MMIC SURFACE MOUNT

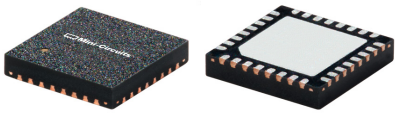
Power Amplifier

PMA5-123-1W+

50Ω 8 to 12 GHz 1 W P_{SAT}

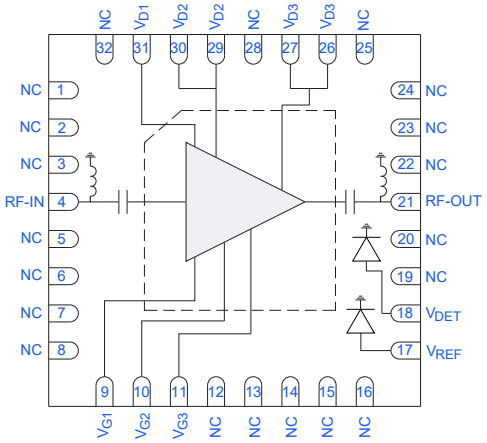
THE BIG DEAL

- P_{SAT}, Typ. +31.9 dBm
- PAE, Typ. 35%
- Linear Gain, Typ. 31.2 dB
- Gain Flatness < ± 1.3 dB
- IM3, Typ. -36 dBc @ P_{OUT} = +20 dBm/Tone
- IM5, Typ. -59 dBc @ P_{OUT} = +20 dBm/Tone
- Supply Voltage, +6 V at 600 mA
- Integrated Power Detector
- 5×5 mm 32-Lead QFN-Style Package



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



APPLICATIONS

- Radar, EW, and ECM Defense Systems
- Satellite Communications
- MIMO Wireless Infrastructure Systems
- Microwave Radio & VSAT

PRODUCT OVERVIEW

Mini-Circuits' PMA5-123-1W+ is a GaAs MMIC Power Amplifier operating from 8 to 12 GHz with high linear gain, excellent linearity, and high efficiency in a compact footprint, making it an ideal pre-driver stage in demanding transmitter applications. At 10 GHz, the amplifier delivers 31.2 dB gain, +31.9 dBm saturated output power, and 35% PAE, while maintaining outstanding linearity with -36 dBc IM3 and -59 dBc IM5 at +20 dBm/tone. The amplifier's linear performance and integrated power detector functionality make it well suited for radar, electronic warfare, satellite communication, and microwave radio applications, where signal integrity and power monitoring are critical. The device operates from a +6 V supply with 600 mA quiescent current. The amplifier is matched to 50Ω at the input and output, making it easy to implement. It comes in a 5×5 mm, 32-lead QFN-Style surface-mount package, ensuring excellent thermal performance and compatibility with high-volume manufacturing.

KEY FEATURES

Features	Advantages
• Gain, Typ. 31.2 dB • Gain Flatness <± 1.3 dB • P_{SAT} Typ. +31.9 dBm • PAE, Typ. 35%	Delivers flat, high linear gain and strong output drive capability exceeding 1 W across the full band, with high efficiency. This performance reduces the need for additional driver stages, simplifying transmitter chains and making the amplifier well suited for pre-driver applications ahead of the high-power final-stage amplifier.
At P_{OUT} = +20 dBm/Tone: • OIP2, Typ. +60 dBm • OIP3, Typ. +39 dBm	Excellent linearity provides low in-band IM distortion products. This preserves signal integrity and minimizes spectral regrowth in complex modulation schemes, making the amplifier well suited for high linearity communication and radar systems.
Integrated Power Detector	The amplifier's on-chip power detector provides a monotonic output voltage that varies linearly in dB with output power up to +30 dBm, enabling real-time output power monitoring for closed-loop automatic level control (ALC) and dynamic gain management without external coupling components.
• 50Ω Matched • Operating Temperature -45 °C to +105 °C	Fully self-contained RF interface with no external matching network required. This reduces component count, board area, and design iteration cycles. Wide temperature operation and standard supply voltage ensure drop-in compatibility across defense, satellite, and communications platforms from prototype to production.
5×5 mm 32-Lead QFN-Style Package	Small footprint saves space in dense layouts while providing low inductance, repeatable transitions, and excellent thermal contact to the PCB. Industry standard packaging allows for ease of assembly in high volume manufacturing processes.

Power Amplifier

PMA5-123-1W+

50Ω 8 to 12 GHz 1 W P_{SAT}

ELECTRICAL SPECIFICATIONS[1] AT +25 °C, V_{DD} = +6 V, UNLESS NOTED OTHERWISE

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range	–	8	–	12	GHz
Gain	8	30.4	32.3	–	dB
	9	31.3	32.8	–	
	10	30.0	31.2	–	
	11	29.3	31.0	–	
	12	31.3	32.7	–	
Input Return Loss	8	–	14	–	dB
	9	–	14	–	
	10	–	17	–	
	11	–	13	–	
	12	–	14	–	
Output Return Loss	8	–	21	–	dB
	9	–	15	–	
	10	–	18	–	
	11	–	28	–	
	12	–	17	–	
Isolation	8–12	–	58.8	–	dB
Output Power at 1 dB Compression (P1dB)	8	–	+31.8	–	dBm
	9	–	+31.3	–	
	10	–	+30.7	–	
	11	–	+30	–	
	12	–	+30	–	
Output Power at Saturation (P_{SAT})[2]	8	–	+32.7	–	dBm
	9	–	+32.6	–	
	10	–	+31.9	–	
	11	–	+32.1	–	
	12	–	+31.8	–	
Power Added Efficiency (PAE) at P_{SAT}	8–12	–	35	–	%
Output Third-Order Intercept (P_{OUT} = +20 dBm/Tone)	8	–	+36.6	–	dBm
	9	–	+37.3	–	
	10	–	+38.8	–	
	11	–	+38.7	–	
	12	–	+37.2	–	
Output Second-Order Intercept (P_{OUT} = +20 dBm/Tone)	8	–	+58.7	–	dBm
	9	–	+56.5	–	
	10	–	+59.7	–	
	11	–	+57.1	–	
	12	–	+59.8	–	
Noise Figure	8	–	6.2	–	dB
	9	–	5.4	–	
	10	–	5.2	–	
	11	–	5.3	–	
	12	–	5.8	–	
Device Operating Voltage (V_{DD})[3]	–	+5	+6	+8	V
Device Operating Current (I_{DD})[4]	–	–	600	–	mA
Gate Voltage (V_{GG})[5]	–	–	-0.81	–	V
Device Gate Current (I_{GG})	–	–	1.13	–	µA
DC Current Variation vs. Temperature[6]	–	–	-10	–	µA/°C
DC Current Variation vs. Voltage[7]	–	–	-0.00156	–	mA/mV

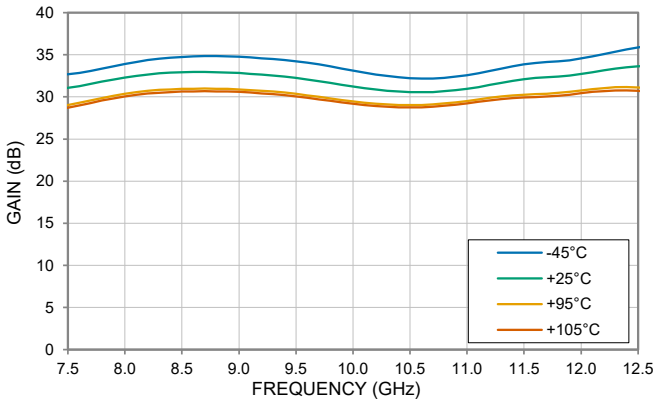
1. Tested on Mini-Circuits Characterization Test Board TB-PMA51231WCX+. See Figure 2. Board loss de-embedded to the device. Data measured in CW operation.
2. P_{SAT} is defined as when the Output Power changes 0.1 dB per 1 dB change in Input Power.
3. $V_{DD} = V_{D1} = V_{D2} = V_{D3}$
4. Current at P_{IN} = -15 dBm. Increases to 900 mA at P1dB.
5. $V_{GG} = V_{G1} = V_{G2} = V_{G3}$
6. (Current at +105 °C - Current at -45 °C) / (150 °C).
7. (Current at +8 V in mA - Current at +5 V in mA) / (+8 V - +5 V)

TYPICAL PERFORMANCE GRAPHS

Note: The following data was taken on Mini-Circuits Characterization Test Board TB-PMA51231WCX+ (Figure 2). All data taken at nominal condition of V_{DD} = +6 V and I_{DD} = 600 mA unless noted otherwise. V_{GG} was adjusted at each voltage and temperature level to achieve I_{DD}.

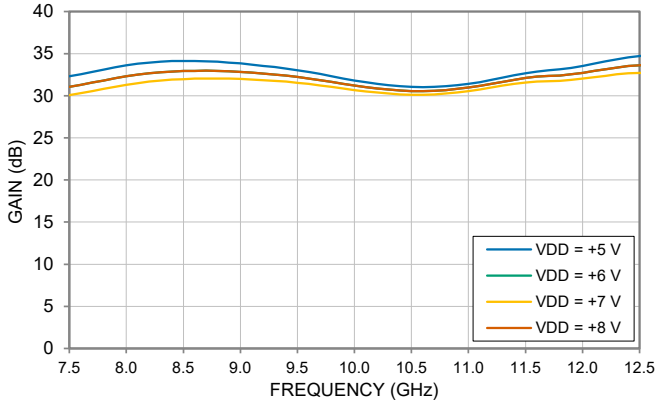
GAIN vs. TEMPERATURE

P_{IN} = -15 dBm, V_{DD} = +6 V, I_{DD} = 600 mA



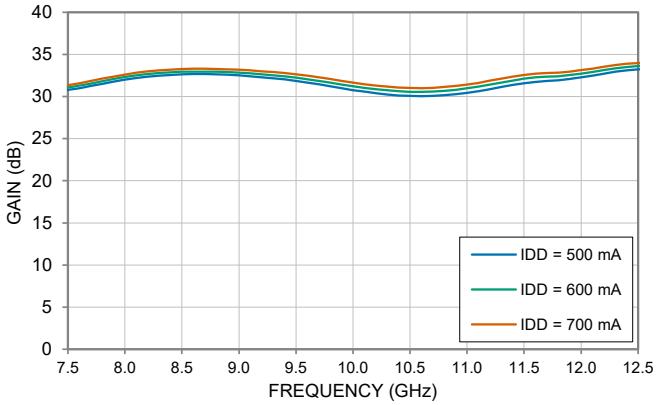
GAIN vs. DEVICE VOLTAGE

P_{IN} = -15 dBm, I_{DD} = 600 mA, TEMPERATURE = +25°C



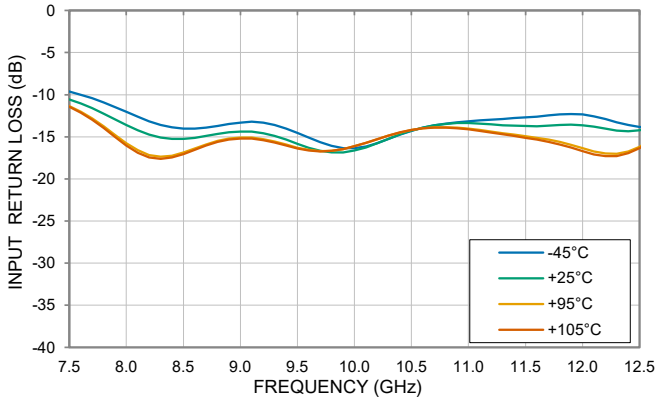
GAIN vs. DEVICE CURRENT

P_{IN} = -15 dBm, , V_{DD} = +6 V, TEMPERATURE = +25°C



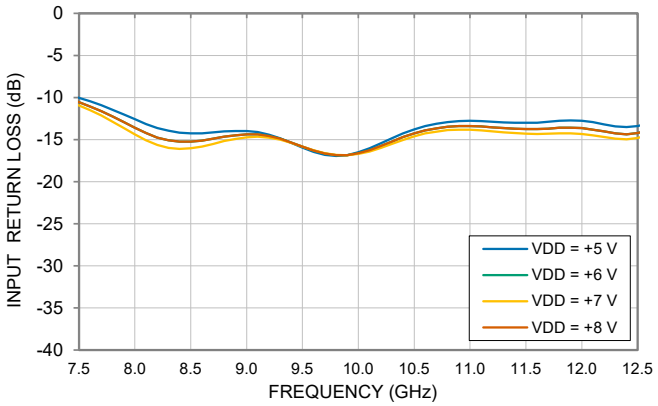
INPUT RETURN LOSS vs. TEMPERATURE

P_{IN} = -15 dBm, V_{DD} = +6 V, I_{DD} = 600 mA



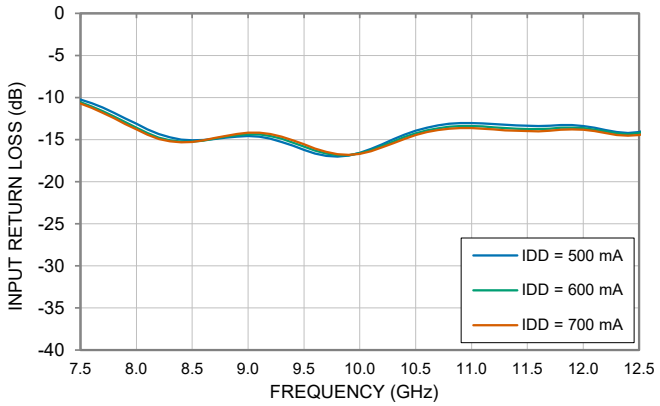
INPUT RETURN LOSS vs. DEVICE VOLTAGE

P_{IN} = -15 dBm, I_{DD} = 600 mA, TEMPERATURE = +25°C



INPUT RETURN LOSS vs. DEVICE CURRENT

P_{IN} = -15 dBm, , V_{DD} = +6 V, TEMPERATURE = +25°C

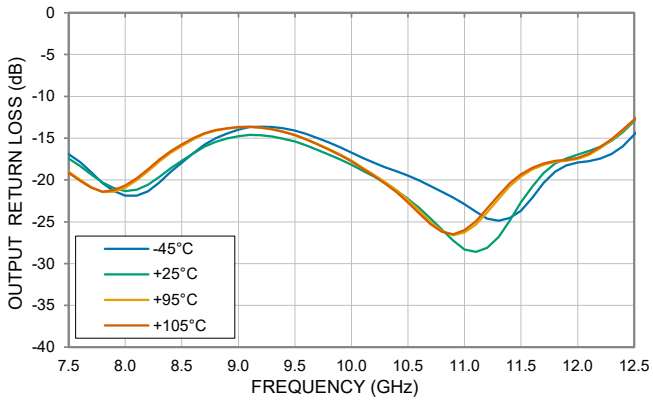


TYPICAL PERFORMANCE GRAPHS

Note: The following data was taken on Mini-Circuits Characterization Test Board TB-PMA51231WCX+ (Figure 2). All data taken at nominal condition of V_{DD} = +6 V and I_{DD} = 600 mA unless noted otherwise. V_{GG} was adjusted at each voltage and temperature level to achieve I_{DD}.

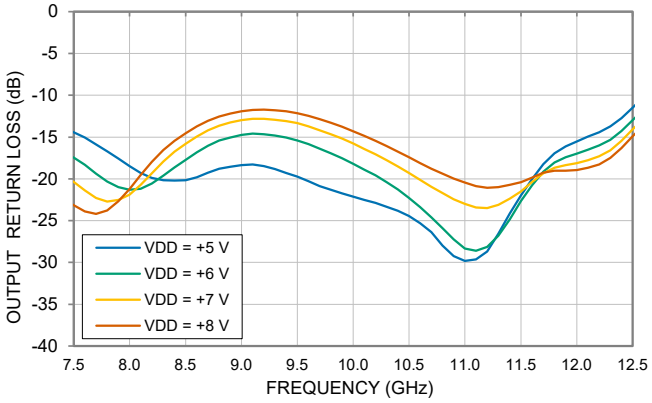
OUTPUT RETURN LOSS vs. TEMPERATURE

P_{IN} = -15 dBm, V_{DD} = +6 V, I_{DD} = 600 mA



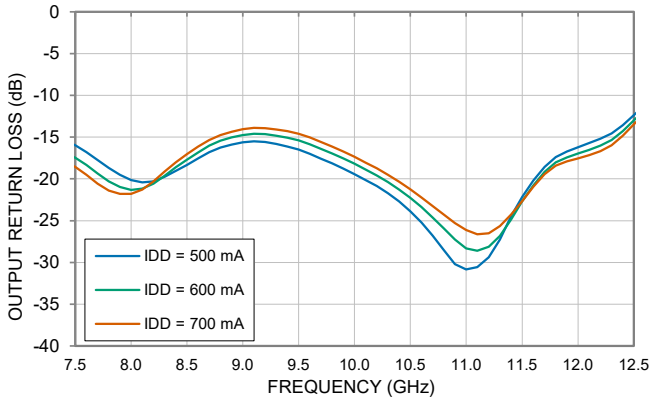
OUTPUT RETURN LOSS vs. DEVICE VOLTAGE

P_{IN} = -15 dBm, I_{DD} = 600 mA, TEMPERATURE = +25°C



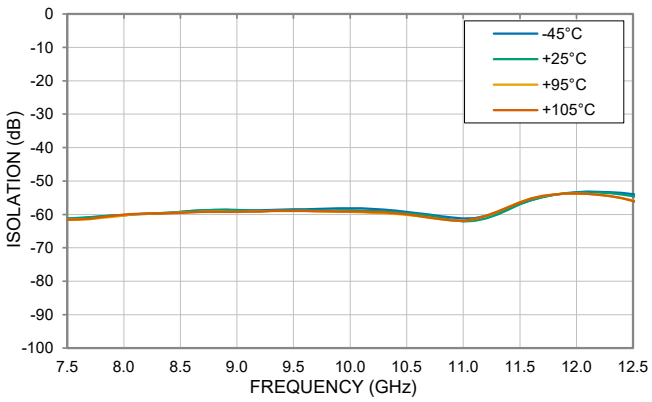
OUTPUT RETURN LOSS vs. DEVICE CURRENT

P_{IN} = -15 dBm, V_{DD} = +6 V, TEMPERATURE = +25°C



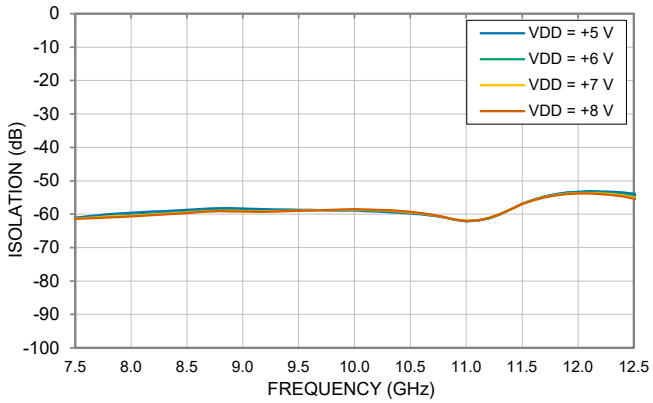
ISOLATION vs. TEMPERATURE

P_{IN} = -15 dBm, V_{DD} = +6 V, I_{DD} = 600 mA



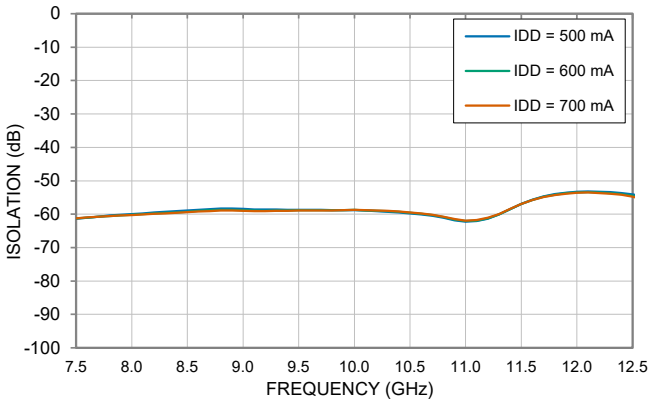
ISOLATION vs. DEVICE VOLTAGE

P_{IN} = -15 dBm, I_{DD} = 600 mA, TEMPERATURE = +25°C



ISOLATION vs. DEVICE CURRENT

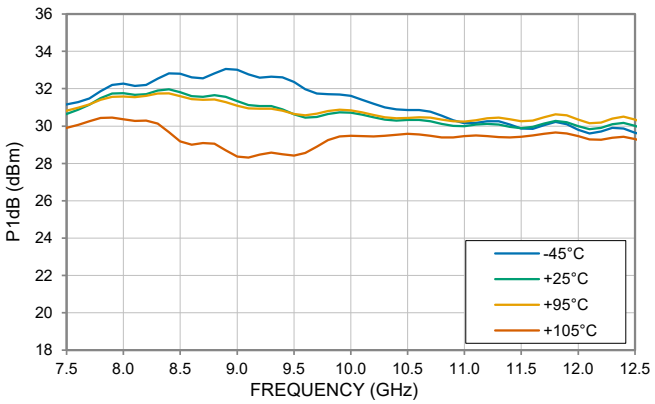
P_{IN} = -15 dBm, , V_{DD} = +6 V, TEMPERATURE = +25°C



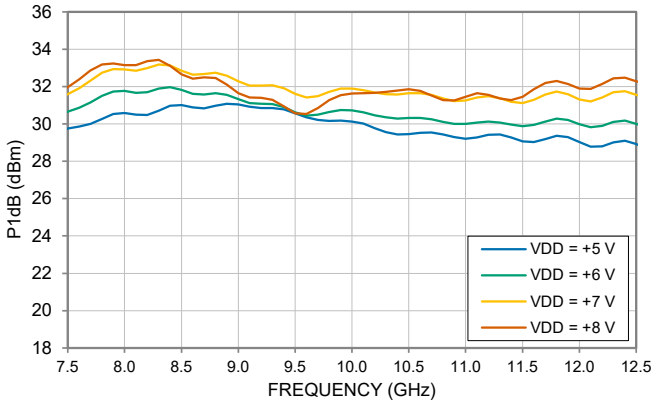
TYPICAL PERFORMANCE GRAPHS

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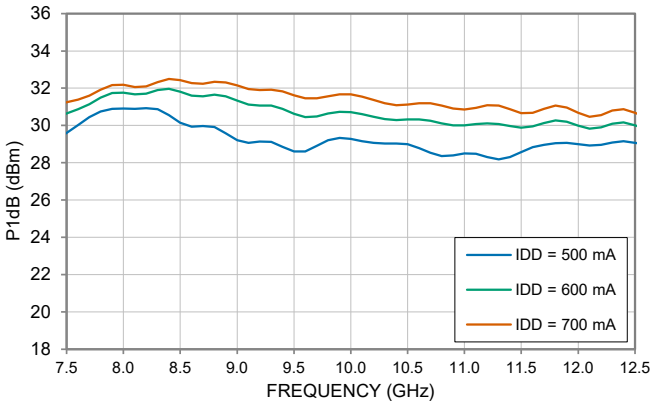
P1dB vs. TEMPERATURE



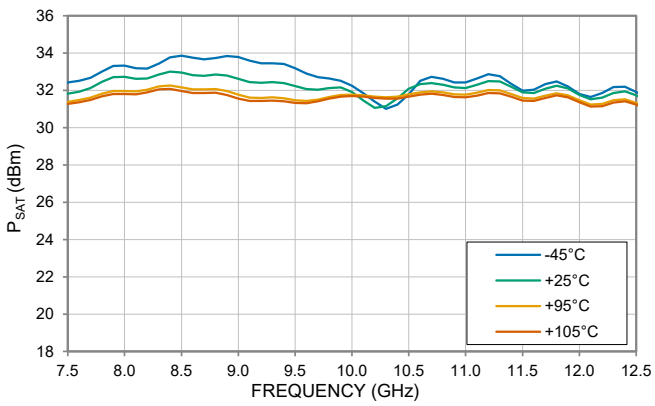
P1dB vs. DEVICE VOLTAGE
TEMPERATURE = +25°C



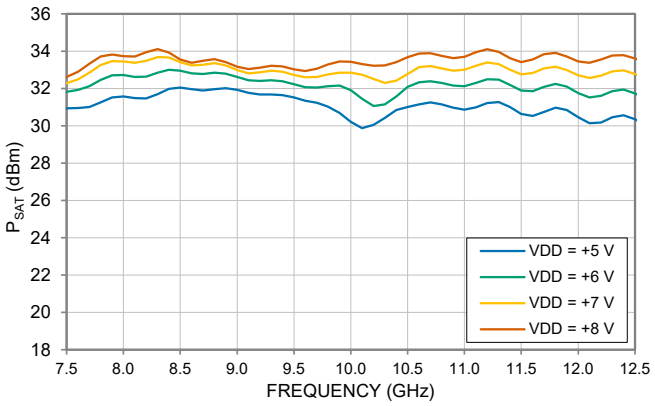
P1dB vs. DEVICE CURRENT
TEMPERATURE = +25°C



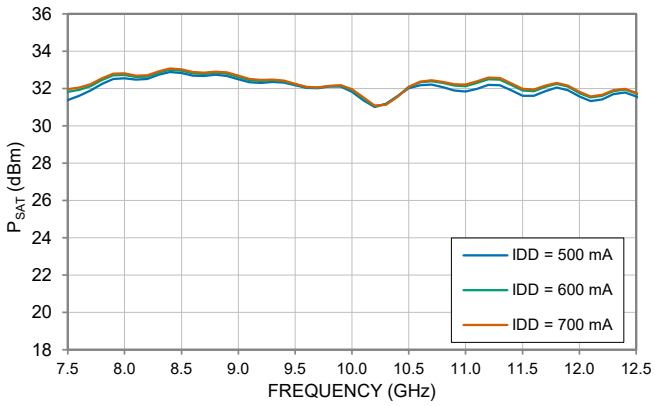
P_{SAT} vs. TEMPERATURE



P_{SAT} vs. DEVICE VOLTAGE
TEMPERATURE = +25°C



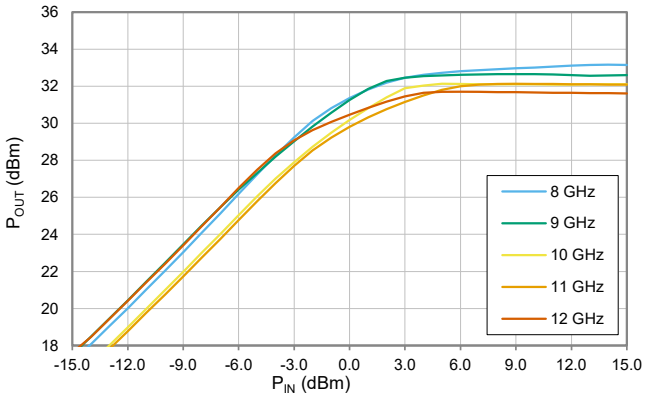
P_{SAT} vs. DEVICE CURRENT
TEMPERATURE = +25°C



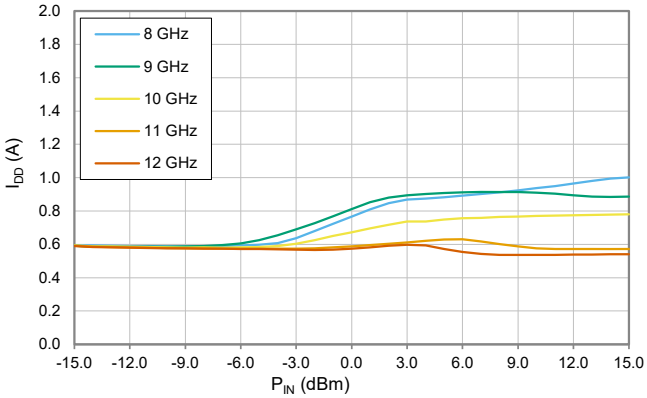
TYPICAL PERFORMANCE GRAPHS

Note: The following data was taken on Mini-Circuits Characterization Test Board TB-PMA51231WCX+ (Figure 2). All data taken at nominal condition of V_{DD} = +6 V and I_{DD} = 600 mA unless noted otherwise. V_{GG} was adjusted at each voltage and temperature level to achieve I_{DD}.

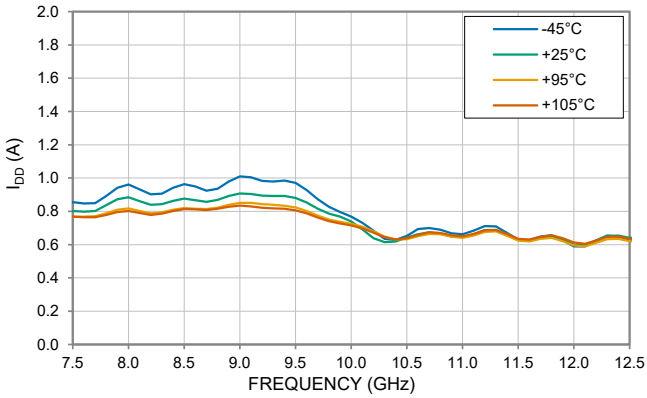
P_{OUT} vs. P_{IN}
TEMPERATURE = +25°C



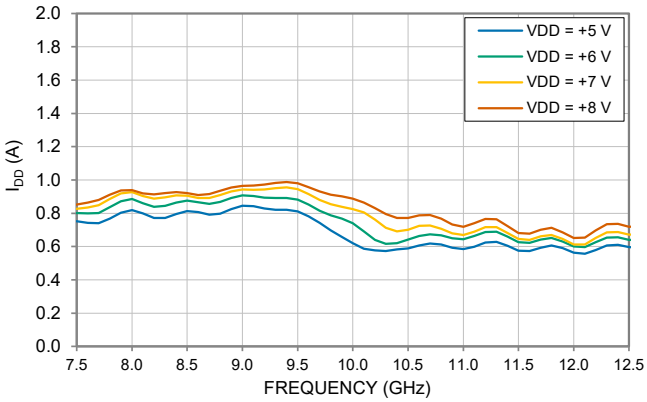
I_{DD} vs. P_{IN}
TEMPERATURE = +25°C



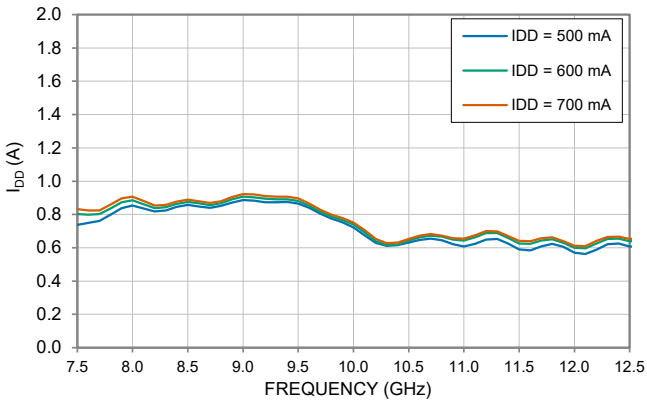
I_{DD} @ P_{SAT} vs. TEMPERATURE



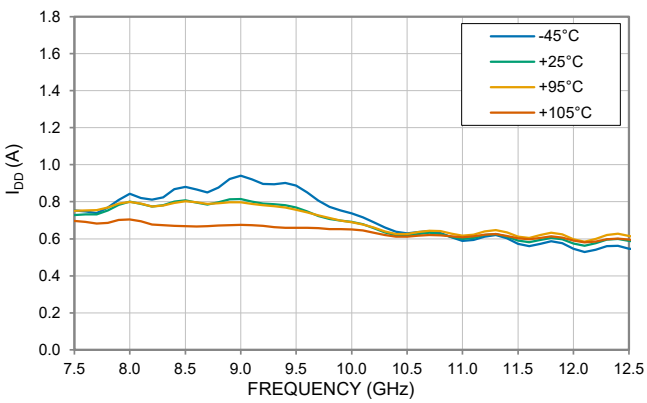
I_{DD} @ P_{SAT} vs. DEVICE VOLTAGE
TEMPERATURE = +25°C



I_{DD} @ P_{SAT} vs. DEVICE CURRENT
TEMPERATURE = +25°C



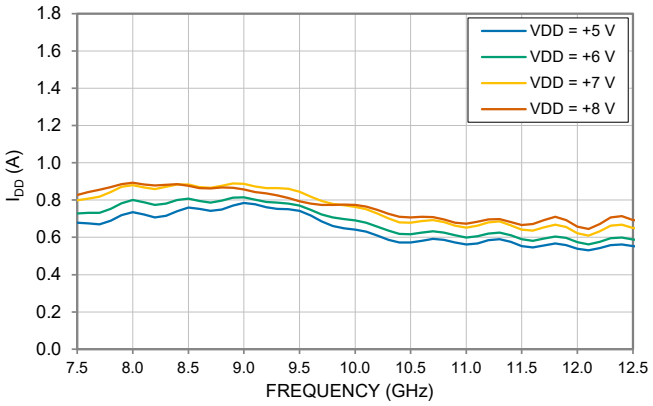
I_{DD} @ P1dB vs. TEMPERATURE



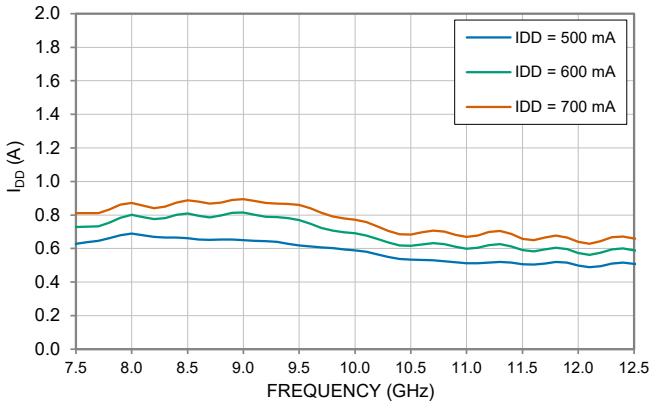
TYPICAL PERFORMANCE GRAPHS

Note: The following data was taken on Mini-Circuits Characterization Test Board TB-PMA51231WCX+ (Figure 2). All data taken at nominal condition of V_{DD} = +6 V and I_{DD} = 600 mA unless noted otherwise. V_{GG} was adjusted at each voltage and temperature level to achieve I_{DD}.

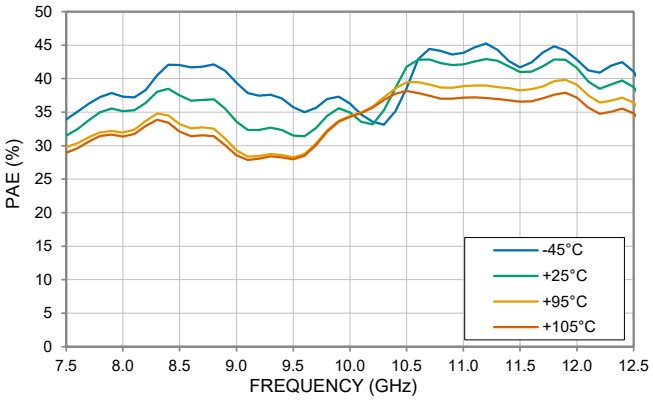
I_{DD} @ P1dB vs. DEVICE VOLTAGE
TEMPERATURE = +25°C



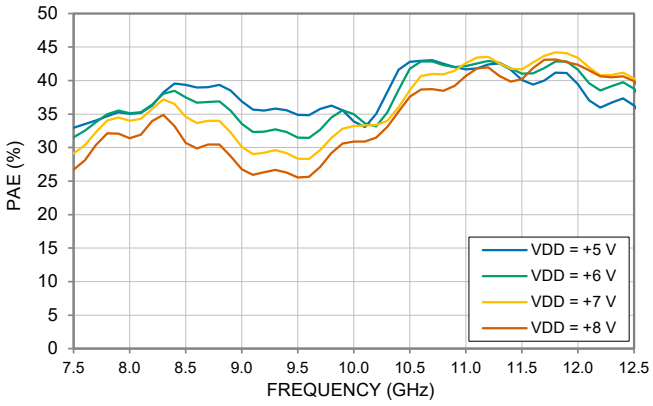
I_{DD} @ P1dB vs. DEVICE CURRENT
TEMPERATURE = +25°C



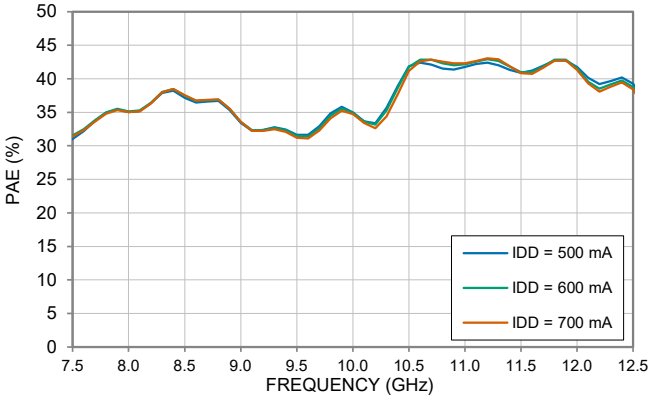
PAE @ P_{SAT} vs. TEMPERATURE



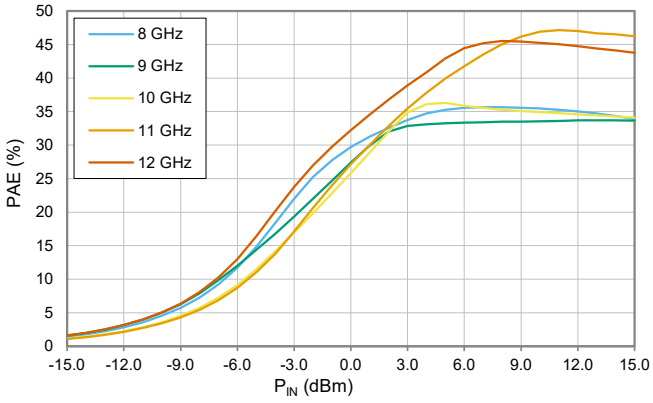
PAE @ P_{SAT} vs. DEVICE VOLTAGE
TEMPERATURE = +25°C



PAE @ P_{SAT} vs. DEVICE CURRENT
TEMPERATURE = +25°C



PAE vs. P_{IN}
TEMPERATURE = +25°C

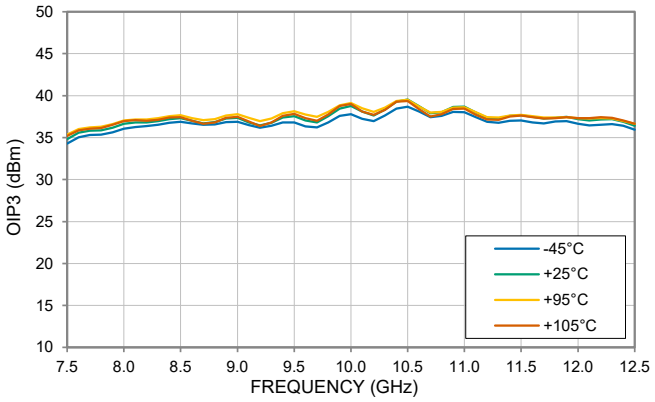


TYPICAL PERFORMANCE GRAPHS

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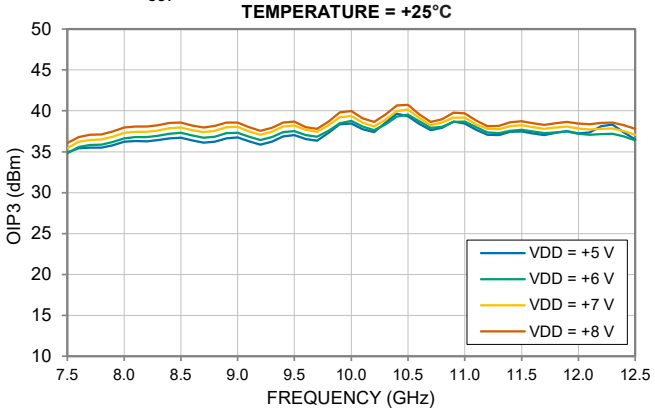
OUTPUT IP3 vs. TEMPERATURE

P_{OUT} = +20 dBm/TONE, TONE SPACING = 10 MHz



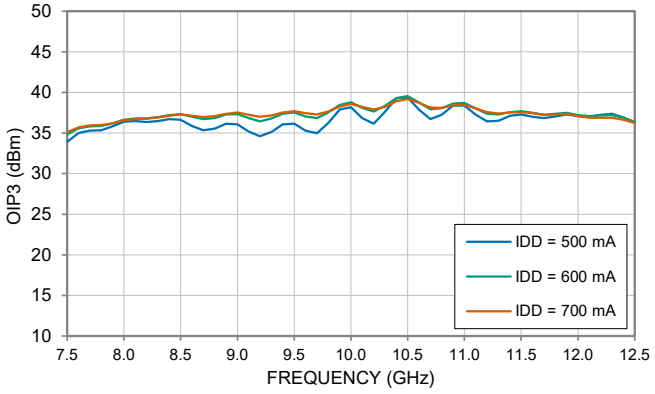
OUTPUT IP3 vs. DEVICE VOLTAGE

P_{OUT} = +20 dBm/TONE, TONE SPACING = 10 MHz
TEMPERATURE = +25°C



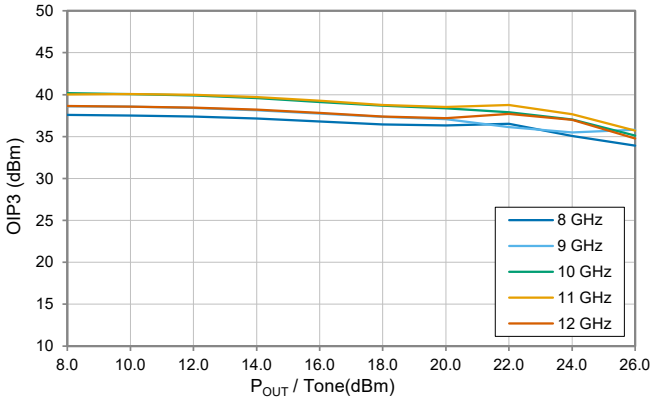
OUTPUT IP3 vs. DEVICE CURRENT

P_{OUT} = +20 dBm/TONE, TONE SPACING = 10 MHz
TEMPERATURE = +25°C



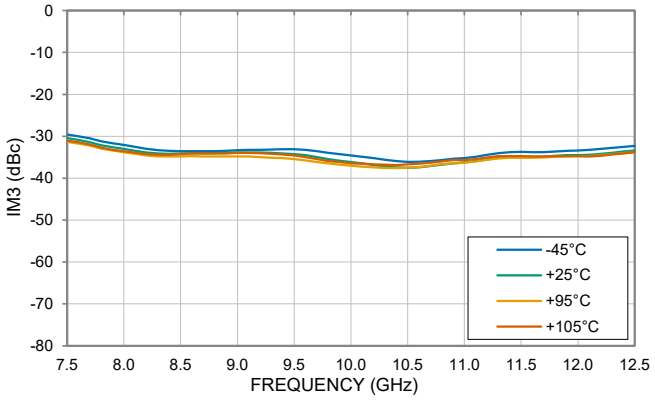
OIP3 vs. P_{OUT}/TONE

TONE SPACING = 10 MHz, TEMPERATURE = +25°C



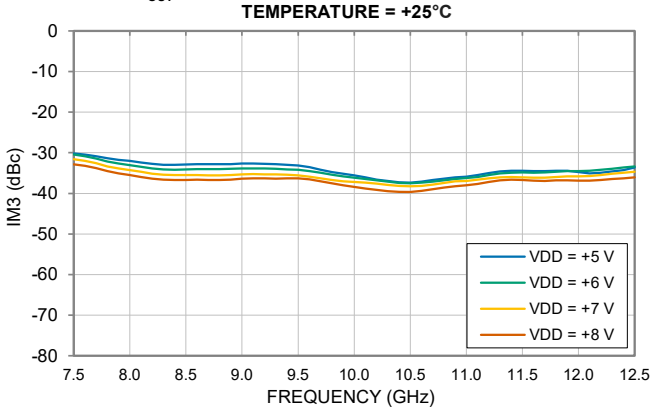
IM3 vs. TEMPERATURE

P_{OUT} = +20 dBm/TONE, TONE SPACING = 10 MHz



IM3 vs. DEVICE VOLTAGE

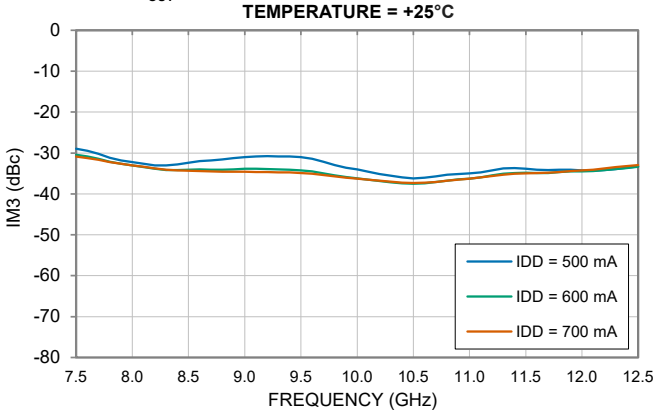
P_{OUT} = +20 dBm/TONE, TONE SPACING = 10 MHz
TEMPERATURE = +25°C



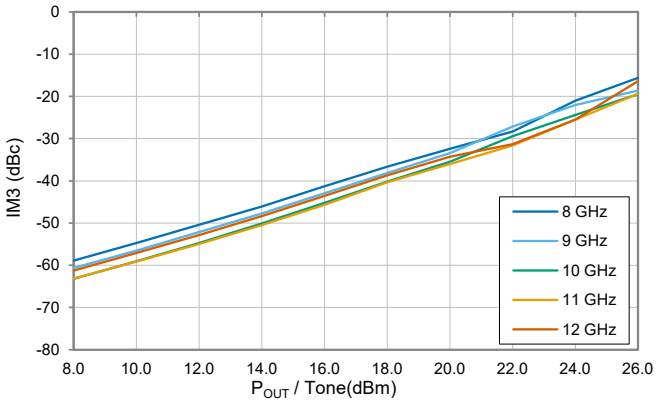
TYPICAL PERFORMANCE GRAPHS

Note: The following data was taken on Mini-Circuits Characterization Test Board TB-PMA51231WCX+ (Figure 2). All data taken at nominal condition of V_{DD} = +6 V and I_{DD} = 600 mA unless noted otherwise. V_{GG} was adjusted at each voltage and temperature level to achieve I_{DD}.

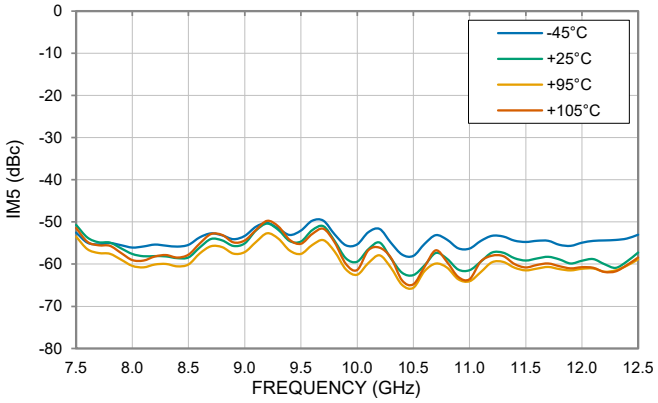
IM3 vs. DEVICE CURRENT
P_{OUT} = +20 dBm/TONE, TONE SPACING = 10 MHz
TEMPERATURE = +25°C



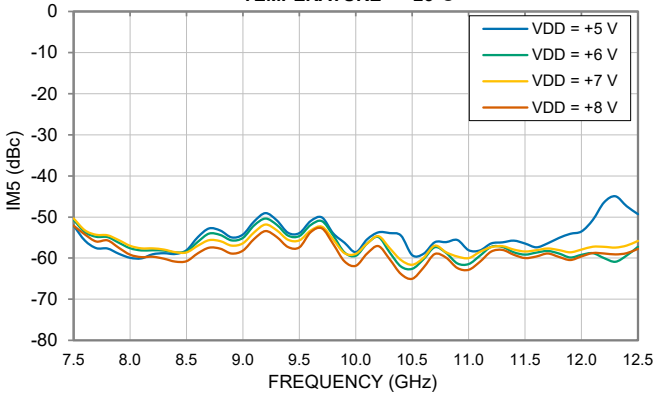
IM3 vs. P_{OUT}/TONE
TONE SPACING = 10 MHz, TEMPERATURE = +25°C



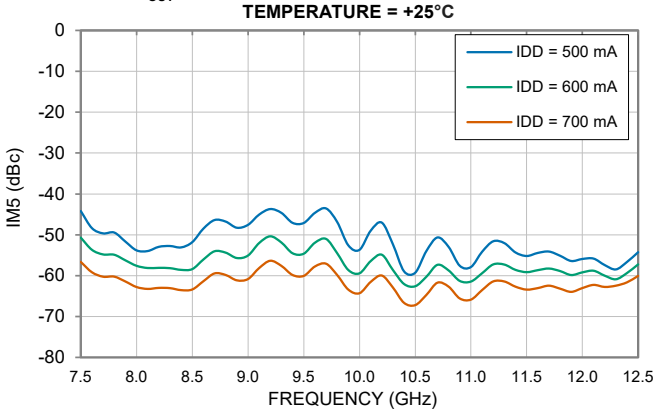
IM5 vs. TEMPERATURE
P_{OUT} = +20 dBm/TONE, TONE SPACING = 10 MHz



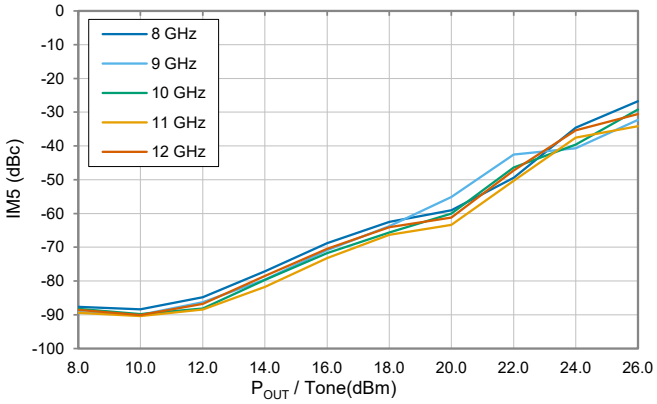
IM5 vs. DEVICE VOLTAGE
P_{OUT} = +20 dBm/TONE, TONE SPACING = 10 MHz
TEMPERATURE = +25°C



IM5 vs. DEVICE CURRENT
P_{OUT} = +20 dBm/TONE, TONE SPACING = 10 MHz
TEMPERATURE = +25°C



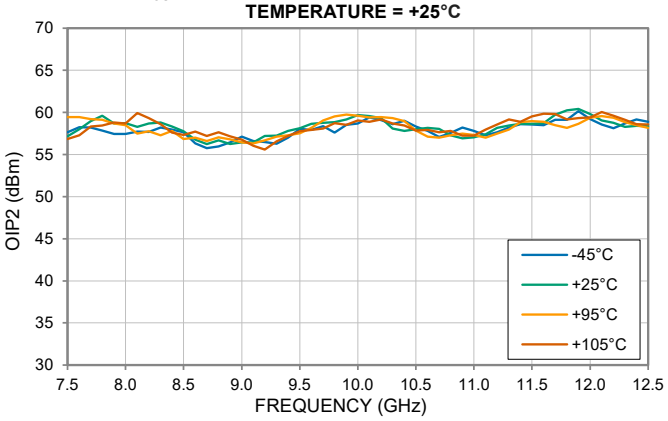
IM5 vs. P_{OUT}/TONE
TONE SPACING = 10 MHz, TEMPERATURE = +25°C



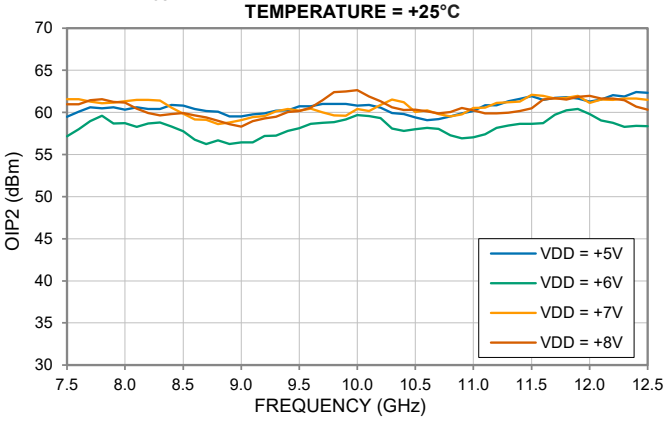
TYPICAL PERFORMANCE GRAPHS

Note: The following data was taken on Mini-Circuits Characterization Test Board TB-PMA51231WCX+ (Figure 2). All data taken at nominal condition of V_{DD} = +6 V and I_{DD} = 600 mA unless noted otherwise. V_{GG} was adjusted at each voltage and temperature level to achieve I_{DD}.

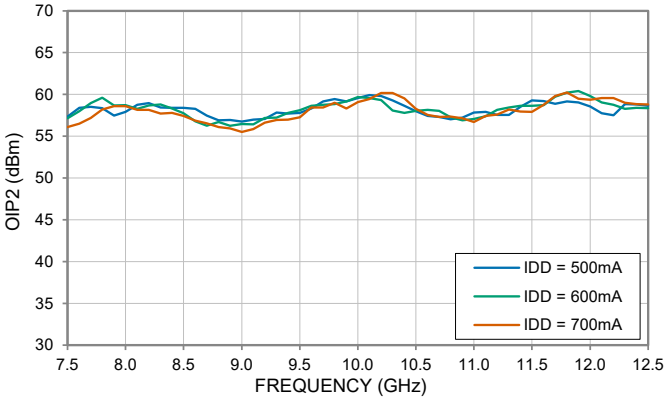
OIP2 vs. TEMPERATURE
P_{OUT} = +20 dBm/TONE, TONE SPACING = 10 MHz
TEMPERATURE = +25°C



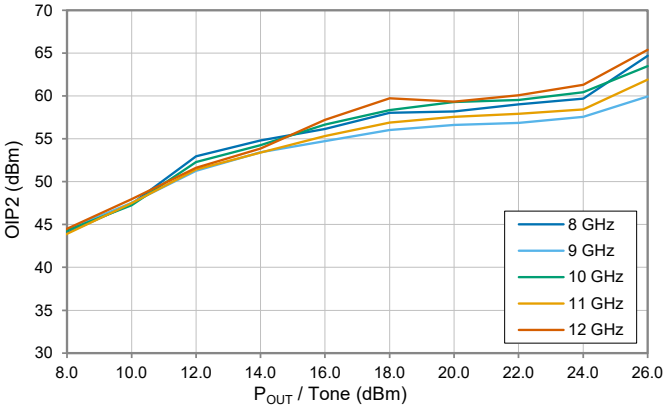
OIP2 vs. DEVICE VOLTAGE
P_{OUT} = +20 dBm/TONE, TONE SPACING = 10 MHz
TEMPERATURE = +25°C



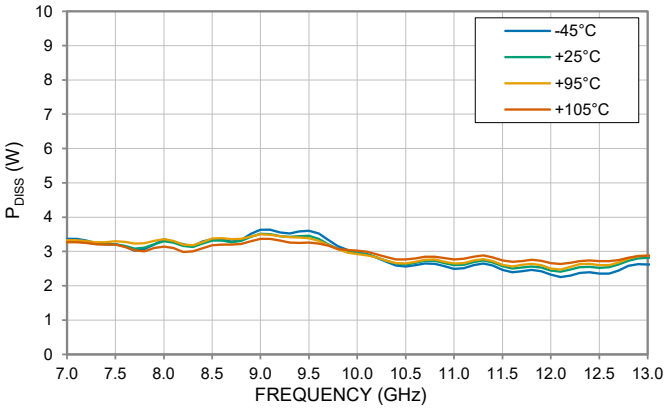
OIP2 vs. DEVICE CURRENT
P_{OUT} = +20 dBm/TONE, TONE SPACING = 10 MHz
TEMPERATURE = +25°C



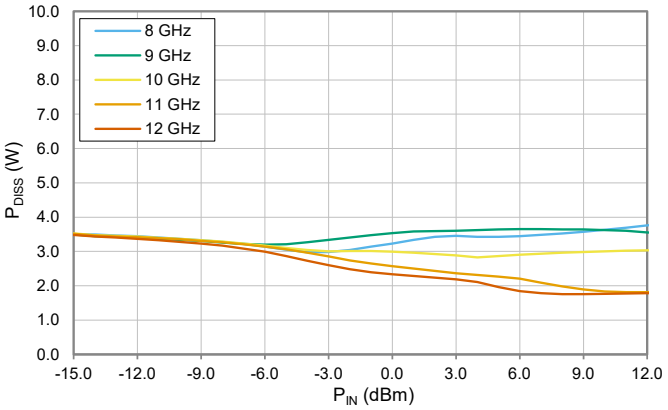
OIP2 vs. P_{OUT}/TONE
TONE SPACING = 10 MHz, TEMPERATURE = +25°C



P_{DISS} @ P1dB vs. TEMPERATURE



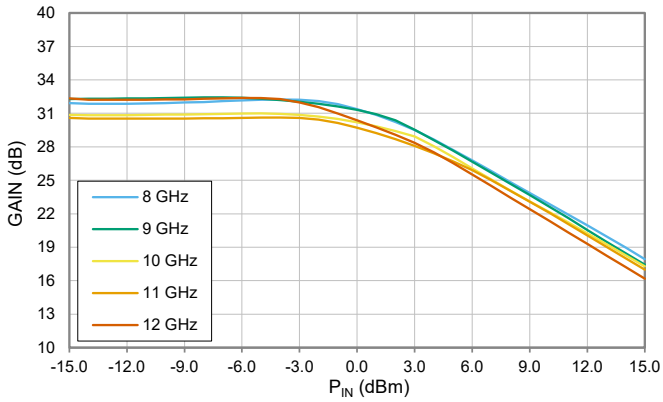
P_{DISS} vs. P_{IN}
TEMPERATURE = +25°C



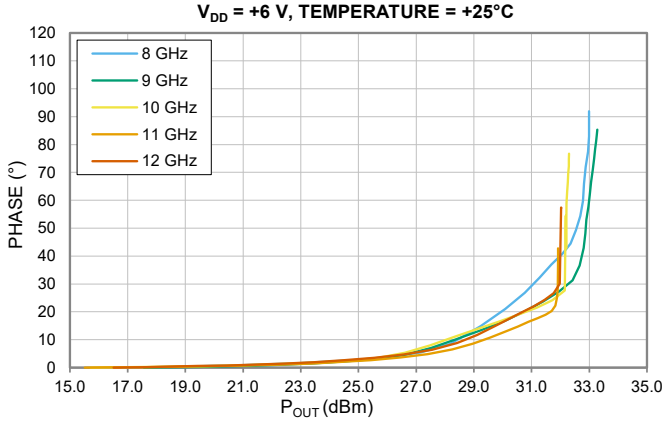
TYPICAL PERFORMANCE GRAPHS

Note: The following data was taken on Mini-Circuits Characterization Test Board TB-PMA51231WCX+ (Figure 2). All data taken at nominal condition of V_{DD} = +6 V and I_{DD} = 600 mA unless noted otherwise. V_{GG} was adjusted at each voltage and temperature level to achieve I_{DD}.

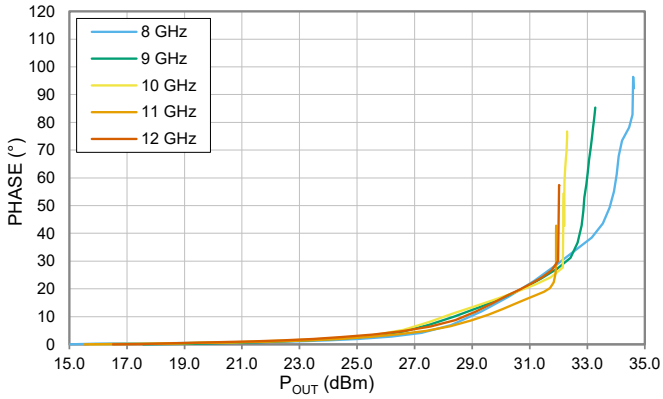
GAIN vs. P_{IN}
TEMPERATURE = +25°C



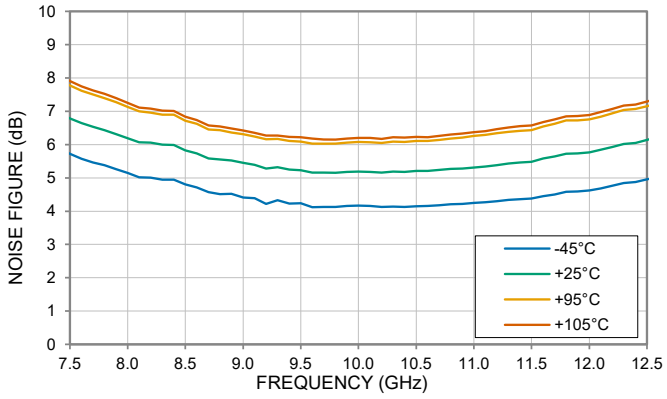
AM - PM
V_{DD} = +6 V, TEMPERATURE = +25°C



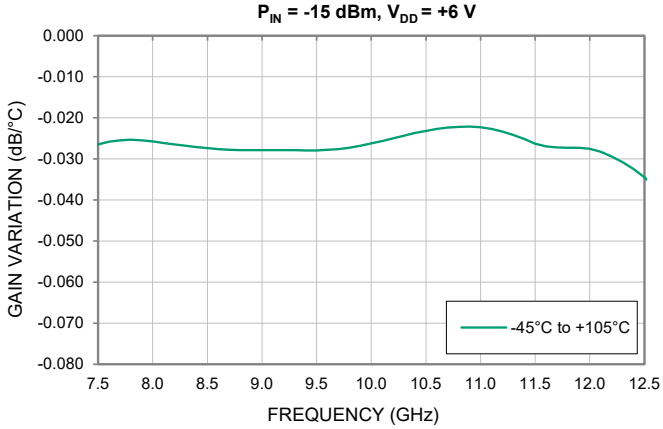
AM - PM
V_{DD} = +8 V, TEMPERATURE = +25°C



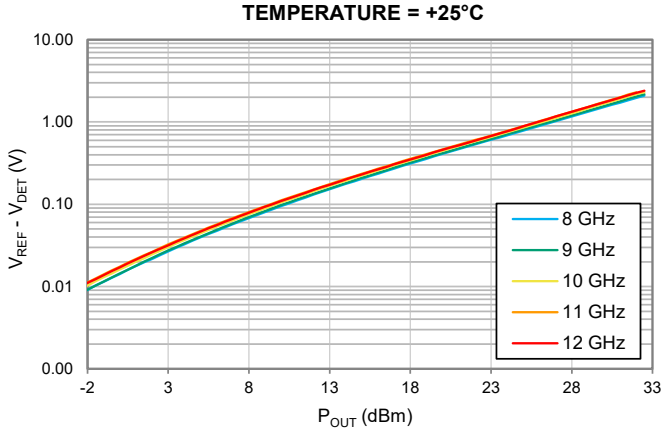
NOISE FIGURE vs. TEMPERATURE



GAIN VARIATION vs. TEMPERATURE
P_{IN} = -15 dBm, V_{DD} = +6 V



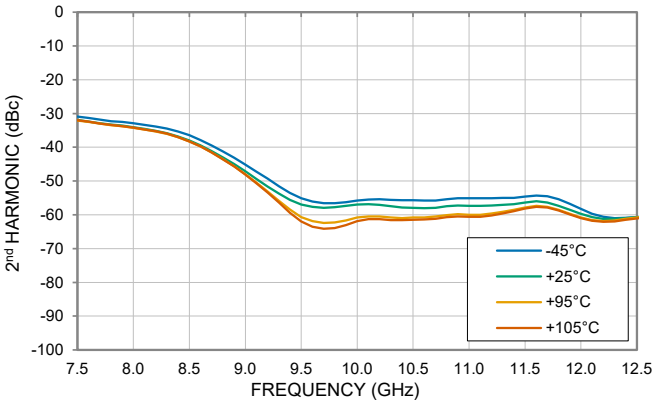
POWER DETECTOR OUTPUT VOLTAGE
TEMPERATURE = +25°C



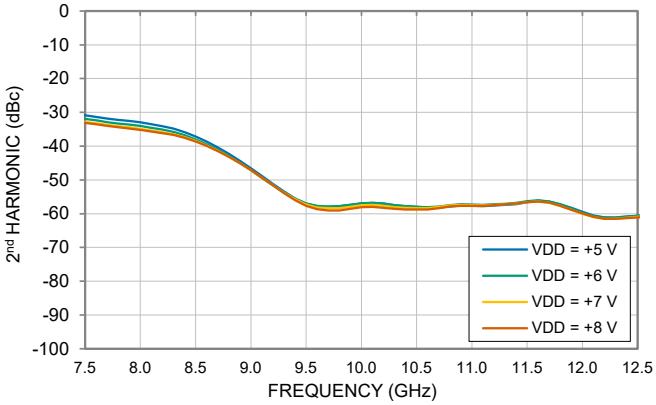
TYPICAL PERFORMANCE GRAPHS

Note: The following data was taken on Mini-Circuits Characterization Test Board TB-PMA51231WCX+ (Figure 2). All data taken at nominal condition of V_{DD} = +6 V and I_{DD} = 600 mA unless noted otherwise. V_{GG} was adjusted at each voltage and temperature level to achieve I_{DD}.

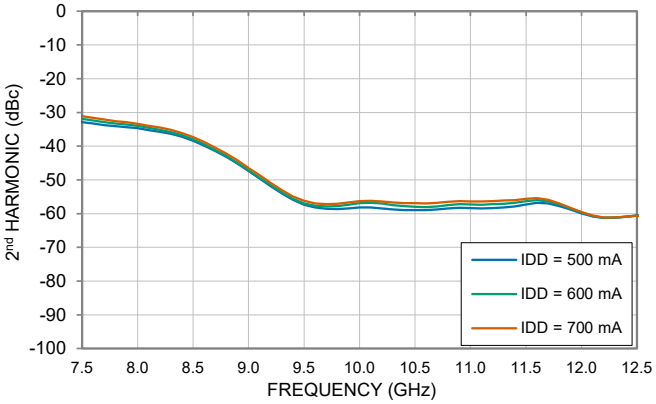
2ND HARMONIC vs. TEMPERATURE
P_{OUT} = +20 dBm/TONE



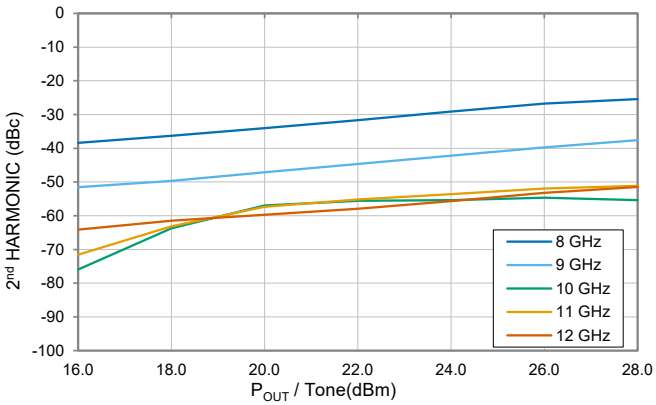
2ND HARMONIC vs. DEVICE VOLTAGE
P_{OUT} = +20 dBm/TONE, TEMPERATURE = +25°C



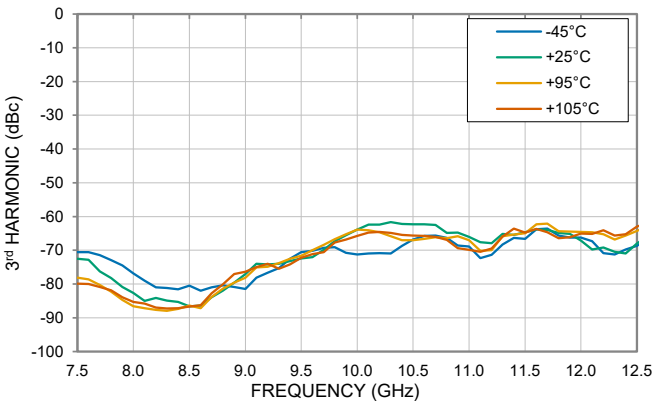
2ND HARMONIC vs. DEVICE CURRENT
P_{OUT} = +20 dBm/TONE, TEMPERATURE = +25°C



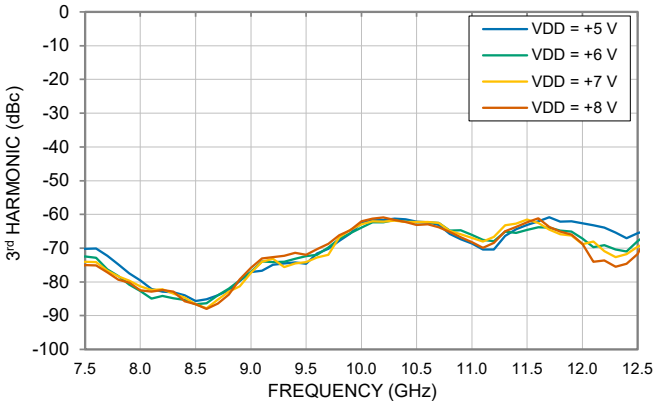
2ND HARMONIC vs. P_{OUT}/TONE
TEMPERATURE = +25°C



3RD HARMONIC vs. TEMPERATURE
P_{OUT} = +20 dBm/TONE



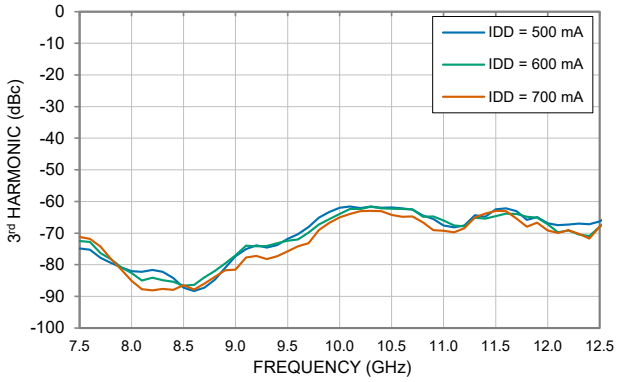
3RD HARMONIC vs. DEVICE VOLTAGE
P_{OUT} = +20 dBm/TONE, TEMPERATURE = +25°C



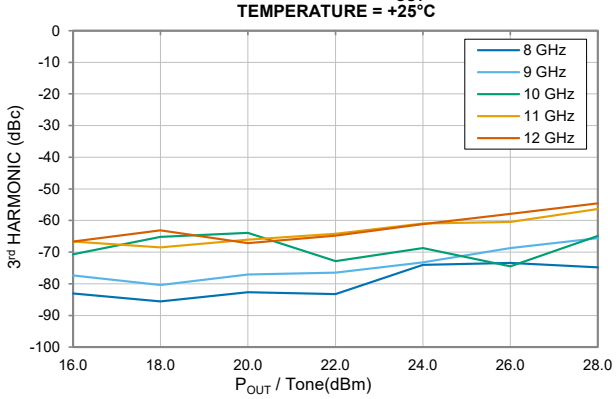
TYPICAL PERFORMANCE GRAPHS

Note: The following data was taken on Mini-Circuits Characterization Test Board TB-PMA51231WCX+ (Figure 2). All data taken at nominal condition of V_{DD} = +6 V and I_{DD} = 600 mA unless noted otherwise. V_{GG} was adjusted at each voltage and temperature level to achieve I_{DD}.

3RD HARMONIC vs. DEVICE CURRENT
P_{OUT} = +20 dBm/TONE, TEMPERATURE = +25°C



3RD HARMONIC vs. P_{OUT}/TONE
TEMPERATURE = +25°C



ABSOLUTE MAXIMUM RATINGS[8]

Parameter	Ratings
Operating Temperature[9]	-45 °C to +105 °C
Storage Temperature	-65 °C to +150 °C
Junction Temperature[10]	+175 °C
Total Power Dissipation	5.83 W
Input Power (CW), V_{DD} = +6 V	+27 dBm
DC Drain Voltage at V_{DD}[11]	+8.5 V
DC Gate Voltage at V_{GG}[12]	-2.0 V to -0.4 V
DC Drain Current I_{DD}	1.2 A
DC Gate Current I_{GG}	10 mA

8. Permanent damage may occur if these limits are exceeded. Maximum ratings are not intended for continuous normal operation.
9. Bottom of Die.
10. Peak temperature on top of Die.
11. $V_{DD} = V_{D1} = V_{D2} = V_{D3}$
12. $V_{GG} = V_{G1} = V_{G2} = V_{G3}$

THERMAL RESISTANCE

Parameter	Ratings
Thermal Resistance (Θ_{JC})[13]	12 °C/W

13. Θ_{JC} = (Hot Spot Temperature on Die - Temperature at Ground Lead) / Dissipated Power

ESD RATING

	Class	Voltage Range	Reference Standard
HBM	1B	500 V to < 1000 V	ANSI/ESDA/JEDEC JS-001-2023
CDM	C3	≥ 1000 V	ANSI/ESDA/JEDEC JS-002-2022

ESD HANDLING PRECAUTION: This device is designed to be Class 1B for HBM. Static charges may easily produce potentials higher than this with improper handling and can discharge into DUT and damage it. As a preventive measure Industry standard ESD handling precautions should be used at all times to protect the device from ESD damage.

MSL RATING

Moisture Sensitivity: MSL1 in accordance with IPC/JEDEC J-STD-020E/JEDEC J-STD-033C

Power Amplifier

PMA5-123-1W+

50Ω 8 to 12 GHz 1 W P_{SAT}

FUNCTIONAL DIAGRAM

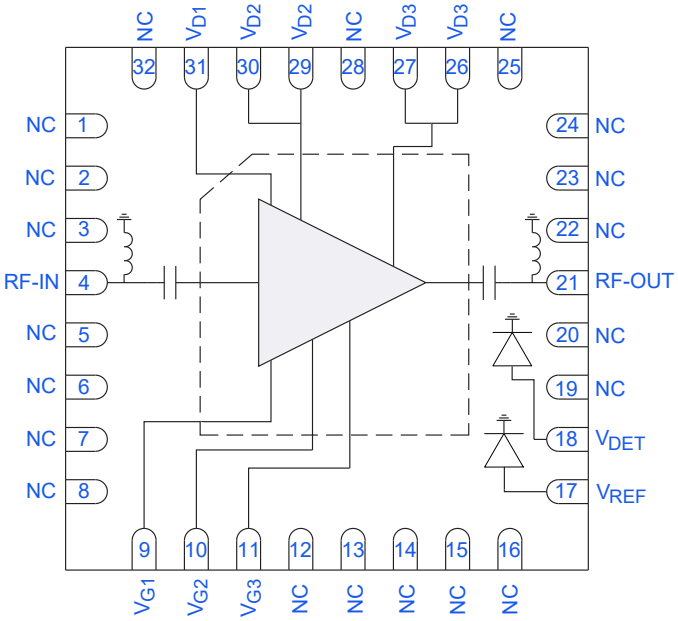


Figure 1. PMA5-123-1W+ Functional Diagram

PAD DESCRIPTION

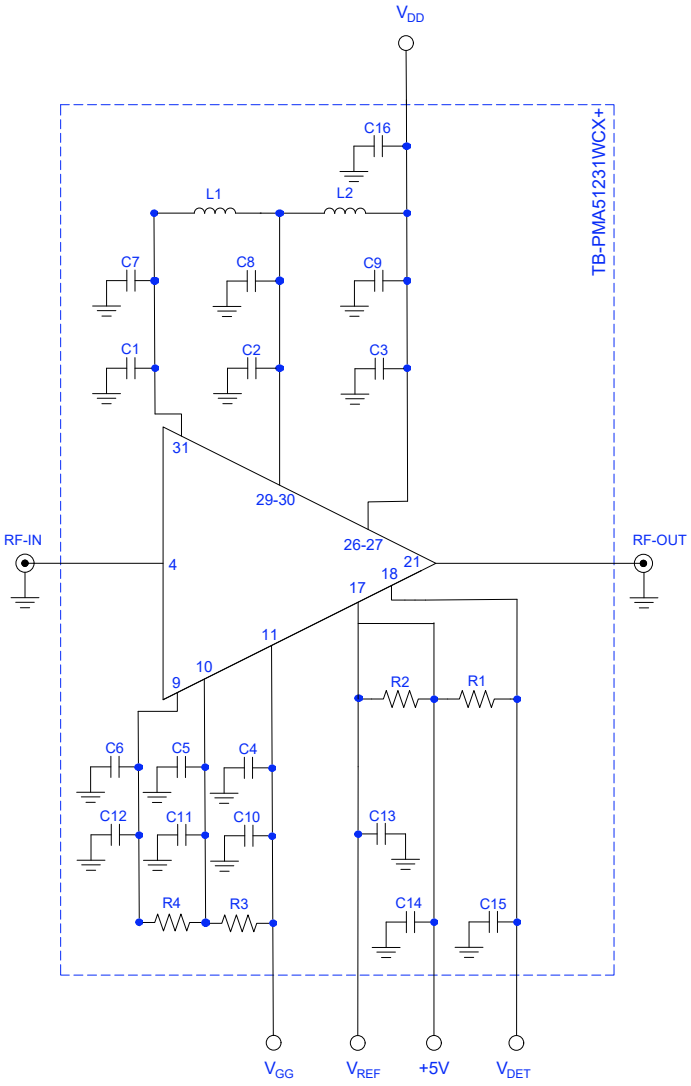
Function	Pad Number	Description (Refer to Figure 1)
RF-IN	4	RF-IN pad connects to RF Input port.
RF-OUT	21	RF-OUT pad connects to RF Output port.
V_{D1}	31	DC Input pad connects to First Stage Drain Voltage port.
V_{G1}	9	DC Input pad connects to First Stage Gate Voltage port.
V_{D2}	29, 30	DC Input pads connect to Second Stage Drain Voltage ports.
V_{G2}	10	DC Input pad connects to Second Stage Gate Voltage port.
V_{D3}	26, 27	DC Input pads connect to Third Stage Drain Voltage ports.
V_{G3}	11	DC Input pad connects to Third Stage Gate Voltage port.
V_{DET}	18	DC Output pad connects to Power Detector Output Voltage port. Voltage is proportional to RF Output Power.
V_{REF}	17	DC Output pad connects to Power Detector Reference Voltage port.
NC	1-3, 5-8, 12-16, 19-20, 22-25, 28, 32	Not used internally. Connected to ground on test board.
GND	Paddle	Connects to ground.

Power Amplifier

PMA5-123-1W+

50Ω 8 to 12 GHz 1 W P_{SAT}

EVALUATION BOARD



Electrical Parameters and Conditions
Gain, Return Loss, Output Power at 1 dB Compression (P1dB), Output IP3 (OIP3), and Noise Figure measured using N5247B PNA-X Microwave Network Analyzer. All data taken with test board mounted on heatsink TB-PMA51231WCX+.

Conditions:
1. Gain and Return Loss: P_{IN} = -15 dBm
2. Output IP3 (OIP3): Two tones, spaced 10 MHz apart, +20 dBm/Tone at output.

Power ON/Power OFF Sequence
Caution: Permanent damage to the device will occur if the Power ON/ Power OFF sequences are not followed.

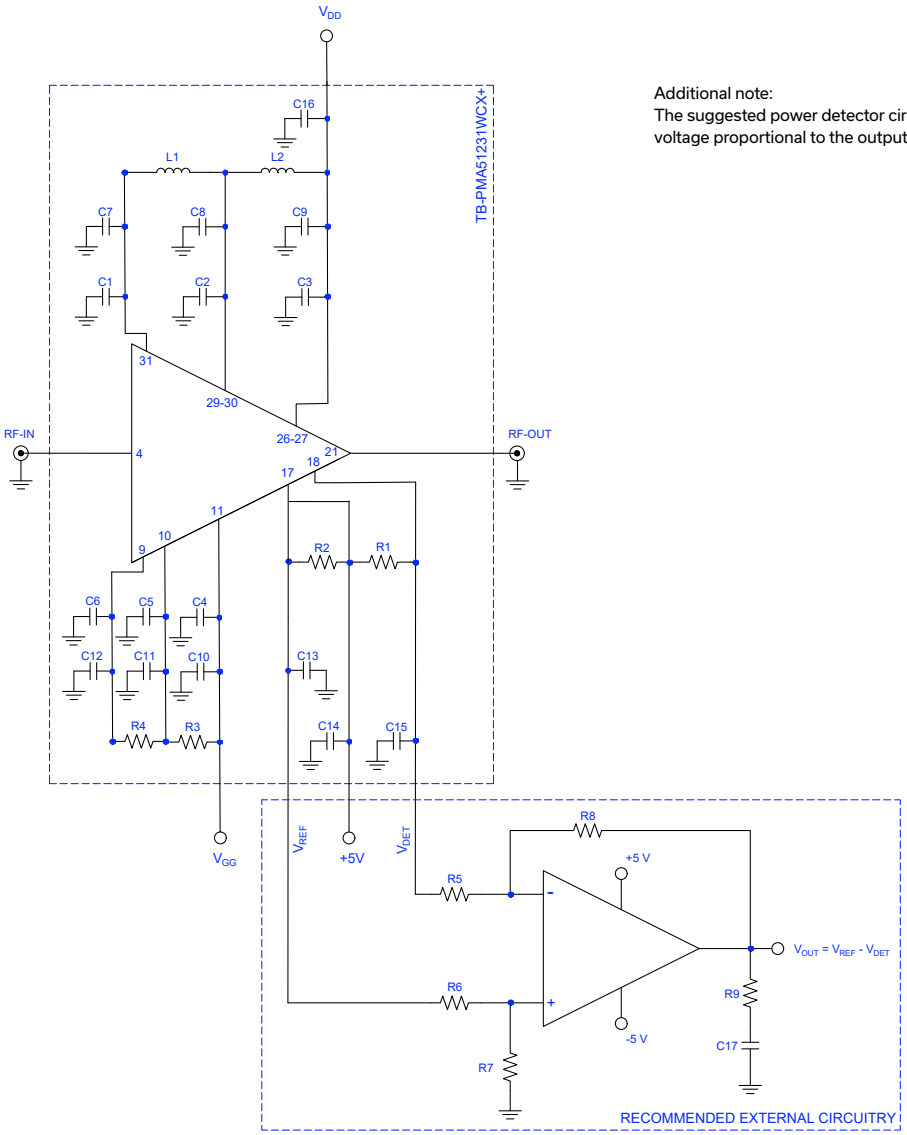
POWER ON:
1. Set V_{GG} = -2 V. Apply V_{GG}.
2. Set V_{DD} = +6 V. Apply V_{DD}.
3. Increase V_{GG} to obtain desired I_{DD} as shown in spec table.
4. Apply RF Signal.

POWER OFF:
1. Turn off RF Signal.
2. Adjust V_{GG} down to -2 V.
3. Turn off V_{DD}.
4. Turn off V_{GG}

Figure 2. PMA5-123-1W+ Evaluation and Characterization Circuit

Component	Value	Size	Part Number	Manufacturer
R1–R2	100KΩ	0402	RK73H1ETTP1003F	KOA SPEER
R3	0Ω	0402	RK73Z1ETTP	KOA SPEER
R4	100Ω	0402	RK73H1ETTP1000F	KOA SPEER
C1–C6	0.001 µF	0402	GRM1555C1H102JA01D	MURATA
C7–C15	0.1 µF	0402	GRM155R71E104KE14D	MURATA
C16	47 µF	1206	1206YD476MAT2A	AVX CORPORATION
L1, L2	150 nH	0402	0402DF-151XJRW	COILCRAFT

EVALUATION BOARD & RECOMMENDED POWER DETECTOR CIRCUITRY



Additional note:
The suggested power detector circuitry may be used to provide a temperature compensated output voltage proportional to the output power of the device. +5 V must be applied at shunt capacitor C14.

Figure 3. PMA5-123-1W+ Characterization Circuit with Power Detector Circuitry

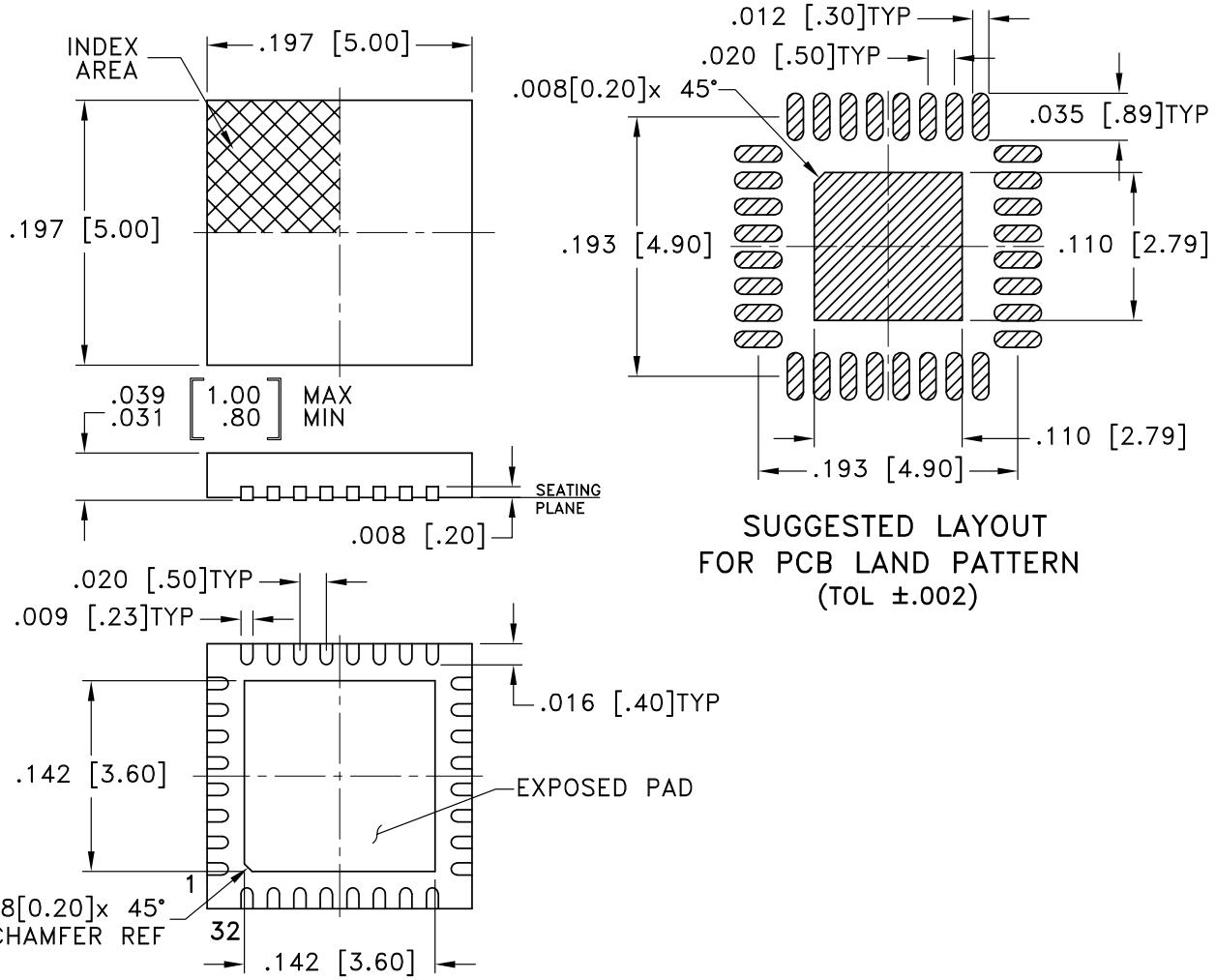
Component	Value	Size	Part Number	Manufacturer
R5-R8	10kΩ	0402	RK73H1ETTP1002F	KOA SPEER
R9	2.21Ω	0402	RK73H1ETTP1002F	KOA SPEER
C17	4.7 µF	0805	08053C475KAT2A	KYOCERA AVX

Power Amplifier

PMA5-123-1W+

50Ω 8 to 12 GHz 1 W P_{SAT}

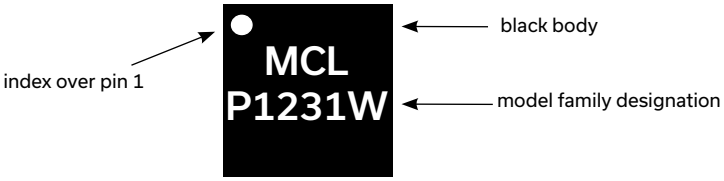
CASE STYLE DRAWING



Weight: .05 grams

Dimensions are in inches [mm]. Tolerances: 2 Pl.±.01; 3Pl.±.005 Inch

PRODUCT MARKING



Marking may contain other features or characters for internal lot control.

Power Amplifier

PMA5-123-1W+

50Ω 8 to 12 GHz 1 W P_{SAT}

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file)
Case Style	DG1677-10 Plastic package, exposed paddle, Lead Finish: Matte-Tin
RoHS Status	Compliant
Tape & Reel **Standard quantities available on reel**	F68-1 7" Reels with 10, 50, 100, 200, 500, 1K, or 2K 13" reels with 2K, 3K, or 4K
Suggested Layout for PCB Design	PL-883
Evaluation Board	TB-PMA51231WCX+ Gerber File
Environmental Ratings	ENV08T1

NOTES

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.

B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.

C. The parts covered by this specification document are subject to Mini-Circuits' standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/terms/viewterm.html