



MMIC SURFACE MOUNT

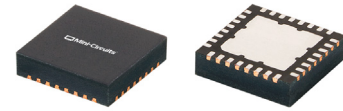
Power Amplifier

PMA5-223+

50Ω 0.01 to 22 GHz Wideband Amplifier

THE BIG DEAL

- Wide Bandwidth 10 MHz to 22 GHz
- P_{SAT} , Typ. +33 dBm
- Linear Gain, Typ. 15.5 dB
- IM3, Typ. -46 dBc @ $P_{OUT} = +20$ dBm/tone
- Supply Voltage, +15 V at 500 mA
- 5×5 mm 32-Lead QFN-Style Package

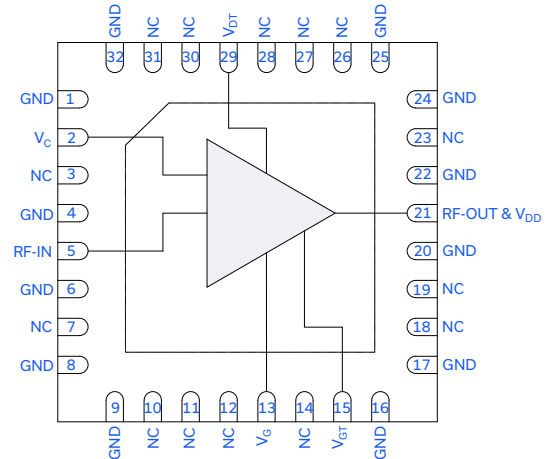


Generic photo used for illustration purposes only

APPLICATIONS

- Test and Measurement Equipment
- 5G MIMO and Backhaul Radio
- Satellite Communication
- Radar, EW, and ECM Defense Systems

FUNCTIONAL DIAGRAM (TOP VIEW)



PRODUCT OVERVIEW

The PMA5-223+ is a GaAs pHEMT MMIC power amplifier operating from 0.01 to 22 GHz. The wideband distributed amplifier provides 15.5 dB of linear gain, +33 dBm saturated output power, and achieves +43 dBm output IP3 at 10 GHz. The device operates from a +15 V supply and consumes 500 mA of quiescent current. The amplifier is 50Ω matched at the input and output, making it easy to implement and comes in an industry standard 5×5 mm 32-Lead QFN-Style package for ease of integration into dense circuit board layouts. These characteristics make it ideally suited for wideband test instrumentation, satellite communication, and defense systems that require high operating output power, while maintaining very low distortion characteristics.

KEY FEATURES

Feature	Advantages
Gain, Typ. 15.5 dB P_{SAT} , Typ. +33 dBm	Flat, broadband gain and high output power without high frequency roll-off make this device excellent for wideband systems from 0.01 to 22 GHz that require at least 1 W of operating output power over the full band.
At $P_{OUT} = +20$ dBm/tone: • OIP2, Typ. +44 dBm • OIP3, Typ. +43 dBm	High operating OIP2 and OIP3 provide low in-band IM distortion products, enabling minimal signal-to-noise degradation in high fidelity measurement systems and communication systems.
Wide Bandwidth: 10 MHz to 22 GHz	Supports a variety of broadband and narrowband applications without the need to reconfigure circuitry.
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.





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Power Amplifier

PMA5-223+

Mini-Circuits

50Ω 0.01 to 22 GHz Wideband Amplifier

ELECTRICAL SPECIFICATIONS¹ AT +25 °C, $V_{DD} = +15$ V, UNLESS NOTED OTHERWISE

Parameter	Conditions (GHz)	Min.	Typ.	Max.	Units
Frequency Range		0.01		22	GHz
Gain	0.1	19.2	22.0		dB
	1	15.7	17.1		
	5	12.2	13.5		
	10	13.4	15.5		
	15	15.4	18.0		
	22	16.5	17.5		
Input Return Loss	0.1		20		dB
	1		19		
	5		11		
	10		12		
	15		17		
	22		13		
Output Return Loss	0.1		23		dB
	1		14		
	5		9		
	10		11		
	15		24		
	22		16		
Isolation	0.1 - 22		44		dB
Output Power at 1 dB Compression (P1dB)	0.1		+28.5		dBm
	1		+31.2		
	5		+31.4		
	10		+31.5		
	15		+29.5		
	22		+26.5		
Output Power at Saturation (P_{SAT}) ²	0.1		+34.3		dBm
	1		+34.7		
	5		+34.1		
	10		+33.0		
	15		+32.5		
	22		+30.0		
Output Third-Order Intercept ($P_{OUT} = +20$ dBm/Tone)	0.1		+41		dBm
	1		+44		
	5		+44		
	10		+43		
	15		+41		
	22		+36		
2nd Harmonic ($P_{OUT} = +20$ dBm)	0.1		-37.9		dBc
	1		-42.8		
	5		-31.2		
	10		-26.9		
	15		-28.0		
	22		-44.2		
Noise Figure	1		7.0		dB
	5		3.5		
	10		3.0		
	15		3.3		
	22		6.0		
Device Operating Voltage (V_{DD})		+12	+15	+15	V
Device Operating Current (I_{DD}) ³		300	500		mA
Control Voltage (V_C)		+7.5	+9.5		V
Gate Voltage (V_G)			-0.5		V
Device Gate Current on V_G (I_G)			3.56		μA
Device Control Current on V_C (I_C)			380		μA
DC Current Variation vs. Temperature ⁴			167.87		μA/°C
DC Current Variation vs. Voltage ⁵			0.26		μA/mV

1. Tested on Mini-Circuits Characterization Test Board TB-PMA5-223C+. See Figure 2. Board loss de-embedded to the device.

2. P_{SAT} is defined as when the Output Power changes 0.1 dB per 1 dB change in Input Power.3. Current at $P_{IN} = -15$ dBm. Increases to 590 mA at P1dB.

4. (Current at +85 °C - Current at -40 °C) / (125 °C).

5. (Current at +15 V - Current at +12 V) / (+15 V - +12 V).

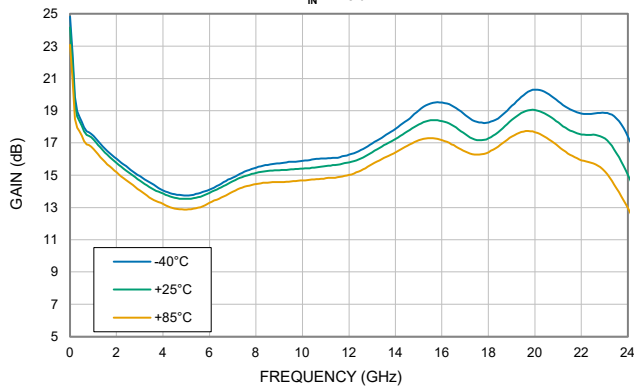




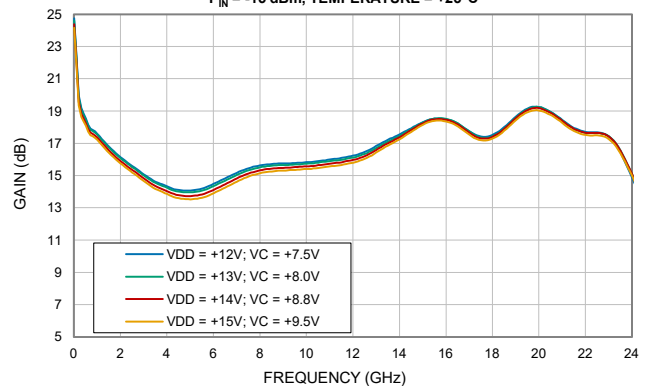
TYPICAL PERFORMANCE GRAPHS

Note: The following data was taken on a Mini-Circuits Characterization Test Board with external Bias-T (Figure 2). All data taken at nominal condition of $V_{DD} = +15\text{ V}$, $V_C = +9.5\text{ V}$ and $I_{DD} = 500\text{ mA}$ unless noted otherwise. V_G was adjusted at each voltage and temperature level to achieve $I_{DD} = 500\text{ mA}$.

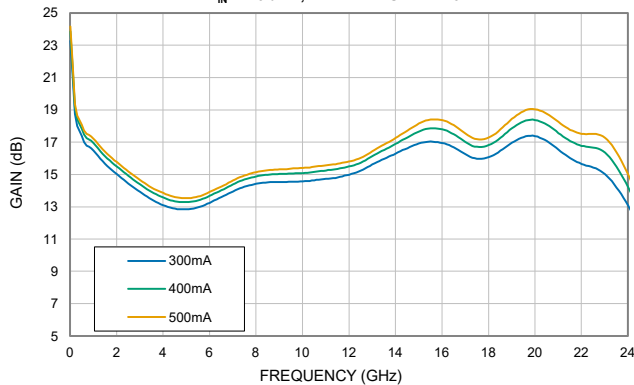
GAIN vs. TEMPERATURE
 $P_{IN} = -15\text{ dBm}$



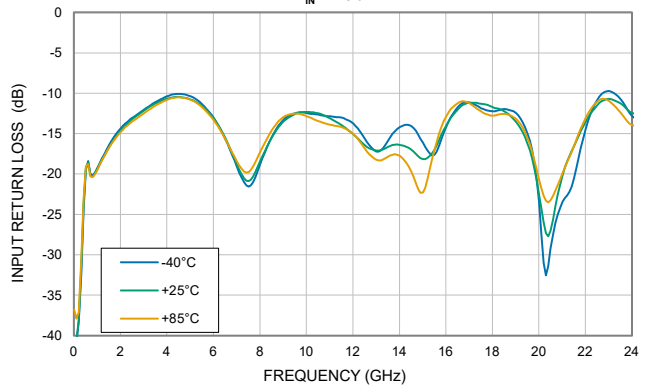
GAIN vs. DEVICE VOLTAGE (V_{DD})
 $P_{IN} = -15\text{ dBm}$, TEMPERATURE = $+25^\circ\text{C}$



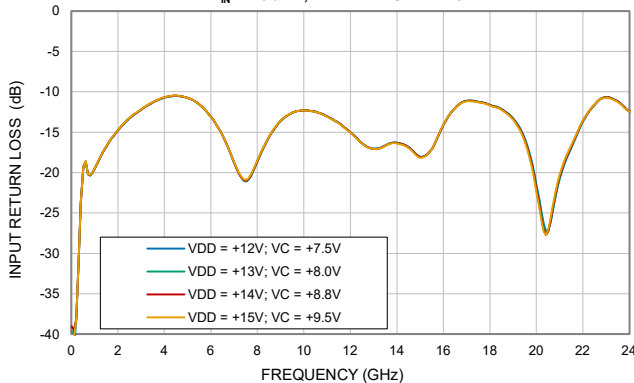
GAIN vs. DEVICE CURRENT (I_{DD})
 $P_{IN} = -15\text{ dBm}$, TEMPERATURE = $+25^\circ\text{C}$



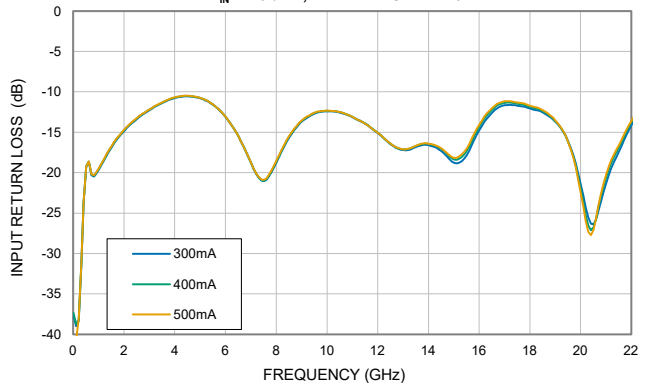
INPUT RETURN LOSS vs. TEMPERATURE
 $P_{IN} = -15\text{ dBm}$



INPUT RETURN LOSS vs. DEVICE VOLTAGE (V_{DD})
 $P_{IN} = -15\text{ dBm}$, TEMPERATURE = $+25^\circ\text{C}$



INPUT RETURN LOSS vs. DEVICE CURRENT (I_{DD})
 $P_{IN} = -15\text{ dBm}$, TEMPERATURE = $+25^\circ\text{C}$





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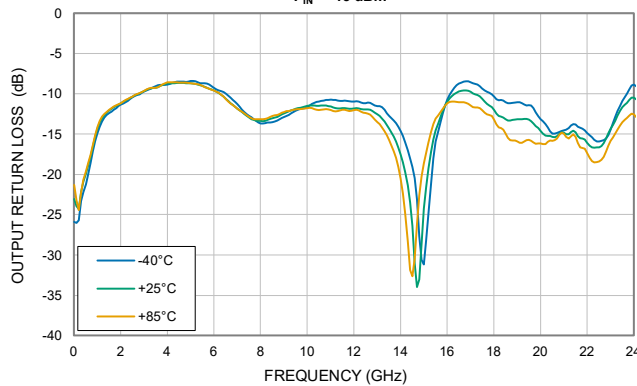
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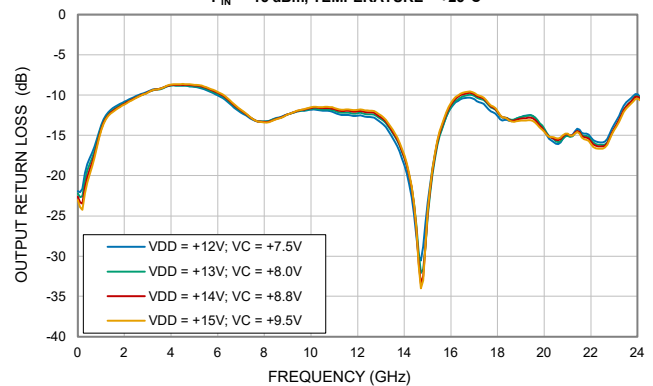
OUTPUT RETURN LOSS vs. TEMPERATURE

$P_{IN} = -15\text{ dBm}$



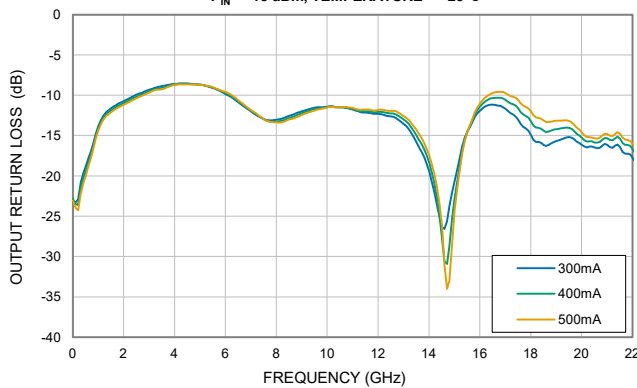
OUTPUT RETURN LOSS vs. DEVICE VOLTAGE (V_{DD})

$P_{IN} = -15\text{ dBm}$, TEMPERATURE = +25°C



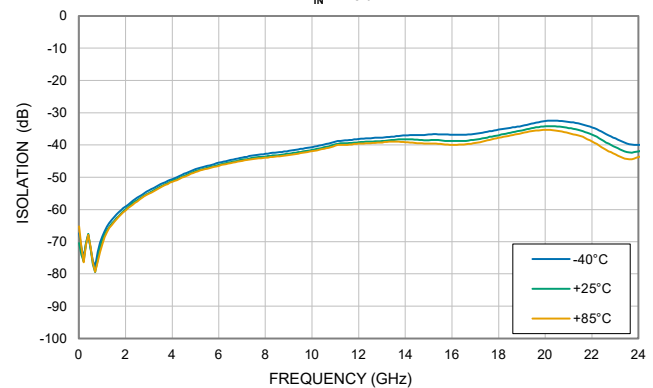
OUTPUT RETURN LOSS vs. DEVICE CURRENT (I_{DD})

$P_{IN} = -15\text{ dBm}$, TEMPERATURE = +25°C



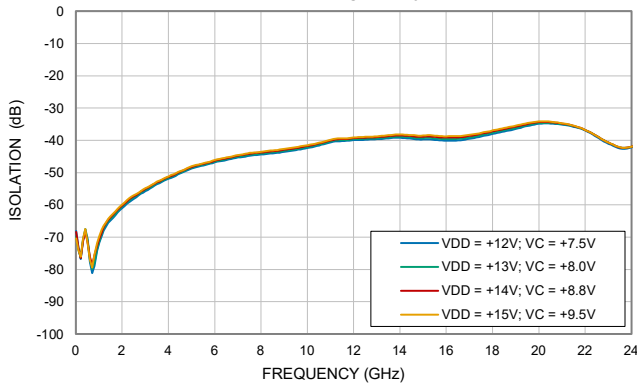
ISOLATION vs. TEMPERATURE

$P_{IN} = -15\text{ dBm}$



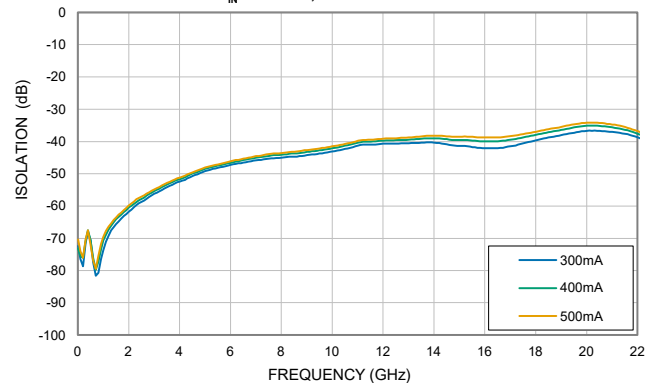
ISOLATION vs. DEVICE VOLTAGE (V_{DD})

TEMPERATURE = +25°C



ISOLATION vs. DEVICE CURRENT (I_{DD})

$P_{IN} = -15\text{ dBm}$, TEMPERATURE = +25°C



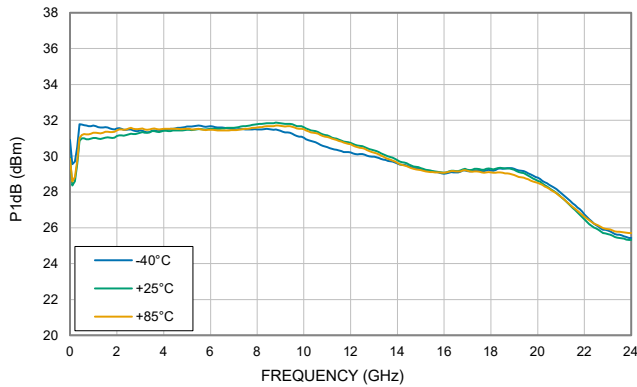
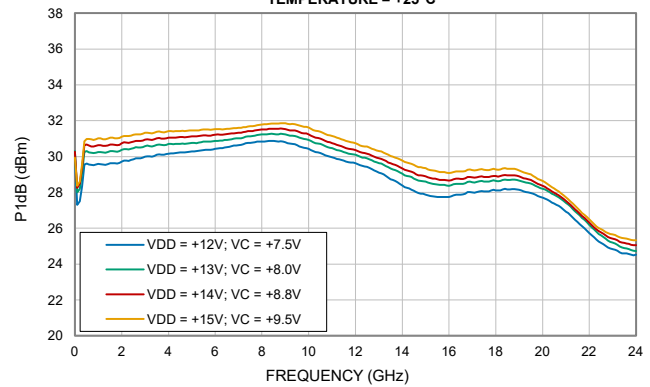
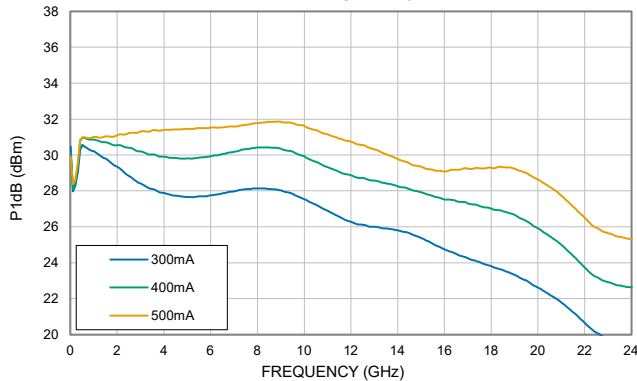
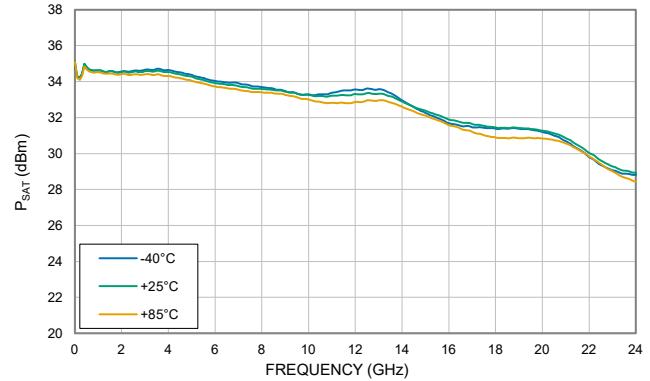
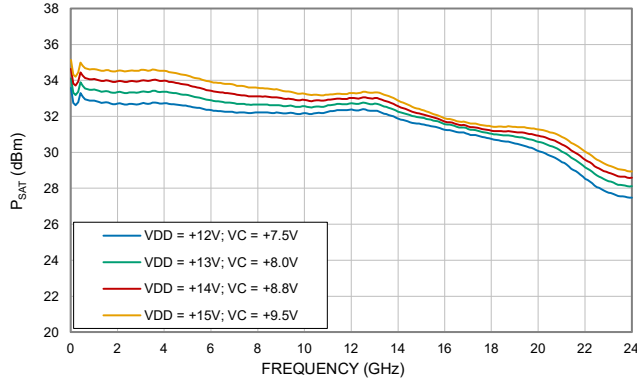
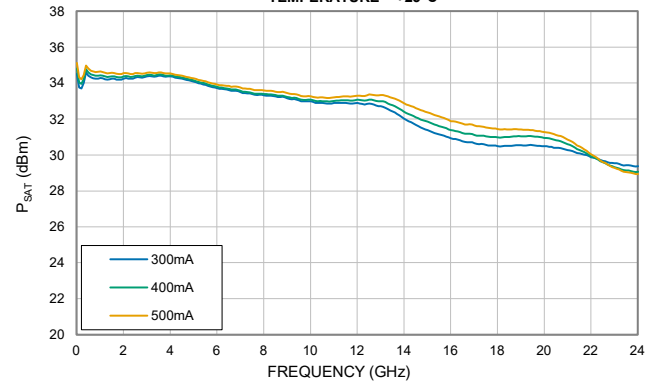
Mini-Circuits



TYPICAL PERFORMANCE GRAPHS

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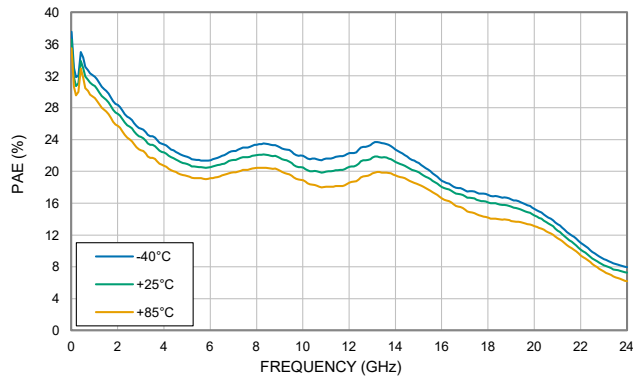
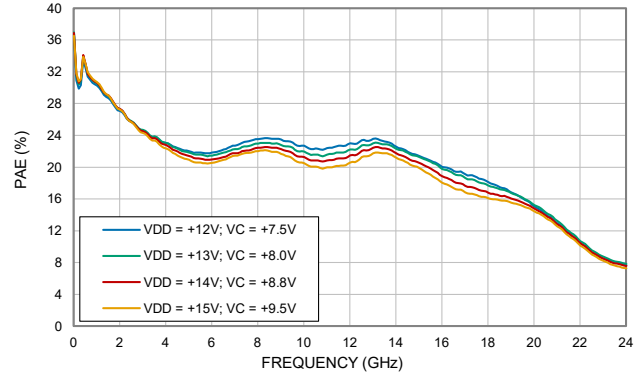
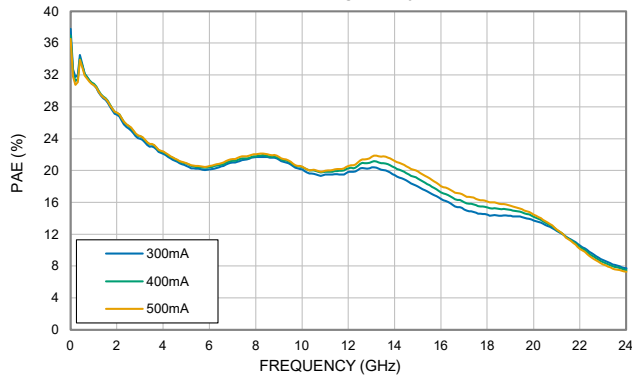
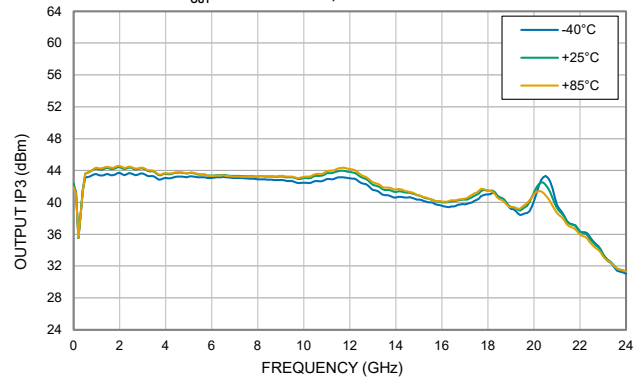
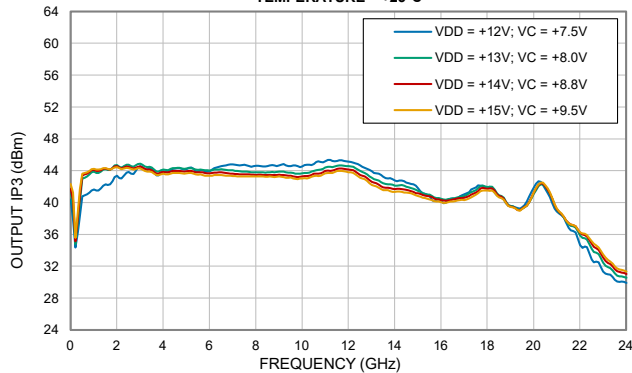
P1dB vs. TEMPERATURE

P1dB vs. DEVICE VOLTAGE (V_{DD})
TEMPERATURE = +25°CP1dB vs. DEVICE CURRENT (I_{DD})
TEMPERATURE = +25°CP_{SAT} vs. TEMPERATUREP_{SAT} vs. DEVICE VOLTAGE (V_{DD})
TEMPERATURE = +25°CP_{SAT} vs. DEVICE CURRENT (I_{DD})
TEMPERATURE = +25°C



TYPICAL PERFORMANCE GRAPHS

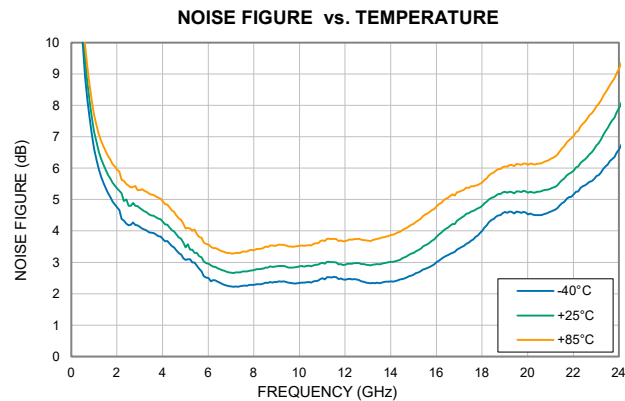
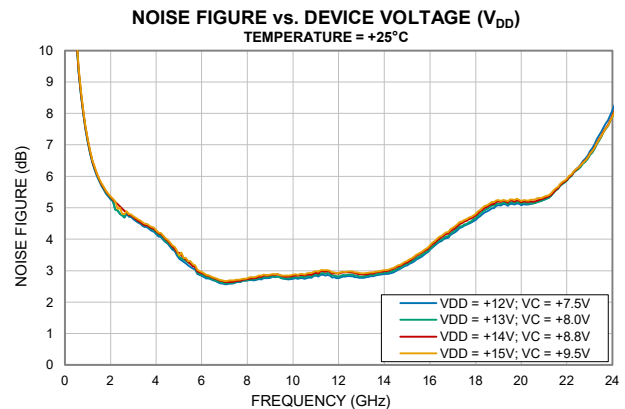
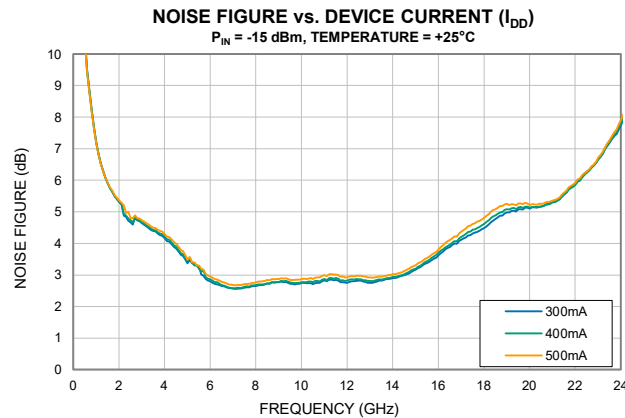
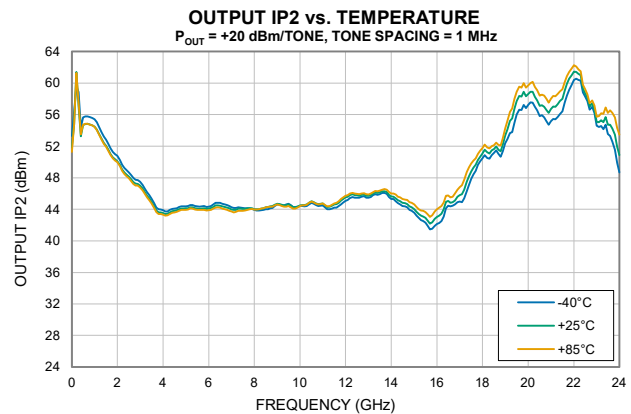
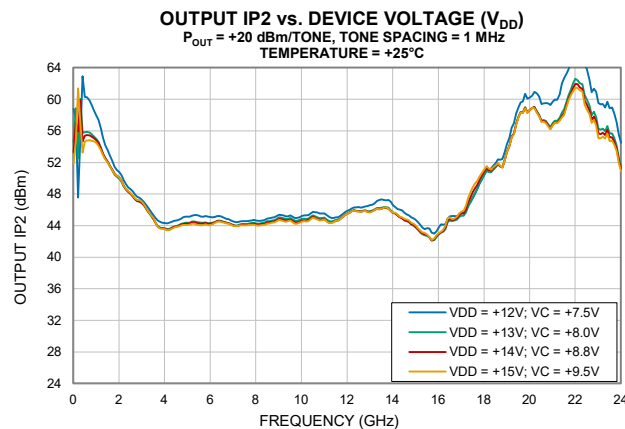
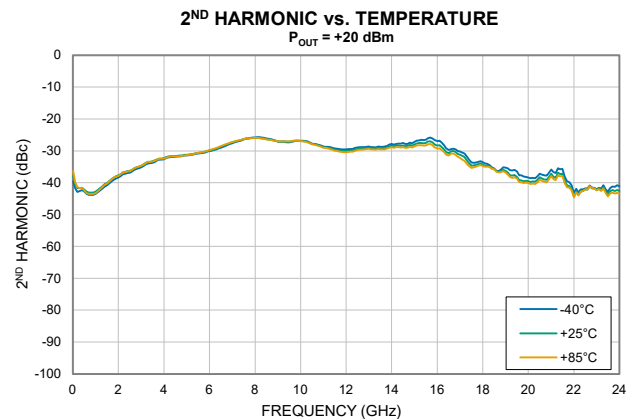
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PAE @ P_{SAT} vs. TEMPERATUREPAE @ P_{SAT} vs. DEVICE VOLTAGE (V_{DD})
TEMPERATURE = +25°CPAE @ P_{SAT} vs. DEVICE CURRENT (I_{DD})
TEMPERATURE = +25°COUTPUT IP3 vs. TEMPERATURE
 $P_{OUT} = +20$ dBm/TONE, TONE SPACING = 1 MHzOUTPUT IP3 vs. DEVICE VOLTAGE (V_{DD})
 $P_{OUT} = +20$ dBm/TONE, TONE SPACING = 1 MHz
TEMPERATURE = +25°C



TYPICAL PERFORMANCE GRAPHS

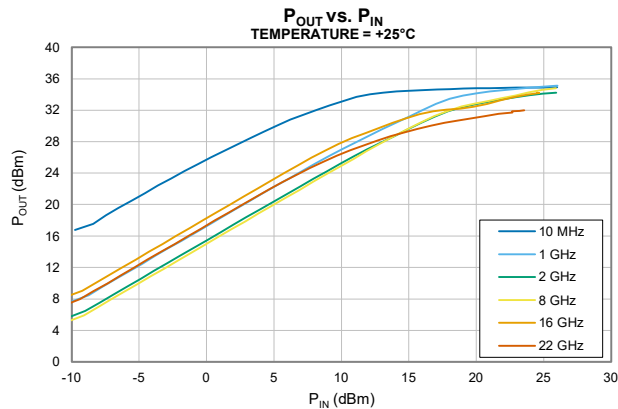
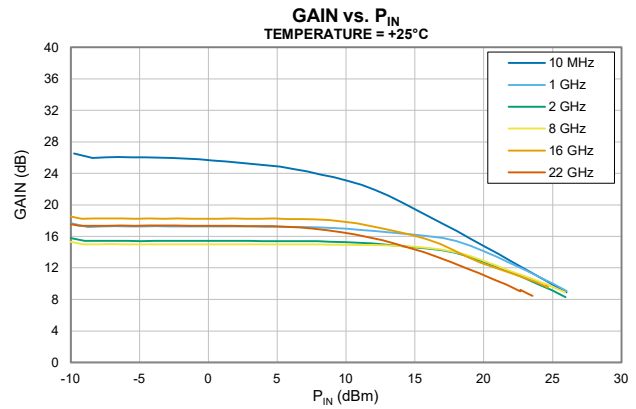
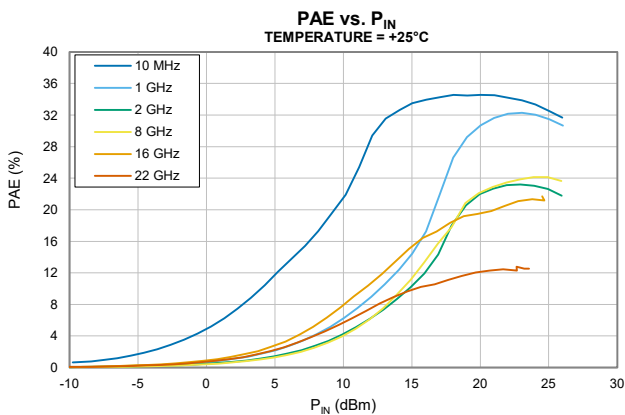
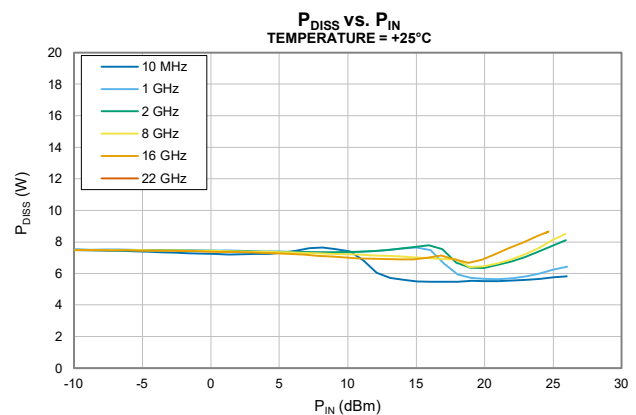
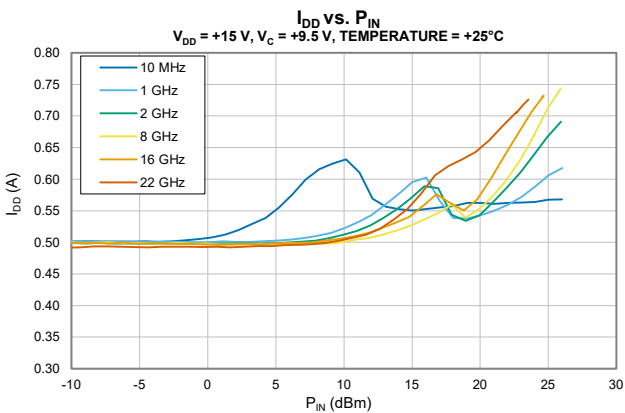
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TYPICAL PERFORMANCE GRAPHS

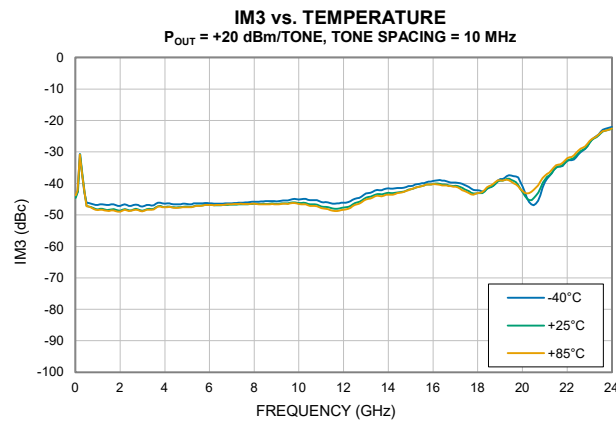
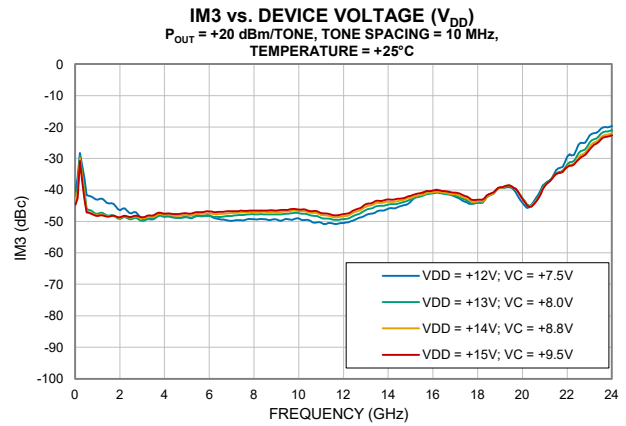
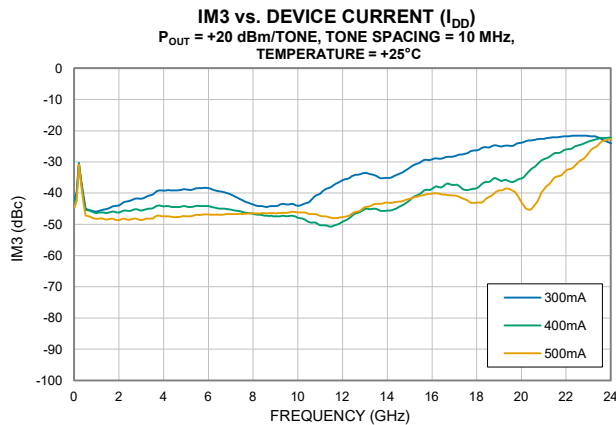
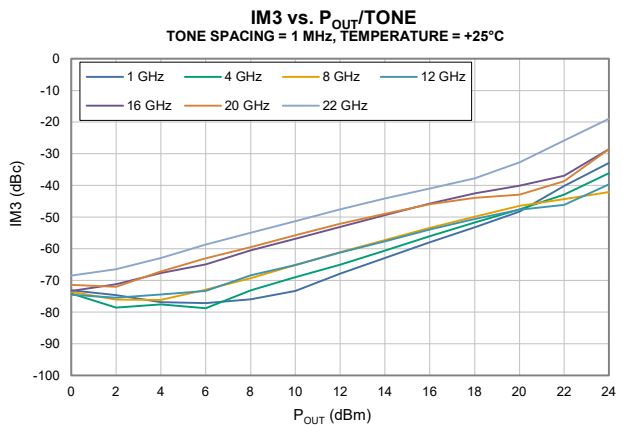
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TYPICAL PERFORMANCE GRAPHS

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ABSOLUTE MAXIMUM RATINGS⁶

Parameter	Ratings
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-65 °C to +150 °C
Junction Temperature ⁷	+175 °C
Total Power Dissipation	11 W
Input Power (CW), $V_{DD} = +15$ V	+27 dBm
DC Drain Voltage at RF-OUT & V_{DD}	+16 V
DC Gate Voltage at V_G	-0.25 V
DC Control Voltage at V_C	+10.3 V
DC Drain Current I_{DD}	800 mA
DC Gate Current I_G	0.6 mA
DC Control Current I_C	8.2 mA

6. Permanent damage may occur if any of these limits are exceeded. Maximum ratings are not intended for continuous normal operation.

7. Peak Temperature on top of Die.

THERMAL RESISTANCE

Parameter	Ratings
Thermal Resistance (Θ_{JC}) ⁸	8.2 °C/W

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

ESD RATING

	Class	Voltage Range	Reference Standard
HBM	1B	500 to < 750	ANSI/ESDA/JEDEC JS-001-2023
CDM	C3	≥ 1000	ANSI/ESDA/JEDEC JS-002-2025



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: MSL3 in accordance with IPC/JEDEC J-STD-020E/JEDEC J-STD-033C





FUNCTIONAL DIAGRAM

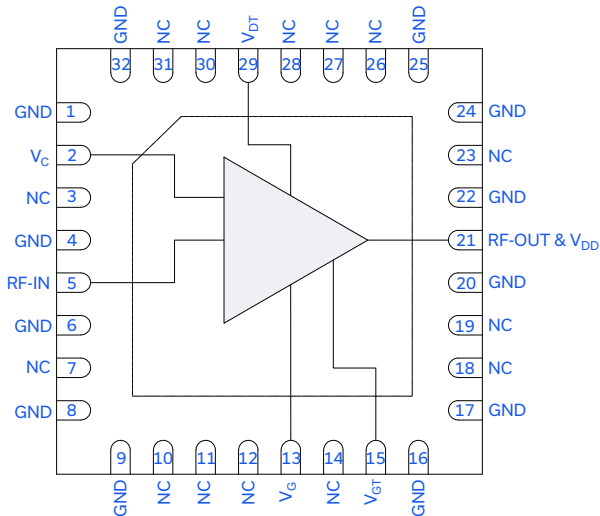


Figure 1. PMA5-223+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description (Refer to Figure 2)
RF-IN ⁹	5	RF-IN Pad connects to RF Input port.
RF-OUT & V _{DD} ¹⁰	21	RF-OUT Pad connects to RF Output port.
V _C ¹¹	2	DC Input pad connects to control voltage Input port, V _C .
V _G ¹¹	13	DC Input pad connects to voltage Input port, V _G .
V _{GT} ¹¹	15	DC Input pad connects to voltage Input port for gate termination, V _{GT} .
V _{DT} ¹¹	29	DC Input pad connects to voltage Input port for drain termination, V _{DT} .
GND	1, 4, 6, 8, 9, 16, 17, 20, 22, 24, 25, 32 & Paddle	Connects to ground.
NC	3, 7, 10-12, 14, 18, 19, 23, 26-28, 30, 31	Not used internally. Connected to ground on test board.

9. DC Blocking Capacitor is required.

10. V_{DD} is applied via external Bias-T.

11. Require Bypass Capacitor.

CHARACTERIZATION TEST BOARD

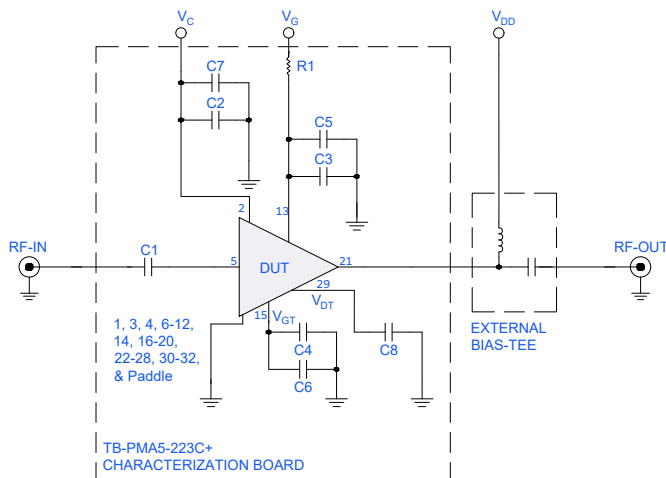


Figure 2. PMA5-223+ Characterization Circuit

Electrical Parameters and Conditions

Gain, Return Loss, Output Power at 1dB Compression (P_{1dB}), Output IP3 (OIP3), Output Power at Saturation (P_{SAT}), and Noise Figure measured using PNA-X N5245B Microwave Network Analyzer.

Conditions:

1. Gain and Return Loss: P_{IN} = -15 dBm
2. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, +20 dBm/Tone at output.
3. V_{DD} = +15 V, V_C = +9.5 V

Power ON/Power OFF Sequence

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

POWER ON:

- 1) Ensure V_G, V_C and V_{DD} are OFF.
- 2) Set V_G = -1.5 V. Apply V_G.
- 3) Set V_C = +9.5 V. Apply V_C.
- 4) Set V_{DD} = +15 V. Apply V_{DD}.
- 5) Increase V_G to obtain the desired I_{DD} as shown in specification table.
- 6) Apply RF Signal.

POWER OFF:

- 1) Turn off RF Signal.
- 2) Adjust V_G to -1.5 V.
- 3) Turn off V_{DD}.
- 4) Turn off V_C.
- 5) Turn off V_G.

Component	Value	Size	Part Number	Manufacturer
C1	0.1 μF	0201	0201BB104KW160	PASSIVE PLUS
C2-C4	0.1 μF	0402	GRM155R71E104KE14D	MURATA
C5-C8	1 μF	0603	06035C105KAT2A	AVX CORP.
R1	0 Ω	0402	RK73Z1ETTP	KOA SPEER



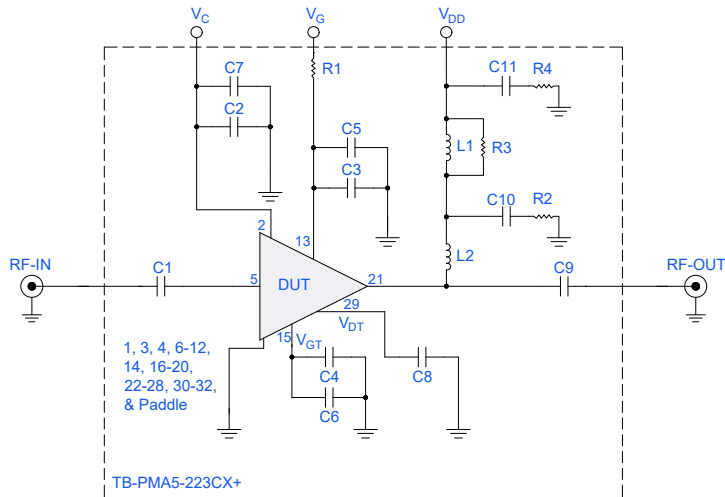
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EVALUATION BOARD



Electrical Parameters and Conditions

Gain, Return Loss, Output Power at 1dB Compression (P1dB), and Output Power at Saturation (PSAT) measured using PNA-X N5245B Microwave Network Analyzer.

Conditions:

1. Gain and Return Loss: $P_{IN} = -15$ dBm
2. $V_{DD} = +15$ V, $V_C = +9.5$ V

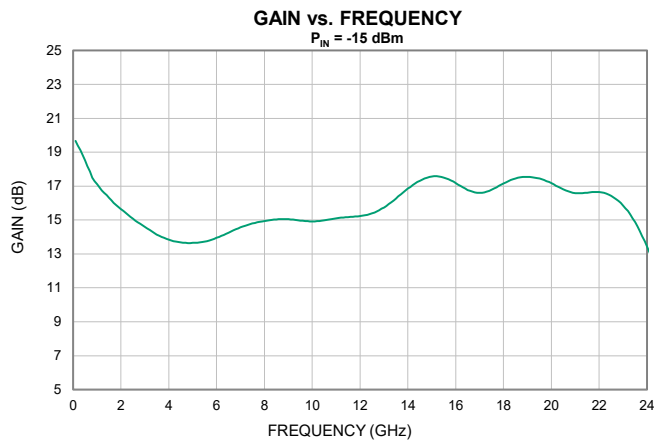
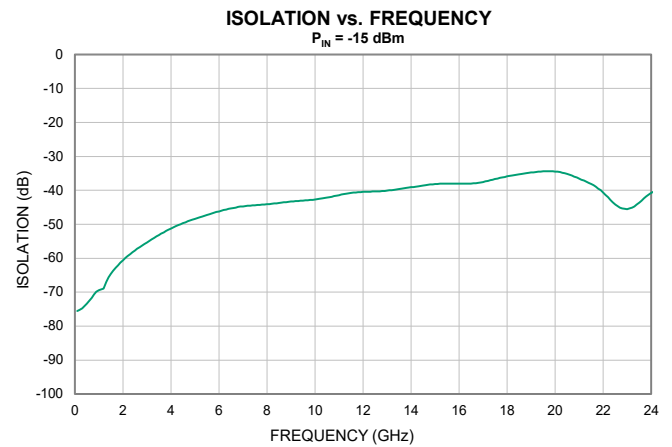
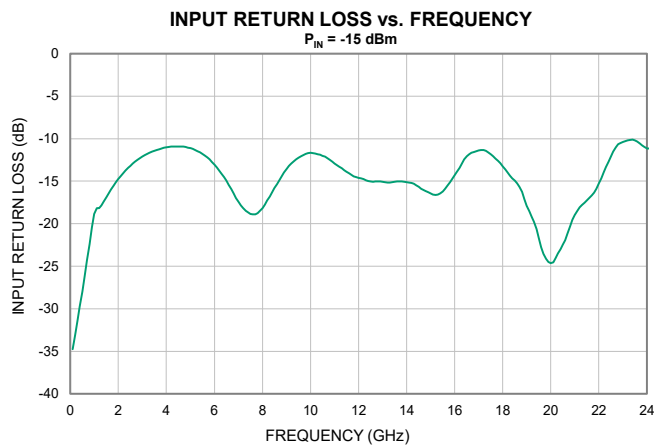
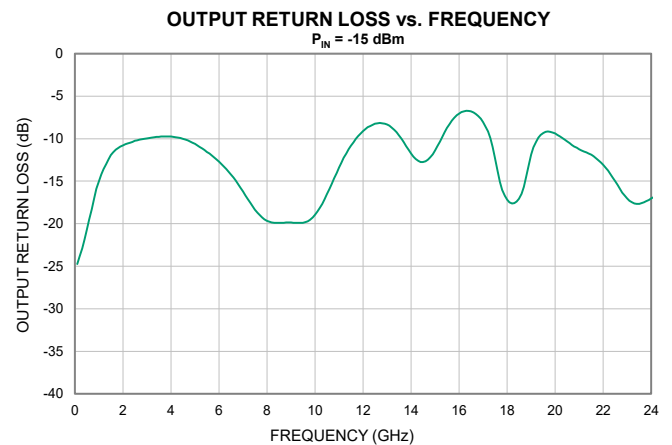
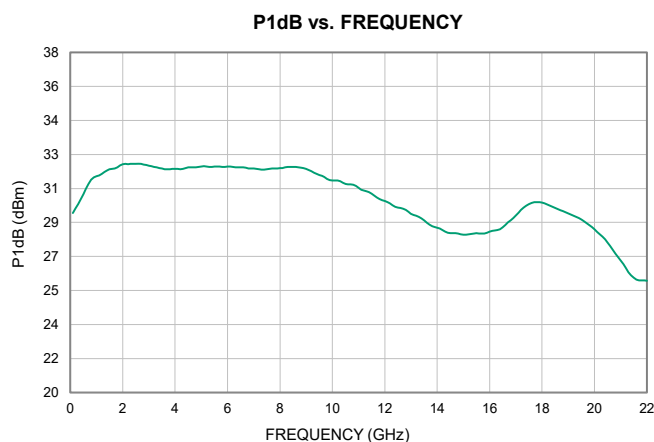
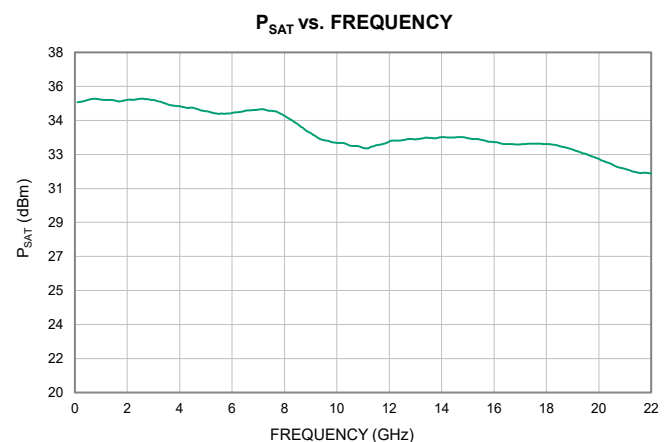
Figure 3. PMA5-223+ 10 MHz - 22 GHz Evaluation and Application Circuit

Component	Value	Size	Part Number	Manufacturer
C1	0.1 μ F	0201	0201BB104KW160	PASSIVE PLUS
C2-C4	0.1 μ F	0402	GRM155R71E104KE14D	MURATA
C5-C8	1 μ F	0603	06035C105KAT2A	AVX CORP.
C9-C10	0.001 μ F	0402	GRM1555C1H102JA01D	MURATA
C11	0.1 μ F	0402	0402BB104KW500	PASSIVE PLUS
R1, R4	0 Ω	0402	RK73Z1ETTP	KOA SPEER
R2	100 Ω	0402	RK73H1ETTP1000F	KOA SPEER
R3	200 Ω	0402	RK73H1ETTP2000F	KOA SPEER
L1	1.2 μ H	0805	0805PB-331XMRC	COILCRAFT
L2	0.425 μ H	1510	CC21T36K240G5-C	PICONICS



TYPICAL EVALUATION BOARD PERFORMANCE GRAPHS

Note: The following data was taken on Mini-Circuits Characterization Test Board TB-PMA5-223CX+ (Figure 3). All data taken at nominal condition of $V_{DD} = +15\text{ V}$, $V_C = +9.5\text{ V}$, and Temperature = $+25^\circ\text{C}$ unless noted otherwise. V_G was adjusted to achieve $I_{DD} = 500\text{ mA}$.





MMIC SURFACE MOUNT

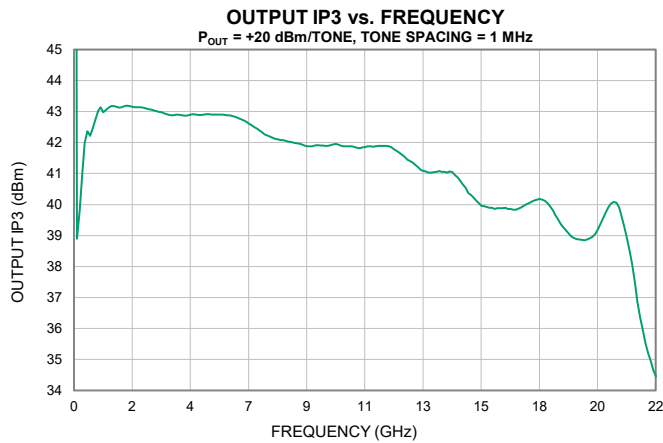
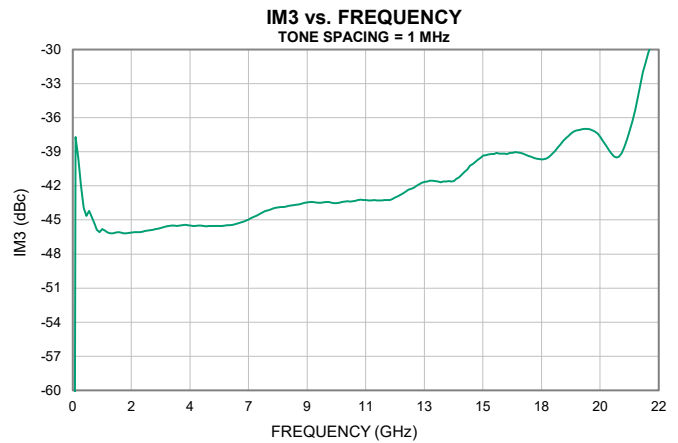
Power Amplifier

PMA5-223+

50 Ω 0.01 to 22 GHz Wideband Amplifier

TYPICAL EVALUATION BOARD PERFORMANCE GRAPHS

Note: The following data was taken on Mini-Circuits Characterization Test Board TB-PMA5-223CX+ (Figure 3). All data taken at nominal condition of $V_{DD} = +15$ V, $V_C = +9.5$ V, and Temperature = +25°C unless noted otherwise. V_G was adjusted to achieve $I_{DD} = 500$ mA.





MMIC SURFACE MOUNT

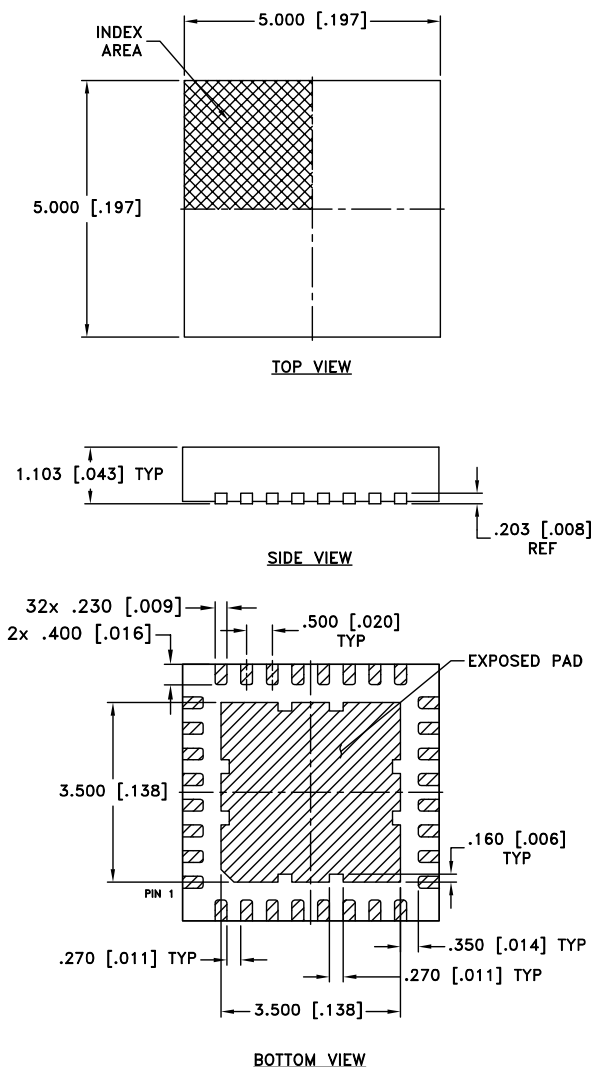
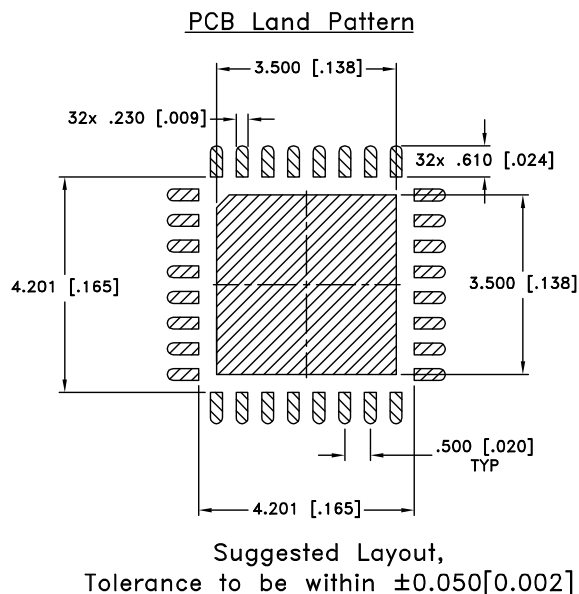
Power Amplifier

PMA5-223+

Mini-Circuits

50Ω 0.01 to 22 GHz Wideband Amplifier

CASE STYLE DRAWING

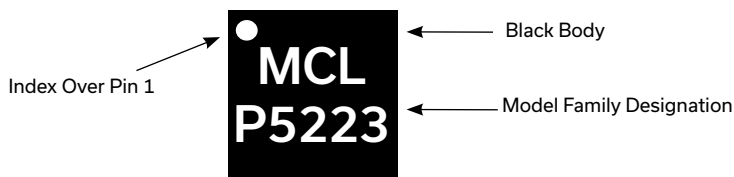


DENOTES METALLIZATION

Weight: .056 Grams

Dimensions are in mm [Inches]. Tolerances: 2 Pl. $\pm 0.254 [0.01]$; 3 Pl. $\pm 0.127 [0.005]$ mm [inches]

PRODUCT MARKING



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

Mini-Circuits

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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	DG1677-8. Plastic package, exposed paddle, Lead Finish: Nickel Palladium Gold
RoHS Status	Compliant
Tape & Reel	F102
Standard Quantities Available on Reel	7" reels with 20, 50, 100, 200, 500 devices 13" reels with 1000 devices
Suggested Layout for PCB Design	PL-872
Evaluation Board	TB-PMA5-223CX+
	Gerber File
Environmental Ratings	ENV08T1
Product Handling	The use of no-clean solder is recommended. This package cannot be subjected to aqueous wash

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

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required

Definitions:

Input Return Loss = S11 (dB)

Gain(Power Gain) = S21 (dB)

Isolation = S12 (dB)

Output Return Loss = S22 (dB)

TEST CONDITIONS: $V_{DD} = +15\text{ V}$, $V_{ctrl} = +9.5\text{ V}$, $I_{DD} = 500\text{ mA}$ @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Noise Figure	1dB Comp. Output	PAE @ 1dB Comp.	P _{SAT} Comp. Output	PAE @ P _{SAT} Comp.	P _{OUT} @ 20 dBm OIP2	P _{OUT} @ 20 dBm OIP3	IM3 Output
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dBm)	(%)	(dBm)	(%)	(dBc)	(dBc)	(dBc)
0.01	24.2	-70.4	-41.4	-23.1	20.5	29.9	11.8	35.1	36.5	51.8	42.3	-44.7
0.1	21.8	-74.1	-40.7	-24.0	18.7	28.4	8.6	34.3	31.8	54.8	41.2	-42.6
0.2	19.3	-76.1	-38.1	-24.3	16.4	28.6	8.9	34.2	30.7	61.4	35.5	-30.8
0.3	18.6	-70.4	-31.3	-22.2	13.9	29.6	10.7	34.5	31.1	57.1	38.8	-37.2
0.4	18.4	-67.5	-23.6	-20.9	11.9	30.8	13.8	35.0	33.9	53.2	41.7	-42.9
0.5	18.1	-72.0	-19.2	-19.9	10.5	31.0	14.0	34.8	33.0	54.7	43.6	-47.2
0.6	17.7	-77.0	-18.6	-18.9	9.4	31.0	13.9	34.7	31.9	54.8	43.7	-47.3
0.7	17.5	-79.4	-20.2	-17.8	8.7	30.9	13.7	34.6	31.5	54.8	43.8	-47.6
0.8	17.4	-75.4	-20.3	-16.6	8.1	30.9	13.7	34.6	31.1	54.7	44.0	-47.9
0.9	17.3	-71.8	-20.0	-15.4	7.6	31.0	13.8	34.6	30.9	54.7	44.2	-48.2
1.0	17.2	-69.6	-19.4	-14.3	7.2	31.0	13.9	34.6	30.7	54.5	44.2	-48.3
2.0	15.8	-59.9	-14.7	-11.2	5.4	31.1	14.2	34.5	27.3	50.1	44.4	-48.7
3.0	14.7	-54.9	-12.1	-9.7	4.7	31.3	14.9	34.6	24.3	47.0	44.3	-48.7
4.0	13.9	-51.1	-10.7	-8.7	4.3	31.4	15.1	34.5	22.4	43.5	43.6	-47.5
5.0	13.5	-48.1	-10.8	-8.7	3.5	31.5	15.4	34.3	20.9	44.1	43.7	-47.4
6.0	13.9	-46.1	-13.1	-9.6	3.0	31.5	16.1	33.9	20.5	44.1	43.4	-46.8
7.0	14.6	-44.6	-18.8	-11.8	2.7	31.6	16.9	33.8	21.4	44.0	43.3	-46.7
8.0	15.1	-43.6	-18.5	-13.4	2.8	31.8	17.9	33.6	22.0	44.0	43.2	-46.5
9.0	15.3	-42.7	-13.5	-12.4	2.9	31.8	18.1	33.4	21.7	44.7	43.2	-46.5
10.0	15.4	-41.5	-12.3	-11.5	2.9	31.6	17.1	33.3	20.5	44.5	43.0	-46.2
11.0	15.6	-39.8	-13.1	-11.6	3.0	31.1	15.5	33.2	20.0	44.7	43.7	-47.4
12.0	15.8	-39.1	-15.1	-11.8	2.9	30.7	14.3	33.3	20.6	45.5	43.8	-47.7
13.0	16.4	-38.8	-17.1	-12.6	2.9	30.3	13.3	33.3	21.7	45.7	42.2	-44.5
14.0	17.3	-38.2	-16.4	-17.5	3.0	29.8	11.9	32.9	21.2	45.6	41.3	-43.0
15.0	18.1	-38.5	-18.2	-24.2	3.3	29.3	10.9	32.4	19.9	44.0	40.8	-41.8
16.0	18.4	-38.8	-14.0	-11.0	3.8	29.1	10.2	31.9	18.0	43.0	40.0	-40.1
17.0	17.5	-38.3	-11.2	-9.8	4.4	29.2	10.6	31.6	16.8	45.8	40.3	-40.8
18.0	17.3	-37.0	-11.7	-12.0	4.8	29.3	10.7	31.4	16.1	51.1	41.5	-43.1
19.0	18.4	-35.5	-13.5	-13.2	5.2	29.2	10.6	31.4	15.5	53.3	39.4	-39.1
20.0	19.0	-34.2	-22.6	-14.6	5.2	28.6	9.3	31.3	14.4	58.6	41.3	-42.9
21.0	18.3	-34.7	-20.2	-14.8	5.4	27.7	7.6	30.8	12.6	56.7	39.3	-38.7
22.0	17.5	-36.8	-13.5	-16.1	5.9	26.5	5.7	30.0	10.1	61.5	36.3	-32.7
23.0	17.3	-40.7	-10.7	-14.4	6.7	25.7	4.6	29.3	8.2	55.1	33.5	-27.1
24.0	15.0	-41.9	-12.4	-10.5	7.9	25.3	4.2	28.9	7.3	50.9	31.3	-22.6

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required

Definitions:

Input Return Loss = S11 (dB)

Gain(Power Gain) = S21 (dB)

Isolation = S12 (dB)

Output Return Loss = S22 (dB)

TEST CONDITIONS: $V_{DD} = +14\text{ V}$, $V_{ctrl} = +8.8\text{ V}$, $I_{DD} = 500\text{ mA}$ @ Temperature = $+25^\circ\text{C}$

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Noise Figure	1dB Comp. Output	PAE @ 1dB Comp.	P _{SAT} Comp. Output	PAE @ P _{SAT} Comp.	P _{OUT} @ 20 dBm OIP2	P _{OUT} @ 20 dBm OIP3	IM3 Output
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dBm)	(%)	(dBm)	(%)	(dBc)	(dBc)	(dBc)
0.01	24.4	-68.5	-39.0	-22.6	20.4	30.3	13.8	34.6	36.9	53.3	41.7	-43.4
0.1	22.1	-73.4	-39.5	-23.3	18.6	28.2	9.0	33.8	31.6	57.0	40.3	-40.6
0.2	19.6	-76.5	-38.1	-23.5	16.3	28.5	9.4	33.7	30.6	55.9	35.1	-29.9
0.3	18.8	-71.4	-31.3	-21.4	13.8	29.4	11.1	33.9	31.0	59.9	38.0	-35.6
0.4	18.5	-68.3	-23.7	-20.2	11.8	30.6	14.5	34.5	34.1	54.7	40.8	-41.2
0.5	18.2	-71.7	-19.2	-19.3	10.4	30.7	14.5	34.3	32.9	55.4	43.4	-46.8
0.6	17.9	-76.1	-18.6	-18.4	9.4	30.6	14.3	34.1	31.7	55.4	43.5	-47.0
0.7	17.7	-78.6	-20.2	-17.4	8.7	30.6	14.2	34.1	31.3	55.4	43.6	-47.2
0.8	17.6	-75.6	-20.3	-16.3	8.1	30.6	14.1	34.1	31.0	55.2	43.8	-47.6
0.9	17.5	-72.7	-20.0	-15.2	7.6	30.6	14.2	34.1	30.8	55.1	44.0	-47.9
1.0	17.4	-70.4	-19.5	-14.2	7.1	30.6	14.4	34.1	30.6	54.8	44.1	-48.0
2.0	15.9	-60.2	-14.7	-11.1	5.3	30.7	14.6	34.0	27.3	50.1	44.6	-48.9
3.0	14.8	-55.1	-12.2	-9.6	4.7	30.9	15.2	34.0	24.5	46.9	44.5	-49.1
4.0	14.0	-51.4	-10.7	-8.7	4.3	31.1	15.4	34.0	22.8	43.6	43.8	-48.0
5.0	13.7	-48.3	-10.8	-8.8	3.6	31.1	15.8	33.8	21.4	44.3	43.9	-48.0
6.0	14.1	-46.4	-13.1	-9.7	2.9	31.2	16.5	33.4	21.0	44.3	43.7	-47.5
7.0	14.8	-44.8	-18.8	-11.9	2.6	31.3	17.5	33.2	21.7	44.0	43.6	-47.3
8.0	15.3	-43.8	-18.5	-13.4	2.7	31.5	18.4	33.1	22.4	44.1	43.5	-47.0
9.0	15.5	-42.9	-13.5	-12.4	2.9	31.5	18.5	33.0	22.3	44.8	43.5	-47.1
10.0	15.6	-41.8	-12.3	-11.6	2.8	31.2	17.3	32.9	21.3	44.6	43.3	-46.7
11.0	15.7	-40.0	-13.1	-11.7	2.9	30.7	15.6	32.9	20.8	44.8	44.0	-48.0
12.0	16.0	-39.3	-15.1	-12.0	2.9	30.4	14.5	33.0	21.5	45.5	44.1	-48.4
13.0	16.6	-39.0	-17.1	-12.8	2.9	29.9	13.3	33.0	22.4	45.7	42.6	-45.3
14.0	17.4	-38.5	-16.3	-17.8	3.0	29.3	11.8	32.6	21.7	45.6	41.7	-43.7
15.0	18.2	-38.9	-18.1	-24.5	3.3	28.9	10.7	32.1	20.5	43.9	41.1	-42.4
16.0	18.5	-39.1	-14.0	-11.2	3.8	28.7	10.2	31.7	18.8	42.9	40.3	-40.7
17.0	17.7	-38.7	-11.1	-9.9	4.3	28.8	10.6	31.4	17.7	45.5	40.6	-41.4
18.0	17.4	-37.3	-11.7	-12.1	4.8	28.9	10.8	31.2	16.8	50.8	41.7	-43.6
19.0	18.6	-35.8	-13.4	-12.9	5.2	28.9	10.7	31.1	16.0	53.3	39.5	-39.3
20.0	19.2	-34.4	-22.2	-14.5	5.2	28.4	9.5	30.9	14.8	58.6	41.2	-42.8
21.0	18.4	-34.8	-20.4	-14.9	5.3	27.5	7.9	30.4	12.8	56.7	39.2	-38.6
22.0	17.7	-36.8	-13.6	-15.8	5.9	26.3	6.0	29.6	10.4	62.0	36.2	-32.5
23.0	17.4	-40.8	-10.7	-14.2	6.7	25.4	4.8	28.9	8.5	55.7	33.1	-26.2
24.0	15.1	-42.0	-12.4	-10.2	7.9	25.0	4.3	28.6	7.6	51.2	31.0	-21.9

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required

Definitions:

Input Return Loss = S11 (dB)

Gain(Power Gain) = S21 (dB)

Isolation = S12 (dB)

Output Return Loss = S22 (dB)

TEST CONDITIONS: $V_{DD} = +13\text{ V}$, $V_{ctrl} = +8\text{ V}$, $I_{DD} = 500\text{ mA}$ @ Temperature = $+25^{\circ}\text{C}$

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Noise Figure	1dB Comp. Output	PAE @ 1dB Comp.	P _{SAT} Comp. Output	PAE @ P _{SAT} Comp.	P _{OUT} @ 20 dBm OIP2	P _{OUT} @ 20 dBm OIP3	IM3 Output
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dBm)	(%)	(dBm)	(%)	(dBc)	(dBc)	(dBc)
0.01	24.6	-69.7	-39.7	-22.2	20.3	30.3	15.3	34.1	36.9	54.6	41.4	-42.7
0.1	22.3	-74.0	-39.9	-22.7	18.5	28.0	9.3	33.3	31.4	58.9	39.4	-38.9
0.2	19.8	-76.3	-38.1	-22.6	16.2	28.2	9.7	33.2	30.4	52.5	34.8	-29.2
0.3	19.1	-70.8	-31.4	-20.6	13.8	29.1	11.5	33.4	30.9	60.0	37.4	-34.4
0.4	18.7	-67.5	-23.7	-19.4	11.8	30.3	14.9	33.9	33.9	55.7	40.1	-39.8
0.5	18.4	-70.5	-19.2	-18.6	10.3	30.3	14.8	33.7	32.9	55.8	43.0	-46.1
0.6	18.1	-76.8	-18.6	-17.8	9.3	30.2	14.5	33.6	31.7	55.9	43.1	-46.3
0.7	17.8	-79.9	-20.2	-17.0	8.6	30.2	14.4	33.5	31.3	55.8	43.3	-46.6
0.8	17.8	-78.0	-20.4	-16.0	8.0	30.2	14.4	33.5	30.9	55.5	43.5	-47.0
0.9	17.7	-73.7	-20.0	-14.9	7.5	30.2	14.5	33.5	30.7	55.3	43.8	-47.5
1.0	17.5	-71.2	-19.5	-14.0	7.1	30.3	14.6	33.5	30.5	55.0	43.9	-47.6
2.0	16.1	-60.5	-14.7	-11.0	5.3	30.4	14.9	33.4	27.3	49.9	44.7	-49.2
3.0	15.0	-55.4	-12.2	-9.7	4.7	30.6	15.5	33.4	24.7	46.8	44.9	-49.8
4.0	14.2	-51.7	-10.7	-8.8	4.2	30.7	15.8	33.4	23.1	43.6	44.1	-48.6
5.0	14.0	-48.6	-10.8	-8.9	3.4	30.8	16.1	33.2	21.8	44.4	44.3	-48.7
6.0	14.4	-46.6	-13.1	-9.9	2.9	30.9	16.9	32.9	21.5	44.3	44.0	-48.2
7.0	15.0	-45.1	-18.8	-12.0	2.6	31.0	17.9	32.7	22.3	44.1	44.0	-48.2
8.0	15.5	-44.1	-18.6	-13.3	2.7	31.2	19.0	32.7	23.0	44.3	43.8	-47.7
9.0	15.6	-43.3	-13.6	-12.4	2.8	31.2	18.9	32.6	22.8	45.0	43.9	-47.8
10.0	15.7	-42.1	-12.3	-11.7	2.8	30.9	17.7	32.6	22.0	44.9	43.7	-47.4
11.0	15.9	-40.3	-13.1	-12.0	2.9	30.5	16.1	32.6	21.6	45.0	44.4	-48.9
12.0	16.1	-39.7	-15.0	-12.3	2.8	30.1	15.0	32.7	22.2	45.6	44.6	-49.3
13.0	16.7	-39.4	-17.0	-13.0	2.8	29.6	13.7	32.7	23.0	45.8	43.1	-46.3
14.0	17.5	-38.9	-16.3	-17.9	2.9	29.0	12.1	32.3	22.3	45.7	42.1	-44.6
15.0	18.3	-39.3	-18.0	-25.0	3.2	28.6	10.9	31.9	21.3	43.8	41.5	-43.0
16.0	18.5	-39.6	-14.0	-11.5	3.7	28.4	10.4	31.6	19.8	42.9	40.5	-41.1
17.0	17.7	-39.1	-11.1	-10.1	4.2	28.6	10.9	31.3	18.6	45.2	40.8	-41.8
18.0	17.4	-37.6	-11.7	-12.2	4.7	28.6	11.1	31.0	17.7	50.4	41.9	-44.1
19.0	18.6	-36.2	-13.4	-12.7	5.1	28.7	11.1	30.9	16.7	53.3	39.6	-39.4
20.0	19.2	-34.7	-21.9	-14.2	5.1	28.2	10.0	30.6	15.3	58.6	41.1	-42.6
21.0	18.4	-35.0	-20.6	-15.1	5.3	27.4	8.4	30.0	13.2	57.0	39.1	-38.4
22.0	17.7	-36.8	-13.6	-15.5	5.9	26.2	6.3	29.2	10.7	62.6	35.9	-31.8
23.0	17.4	-40.8	-10.7	-14.2	6.7	25.2	5.0	28.4	8.7	56.2	32.4	-24.9
24.0	15.1	-42.0	-12.4	-10.1	7.9	24.7	4.4	28.1	7.8	51.5	30.5	-21.0

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required

Definitions:

Input Return Loss = S11 (dB)

Gain(Power Gain) = S21 (dB)

Isolation = S12 (dB)

Output Return Loss = S22 (dB)

TEST CONDITIONS: $V_{DD} = +12\text{ V}$, $V_{ctrl} = +7.5\text{ V}$, $I_{DD} = 500\text{ mA}$ @ Temperature = $+25^\circ\text{C}$

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Noise Figure	1dB Comp. Output	PAE @ 1dB Comp.	P _{SAT} Comp. Output	PAE @ P _{SAT} Comp.	P _{OUT} @ 20 dBm OIP2	P _{OUT} @ 20 dBm OIP3	IM3 Output
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dBm)	(%)	(dBm)	(%)	(dBc)	(dBc)	(dBc)
0.01	24.7	-68.1	-44.1	-21.9	20.2	30.0	15.7	33.6	36.9	58.8	40.4	-40.6
0.1	22.5	-73.1	-42.1	-22.1	18.4	27.3	8.7	32.8	30.9	57.6	37.9	-35.8
0.2	20.0	-76.9	-38.1	-21.7	16.2	27.5	9.0	32.6	29.9	47.6	34.3	-28.3
0.3	19.2	-70.8	-31.4	-19.7	13.7	28.3	10.8	32.8	30.3	55.0	36.3	-32.2
0.4	18.8	-68.0	-23.7	-18.6	11.8	29.6	14.0	33.3	33.5	62.9	38.3	-36.2
0.5	18.5	-71.1	-19.2	-17.9	10.3	29.6	14.1	33.1	32.5	60.3	40.8	-41.7
0.6	18.1	-77.7	-18.6	-17.1	9.3	29.6	13.9	33.0	31.4	60.2	40.9	-41.8
0.7	17.9	-81.2	-20.2	-16.4	8.6	29.5	13.8	32.9	31.0	59.8	41.0	-42.1
0.8	17.8	-78.9	-20.4	-15.5	8.0	29.5	13.8	32.9	30.6	59.2	41.3	-42.5
0.9	17.7	-74.3	-20.0	-14.6	7.5	29.5	13.9	32.9	30.4	58.5	41.5	-42.9
1.0	17.6	-71.6	-19.5	-13.7	7.1	29.6	14.0	32.9	30.3	58.0	41.6	-43.1
2.0	16.1	-61.0	-14.7	-10.8	5.3	29.7	14.3	32.7	27.1	50.8	43.3	-46.5
3.0	15.1	-55.8	-12.2	-9.6	4.6	30.0	15.0	32.7	24.6	47.2	44.6	-49.2
4.0	14.3	-51.9	-10.7	-8.8	4.2	30.2	15.5	32.7	23.1	44.3	43.9	-48.2
5.0	14.1	-48.8	-10.8	-9.0	3.4	30.3	16.0	32.6	22.0	45.1	44.2	-48.6
6.0	14.5	-46.8	-13.1	-10.0	2.8	30.4	17.0	32.3	21.8	45.1	43.9	-48.1
7.0	15.2	-45.4	-18.9	-12.2	2.6	30.6	18.2	32.2	22.7	44.5	44.8	-49.8
8.0	15.6	-44.4	-18.6	-13.3	2.7	30.8	19.1	32.2	23.5	44.6	44.6	-49.3
9.0	15.7	-43.6	-13.6	-12.4	2.8	30.8	18.9	32.2	23.5	45.4	44.6	-49.4
10.0	15.8	-42.4	-12.3	-11.8	2.7	30.4	17.4	32.2	22.7	45.2	44.5	-49.1
11.0	16.0	-40.6	-13.1	-12.2	2.8	30.0	15.8	32.3	22.4	45.5	45.2	-50.4
12.0	16.2	-39.9	-15.0	-12.6	2.8	29.6	14.8	32.4	23.0	45.9	45.1	-50.5
13.0	16.8	-39.7	-17.0	-13.5	2.8	29.1	13.3	32.3	23.5	46.6	43.9	-48.0
14.0	17.6	-39.3	-16.3	-18.8	2.9	28.4	11.4	31.9	22.6	46.6	42.8	-45.9
15.0	18.3	-39.8	-18.1	-23.3	3.2	27.9	10.2	31.6	21.4	44.7	41.8	-43.7
16.0	18.5	-40.1	-14.1	-11.6	3.7	27.7	9.8	31.3	20.0	43.8	40.3	-40.7
17.0	17.8	-39.6	-11.1	-10.5	4.2	28.0	10.4	31.0	19.1	45.6	41.0	-42.2
18.0	17.5	-38.0	-11.6	-12.6	4.6	28.1	10.7	30.7	18.1	50.4	41.9	-43.8
19.0	18.7	-36.5	-13.3	-12.7	5.1	28.1	10.8	30.5	16.8	54.3	39.5	-39.3
20.0	19.3	-34.9	-21.6	-14.5	5.1	27.7	9.7	30.1	15.1	60.2	41.8	-44.1
21.0	18.4	-35.2	-20.7	-15.0	5.3	26.9	8.2	29.5	12.9	59.7	38.9	-38.0
22.0	17.7	-37.0	-13.7	-15.3	5.9	25.7	6.2	28.5	10.4	67.1	34.6	-29.4
23.0	17.4	-41.1	-10.7	-13.7	6.8	24.8	5.0	27.8	8.5	59.5	31.3	-22.7
24.0	14.9	-42.2	-12.4	-9.9	8.1	24.5	4.6	27.5	7.7	54.5	29.9	-19.7

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required

Definitions:

Input Return Loss = S11 (dB)

Gain(Power Gain) = S21 (dB)

Isolation = S12 (dB)

Output Return Loss = S22 (dB)

TEST CONDITIONS: $V_{DD} = +15\text{ V}$, $V_{ctrl} = +9.5\text{ V}$, $I_{DD} = 400\text{ mA}$ @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Noise Figure	1dB Comp. Output	PAE @ 1dB Comp.	P _{SAT} Comp. Output	PAE @ P _{SAT} Comp.	P _{OUT} @ 20 dBm OIP2	P _{OUT} @ 20 dBm OIP3	IM3 Output
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dBm)	(%)	(dBm)	(%)	(dBc)	(dBc)	(dBc)
0.01	23.8	-73.2	-37.3	-22.9	20.6	30.1	14.5	34.8	37.0	46.4	41.4	-42.8
0.1	21.6	-75.5	-38.7	-23.5	18.8	28.1	9.6	34.0	32.2	50.9	40.4	-40.8
0.2	19.2	-76.0	-38.2	-23.6	16.4	28.4	10.1	34.0	31.2	62.6	35.3	-30.3
0.3	18.4	-70.7	-31.4	-21.5	13.9	29.4	12.2	34.2	31.5	52.6	38.3	-36.3
0.4	18.1	-67.5	-23.7	-20.2	12.0	30.8	16.0	34.8	34.1	50.1	41.0	-41.5
0.5	17.8	-70.5	-19.2	-19.3	10.5	31.0	16.1	34.6	33.1	51.7	42.7	-45.4
0.6	17.5	-76.1	-18.6	-18.4	9.5	30.9	16.0	34.5	32.1	51.9	42.8	-45.5
0.7	17.2	-79.8	-20.2	-17.4	8.7	30.9	15.8	34.4	31.7	52.0	42.9	-45.7
0.8	17.2	-77.3	-20.4	-16.2	8.2	30.9	15.7	34.4	31.3	51.9	43.1	-46.0
0.9	17.1	-73.5	-20.0	-15.1	7.6	30.9	15.7	34.4	31.1	52.0	43.3	-46.3
1.0	16.9	-70.7	-19.5	-14.1	7.2	30.9	15.7	34.4	30.9	51.9	43.3	-46.4
2.0	15.5	-60.5	-14.7	-11.0	5.3	30.6	14.8	34.4	27.2	48.3	43.2	-46.2
3.0	14.4	-55.4	-12.2	-9.5	4.7	30.2	13.8	34.4	24.3	45.3	42.7	-45.5
4.0	13.6	-51.6	-10.7	-8.7	4.2	29.9	12.9	34.4	22.3	41.9	42.0	-44.3
5.0	13.3	-48.5	-10.8	-8.7	3.5	29.8	12.7	34.2	20.9	42.4	42.1	-44.3
6.0	13.7	-46.6	-13.1	-9.7	2.9	29.9	13.2	33.8	20.4	42.3	42.0	-44.2
7.0	14.4	-45.0	-18.8	-11.9	2.6	30.2	14.3	33.6	21.2	42.5	42.6	-45.3
8.0	14.9	-44.1	-18.5	-13.3	2.7	30.4	15.3	33.4	21.8	43.1	43.3	-46.6
9.0	15.0	-43.3	-13.6	-12.2	2.8	30.3	15.3	33.2	21.5	43.6	43.8	-47.5
10.0	15.1	-42.1	-12.3	-11.5	2.8	29.9	14.0	33.1	20.4	43.7	43.9	-47.9
11.0	15.2	-40.3	-13.1	-11.7	2.9	29.3	12.5	33.0	19.8	44.4	45.2	-50.3
12.0	15.5	-39.7	-15.1	-12.0	2.8	28.9	11.5	33.1	20.3	45.1	44.5	-49.2
13.0	16.1	-39.4	-17.1	-13.0	2.8	28.6	11.0	33.0	21.1	45.3	42.5	-45.1
14.0	16.9	-39.0	-16.4	-18.5	2.9	28.3	10.3	32.4	20.3	45.7	42.6	-45.6
15.0	17.7	-39.6	-18.4	-22.8	3.2	27.9	9.6	31.9	19.0	44.2	41.1	-42.3
16.0	17.8	-40.0	-14.3	-11.4	3.7	27.5	8.8	31.4	17.2	43.5	39.4	-38.7
17.0	17.0	-39.4	-11.3	-10.6	4.2	27.3	8.4	31.1	16.0	46.1	38.7	-37.4
18.0	16.8	-37.9	-11.9	-13.3	4.6	27.0	7.9	31.0	15.3	51.3	39.2	-38.5
19.0	17.8	-36.4	-13.6	-14.2	5.1	26.7	7.4	31.0	15.0	54.1	37.8	-35.8
20.0	18.4	-35.1	-22.1	-15.3	5.1	25.9	6.2	31.0	14.2	59.1	37.5	-35.3
21.0	17.6	-35.7	-20.5	-15.3	5.3	25.0	5.0	30.6	12.5	56.8	34.5	-29.1
22.0	16.8	-37.6	-13.7	-16.7	5.9	23.7	3.8	29.9	10.3	61.5	33.0	-26.0
23.0	16.3	-41.6	-10.8	-14.9	6.7	22.9	3.1	29.3	8.5	55.3	31.7	-23.5
24.0	14.2	-42.8	-12.4	-11.0	7.8	22.6	2.8	29.1	7.5	50.7	31.1	-22.2

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required

Definitions:

Input Return Loss = S11 (dB)

Gain(Power Gain) = S21 (dB)

Isolation = S12 (dB)

Output Return Loss = S22 (dB)

TEST CONDITIONS: $V_{DD} = +15\text{ V}$, $V_{ctrl} = +9.5\text{ V}$, $I_{DD} = 300\text{ mA}$ @ Temperature = $+25^{\circ}\text{C}$

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Noise Figure	1dB Comp. Output	PAE @ 1dB Comp.	P _{SAT} Comp. Output	PAE @ P _{SAT} Comp.	P _{OUT} @ 20 dBm OIP2	P _{OUT} @ 20 dBm OIP3	IM3 Output
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dBm)	(%)	(dBm)	(%)	(dBc)	(dBc)	(dBc)
0.01	23.3	-72.4	-37.7	-23.1	20.7	30.5	19.5	34.5	37.8	41.8	41.0	-42.1
0.1	21.1	-76.5	-39.0	-23.3	18.9	28.0	12.0	33.7	32.7	47.0	39.9	-39.7
0.2	18.7	-78.6	-38.3	-22.9	16.5	28.3	12.4	33.7	31.7	53.7	35.3	-30.4
0.3	18.0	-71.4	-31.5	-20.8	14.0	29.0	13.9	34.0	32.0	47.5	38.2	-36.0
0.4	17.7	-68.0	-23.7	-19.6	12.0	30.3	17.7	34.6	34.5	46.0	40.5	-40.6
0.5	17.4	-70.6	-19.2	-18.8	10.6	30.6	18.5	34.4	33.3	47.8	42.5	-45.1
0.6	17.0	-77.4	-18.7	-17.9	9.5	30.5	18.1	34.3	32.1	48.0	42.7	-45.3
0.7	16.8	-81.6	-20.3	-16.9	8.8	30.4	17.8	34.3	31.7	48.1	42.8	-45.5
0.8	16.7	-80.7	-20.5	-15.9	8.2	30.3	17.5	34.2	31.3	48.1	42.9	-45.7
0.9	16.6	-76.5	-20.1	-14.8	7.7	30.2	17.3	34.3	31.0	48.1	43.1	-45.9
1.0	16.5	-73.7	-19.6	-13.8	7.2	30.2	17.2	34.3	30.7	48.1	43.1	-45.9
2.0	15.0	-61.8	-14.8	-10.7	5.3	29.3	14.4	34.3	27.0	45.2	42.1	-43.9
3.0	13.9	-56.2	-12.3	-9.3	4.6	28.4	11.8	34.4	24.0	42.2	40.8	-41.8
4.0	13.1	-52.4	-10.8	-8.6	4.2	27.9	10.5	34.4	22.1	38.6	39.5	-39.3
5.0	12.8	-49.2	-10.8	-8.7	3.4	27.7	10.0	34.1	20.6	39.0	39.4	-38.8
6.0	13.2	-47.3	-13.1	-9.9	2.8	27.8	10.4	33.7	20.1	38.6	39.1	-38.4
7.0	14.0	-45.9	-18.8	-12.0	2.6	28.0	11.2	33.5	21.0	39.2	40.2	-40.5
8.0	14.4	-45.0	-18.7	-13.0	2.6	28.1	11.9	33.3	21.7	40.5	41.8	-43.7
9.0	14.5	-44.3	-13.7	-12.0	2.8	28.0	11.8	33.2	21.3	40.9	42.0	-44.1
10.0	14.6	-43.1	-12.4	-11.4	2.7	27.5	10.7	33.0	20.1	41.1	42.0	-44.0
11.0	14.7	-41.3	-13.1	-11.8	2.8	26.9	9.5	32.9	19.5	42.3	40.0	-40.1
12.0	15.0	-40.7	-15.1	-12.3	2.8	26.3	8.5	32.9	19.8	43.1	37.9	-35.8
13.0	15.6	-40.6	-17.2	-13.6	2.8	26.0	8.1	32.7	20.4	43.3	36.8	-33.5
14.0	16.3	-40.4	-16.6	-19.6	2.9	25.8	7.8	32.0	19.4	44.2	37.4	-35.1
15.0	16.9	-41.4	-18.8	-20.6	3.2	25.4	7.2	31.4	18.0	42.8	36.0	-31.9
16.0	16.9	-42.1	-14.7	-11.9	3.6	24.7	6.2	30.9	16.4	41.7	34.7	-29.2
17.0	16.2	-41.5	-11.6	-11.7	4.1	24.2	5.6	30.6	15.1	43.3	34.1	-28.2
18.0	16.1	-39.6	-12.1	-15.0	4.5	23.8	5.1	30.5	14.4	47.7	33.3	-26.3
19.0	17.0	-38.1	-13.7	-15.7	5.0	23.3	4.6	30.5	14.3	53.3	32.5	-25.0
20.0	17.4	-36.7	-21.5	-16.1	5.1	22.6	3.9	30.5	13.7	59.2	31.9	-23.9
21.0	16.5	-37.1	-21.3	-16.2	5.3	21.8	3.2	30.3	12.4	56.3	31.3	-22.6
22.0	15.6	-38.7	-14.1	-17.8	5.9	20.6	2.5	29.9	10.5	61.2	30.9	-21.8
23.0	15.0	-43.0	-10.9	-15.7	6.7	19.8	2.0	29.5	8.8	55.7	30.8	-21.7
24.0	13.1	-44.5	-12.4	-11.8	7.8	19.3	1.8	29.4	7.7	51.6	32.0	-24.1

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required

Definitions:

Input Return Loss = S11 (dB)

Gain(Power Gain) = S21 (dB)

Isolation = S12 (dB)

Output Return Loss = S22 (dB)

TEST CONDITIONS: $V_{DD} = +15\text{ V}$, $V_{ctrl} = +9.5\text{ V}$, $I_{DD} = 500\text{ mA}$ @ Temperature = +85°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Noise Figure	1dB Comp. Output	PAE @ 1dB Comp.	P _{SAT} Comp. Output	PAE @ P _{SAT} Comp.	P _{OUT} @ 20 dBm OIP2	P _{OUT} @ 20 dBm OIP3	IM3 Output
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dBm)	(%)	(dBm)	(%)	(dBc)	(dBc)	(dBc)
0.01	23.1	-65.2	-36.8	-21.3	21.8	29.9	11.7	35.1	35.5	51.2	41.9	-43.8
0.1	20.9	-71.7	-37.9	-23.2	19.7	28.6	8.8	34.2	30.7	54.8	41.0	-42.2
0.2	18.5	-76.3	-37.1	-24.4	17.2	28.8	9.1	34.1	29.6	61.3	35.6	-30.9
0.3	17.9	-71.0	-30.4	-22.3	14.5	29.7	10.7	34.3	30.0	57.5	38.7	-37.0
0.4	17.7	-67.9	-23.1	-20.7	12.4	31.0	13.9	34.8	32.9	53.5	41.5	-42.4
0.5	17.5	-71.6	-19.0	-19.6	10.9	31.2	14.1	34.7	31.8	54.7	43.6	-47.2
0.6	17.1	-76.4	-18.8	-18.6	9.9	31.2	14.3	34.6	30.5	54.8	43.7	-47.4
0.7	16.9	-79.3	-20.3	-17.6	9.2	31.2	14.2	34.5	30.1	54.8	43.9	-47.7
0.8	16.9	-76.2	-20.4	-16.4	8.6	31.2	14.2	34.5	29.7	54.7	44.1	-48.0
0.9	16.8	-73.2	-20.0	-15.2	8.1	31.3	14.4	34.5	29.4	54.6	44.3	-48.4
1.0	16.6	-70.8	-19.5	-14.1	7.7	31.3	14.5	34.5	29.2	54.4	44.3	-48.5
2.0	15.2	-60.2	-14.8	-11.1	6.0	31.4	15.1	34.4	25.7	50.0	44.6	-49.0
3.0	14.0	-55.1	-12.5	-9.6	5.3	31.5	15.4	34.4	22.7	46.8	44.4	-48.9
4.0	13.2	-51.4	-10.8	-8.6	4.9	31.5	15.3	34.3	20.7	43.3	43.7	-47.6
5.0	12.9	-48.4	-10.8	-8.7	4.1	31.5	15.4	34.1	19.4	43.9	43.7	-47.6
6.0	13.3	-46.4	-13.3	-9.6	3.6	31.5	15.7	33.7	19.1	43.9	43.3	-46.8
7.0	14.0	-44.9	-18.4	-11.8	3.3	31.4	16.3	33.5	19.9	43.7	43.2	-46.6
8.0	14.5	-44.0	-17.3	-13.2	3.4	31.6	17.1	33.4	20.4	44.0	43.2	-46.5
9.0	14.6	-43.1	-13.0	-12.3	3.5	31.7	17.3	33.3	20.1	44.6	43.3	-46.7
10.0	14.7	-41.9	-12.8	-11.8	3.5	31.5	16.3	33.0	18.9	44.4	43.2	-46.5
11.0	14.8	-40.2	-13.9	-12.0	3.7	31.1	14.8	32.8	18.1	44.7	43.9	-47.9
12.0	15.0	-39.6	-15.1	-12.0	3.7	30.7	13.7	32.9	18.6	45.7	44.2	-48.4
13.0	15.7	-39.2	-18.2	-13.5	3.7	30.2	12.6	33.0	19.7	45.9	42.5	-45.1
14.0	16.4	-39.1	-17.7	-20.5	3.9	29.6	11.2	32.6	19.5	46.0	41.6	-43.6
15.0	17.2	-39.6	-22.3	-18.6	4.2	29.2	10.3	32.1	18.4	44.6	40.9	-41.9
16.0	17.2	-39.9	-12.9	-11.2	4.8	29.1	9.9	31.6	16.6	44.0	40.1	-40.2
17.0	16.5	-39.4	-11.2	-11.5	5.2	29.2	10.1	31.2	15.2	46.8	40.5	-41.0
18.0	16.4	-37.8	-12.8	-13.2	5.5	29.1	9.9	30.9	14.2	51.8	41.5	-43.1
19.0	17.4	-36.3	-13.2	-15.9	6.1	28.9	9.6	30.9	13.8	54.2	39.4	-39.0
20.0	17.7	-35.3	-20.7	-16.2	6.1	28.5	8.7	30.8	13.1	59.7	41.0	-42.4
21.0	16.8	-36.3	-19.9	-14.9	6.3	27.7	7.2	30.6	11.6	58.0	38.7	-37.6
22.0	15.9	-39.0	-13.1	-17.3	7.0	26.6	5.6	29.8	9.4	62.2	35.9	-32.0
23.0	15.2	-43.0	-10.9	-15.8	8.0	25.9	4.6	29.0	7.4	55.7	33.2	-26.5
24.0	12.9	-43.7	-13.9	-12.5	9.2	25.7	4.2	28.4	6.2	53.4	31.3	-22.6

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required

Definitions:

Input Return Loss = S11 (dB)

Gain(Power Gain) = S21 (dB)

Isolation = S12 (dB)

Output Return Loss = S22 (dB)

TEST CONDITIONS: $V_{DD} = +15\text{ V}$, $V_{ctrl} = +9.5\text{ V}$, $I_{DD} = 500\text{ mA}$ @ Temperature = -40°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Noise Figure	1dB Comp. Output	PAE @ 1dB Comp.	P _{SAT} Comp. Output	PAE @ P _{SAT} Comp.	P _{OUT} @ 20 dBm OIP2	P _{OUT} @ 20 dBm OIP3	IM3 Output
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dBm)	(%)	(dBm)	(%)	(dBc)	(dBc)	(dBc)
0.01	24.8	-67.4	-41.5	-25.9	19.1	30.9	14.8	34.9	37.5	53.3	42.0	-44.1
0.1	22.5	-71.7	-40.8	-26.0	17.4	29.6	11.1	34.3	33.0	56.4	41.3	-42.7
0.2	19.9	-75.0	-38.4	-25.7	15.4	29.7	11.3	34.2	31.9	59.6	35.5	-30.6
0.3	19.0	-70.6	-32.3	-23.3	13.1	30.5	13.5	34.5	32.0	58.9	38.7	-37.0
0.4	18.6	-68.0	-24.4	-22.2	11.3	31.8	17.6	35.0	35.0	54.4	41.6	-42.8
0.5	18.3	-72.0	-19.5	-21.2	9.9	31.8	17.4	34.8	34.3	55.6	43.1	-46.2
0.6	18.0	-75.9	-18.4	-19.9	8.9	31.7	17.4	34.7	33.1	55.8	43.2	-46.3
0.7	17.7	-77.7	-20.0	-18.6	8.2	31.7	17.2	34.6	32.7	55.8	43.3	-46.4
0.8	17.7	-73.1	-20.2	-17.1	7.6	31.7	17.2	34.6	32.3	55.7	43.4	-46.7
0.9	17.6	-70.3	-19.8	-15.9	7.1	31.7	17.3	34.6	32.1	55.6	43.5	-46.9
1.0	17.4	-68.4	-19.3	-14.9	6.6	31.7	17.4	34.6	31.9	55.4	43.5	-46.9
2.0	16.0	-59.1	-14.4	-11.3	4.7	31.5	17.1	34.6	28.4	50.7	43.7	-47.2
3.0	14.9	-54.0	-12.0	-9.7	4.1	31.4	17.0	34.7	25.4	47.5	43.6	-47.3
4.0	14.1	-50.6	-10.4	-8.8	3.7	31.5	16.9	34.6	23.4	43.9	43.1	-46.4
5.0	13.7	-47.5	-10.4	-8.4	3.1	31.6	17.6	34.4	21.8	44.4	43.2	-46.5
6.0	14.1	-45.5	-13.1	-9.3	2.5	31.7	18.4	34.0	21.4	44.3	43.1	-46.3
7.0	14.9	-43.9	-19.1	-11.3	2.2	31.5	18.6	33.9	22.6	44.3	43.1	-46.3
8.0	15.5	-42.8	-18.8	-13.7	2.3	31.5	19.0	33.7	23.4	43.9	42.9	-45.8
9.0	15.7	-41.8	-13.3	-12.9	2.4	31.4	18.6	33.5	23.0	44.6	42.8	-45.7
10.0	15.9	-40.6	-12.5	-11.7	2.3	31.0	17.1	33.3	21.9	44.4	42.5	-45.1
11.0	16.0	-39.0	-12.9	-10.7	2.5	30.5	15.3	33.4	21.6	44.5	42.9	-46.0
12.0	16.3	-38.2	-13.8	-10.9	2.4	30.2	14.3	33.6	22.3	45.1	43.0	-46.1
13.0	17.0	-37.7	-17.2	-11.5	2.3	30.0	13.6	33.6	23.5	45.5	41.6	-43.2
14.0	17.9	-37.0	-14.2	-14.6	2.4	29.6	12.5	32.9	22.7	45.3	40.6	-41.6
15.0	19.0	-36.8	-16.2	-31.2	2.6	29.3	11.6	32.3	21.0	43.6	40.3	-40.8
16.0	19.5	-36.8	-14.2	-10.7	3.0	29.0	10.8	31.7	18.8	42.1	39.5	-39.2
17.0	18.7	-36.5	-11.1	-8.6	3.4	29.2	11.2	31.5	17.6	45.0	39.8	-39.7
18.0	18.3	-35.3	-12.3	-10.4	4.0	29.2	11.3	31.4	17.0	50.4	41.0	-42.2
19.0	19.3	-34.1	-12.4	-11.1	4.6	29.3	11.6	31.4	16.5	52.3	39.2	-38.7
20.0	20.3	-32.6	-23.5	-13.1	4.5	28.8	10.3	31.2	15.3	57.2	40.2	-40.8
21.0	19.6	-32.9	-23.4	-14.5	4.6	27.9	8.5	30.7	13.3	55.2	39.7	-39.6
22.0	18.8	-34.6	-14.4	-14.9	5.2	26.7	6.5	29.8	11.0	60.4	36.3	-32.8
23.0	18.9	-38.0	-9.7	-14.5	5.7	25.9	5.2	29.1	9.0	54.6	33.5	-27.1
24.0	17.4	-40.0	-12.8	-8.8	6.6	25.4	4.7	28.8	8.0	48.7	31.0	-22.0

*Typical Performance Data*TEST CONDITIONS: VDD = +15 V, V_{ctrl} = +9.5 V, IDD = 500 mA @ Temperature = +25°C

Set P _{IN}	Gain @ 10MHz	Current @ 10MHz	P _{DISS} @ 10MHz	Measured P _{IN} @ 10MHz	Measured P _{OUT} @ 10MHz	PAE @ 10MHz
(dBm)	(dB)	(mA)	(W)	(dBm)	(dBm)	(%)
-10.0	26.5	0.5	7.5	-9.8	16.8	0.6
-9.0	26.0	0.5	7.5	-8.4	17.5	0.8
-8.0	26.1	0.5	7.4	-7.4	18.6	1.0
-7.0	26.1	0.5	7.4	-6.5	19.6	1.2
-6.0	26.1	0.5	7.4	-5.5	20.5	1.5
-5.0	26.0	0.5	7.4	-4.6	21.5	1.9
-4.0	26.0	0.5	7.3	-3.6	22.4	2.3
-3.0	26.0	0.5	7.3	-2.6	23.3	2.9
-2.0	25.9	0.5	7.3	-1.6	24.2	3.5
-1.0	25.8	0.5	7.3	-0.7	25.1	4.3
0.0	25.7	0.5	7.2	0.3	26.0	5.2
1.0	25.5	0.5	7.2	1.3	26.8	6.2
2.0	25.4	0.5	7.2	2.3	27.6	7.4
3.0	25.2	0.5	7.2	3.3	28.5	8.8
4.0	25.0	0.5	7.2	4.2	29.3	10.4
5.0	24.8	0.6	7.3	5.2	30.1	12.1
6.0	24.6	0.6	7.4	6.2	30.8	13.8
7.0	24.2	0.6	7.6	7.2	31.4	15.4
8.0	23.9	0.6	7.6	8.2	32.0	17.2
9.0	23.5	0.6	7.5	9.1	32.6	19.5
10.0	23.0	0.6	7.4	10.2	33.2	21.9
11.0	22.5	0.6	6.8	11.1	33.7	25.4
12.0	21.9	0.6	6.0	12.1	34.0	29.4
13.0	21.1	0.6	5.7	13.1	34.2	31.5
14.0	20.3	0.6	5.6	14.1	34.4	32.6
15.0	19.4	0.6	5.5	15.0	34.5	33.5
16.0	18.5	0.6	5.5	16.1	34.6	33.9
17.0	17.5	0.6	5.5	17.1	34.6	34.3
18.0	16.7	0.6	5.5	18.0	34.7	34.5
19.0	15.7	0.6	5.5	19.0	34.8	34.5
20.0	14.8	0.6	5.5	20.0	34.8	34.6
21.0	13.8	0.6	5.5	21.0	34.8	34.5
22.0	12.8	0.6	5.6	22.0	34.8	34.2
23.0	11.8	0.6	5.6	23.0	34.9	33.8
24.0	10.8	0.6	5.6	24.0	34.9	33.3
25.0	9.9	0.6	5.7	25.0	34.9	32.5
26.0	8.9	0.6	5.8	26.0	34.9	31.7

*Typical Performance Data*TEST CONDITIONS: VDD = +15 V, V_{ctrl} = +9.5 V, IDD = 500 mA @ Temperature = +25°C

Set P _{IN}	Gain @ 1GHz	Current @ 1GHz	P _{Diss} @ 1GHz	Measured P _{IN} @ 1GHz	Measured P _{OUT} @ 1GHz	PAE @ 1GHz
(dBm)	(dB)	(mA)	(W)	(dBm)	(dBm)	(%)
-10.0	17.7	0.5	7.5	-10.0	7.7	0.1
-9.0	17.2	0.5	7.5	-8.7	8.4	0.1
-8.0	17.3	0.5	7.5	-7.7	9.5	0.1
-7.0	17.3	0.5	7.5	-6.8	10.5	0.1
-6.0	17.3	0.5	7.5	-5.8	11.5	0.2
-5.0	17.3	0.5	7.5	-4.8	12.5	0.2
-4.0	17.3	0.5	7.5	-3.8	13.5	0.3
-3.0	17.3	0.5	7.5	-2.8	14.4	0.4
-2.0	17.3	0.5	7.5	-1.9	15.4	0.5
-1.0	17.3	0.5	7.5	-0.9	16.4	0.6
0.0	17.3	0.5	7.4	0.1	17.4	0.7
1.0	17.2	0.5	7.5	1.1	18.3	0.9
2.0	17.3	0.5	7.4	2.1	19.3	1.1
3.0	17.3	0.5	7.4	3.1	20.3	1.4
4.0	17.2	0.5	7.4	4.1	21.3	1.8
5.0	17.2	0.5	7.4	5.1	22.3	2.2
6.0	17.2	0.5	7.4	6.1	23.3	2.7
7.0	17.2	0.5	7.3	7.0	24.2	3.4
8.0	17.1	0.5	7.3	8.0	25.2	4.2
9.0	17.1	0.5	7.3	9.0	26.1	5.2
10.0	17.0	0.5	7.3	10.0	27.0	6.3
11.0	16.8	0.5	7.4	11.0	27.9	7.5
12.0	16.7	0.5	7.4	12.0	28.7	9.0
13.0	16.6	0.6	7.5	13.0	29.6	10.6
14.0	16.4	0.6	7.6	14.0	30.4	12.4
15.0	16.2	0.6	7.6	15.0	31.2	14.4
16.0	16.0	0.6	7.5	16.0	32.0	17.2
17.0	15.8	0.6	6.6	17.0	32.8	21.9
18.0	15.4	0.5	5.9	18.0	33.4	26.6
19.0	14.8	0.5	5.7	19.0	33.9	29.2
20.0	14.1	0.5	5.6	20.0	34.1	30.7
21.0	13.4	0.6	5.6	21.0	34.4	31.6
22.0	12.5	0.6	5.7	22.0	34.6	32.1
23.0	11.7	0.6	5.8	23.0	34.7	32.3
24.0	10.9	0.6	6.0	24.0	34.9	32.0
25.0	10.0	0.6	6.2	25.0	35.0	31.5
26.0	9.1	0.6	6.4	26.0	35.1	30.6

*Typical Performance Data*TEST CONDITIONS: VDD = +15 V, V_{ctrl} = +9.5 V, IDD = 500 mA @ Temperature = +25°C

Set P _{IN}	Gain @ 2GHz	Current @ 2GHz	P _{DISS} @ 2GHz	Measured P _{IN} @ 2GHz	Measured P _{OUT} @ 2GHz	PAE @ 2GHz
(dBm)	(dB)	(mA)	(W)	(dBm)	(dBm)	(%)
-10.0	15.8	0.5	7.5	-10.0	5.8	0.0
-9.0	15.4	0.5	7.5	-9.0	6.4	0.1
-8.0	15.4	0.5	7.5	-7.9	7.5	0.1
-7.0	15.4	0.5	7.5	-6.9	8.5	0.1
-6.0	15.4	0.5	7.5	-5.9	9.6	0.1
-5.0	15.4	0.5	7.5	-4.9	10.5	0.1
-4.0	15.4	0.5	7.5	-3.9	11.5	0.2
-3.0	15.4	0.5	7.5	-2.9	12.5	0.2
-2.0	15.4	0.5	7.5	-1.9	13.5	0.3
-1.0	15.5	0.5	7.4	-1.0	14.5	0.4
0.0	15.4	0.5	7.4	0.0	15.5	0.5
1.0	15.4	0.5	7.4	1.0	16.4	0.6
2.0	15.4	0.5	7.4	2.0	17.4	0.7
3.0	15.4	0.5	7.4	3.0	18.4	0.9
4.0	15.4	0.5	7.4	4.0	19.4	1.1
5.0	15.4	0.5	7.4	4.9	20.4	1.4
6.0	15.4	0.5	7.4	5.9	21.3	1.8
7.0	15.4	0.5	7.4	6.9	22.3	2.2
8.0	15.4	0.5	7.3	7.9	23.3	2.7
9.0	15.3	0.5	7.3	8.9	24.2	3.4
10.0	15.3	0.5	7.4	9.9	25.2	4.2
11.0	15.2	0.5	7.4	10.9	26.1	5.1
12.0	15.1	0.5	7.4	11.9	27.0	6.2
13.0	15.0	0.5	7.5	12.9	27.9	7.3
14.0	14.8	0.6	7.6	13.9	28.7	8.7
15.0	14.6	0.6	7.7	14.9	29.5	10.2
16.0	14.5	0.6	7.8	15.9	30.4	11.9
17.0	14.3	0.6	7.5	16.9	31.2	14.3
18.0	13.9	0.5	6.7	17.9	31.8	18.0
19.0	13.4	0.5	6.4	18.9	32.4	20.6
20.0	12.8	0.5	6.4	19.9	32.8	22.0
21.0	12.1	0.6	6.5	21.0	33.1	22.7
22.0	11.5	0.6	6.8	21.9	33.4	23.1
23.0	10.7	0.6	7.0	22.9	33.7	23.2
24.0	10.0	0.6	7.4	23.9	33.9	23.1
25.0	9.2	0.7	7.7	24.9	34.1	22.6
26.0	8.3	0.7	8.1	25.9	34.2	21.8

Typical Performance Data

TEST CONDITIONS: VDD = +15 V, V_{ctrl} = +9.5 V, IDD = 500 mA @ Temperature = +25°C

Set P _{IN}	Gain @ 8GHz	Current @ 8GHz	P _{DISS} @ 8GHz	Measured P _{IN} @ 8GHz	Measured P _{OUT} @ 8GHz	PAE @ 8GHz
(dBm)	(dB)	(mA)	(W)	(dBm)	(dBm)	(%)
-10.0	15.3	0.5	7.5	-10.1	5.2	0.0
-9.0	15.0	0.5	7.5	-9.1	5.9	0.1
-8.0	15.0	0.5	7.5	-8.1	6.9	0.1
-7.0	15.0	0.5	7.5	-7.2	7.9	0.1
-6.0	15.0	0.5	7.5	-6.1	8.9	0.1
-5.0	15.0	0.5	7.5	-5.2	9.9	0.1
-4.0	15.0	0.5	7.5	-4.1	10.9	0.2
-3.0	15.0	0.5	7.5	-3.1	11.9	0.2
-2.0	15.0	0.5	7.5	-2.1	12.9	0.3
-1.0	15.0	0.5	7.5	-1.1	13.9	0.3
0.0	15.0	0.5	7.4	-0.1	14.9	0.4
1.0	15.0	0.5	7.4	0.9	15.9	0.5
2.0	15.0	0.5	7.4	1.9	16.9	0.6
3.0	15.0	0.5	7.4	2.9	17.9	0.8
4.0	15.0	0.5	7.4	3.9	18.9	1.0
5.0	15.0	0.5	7.4	4.9	19.9	1.3
6.0	15.0	0.5	7.3	5.9	20.9	1.6
7.0	15.0	0.5	7.3	6.9	21.9	2.0
8.0	15.0	0.5	7.3	7.9	22.9	2.5
9.0	15.0	0.5	7.2	8.9	23.8	3.1
10.0	15.0	0.5	7.2	9.9	24.8	3.9
11.0	14.9	0.5	7.2	10.9	25.8	4.9
12.0	14.9	0.5	7.1	11.9	26.8	6.1
13.0	14.9	0.5	7.1	12.9	27.8	7.5
14.0	14.8	0.5	7.1	13.9	28.7	9.2
15.0	14.7	0.5	7.0	14.9	29.6	11.1
16.0	14.5	0.5	7.0	15.9	30.4	13.3
17.0	14.3	0.5	6.9	16.9	31.2	15.7
18.0	14.0	0.6	6.9	17.9	31.9	17.8
19.0	13.6	0.5	6.4	18.9	32.5	20.8
20.0	13.0	0.6	6.5	19.9	32.9	22.1
21.0	12.3	0.6	6.6	20.9	33.2	22.9
22.0	11.6	0.6	6.9	21.9	33.5	23.4
23.0	11.0	0.6	7.2	22.9	33.9	23.8
24.0	10.4	0.7	7.6	23.9	34.2	24.1
25.0	9.7	0.7	8.1	24.9	34.6	24.1
26.0	8.9	0.7	8.5	25.9	34.8	23.6

Typical Performance Data

TEST CONDITIONS: VDD = +15 V, V_{ctrl} = +9.5 V, IDD = 500 mA @ Temperature = +25°C

Set P _{IN}	Gain @ 16GHz	Current @ 16GHz	P _{Diss} @ 16GHz	Measured P _{IN} @ 16GHz	Measured P _{OUT} @ 16GHz	PAE @ 16GHz
(dBm)	(dB)	(mA)	(W)	(dBm)	(dBm)	(%)
-10.0	18.6	0.5	7.5	-10.2	8.4	0.1
-9.0	18.2	0.5	7.5	-9.2	9.0	0.1
-8.0	18.3	0.5	7.5	-8.2	10.0	0.1
-7.0	18.3	0.5	7.5	-7.3	11.0	0.2
-6.0	18.3	0.5	7.5	-6.3	12.0	0.2
-5.0	18.2	0.5	7.4	-5.3	13.0	0.3
-4.0	18.3	0.5	7.4	-4.3	14.0	0.3
-3.0	18.2	0.5	7.4	-3.3	15.0	0.4
-2.0	18.3	0.5	7.4	-2.3	16.0	0.5
-1.0	18.2	0.5	7.4	-1.2	17.0	0.7
0.0	18.3	0.5	7.4	-0.2	18.0	0.8
1.0	18.2	0.5	7.4	0.8	19.0	1.1
2.0	18.3	0.5	7.4	1.8	20.0	1.3
3.0	18.2	0.5	7.3	2.8	21.0	1.7
4.0	18.2	0.5	7.3	3.8	22.0	2.1
5.0	18.3	0.5	7.3	4.7	23.0	2.6
6.0	18.2	0.5	7.2	5.8	24.0	3.3
7.0	18.2	0.5	7.2	6.8	25.0	4.1
8.0	18.2	0.5	7.1	7.8	25.9	5.2
9.0	18.1	0.5	7.1	8.8	26.9	6.3
10.0	17.9	0.5	7.0	9.8	27.7	7.6
11.0	17.7	0.5	7.0	10.8	28.4	9.0
12.0	17.3	0.5	6.9	11.8	29.1	10.4
13.0	16.9	0.5	6.9	12.8	29.8	11.8
14.0	16.6	0.5	6.9	13.8	30.4	13.4
15.0	16.2	0.5	6.9	14.8	31.0	15.0
16.0	15.7	0.6	7.0	15.8	31.5	16.4
17.0	15.1	0.6	7.2	16.8	31.9	17.2
18.0	14.3	0.6	6.9	17.8	32.1	18.3
19.0	13.4	0.6	6.7	18.8	32.2	19.2
20.0	12.6	0.6	6.9	19.8	32.4	19.4
21.0	12.0	0.6	7.2	20.8	32.8	19.8
22.0	11.5	0.6	7.6	21.8	33.2	20.5
23.0	10.9	0.7	8.0	22.8	33.6	21.1
24.0	10.2	0.7	8.3	23.8	34.0	21.3
25.0	9.5	0.7	8.7	24.7	34.2	21.1
26.0	9.7	0.7	8.6	24.5	34.2	21.7

Typical Performance Data

TEST CONDITIONS: VDD = +15 V, V_{ctrl} = +9.5 V, IDD = 500 mA @ Temperature = +25°C

Set P _{IN}	Gain @ 22GHz	Current @ 22GHz	P _{DISS} @ 22GHz	Measured P _{IN} @ 22GHz	Measured P _{OUT} @ 22GHz	PAE @ 22GHz
(dBm)	(dB)	(mA)	(W)	(dBm)	(dBm)	(%)
-10.0	17.7	0.5	7.4	-10.4	7.3	0.1
-9.0	17.4	0.5	7.4	-9.4	8.0	0.1
-8.0	17.4	0.5	7.4	-8.4	9.0	0.1
-7.0	17.3	0.5	7.4	-7.4	10.0	0.1
-6.0	17.4	0.5	7.4	-6.4	11.0	0.2
-5.0	17.3	0.5	7.4	-5.3	12.0	0.2
-4.0	17.4	0.5	7.4	-4.4	13.0	0.3
-3.0	17.4	0.5	7.4	-3.4	14.0	0.3
-2.0	17.4	0.5	7.4	-2.4	15.0	0.4
-1.0	17.4	0.5	7.4	-1.4	16.0	0.5
0.0	17.4	0.5	7.3	-0.4	17.0	0.7
1.0	17.4	0.5	7.3	0.6	18.0	0.8
2.0	17.4	0.5	7.3	1.6	19.0	1.1
3.0	17.3	0.5	7.3	2.7	20.0	1.3
4.0	17.3	0.5	7.3	3.6	21.0	1.7
5.0	17.3	0.5	7.3	4.6	21.9	2.1
6.0	17.2	0.5	7.2	5.6	22.9	2.6
7.0	17.1	0.5	7.2	6.6	23.8	3.1
8.0	17.0	0.5	7.2	7.6	24.6	3.8
9.0	16.8	0.5	7.1	8.7	25.4	4.6
10.0	16.5	0.5	7.1	9.6	26.2	5.4
11.0	16.2	0.5	7.1	10.6	26.9	6.3
12.0	15.9	0.5	7.1	11.6	27.5	7.2
13.0	15.5	0.5	7.2	12.6	28.1	8.1
14.0	15.0	0.5	7.3	13.6	28.7	8.9
15.0	14.5	0.6	7.5	14.7	29.2	9.7
16.0	14.0	0.6	7.8	15.6	29.6	10.2
17.0	13.4	0.6	8.1	16.7	30.0	10.6
18.0	12.7	0.6	8.3	17.7	30.4	11.1
19.0	12.0	0.6	8.4	18.6	30.7	11.6
20.0	11.3	0.6	8.5	19.7	31.0	12.0
21.0	10.6	0.7	8.7	20.7	31.3	12.3
22.0	9.9	0.7	9.0	21.7	31.5	12.4
23.0	9.0	0.7	9.3	22.7	31.7	12.3
24.0	9.2	0.7	9.2	22.6	31.9	12.8
25.0	8.7	0.7	9.4	23.2	31.9	12.5
26.0	8.5	0.7	9.5	23.5	32.0	12.5

Typical Performance Data

TEST CONDITIONS: $V_{DD} = +15\text{ V}$, $V_{ctrl} = +9.5\text{ V}$, $I_{DD} = 500\text{ mA}$, Temperature $+25^{\circ}\text{C}$

FREQ	P _{OUT} @ 10 dBm	P _{OUT} @ 12 dBm	P _{OUT} @ 14 dBm	P _{OUT} @ 16 dBm	P _{OUT} @ 18 dBm	P _{OUT} @ 20 dBm	P _{OUT} @ 22 dBm	P _{OUT} @ 24 dBm
(GHz)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)
0.0	-49.5	-46.9	-44.3	-42.5	-40.2	-37.9	-35.5	-34.8
0.1	-50.8	-48.9	-46.8	-44.7	-42.5	-40.2	-39.0	-37.4
0.2	-52.0	-50.0	-47.8	-45.9	-43.8	-41.7	-41.1	-42.7
0.3	-52.1	-50.1	-48.0	-45.9	-43.8	-41.7	-40.0	-47.5
0.4	-52.1	-49.9	-47.9	-45.8	-43.7	-41.6	-39.6	-41.4
0.5	-52.3	-50.3	-48.3	-46.2	-44.2	-42.2	-40.1	-39.2
0.6	-52.6	-50.6	-48.6	-46.5	-44.8	-42.9	-40.7	-38.7
0.7	-52.9	-50.9	-48.8	-46.8	-45.0	-43.1	-40.9	-39.0
0.8	-53.0	-51.0	-48.9	-46.9	-45.1	-43.1	-40.9	-39.0
0.9	-53.1	-51.0	-49.0	-46.9	-45.1	-43.1	-40.9	-39.0
1.0	-52.9	-50.8	-48.8	-46.7	-44.9	-42.8	-40.7	-38.8
2.0	-48.0	-46.0	-43.9	-41.9	-39.9	-37.7	-35.5	-33.3
3.0	-45.1	-43.0	-40.9	-38.8	-36.8	-34.6	-32.4	-30.1
4.0	-42.7	-40.7	-38.6	-36.5	-34.4	-32.3	-30.1	-27.9
5.0	-41.9	-39.8	-37.7	-35.5	-33.4	-31.2	-29.0	-26.8
6.0	-40.4	-38.3	-36.2	-34.1	-31.9	-29.9	-27.7	-25.6
7.0	-37.9	-35.8	-33.7	-31.6	-29.5	-27.4	-25.2	-23.1
8.0	-36.4	-34.3	-32.2	-30.1	-28.0	-25.9	-23.7	-21.6
9.0	-37.5	-35.4	-33.4	-31.3	-29.2	-27.1	-24.9	-22.7
10.0	-37.3	-35.2	-33.1	-31.0	-29.0	-26.9	-24.8	-22.6
11.0	-39.5	-37.4	-35.3	-33.2	-31.0	-28.8	-26.6	-24.5
12.0	-41.1	-38.9	-36.7	-34.5	-32.4	-30.1	-27.7	-25.5
13.0	-39.9	-37.8	-35.6	-33.5	-31.3	-29.1	-26.8	-24.7
14.0	-39.5	-37.3	-35.1	-32.8	-30.6	-28.4	-26.3	-24.2
15.0	-39.1	-37.3	-34.9	-32.6	-30.4	-28.0	-25.9	-23.6
16.0	-39.8	-37.9	-35.5	-33.1	-30.7	-28.3	-25.9	-23.6
17.0	-42.5	-40.7	-38.3	-35.8	-33.6	-31.3	-29.0	-26.4
18.0	-46.1	-43.9	-41.6	-39.0	-36.5	-34.3	-32.1	-29.6
19.0	-48.8	-46.0	-43.4	-40.9	-38.6	-36.3	-34.3	-32.9
20.0	-51.6	-49.0	-46.6	-44.0	-41.6	-39.5	-37.6	-36.3
21.0	-50.3	-46.2	-44.1	-41.8	-39.0	-37.2	-35.4	-34.1
22.0	-56.1	-54.3	-52.1	-49.3	-46.6	-44.3	-42.7	-41.5
23.0	-55.6	-52.3	-49.6	-47.0	-44.6	-42.3	-40.7	-39.4
24.0	-54.6	-52.8	-50.9	-47.8	-45.0	-42.6	-40.6	-38.9

Typical Performance Data

TEST CONDITIONS: $V_{DD} = +15\text{ V}$, $V_{ctrl} = +9.5\text{ V}$, $I_{DD} = 500\text{ mA}$, Temperature -40°C

FREQ	P _{OUT} @ 10 dBm	P _{OUT} @ 12 dBm	P _{OUT} @ 14 dBm	P _{OUT} @ 16 dBm	P _{OUT} @ 18 dBm	P _{OUT} @ 20 dBm	P _{OUT} @ 22 dBm	P _{OUT} @ 24 dBm
(GHz)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)
0.0	-51.0	-48.9	-46.2	-44.3	-41.9	-39.5	-37.2	-34.9
0.1	-52.3	-50.2	-47.9	-45.8	-43.9	-41.7	-40.7	-37.2
0.2	-53.4	-51.1	-48.9	-46.8	-44.9	-42.9	-43.0	-41.5
0.3	-53.4	-51.2	-48.9	-46.7	-44.5	-42.6	-41.1	-51.4
0.4	-53.2	-50.8	-48.7	-46.5	-44.3	-42.2	-40.4	-43.0
0.5	-53.3	-51.1	-48.9	-46.7	-44.8	-42.8	-40.7	-40.2
0.6	-53.8	-51.5	-49.4	-47.3	-45.5	-43.5	-41.4	-39.5
0.7	-54.1	-51.9	-49.7	-47.5	-45.7	-43.7	-41.6	-39.7
0.8	-54.3	-52.0	-49.8	-47.7	-45.8	-43.7	-41.6	-39.7
0.9	-54.5	-52.2	-49.9	-47.8	-45.8	-43.8	-41.6	-39.7
1.0	-54.3	-52.0	-49.8	-47.6	-45.6	-43.5	-41.3	-39.4
2.0	-49.3	-47.2	-45.0	-42.9	-40.7	-38.4	-36.0	-33.7
3.0	-46.0	-43.8	-41.7	-39.6	-37.4	-35.2	-32.8	-30.5
4.0	-43.4	-41.3	-39.1	-36.9	-34.8	-32.7	-30.3	-28.0
5.0	-42.6	-40.4	-38.2	-35.9	-33.7	-31.5	-29.1	-26.8
6.0	-40.9	-38.8	-36.6	-34.4	-32.2	-30.1	-27.8	-25.6
7.0	-38.2	-36.1	-34.0	-31.8	-29.7	-27.6	-25.4	-23.2
8.0	-36.4	-34.3	-32.2	-30.0	-27.9	-25.8	-23.6	-21.3
9.0	-37.6	-35.5	-33.4	-31.3	-29.2	-27.1	-24.9	-22.6
10.0	-37.3	-35.2	-33.1	-31.0	-28.9	-26.9	-24.8	-22.6
11.0	-39.5	-37.3	-35.1	-33.0	-30.9	-28.7	-26.5	-24.3
12.0	-41.0	-38.7	-36.4	-34.2	-31.9	-29.5	-27.1	-24.9
13.0	-39.8	-37.5	-35.4	-33.2	-31.0	-28.6	-26.3	-24.2
14.0	-39.4	-37.2	-34.8	-32.3	-30.0	-27.9	-25.9	-23.7
15.0	-38.8	-36.9	-34.2	-31.8	-29.5	-27.2	-25.2	-23.0
16.0	-39.3	-37.1	-34.5	-31.8	-29.4	-27.0	-24.6	-22.2
17.0	-42.3	-40.2	-37.7	-34.9	-32.6	-30.3	-27.9	-25.2
18.0	-45.4	-43.3	-41.1	-38.1	-35.8	-33.6	-31.3	-28.5
19.0	-47.4	-45.3	-42.5	-39.8	-37.4	-35.3	-33.6	-32.2
20.0	-50.0	-48.4	-46.4	-43.0	-40.5	-38.3	-36.4	-35.1
21.0	-48.9	-45.3	-43.2	-40.3	-37.8	-35.8	-34.2	-32.8
22.0	-55.3	-52.9	-51.0	-48.3	-45.3	-43.3	-41.7	-40.6
23.0	-54.1	-51.8	-49.8	-46.8	-44.2	-42.1	-40.4	-39.1
24.0	-55.5	-52.8	-50.0	-46.8	-43.7	-41.1	-38.8	-36.9

Typical Performance Data

TEST CONDITIONS: $V_{DD} = +15\text{ V}$, $V_{ctrl} = +9.5\text{ V}$, $I_{DD} = 500\text{ mA}$, Temperature $+85^\circ\text{C}$

FREQ	P _{OUT} @ 10 dBm	P _{OUT} @ 12 dBm	P _{OUT} @ 14 dBm	P _{OUT} @ 16 dBm	P _{OUT} @ 18 dBm	P _{OUT} @ 20 dBm	P _{OUT} @ 22 dBm	P _{OUT} @ 24 dBm
(GHz)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)	2nd Harmonic (dBc)
0.0	-46.7	-44.9	-42.8	-40.7	-38.5	-36.3	-34.0	-33.6
0.1	-50.9	-48.8	-46.6	-44.4	-42.2	-39.8	-38.5	-36.9
0.2	-52.3	-50.2	-48.1	-45.9	-43.7	-41.4	-41.1	-41.7
0.3	-52.3	-50.3	-48.3	-46.1	-43.9	-41.7	-40.0	-48.3
0.4	-52.1	-50.3	-48.2	-46.1	-43.8	-41.6	-39.6	-42.1
0.5	-52.9	-50.9	-48.8	-46.7	-44.6	-42.5	-40.4	-39.7
0.6	-53.4	-51.4	-49.3	-47.3	-45.3	-43.3	-41.2	-39.2
0.7	-53.6	-51.6	-49.5	-47.5	-45.6	-43.6	-41.4	-39.4
0.8	-53.7	-51.6	-49.6	-47.6	-45.6	-43.6	-41.4	-39.4
0.9	-53.7	-51.6	-49.6	-47.6	-45.6	-43.6	-41.4	-39.4
1.0	-53.4	-51.4	-49.4	-47.4	-45.3	-43.3	-41.0	-39.1
2.0	-48.1	-46.1	-44.1	-42.0	-40.0	-37.8	-35.6	-33.4
3.0	-45.0	-43.1	-41.0	-38.9	-36.9	-34.7	-32.5	-30.2
4.0	-42.8	-40.8	-38.7	-36.7	-34.5	-32.4	-30.2	-28.0
5.0	-41.9	-39.9	-37.8	-35.7	-33.5	-31.3	-29.1	-27.0
6.0	-40.1	-38.1	-36.1	-34.0	-31.9	-29.8	-27.7	-25.6
7.0	-37.6	-35.6	-33.5	-31.4	-29.3	-27.2	-25.0	-22.9
8.0	-36.3	-34.3	-32.3	-30.2	-28.1	-26.0	-23.8	-21.6
9.0	-37.4	-35.3	-33.3	-31.2	-29.2	-27.1	-24.9	-22.7
10.0	-37.3	-35.2	-33.2	-31.1	-29.1	-27.0	-24.8	-22.7
11.0	-39.6	-37.5	-35.5	-33.4	-31.2	-29.0	-26.8	-24.6
12.0	-41.3	-39.2	-37.1	-34.9	-32.7	-30.4	-28.1	-25.9
13.0	-40.3	-38.2	-36.1	-33.9	-31.7	-29.4	-27.1	-25.0
14.0	-39.9	-37.8	-35.6	-33.4	-31.1	-28.9	-26.7	-24.6
15.0	-39.9	-37.8	-35.6	-33.2	-31.0	-28.6	-26.3	-24.1
16.0	-41.0	-38.7	-36.4	-34.0	-31.7	-29.3	-26.8	-24.4
17.0	-43.9	-41.6	-39.5	-36.9	-34.6	-32.3	-29.9	-27.4
18.0	-46.9	-44.5	-42.0	-39.6	-37.1	-34.8	-32.6	-30.2
19.0	-49.1	-47.0	-44.4	-41.8	-39.3	-36.7	-34.8	-33.4
20.0	-51.1	-50.3	-47.5	-45.1	-42.5	-40.1	-38.3	-37.1
21.0	-50.1	-47.9	-45.5	-42.8	-40.3	-37.9	-36.1	-35.0
22.0	-57.4	-55.6	-51.9	-49.3	-46.8	-44.6	-43.0	-41.9
23.0	-54.9	-52.5	-49.9	-47.3	-44.6	-42.4	-40.8	-39.6
24.0	-57.4	-54.0	-51.1	-48.9	-45.8	-43.5	-41.6	-40.6

Typical Performance Data

Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: VDD = +15 V, V_{ctrl} = +9.5 V, IDD = 500 mA @ Temperature = +25°C

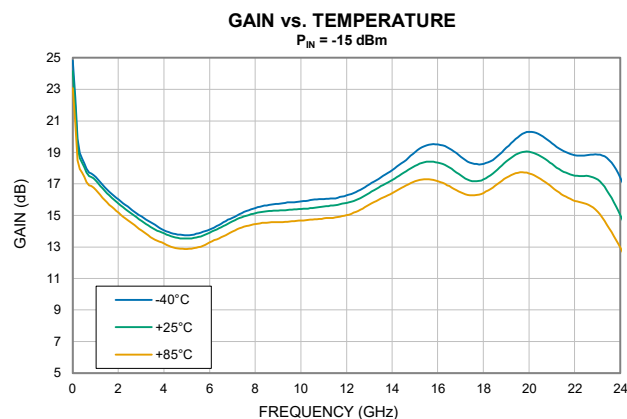
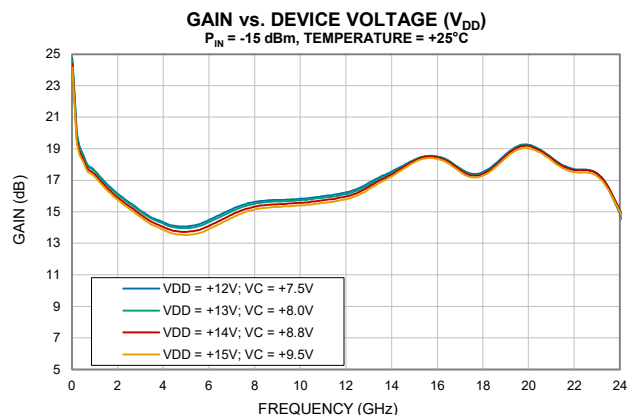
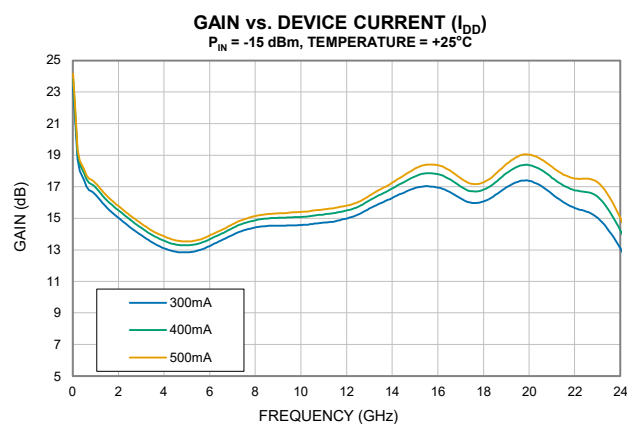
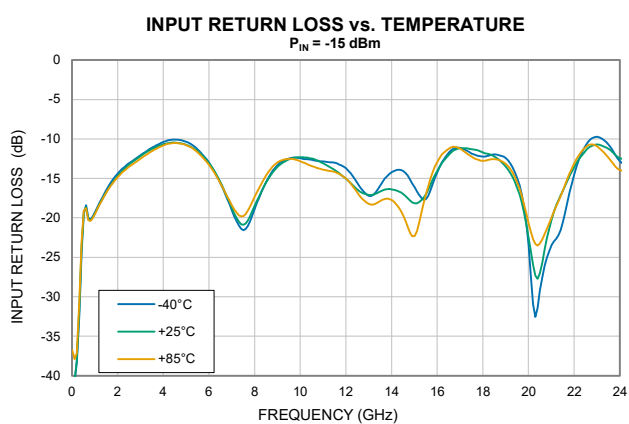
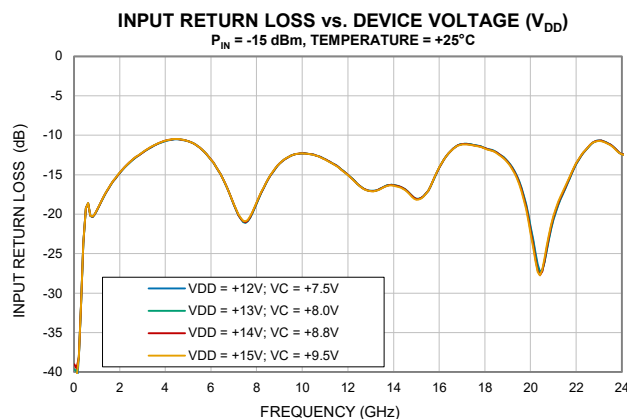
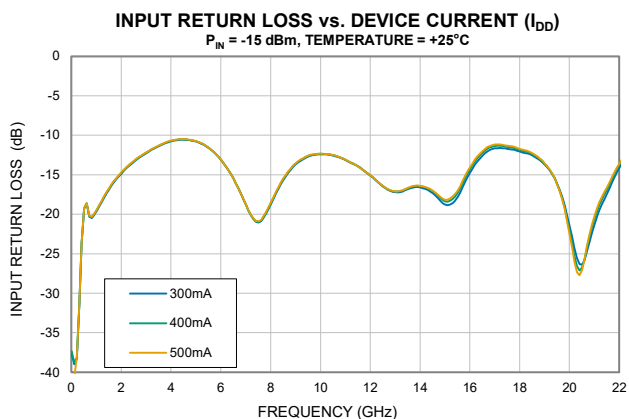
Power	OIP2 (@1 GHz)	OIP2 (@4 GHz)	OIP2 (@8 GHz)	OIP2 (@12 GHz)	OIP2 (@16 GHz)	OIP2 (@20 GHz)	OIP2 (@22 GHz)
(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)
0.00	54.33	44.71	45.07	47.06	45.55	53.31	56.23
2.00	54.84	44.67	45.05	47.09	45.85	59.19	58.88
4.00	54.71	44.55	45.02	46.90	45.64	59.02	58.01
6.00	54.58	44.55	45.00	46.92	45.68	58.23	62.40
8.00	54.72	44.45	44.91	46.71	45.24	59.21	60.61
10.00	54.69	44.38	44.83	46.59	45.05	58.75	59.99
12.00	54.51	44.32	44.71	46.42	44.60	58.29	60.07
14.00	54.47	44.21	44.58	46.21	44.18	57.68	59.60
16.00	54.41	44.02	44.42	45.97	43.74	57.47	59.65
18.00	54.36	43.78	44.25	45.73	43.29	57.69	59.96
20.00	54.47	43.53	44.03	45.50	43.04	58.63	61.46
22.00	57.42	43.96	43.93	45.37	44.13	60.87	66.25
24.00	67.02	45.30	44.72	46.51	47.00	64.60	69.82

Power	OIP3 (@1 GHz)	OIP3 (@4 GHz)	OIP3 (@8 GHz)	OIP3 (@12 GHz)	OIP3 (@16 GHz)	OIP3 (@20 GHz)	OIP3 (@22 GHz)
(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)
0.00	36.50	36.75	36.67	37.15	36.44	35.42	34.02
2.00	39.26	41.03	39.95	39.62	37.45	37.74	35.03
4.00	42.36	42.55	42.00	41.13	37.66	37.28	35.30
6.00	44.52	45.16	42.37	42.59	38.37	37.24	35.16
8.00	45.97	44.31	42.55	42.15	38.17	37.53	35.31
10.00	46.76	44.30	42.51	42.56	38.37	37.70	35.50
12.00	46.00	44.36	42.50	42.59	38.48	37.87	35.66
14.00	45.50	44.17	42.58	42.82	38.60	38.24	35.90
16.00	45.04	43.92	42.69	42.95	38.80	38.75	36.33
18.00	44.64	43.73	42.92	43.27	39.19	39.74	36.71
20.00	44.23	43.59	43.24	43.81	40.02	41.25	36.27
22.00	42.17	43.28	44.10	44.96	40.47	41.19	34.91
24.00	40.53	41.96	45.03	43.88	38.34	38.25	33.59

Power	IM3 (@1 GHz)	IM3 (@4 GHz)	IM3 (@8 GHz)	IM3 (@12 GHz)	IM3 (@16 GHz)	IM3 (@20 GHz)	IM3 (@22 GHz)
(dBm)	(dBc)	(dBc)	(dBc)	(dBc)	(dBc)	(dBc)	(dBc)
0.00	-73.06	-74.10	-73.59	-74.51	-73.28	-71.39	-68.45
2.00	-74.60	-78.63	-76.12	-75.42	-71.18	-72.03	-66.45
4.00	-76.79	-77.64	-76.20	-74.43	-67.60	-67.15	-62.98
6.00	-77.12	-78.81	-72.93	-73.32	-64.99	-63.05	-58.65
8.00	-75.98	-73.07	-69.26	-68.41	-60.48	-59.55	-54.91
10.00	-73.34	-69.01	-65.17	-65.20	-56.88	-55.82	-51.25
12.00	-67.82	-65.07	-61.12	-61.23	-53.10	-52.15	-47.54
14.00	-62.87	-60.60	-57.24	-57.68	-49.42	-48.95	-44.12
16.00	-57.97	-56.11	-53.44	-53.90	-45.75	-45.94	-40.98
18.00	-53.19	-51.69	-49.84	-50.54	-42.51	-43.96	-37.69
20.00	-48.28	-47.51	-46.49	-47.66	-40.11	-42.87	-32.68
22.00	-40.17	-42.96	-44.33	-46.12	-36.96	-38.63	-25.80
24.00	-32.86	-36.15	-42.15	-39.64	-28.54	-28.59	-18.96

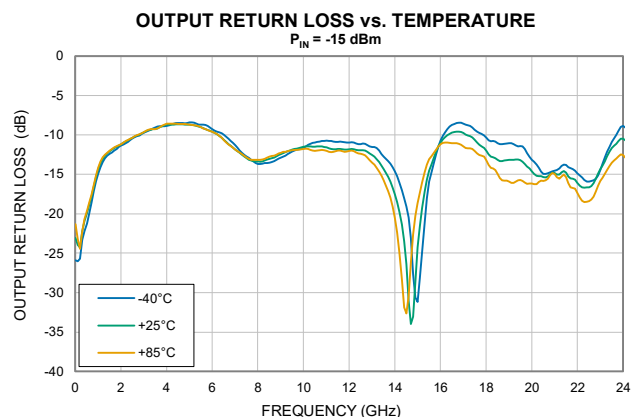
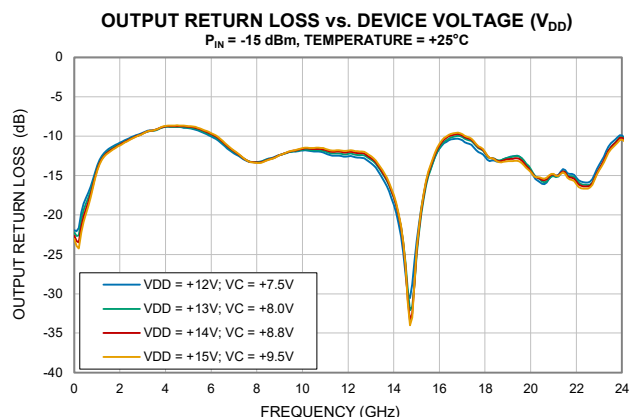
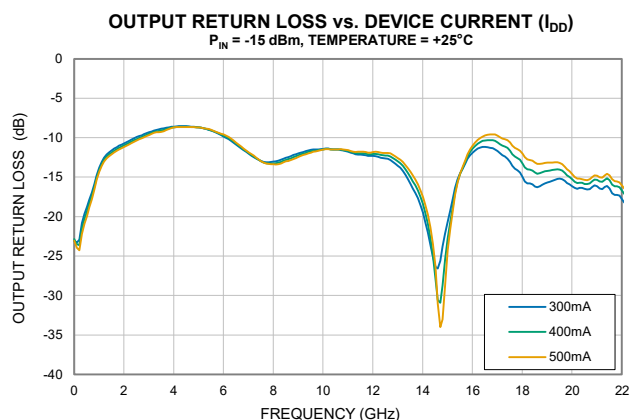
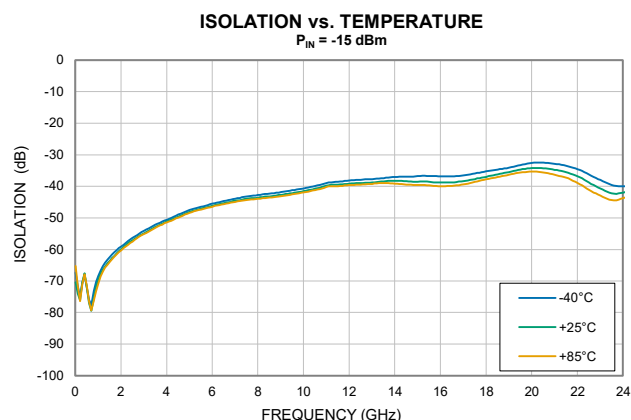
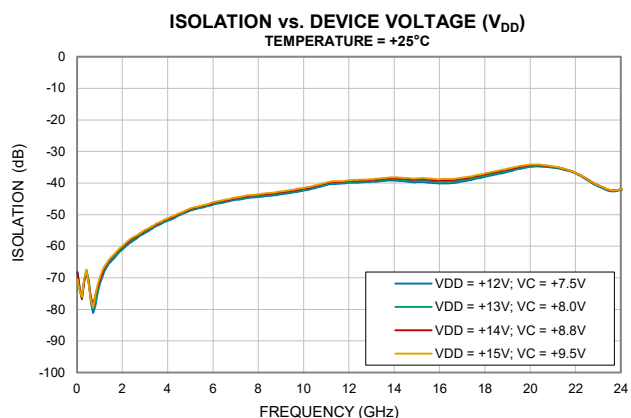
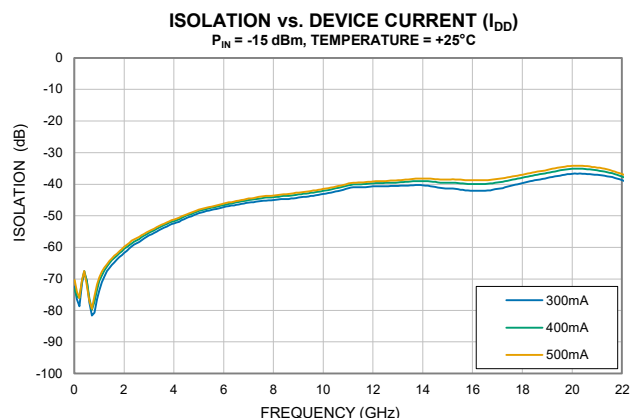
Typical Performance Curves

Note: The following data was taken on a Mini-Circuits Characterization Test Board with external Bias-T (Figure 2). All data taken at nominal condition of $V_{DD} = +15\text{ V}$, $V_C = +9.5\text{ V}$ and $I_{DD} = 500\text{ mA}$ unless noted otherwise. V_G was adjusted at each voltage and temperature level to achieve $I_{DD} = 500\text{ mA}$.



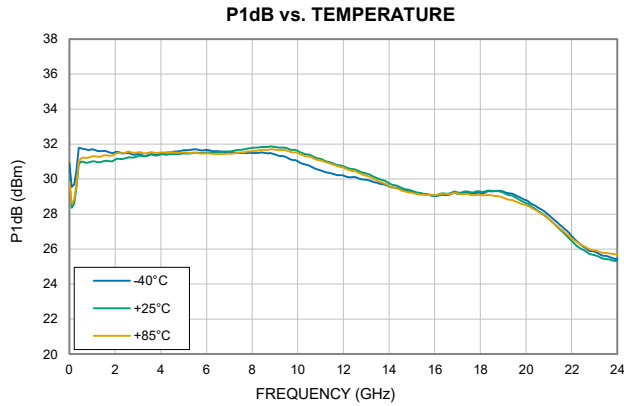
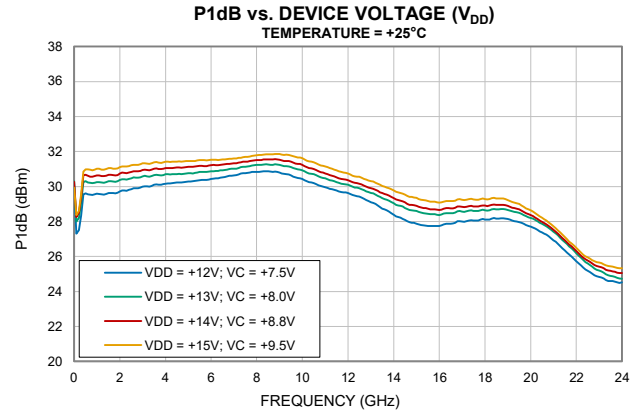
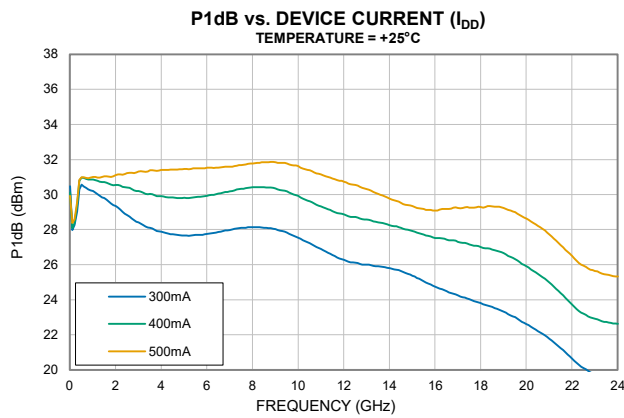
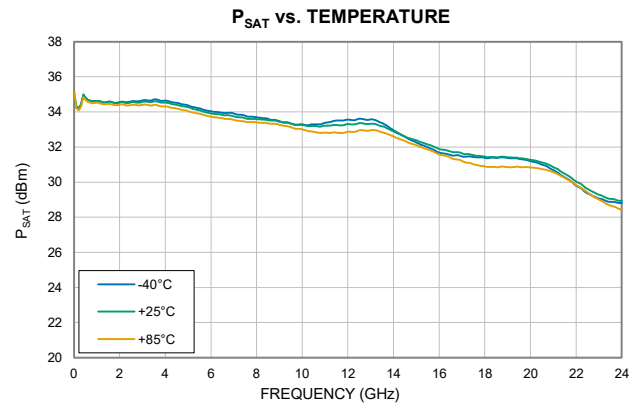
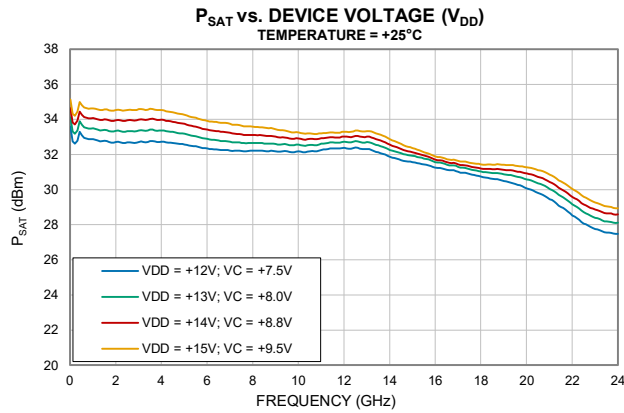
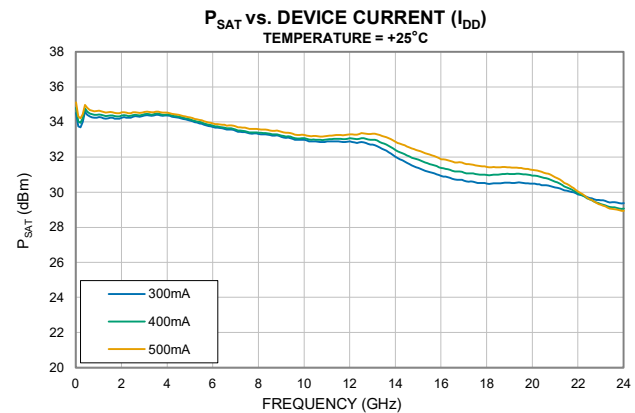
Typical Performance Curves

Note: The following data was taken on a Mini-Circuits Characterization Test Board with external Bias-T (Figure 2). All data taken at nominal condition of $V_{DD} = +15\text{ V}$, $V_C = +9.5\text{ V}$ and $I_{DD} = 500\text{ mA}$ unless noted otherwise. V_G was adjusted at each voltage and temperature level to achieve $I_{DD} = 500\text{ mA}$.



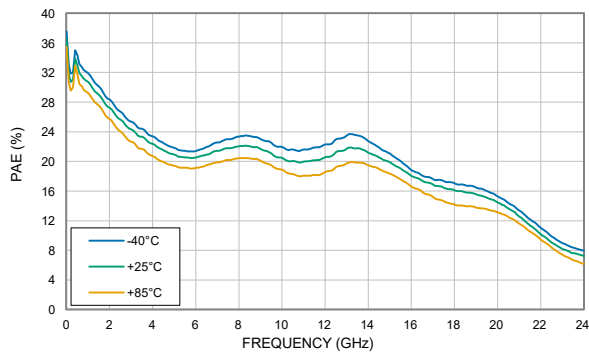
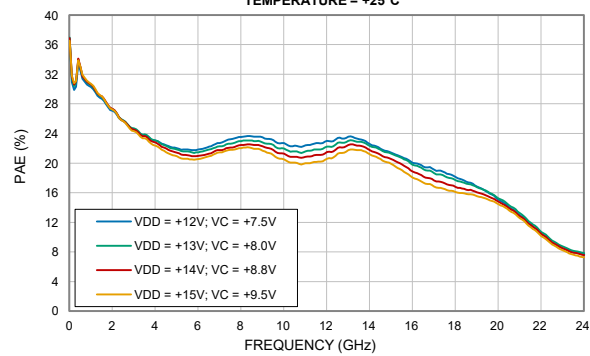
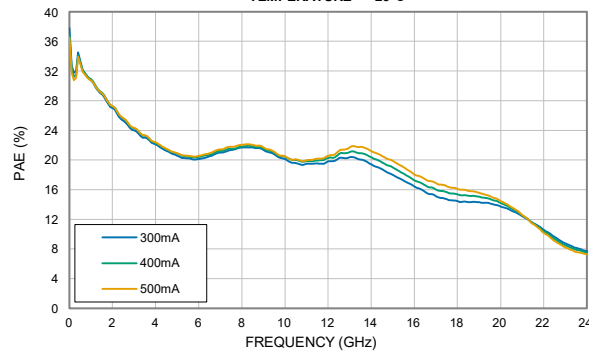
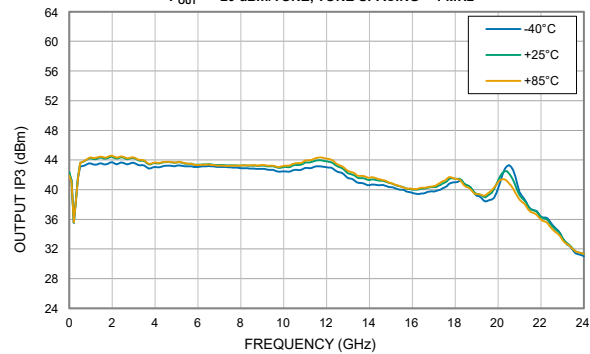
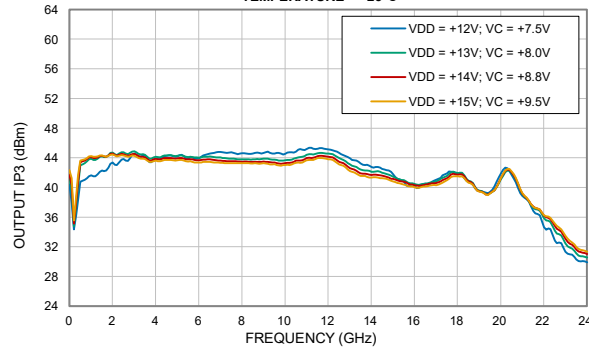
Typical Performance Curves

Note: The following data was taken on a Mini-Circuits Characterization Test Board with external Bias-T (Figure 2). All data taken at nominal condition of $V_{DD} = +15\text{ V}$, $V_C = +9.5\text{ V}$ and $I_{DD} = 500\text{ mA}$ unless noted otherwise. V_G was adjusted at each voltage and temperature level to achieve $I_{DD} = 500\text{ mA}$.



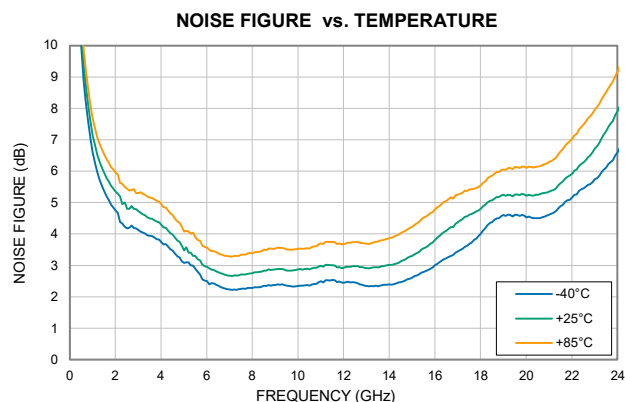
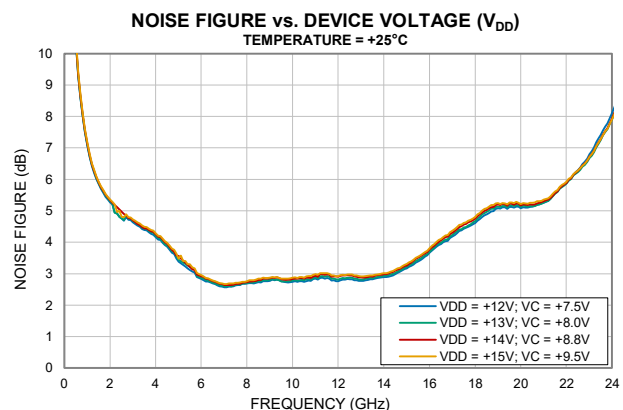
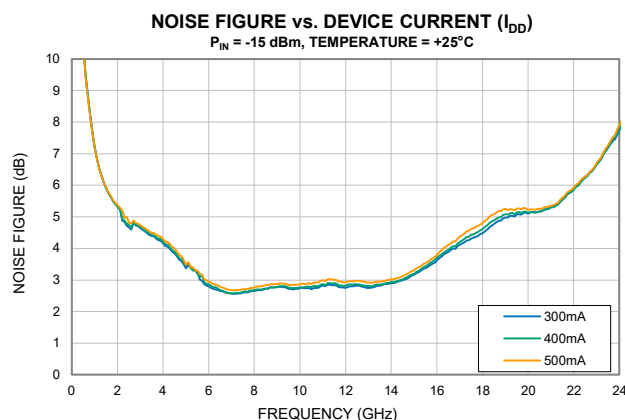
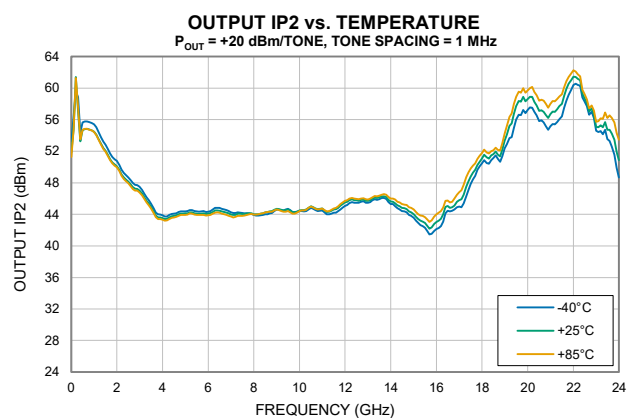
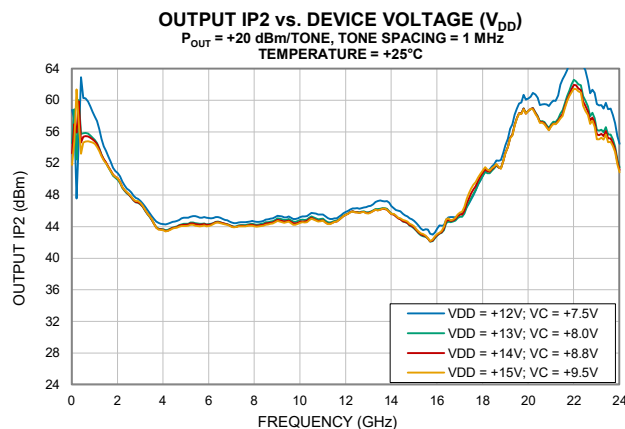
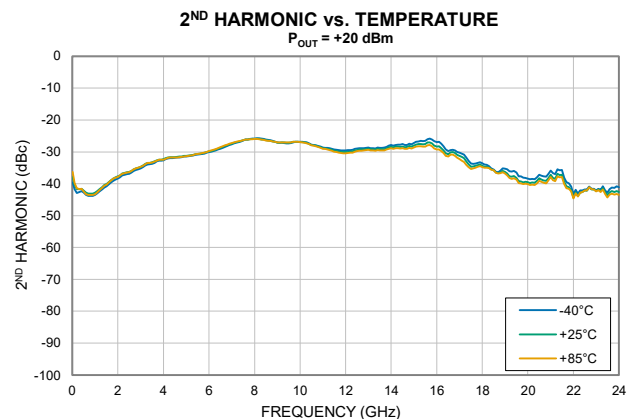
Typical Performance Curves

Note: The following data was taken on a Mini-Circuits Characterization Test Board with external Bias-T (Figure 2). All data taken at nominal condition of $V_{DD} = +15\text{ V}$, $V_C = +9.5\text{ V}$ and $I_{DD} = 500\text{ mA}$ unless noted otherwise. V_G was adjusted at each voltage and temperature level to achieve $I_{DD} = 500\text{ mA}$.

PAE @ P_{SAT} vs. TEMPERATUREPAE @ P_{SAT} vs. DEVICE VOLTAGE (V_{DD})
TEMPERATURE = +25°CPAE @ P_{SAT} vs. DEVICE CURRENT (I_{DD})
TEMPERATURE = +25°COUTPUT IP3 vs. TEMPERATURE
 $P_{OUT} = +20\text{ dBm/TONE}$, TONE SPACING = 1 MHzOUTPUT IP3 vs. DEVICE VOLTAGE (V_{DD})
 $P_{OUT} = +20\text{ dBm/TONE}$, TONE SPACING = 1 MHz
TEMPERATURE = +25°C

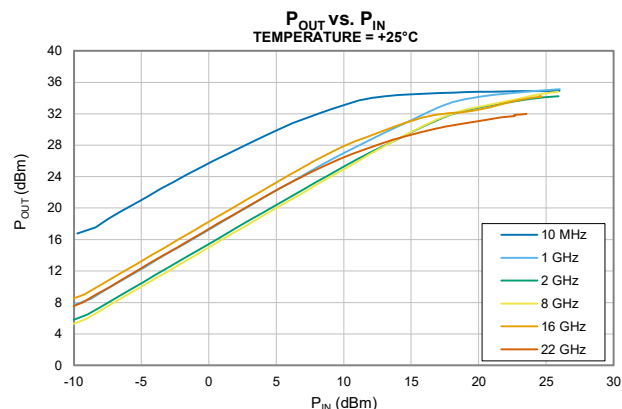
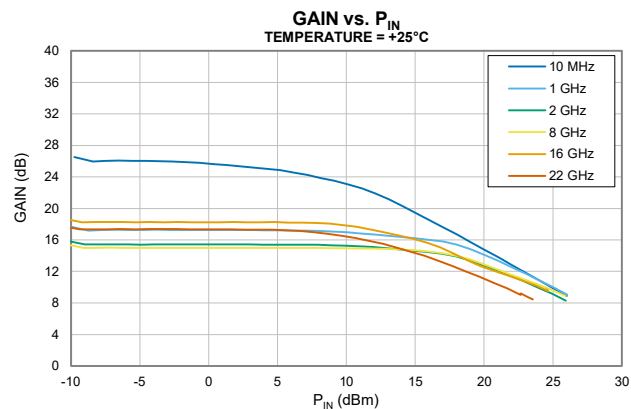
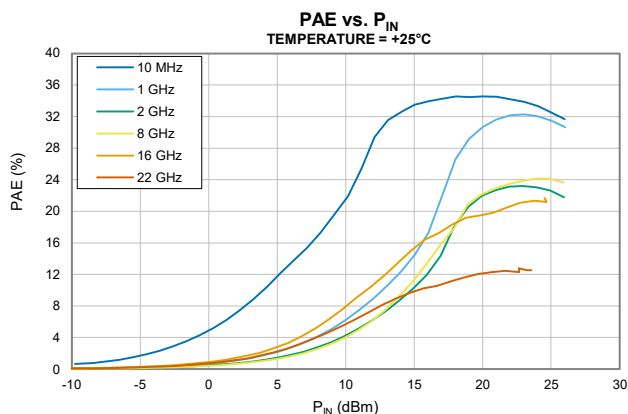
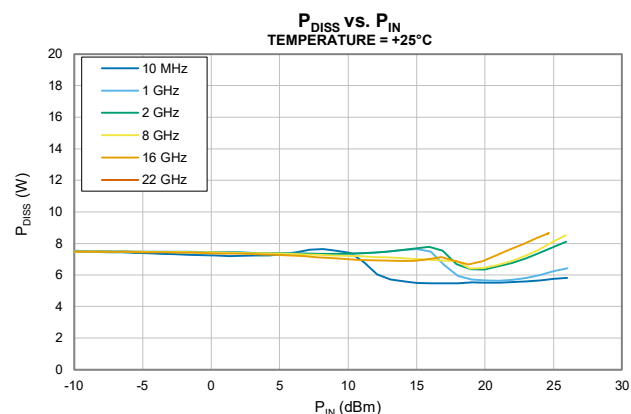
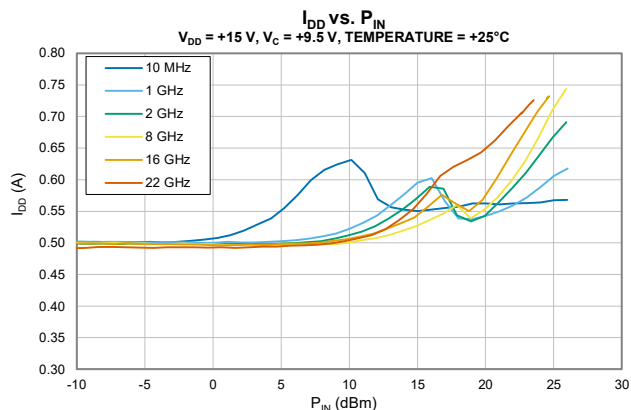
Typical Performance Curves

Note: The following data was taken on a Mini-Circuits Characterization Test Board with external Bias-T (Figure 2). All data taken at nominal condition of $V_{DD} = +15\text{ V}$, $V_C = +9.5\text{ V}$ and $I_{DD} = 500\text{ mA}$ unless noted otherwise. V_G was adjusted at each voltage and temperature level to achieve $I_{DD} = 500\text{ mA}$.



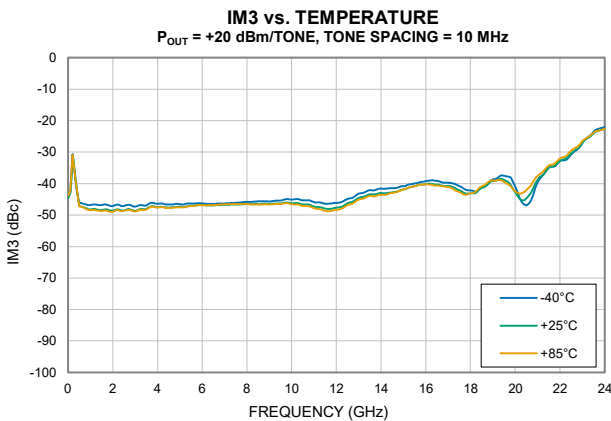
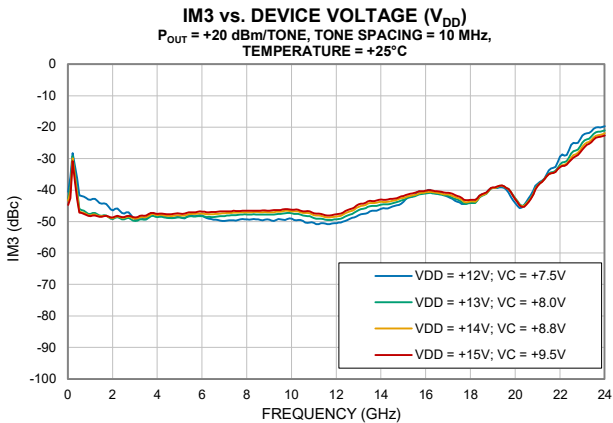
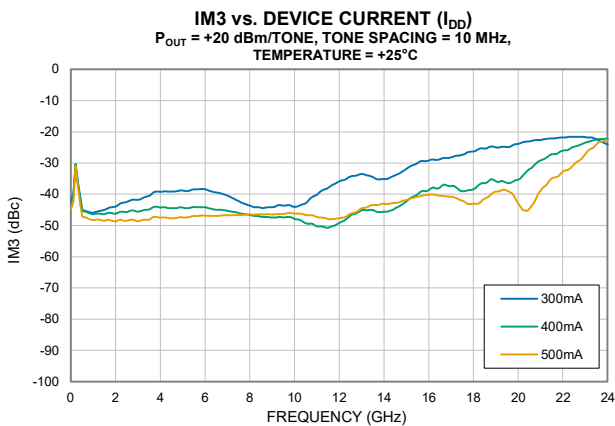
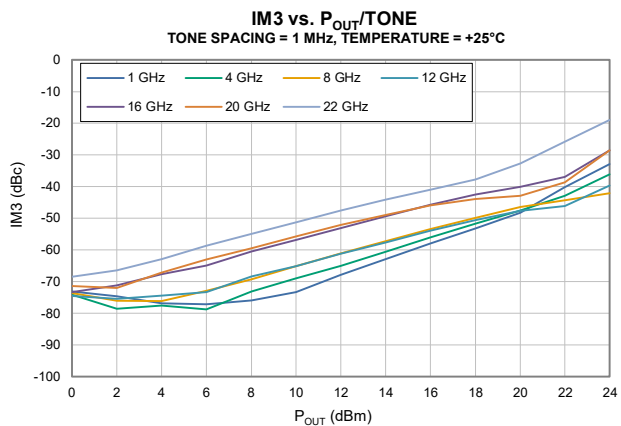
Typical Performance Curves

Note: The following data was taken on a Mini-Circuits Characterization Test Board with external Bias-T (Figure 2). All data taken at nominal condition of $V_{DD} = +15\text{ V}$, $V_C = +9.5\text{ V}$ and $I_{DD} = 500\text{ mA}$ unless noted otherwise. V_G was adjusted at each voltage and temperature level to achieve $I_{DD} = 500\text{ mA}$.



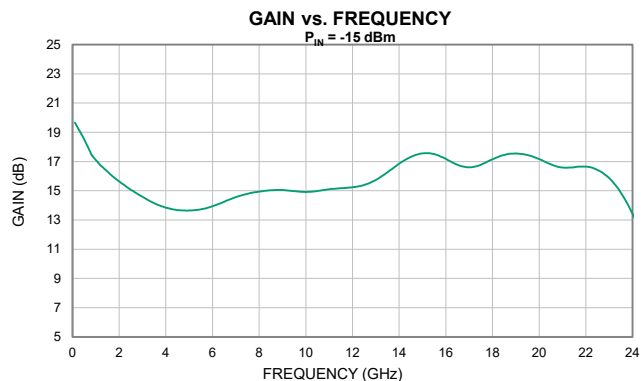
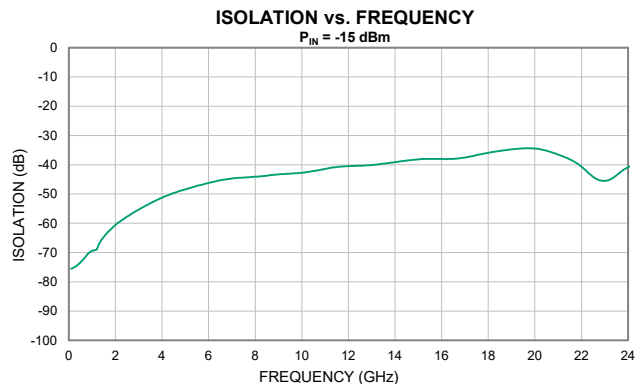
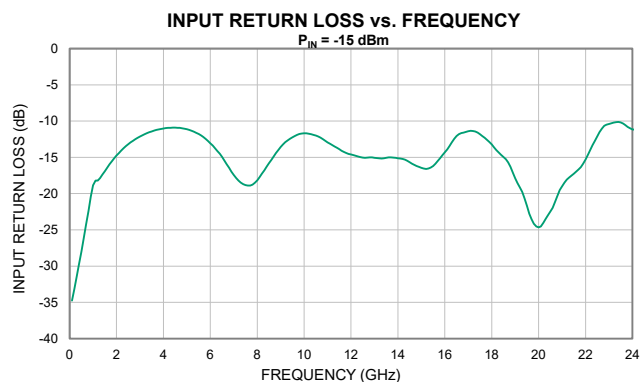
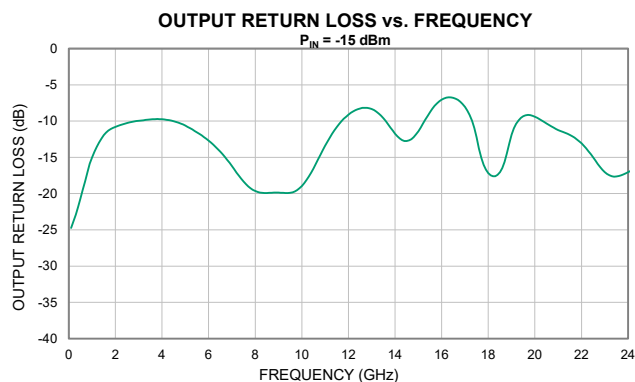
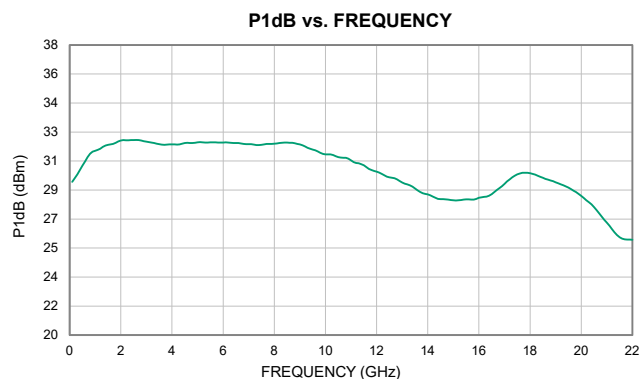
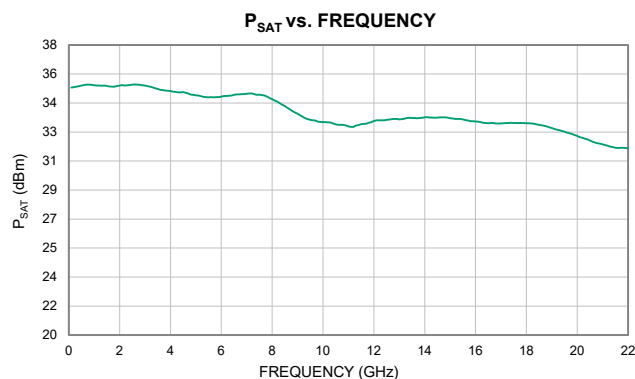
Typical Performance Curves

Note: The following data was taken on a Mini-Circuits Characterization Test Board with external Bias-T (Figure 2). All data taken at nominal condition of $V_{DD} = +15\text{ V}$, $V_C = +9.5\text{ V}$ and $I_{DD} = 500\text{ mA}$ unless noted otherwise. V_G was adjusted at each voltage and temperature level to achieve $I_{DD} = 500\text{ mA}$.



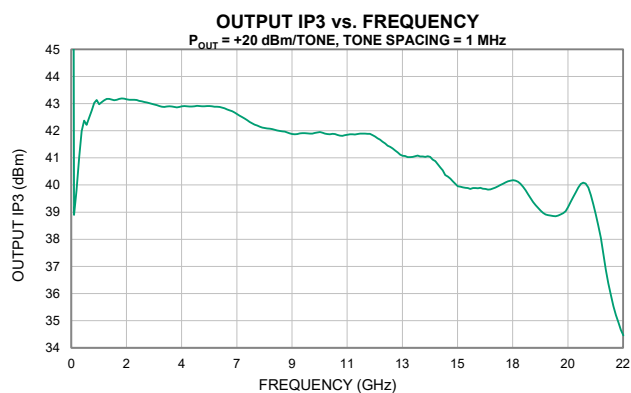
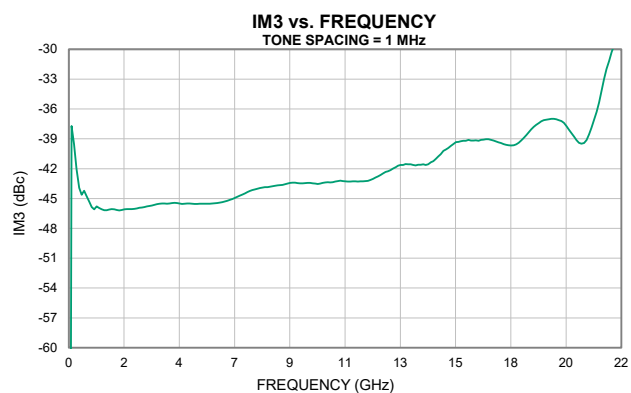
Typical Performance Curves

Note: The following data was taken on Mini-Circuits Characterization Test Board TB-PMA5-223CX+ (Figure 3). All data taken at nominal condition of $V_{DD} = +15\text{ V}$, $V_C = +9.5\text{ V}$, and Temperature = $+25^\circ\text{C}$ unless noted otherwise. V_G was adjusted to achieve $I_{DD} = 500\text{ mA}$.



Typical Performance Curves

Note: The following data was taken on Mini-Circuits Characterization Test Board TB-PMA5-223CX+ (Figure 3). All data taken at nominal condition of $V_{DD} = +15\text{ V}$, $V_C = +9.5\text{ V}$, and Temperature = $+25^\circ\text{C}$ unless noted otherwise. V_G was adjusted to achieve $I_{DD} = 500\text{ mA}$.

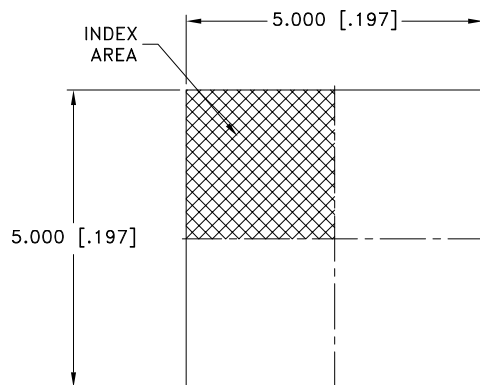


Case Style

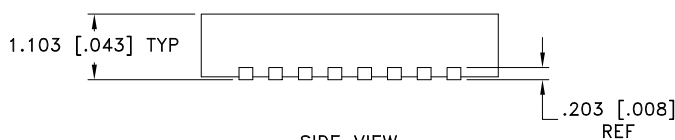
Outline Dimensions

DG

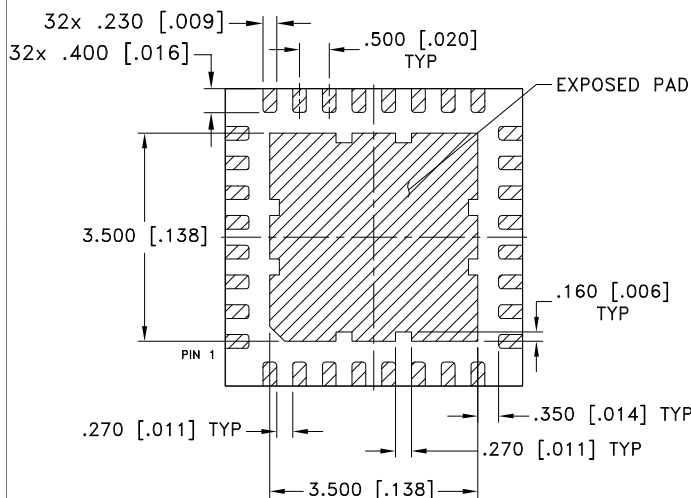
DG1677-8



TOP VIEW

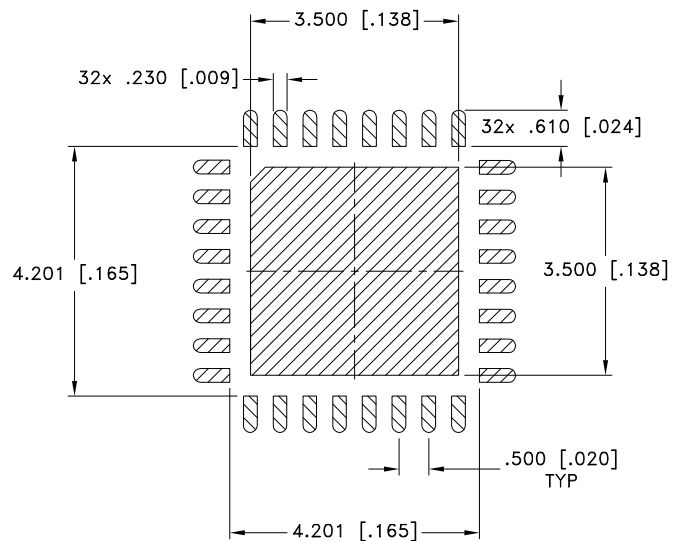


SIDE VIEW



BOTTOM VIEW

PCB Land Pattern



Suggested Layout,
Tolerance to be within $\pm 0.050 [0.002]$

NOTES:

1.  DENOTES METALLIZATION

Weight: .056 grams

Dimensions are in mm [inches]. Tolerances: 2 Pl. $\pm 0.254 [0.01]$; 3 Pl. $\pm 0.127 [0.005]$ mm [Inches]

Notes:

1. Case material: Plastic.
2. Termination finish: PPF (NiPdAu Plating 0.5 μm /0.02 μm /0.05 μm)

 **Mini-Circuits®**
ISO 9001 ISO 14001 CERTIFIED

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



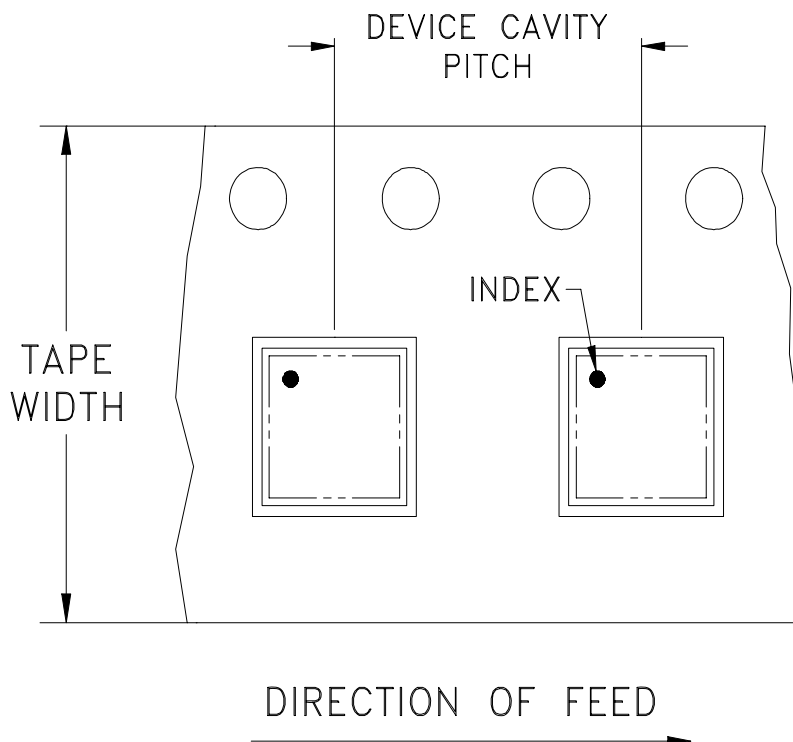
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Tape & Reel Packaging TR-F102

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
12	8	7	Small quantity standards (see note)	20
				50
				100
				200
				500
		13	Standard	1000

Note: Please Consult individual model data sheet to determine device per reel availability

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf



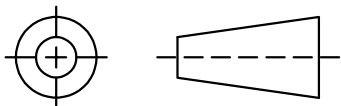
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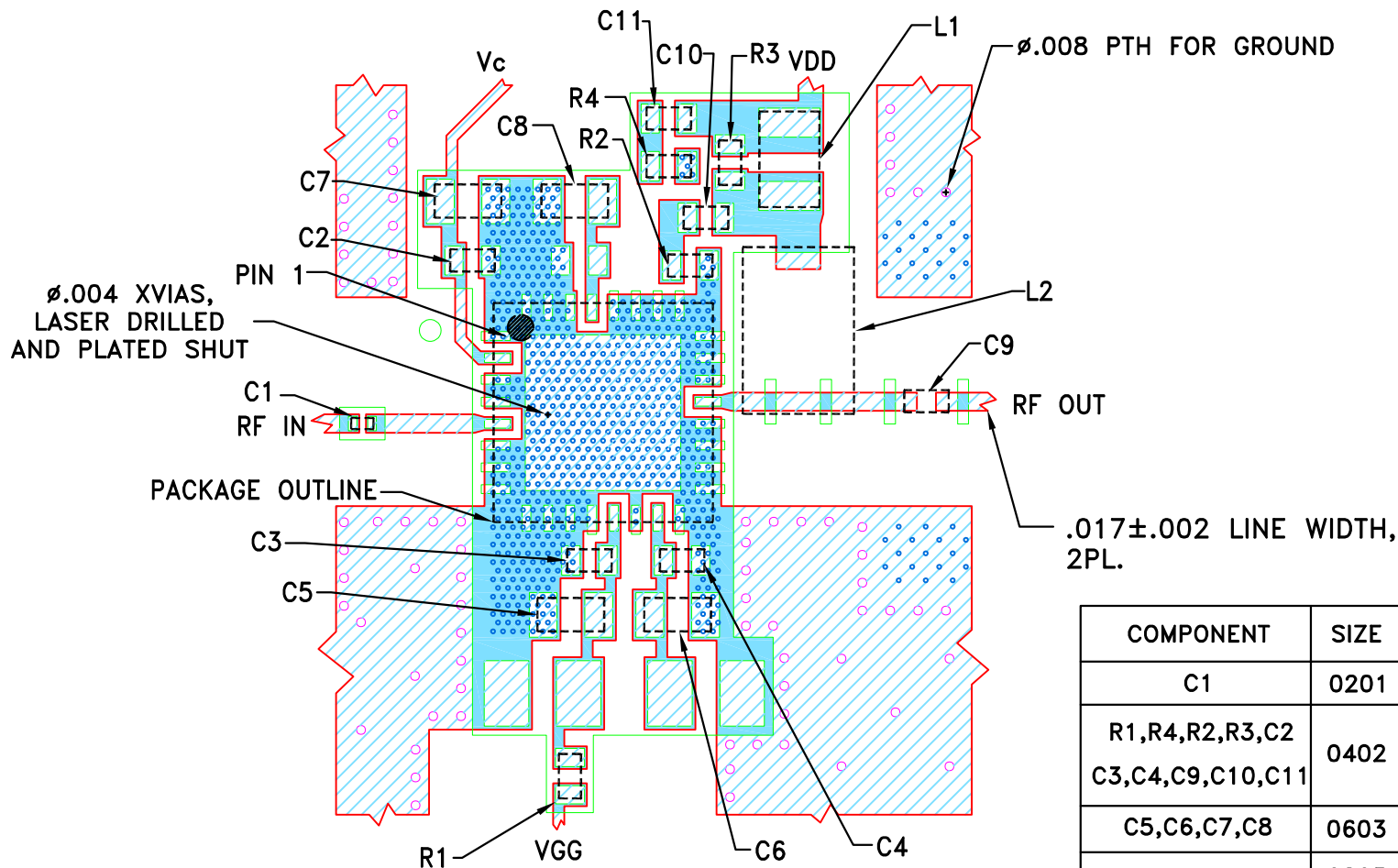
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	ECO-029899	NEW RELEASE	06.05.26	TP	IL

**SUGGESTED MOUNTING CONFIGURATION
FOR DG1677-8 CASE STYLE**



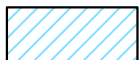
COMPONENT	SIZE
C1	0201
R1,R4,R2,R3,C2 C3,C4,C9,C10,C11	0402
C5,C6,C7,C8	0603
L1	0805
L2	1510

NOTES:

1. TRACE WIDTH & GAP ARE SHOWN FOR ROGER R04003C LoPro FOIL WITH DIELECTRIC THICKNESS 0.0087 ± 0.0011 ; COPPER 1 OZ. ON EACH SIDE.
FOR OTHER MATERIALS TRACE WIDTH & GAP MAY NEED TO BE MODIFIED.
2. CHIP COMPONENT FOOT PRINTS SHOWN FOR REFERENCE. FOR COMPONENT VALUES, REFER TO TB-PMA5-223C+
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE



DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).



DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

UNLESS OTHERWISE SPECIFIED

INITIALS

DATE

DIMENSIONS ARE IN INCHES

TOLERANCES ON:

2 PL DECIMALS $\pm$ 3 PL DECIMALS $\pm$.005ANGLES $\pm$ FRACTIONS $\pm$

DRAWN

TP

06.05.26

CHECKED

NP

06.05.26

APPROVED

IL

06.05.26

**Mini-Circuits®**13 Neptune Avenue
Brooklyn NY 11235**PL, DG1677-8, TB-PMA5-223C+**

Mini-Circuits®

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SIZE
ACODE IDENT
15542

DRAWING NO:

98-PL-872

REV:

OR

FILE: 98PL872

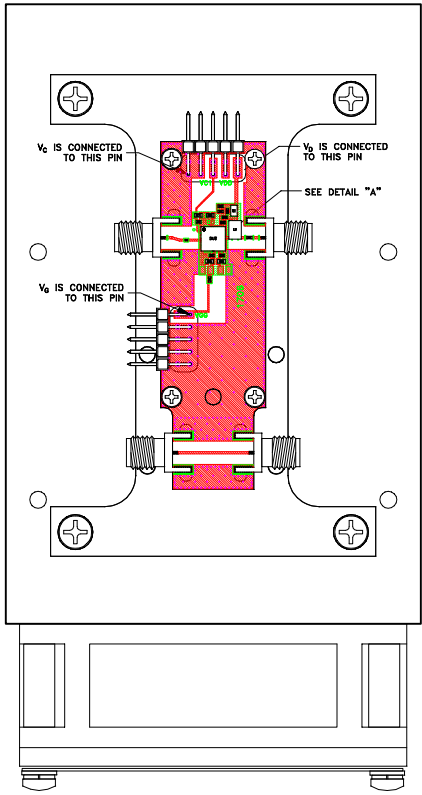
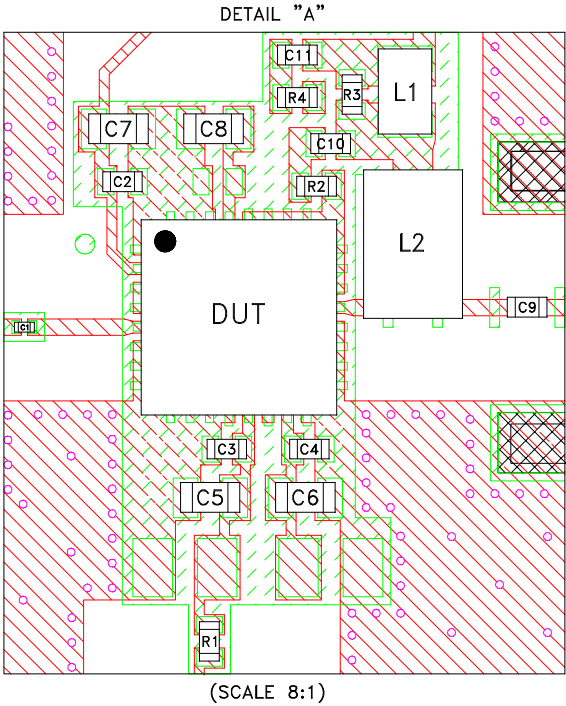
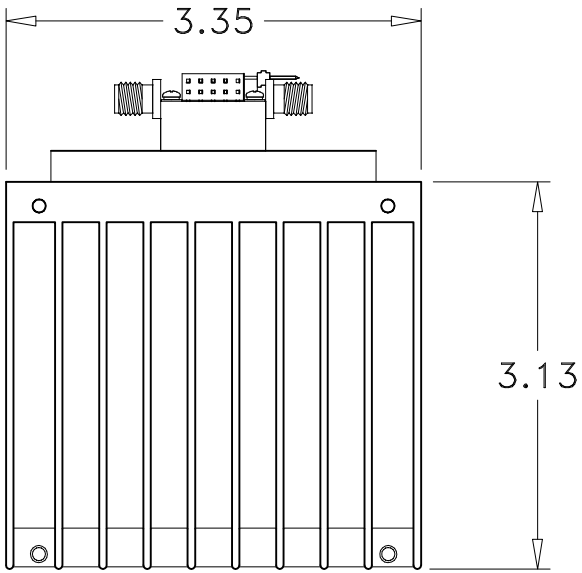
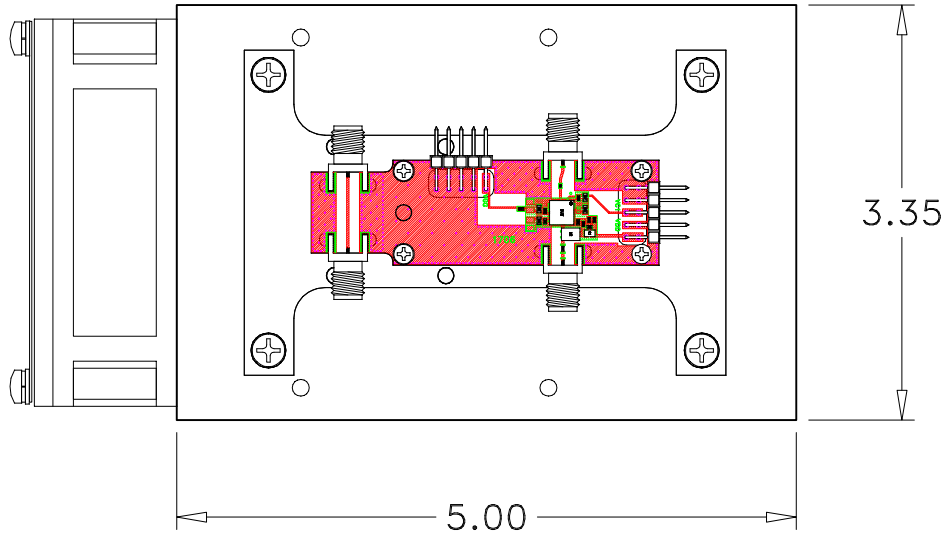
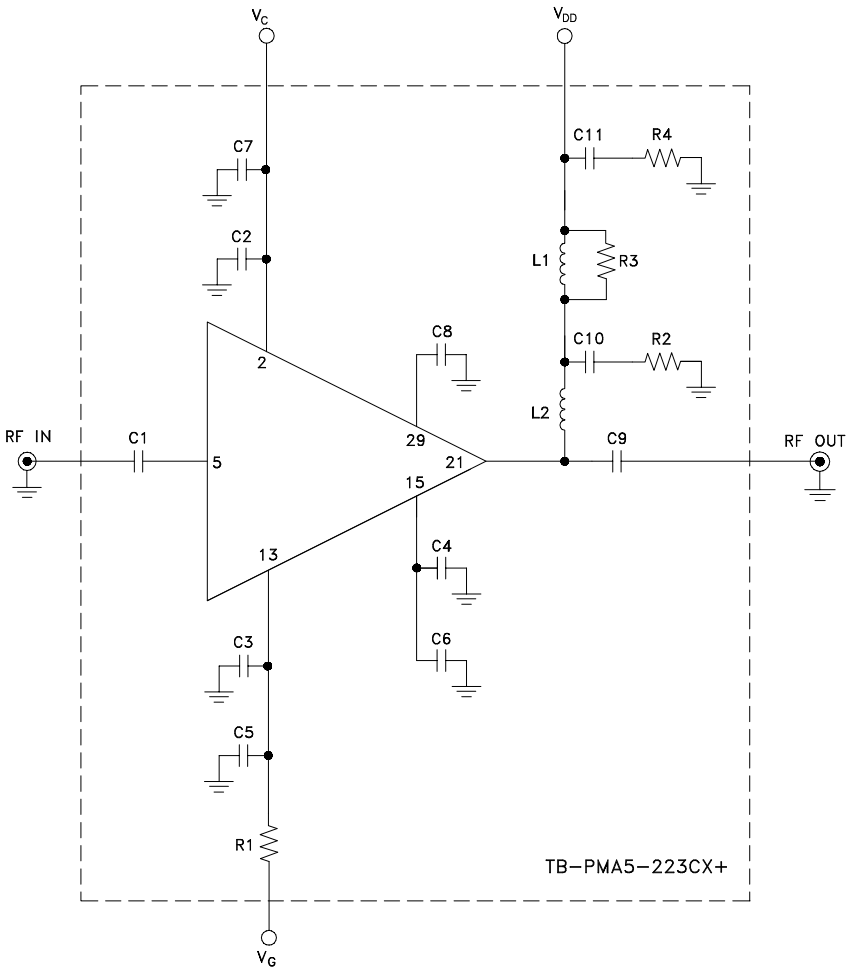
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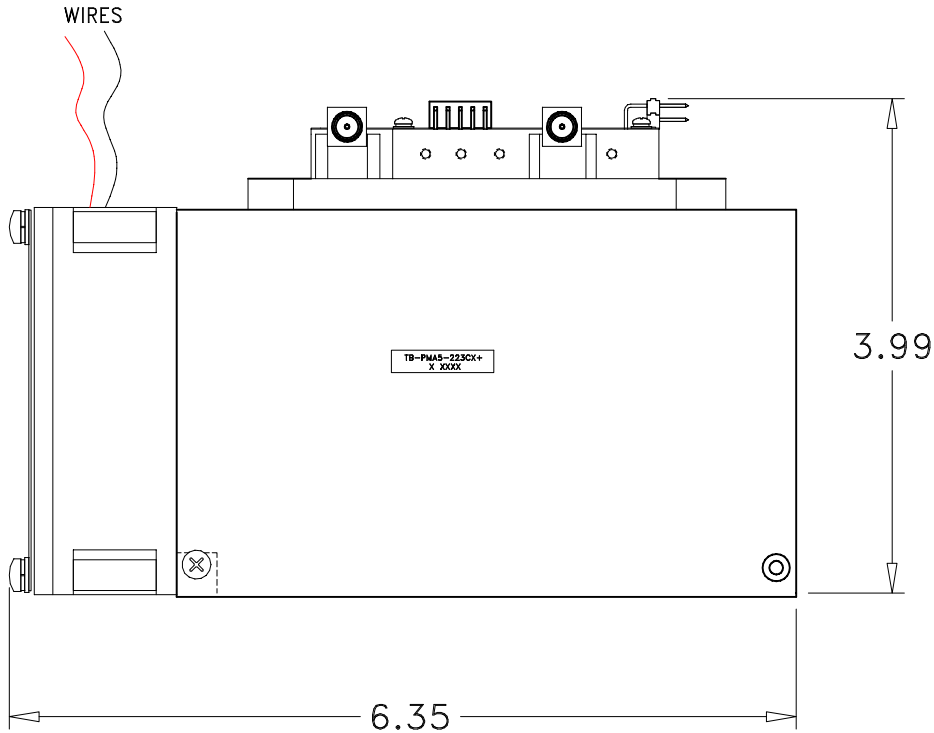
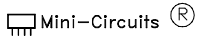
SHEET:

1 OF 1

ASHEETA1.DWG REV:A DATE:01/12/95



COMPONENT	SIZE	VALUE	PART NUMBER	MANUFACTURER
R1, R4	0402	0 Ω	RK73Z1ETTP	KOA SPEER ELECTRONICS
R2	0402	100 Ω	RK73H1ETTP1000F	KOA SPEER ELECTRONICS
R3	0402	200 Ω	RK73H1ETTP2000F	KOA SPEER ELECTRONICS
C1	0201	0.1 μ F	0201BB104KW160	PASSIVE PLUS
C2-C4	0402	0.1 μ F	GRM155R71E104KE14D	MURATA
C5-C8	0603	1 μ F	06035C105KAT2A	AVX
C9, C10	0402	0.001 μ F	GRM1555C1H102JA01D	MURATA
C11	0402	0.1 μ F	0402BB104KW500	PASSIVE PLUS
L1	0805	1.2 μ H	0805PB-331XMRC	COILCRAFT
L2	1510	0.425 μ H	CC21T36K240G5-C	PICONICS



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BSHEETA2.DWG REV:A DATE: 01/12/94

ALL DIMENSIONS ARE IN INCHES EXCEPT OTHERWISE SPECIFIED

SIZE B	CODE IDENT 15542	DRAWING NO: TB-PMA5-223CX-20+	REV: A
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FILE: WTB-PMA5-223CX+	SCALE: 1:1	SHEET: 3 OF 3
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All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-40° to 85° C or -45° to 85° C or -55° to 105° C or -40° to 105° C or -40° to 95° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C or -65° to 150° Ambient Environment	Individual Model Data Sheet
HTOL	1000 hours at 125°C	MIL-STD-883, Method 1005, Condition B
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Mechanical Shock	1.5Kg, 0.5 ms, 5 shock pulses, Y1 direction only	MIL-STD-883, Method 2002, Condition B, except Y1 direction only
Vibration (Variable Frequency)	50g peak	MIL-STD-883, Method 2007, Condition B
Autoclave	15 psig, 100% RH, 121°C, 96 hours	JESD22-A102, Condition C
HAST	130°C, 85% RH, 96 hours	JESD22-A110
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Solder Reflow Heat	Sn-Pb Eutetic Process: 240°C peak Pb-Free Process: 260°C peak	J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1
Moisture Sensitivity: Level 1	Bake at 125°C for 24 hours Soak at 85°C/85% RH for 168 hours, Reflow 3 cycles at 260°C peak	J-STD-020



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215