

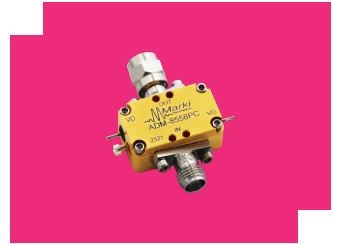
ADM-8558PC

0.005 - 20 GHz Distributed Amplifier

DEVICE OVERVIEW

General Description

The ADM-8558 is a wideband distributed low noise amplifier capable of providing 16 dB gain and +23 dBm OIP3 from 0.005 to 20 GHz and a low 1.8 dB typical noise figure from 7 to 15 GHz. The ADM-8558 is an ideal linear signal amplifier for applications requiring low power consumption and small form-factors. ADM-8558 is available in bare die and connectorized module forms. The amplifier has excellent return losses and gain flatness.



[Download s-parameters here](#)

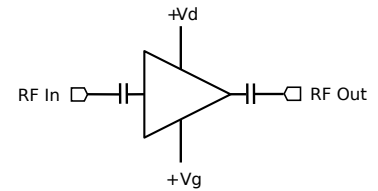
Features

- 16 dB typical gain
- 1.8 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	Connectors	Green Status	Product Lifecycle	Export Classification
ADM-8558PC	0.005 - 20 GHz Distributed Amplifier	PC	<u>Standard</u>	RoHS REACH	Released	EAR99

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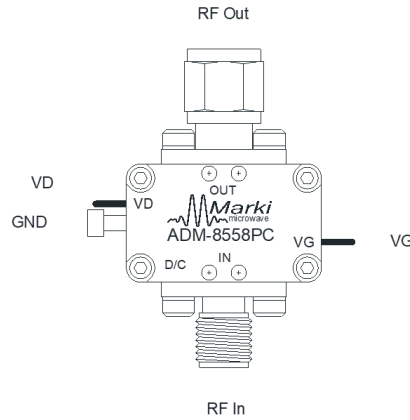
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Revision History

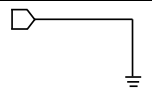
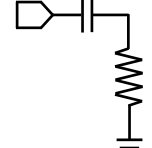
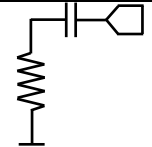
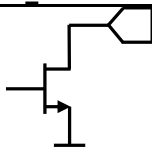
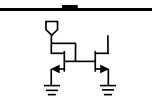
Revision Code	Revision Date	Comment
-	2023-07-01	Datasheet Initial Release
A	2024-08-02	Updated according to ECN 24030. Updated voltage/current limits and performance plots.

Port Configuration and Functions

Port Diagram



Port Functions

Port	Function	Connector Type	Description	DC Equivalent Circuit
GND	Ground	-	Housing or ground lug must be connected to a DC/RF ground potential with high thermal and electrical conductivity.	
RF In	RF Input	-	This is the amplifier's RF Input port. It is RF matched to 50 Ω and has built-in DC blocking capacitors.	
RF Out	RF Output	-	This is the amplifier's RF Output port. It is RF matched to 50 Ω and has built-in DC blocking capacitors.	
Vd	Drain Supply Pin	-	The VD pin supplies DC voltage to the drain of the amplifier IC. This pin is nominally set at +6V.	
Vg	Gate Bias Pin	-	The VG pin provides a required positive bias which supplies the current mirror. A higher voltage results in a higher current draw through the RF Out port. This pin is nominally set at +3V.	

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) (No RF Applied)	80	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
Weight	Package name: PC	10.27g
Dimensions	-	21.85 x 13.21 mm

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
Power Supply DC Current (Id) (No RF Input)	50	50	70	mA
Power Supply DC Voltage (Vd)	5	6	8	V
Ambient Temperature	-40	25	85	°C
Gate Bias DC Voltage (Vg)	3	3	4	V

Sequencing Requirements

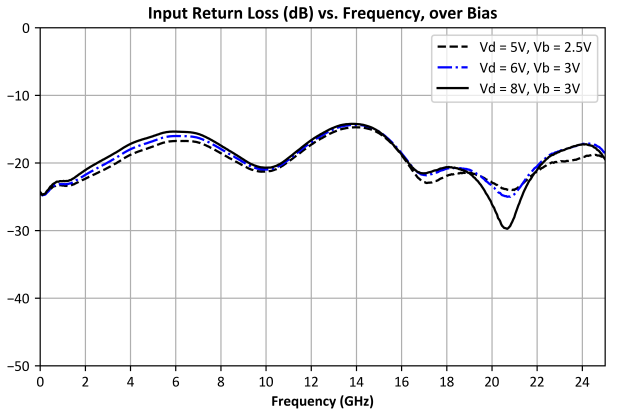
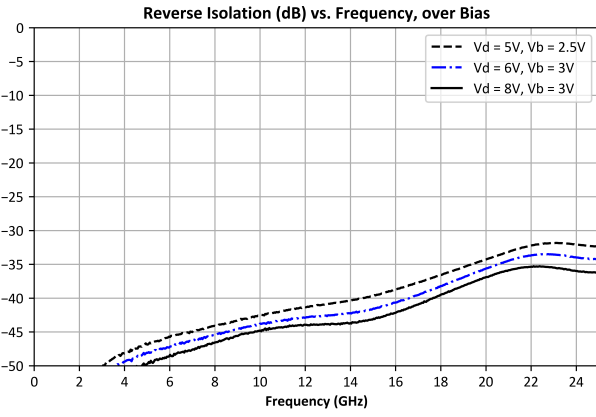
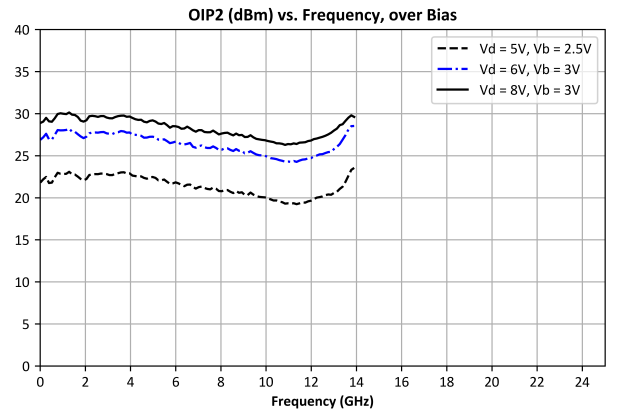
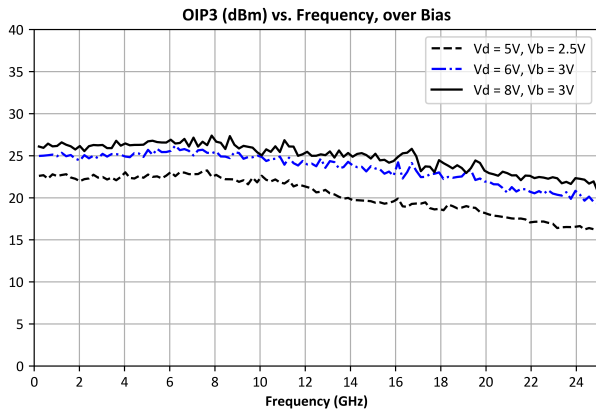
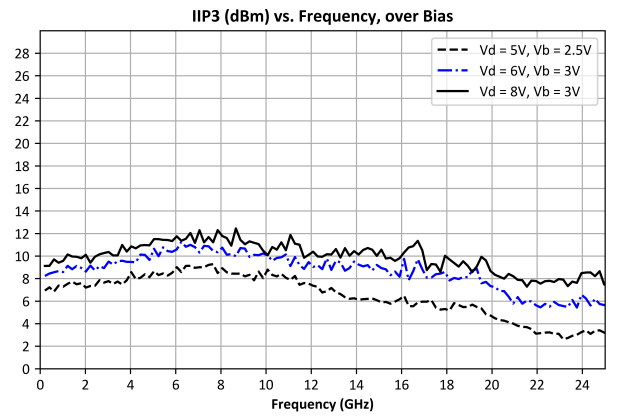
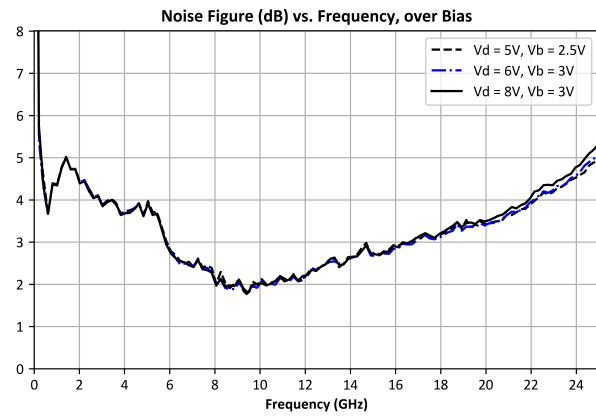
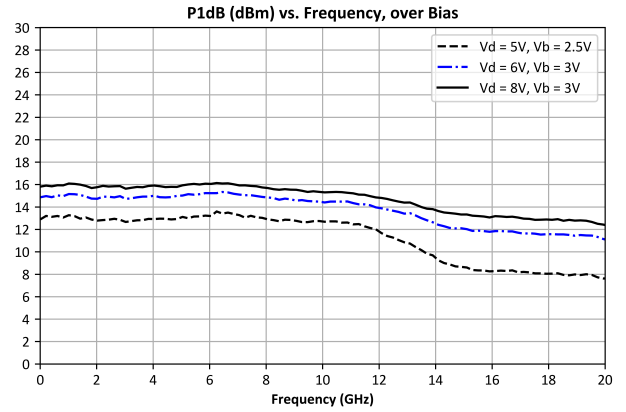
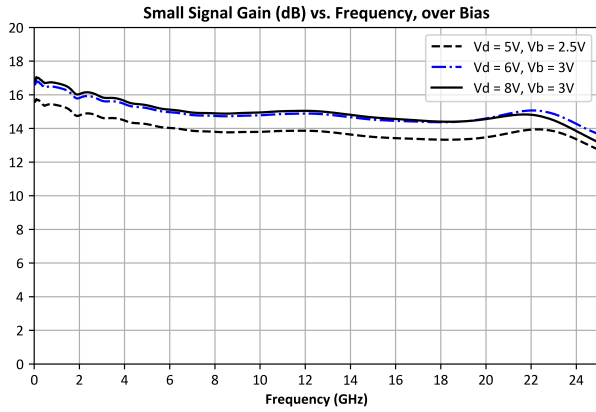
There is no sequencing required to power up or power down the amplifier.

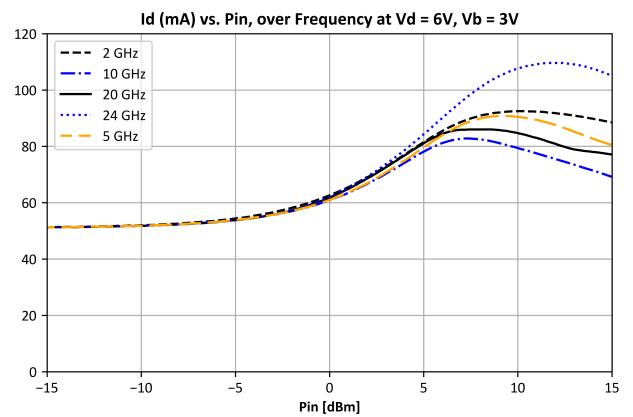
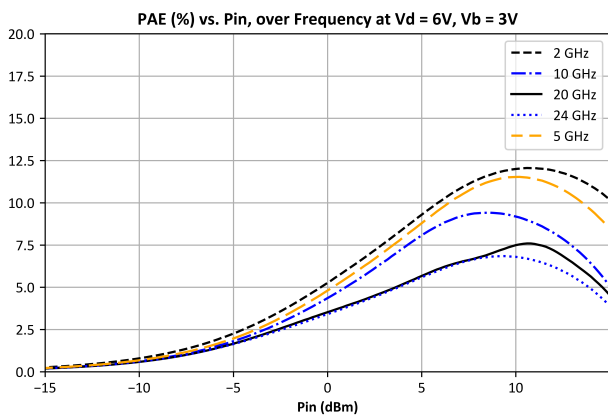
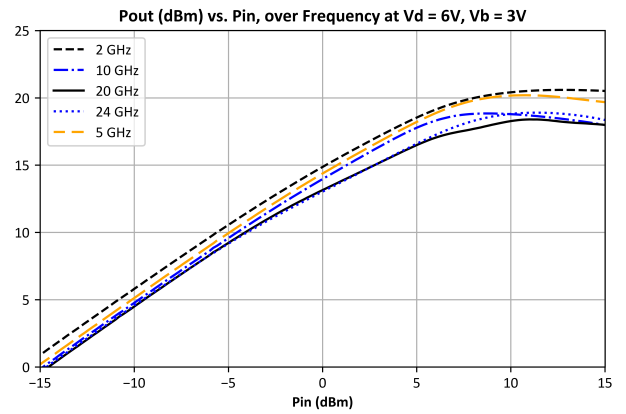
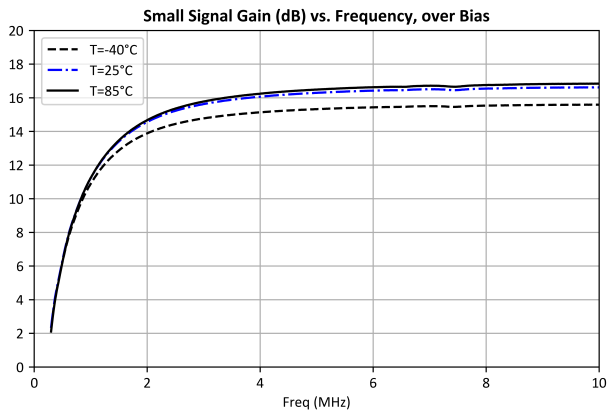
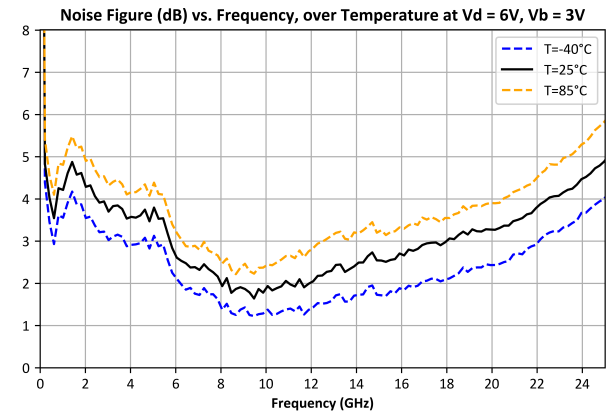
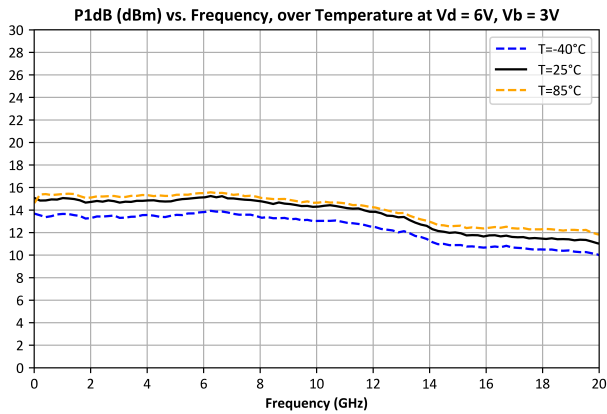
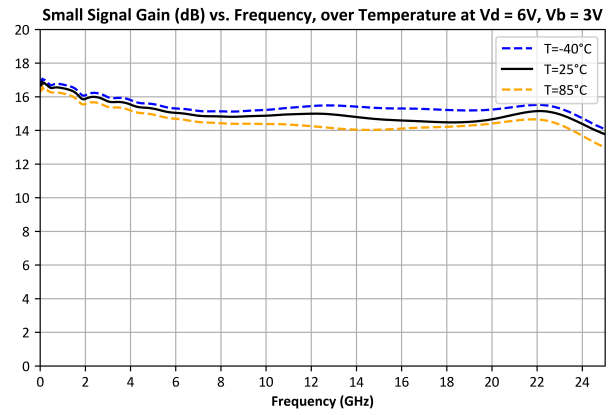
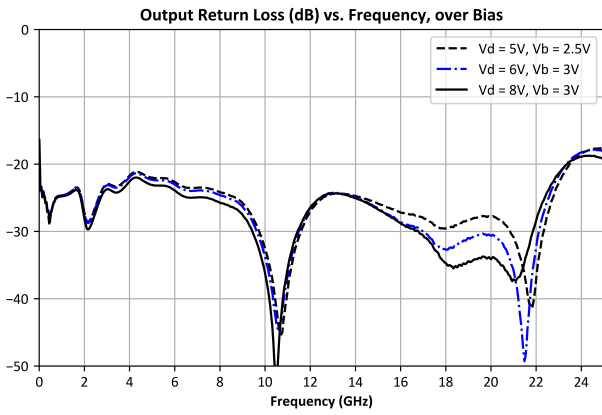
Electrical Specifications

Unless otherwise specified, electrical specifications apply at TA=+25°C, Vd = 6V, Vg = 6V.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Output Power	-	2	24	-	19	-	dBm
DC Supply Quiescent Current (Idq)	Vd = 6V, Vg = 3V, No RF input	0.004	20	-	50	-	mA
Input Return Loss	Vd = 6V, Vg = 3V, Pin = -20dBm	0.005	20	-	15	-	dB
Noise Figure	Vd = 6V, Vg = 3V, Pin = -20dBm	15	20	-	2.8	-	dB
Noise Figure	Vd = 6V, Vg = 3V, Pin = -20dBm	7	15	-	2.2	-	dB
Noise Figure	Vd = 6V, Vg = 3V, Pin = -20dBm	0.005	7	-	3.8	-	dB
Output IP3	Vd = 6V, Vg = 3V, Pin = -20dBm	0.004	20	-	23	-	dBm
Output P1dB	Vd = 6V, Vg = 3V	0.005	20	-	14	-	dBm
Output Return Loss	Vd = 6V, Vg = 3V, Pin = -20dBm	0.004	20	-	20	-	dB
Reverse Isolation	Vd = 6V, Vg = 3V, Pin = -20dBm	0.004	20	-	40	-	dB
Small Signal Gain	Vd = 6V, Vg = 3V, Pin = -20dBm	0.005	20	13	15	-	dB

Typical Performance Plots

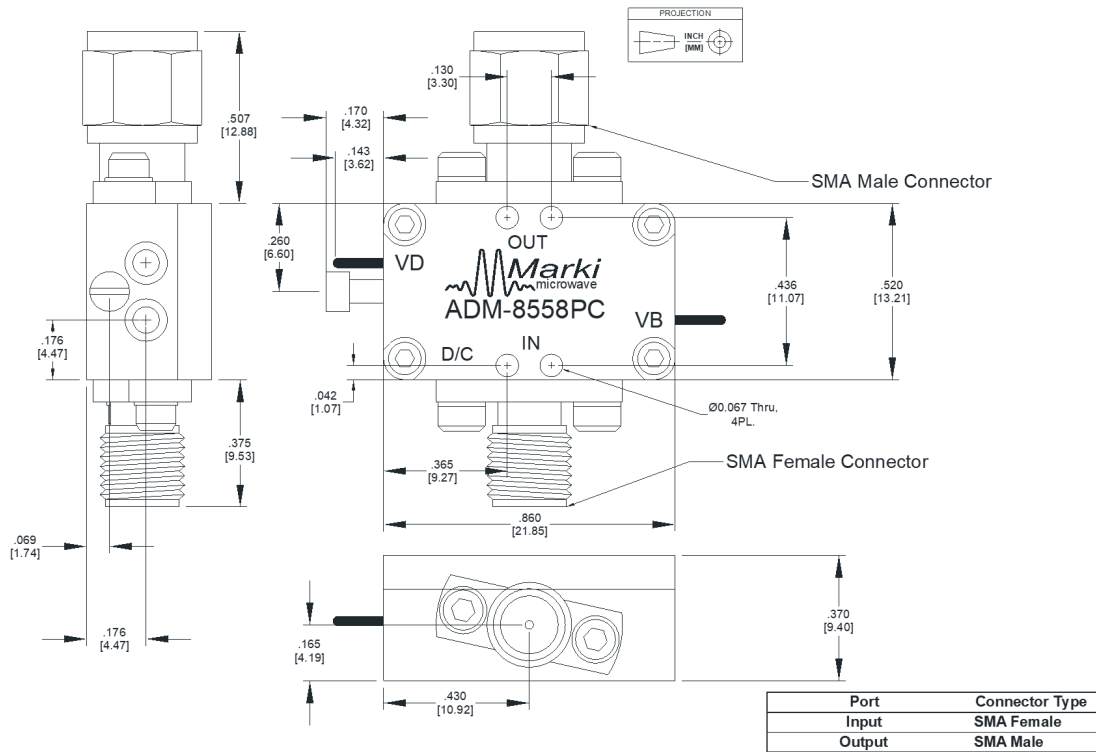




Mechanical Data

Outline Drawing

Download : [Outline 2D Drawing](#) | [Outline 3D Drawing](#) | [Outline 3D STP](#)



Notes:

1. All measurements are typical.
2. Ground lug and bias pins are solderable.

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