

ADM1-8096PC

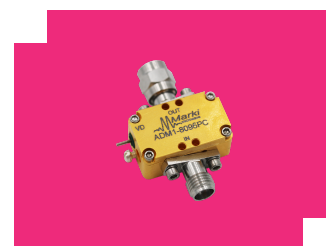
0.09 - 6 GHz High Dynamic Range Gain Block

DEVICE OVERVIEW

General Description

The ADM1-8096PC is a high-linearity amplifier capable of providing +23 dBm output power up to 6 GHz. The ADM1-8096PC can serve either as a linear signal amplifier, or as a saturated driver amplifier for H- or S-diode mixers. The amplifier has excellent return losses and gain flatness.

[Download s-parameters here](#)



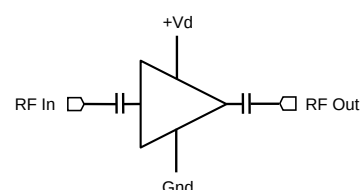
Features

- +23 dBm output power
- +22.5 dB gain
- Gain flatness
- Excellent Return Losses
- No external bias tee required
- Single supply, positive only bias

Applications

- Mobile test and measurement equipment
- Radar
- Driver Amplifier for H and S - Diode Mixers
- SATCOM

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Packing Size	Green Status	Product Lifecycle	Export Classification
ADM1-8096PC	0.09 - 6 GHz High Dynamic Range Gain Block	PC	-	RoHS	Released	EAR99

ADM1-8096PC

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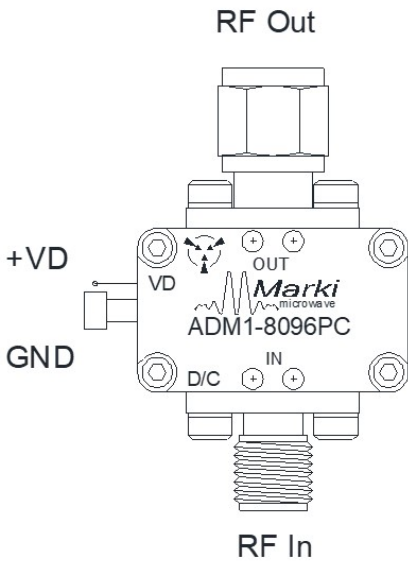
Revision History

Revision Code	Revision Date	Comment
-	2022-11-01	Initial Release

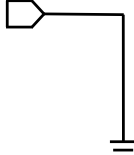
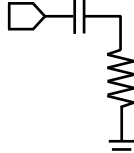
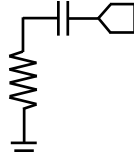
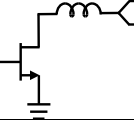
Port Configuration and Functions

Port Diagram

A port diagram of the ADM1-8096PC is shown below.



Port Functions

Port	Function	Description	Equivalent Circuit for Package
GND	Ground	The housing or outside of the coaxial cables must be connected to a DC/RF ground potential with high thermal and electrical conductivity.	
RF In	RF Input	The amplifier's RF Input port is matched to 50 Ω and has built-in DC blocking capacitors.	
RF Out	RF Output	The amplifier's RF Output port is 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.	

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 (RF Applied)	130	mA
Drain Supply Voltage (Vd)	8	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	-65	°C
RF Input Power	15	dBm

Package Information

Parameter	Details	Rating
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) ¹	44	84	107	mA
Input Power for Saturation	2	4	6	dBm
Power Supply DC Voltage (Vd)	3	5	6	V

^[1] Recommended operating current conditions without RF input applied.

Sequencing Requirements

There is no sequencing required to power up or power down the amplifier. An output load is recommended to be connected to the amplifier during operation.

Electrical Specifications

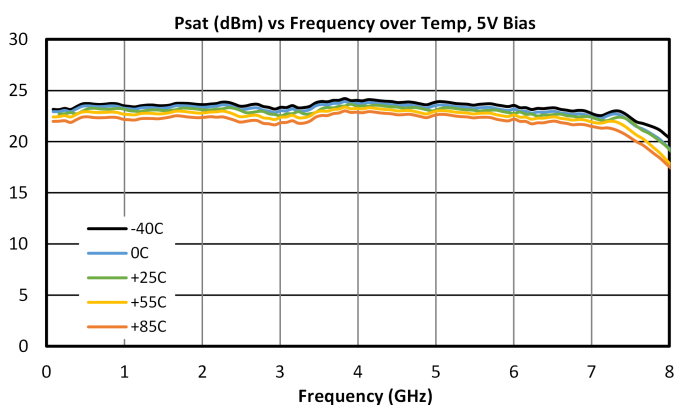
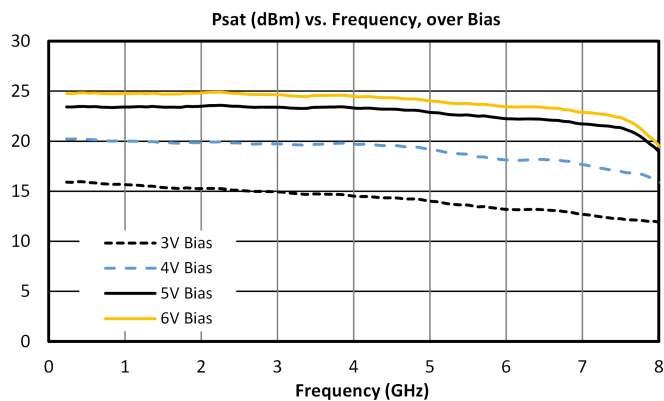
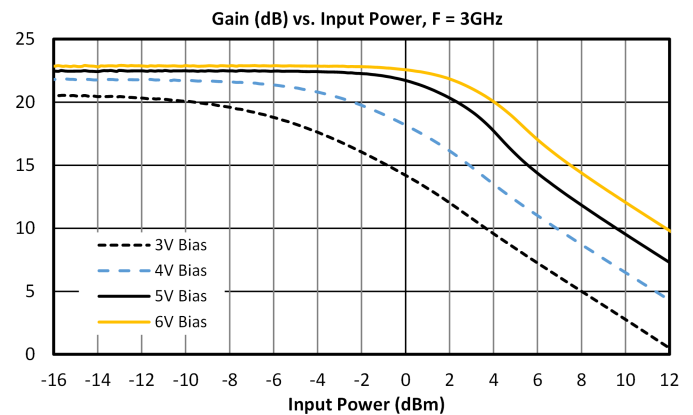
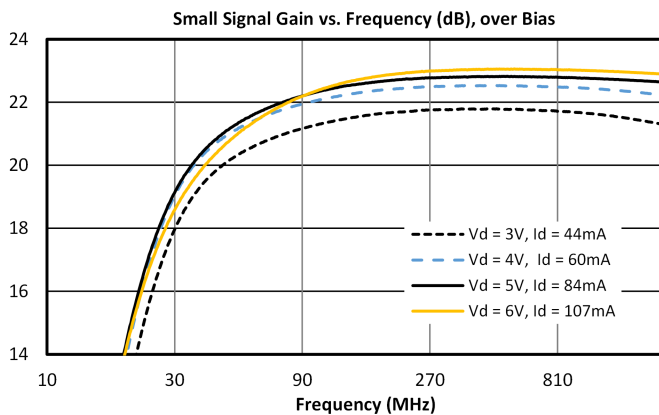
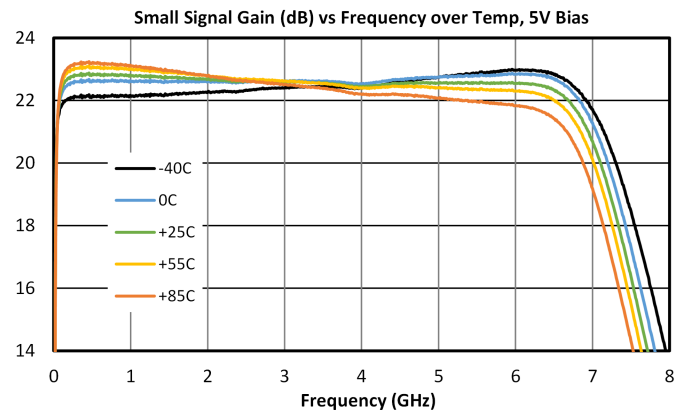
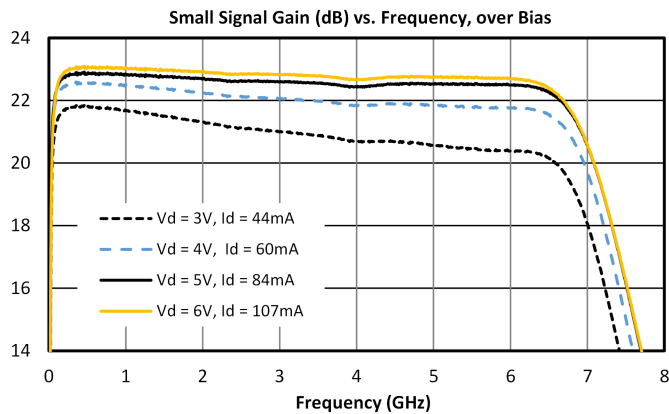
Unless otherwise specified, electrical specifications apply at TA=+25°C, Vd = 5 V. Min and Max limits apply only to our connectorized units and are guaranteed at TA=+25°C

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Small Signal Gain	Vd = 5 V, Pin = -20 dBm	0.09	6	-	22.5	-	dB
Noise Figure	-	0.09	3	-	1.5	-	dB
Noise Figure	-	3	6	-	2.2	-	dB
Saturated Output Power	Vd = 5 V	0.09	6	-	23	-	dBm
Output IP3	Vd = 5 V, Pin = -15 dBm per tone, 10 MHz tone spacing	0.09	6	-	35	-	dBm
Input IP3	Vd = 5 V, Pin = -15 dBm per tone, 10 MHz tone spacing	0.09	6	-	14	-	dBm
Output P1dB	Vd = 5V	0.09	6	-	23	-	dBm
Input Return Loss	Vd = 5 V, Pin = -20 dBm	0.09	6	-	16	-	dB
Output Return Loss	Vd = 5 V, Pin = -20 dBm	0.09	6	-	16	-	dB
Reverse Isolation	Vd = 5 V, Pin = -20 dBm	0.09	6	-	28	-	dB
Input Power for Saturation	Vd = 5V	0.09	6	2	4	-	dBm
DC Supply Quiescent Current (Idq)	Vd = 5 V, no RF input	-	-	-	84	-	mA

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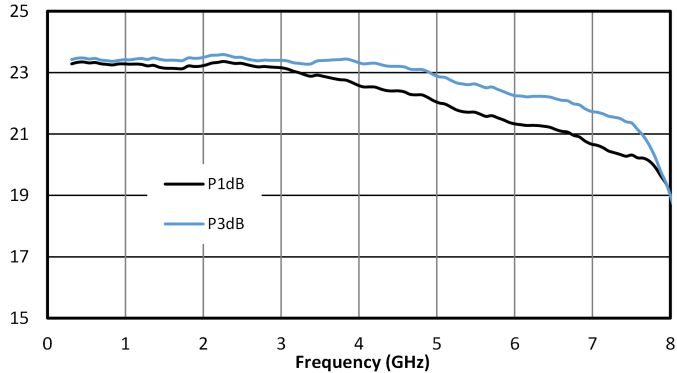
ADM1-8096PC Typical Performance Plots



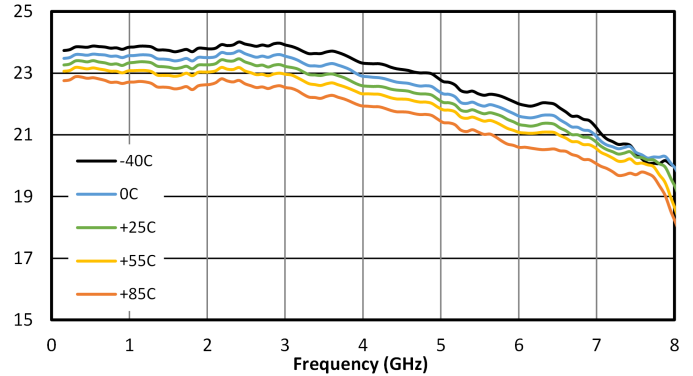
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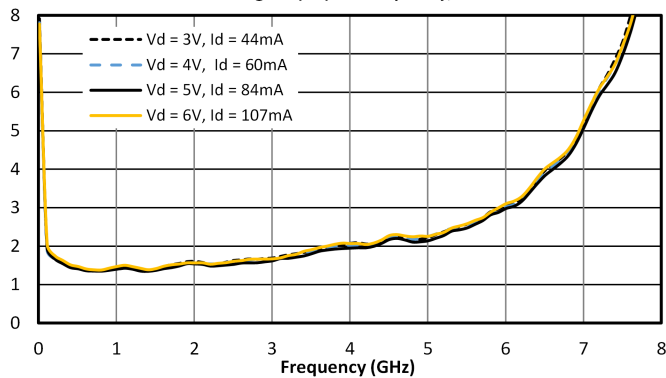
Output Compression Curves (dBm) vs. Frequency, 5V Bias



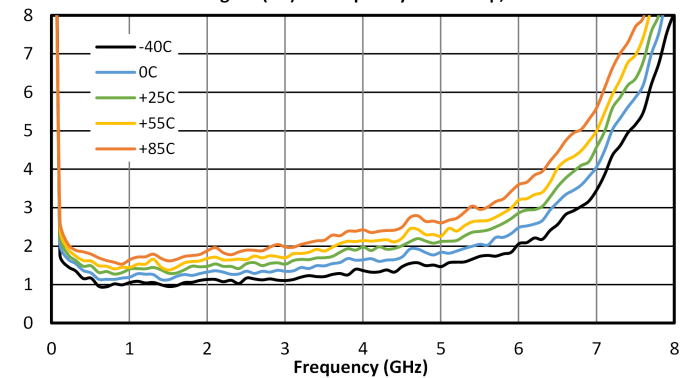
P1dB (dBm) vs Frequency over Temp, 5V Bias



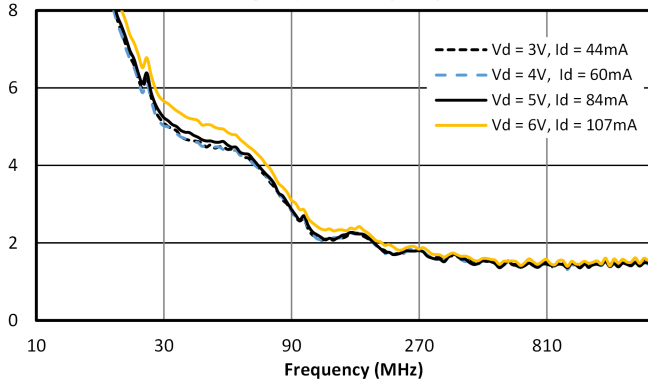
Noise Figure (dB) vs. Frequency, over Bias



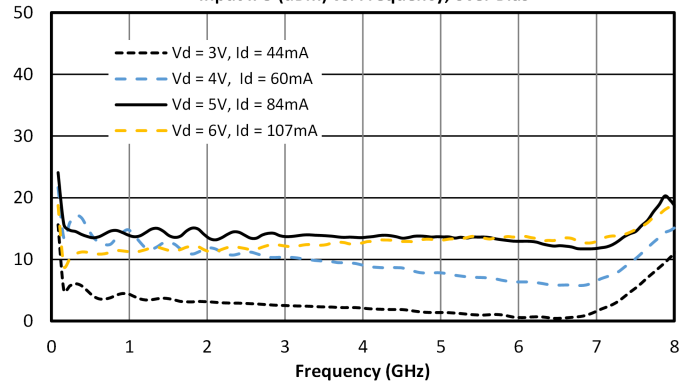
Noise Figure (dB) vs Frequency over Temp, 5V Bias



Noise Figure (dB) vs. Frequency, over Bias

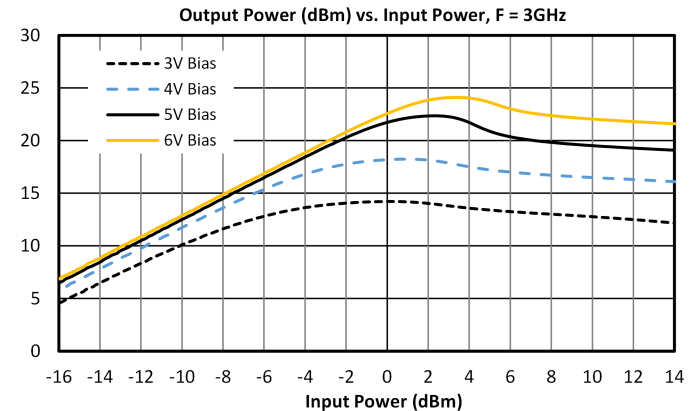
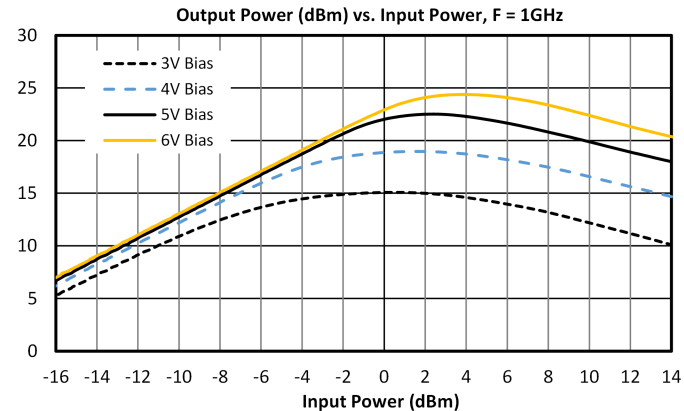
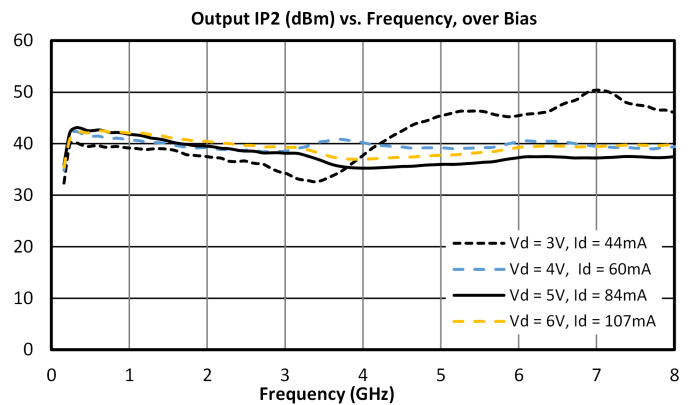
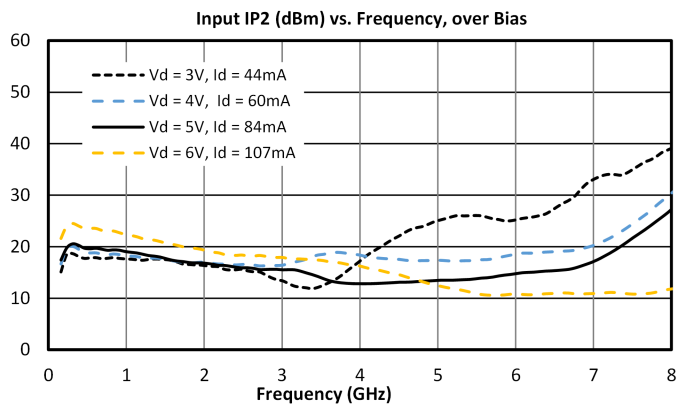
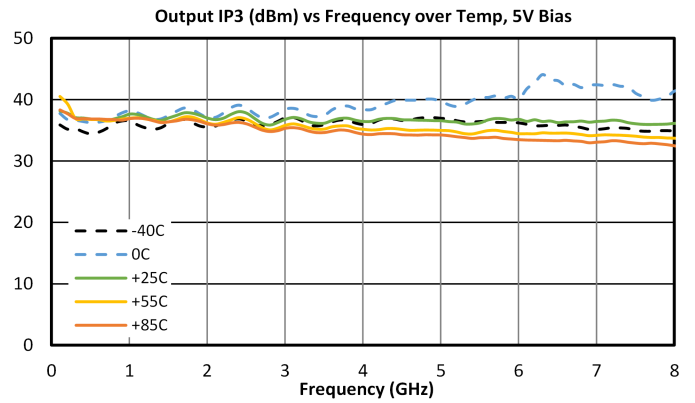
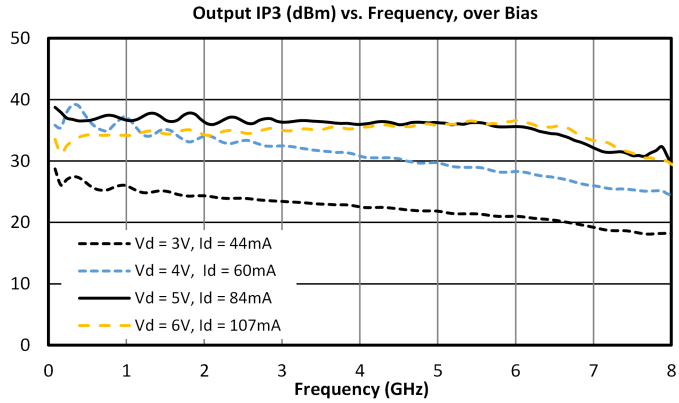


Input IP3 (dBm) vs. Frequency, over Bias



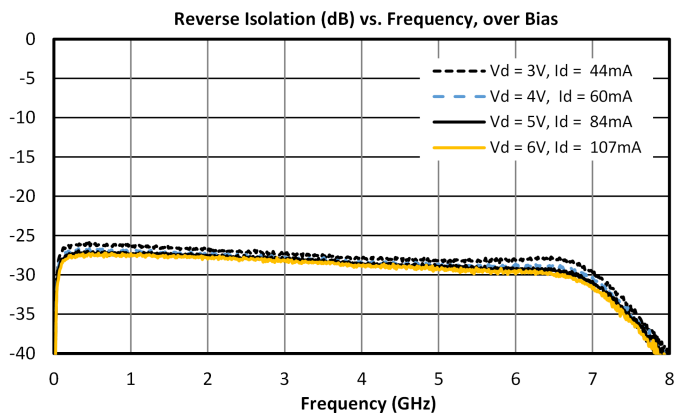
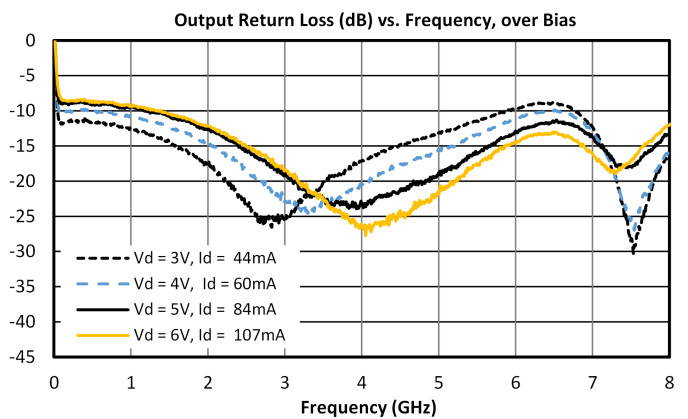
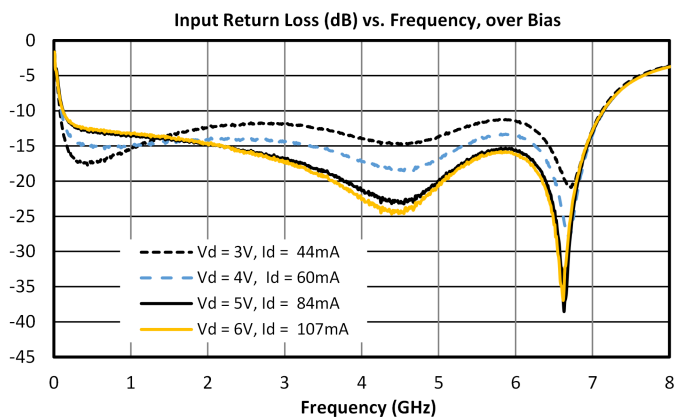
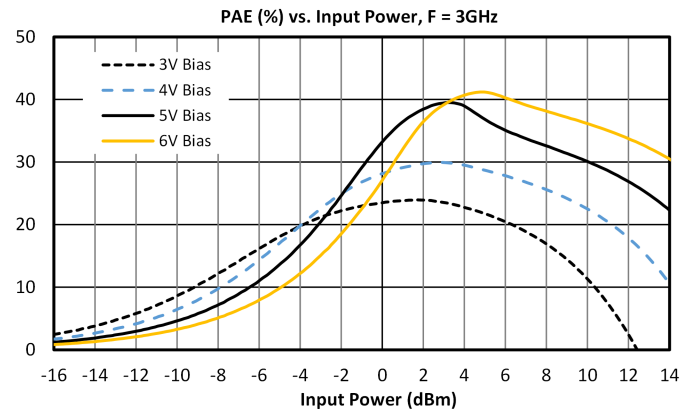
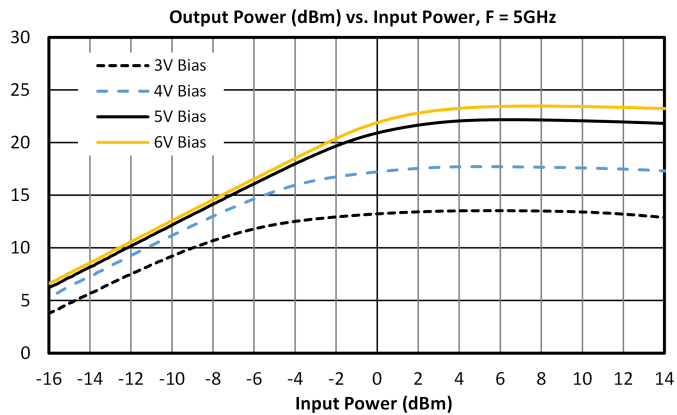
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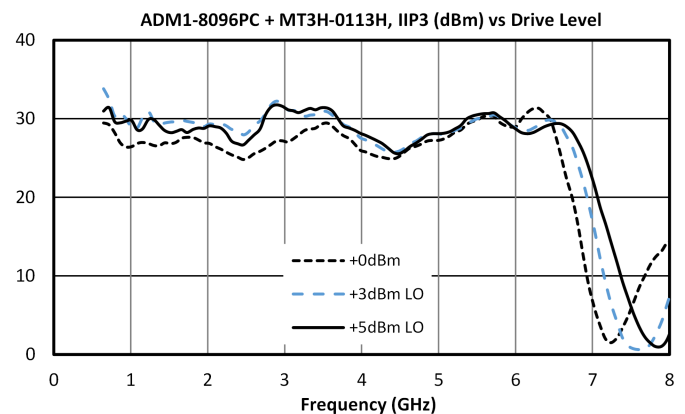
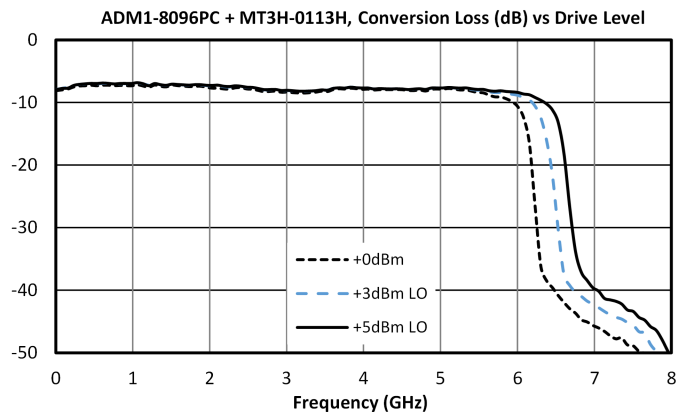
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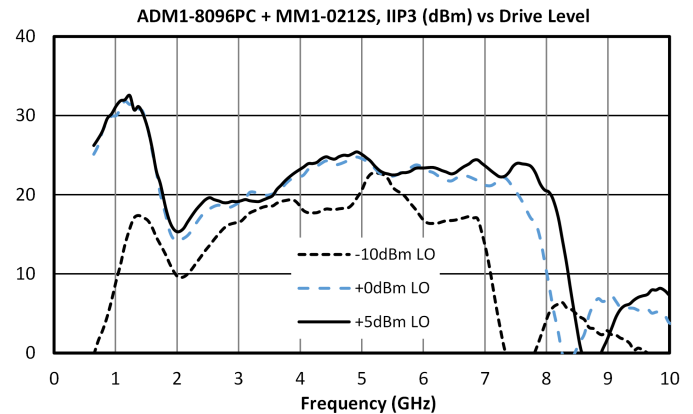
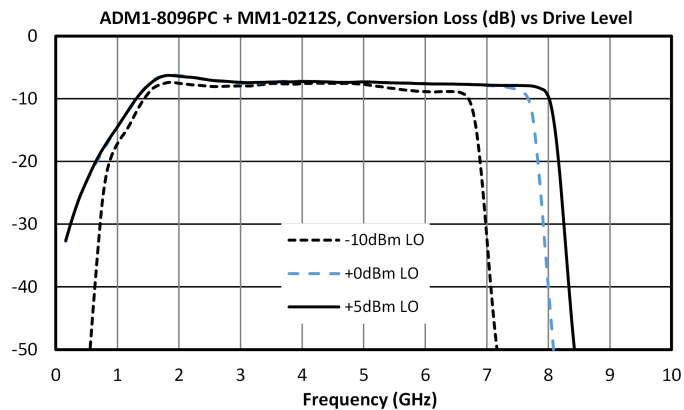
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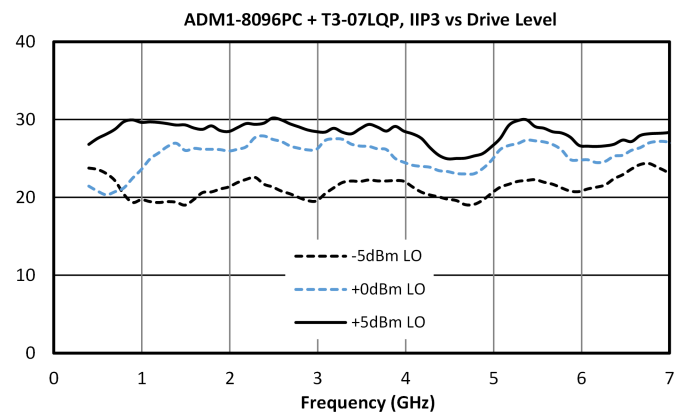
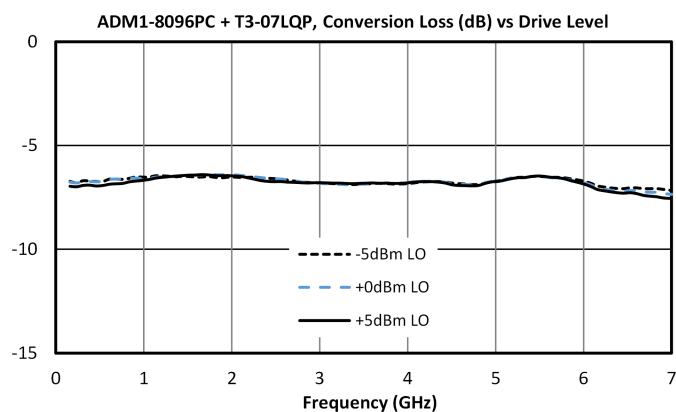
Typical Performance Plots of Marki MT3H-0113H with ADM1-8096PC



Typical Performance Plots of Marki MM1-0212S with ADM1-8096PC



Typical Performance Plots of Marki T3-07LQP with ADM1-8096PC

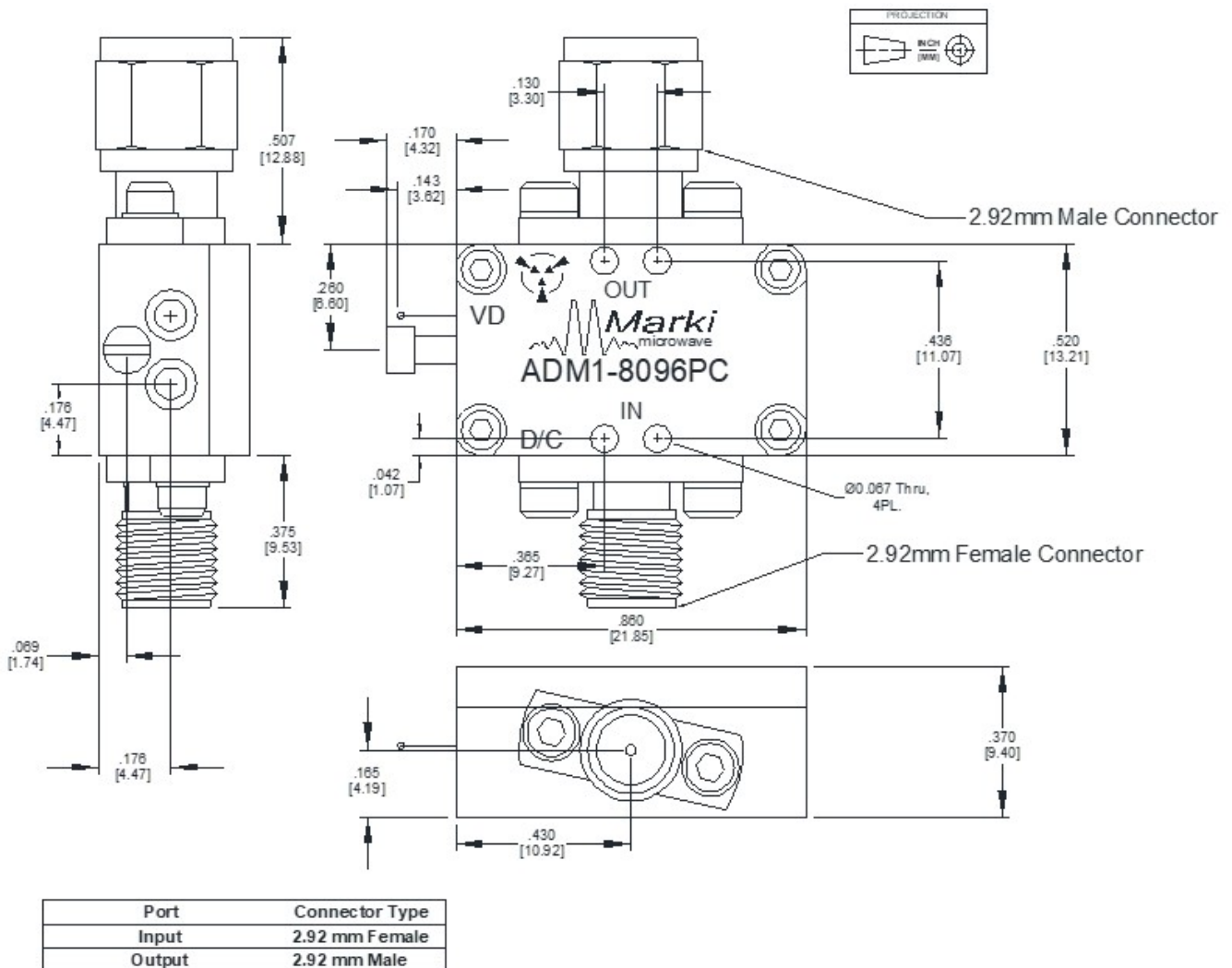


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Mechanical Data

Outline Drawing



Package Notes:

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

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