

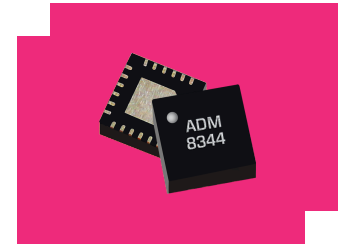
ADM-8344PSM

DC - 18 GHz Distributed Amplifier

DEVICE OVERVIEW

General Description

The ADM-8344PSM is a wideband distributed low noise amplifier capable of providing 19 dB gain and +29 dBm OIP3 from DC to 18 GHz and a low 1.7 dB typical noise figure from 4 to 14 GHz. The ADM-8344PSM is an ideal linear signal amplifier for applications requiring low power consumption and small form-factors. ADM-8344 is available A 4mm QFN and can be supplied from a single positive bias. The amplifier has excellent return losses and noise figure performance.



[Download s-parameters here](#)

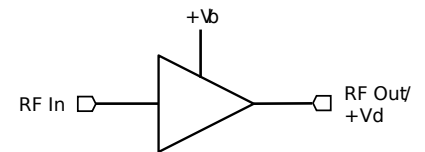
Features

- 19 dB typical gain
- 1.9 dB typical noise figure
- Single Supply, Positive Only Bias
- Low power consumption

Applications

- Test and Measurement Equipment
- Radar and satellite communications

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification
ADM-8344PSM	DC - 18 GHz Distributed Amplifier	PSM	RoHS REACH	Released	EAR99
EVB-ADM-8344P	Evaluation Board, DC - 18 GHz Distributed Amplifier	EVB	REACH RoHS	Released	-

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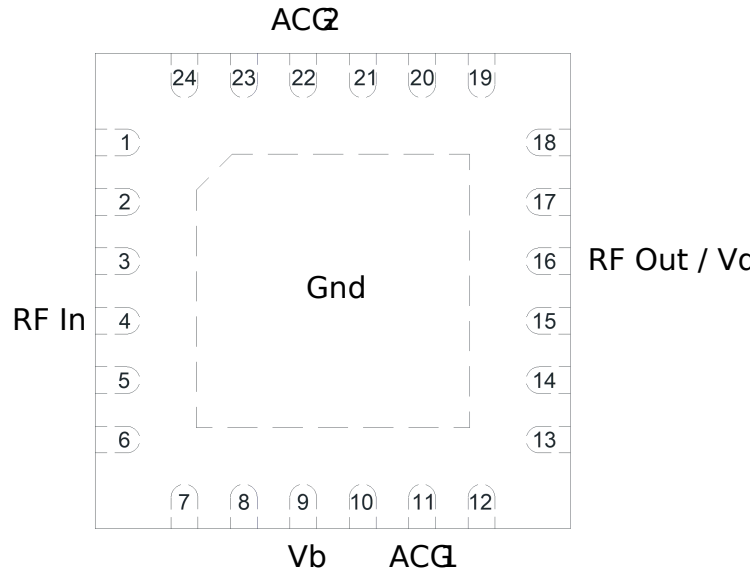
Revision History

Revision Code	Revision Date	Comment
-	2025-06-13	Initial Release

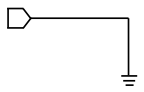
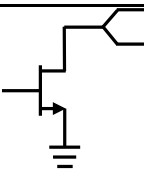
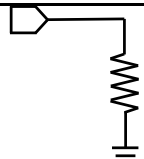
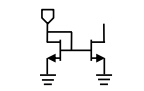
Port Configuration and Functions

Port Diagram

Below is the port diagram from the ADM-8344PSM. The diagram is an x-ray view from the top down.



Port Functions

Port	Function	Description	DC Equivalent Circuit
Paddle	Ground	The package ground paddle must be connected to a DC/RF ground potential with high thermal and electrical conductivity.	
Pin 11	ACG	This pin provides AC ground for the internal circuit. This pin should be connected to ground through a bypass capacitor as shown in the application schematic. This pin should not be connected directly to GND.	-
Pin 16	RF Out / Vd	Pin 16 is the RF output and primary DC power supply of the amplifier. This pin is internally RF matched to 50 ohms and requires an external bias-tee connected to a positive DC supply voltage. The voltage, Vd, at this pin should be set to 5V for normal operation.	
Pin 22	ACG	This pin provides AC ground for the internal circuit. This pin should be connected to ground through a bypass capacitor as shown in the application schematic. This pin should not be connected directly to GND.	-
Pin 4	RF Input	Pin 4 is the amplifier's RF input pin. This pin is internally RF matched to 50 Ohms and requires an external DC blocking capacitor.	
Pin 9	Vb	Pin 9 provides positive DC bias voltage to the amplifier. This pin is internally connected to a current mirror controlling amplifier drain current. A higher voltage on this pin results in higher current draw through the Vd / RF out pin. The voltage at this pin should be set to 5V for normal operation.	
Pins 1-3,5-8,10,12-15,17-21,23,24	Non-connect (NC)	These pins are not connected internally. They should be grounded for best performance. Datasheet performance is measured with these pins grounded.	-

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 become inoperable or have a reduced lifetime. Reliability limits are individual, instantaneous catastrophic limits only. Functional operation limits are indicated below. Operation of the device at multiple absolute maximum limits or for extended periods at a single limit can cause degradation and damage to the device

Parameter	Maximum Rating	Unit
Drain Current (Id) (RF Applied)	130	mA
Drain Supply Voltage (Vd)	8.5	V
Gate Current (Ig)	10	mA
Gate Supply Voltage (Vg)	6.5	V
Maximum Operating Temperature for MTTF > 1E6 hours	85	°C
Maximum Storage Temperature	125	°C
Minimum Operating Temperature for MTTF > 1E6 hours	-40	°C
Minimum Storage Temperature	-55	°C
RF Power Handling	15	dBm

Package Information

Parameter	Details	Rating
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	-40	25	85	°C
Power Supply DC Voltage (Vd)	4	5	8	V
Gate Bias DC Voltage (Vg)	3	5	6	V
Power Supply DC Current (Id) (No RF Input)	82	102	120	mA

Sequencing Requirements

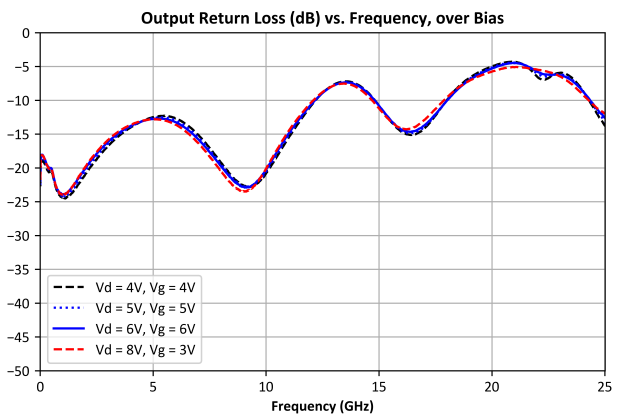
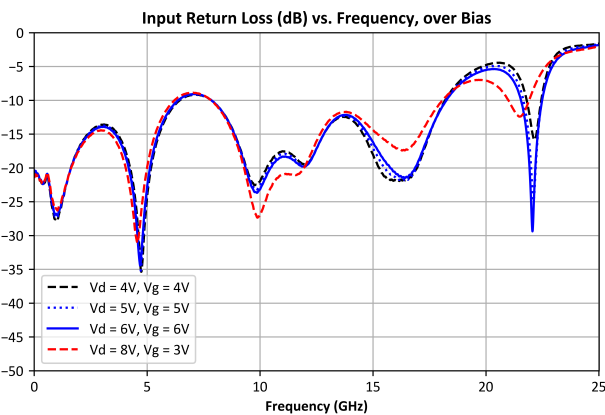
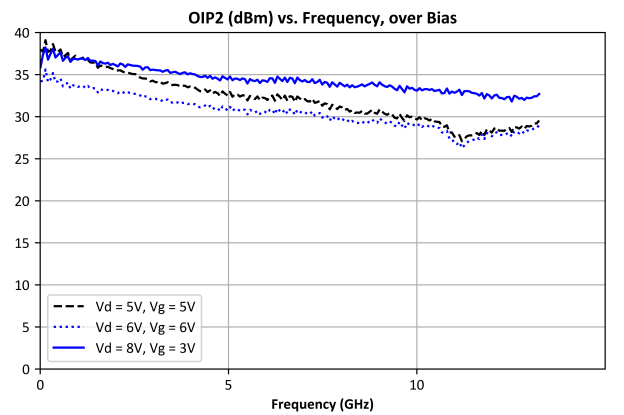
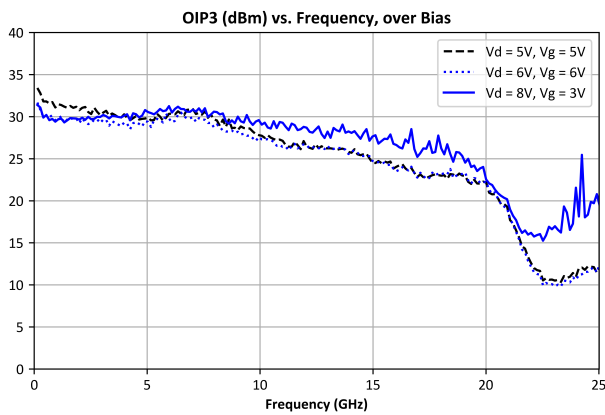
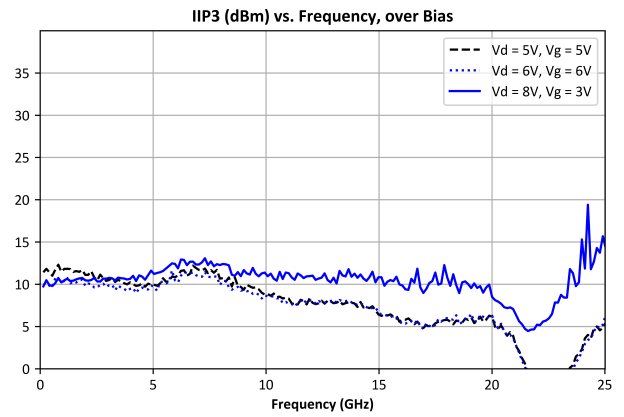
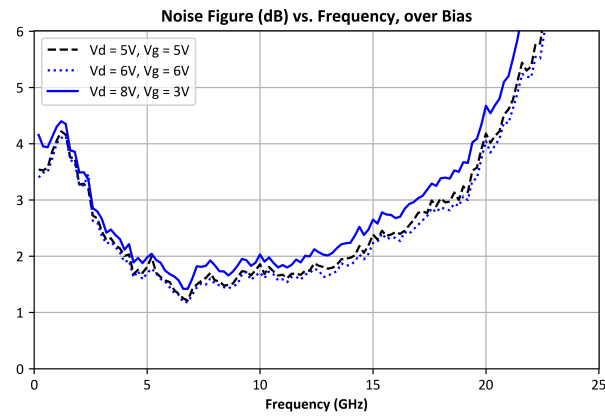
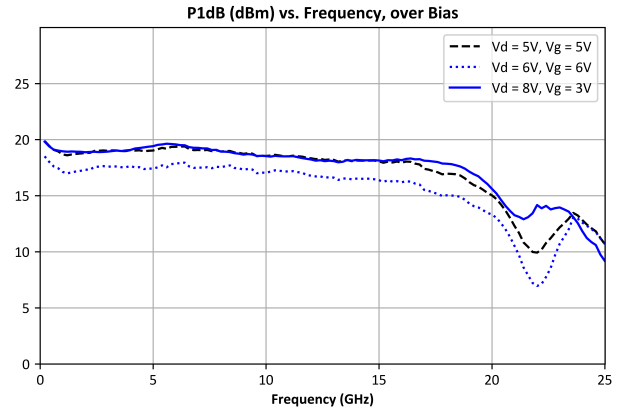
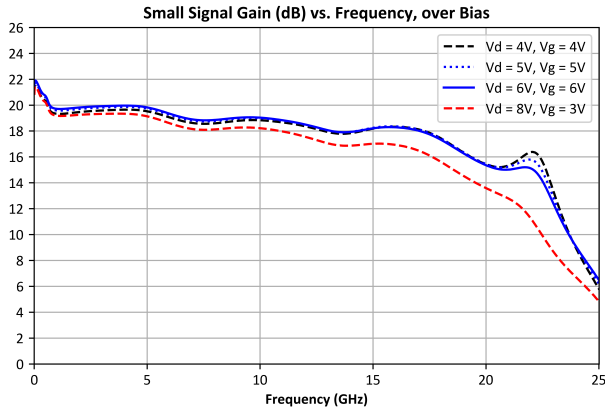
There is no sequencing required to power up or power down the amplifier.

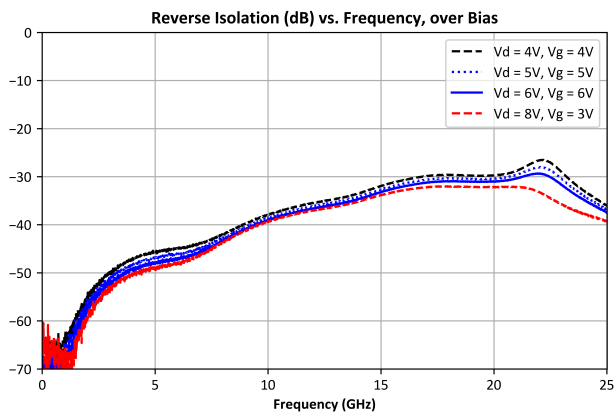
Electrical Specifications

Unless otherwise specified, electrical specifications apply at TA=+25°C, Vd = 5V, Vg = 5V.

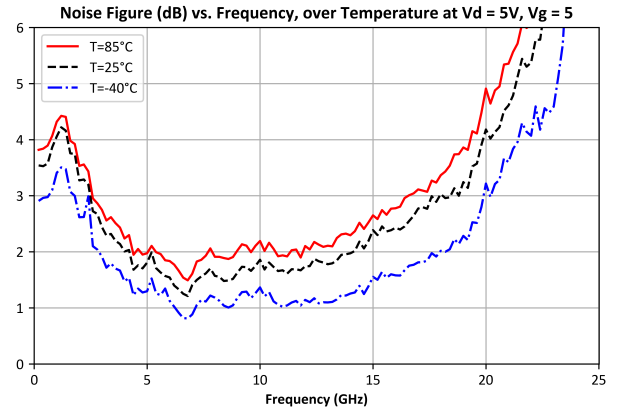
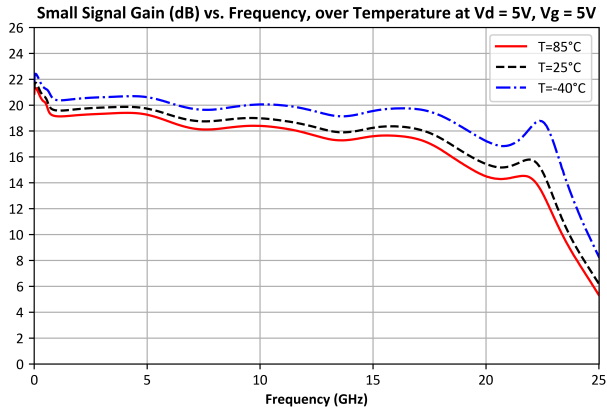
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Small Signal Gain	25°C, Vd1=5, Vb1=5, Id1=102	0	18	-	19.0	-	dB
Input Return Loss	25°C, Vd1=5, Vb1=5, Id1=102	0	18	-	17	-	dB
Output Return Loss	25°C, Vd1=5, Vb1=5, Id1=102	0	18	-	14	-	dB
Reverse Isolation	25°C, Vd1=5, Vb1=5, Id1=102	0	18	-	40	-	dB
Noise Figure	25°C, Vd1=5, Vb1=5, Id1=102	0	18	-	1.9	-	dB
Input P1dB	25°C, Vd1=5, Vb1=5, Id1=102	0	18	-	0	-	dBm
Output P1dB	25°C, Vd1=5, Vb1=5, Id1=102	0	18	-	19	-	dBm
Input IP2	25°C, Vd1=5, Vb1=5, Id1=102	0	18	-	13	-	dBm
Output IP2	25°C, Vd1=5, Vb1=5, Id1=102	0	18	-	32	-	dBm
Input IP3	25°C, Vd1=5, Vb1=5, Id1=102	0	18	-	10	-	dBm
Output IP3	25°C, Vd1=5, Vb1=5, Id1=102	0	18	-	29	-	dBm
Current Consumption	Vd = 5V, Vg = 5V, no RF input	0	18	-	102	-	mA

Typical Performance Plots, Over Bias





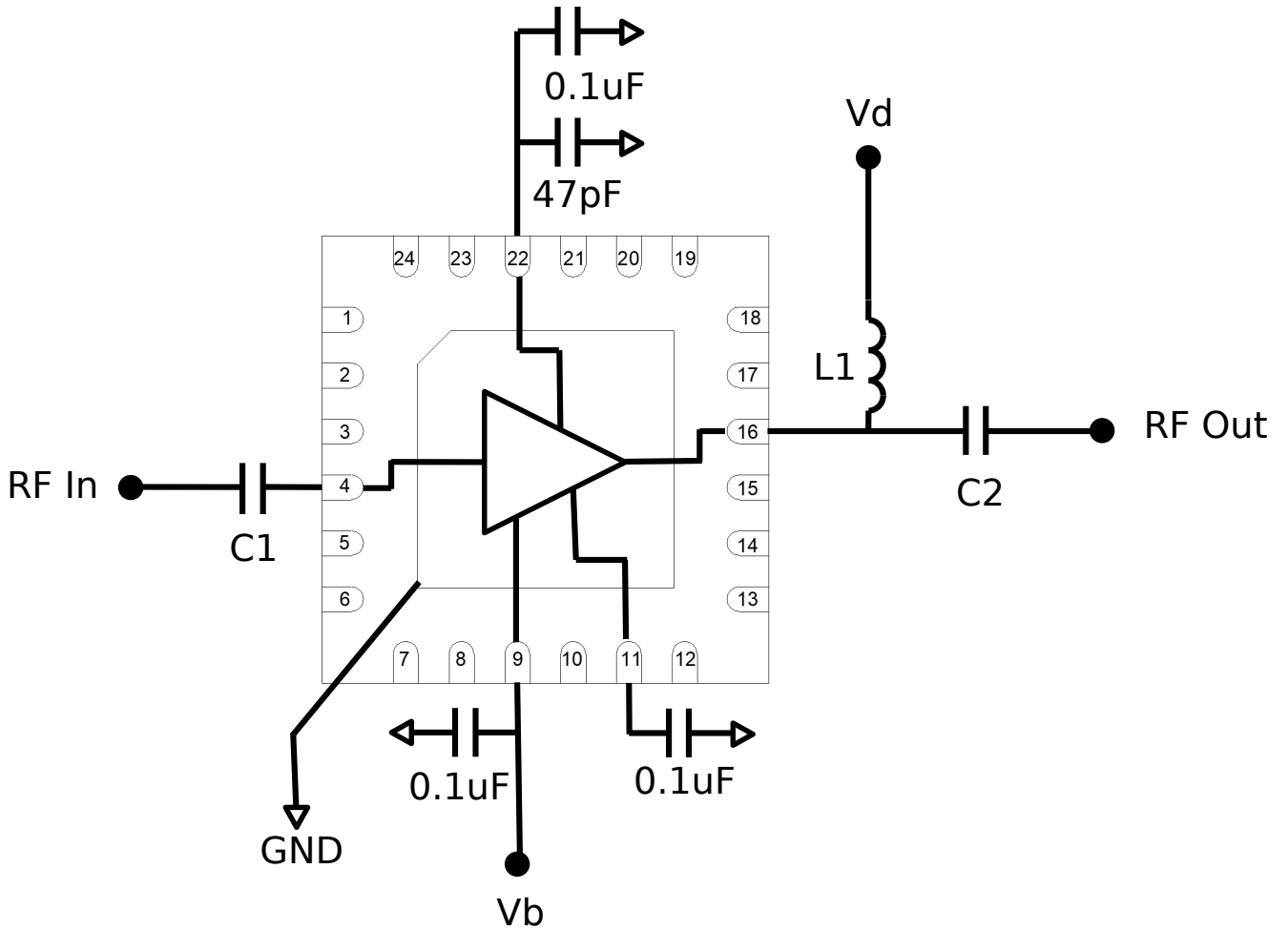
Typical Performance Plots, Over Temp



Application Information

The ADM-8344PSM requires biasing through the RF output port as well as the dedicated Vb port. This part also requires the use of DC blocking capacitors the input and output. It is possible to extend low-frequency performance by using sufficiently large DC blocking caps to not impede RF signal at the frequency of interest. Contact Marki technical support if you need assistance with a low-frequency application circuit for this part. Datasheet performance was measured using external wideband test equipment bias tees.

Application Circuit



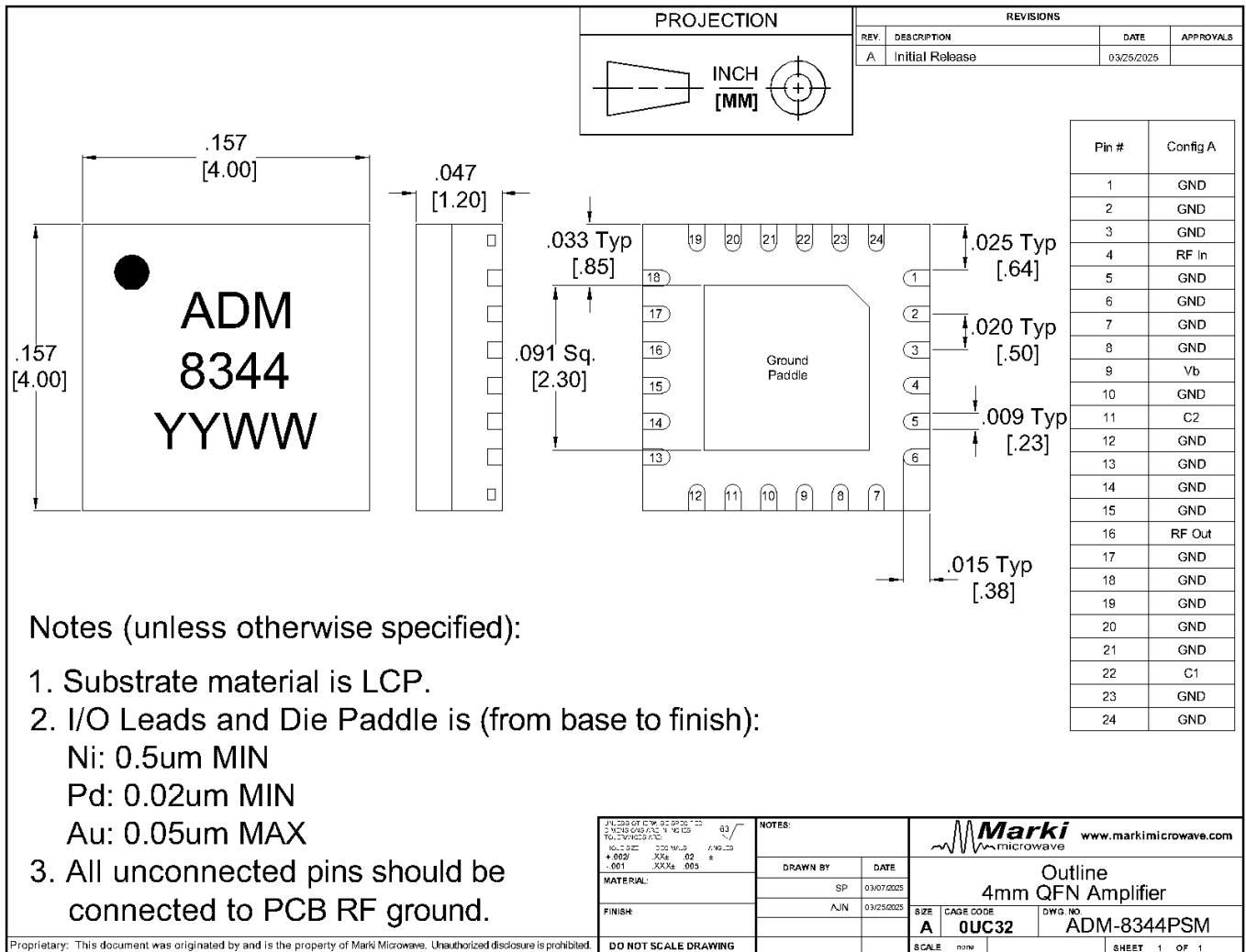
Application Circuit Description

The ADM-8344PSM requires biasing through the RF output port as well as the dedicated Vb port. The main power supply for the part is provided through RF Out / Vd pin 16. DC voltage should be applied through a choke inductor (L1) and the RF output requires a DC blocking capacitor (C2). These components may be placed as discrete SMDs or as part of a bias tee such as the Marki BTM-0026PSM-2. The RF input also requires a DC blocking capacitor (C1). The exact capacitance values of the blocking caps is flexible and depends on factors such as low frequency insertion loss and physical size requirements of the end application. For instance, it is possible to extend low-frequency performance by using sufficiently large DC blocking caps to not impede RF signal at the frequency of interest.

Mechanical Data

Outline Drawing

Download : [Outline 2D Drawing](#)

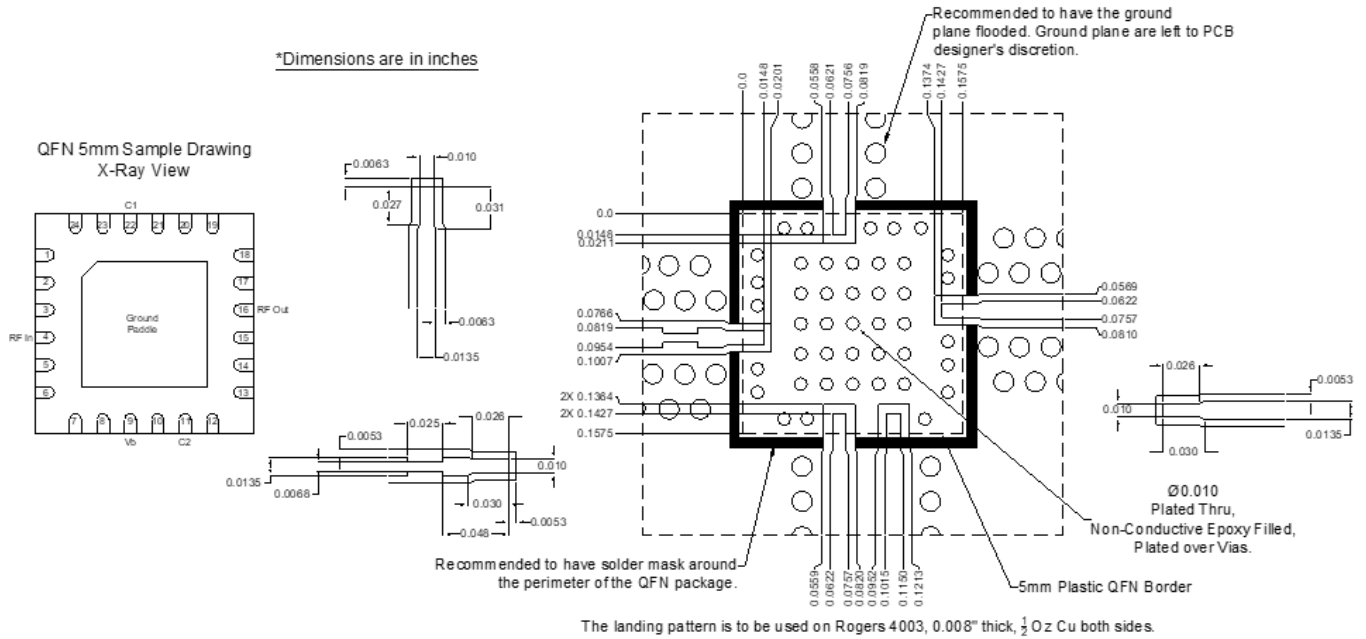


Notes (unless otherwise specified):

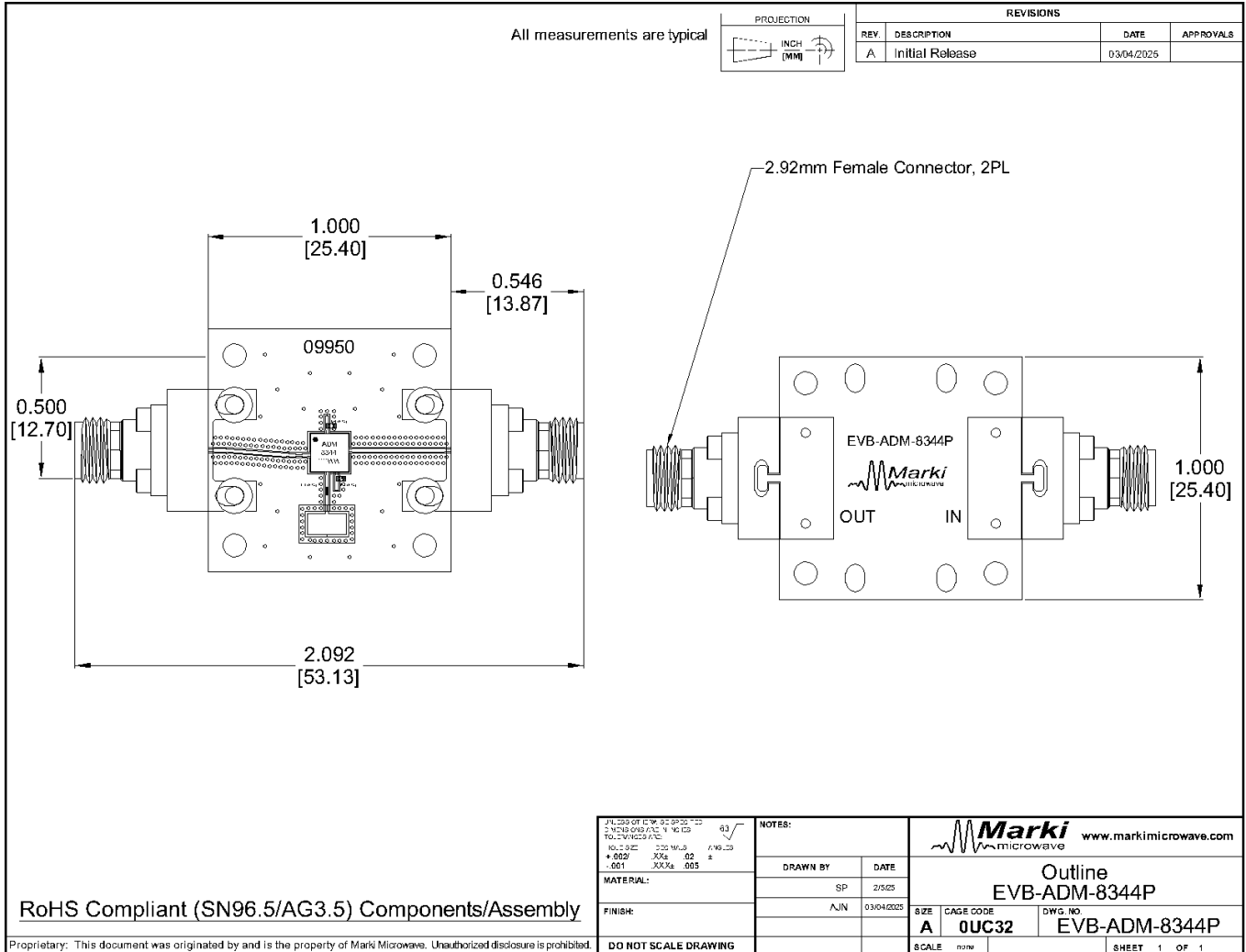
- Substrate material is LCP.
- I/O Leads and Die Paddle is (from base to finish):
 Ni: 0.5um MIN
 Pd: 0.02um MIN
 Au: 0.05um MAX
- All unconnected pins should be connected to PCB RF ground.

Footprint Image

Download : [Footprint Drawing](#)



Evaluation Board - Outline Drawing



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