

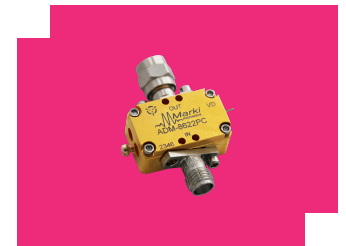
ADM-8622PC

300 kHz - 10 GHz High Dynamic Range Gain Block

DEVICE OVERVIEW

General Description

The ADM-8622PC is a high-linearity low noise amplifier capable of providing 15 dB gain, 2.1 dB noise figure and +27 dBm OIP3 from 300 kHz to 10 GHz. The ADM-8622PC can serve either as a linear signal amplifier, or as a saturated driver amplifier for H- or S-diode mixers. The amplifier features excellent return losses, gain flatness and high dynamic range making it suitable for RF front-end applications. The size and low power consumption of the ADM-8622PC make it ideal for low SWaP applications.



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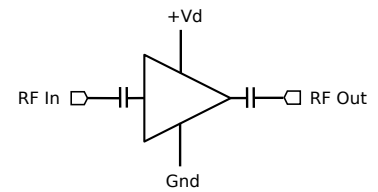
Features

- 15 dB typical gain
- 2.1 dB typical noise figure
- Low frequency operation down to 300kHz
- Single Supply, Positive Only Bias
- Low power consumption

Applications

- Test and Measurement Equipment
- Radar and satellite communications
- 5G transceivers
- Driver Amplifier for H and S - Diode Mixers

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Connectors	Green Status	Product Lifecycle	Export Classification
ADM-8622PC	300 kHz - 10 GHz High Dynamic Range Gain Block	PC	<u>Standard</u>	RoHS REACH	Released	EAR99

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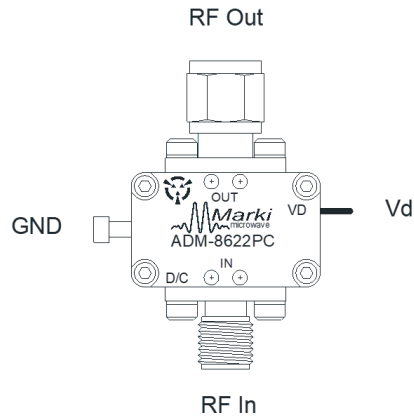
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Revision History

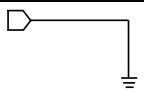
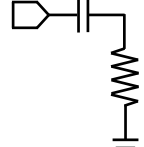
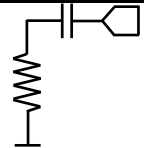
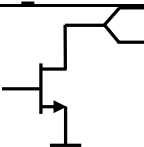
Revision Code	Revision Date	Comment
-	2023-10-11	Datasheet Initial Release
A	2025-05-07	Updated Absolute Maximum Operation Voltage from 4V to 7V

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 +3.3V.	

Specifications

Absolute Maximum Ratings

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If any one of 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)	60	mA
Drain Supply Voltage (Vd)	7	V
Maximum Operating Temperature for MTTF > 1E6 hours	85	°C
Maximum Storage Temperature	125	°C
Max Junction Temperature for MTTF of 1E6 hours	175	°C
Max Power Dissipation for MTTF of 1E6 hours	0.72	W
Minimum Operating Temperature for MTTF > 1E6 hours	-40	°C
Minimum Storage Temperature	-55	°C
RF Power Handling	20	dBm
θ_{Jc} , Junction to Case Thermal Resistance	50	°C/W

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
Ambient Temperature	-40	25	85	°C
Power Supply DC Current (Id) (No RF Input)	-	42	-	mA
Power Supply DC Voltage (Vd)	-	3.3	-	V
Input Power for Saturation	-	5	-	-

Sequencing Requirements

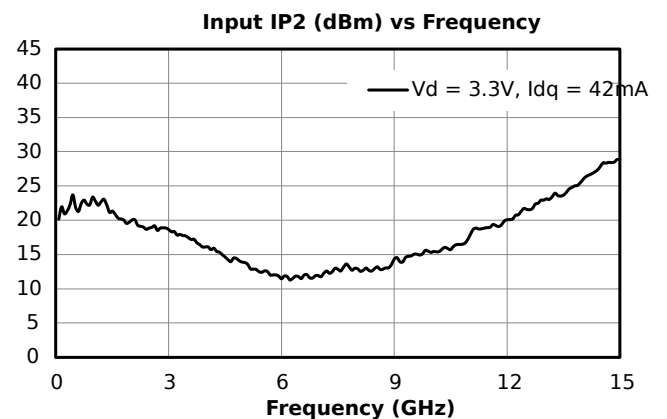
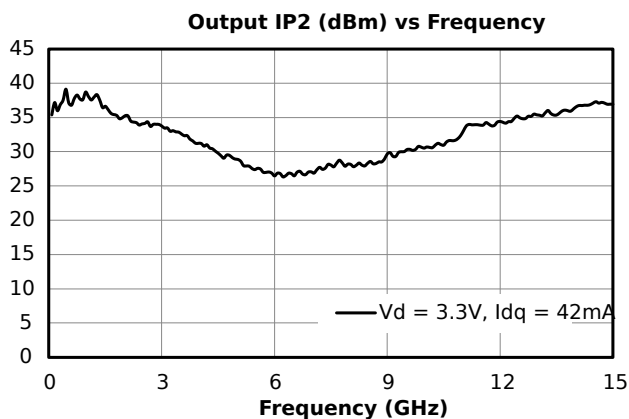
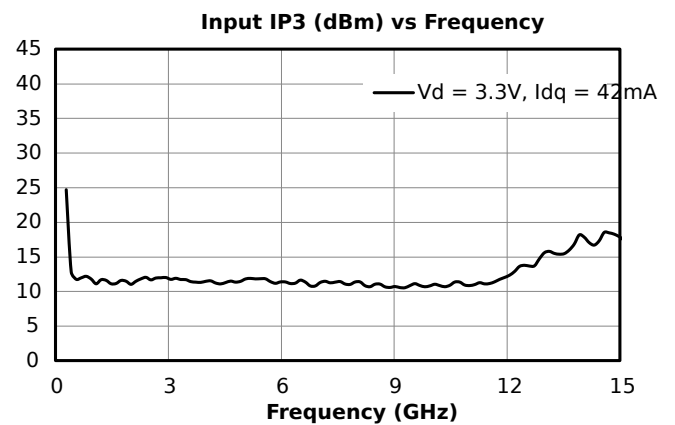
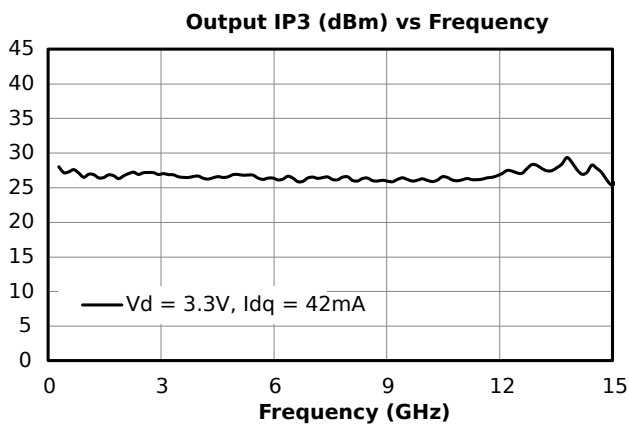
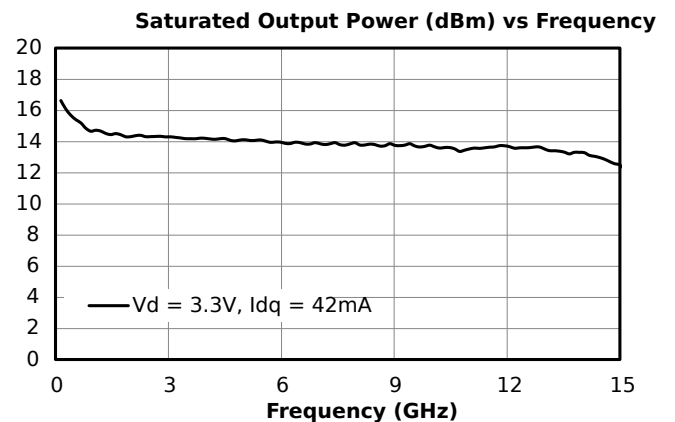
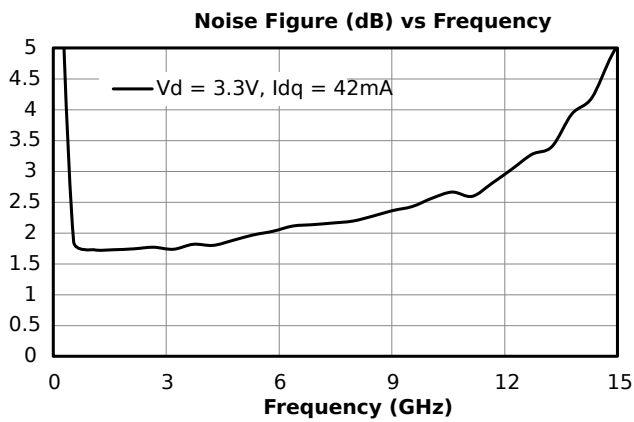
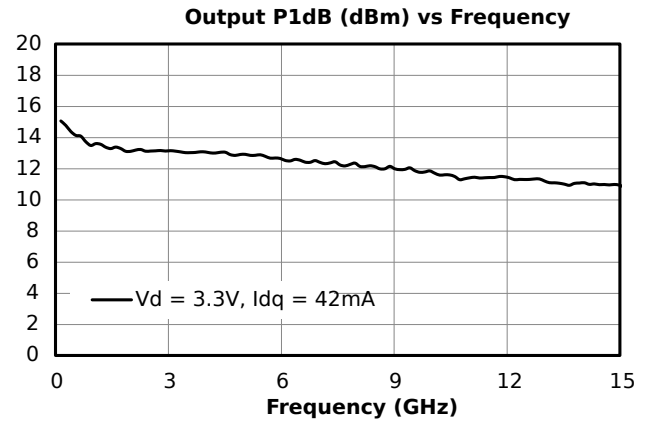
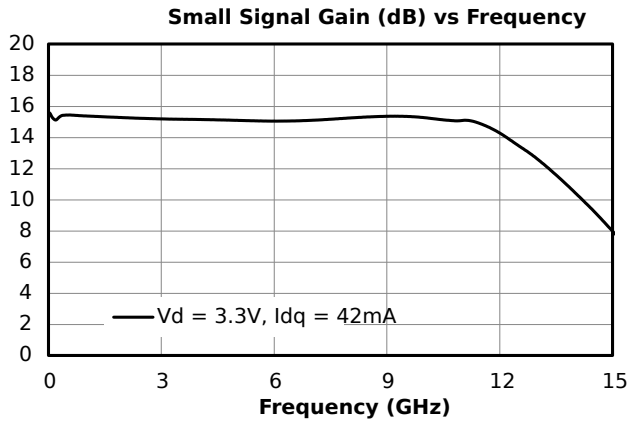
There is no sequencing required to power up or power down the amplifier.

Electrical Specifications

Unless otherwise specified, electrical specifications apply at TA=+25°C, Vd = 3.3V, Idq = 42mA.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Current Consumption	Vd = 3.3V, Idq = 42mA, no RF input	-	-	-	42	-	mA
Input IP2	Vd = 3.3V, Idq = 42mA, Pin = -18dBm per tone, 1MHz tone spacing	0.0003	10	-	15	-	dBm
Input IP3	Vd = 3.3V, Idq = 42mA, Pin = -18dBm per tone, 1MHz tone spacing	0.0003	10	-	12	-	dBm
Input Power for Saturation	Vd = 3.3V, Idq = 42mA	0.0003	10	-	5	-	dBm
Input Return Loss	Vd = 3.3V, Idq = 42mA, Pin = -20dBm	0.0003	10	-	20	-	dB
Noise Figure	Vd = 3.3V, Idq = 42mA, Pin = -20dBm	0.0003	10	-	2.1	-	dB
Output IP2	Vd = 3.3V, Idq = 42mA, Pin = -18dBm per tone, 1MHz tone spacing	0.0003	10	-	30	-	dBm
Output IP3	Vd = 3.3V, Idq = 42mA, Pin = -18dBm per tone, 1MHz tone spacing	0.0003	10	-	27	-	dBm
Output P1dB	Vd = 3.3V, Idq = 42mA	0.0003	10	-	13	-	dBm
Output Return Loss	Vd = 3.3V, Idq = 42mA, Pin = -20dBm	0.0003	10	-	17	-	dB
Reverse Isolation	Vd = 3.3V, Idq = 42mA, Pin = -20dBm	0.0003	10	-	20	-	dB
Saturated Output Power	Vd = 3.3V, Idq = 42mA	0.0003	10	-	14	-	dBm
Small Signal Gain	Vd = 3.3V, Idq = 42mA, Pin = -20dBm	0.0003	10	13	15	-	dB

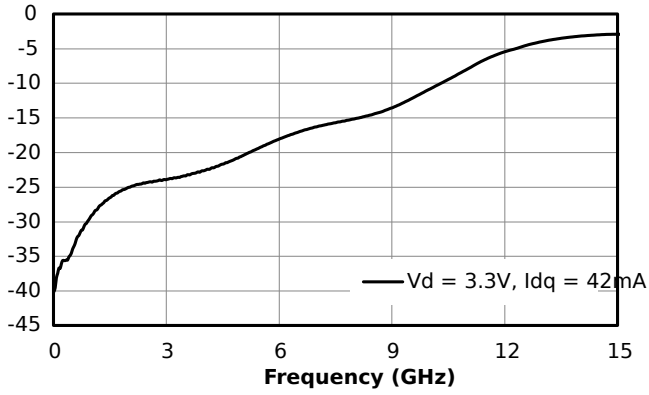
Typical Performance Plots



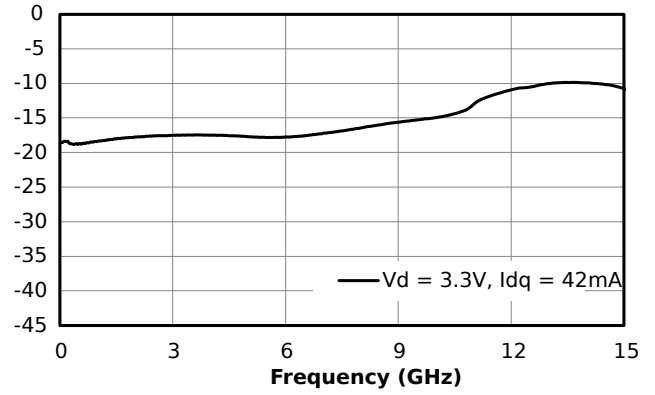
ADM-8622PC

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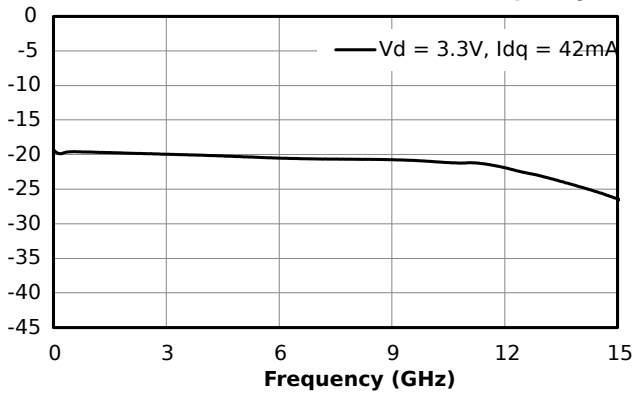
Input Return Loss (dB) vs Frequency



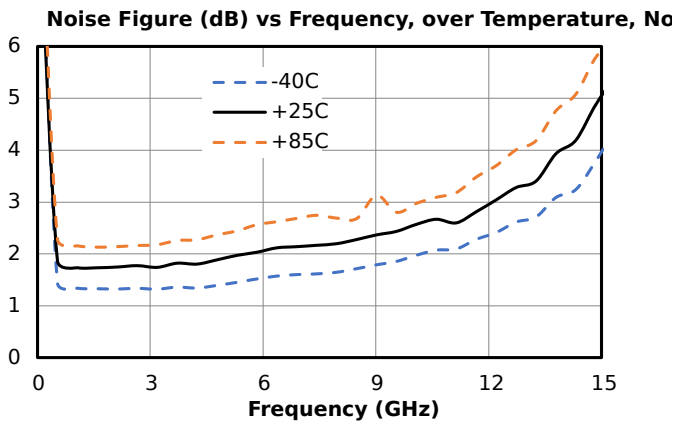
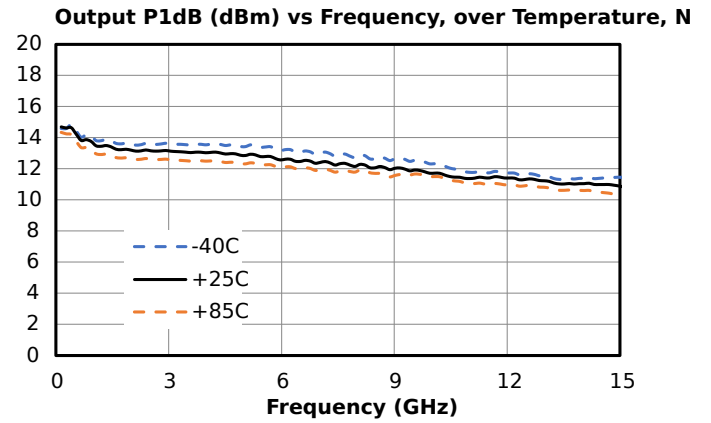
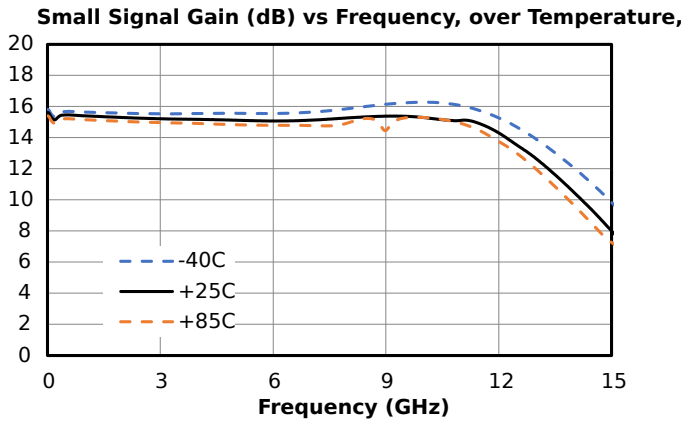
Output Return Loss (dB) vs Frequency



Reverse Isolation (dB) vs Frequency



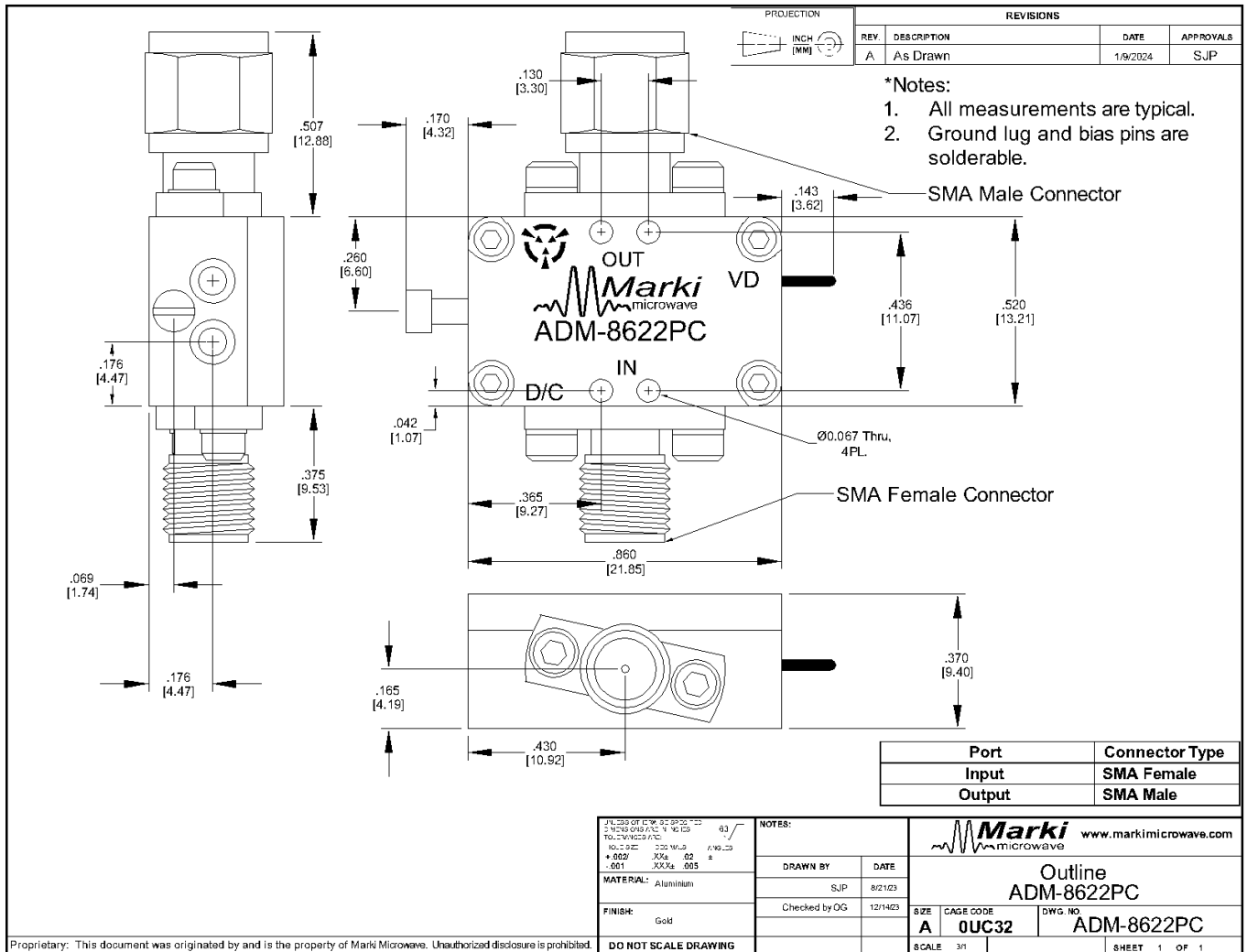
Typical Performance over Temperature Plots



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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