MMIC SURFACE MOUNT

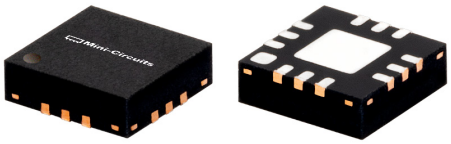
Wideband Amplifier

PMA3-83LP+

50Ω 0.4 to 8 GHz +6V Supply

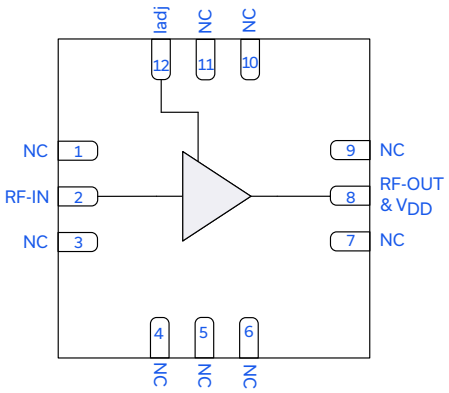
THE BIG DEAL

- Output P1dB, Typ. +25dBm
- Output IP3, Typ. +34dBm
- Low Noise Figure, Typ. 2.8dB
- Adjustable Supply Current
- 3x3mm 12-Lead QFN-style Package
- Patent Pending



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



APPLICATIONS

- Wi-Fi 6
- 5G MIMO Radio Systems
- L, S, and C-band Radar
- SATCOM

PRODUCT OVERVIEW

The PMA3-83LP+ is a GaAs pHEMT based wideband, low noise, MMIC amplifier with a unique combination of low noise figure, high OIP3, and high output power. This makes it ideal for sensitive, high-dynamic range receiver applications. The PMA3-83LP+ design operates on a single supply voltage of +6V, is well matched for 50Ω, and comes in a low-profile package (3x3mm 12-Lead), which can accommodate dense circuit board layouts.

KEY FEATURES

Feature	Advantages
Low Noise Figure, 2.8dB Typ	Enables lower system noise figure performance.
High IP3: • +41dBm at 0.4GHz • +34dBm at 2GHz • +34dBm at 4GHz • +34dBm at 6GHz • +34dBm at 8GHz	Combination of low noise figure and high IP3 makes this MMIC amplifier ideal for use in low noise receiver front end (RFE), as it gives the user advantages of sensitivity and two-tone IM performance at both ends of the dynamic range.
Output Power at 1dB Compression, +25dBm	Enables usage as a pre-driver or driver amplifier in a variety of transmit and receive applications in commercial, industrial, and defense systems. Adjustable supply current to optimize power efficiency.
3x3mm 12-lead QFN-style package	Tiny footprint saves space in dense layouts while providing low inductance, repeatable transitions, and excellent thermal contact to the PCB.
Wide bandwidth with flat gain • ±1.5dB over 4 to 8GHz	Enables a single amplifier to be used in many wideband applications including defense, instrumentation, and more.

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

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		400		8000	MHz
Gain	400	20.6	21.3		dB
	2000	19.9	20.5		
	4000	18.6	19.6		
	6000	17.8	18.8		
	8000	16.0	17.3		
Output Power at 1dB Compression (P1dB)	400		+25.0		dBm
	2000		+25.4		
	4000		+25.7		
	6000		+24.3		
	8000		+22.9		
Output Third-Order Intercept (P_{OUT} = +12dBm/Tone)	400		+41		dBm
	2000		+34		
	4000		+34		
	6000		+34		
	8000		+34		
Input Return Loss	400		12		dB
	2000		12		
	4000		12		
	6000		15		
	8000		12		
Output Return Loss	400		8		dB
	2000		13		
	4000		17		
	6000		11		
	8000		9		
Isolation	400-8000		28		dB
Noise Figure	400		3.3		dB
	2000		3.0		
	4000		2.6		
	6000		2.4		
	8000		2.7		
Device Operating Voltage (V_{DD})		+5.5	+6	+6.5	V
Device Operating Current (I_{DD})[2]			150		mA
Voltage at ladj pin (V_{ladj})			3.35		V
Current at ladj pin (I_{adj})			1.21		mA
DC Current Variation vs. Temperature[3]			-0.28		µA/°C
DC Current Variation vs. Voltage[4]			44		mA/mV

1. Tested on Mini-Circuits Characterization Evaluation Board TB-PMA3-83LPC+. See Figure 2. Board loss de-embedded to the device.
2. Current at P_{IN}= -25dBm. Increases to 178mA at P1dB at room temperature.
3. ((Current at 85°C - Current at -45°C))/(130°C)
4. ((Current at +6.5V in mA) - (Current at +5.5V in mA))/((+6.5V) - (+5.5V)*1000mA/mV)

Wideband Amplifier PMA3-83LP+

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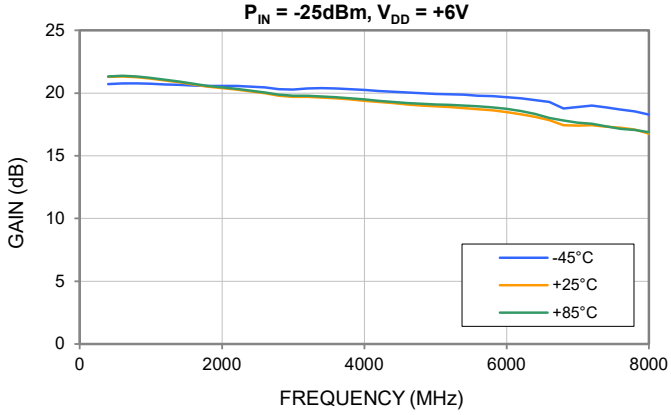
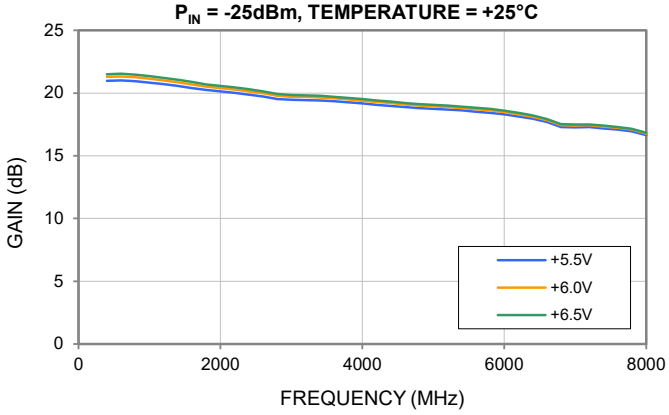
TYPICAL PERFORMANCE GRAPHS

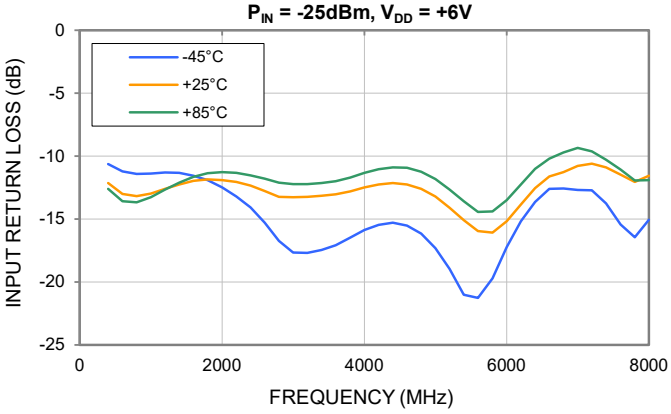
GAIN vs. TEMPERATURE,
P_{IN} = -25dBm, V_{DD} = +6V



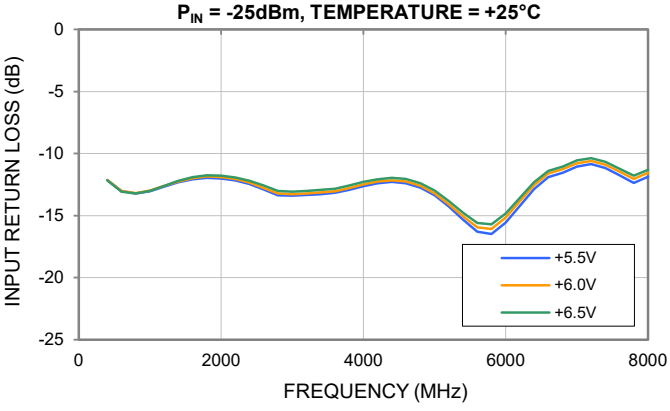
GAIN vs. DEVICE VOLTAGE,
P_{IN} = -25dBm, TEMPERATURE = +25°C



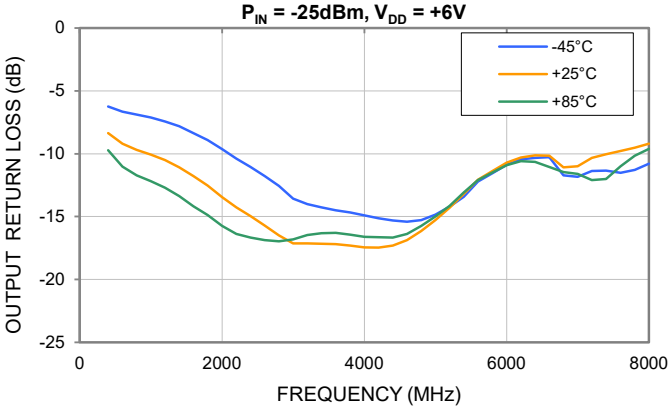
INPUT RETURN LOSS vs.TEMPERATURE,
P_{IN} = -25dBm, V_{DD} = +6V



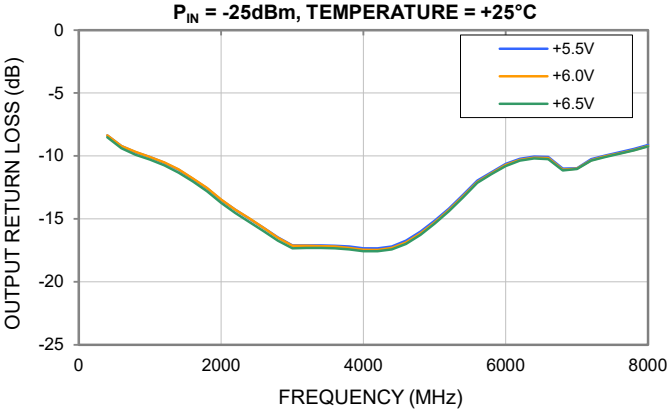
INPUT RETURN LOSS vs. DEVICE VOLTAGE,
P_{IN} = -25dBm, TEMPERATURE = +25°C



OUTPUT RETURN LOSS vs. TEMPERATURE,
P_{IN} = -25dBm, V_{DD} = +6V



OUTPUT RETURN LOSS vs. DEVICE VOLTAGE,
P_{IN} = -25dBm, TEMPERATURE = +25°C



Wideband Amplifier PMA3-83LP+

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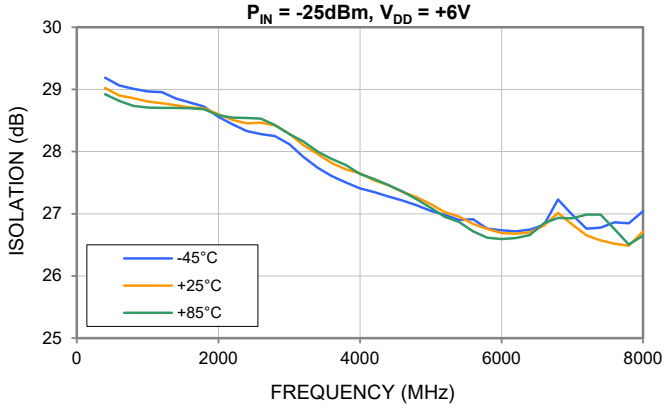
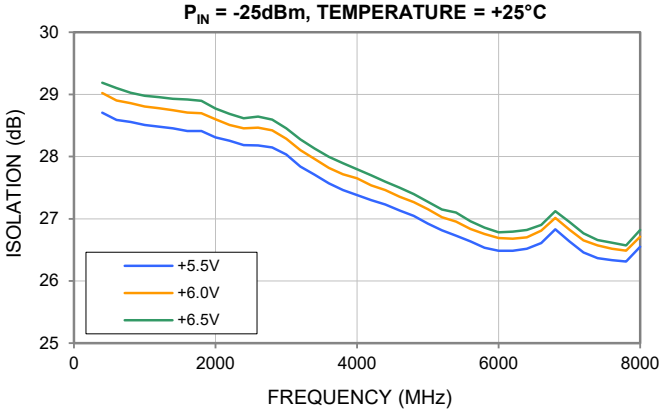
TYPICAL PERFORMANCE GRAPHS

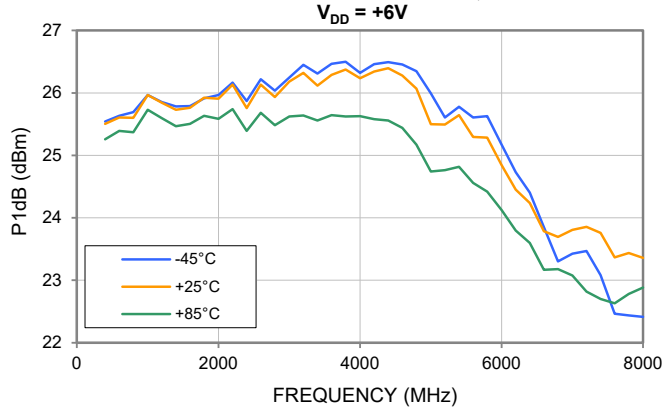
ISOLATION vs. TEMPERATURE,
P_{IN} = -25dBm, V_{DD} = +6V



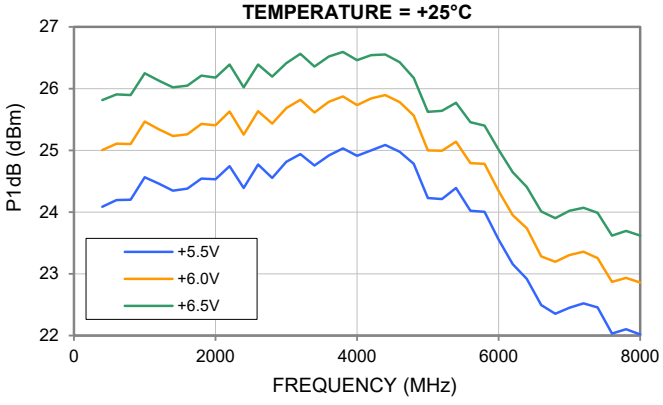
ISOLATION vs. DEVICE VOLTAGE,
P_{IN} = -25dBm, TEMPERATURE = +25°C



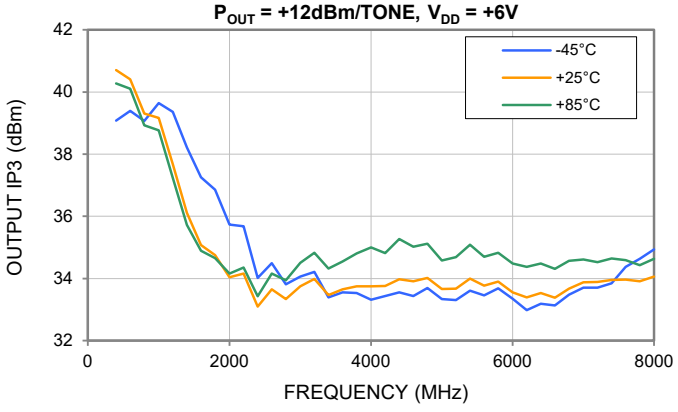
P1dB vs. TEMPERATURE,
V_{DD} = +6V



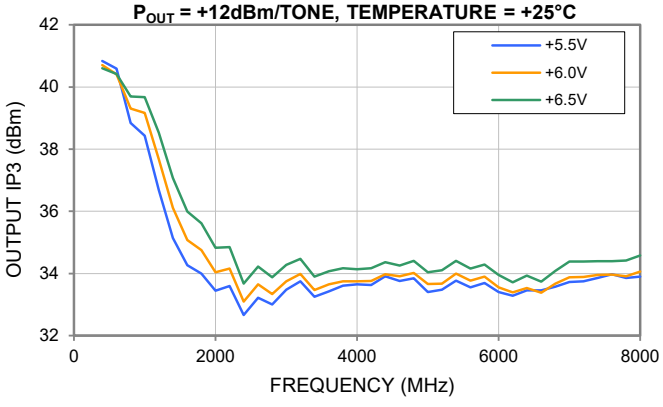
P1dB vs. DEVICE VOLTAGE,
TEMPERATURE = +25°C



OUTPUT IP3 vs. TEMPERATURE,
P_{OUT} = +12dBm/TONE, V_{DD} = +6V

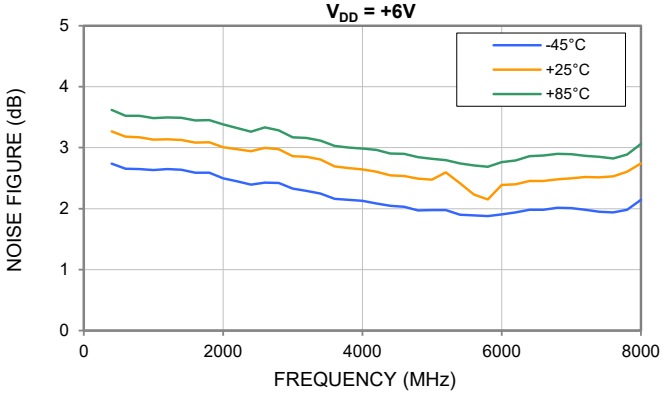


OUTPUT IP3 vs. DEVICE VOLTAGE,
P_{OUT} = +12dBm/TONE, TEMPERATURE = +25°C

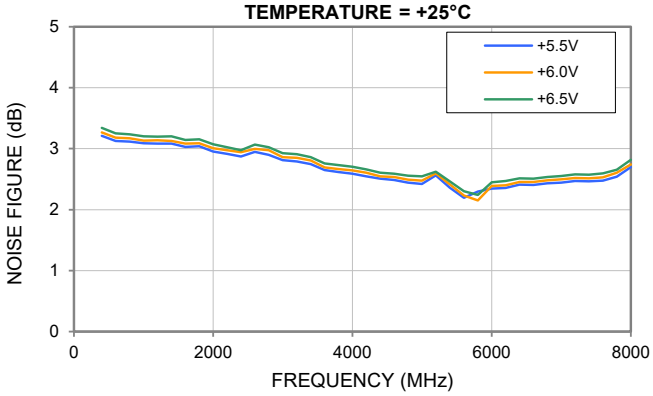


TYPICAL PERFORMANCE GRAPHS

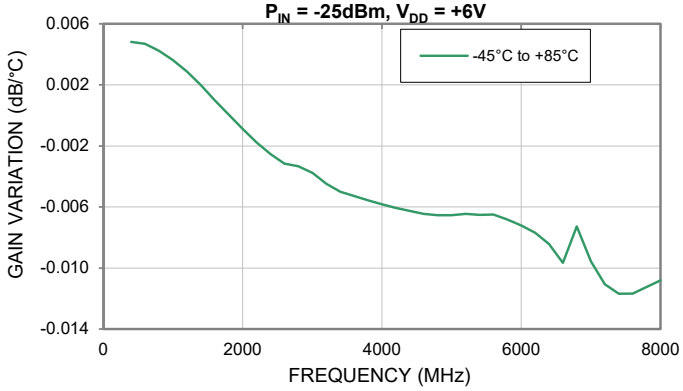
NOISE FIGURE vs. TEMPERATURE, V_{DD} = +6V



NOISE FIGURE vs. DEVICE VOLTAGE, TEMPERATURE = +25°C



GAIN VARIATION vs. TEMPERATURE, P_{IN} = -25dBm, V_{DD} = +6V

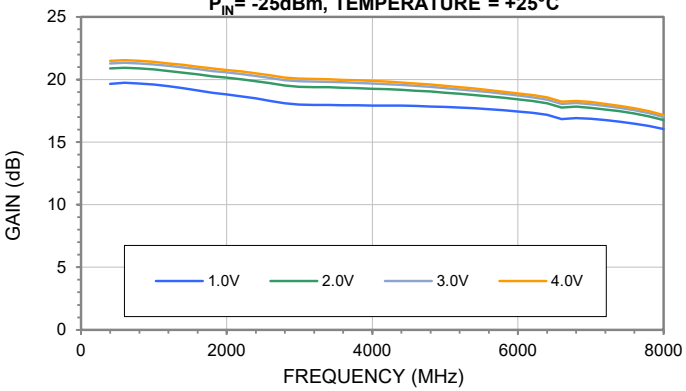


Wideband Amplifier PMA3-83LP+

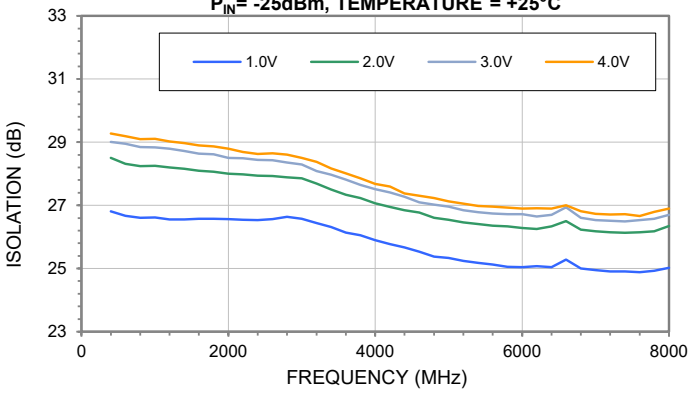
50Ω 0.4 to 8 GHz +6V Supply

TYPICAL PERFORMANCE GRAPHS

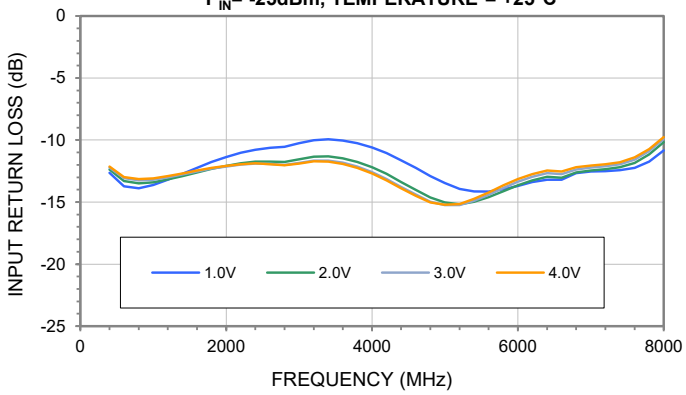
GAIN vs. V_{ladj}
P_{IN}= -25dBm, TEMPERATURE = +25°C



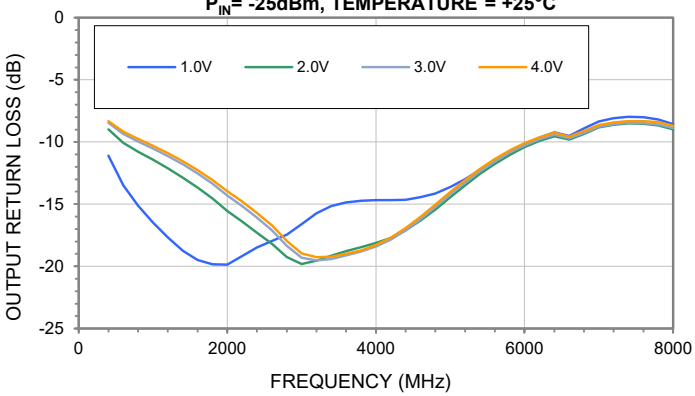
ISOLATION vs. V_{ladj}
P_{IN}= -25dBm, TEMPERATURE = +25°C



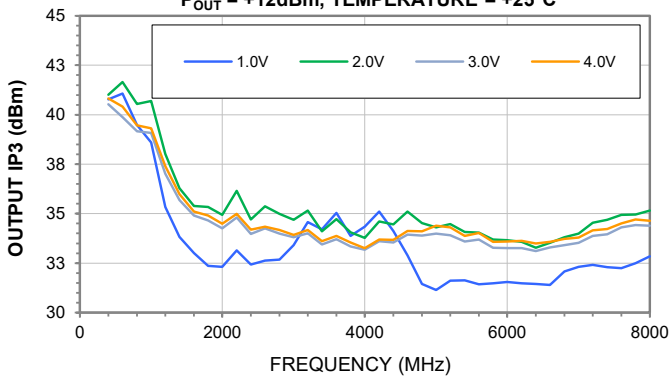
INPUT RETURN LOSS vs. V_{ladj}
P_{IN}= -25dBm, TEMPERATURE = +25°C



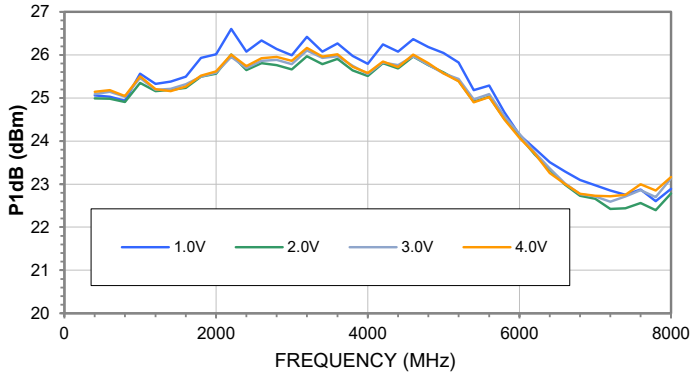
OUTPUT RETURN LOSS vs. V_{ladj}
P_{IN}= -25dBm, TEMPERATURE = +25°C



OUTPUT IP3 vs. V_{ladj}
P_{OUT} = +12dBm, TEMPERATURE = +25°C



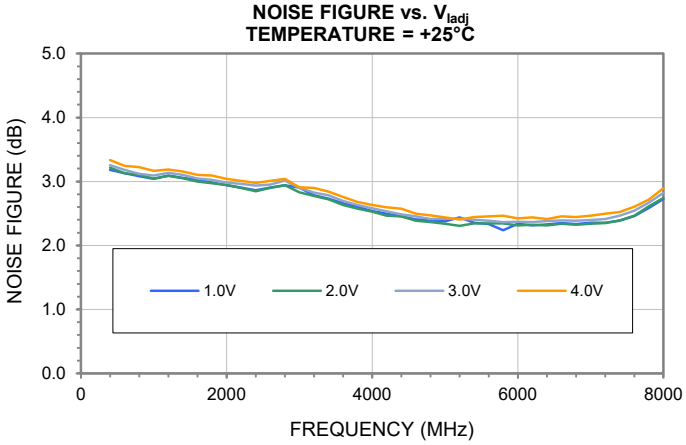
P1dB vs. V_{ladj}
TEMPERATURE = +25°C

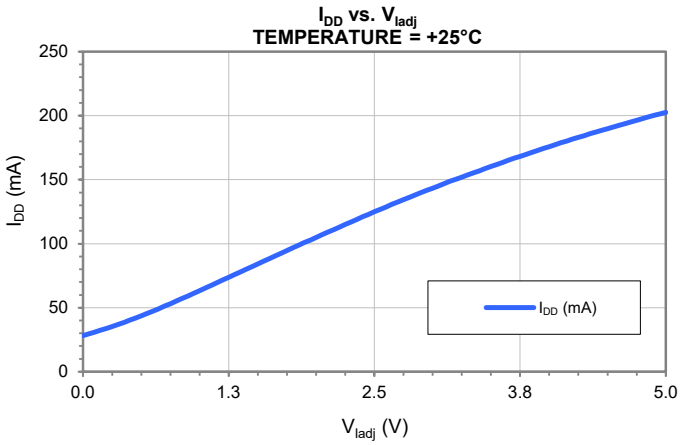


Wideband Amplifier PMA3-83LP+

50Ω 0.4 to 8 GHz +6V Supply

TYPICAL PERFORMANCE GRAPHS





ABSOLUTE MAXIMUM RATINGS[5]

Parameter	Ratings
Operating Temperature (ground lead)	-45°C to +85°C
Storage Temperature	-65°C to +150°C
Junction Temperature[6]	+150°C
Total Power Dissipation	1.4W
Input Power (CW)	+23dBm
DC Voltage at V_{DD}	+9V
DC Voltage at Vladj	+6V

5. Permanent damage may occur if any of these limits are exceeded. Maximum ratings are not intended for continuous normal operation.
6. Peak temperature on top of Die.

THERMAL RESISTANCE

Parameter	Ratings
Thermal Resistance (Θ_{jc})[7]	46.3°C/W

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

ESD RATING

	Class	Voltage Range	Reference Standard
Human Body Model (HBM)	1A	250V to <500V	ANSI/ESDA/JEDEC JS-001-2017

ESD HANDLING PRECAUTION: This device is designed to be Class 1A 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

Wideband Amplifier PMA3-83LP+

50Ω 0.4 to 8 GHz +6V Supply

FUNCTIONAL DIAGRAM

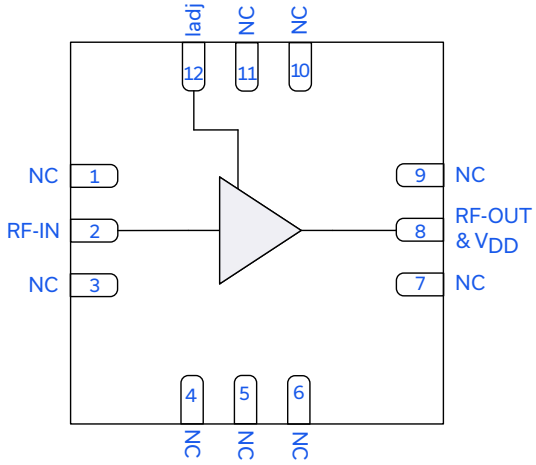


Figure 1. PMA3-83LP+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description (Refer to Figure 2)
RF-IN	2	Connects to RF Input Pad via C1.
RF-OUT & V_{DD}	8	Connects to RF Output Pad via C2 and connects to V_{DD} via L1.
ladj	12	Connects to Current Adjust Pad. Connects to V_{DD} via R1.
NC	1, 3-7, 9-11	Not used internally. Connected to ground on Test Board.
GND	Paddle, Index	Paddle connected to ground on Test Board. (Paddle & Index connected internally.)

CHARACTERIZATION TEST BOARD

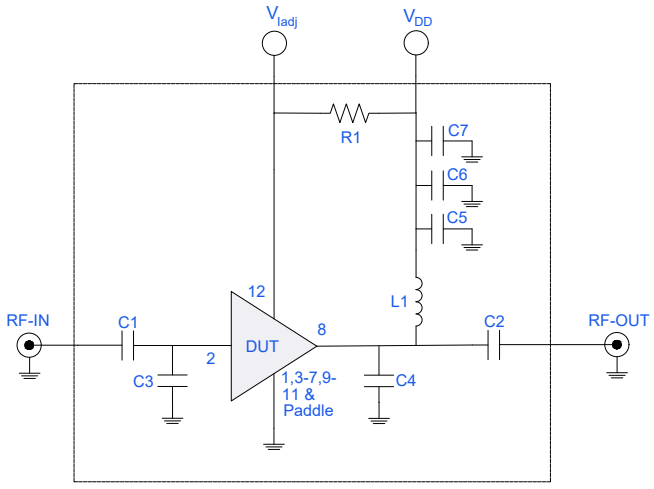


Figure 2. DUT soldered on Mini-Circuits Characterization Test Board: TB-PMA3-83LPC+. If V_{ladj} is used independently of V_{DD} then R1 needs to be removed from the circuit.

Electrical Parameters and Conditions
Gain, Return Loss, Output Power at 1dB Compression (P1dB), Output IP3 (OIP3), and Noise Figure measured using N5242A PNA-X microwave network analyzer.

Conditions:
1. Gain and Return Loss: P_{IN}= -25dBm
2. Output IP3 (OIP3): Two tones, spaced 1MHz apart, +12dBm/tone at output.
3. V_{DD} = +6V

Component	Vendor	Vendor P/N	Value	Size
C1, C2	Murata	GRM1555C1H101JA01D	100pF	0402
C3	Murata	GJM1555C1HR40WB01D	0.4pF	0402
C4	Murata	GJM1555C1HR10WB01D	0.1pF	0402
C5	Murata	GRM1555C1H100JA01D	10pF	0402
C6	Murata	GRM155C71A105KE11D	1uF	0402
C7	Murata	GRM188D71A106MA73J	10uF	0603
L1	Coilcraft	0603CS-33NXJEW	33nH	0603
R1	KOA Speer	RK73H1ETTP2201F	2.2kΩ	0402

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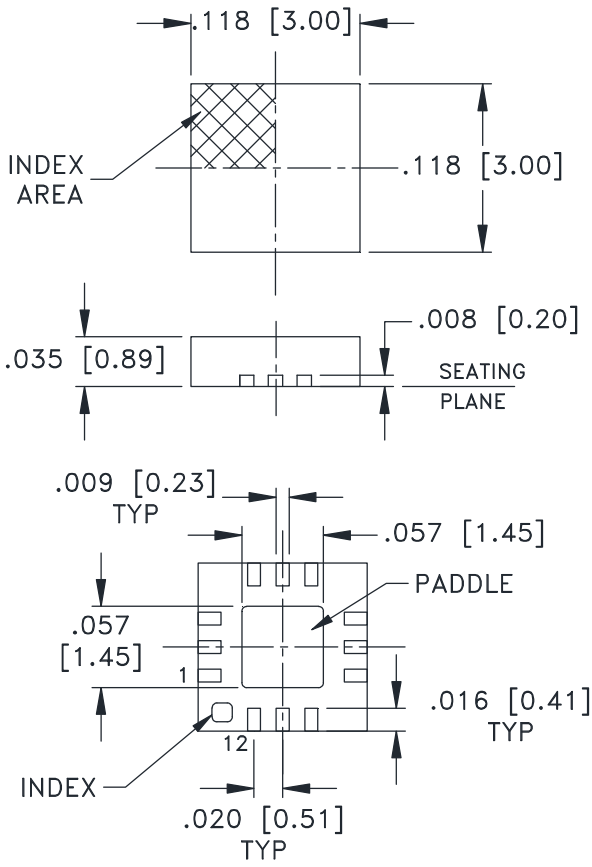
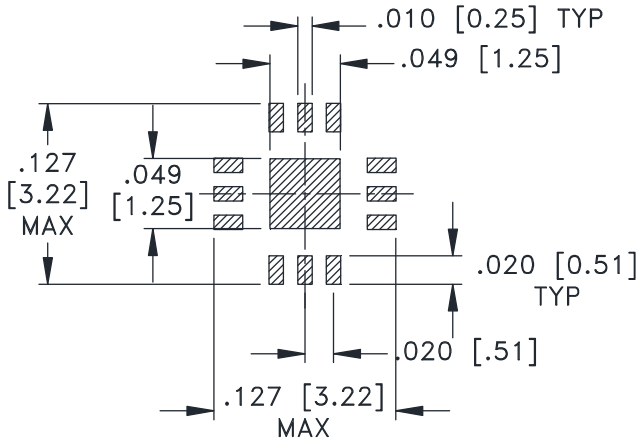
CASE STYLE DRAWING



PCB Land Pattern

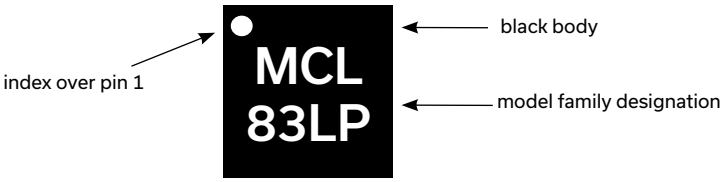


SUGGESTED LAYOUT,
TOLERANCE TO BE WITHIN ±.002

Weight: .02 Grams

Dimensions are in inches [mm]. 2 Pl. ±.01; 3 Pl.±.004

PRODUCT MARKING



Marking may contain other features or characters for internal lot control

Wideband Amplifier PMA3-83LP+

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ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD CLICK HERE

Performance Data	Data Graphs S-Parameter (S2P Files) Data Set (.zip file)
Case Style	DQ1225 Plastic package, exposed paddle, Lead Finish: Matte-Tin
RoHs Status	Compliant
Tape & Reel **Standard quantities available on reel**	F66 7" reels with 20, 50, 100, 200, 500,1K or 2K devices
Suggested Layout for PCB Design	PL-757
Evaluation Board	TB-PMA3-83LPC+ 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-Circuit's 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 conditions

Definitions:
Input Return Loss = S11 (dB)
Gain(Power Gain) = S21 (dB)
Isolation = -S12 (dB)
Output Return Loss = S22 (dB)

TEST CONDITIONS: V_{DD} = +6.00 V, I_{DD} = 148mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
400	21.3	29.0	-12.1	-8.4	1.3	0.7	40.7	25.0	3.3
600	21.3	28.9	-13.0	-9.2	1.3	0.7	40.4	25.1	3.2
800	21.3	28.9	-13.2	-9.7	1.3	0.7	39.3	25.1	3.2
1000	21.1	28.8	-13.0	-10.1	1.3	0.7	39.2	25.5	3.1
1200	21.0	28.8	-12.6	-10.5	1.3	0.8	37.7	25.3	3.1
1400	20.9	28.7	-12.2	-11.1	1.3	0.8	36.1	25.2	3.1
1600	20.7	28.7	-12.0	-11.8	1.3	0.8	35.1	25.3	3.1
1800	20.5	28.7	-11.9	-12.5	1.3	0.8	34.7	25.4	3.1
2000	20.4	28.6	-11.9	-13.4	1.3	0.9	34.0	25.4	3.0
2200	20.3	28.5	-12.1	-14.3	1.3	0.9	34.2	25.6	3.0
2400	20.1	28.5	-12.3	-15.0	1.4	0.9	33.1	25.3	2.9
2600	20.0	28.5	-12.8	-15.7	1.4	0.9	33.6	25.6	3.0
2800	19.8	28.4	-13.2	-16.5	1.4	0.9	33.3	25.4	3.0
3000	19.7	28.3	-13.3	-17.1	1.4	0.9	33.7	25.7	2.9
3200	19.7	28.1	-13.2	-17.1	1.4	0.9	34.0	25.8	2.8
3400	19.6	28.0	-13.1	-17.2	1.4	0.9	33.5	25.6	2.8
3600	19.6	27.8	-13.0	-17.2	1.4	0.9	33.6	25.8	2.7
3800	19.5	27.7	-12.8	-17.3	1.4	0.9	33.7	25.9	2.7
4000	19.4	27.7	-12.5	-17.5	1.4	0.9	33.8	25.7	2.6
4200	19.3	27.5	-12.3	-17.5	1.4	0.9	33.8	25.8	2.6
4400	19.2	27.5	-12.2	-17.3	1.3	0.9	34.0	25.9	2.5
4600	19.1	27.4	-12.3	-16.9	1.4	0.9	33.9	25.8	2.5
4800	19.0	27.3	-12.6	-16.1	1.3	0.9	34.0	25.6	2.5
5000	18.9	27.2	-13.2	-15.3	1.3	0.9	33.7	25.0	2.5
5200	18.9	27.0	-14.1	-14.3	1.3	0.9	33.7	25.0	2.6
5400	18.8	27.0	-15.1	-13.2	1.3	0.8	34.0	25.1	2.4
5600	18.7	26.8	-16.0	-12.1	1.3	0.8	33.8	24.8	2.2
5800	18.6	26.8	-16.1	-11.4	1.3	0.8	33.9	24.8	2.2
6000	18.5	26.7	-15.2	-10.7	1.3	0.8	33.6	24.3	2.4
6200	18.3	26.7	-13.8	-10.3	1.3	0.8	33.4	24.0	2.4
6400	18.1	26.7	-12.6	-10.1	1.3	0.9	33.5	23.7	2.5
6600	17.8	26.8	-11.6	-10.2	1.3	0.9	33.4	23.3	2.5
6800	17.4	27.0	-11.3	-11.1	1.4	0.9	33.7	23.2	2.5
7000	17.4	26.8	-10.8	-11.0	1.5	1.0	33.9	23.3	2.5
7200	17.4	26.7	-10.6	-10.3	1.5	1.0	33.9	23.4	2.5
7400	17.3	26.6	-10.9	-10.0	1.6	1.0	34.0	23.3	2.5
7600	17.2	26.5	-11.5	-9.8	1.7	0.9	34.0	22.9	2.5
7800	17.1	26.5	-12.1	-9.5	1.7	0.9	33.9	22.9	2.6
8000	16.8	26.7	-11.6	-9.2	1.7	0.9	34.1	22.9	2.7

Typical Performance Data

Definitions:
Input Return Loss = S11 (dB)
Gain(Power Gain) = S21 (dB)
Isolation = -S12 (dB)
Output Return Loss = S22 (dB)

TEST CONDITIONS: V_{DD} = +5.50 V, I_{DD} = 128mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
400	21.0	28.7	-12.1	-8.4	1.3	0.7	40.8	24.1	3.2
600	21.0	28.6	-13.0	-9.2	1.3	0.7	40.6	24.2	3.1
800	20.9	28.6	-13.2	-9.7	1.3	0.7	38.8	24.2	3.1
1000	20.8	28.5	-13.0	-10.1	1.3	0.7	38.4	24.6	3.1
1200	20.7	28.5	-12.7	-10.5	1.3	0.8	36.7	24.5	3.1
1400	20.6	28.5	-12.3	-11.1	1.3	0.8	35.1	24.3	3.1
1600	20.4	28.4	-12.1	-11.8	1.3	0.8	34.3	24.4	3.0
1800	20.2	28.4	-12.0	-12.6	1.3	0.8	34.0	24.5	3.0
2000	20.1	28.3	-12.0	-13.5	1.3	0.9	33.4	24.5	3.0
2200	20.0	28.3	-12.2	-14.3	1.3	0.9	33.6	24.7	2.9
2400	19.9	28.2	-12.5	-15.0	1.4	0.9	32.7	24.4	2.9
2600	19.7	28.2	-12.9	-15.7	1.4	0.9	33.2	24.8	2.9
2800	19.5	28.1	-13.4	-16.5	1.4	0.9	33.0	24.6	2.9
3000	19.5	28.0	-13.4	-17.1	1.4	0.9	33.5	24.8	2.8
3200	19.4	27.8	-13.3	-17.1	1.4	0.9	33.7	24.9	2.8
3400	19.4	27.7	-13.3	-17.1	1.4	0.9	33.2	24.8	2.7
3600	19.3	27.6	-13.2	-17.1	1.4	0.9	33.4	24.9	2.6
3800	19.3	27.5	-12.9	-17.2	1.4	0.9	33.6	25.0	2.6
4000	19.2	27.4	-12.6	-17.3	1.4	0.9	33.6	24.9	2.6
4200	19.1	27.3	-12.4	-17.3	1.4	0.9	33.6	25.0	2.5
4400	19.0	27.2	-12.3	-17.2	1.4	0.9	33.9	25.1	2.5
4600	18.9	27.1	-12.4	-16.7	1.3	0.9	33.8	25.0	2.5
4800	18.8	27.0	-12.8	-16.0	1.3	0.9	33.8	24.8	2.4
5000	18.7	26.9	-13.4	-15.1	1.3	0.9	33.4	24.2	2.4
5200	18.7	26.8	-14.3	-14.2	1.3	0.9	33.5	24.2	2.6
5400	18.6	26.7	-15.3	-13.1	1.3	0.8	33.8	24.4	2.4
5600	18.5	26.6	-16.3	-12.0	1.3	0.8	33.6	24.0	2.2
5800	18.4	26.5	-16.5	-11.3	1.3	0.8	33.7	24.0	2.3
6000	18.3	26.5	-15.6	-10.6	1.3	0.8	33.4	23.6	2.3
6200	18.1	26.5	-14.2	-10.2	1.3	0.8	33.3	23.2	2.4
6400	18.0	26.5	-12.9	-10.0	1.3	0.9	33.5	22.9	2.4
6600	17.7	26.6	-11.9	-10.1	1.3	0.9	33.5	22.5	2.4
6800	17.3	26.8	-11.6	-11.0	1.4	0.9	33.6	22.4	2.4
7000	17.3	26.6	-11.1	-11.0	1.5	1.0	33.7	22.4	2.4
7200	17.3	26.5	-10.8	-10.3	1.5	1.0	33.7	22.5	2.5
7400	17.2	26.4	-11.2	-10.0	1.6	1.0	33.8	22.5	2.5
7600	17.1	26.3	-11.8	-9.7	1.7	0.9	34.0	22.0	2.5
7800	17.0	26.3	-12.4	-9.4	1.7	0.9	33.9	22.1	2.5
8000	16.6	26.5	-11.9	-9.1	1.7	0.9	33.9	22.0	2.7

Typical Performance Data

Definitions:
Input Return Loss = S11 (dB)
Gain(Power Gain) = S21 (dB)
Isolation = -S12 (dB)
Output Return Loss = S22 (dB)

TEST CONDITIONS: V_{DD} = +6.50 V, I_{DD} = 170mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
400	21.5	29.2	-12.2	-8.5	1.3	0.7	40.6	25.8	3.3
600	21.5	29.1	-13.1	-9.4	1.3	0.7	40.4	25.9	3.3
800	21.5	29.0	-13.2	-9.9	1.3	0.7	39.7	25.9	3.2
1000	21.4	29.0	-13.0	-10.3	1.3	0.7	39.7	26.2	3.2
1200	21.2	29.0	-12.6	-10.7	1.3	0.8	38.5	26.1	3.2
1400	21.0	28.9	-12.2	-11.3	1.3	0.8	37.1	26.0	3.2
1600	20.9	28.9	-11.9	-12.0	1.3	0.8	36.0	26.0	3.1
1800	20.7	28.9	-11.8	-12.8	1.3	0.8	35.6	26.2	3.2
2000	20.6	28.8	-11.8	-13.7	1.3	0.9	34.8	26.2	3.1
2200	20.4	28.7	-11.9	-14.5	1.3	0.9	34.8	26.4	3.0
2400	20.3	28.6	-12.2	-15.2	1.4	0.9	33.7	26.0	3.0
2600	20.1	28.6	-12.6	-16.0	1.4	0.9	34.2	26.4	3.1
2800	19.9	28.6	-13.0	-16.7	1.4	0.9	33.9	26.2	3.0
3000	19.9	28.5	-13.1	-17.3	1.4	0.9	34.3	26.4	2.9
3200	19.8	28.3	-13.0	-17.3	1.4	0.9	34.5	26.6	2.9
3400	19.8	28.1	-12.9	-17.3	1.4	0.9	33.9	26.4	2.9
3600	19.7	28.0	-12.8	-17.3	1.4	0.9	34.1	26.5	2.8
3800	19.6	27.9	-12.6	-17.4	1.4	0.9	34.2	26.6	2.7
4000	19.5	27.8	-12.3	-17.6	1.4	0.9	34.1	26.5	2.7
4200	19.4	27.7	-12.1	-17.6	1.4	0.9	34.2	26.5	2.7
4400	19.3	27.6	-11.9	-17.4	1.3	0.9	34.4	26.6	2.6
4600	19.2	27.5	-12.1	-17.0	1.3	0.9	34.3	26.4	2.6
4800	19.1	27.4	-12.4	-16.2	1.3	0.9	34.4	26.2	2.6
5000	19.1	27.3	-13.0	-15.4	1.3	0.9	34.0	25.6	2.5
5200	19.0	27.2	-13.8	-14.4	1.3	0.9	34.1	25.6	2.6
5400	18.9	27.1	-14.8	-13.3	1.3	0.9	34.4	25.8	2.5
5600	18.8	27.0	-15.6	-12.1	1.3	0.8	34.2	25.5	2.3
5800	18.7	26.9	-15.7	-11.4	1.3	0.8	34.3	25.4	2.2
6000	18.6	26.8	-14.8	-10.8	1.3	0.8	33.9	25.0	2.4
6200	18.4	26.8	-13.6	-10.4	1.3	0.8	33.7	24.6	2.5
6400	18.2	26.8	-12.3	-10.2	1.3	0.9	33.9	24.4	2.5
6600	17.9	26.9	-11.4	-10.2	1.3	0.9	33.7	24.0	2.5
6800	17.5	27.1	-11.0	-11.1	1.4	0.9	34.1	23.9	2.5
7000	17.5	27.0	-10.6	-11.0	1.5	1.0	34.4	24.0	2.6
7200	17.5	26.8	-10.4	-10.4	1.5	1.0	34.4	24.1	2.6
7400	17.4	26.7	-10.7	-10.1	1.6	1.0	34.4	24.0	2.6
7600	17.3	26.6	-11.2	-9.8	1.7	0.9	34.4	23.6	2.6
7800	17.2	26.6	-11.8	-9.6	1.7	0.9	34.4	23.7	2.7
8000	16.8	26.8	-11.3	-9.2	1.7	0.9	34.6	23.6	2.8

Typical Performance Data

Definitions:
Input Return Loss = S11 (dB)
Gain(Power Gain) = S21 (dB)
Isolation = -S12 (dB)
Output Return Loss = S22 (dB)

TEST CONDITIONS: V_{DD} = +6.00 V, I_{DD} = 171mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
400	20.7	29.2	-10.6	-6.2	1.3	0.6	39.1	25.0	2.7
600	20.8	29.1	-11.2	-6.6	1.3	0.6	39.4	25.1	2.7
800	20.8	29.0	-11.4	-6.9	1.3	0.6	39.1	25.2	2.6
1000	20.7	29.0	-11.4	-7.1	1.3	0.6	39.6	25.5	2.6
1200	20.7	29.0	-11.3	-7.4	1.3	0.7	39.4	25.4	2.6
1400	20.6	28.9	-11.3	-7.8	1.3	0.7	38.2	25.3	2.6
1600	20.6	28.8	-11.5	-8.4	1.3	0.7	37.3	25.3	2.6
1800	20.6	28.7	-11.9	-8.9	1.3	0.7	36.9	25.4	2.6
2000	20.6	28.6	-12.5	-9.6	1.3	0.8	35.7	25.5	2.5
2200	20.6	28.4	-13.2	-10.4	1.3	0.8	35.7	25.7	2.4
2400	20.5	28.3	-14.1	-11.1	1.3	0.8	34.0	25.4	2.4
2600	20.5	28.3	-15.3	-11.8	1.3	0.8	34.5	25.7	2.4
2800	20.3	28.3	-16.7	-12.6	1.4	0.8	33.8	25.5	2.4
3000	20.3	28.1	-17.7	-13.6	1.4	0.8	34.1	25.7	2.3
3200	20.4	27.9	-17.7	-14.0	1.3	0.8	34.2	25.9	2.3
3400	20.4	27.7	-17.4	-14.3	1.3	0.8	33.4	25.8	2.2
3600	20.4	27.6	-17.1	-14.5	1.3	0.8	33.6	26.0	2.2
3800	20.3	27.5	-16.5	-14.7	1.3	0.8	33.5	26.0	2.1
4000	20.2	27.4	-15.9	-14.9	1.3	0.8	33.3	25.8	2.1
4200	20.2	27.3	-15.5	-15.1	1.3	0.8	33.4	26.0	2.1
4400	20.1	27.3	-15.3	-15.3	1.3	0.8	33.5	26.0	2.0
4600	20.0	27.2	-15.5	-15.4	1.3	0.8	33.4	26.0	2.0
4800	20.0	27.1	-16.2	-15.3	1.3	0.8	33.7	25.8	2.0
5000	19.9	27.0	-17.3	-14.8	1.3	0.8	33.3	25.5	2.0
5200	19.9	27.0	-19.0	-14.2	1.3	0.8	33.3	25.1	2.0
5400	19.9	26.9	-21.0	-13.4	1.3	0.8	33.6	25.3	1.9
5600	19.8	26.9	-21.3	-12.2	1.3	0.8	33.5	25.1	1.9
5800	19.7	26.8	-19.7	-11.6	1.3	0.8	33.7	25.1	1.9
6000	19.7	26.7	-17.2	-10.9	1.3	0.8	33.3	24.7	1.9
6200	19.6	26.7	-15.2	-10.4	1.3	0.8	33.0	24.2	1.9
6400	19.4	26.7	-13.6	-10.3	1.3	0.8	33.2	23.9	2.0
6600	19.3	26.8	-12.6	-10.3	1.3	0.8	33.1	23.3	2.0
6800	18.8	27.2	-12.6	-11.7	1.3	0.8	33.5	22.8	2.0
7000	18.9	27.0	-12.7	-11.8	1.5	0.9	33.7	22.9	2.0
7200	19.0	26.8	-12.7	-11.4	1.4	0.9	33.7	23.0	2.0
7400	18.9	26.8	-13.7	-11.3	1.4	0.9	33.8	22.6	2.0
7600	18.7	26.9	-15.4	-11.5	1.5	0.9	34.4	22.0	1.9
7800	18.5	26.8	-16.5	-11.3	1.6	0.9	34.6	21.9	2.0
8000	18.3	27.0	-15.0	-10.8	1.6	0.9	34.9	21.9	2.1

Typical Performance Data

Definitions:
Input Return Loss = S11 (dB)
Gain(Power Gain) = S21 (dB)
Isolation = -S12 (dB)
Output Return Loss = S22 (dB)

TEST CONDITIONS: V_{DD} = +5.50 V, I_{DD} = 147mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
400	20.4	29.0	-10.6	-6.2	1.3	0.6	40.3	24.0	2.7
600	20.5	28.8	-11.2	-6.6	1.3	0.6	40.9	24.1	2.6
800	20.5	28.8	-11.4	-6.8	1.3	0.6	40.5	24.2	2.6
1000	20.5	28.7	-11.4	-7.1	1.3	0.6	40.7	24.4	2.6
1200	20.4	28.7	-11.3	-7.4	1.3	0.7	39.7	24.3	2.6
1400	20.4	28.6	-11.4	-7.7	1.3	0.7	37.7	24.3	2.6
1600	20.4	28.6	-11.6	-8.3	1.3	0.7	36.6	24.3	2.5
1800	20.4	28.5	-12.0	-8.8	1.3	0.7	36.2	24.4	2.5
2000	20.4	28.4	-12.6	-9.5	1.3	0.8	35.1	24.5	2.4
2200	20.4	28.2	-13.4	-10.3	1.3	0.8	35.1	24.6	2.4
2400	20.3	28.1	-14.3	-11.0	1.3	0.8	33.6	24.4	2.3
2600	20.3	28.1	-15.6	-11.7	1.3	0.8	34.0	24.7	2.4
2800	20.1	28.0	-17.2	-12.5	1.4	0.8	33.5	24.5	2.4
3000	20.1	27.9	-18.2	-13.5	1.4	0.8	33.7	24.7	2.3
3200	20.2	27.7	-18.3	-13.9	1.3	0.8	33.9	24.9	2.3
3400	20.2	27.5	-18.1	-14.2	1.3	0.8	33.2	24.8	2.2
3600	20.2	27.4	-17.8	-14.4	1.3	0.8	33.4	24.9	2.1
3800	20.2	27.3	-17.1	-14.6	1.3	0.8	33.4	25.0	2.1
4000	20.1	27.3	-16.5	-14.8	1.3	0.8	33.2	24.8	2.1
4200	20.1	27.2	-16.1	-15.1	1.3	0.8	33.4	25.0	2.0
4400	20.0	27.1	-16.0	-15.3	1.3	0.8	33.6	25.0	2.0
4600	19.9	27.0	-16.2	-15.4	1.3	0.8	33.5	25.0	2.0
4800	19.9	27.0	-16.9	-15.3	1.3	0.8	33.8	24.9	1.9
5000	19.8	26.9	-18.2	-14.8	1.3	0.8	33.5	24.5	1.9
5200	19.8	26.8	-20.1	-14.2	1.3	0.8	33.5	24.1	2.0
5400	19.8	26.8	-22.6	-13.4	1.3	0.8	33.8	24.3	1.9
5600	19.7	26.8	-22.9	-12.2	1.3	0.8	33.6	24.1	1.8
5800	19.7	26.6	-20.9	-11.6	1.3	0.8	33.7	24.1	1.8
6000	19.6	26.6	-18.0	-10.9	1.3	0.7	33.5	23.6	1.9
6200	19.5	26.6	-15.8	-10.5	1.3	0.7	33.3	23.2	1.9
6400	19.4	26.6	-14.3	-10.3	1.3	0.8	33.6	22.8	1.9
6600	19.3	26.7	-13.2	-10.3	1.3	0.8	33.8	22.4	1.9
6800	18.8	27.1	-13.2	-11.7	1.3	0.8	34.2	21.8	2.0
7000	18.9	26.9	-13.5	-11.8	1.5	0.9	34.6	21.9	2.0
7200	19.0	26.6	-13.5	-11.4	1.4	0.8	34.4	22.0	1.9
7400	18.9	26.7	-14.7	-11.3	1.4	0.8	34.6	21.7	1.9
7600	18.7	26.8	-16.5	-11.5	1.5	0.9	35.4	21.0	1.9
7800	18.5	26.7	-17.7	-11.3	1.6	0.8	36.0	21.0	1.9
8000	18.3	27.0	-16.0	-10.8	1.6	0.9	36.5	21.0	2.1

Typical Performance Data

Definitions:
Input Return Loss = S11 (dB)
Gain(Power Gain) = S21 (dB)
Isolation = -S12 (dB)
Output Return Loss = S22 (dB)

TEST CONDITIONS: V_{DD} = +6.50 V, I_{DD} = 195mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
400	20.9	29.3	-10.7	-6.4	1.2	0.6	36.8	25.9	2.8
600	21.0	29.2	-11.3	-6.8	1.3	0.6	39.1	26.0	2.7
800	21.0	29.1	-11.5	-7.1	1.3	0.6	38.8	26.1	2.7
1000	20.9	29.1	-11.5	-7.3	1.3	0.6	38.4	26.4	2.7
1200	20.9	29.1	-11.3	-7.6	1.3	0.7	37.1	26.2	2.7
1400	20.8	29.0	-11.4	-8.0	1.3	0.7	38.3	26.2	2.7
1600	20.8	28.9	-11.5	-8.6	1.3	0.7	35.4	26.2	2.6
1800	20.7	28.9	-11.9	-9.2	1.3	0.7	34.2	26.3	2.7
2000	20.7	28.7	-12.4	-9.9	1.3	0.8	36.3	26.3	2.6
2200	20.7	28.6	-13.0	-10.7	1.3	0.8	36.2	26.5	2.5
2400	20.6	28.5	-13.9	-11.4	1.3	0.8	34.5	26.2	2.4
2600	20.6	28.4	-15.0	-12.1	1.3	0.8	35.0	26.6	2.5
2800	20.4	28.4	-16.4	-12.9	1.4	0.8	34.2	26.4	2.5
3000	20.4	28.2	-17.2	-13.9	1.4	0.8	34.5	26.6	2.4
3200	20.5	28.0	-17.1	-14.3	1.3	0.8	34.6	26.9	2.4
3400	20.5	27.9	-16.9	-14.6	1.3	0.8	33.7	26.7	2.3
3600	20.4	27.7	-16.5	-14.8	1.3	0.8	33.8	26.9	2.2
3800	20.4	27.6	-15.9	-15.0	1.3	0.8	33.8	26.9	2.2
4000	20.3	27.5	-15.3	-15.2	1.3	0.8	33.5	26.7	2.2
4200	20.2	27.5	-14.9	-15.5	1.3	0.8	33.6	26.8	2.1
4400	20.2	27.4	-14.7	-15.6	1.3	0.8	33.7	26.8	2.1
4600	20.1	27.3	-14.9	-15.7	1.3	0.8	33.5	26.8	2.1
4800	20.0	27.2	-15.5	-15.5	1.3	0.8	33.8	26.7	2.0
5000	20.0	27.2	-16.5	-15.0	1.3	0.8	33.4	26.3	2.0
5200	19.9	27.1	-18.0	-14.3	1.3	0.8	33.4	26.0	2.0
5400	19.9	27.0	-19.8	-13.5	1.3	0.8	33.7	26.2	2.0
5600	19.8	27.0	-20.1	-12.3	1.3	0.8	33.5	26.0	1.9
5800	19.8	26.9	-18.9	-11.6	1.3	0.8	33.7	26.0	1.9
6000	19.7	26.8	-16.7	-10.9	1.3	0.8	33.3	25.5	1.9
6200	19.6	26.8	-14.7	-10.5	1.3	0.8	33.0	25.1	2.0
6400	19.5	26.8	-13.2	-10.4	1.3	0.8	33.1	24.8	2.0
6600	19.3	26.9	-12.2	-10.3	1.3	0.8	33.0	24.3	2.0
6800	18.8	27.3	-12.1	-11.8	1.3	0.8	33.2	23.8	2.1
7000	18.9	27.1	-12.1	-11.9	1.5	0.9	33.4	23.9	2.0
7200	19.0	26.8	-12.1	-11.4	1.4	0.9	33.5	23.9	2.0
7400	18.8	26.8	-13.1	-11.4	1.4	0.9	33.5	23.5	2.0
7600	18.6	26.9	-14.6	-11.6	1.6	0.9	33.6	22.8	2.0
7800	18.5	26.9	-15.6	-11.3	1.6	0.9	33.8	22.8	2.0
8000	18.2	27.1	-14.4	-10.8	1.6	0.9	34.0	22.8	2.2

Typical Performance Data

Definitions:
Input Return Loss = S11 (dB)
Gain(Power Gain) = S21 (dB)
Isolation = -S12 (dB)
Output Return Loss = S22 (dB)

TEST CONDITIONS: V_{DD} = +6.00 V, I_{DD} = 142mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
400	21.3	28.9	-12.6	-9.7	1.3	0.7	40.3	24.8	3.6
600	21.4	28.8	-13.6	-11.0	1.3	0.7	40.1	24.9	3.5
800	21.3	28.7	-13.7	-11.7	1.3	0.8	38.9	24.9	3.5
1000	21.2	28.7	-13.3	-12.2	1.3	0.8	38.8	25.2	3.5
1200	21.1	28.7	-12.7	-12.7	1.3	0.8	37.2	25.1	3.5
1400	20.9	28.7	-12.1	-13.4	1.3	0.8	35.7	25.0	3.5
1600	20.7	28.7	-11.6	-14.2	1.3	0.9	34.9	25.0	3.4
1800	20.6	28.7	-11.4	-14.9	1.3	0.9	34.7	25.1	3.5
2000	20.5	28.6	-11.3	-15.7	1.3	0.9	34.2	25.1	3.4
2200	20.3	28.5	-11.3	-16.4	1.4	0.9	34.4	25.2	3.3
2400	20.2	28.5	-11.5	-16.7	1.4	0.9	33.4	24.9	3.3
2600	20.0	28.5	-11.8	-16.9	1.4	0.9	34.2	25.2	3.3
2800	19.9	28.4	-12.1	-17.0	1.4	0.9	33.9	25.0	3.3
3000	19.8	28.3	-12.2	-16.8	1.4	0.9	34.5	25.1	3.2
3200	19.8	28.2	-12.2	-16.5	1.4	0.9	34.8	25.1	3.2
3400	19.7	28.0	-12.1	-16.3	1.4	0.9	34.3	25.1	3.1
3600	19.7	27.9	-12.0	-16.3	1.4	0.9	34.5	25.1	3.0
3800	19.6	27.8	-11.7	-16.4	1.4	0.9	34.8	25.1	3.0
4000	19.5	27.6	-11.3	-16.6	1.4	0.9	35.0	25.1	3.0
4200	19.4	27.6	-11.1	-16.6	1.4	0.9	34.8	25.1	3.0
4400	19.3	27.5	-10.9	-16.7	1.4	0.9	35.3	25.1	2.9
4600	19.2	27.4	-10.9	-16.4	1.4	0.9	35.0	24.9	2.9
4800	19.1	27.2	-11.2	-15.7	1.4	0.9	35.1	24.7	2.8
5000	19.1	27.1	-11.8	-15.0	1.4	0.9	34.6	24.2	2.8
5200	19.1	26.9	-12.6	-14.1	1.4	0.9	34.7	24.3	2.8
5400	19.0	26.9	-13.6	-13.1	1.4	0.9	35.1	24.3	2.7
5600	18.9	26.7	-14.4	-12.1	1.3	0.9	34.7	24.1	2.7
5800	18.9	26.6	-14.4	-11.5	1.3	0.9	34.8	23.9	2.7
6000	18.7	26.6	-13.5	-10.9	1.3	0.9	34.5	23.6	2.8
6200	18.6	26.6	-12.3	-10.6	1.3	0.9	34.4	23.3	2.8
6400	18.3	26.7	-11.0	-10.6	1.3	0.9	34.5	23.1	2.9
6600	18.0	26.8	-10.2	-11.1	1.4	1.0	34.3	22.7	2.9
6800	17.8	26.9	-9.7	-11.5	1.5	1.0	34.6	22.7	2.9
7000	17.6	26.9	-9.3	-11.6	1.5	1.0	34.6	22.6	2.9
7200	17.6	27.0	-9.6	-12.1	1.7	1.0	34.5	22.3	2.9
7400	17.3	27.0	-10.3	-12.0	1.8	1.0	34.6	22.2	2.9
7600	17.2	26.7	-11.1	-11.0	1.7	1.0	34.6	22.1	2.8
7800	17.1	26.5	-11.9	-10.2	1.6	0.9	34.4	22.3	2.9
8000	16.9	26.6	-11.9	-9.6	1.6	0.9	34.6	22.4	3.1

Typical Performance Data

Definitions:
Input Return Loss = S11 (dB)
Gain(Power Gain) = S21 (dB)
Isolation = -S12 (dB)
Output Return Loss = S22 (dB)

TEST CONDITIONS: V_{DD} = +5.50 V, I_{DD} = 123mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
400	21.1	28.6	-12.6	-9.8	1.3	0.7	40.4	23.9	3.6
600	21.1	28.5	-13.6	-11.1	1.3	0.7	39.9	24.0	3.5
800	21.1	28.5	-13.7	-11.8	1.3	0.8	38.1	24.0	3.5
1000	20.9	28.5	-13.3	-12.3	1.3	0.8	37.8	24.3	3.4
1200	20.8	28.4	-12.7	-12.8	1.3	0.8	36.1	24.2	3.5
1400	20.7	28.5	-12.1	-13.5	1.3	0.8	34.8	24.1	3.5
1600	20.5	28.4	-11.7	-14.3	1.3	0.9	34.1	24.1	3.4
1800	20.3	28.4	-11.4	-15.0	1.3	0.9	34.0	24.3	3.4
2000	20.2	28.4	-11.3	-15.8	1.3	0.9	33.6	24.2	3.3
2200	20.1	28.3	-11.3	-16.4	1.4	0.9	33.9	24.4	3.3
2400	19.9	28.3	-11.5	-16.7	1.4	0.9	33.0	24.0	3.3
2600	19.8	28.2	-11.8	-16.8	1.4	0.9	33.8	24.4	3.3
2800	19.6	28.2	-12.1	-16.8	1.4	0.9	33.6	24.1	3.2
3000	19.6	28.1	-12.2	-16.6	1.4	0.9	34.3	24.3	3.1
3200	19.5	27.9	-12.2	-16.3	1.4	0.9	34.6	24.4	3.1
3400	19.5	27.8	-12.1	-16.1	1.4	0.9	34.2	24.2	3.1
3600	19.4	27.6	-12.0	-16.1	1.4	0.9	34.4	24.3	3.0
3800	19.4	27.5	-11.7	-16.2	1.4	0.9	34.7	24.4	3.0
4000	19.3	27.4	-11.3	-16.4	1.4	0.9	34.9	24.3	3.0
4200	19.2	27.4	-11.0	-16.4	1.4	0.9	34.7	24.4	2.9
4400	19.1	27.3	-10.9	-16.4	1.4	0.9	35.1	24.3	2.9
4600	19.0	27.2	-10.9	-16.1	1.4	0.9	34.8	24.2	2.9
4800	18.9	27.0	-11.3	-15.5	1.4	0.9	34.9	24.0	2.8
5000	18.9	26.9	-11.8	-14.8	1.4	0.9	34.3	23.5	2.8
5200	18.9	26.7	-12.7	-13.9	1.3	0.9	34.4	23.6	2.7
5400	18.8	26.7	-13.6	-12.9	1.4	0.9	34.7	23.6	2.7
5600	18.7	26.5	-14.5	-11.9	1.3	0.9	34.4	23.3	2.7
5800	18.7	26.5	-14.5	-11.3	1.3	0.9	34.4	23.2	2.6
6000	18.5	26.4	-13.6	-10.8	1.3	0.9	34.2	22.9	2.7
6200	18.4	26.4	-12.4	-10.5	1.3	0.9	34.2	22.5	2.8
6400	18.2	26.5	-11.1	-10.5	1.3	0.9	34.3	22.3	2.8
6600	17.8	26.7	-10.3	-10.9	1.4	1.0	34.4	21.9	2.8
6800	17.6	26.8	-9.8	-11.3	1.5	1.0	34.3	21.9	2.9
7000	17.4	26.8	-9.5	-11.5	1.5	1.0	34.3	21.9	2.9
7200	17.4	26.8	-9.7	-12.0	1.7	1.0	34.6	21.6	2.8
7400	17.2	26.8	-10.4	-11.8	1.8	1.0	34.5	21.5	2.8
7600	17.0	26.6	-11.2	-10.8	1.7	1.0	34.5	21.4	2.8
7800	16.9	26.4	-12.1	-10.0	1.6	0.9	34.2	21.6	2.9
8000	16.7	26.5	-12.1	-9.5	1.6	0.9	34.1	21.7	3.0

Typical Performance Data

Definitions:
Input Return Loss = S11 (dB)
Gain(Power Gain) = S21 (dB)
Isolation = -S12 (dB)
Output Return Loss = S22 (dB)

TEST CONDITIONS: V_{DD} = +6.50 V, I_{DD} = 159mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
400	21.5	29.0	-12.6	-9.8	1.3	0.7	39.6	25.5	3.7
600	21.6	28.9	-13.6	-11.2	1.3	0.7	40.5	25.7	3.6
800	21.5	28.9	-13.7	-11.9	1.3	0.8	39.6	25.7	3.5
1000	21.4	28.9	-13.2	-12.3	1.3	0.8	37.9	26.0	3.5
1200	21.2	28.9	-12.6	-12.9	1.3	0.8	36.7	25.9	3.5
1400	21.1	28.8	-12.1	-13.5	1.3	0.8	36.8	25.7	3.5
1600	20.9	28.8	-11.6	-14.4	1.3	0.9	34.9	25.8	3.5
1800	20.7	28.8	-11.3	-15.1	1.3	0.9	34.6	25.9	3.5
2000	20.6	28.7	-11.2	-15.9	1.3	0.9	34.9	25.8	3.4
2200	20.5	28.7	-11.3	-16.6	1.4	0.9	35.1	25.9	3.4
2400	20.3	28.6	-11.5	-16.8	1.4	0.9	34.1	25.7	3.3
2600	20.2	28.7	-11.7	-17.0	1.4	0.9	34.7	25.9	3.4
2800	20.0	28.6	-12.0	-17.1	1.4	0.9	34.5	25.7	3.3
3000	19.9	28.4	-12.1	-16.9	1.4	0.9	35.1	25.8	3.2
3200	19.9	28.3	-12.1	-16.5	1.4	0.9	35.4	25.7	3.2
3400	19.9	28.2	-12.1	-16.4	1.4	0.9	34.8	25.7	3.2
3600	19.8	28.0	-11.9	-16.4	1.4	0.9	35.0	25.8	3.1
3800	19.7	27.9	-11.6	-16.5	1.4	0.9	35.3	25.7	3.0
4000	19.6	27.8	-11.2	-16.7	1.4	0.9	35.5	25.8	3.0
4200	19.5	27.7	-11.0	-16.7	1.4	0.9	35.2	25.7	3.0
4400	19.4	27.6	-10.8	-16.7	1.4	0.9	35.8	25.6	3.0
4600	19.3	27.5	-10.9	-16.5	1.4	0.9	35.5	25.5	2.9
4800	19.3	27.3	-11.2	-15.8	1.4	0.9	35.6	25.2	2.9
5000	19.2	27.2	-11.7	-15.1	1.4	0.9	35.2	24.9	2.9
5200	19.2	27.1	-12.5	-14.2	1.4	0.9	35.3	24.8	2.8
5400	19.1	27.0	-13.4	-13.2	1.4	0.9	35.7	24.9	2.8
5600	19.1	26.9	-14.3	-12.2	1.3	0.9	35.3	24.6	2.7
5800	19.0	26.7	-14.2	-11.6	1.3	0.9	35.4	24.5	2.7
6000	18.9	26.7	-13.3	-11.0	1.3	0.9	35.2	24.2	2.8
6200	18.7	26.7	-12.1	-10.7	1.3	0.9	34.9	23.9	2.8
6400	18.5	26.8	-10.9	-10.7	1.3	0.9	35.2	23.7	2.9
6600	18.1	27.0	-10.1	-11.2	1.4	1.0	34.9	23.3	2.9
6800	17.9	27.1	-9.6	-11.6	1.5	1.0	35.4	23.3	2.9
7000	17.7	27.0	-9.2	-11.7	1.5	1.0	35.5	23.2	2.9
7200	17.7	27.1	-9.5	-12.2	1.7	1.0	35.3	22.9	2.9
7400	17.5	27.1	-10.2	-12.1	1.8	1.0	35.5	22.8	2.9
7600	17.3	26.8	-10.9	-11.1	1.7	1.0	35.4	22.7	2.9
7800	17.2	26.6	-11.8	-10.3	1.6	0.9	35.3	22.9	2.9
8000	17.0	26.7	-11.7	-9.7	1.6	0.9	35.5	22.9	3.1

Typical Performance Data

Definitions:
Input Return Loss = S11 (dB)
Gain(Power Gain) = S21 (dB)
Isolation = -S12 (dB)
Output Return Loss = S22 (dB)

TEST CONDITIONS: V_{DD} = 6.00V, V_{Iadj} = 1.0V, I_{DD} = 65mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
400	19.66	26.81	-12.63	-11.12	1.27	0.73	40.78	25.06	3.18
600	19.74	26.67	-13.73	-13.49	1.27	0.77	41.07	25.03	3.13
800	19.69	26.61	-13.87	-15.12	1.28	0.80	39.48	24.94	3.08
1000	19.59	26.62	-13.63	-16.47	1.28	0.82	38.60	25.57	3.04
1200	19.45	26.55	-13.20	-17.67	1.28	0.85	35.35	25.33	3.09
1400	19.30	26.55	-12.72	-18.74	1.29	0.87	33.83	25.38	3.06
1600	19.13	26.57	-12.23	-19.50	1.30	0.89	33.02	25.50	3.02
1800	18.95	26.58	-11.76	-19.84	1.31	0.91	32.36	25.93	2.98
2000	18.80	26.57	-11.36	-19.86	1.31	0.92	32.31	26.01	2.94
2200	18.65	26.54	-11.02	-19.18	1.32	0.93	33.14	26.60	2.90
2400	18.49	26.53	-10.77	-18.49	1.33	0.94	32.42	26.07	2.86
2600	18.30	26.56	-10.63	-17.95	1.36	0.94	32.63	26.33	2.91
2800	18.10	26.64	-10.53	-17.45	1.39	0.95	32.67	26.14	2.94
3000	17.99	26.57	-10.26	-16.60	1.39	0.95	33.41	25.99	2.90
3200	17.97	26.43	-10.01	-15.73	1.37	0.94	34.57	26.42	2.79
3400	17.96	26.31	-9.93	-15.15	1.35	0.93	34.20	26.07	2.73
3600	17.94	26.13	-10.03	-14.87	1.33	0.92	35.03	26.27	2.66
3800	17.94	26.05	-10.25	-14.72	1.33	0.92	33.87	25.98	2.60
4000	17.93	25.90	-10.60	-14.69	1.32	0.91	34.34	25.79	2.54
4200	17.92	25.77	-11.05	-14.68	1.31	0.90	35.11	26.25	2.50
4400	17.90	25.66	-11.63	-14.66	1.31	0.89	34.13	26.08	2.45
4600	17.88	25.53	-12.24	-14.45	1.30	0.88	32.90	26.36	2.41
4800	17.85	25.38	-12.91	-14.14	1.29	0.87	31.44	26.18	2.39
5000	17.80	25.33	-13.46	-13.61	1.29	0.86	31.14	26.04	2.37
5200	17.75	25.24	-13.94	-12.97	1.28	0.85	31.62	25.83	2.44
5400	17.70	25.17	-14.14	-12.23	1.26	0.85	31.64	25.18	2.36
5600	17.63	25.12	-14.14	-11.51	1.25	0.84	31.42	25.29	2.33
5800	17.54	25.05	-13.97	-10.82	1.23	0.84	31.49	24.67	2.24
6000	17.45	25.04	-13.70	-10.21	1.22	0.83	31.55	24.14	2.34
6200	17.33	25.07	-13.39	-9.66	1.21	0.83	31.48	23.83	2.31
6400	17.18	25.04	-13.18	-9.24	1.20	0.83	31.45	23.51	2.33
6600	16.84	25.28	-13.21	-9.51	1.28	0.85	31.40	23.30	2.35
6800	16.92	25.00	-12.66	-8.91	1.20	0.84	32.08	23.09	2.34
7000	16.86	24.95	-12.54	-8.35	1.18	0.83	32.31	22.97	2.35
7200	16.75	24.91	-12.51	-8.10	1.17	0.82	32.41	22.85	2.36
7400	16.62	24.90	-12.43	-7.98	1.18	0.83	32.29	22.75	2.39
7600	16.47	24.88	-12.25	-8.01	1.19	0.83	32.24	22.87	2.46
7800	16.29	24.93	-11.73	-8.18	1.21	0.85	32.49	22.60	2.59
8000	16.04	25.02	-10.84	-8.57	1.25	0.89	32.85	22.89	2.72

Typical Performance Data

Definitions:
Input Return Loss = S11 (dB)
Gain(Power Gain) = S21 (dB)
Isolation = -S12 (dB)
Output Return Loss = S22 (dB)

TEST CONDITIONS: V_{DD} = 6.00V, V_{ladj} = 2.0V, I_{DD} = 107mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
400	20.87	28.50	-12.37	-8.98	1.27	0.69	41.00	24.99	3.22
600	20.93	28.31	-13.30	-10.06	1.27	0.72	41.65	24.98	3.13
800	20.89	28.25	-13.48	-10.79	1.27	0.75	40.54	24.91	3.10
1000	20.80	28.25	-13.40	-11.43	1.28	0.78	40.69	25.35	3.05
1200	20.68	28.20	-13.17	-12.11	1.29	0.80	38.01	25.16	3.09
1400	20.56	28.15	-12.90	-12.87	1.30	0.83	36.29	25.19	3.05
1600	20.41	28.10	-12.60	-13.67	1.30	0.85	35.39	25.24	3.00
1800	20.26	28.07	-12.31	-14.54	1.31	0.88	35.34	25.49	2.97
2000	20.14	28.00	-12.08	-15.56	1.32	0.89	34.95	25.56	2.95
2200	20.01	27.98	-11.88	-16.39	1.33	0.91	36.15	26.01	2.90
2400	19.86	27.94	-11.74	-17.28	1.35	0.92	34.70	25.65	2.85
2600	19.69	27.93	-11.75	-18.20	1.37	0.93	35.37	25.81	2.90
2800	19.51	27.89	-11.76	-19.26	1.39	0.94	34.99	25.76	2.94
3000	19.42	27.85	-11.56	-19.81	1.40	0.94	34.70	25.66	2.83
3200	19.39	27.69	-11.34	-19.54	1.38	0.94	35.15	25.97	2.77
3400	19.38	27.50	-11.31	-19.14	1.36	0.93	34.11	25.78	2.72
3600	19.34	27.33	-11.47	-18.79	1.35	0.92	34.72	25.90	2.63
3800	19.31	27.23	-11.76	-18.47	1.35	0.92	34.05	25.64	2.57
4000	19.27	27.07	-12.18	-18.13	1.34	0.91	33.78	25.51	2.53
4200	19.23	26.94	-12.72	-17.72	1.34	0.90	34.60	25.81	2.47
4400	19.17	26.84	-13.38	-17.12	1.34	0.89	34.45	25.69	2.46
4600	19.11	26.78	-14.03	-16.32	1.34	0.88	35.11	25.96	2.39
4800	19.04	26.61	-14.64	-15.43	1.33	0.87	34.52	25.76	2.37
5000	18.95	26.55	-15.02	-14.43	1.32	0.86	34.30	25.60	2.34
5200	18.86	26.45	-15.18	-13.49	1.31	0.85	34.47	25.40	2.31
5400	18.76	26.41	-14.99	-12.57	1.31	0.84	34.07	24.91	2.34
5600	18.66	26.35	-14.60	-11.75	1.29	0.84	34.04	25.03	2.34
5800	18.54	26.33	-14.12	-11.04	1.28	0.83	33.69	24.52	2.34
6000	18.42	26.28	-13.66	-10.43	1.27	0.83	33.66	24.11	2.31
6200	18.28	26.25	-13.26	-9.92	1.26	0.83	33.57	23.69	2.32
6400	18.11	26.33	-12.97	-9.53	1.27	0.84	33.28	23.34	2.31
6600	17.77	26.50	-13.04	-9.82	1.35	0.85	33.52	22.99	2.34
6800	17.83	26.23	-12.60	-9.35	1.27	0.85	33.80	22.73	2.32
7000	17.74	26.18	-12.44	-8.84	1.25	0.84	33.98	22.66	2.34
7200	17.61	26.14	-12.35	-8.62	1.25	0.84	34.54	22.43	2.35
7400	17.46	26.13	-12.19	-8.50	1.26	0.84	34.69	22.44	2.39
7600	17.27	26.15	-11.84	-8.52	1.28	0.85	34.93	22.56	2.46
7800	17.05	26.18	-11.16	-8.66	1.30	0.87	34.96	22.39	2.61
8000	16.76	26.34	-10.17	-8.98	1.35	0.91	35.16	22.78	2.74

Typical Performance Data

Definitions:
Input Return Loss = S11 (dB)
Gain(Power Gain) = S21 (dB)
Isolation = -S12 (dB)
Output Return Loss = S22 (dB)

TEST CONDITIONS: V_{DD} = 6.00V, V_{ladj} = 3.0V, I_{DD} = 144mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
400	21.28	29.01	-12.21	-8.45	1.27	0.68	40.53	25.09	3.25
600	21.34	28.95	-13.07	-9.35	1.28	0.71	39.88	25.14	3.18
800	21.29	28.84	-13.25	-9.96	1.28	0.74	39.17	25.03	3.12
1000	21.20	28.83	-13.19	-10.53	1.29	0.76	39.09	25.47	3.09
1200	21.09	28.79	-13.01	-11.13	1.29	0.79	37.02	25.19	3.13
1400	20.96	28.72	-12.78	-11.80	1.30	0.82	35.69	25.21	3.10
1600	20.83	28.64	-12.54	-12.54	1.30	0.84	34.90	25.32	3.04
1800	20.68	28.62	-12.30	-13.35	1.32	0.87	34.66	25.49	3.02
2000	20.56	28.50	-12.13	-14.31	1.32	0.88	34.25	25.58	2.98
2200	20.44	28.49	-11.98	-15.15	1.33	0.90	34.81	25.95	2.96
2400	20.29	28.44	-11.89	-16.09	1.35	0.91	33.98	25.70	2.94
2600	20.12	28.42	-11.93	-17.11	1.38	0.92	34.25	25.86	2.95
2800	19.95	28.35	-12.01	-18.35	1.40	0.93	33.98	25.89	3.01
3000	19.86	28.29	-11.85	-19.32	1.40	0.94	33.81	25.79	2.90
3200	19.83	28.09	-11.66	-19.53	1.38	0.93	34.01	26.10	2.82
3400	19.81	27.97	-11.65	-19.40	1.37	0.93	33.45	25.93	2.78
3600	19.77	27.81	-11.83	-19.13	1.36	0.92	33.71	25.97	2.70
3800	19.73	27.65	-12.13	-18.81	1.35	0.91	33.34	25.75	2.63
4000	19.68	27.51	-12.58	-18.42	1.35	0.90	33.18	25.56	2.58
4200	19.63	27.41	-13.14	-17.86	1.35	0.90	33.61	25.82	2.53
4400	19.57	27.27	-13.79	-17.12	1.34	0.88	33.54	25.76	2.49
4600	19.49	27.10	-14.39	-16.21	1.33	0.87	33.94	25.97	2.45
4800	19.40	27.02	-14.97	-15.23	1.33	0.86	33.89	25.77	2.41
5000	19.31	26.96	-15.24	-14.20	1.33	0.85	33.99	25.57	2.42
5200	19.20	26.85	-15.23	-13.25	1.32	0.84	33.90	25.44	2.42
5400	19.10	26.78	-14.90	-12.34	1.31	0.84	33.59	24.97	2.40
5600	18.98	26.74	-14.42	-11.55	1.30	0.83	33.69	25.09	2.38
5800	18.86	26.72	-13.87	-10.85	1.29	0.83	33.28	24.58	2.36
6000	18.73	26.72	-13.35	-10.27	1.28	0.83	33.25	24.16	2.37
6200	18.58	26.65	-12.96	-9.77	1.27	0.83	33.25	23.74	2.37
6400	18.40	26.70	-12.67	-9.40	1.28	0.83	33.11	23.36	2.38
6600	18.06	26.94	-12.74	-9.70	1.36	0.85	33.30	23.02	2.39
6800	18.12	26.61	-12.37	-9.26	1.29	0.84	33.41	22.77	2.39
7000	18.03	26.54	-12.20	-8.78	1.26	0.84	33.53	22.72	2.40
7200	17.89	26.51	-12.11	-8.57	1.26	0.84	33.87	22.59	2.41
7400	17.73	26.49	-11.94	-8.45	1.27	0.84	33.96	22.71	2.46
7600	17.54	26.54	-11.58	-8.47	1.30	0.85	34.31	22.86	2.54
7800	17.30	26.58	-10.88	-8.58	1.32	0.87	34.43	22.70	2.67
8000	17.00	26.70	-9.91	-8.87	1.36	0.90	34.38	23.14	2.82

Typical Performance Data

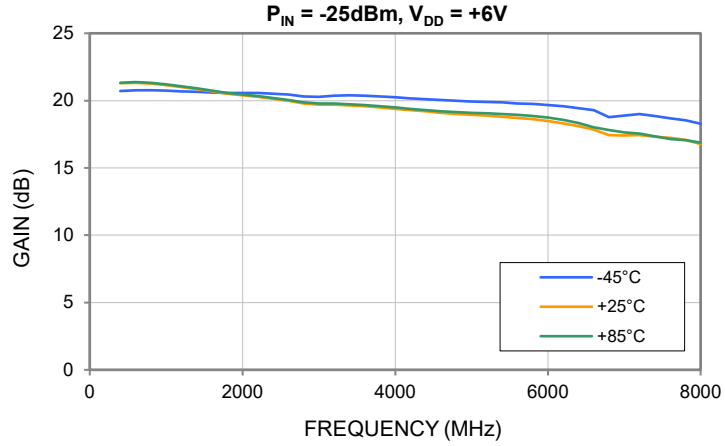
Definitions:
Input Return Loss = S11 (dB)
Gain(Power Gain) = S21 (dB)
Isolation = -S12 (dB)
Output Return Loss = S22 (dB)

TEST CONDITIONS: V_{DD} = 6.00V , V_{ladj} = 4.0V, I_{DD} = 174mA @ Temperature = +25°C

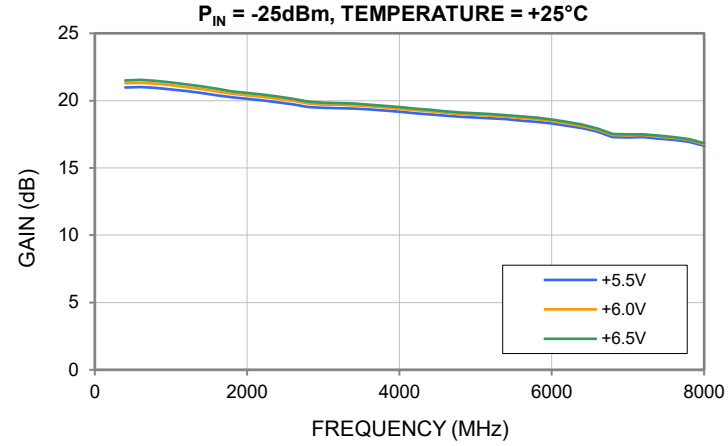
FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
400	21.49	29.27	-12.14	-8.33	1.27	0.68	40.82	25.15	3.33
600	21.54	29.19	-12.97	-9.18	1.28	0.71	40.40	25.18	3.24
800	21.49	29.09	-13.15	-9.76	1.28	0.73	39.46	25.05	3.22
1000	21.40	29.11	-13.09	-10.31	1.29	0.76	39.32	25.50	3.16
1200	21.29	29.02	-12.90	-10.88	1.29	0.79	37.40	25.20	3.19
1400	21.16	28.97	-12.69	-11.55	1.30	0.81	35.99	25.16	3.16
1600	21.03	28.90	-12.47	-12.26	1.31	0.84	35.11	25.27	3.10
1800	20.88	28.86	-12.24	-13.06	1.32	0.86	34.90	25.52	3.09
2000	20.76	28.80	-12.08	-13.97	1.33	0.88	34.49	25.61	3.04
2200	20.64	28.69	-11.94	-14.79	1.33	0.90	35.00	26.01	3.01
2400	20.49	28.63	-11.88	-15.70	1.35	0.91	34.18	25.74	2.98
2600	20.33	28.65	-11.94	-16.72	1.38	0.92	34.34	25.92	3.01
2800	20.16	28.60	-12.03	-17.95	1.40	0.93	34.18	25.95	3.04
3000	20.07	28.50	-11.90	-18.96	1.40	0.93	33.92	25.86	2.91
3200	20.04	28.38	-11.72	-19.26	1.39	0.94	34.17	26.16	2.90
3400	20.02	28.17	-11.73	-19.24	1.37	0.93	33.61	25.96	2.84
3600	19.98	28.01	-11.92	-18.99	1.36	0.92	33.88	26.02	2.76
3800	19.94	27.85	-12.24	-18.72	1.35	0.91	33.54	25.73	2.68
4000	19.88	27.68	-12.69	-18.27	1.34	0.90	33.25	25.58	2.63
4200	19.83	27.59	-13.26	-17.70	1.35	0.89	33.70	25.84	2.59
4400	19.76	27.38	-13.89	-16.93	1.33	0.88	33.68	25.72	2.58
4600	19.69	27.30	-14.50	-16.02	1.33	0.87	34.13	26.00	2.50
4800	19.60	27.23	-15.03	-15.04	1.34	0.86	34.10	25.81	2.47
5000	19.49	27.12	-15.21	-14.02	1.33	0.85	34.40	25.57	2.44
5200	19.39	27.05	-15.16	-13.06	1.32	0.84	34.31	25.39	2.40
5400	19.28	26.99	-14.75	-12.17	1.31	0.83	33.88	24.90	2.44
5600	19.16	26.96	-14.23	-11.38	1.30	0.83	34.03	25.02	2.45
5800	19.03	26.93	-13.65	-10.68	1.29	0.83	33.58	24.50	2.46
6000	18.90	26.90	-13.14	-10.11	1.28	0.82	33.59	24.08	2.42
6200	18.75	26.90	-12.74	-9.63	1.28	0.83	33.62	23.71	2.44
6400	18.57	26.89	-12.45	-9.26	1.28	0.83	33.48	23.26	2.41
6600	18.23	27.00	-12.52	-9.57	1.35	0.85	33.57	23.01	2.45
6800	18.29	26.82	-12.19	-9.11	1.29	0.84	33.72	22.77	2.44
7000	18.19	26.73	-12.05	-8.65	1.26	0.83	33.80	22.73	2.46
7200	18.05	26.71	-11.96	-8.43	1.26	0.83	34.16	22.72	2.49
7400	17.89	26.72	-11.79	-8.32	1.28	0.83	34.22	22.75	2.52
7600	17.70	26.66	-11.40	-8.32	1.29	0.84	34.51	23.00	2.61
7800	17.46	26.80	-10.73	-8.41	1.32	0.86	34.71	22.85	2.72
8000	17.15	26.90	-9.76	-8.68	1.36	0.90	34.64	23.16	2.89

Typical Performance Curves

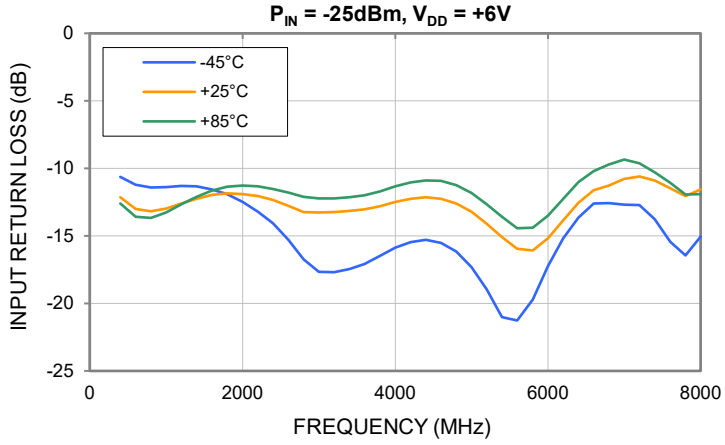
GAIN vs. TEMPERATURE,
P_{IN} = -25dBm, V_{DD} = +6V



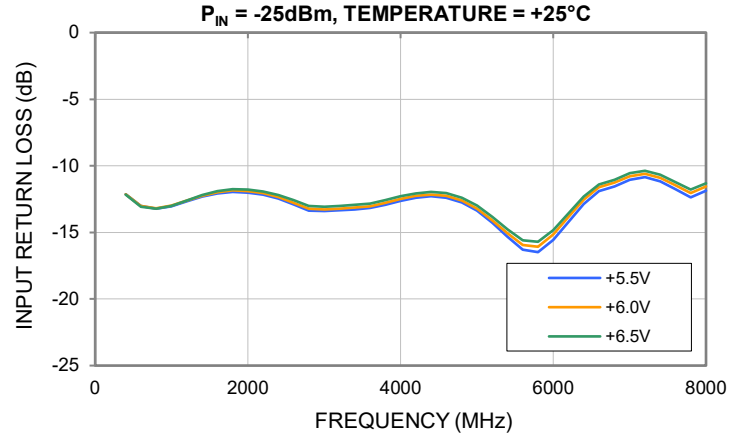
GAIN vs. DEVICE VOLTAGE,
P_{IN} = -25dBm, TEMPERATURE = +25°C



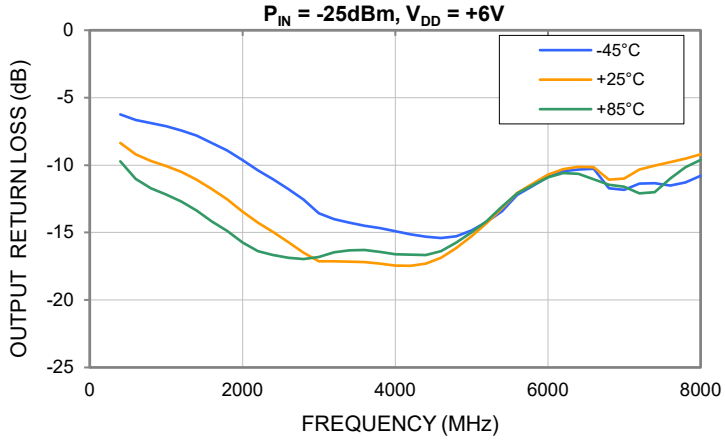
INPUT RETURN LOSS vs.TEMPERATURE,
P_{IN} = -25dBm, V_{DD} = +6V



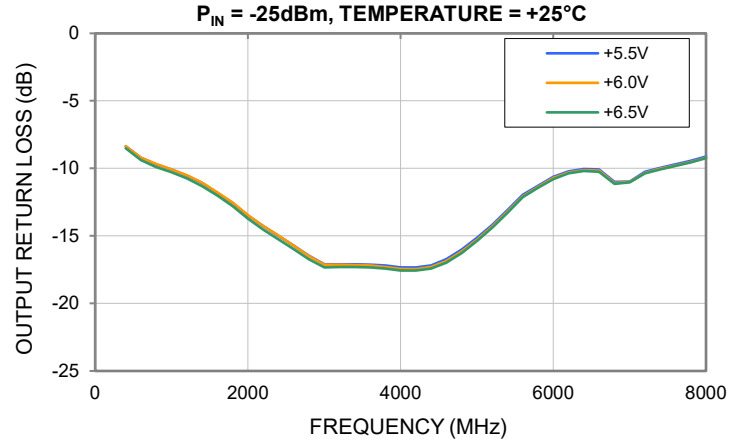
INPUT RETURN LOSS vs. DEVICE VOLTAGE,
P_{IN} = -25dBm, TEMPERATURE = +25°C



OUTPUT RETURN LOSS vs. TEMPERATURE,
P_{IN} = -25dBm, V_{DD} = +6V

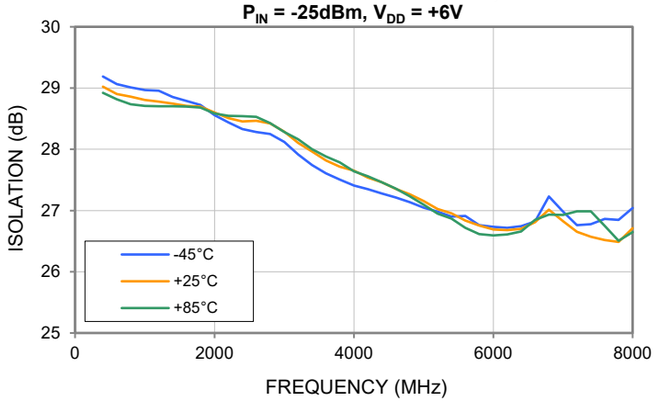


OUTPUT RETURN LOSS vs. DEVICE VOLTAGE,
P_{IN} = -25dBm, TEMPERATURE = +25°C

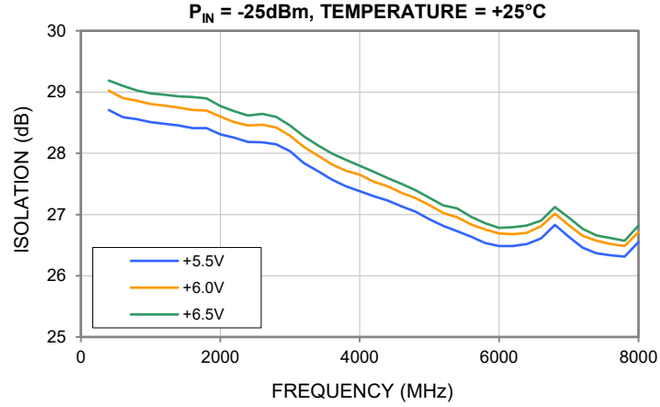


Typical Performance Curves

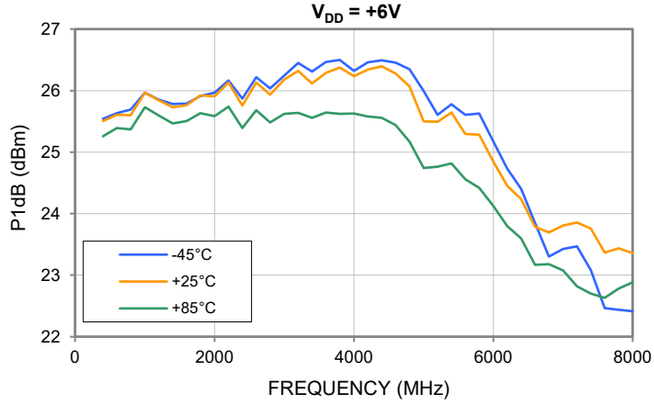
ISOLATION vs. TEMPERATURE,
P_{IN} = -25dBm, V_{DD} = +6V



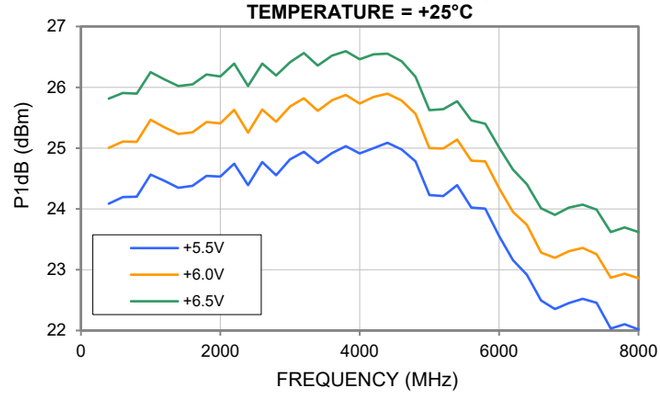
ISOLATION vs. DEVICE VOLTAGE,
P_{IN} = -25dBm, TEMPERATURE = +25°C



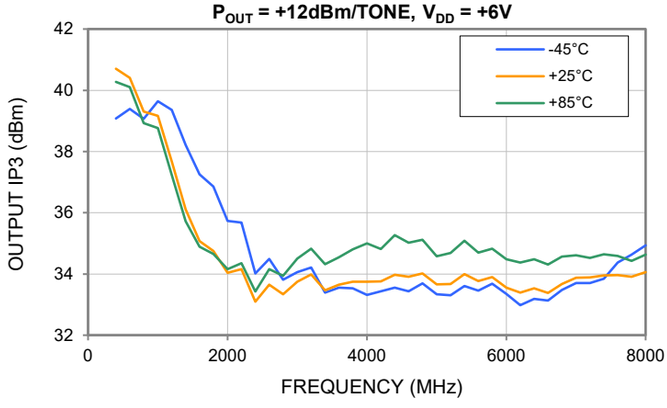
P1dB vs. TEMPERATURE,
V_{DD} = +6V



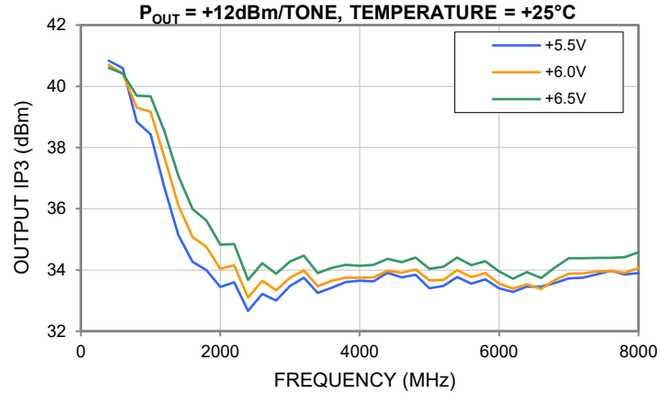
P1dB vs. DEVICE VOLTAGE,
TEMPERATURE = +25°C



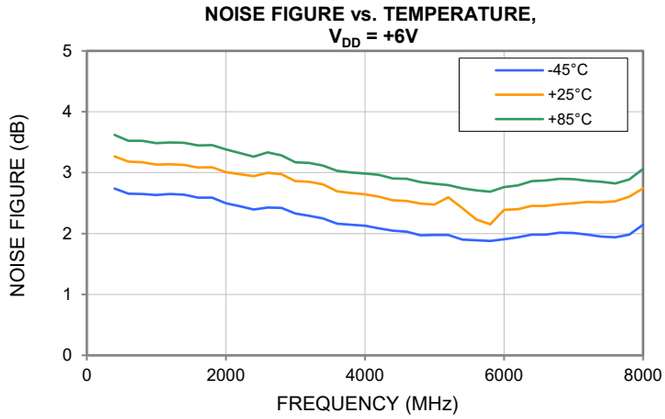
OUTPUT IP3 vs. TEMPERATURE,
P_{OUT} = +12dBm/TONE, V_{DD} = +6V

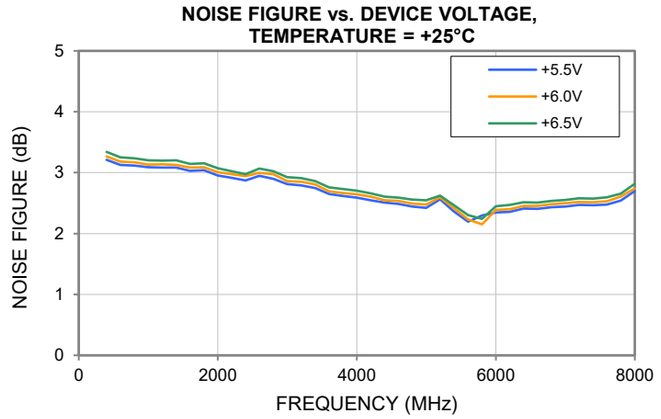


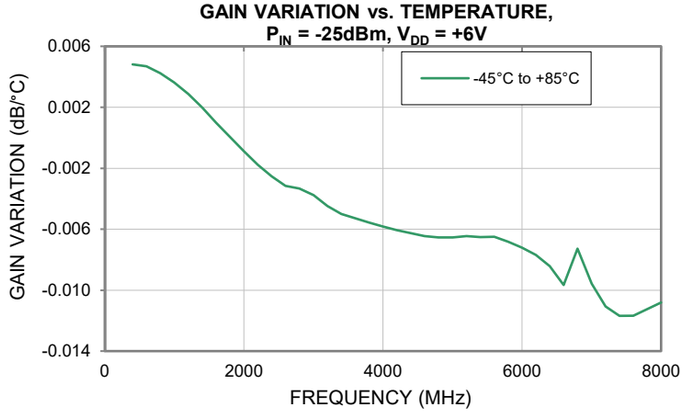
OUTPUT IP3 vs. DEVICE VOLTAGE,
P_{OUT} = +12dBm/TONE, TEMPERATURE = +25°C



Typical Performance Curves

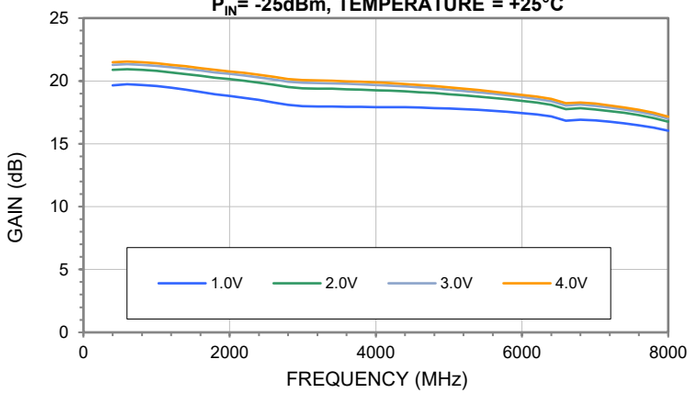




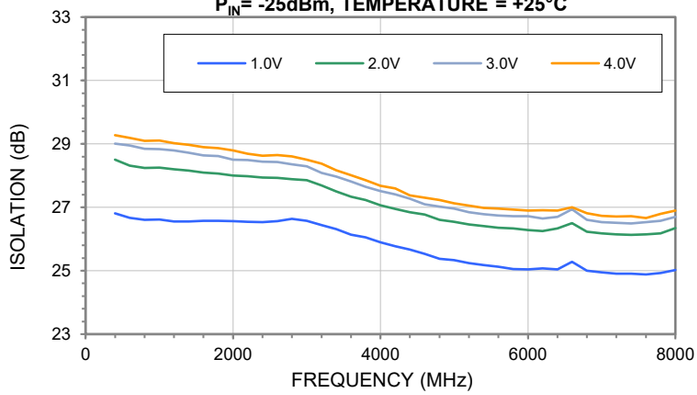


Typical Performance Curves

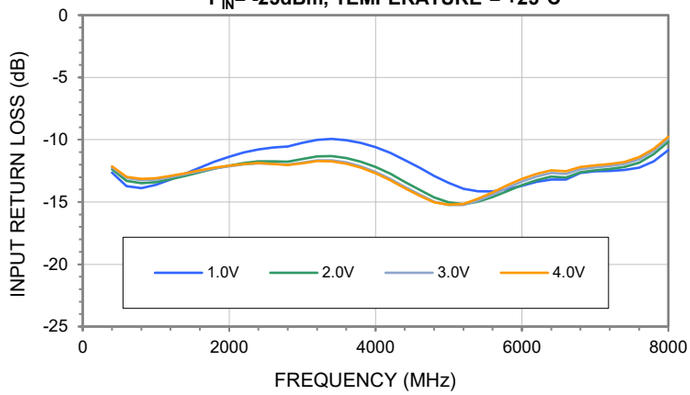
GAIN vs. V_{ladj}
P_{IN}= -25dBm, TEMPERATURE = +25°C



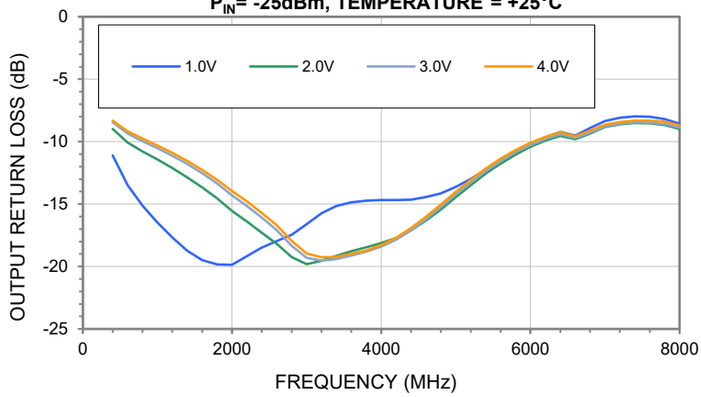
ISOLATION vs. V_{ladj}
P_{IN}= -25dBm, TEMPERATURE = +25°C



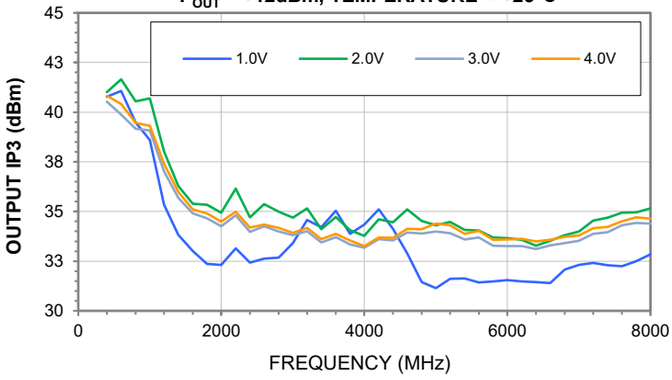
INPUT RETURN LOSS vs. V_{ladj}
P_{IN}= -25dBm, TEMPERATURE = +25°C



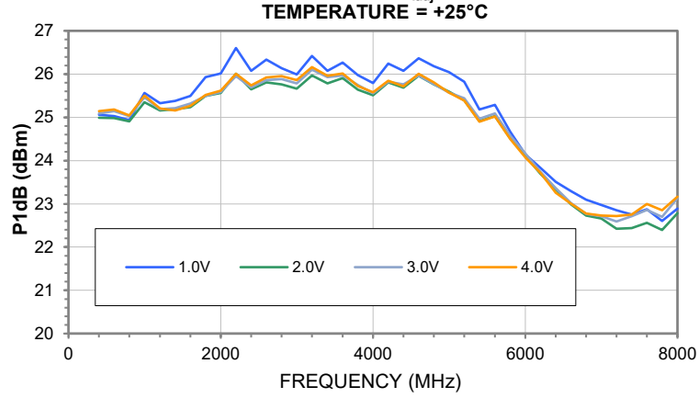
OUTPUT RETURN LOSS vs. V_{ladj}
P_{IN}= -25dBm, TEMPERATURE = +25°C



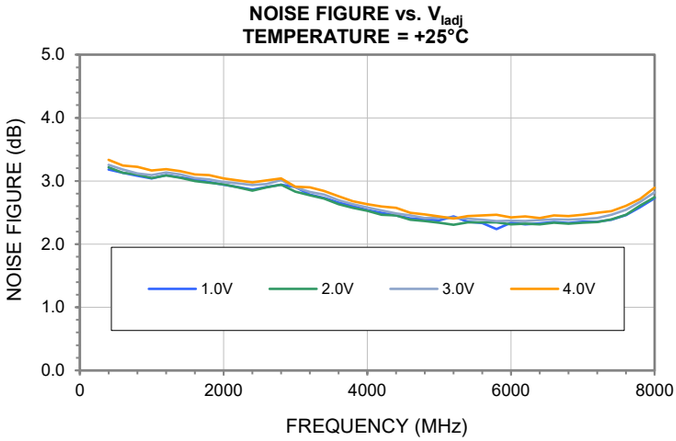
OUTPUT IP3 vs. V_{ladj}
P_{OUT} = +12dBm, TEMPERATURE = +25°C

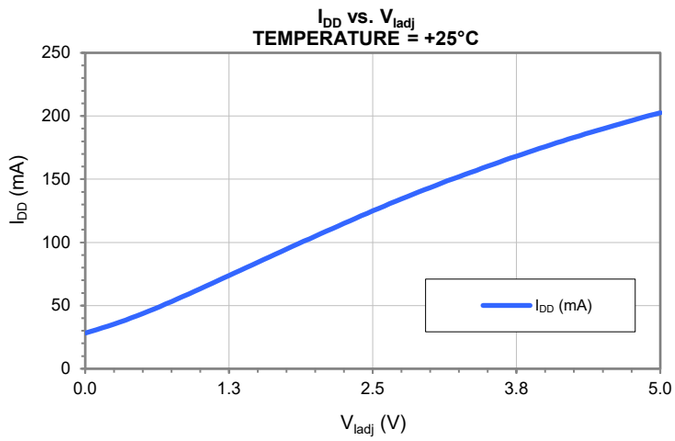


P1dB vs. V_{ladj}
TEMPERATURE = +25°C



Typical Performance Curves

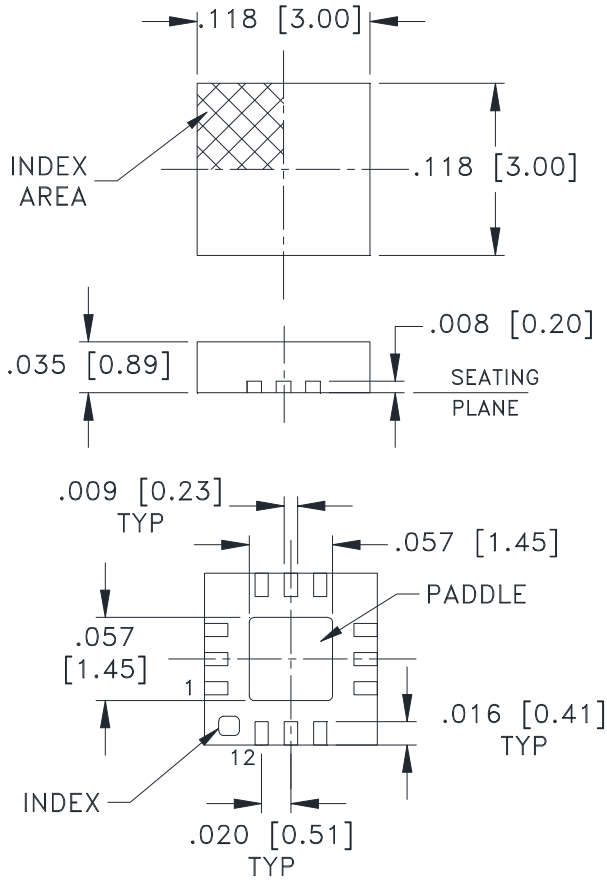


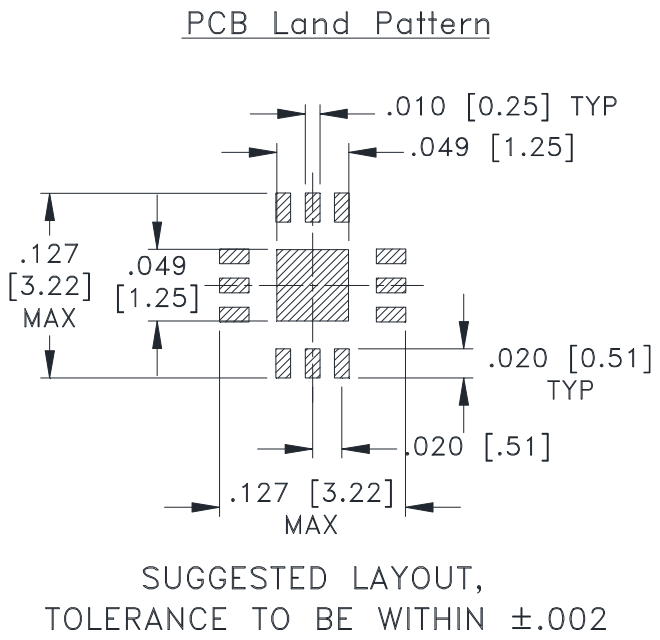


Case Style DQ

DQ1225

Outline Dimensions





Weight: .02 Grams

Dimensions are in inches (mm). Tolerances: 2Pl. ± .01; 3 Pl. ± .004

Notes:

1. Case material: Plastic.
2. Termination finish:
   - For RoHS Case Styles: Tin-Silver alloy plate over Nickel barrier or Matte-Tin. All models, (+) suffix. See Data sheet.
   - For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

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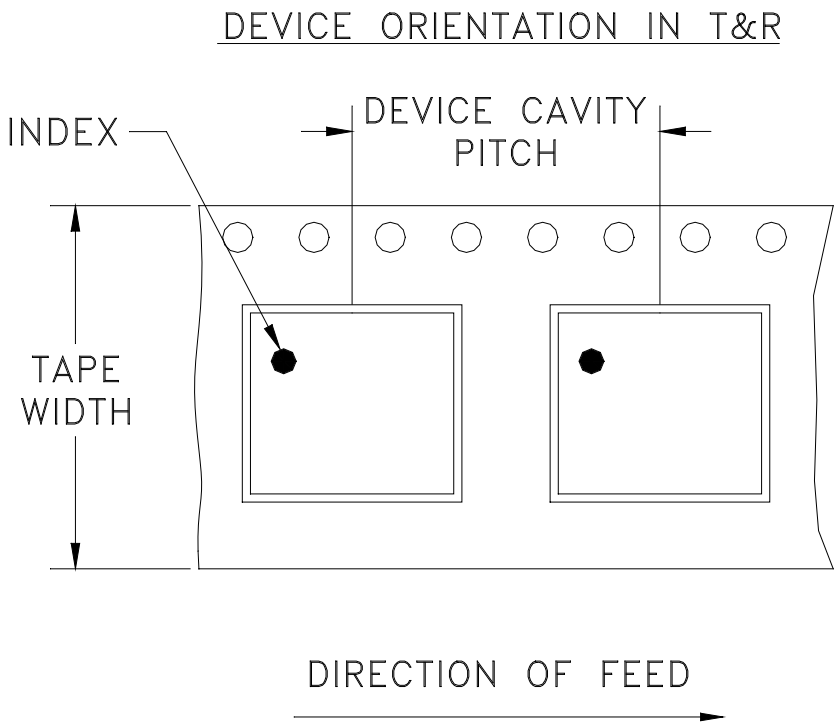
Tape & Reel Packaging TR-F66



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel see note	
8	4	7	Small quantity standard	20
				50
				100
				200
				500
		7	Standard	1000, 2000, 3000

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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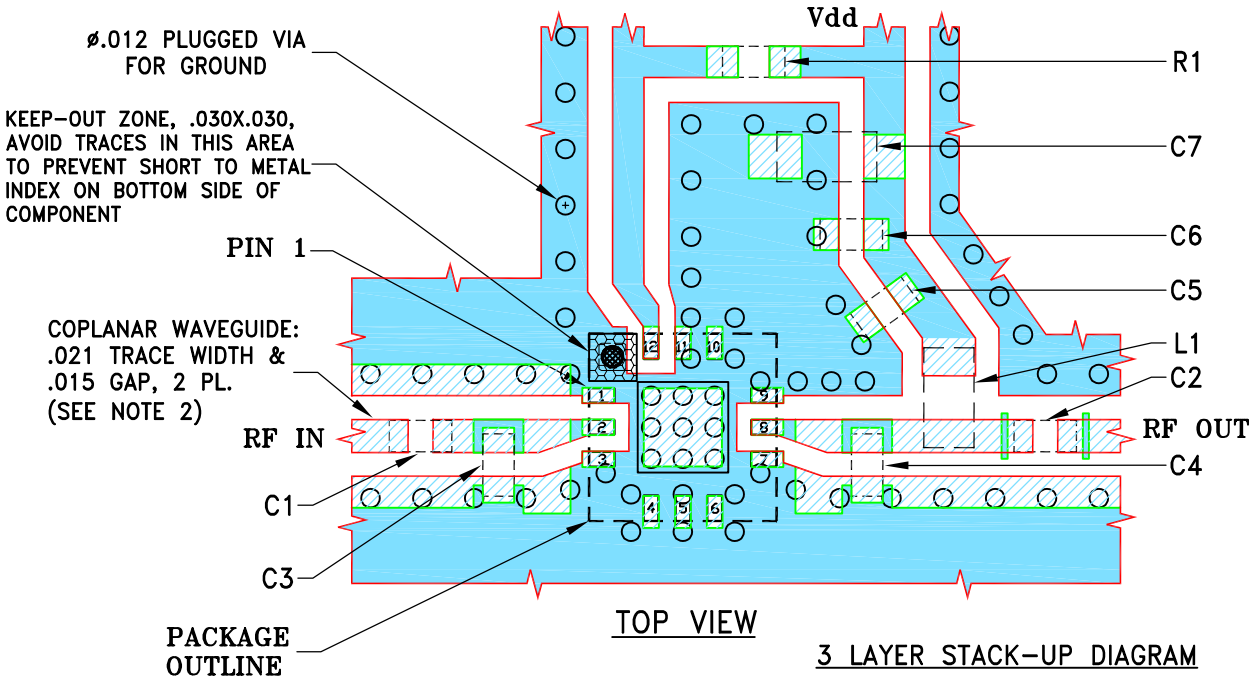
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	ECO-018697	NEW RELEASE	07/28/23	ITG	IL
A	NPO-003730	UPDATE TB P/N	07/27/23	IK	CY

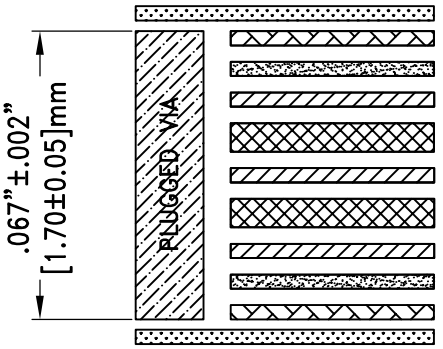
SUGGESTED MOUNTING CONFIGURATION FOR DQ1225 CASE STYLE



TOP VIEW

COMPONENT	SIZE
C1...C6	0402
C7,L1	0603
R1	0402

3 LAYER STACK-UP DIAGRAM



SOLDER MASK (SM1)
IMMERSION GOLD (0.025um-0.075um)
ELECTROLESS NICKEL (3um-6um)
L1 COPPER: 0.5 OZ (0.7mil)
BASE: RO4350B (10mil)
L2 COPPER: 0.5 OZ (0.7mil)
BASE: FR4 (1.4mm)
L3 COPPER: 0.5 OZ (0.7mil)
ELECTROLESS NICKEL (3um-6um)
IMMERSION GOLD (0.025um-0.075um)
SOLDER MASK (SM2)

NOTES:

1. PCB IS MULTILAYER PCB, SEE STACK-UP DIAGRAM.
2. TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010"±.001"; COPPER: 1/2 OZ. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
3. CHIP COMPONENT FOOT PRINTS SHOWN FOR REFERENCE. FOR COMPONENT VALUES REFER TO TB-PMA3-83LP+.
4. COPPER LAYERS L2 & L3 OF THE PCB ARE CONTINUOUS GROUND PLANES.

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	DRAWN	ITG	07/28/23
TOLERANCES ON:	CHECKED	GF	07/28/23
2 PL DECIMALS ±	APPROVED	IL	07/28/23
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

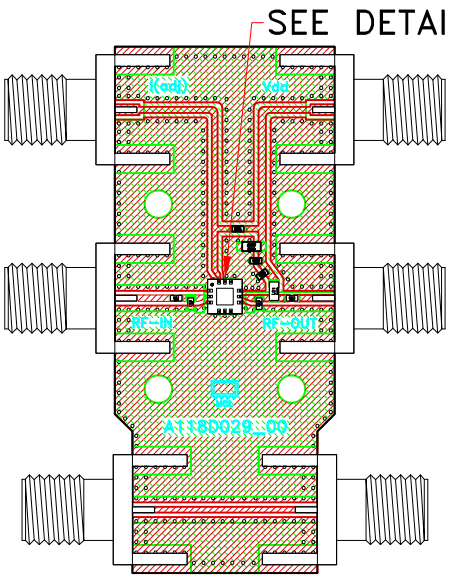
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

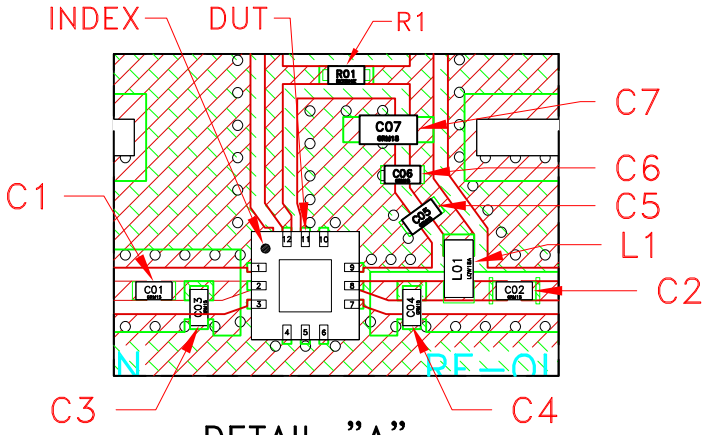
PL, DQ1225, TB-PMA3-83LPC+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-757	A

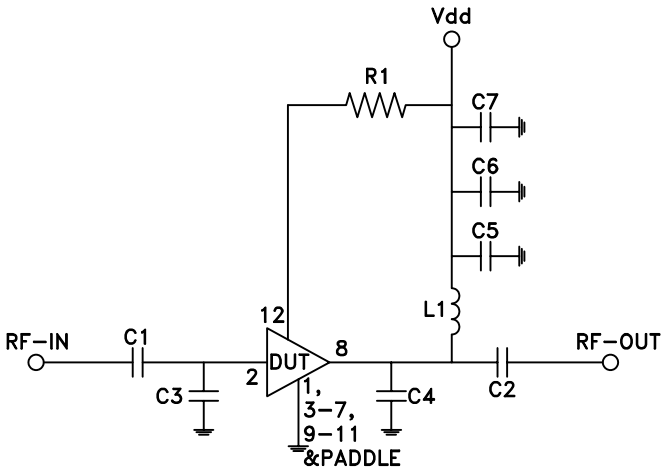
FILE:	SCALE:	SHEET:
98-PL-757	8:1	1 OF 1

Evaluation Board and Circuit





DETAIL "A"
LOCATION OF COMPONENTS
ON THE PCB
(SCALE 3:1)



SCHEMATIC DIAGRAM

Component	Size	Value	Part Number	Manufacturer
C1,C2	0402	100pF	GRM1555C1H101JA01D	Murata
C3	0402	0.4pF	GJM1555C1HR40WB01D	Murata
C4	0402	0.1pF	GJM1555C1HR10WB01D	Murata
C5	0402	10pF	GRM1555C1H100JA01D	Murata
C6	0402	1uF	GRM155C71A105KE11D	Murata
C7	0603	10uF	GRM188D71A106MA73J	Murata
L1	0603	33nH	0603CS-33NXJEW	Coilcraft
R1	0402	2.2KOhm	RK73H1ETTP2201F	KOA Speer

Notes:

1. 50 Ohm SMA Female Connectors.
2. PCB Material: Roger RO4350B or equivalent, Dielectric constant=3.5, Thickness=0.010 inch

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Environmental Specifications **ENV08T1**

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