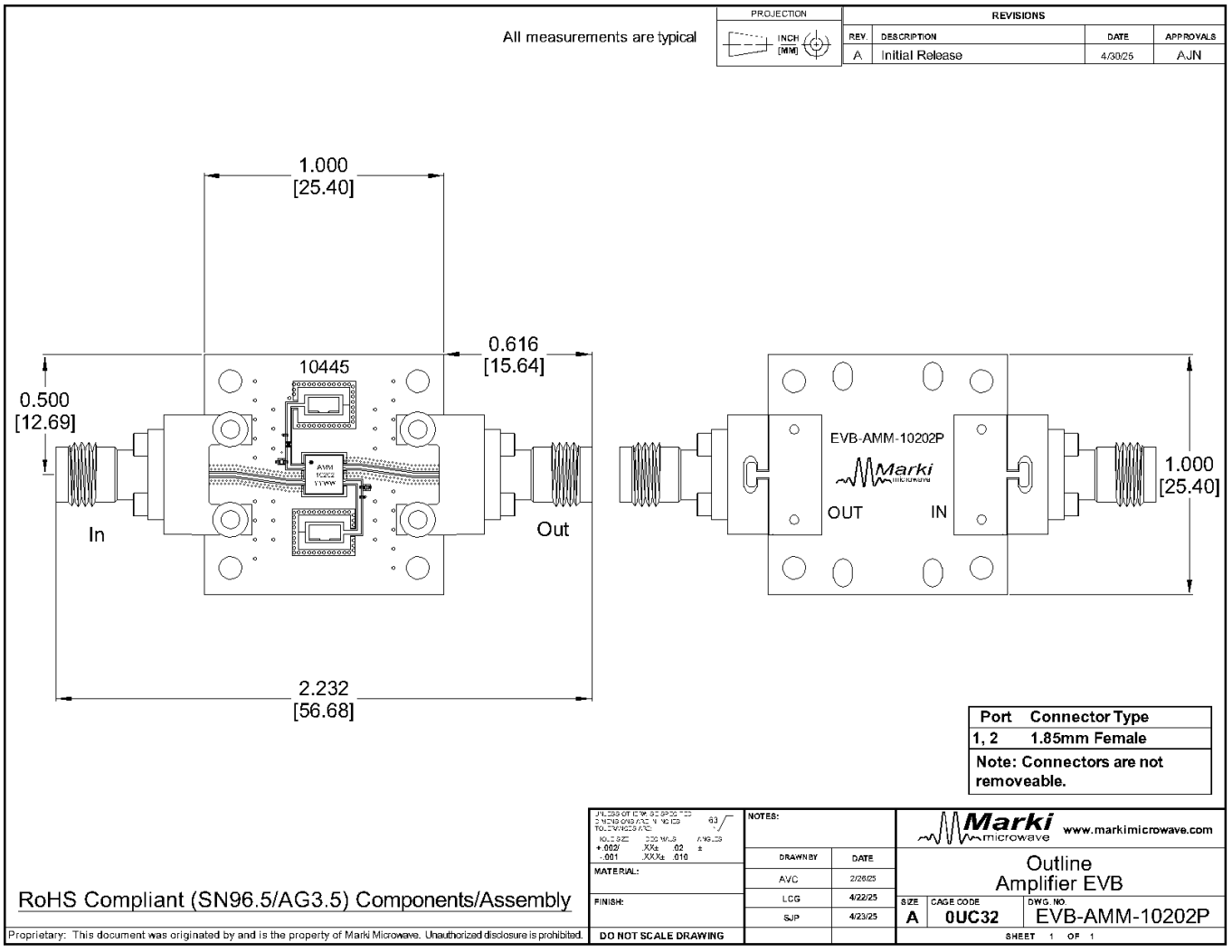
Download : Footprint Drawing



AMM-10202PSM

15-50 GHz GaAs Surface Mount LO Driver Amplifier

Evaluation Board - Outline Drawing



DISCLAIMER

MARKI MICROWAVE, LLC., (“MARKI”) PROVIDES TECHNICAL SPECIFICATIONS AND DATA (INCLUDING DATASHEETS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, AND OTHER INFORMATION AND RESOURCES “AS IS” AND WITH ALL FAULTS. MARKI DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

These resources are intended for developers skilled in the art designing with Marki products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards and other requirements. Marki makes no guarantee regarding the suitability of its products for any particular purpose, nor does Marki assume any liability whatsoever arising out of your use or application of any Marki product.

Marki grants you permission to use these resources only for development of an application that uses Marki products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Marki intellectual property or to any third-party intellectual property. Marki reserves the right to make changes to the product(s) or information contained herein without notice.

MARKI MICROWAVE and T3 MIXER are trademarks or registered trademarks of Marki Microwave, LLC. All other trademarks used are the property of their respective owners.