MMIC SURFACE MOUNT

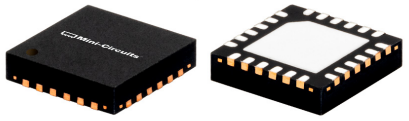
Wideband Amplifier

LVA-6183PN+

50Ω 6 to 18 GHz Ultra-Low Phase Noise

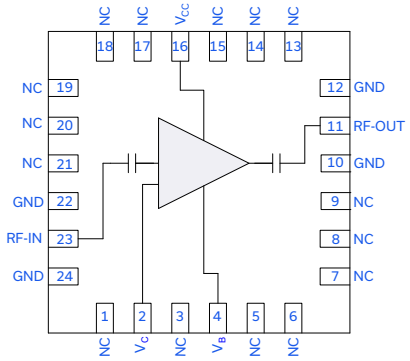
THE BIG DEAL

- Wide Bandwidth, 6 to 18 GHz
- Ultra-Low Phase Noise, Typ. -165 dBc/Hz @ 10 kHz Offset
- Output P1dB, Typ. +19.6 dBm
- Output IP3, Typ. +28.7 dBm
- 4x4 mm 24-Lead QFN-Style Package



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



APPLICATIONS

- Test and Measurement
- Radar, EW, and ECM Defense Systems
- 5G MIMO and Backhaul Radio Systems
- Signal Distribution Networks

PRODUCT OVERVIEW

Mini-Circuits' LVA-6183PN+ is an ultra-low phase noise distributed MMIC amplifier fabricated on a GaAs HBT process. Operating from 6 to 18 GHz, this amplifier features high dynamic range and ultra-low phase noise along with 19.9 dB gain, +19.6 dBm P1dB, +28.7 dBm OIP3, and 4.1 dB noise figure. The LVA-6183PN+ is ideal for use with low noise signal sources and highly sensitive transceiver signal chains for commercial, industrial, and defense applications.

KEY FEATURES

Features	Advantages
Wide Bandwidth: 6 to 18 GHz	Supports a broad variety of applications including Test and Measurement Equipment, 5G Microwave Radio, Radar, and Electronic Warfare Systems.
Ultra-Low Phase Noise: -165 dBc/Hz @ 10 kHz Offset	Preserves signal quality by providing amplification with minimal degradation in system phase noise.
High Dynamic Range: • +19.6 dBm P1dB • 19.9 dB Gain	The MMIC amplifier's unique combination of ultra-low phase noise, high output IP3, high gain, and low noise figure enables optimum performance in sensitive high dynamic range receivers.
4x4 mm 24-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.

REV. A
ECO-025575
LVA-6183PN+
MCL NY
250530

Wideband Amplifier LVA-6183PN+

50Ω 6 to 18 GHz Ultra-Low Phase Noise

ELECTRICAL SPECIFICATIONS[1] AT +25°C, V_{CC} = +6 V, V_C = +6 V, V_B = +5.4 V, & Zo = 50Ω UNLESS NOTED OTHERWISE

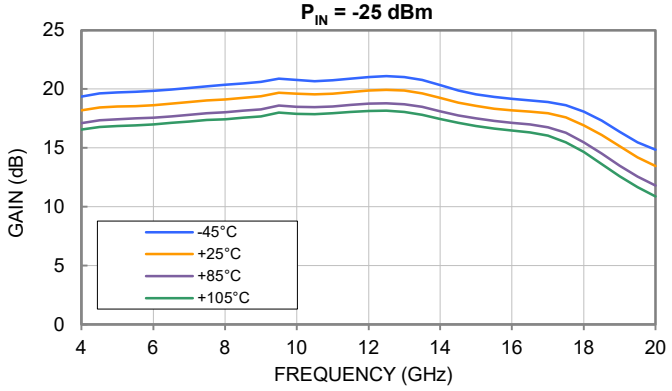
Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range		6		18	GHz
Additive Phase Noise[2]	6		-165		dBc/Hz
Gain	6	17.9	18.7		dB
	9	18.6	19.4		
	12	19.1	19.9		
	15	17.7	18.6		
	18	15.9	16.9		
Input Return Loss	6		12		dB
	9		13		
	12		17		
	15		11		
	18		20		
Output Return Loss	6		15		dB
	9		12		
	12		19		
	15		18		
	18		15		
Isolation	6-18		41.3		dB
Output Power at 1 dB Compression (P1dB)	6		+20.3		dBm
	9		+20.3		
	12		+19.6		
	15		+17.5		
	18		+14.6		
Output Power at 3 dB Compression (P3dB)	6		+23.0		dBm
	9		+22.3		
	12		+21.3		
	15		+20.1		
	18		+17.5		
Output Third-Order Intercept Point (P_{OUT} = 0 dBm/Tone)	6		+29.2		dBm
	9		+29.2		
	12		+28.7		
	15		+26.5		
	18		+23.3		
Input Third-Order Intercept Point (P_{OUT} = 0 dBm/Tone)	6		+10.5		dBm
	9		+9.8		
	12		+8.8		
	15		+7.8		
	18		+6.4		
Noise Figure	6		4.6		dB
	9		4.3		
	12		4.1		
	15		4.9		
	18		5.7		
Device Operating Voltage (V_{CC})			+6		V
Device Operating Current (I_{CC})[3]			123		mA
Collector Voltage (V_C)			+6		V
Collector Current (I_C)			7.5		mA
Base Voltage (V_B)[4]			+5.4		V
Base Current (I_B)			12.4		mA
Device Current Variation Vs. Temperature[5]			12.2		µA/°C
Device Current Variation Vs. Voltage[6]			-0.0044		mA/mV

1. Tested in Mini-Circuits Characterization Test Board TB-LVA-6183PNC+. See Figure 2. De-embedded to the device reference plane.
2. P_{IN} = +3 dBm and Offset Frequency = 10 kHz
3. Current at P_{IN} = -25 dBm. Current increases to 180 mA at P3dB.
4. 50Ω series resistor may be used to create V_B = +5.4 V from available +6 V source.
5. (Current at +105°C – Current at -45°C)/(+150°C)
6. (Current at +6.25 V - Current at +5.75 V) / (+6.25 V - +5.75 V)

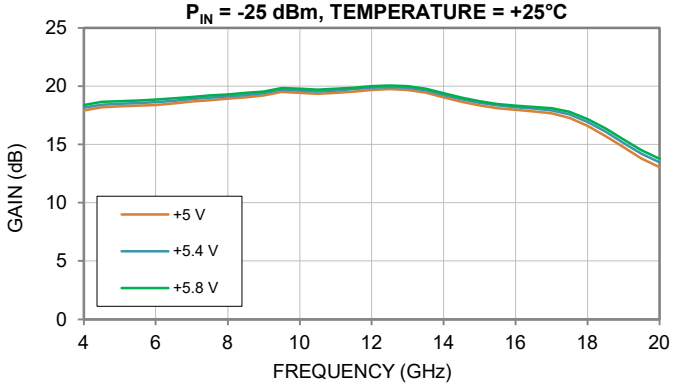
TYPICAL PERFORMANCE GRAPHS

Note: The following data was taken on the Mini-Circuits Characterization Test Board TB-LVA-6183PNC+ (Figure 2). All data taken at nominal conditions V_{CC} = +6 V, V_C = +6 V, and V_B = +5.4 V unless noted otherwise.

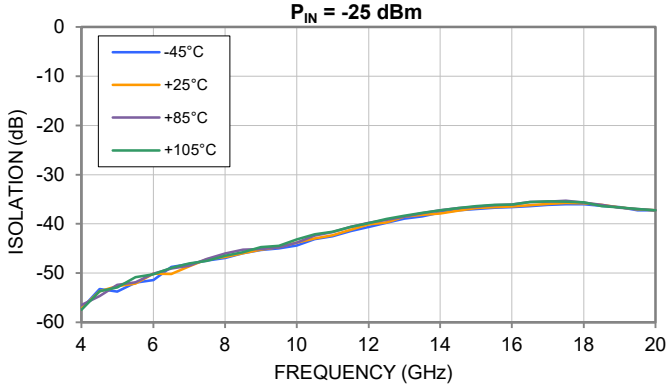
GAIN vs. TEMPERATURE
P_{IN} = -25 dBm



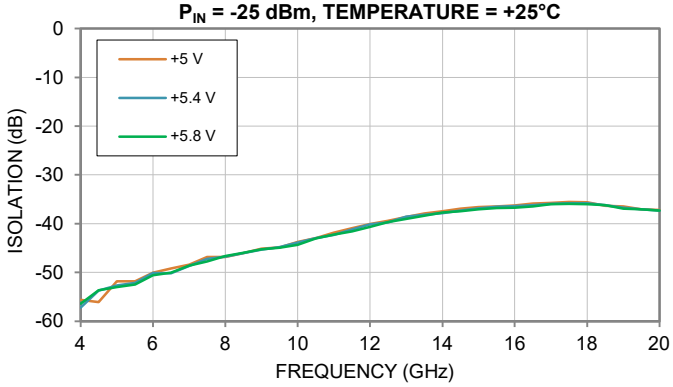
GAIN vs. BASE VOLTAGE (V_B)
P_{IN} = -25 dBm, TEMPERATURE = +25°C



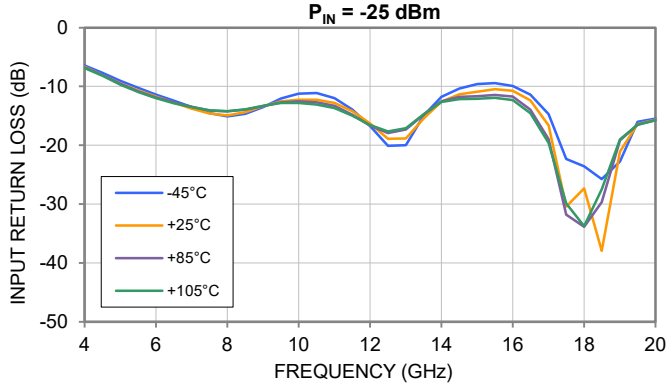
ISOLATION vs. TEMPERATURE
P_{IN} = -25 dBm



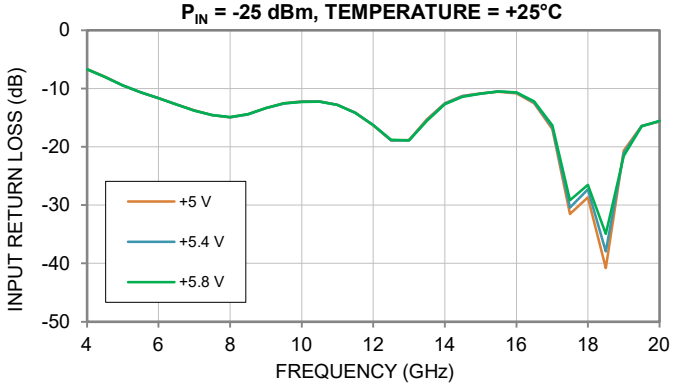
ISOLATION vs. BASE VOLTAGE (V_B)
P_{IN} = -25 dBm, TEMPERATURE = +25°C



INPUT RETURN LOSS vs. TEMPERATURE
P_{IN} = -25 dBm



INPUT RETURN LOSS vs. BASE VOLTAGE (V_B)
P_{IN} = -25 dBm, TEMPERATURE = +25°C



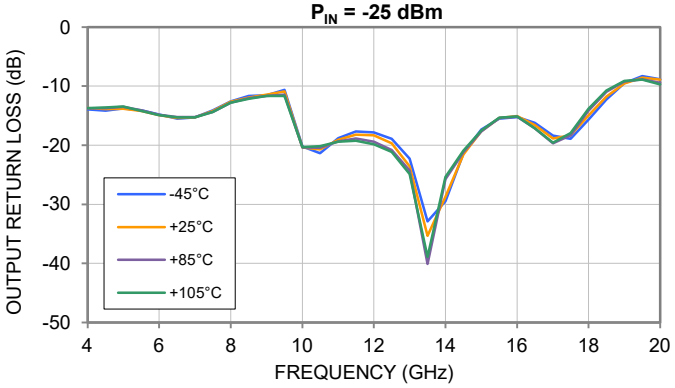
Wideband Amplifier LVA-6183PN+

50Ω 6 to 18 GHz Ultra-Low Phase Noise

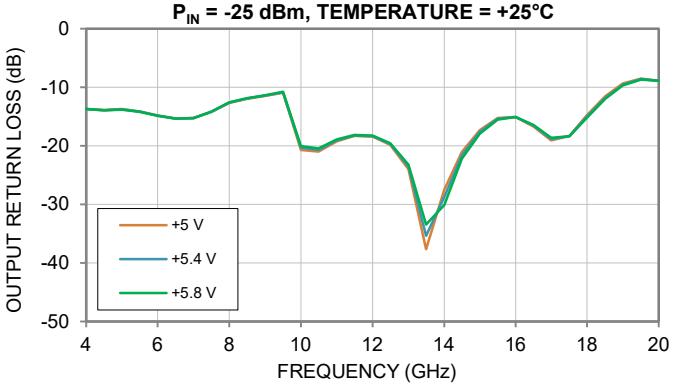
TYPICAL PERFORMANCE GRAPHS

Note: The following data was taken on the Mini-Circuits Characterization Test Board TB-LVA-6183PNC+ (Figure 2). All data taken at nominal conditions V_{CC} = +6 V, V_C = +6 V, and V_B = +5.4 V unless noted otherwise.

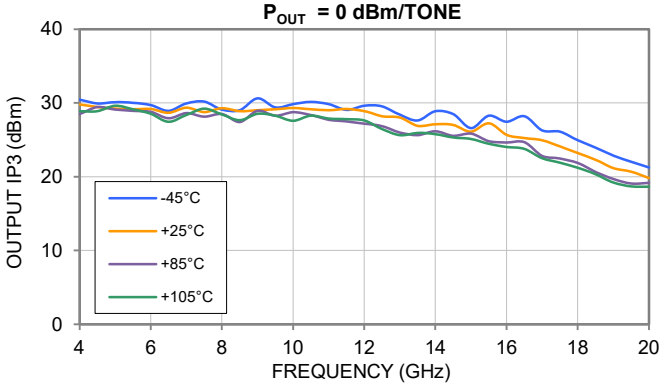
OUTPUT RETURN LOSS vs. TEMPERATURE
P_{IN} = -25 dBm



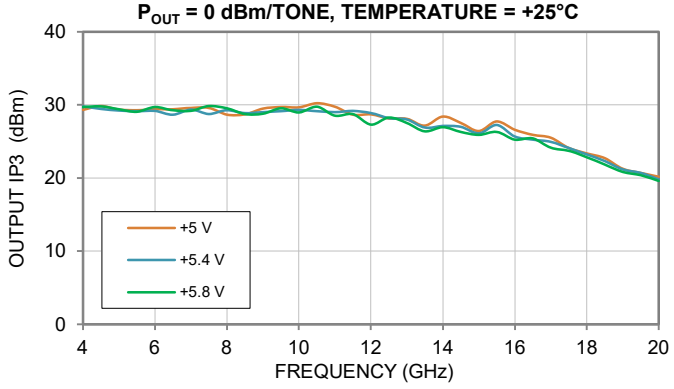
OUTPUT RETURN LOSS vs. BASE VOLTAGE (V_B)
P_{IN} = -25 dBm, TEMPERATURE = +25°C



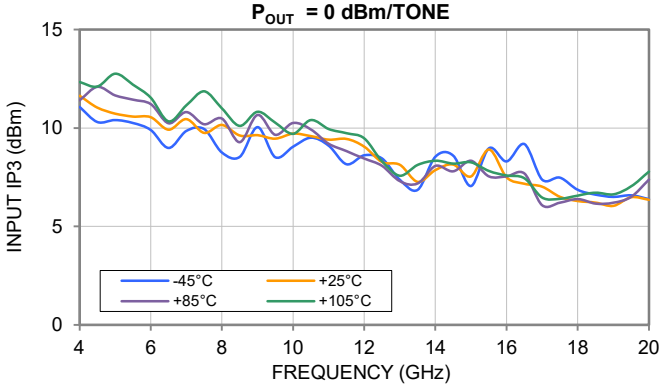
OUTPUT IP3 vs. TEMPERATURE
P_{OUT} = 0 dBm/TONE



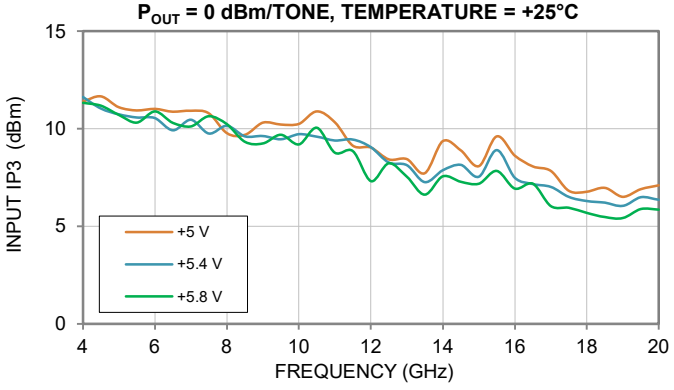
OUTPUT IP3 vs. BASE VOLTAGE (V_B)
P_{OUT} = 0 dBm/TONE, TEMPERATURE = +25°C



INPUT IP3 vs. TEMPERATURE
P_{OUT} = 0 dBm/TONE

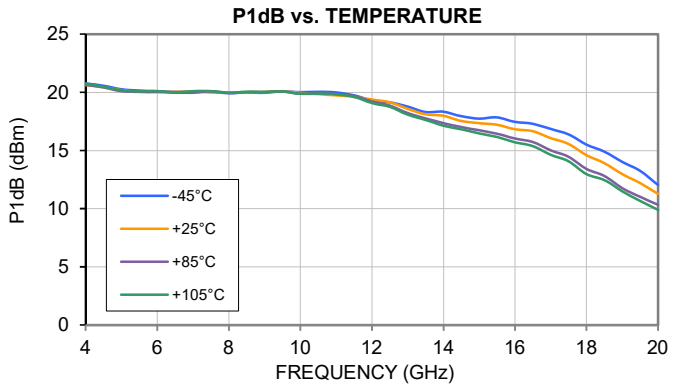


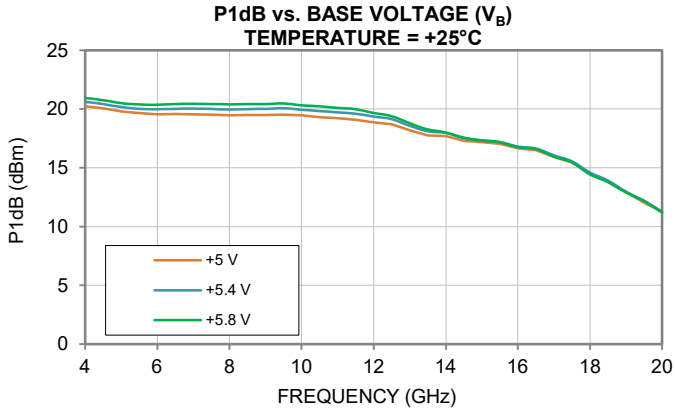
INPUT IP3 vs. BASE VOLTAGE (V_B)
P_{OUT} = 0 dBm/TONE, TEMPERATURE = +25°C

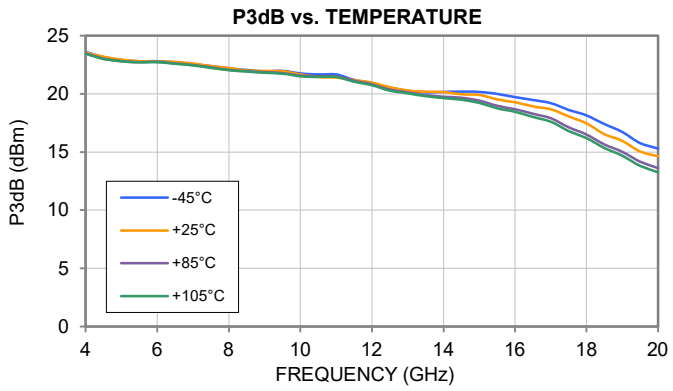


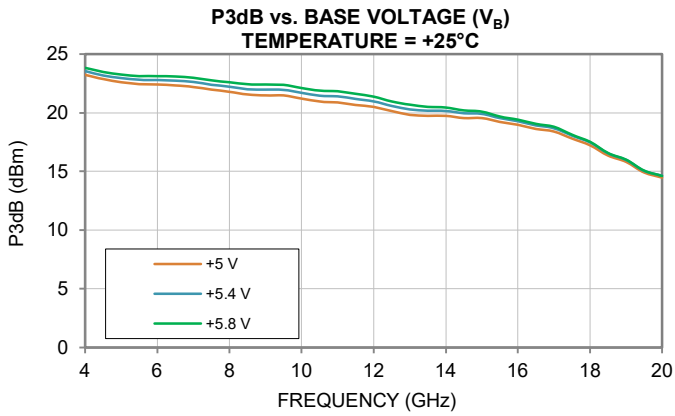
TYPICAL PERFORMANCE GRAPHS

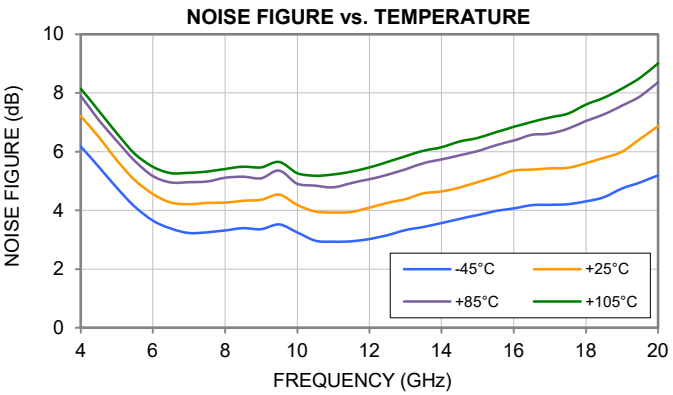
Note: The following data was taken on the Mini-Circuits Characterization Test Board TB-LVA-6183PNC+ (Figure 2). All data taken at nominal conditions V_{CC} = +6 V, V_C = +6 V, and V_B = +5.4 V unless noted otherwise.

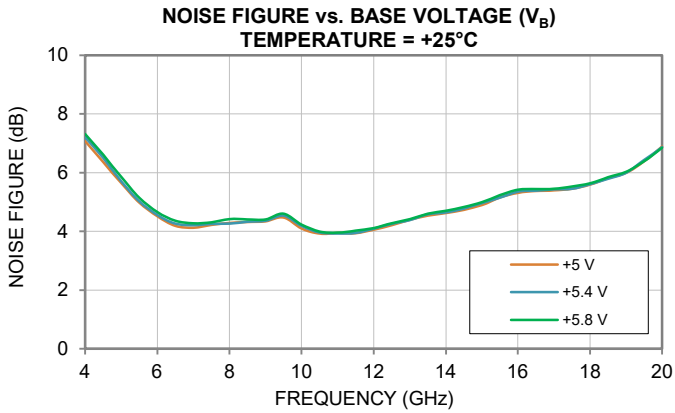










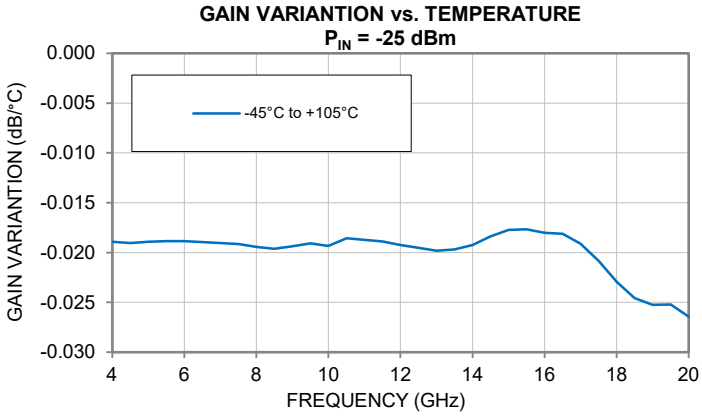


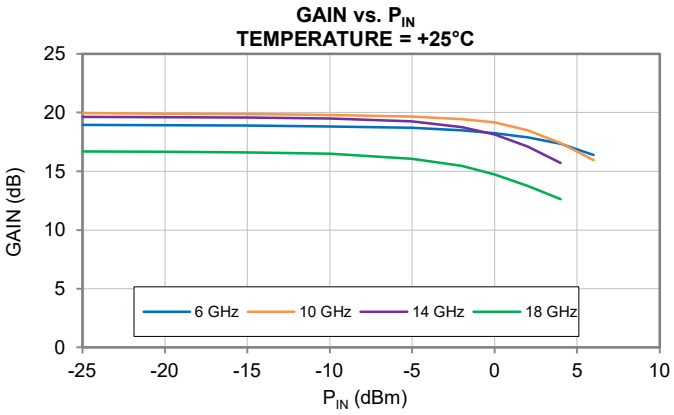
Wideband Amplifier LVA-6183PN+

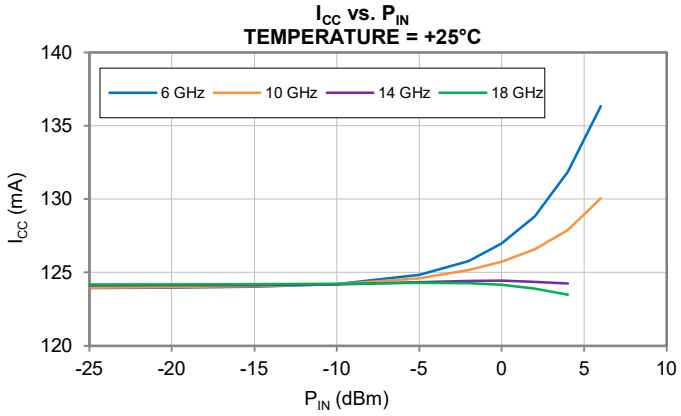
50Ω 6 to 18 GHz Ultra-Low Phase Noise

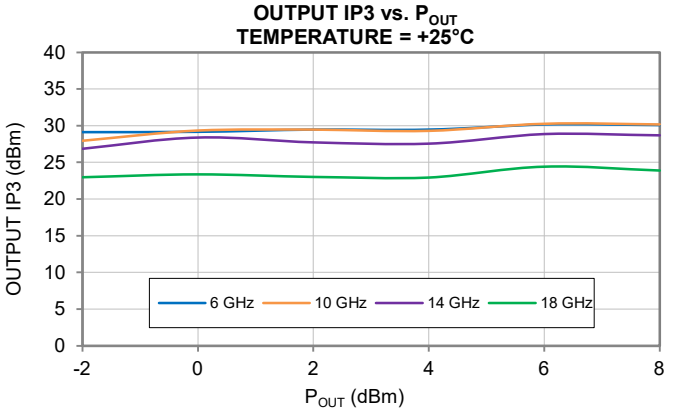
TYPICAL PERFORMANCE GRAPHS

Note: The following data was taken on the Mini-Circuits Characterization Test Board TB-LVA-6183PNC+ (Figure 2). All data taken at nominal conditions V_{CC} = +6 V, V_C = +6 V, and V_B = +5.4 V unless noted otherwise.







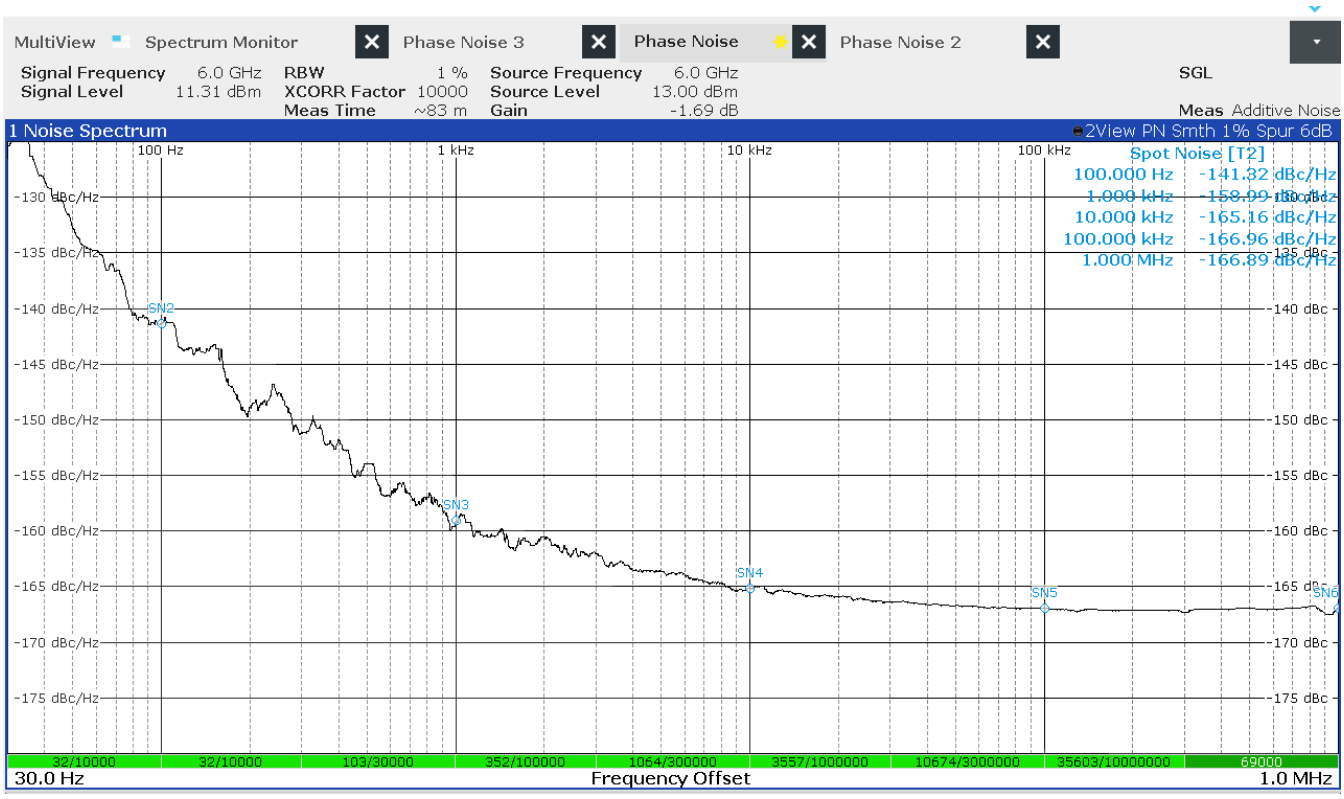


Wideband Amplifier LVA-6183PN+

50Ω 6 to 18 GHz Ultra-Low Phase Noise

ADDITIVE PHASE NOISE VS. OFFSET FREQUENCY

(RF Frequency = 6 GHz, RF Input Power = +3 dBm)



ABSOLUTE MAXIMUM RATINGS[7]

Parameter	Ratings
Operating Temperature	-45°C to +105°C
Storage Temperature	-65°C to +150°C
Total Power Dissipation	1.27 W
Junction Temperature[8]	+150°C
Input Power (CW), V_{CC} = +6 V, V_C = +6 V, V_B = +5.4 V	+25 dBm
DC Voltage on V_{CC}	+11 V
Current I_{CC}	170 mA
DC Voltage on V_C	+11 V
Current I_C	15 mA
DC Voltage on V_B	+11 V
Current I_B	30 mA

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

THERMAL RESISTANCE

Parameter	Ratings
Thermal Resistance (Θ_{JC})[9]	35.3°C/W

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

ESD RATING

	Class	Voltage Range	Reference Standard
HBM	1C	1000 V to < 2000 V	ANSI/ESDA/JEDEC JS-001-2017
CDM	C3	≥ 1000 V	JESD22-C101F

ESD HANDLING PRECAUTION: This device is designed to be Class 1C 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 LVA-6183PN+

50Ω 6 to 18 GHz Ultra-Low Phase Noise

FUNCTIONAL DIAGRAM

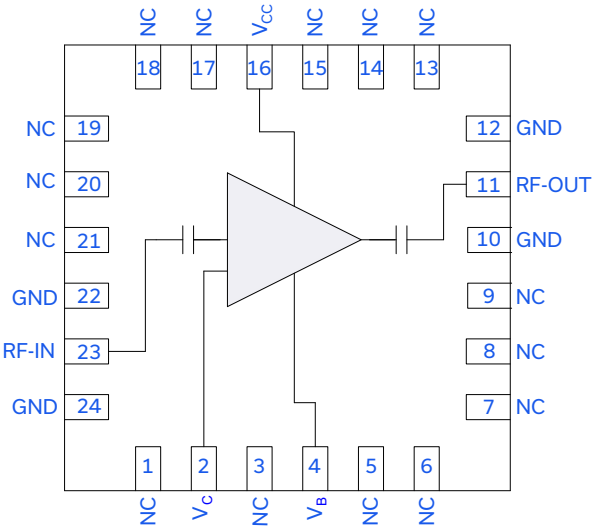


Figure 1. LVA-6183PN+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Application Description (Refer to Figure 2)
RF-IN	23	RF-IN Pad connects to RF input port.
RF-OUT	11	RF-OUT Pad connects to RF output port.
V_{CC}	16	DC Input Pad connects to supply voltage input port.
V_C	2	DC Input Pad connects to collector voltage input port.
V_B	4	DC Input Pad connects to base voltage input port.
GND	10, 12, 22, 24	Connects to ground.
NC	1, 3, 5-9, 13-15, 17-21	Not used internally. Connects to ground on evaluation board.

EVALUATION BOARD

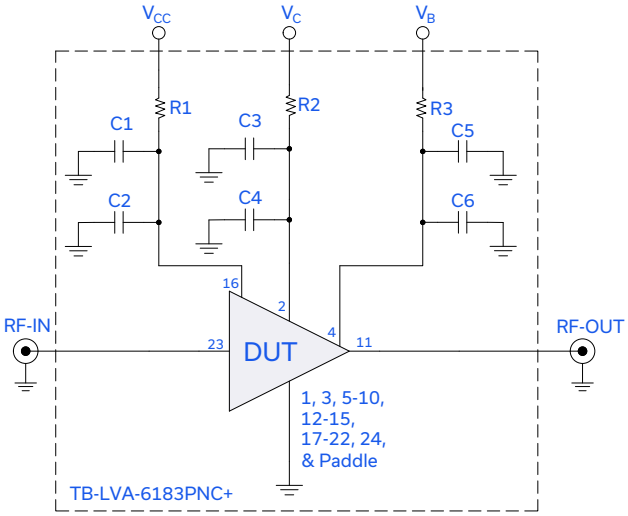


Figure 2. LVA-6183PN+ Characterization and Application Circuit

Electrical Parameters and Conditions
Gain, Return Loss, Output Power at 1dB Compression (P1dB), Output IP3 (OIP3), and Noise Figure measured using N5245A PNA-X Microwave Network Analyzer.

Conditions:
1. Gain and Return Loss: P_{IN} = -25 dBm
2. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, 0 dBm/Tone at output.

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) Set V_{CC} = +6 V.
2) Set V_C = +6 V.
3) Set V_B = +5.4 V.
4) Turn on V_{CC}, V_C, and V_B.
5) Apply RF signal.

Power OFF:
1) Turn off RF signal.
2) Turn off V_{CC}, V_C, and V_B.

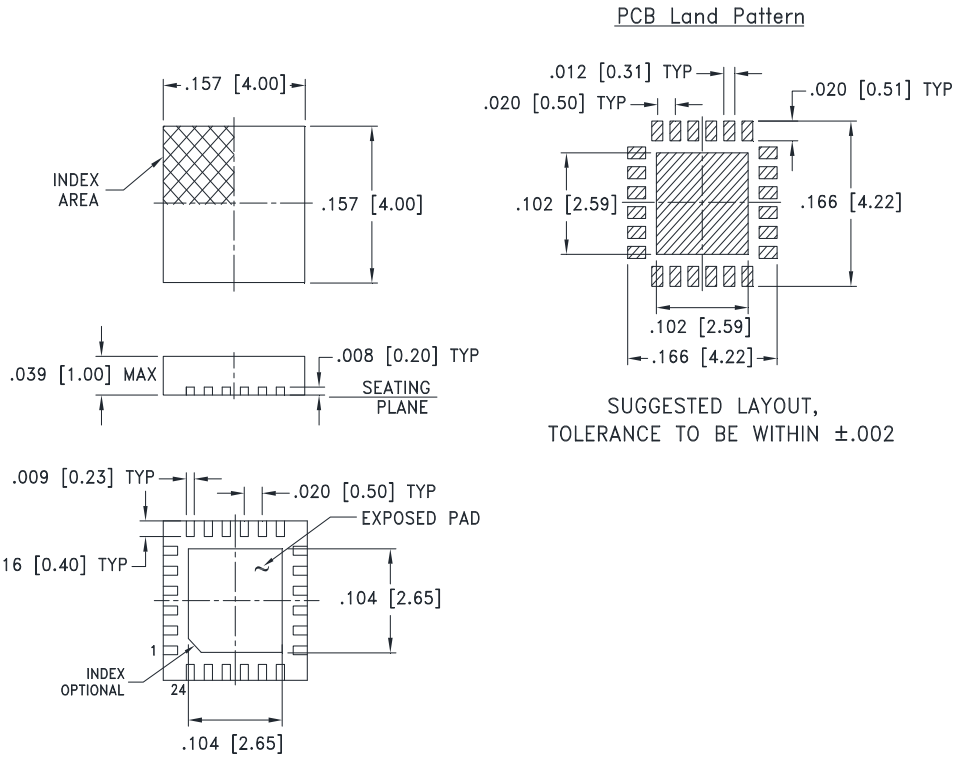
Component	Value	Size	Part Number	Manufacturer
C1, C3, C5	0.1 µF	0402	GRM155R71H104KE14J	Murata
C2, C4, C6	100 pF	0402	GRM1555C1H101JA01D	Murata
R1, R2, R3[10]	0Ω	0402	RK73Z1ETTP	KOA Speer

10. R3 can be swapped for a 50Ω resistor to create V_B = +5.4 V from available +6 V source.

Wideband Amplifier LVA-6183PN+

50Ω 6 to 18 GHz Ultra-Low Phase Noise

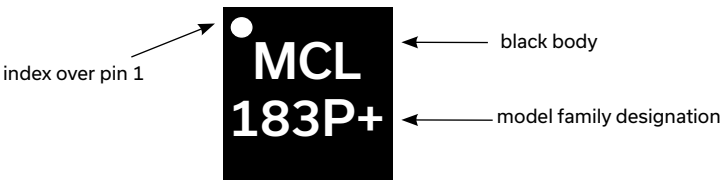
CASE STYLE DRAWING



Weight: .04 Grams

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

PRODUCT MARKING



Marking may contain other features or characters for internal lot control

Wideband Amplifier LVA-6183PN+

50Ω 6 to 18 GHz Ultra-Low Phase Noise

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file)
Case Style	DG1847 Plastic package, exposed paddle, Lead Finish: Matte-Tin
RoHS Status	Compliant
Tape & Reel **Standard quantities available on reel**	F68 7" reels with 20, 50, 100, 200, 500, or 1000 devices
Suggested Layout for PCB Design	PL-777
Evaluation Board	TB-LVA-6183PNC+ 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)
Reverse Isolation = -S12 (dB)
Output Return Loss = -S22 (dB)

TEST CONDITIONS: V_{CC} = +6 V; V_C = +6 V; V_B = +5 V , I_{CC} = 113 mA, I_C = 7.49 mA, I_B = 11.26 mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	IP-3 Input	1dB Comp. Output	3dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
4.00	17.9	-55.6	-6.6	-13.7	31.0	1.2	29.3	11.4	20.6	23.2	7.1
4.50	18.2	-56.1	-8.0	-13.8	34.5	1.1	29.8	11.7	20.4	22.9	6.4
5.00	18.3	-51.8	-9.4	-13.7	22.1	1.1	29.4	11.1	20.2	22.6	5.7
5.50	18.3	-51.8	-10.7	-14.2	22.9	1.0	29.3	10.9	20.0	22.4	5.0
6.00	18.4	-50.0	-11.7	-14.8	19.0	1.0	29.4	11.0	20.0	22.4	4.5
6.50	18.5	-49.2	-12.7	-15.4	17.5	1.0	29.4	10.9	20.0	22.3	4.2
7.00	18.7	-48.4	-13.7	-15.3	16.0	1.0	29.6	10.9	20.0	22.2	4.1
7.50	18.8	-46.8	-14.6	-14.2	13.2	1.0	29.6	10.8	20.0	22.0	4.2
8.00	18.9	-46.8	-14.9	-12.6	12.9	1.0	28.7	9.8	20.0	21.8	4.3
8.50	19.0	-46.0	-14.4	-12.0	11.5	1.0	28.7	9.7	20.0	21.5	4.3
9.00	19.2	-45.1	-13.3	-11.5	10.1	1.0	29.5	10.3	20.0	21.5	4.3
9.50	19.5	-44.8	-12.5	-10.9	9.2	1.0	29.7	10.2	20.1	21.5	4.5
10.00	19.4	-43.8	-12.2	-20.7	8.9	1.0	29.7	10.3	19.9	21.2	4.1
10.50	19.3	-42.9	-12.2	-21.0	8.2	1.1	30.2	10.9	19.8	20.9	3.9
11.00	19.4	-41.9	-12.8	-19.2	7.3	1.0	29.7	10.3	19.7	20.9	3.9
11.50	19.5	-40.9	-14.1	-18.3	6.6	1.0	28.7	9.1	19.6	20.7	3.9
12.00	19.7	-40.1	-16.3	-18.4	6.0	1.0	28.7	9.0	19.4	20.5	4.1
12.50	19.7	-39.4	-18.9	-19.8	5.7	1.0	28.2	8.4	19.1	20.1	4.2
13.00	19.7	-38.6	-18.8	-24.0	5.2	1.0	28.1	8.4	18.6	19.8	4.4
13.50	19.4	-37.9	-15.3	-37.6	4.9	1.0	27.2	7.7	18.1	19.7	4.5
14.00	19.0	-37.4	-12.5	-27.5	4.8	1.0	28.4	9.4	18.0	19.7	4.6
14.50	18.6	-36.9	-11.3	-21.0	4.6	1.1	27.5	8.9	17.5	19.5	4.7
15.00	18.3	-36.6	-10.8	-17.3	4.6	1.0	26.4	8.1	17.3	19.5	4.9
15.50	18.1	-36.5	-10.6	-15.3	4.6	1.0	27.7	9.6	17.2	19.2	5.2
16.00	18.0	-36.3	-10.8	-15.1	4.6	1.0	26.6	8.6	16.8	19.0	5.3
16.50	17.8	-35.9	-12.5	-16.7	4.6	1.0	25.9	8.1	16.6	18.6	5.4
17.00	17.7	-35.8	-17.0	-19.1	4.9	1.0	25.5	7.8	16.1	18.4	5.4
17.50	17.3	-35.5	-31.5	-18.3	5.1	1.0	24.1	6.8	15.6	17.8	5.5
18.00	16.6	-35.6	-28.7	-14.7	5.4	1.0	23.4	6.8	14.6	17.2	5.6
18.50	15.7	-36.3	-40.8	-11.5	6.3	0.9	22.7	7.0	13.9	16.3	5.8
19.00	14.7	-36.5	-20.7	-9.4	6.8	0.9	21.3	6.5	13.0	15.8	6.0
19.50	13.8	-37.0	-16.4	-8.5	7.8	0.9	20.7	6.9	12.2	14.9	6.4
20.00	13.1	-37.2	-15.7	-8.9	8.8	0.9	20.2	7.1	11.3	14.5	6.9

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions

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

TEST CONDITIONS: V_{CC} = +6 V; V_C = +6 V; V_B = +5.4 V , I_{CC} = 125 mA, I_C = 7.54 mA, I_B = 12.52 mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	IP-3 Input	1dB Comp. Output	3dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
4.00	18.2	-57.2	-6.7	-13.7	36.3	1.2	29.8	11.6	21.0	23.5	7.2
4.50	18.4	-53.7	-8.0	-13.9	25.7	1.1	29.5	11.0	20.8	23.2	6.5
5.00	18.5	-52.7	-9.5	-13.8	23.8	1.1	29.2	10.7	20.5	22.9	5.7
5.50	18.6	-52.1	-10.7	-14.2	23.2	1.0	29.1	10.6	20.4	22.8	5.0
6.00	18.6	-50.1	-11.7	-14.9	18.8	1.0	29.2	10.5	20.4	22.8	4.6
6.50	18.8	-50.2	-12.7	-15.4	19.1	1.0	28.7	9.9	20.4	22.7	4.3
7.00	18.9	-48.7	-13.8	-15.3	16.1	1.0	29.3	10.5	20.5	22.6	4.2
7.50	19.0	-47.2	-14.6	-14.2	13.5	1.0	28.8	9.7	20.4	22.4	4.3
8.00	19.1	-46.8	-14.9	-12.6	12.5	1.0	29.3	10.2	20.4	22.2	4.3
8.50	19.3	-46.0	-14.4	-11.9	11.2	1.0	28.9	9.6	20.4	22.0	4.3
9.00	19.4	-45.3	-13.3	-11.4	10.0	1.0	29.0	9.6	20.4	22.0	4.4
9.50	19.7	-44.8	-12.6	-10.9	8.9	1.0	29.2	9.5	20.5	22.0	4.5
10.00	19.6	-43.9	-12.3	-20.3	8.8	1.0	29.3	9.7	20.3	21.7	4.2
10.50	19.5	-42.9	-12.3	-20.7	8.1	1.0	29.1	9.6	20.2	21.5	4.0
11.00	19.6	-42.3	-12.8	-19.1	7.5	1.0	29.0	9.4	20.1	21.4	3.9
11.50	19.7	-41.2	-14.2	-18.2	6.6	1.0	29.2	9.4	20.0	21.2	3.9
12.00	19.9	-40.1	-16.3	-18.3	5.9	1.0	28.9	9.0	19.7	21.0	4.1
12.50	19.9	-39.7	-18.9	-19.7	5.7	1.0	28.2	8.3	19.4	20.6	4.3
13.00	19.9	-38.6	-18.9	-23.5	5.1	1.0	28.0	8.1	18.8	20.3	4.4
13.50	19.6	-38.2	-15.4	-35.3	5.0	1.0	26.9	7.3	18.3	20.2	4.6
14.00	19.3	-37.9	-12.6	-28.7	4.9	1.0	27.1	7.9	18.0	20.2	4.6
14.50	18.9	-37.3	-11.3	-21.6	4.7	1.1	27.0	8.1	17.6	20.0	4.8
15.00	18.6	-36.8	-10.9	-17.6	4.6	1.0	26.1	7.5	17.3	19.9	5.0
15.50	18.3	-36.5	-10.5	-15.4	4.5	1.0	27.2	8.9	17.2	19.5	5.1
16.00	18.2	-36.4	-10.7	-15.0	4.5	1.0	25.7	7.5	16.8	19.3	5.4
16.50	18.1	-36.2	-12.4	-16.5	4.7	1.0	25.2	7.2	16.6	18.9	5.4
17.00	17.9	-35.9	-16.6	-18.8	4.8	1.0	25.0	7.0	16.0	18.7	5.4
17.50	17.6	-35.8	-30.4	-18.3	5.0	1.0	24.1	6.5	15.5	18.1	5.4
18.00	16.9	-35.8	-27.3	-15.0	5.4	1.0	23.2	6.3	14.4	17.5	5.6
18.50	16.1	-36.2	-37.9	-11.7	5.9	0.9	22.3	6.2	13.8	16.5	5.8
19.00	15.1	-36.7	-21.1	-9.5	6.7	0.9	21.2	6.0	12.9	16.0	6.0
19.50	14.2	-37.1	-16.4	-8.6	7.5	0.9	20.7	6.5	12.2	15.0	6.4
20.00	13.5	-37.3	-15.6	-8.9	8.5	0.9	19.8	6.4	11.2	14.6	6.9

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions

Definitions:

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

TEST CONDITIONS: V_{CC} = +6 V; V_C = +6 V; V_B = +5.8 V , I_{CC} = 137 mA, I_C = 7.58 mA, I_B = 13.74 mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	IP-3 Input	1dB Comp. Output	3dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
4.00	18.4	-56.4	-6.7	-13.7	32.5	1.2	29.7	11.3	20.2	23.8	7.3
4.50	18.6	-53.7	-8.0	-13.9	24.8	1.1	29.8	11.2	20.1	23.5	6.6
5.00	18.7	-53.1	-9.5	-13.8	24.2	1.1	29.4	10.7	19.8	23.3	5.9
5.50	18.8	-52.5	-10.7	-14.2	23.6	1.0	29.1	10.3	19.7	23.1	5.1
6.00	18.8	-50.6	-11.7	-14.9	19.4	1.0	29.7	10.9	19.6	23.1	4.7
6.50	18.9	-50.1	-12.7	-15.4	18.4	1.0	29.3	10.3	19.6	23.1	4.4
7.00	19.1	-48.6	-13.8	-15.3	15.7	1.0	29.2	10.1	19.6	23.0	4.3
7.50	19.2	-47.8	-14.6	-14.2	14.1	1.0	29.8	10.6	19.5	22.7	4.3
8.00	19.3	-46.6	-14.9	-12.6	12.1	1.0	29.5	10.2	19.5	22.6	4.4
8.50	19.4	-46.0	-14.4	-11.9	10.9	1.0	28.7	9.3	19.5	22.4	4.4
9.00	19.5	-45.3	-13.3	-11.4	9.8	1.0	28.8	9.2	19.5	22.4	4.4
9.50	19.8	-44.9	-12.5	-10.8	8.9	1.0	29.5	9.7	19.5	22.4	4.6
10.00	19.8	-44.3	-12.3	-20.0	9.2	1.0	29.0	9.2	19.5	22.1	4.2
10.50	19.7	-43.0	-12.3	-20.4	8.0	1.0	29.7	10.0	19.3	21.9	4.0
11.00	19.8	-42.2	-12.8	-18.9	7.3	1.0	28.5	8.8	19.2	21.8	4.0
11.50	19.9	-41.5	-14.2	-18.1	6.8	1.0	28.7	8.9	19.1	21.6	4.0
12.00	20.0	-40.7	-16.3	-18.3	6.2	1.0	27.3	7.3	18.9	21.4	4.1
12.50	20.1	-39.7	-18.8	-19.5	5.6	1.0	28.3	8.2	18.7	21.0	4.3
13.00	20.0	-39.1	-18.8	-23.2	5.3	1.0	27.5	7.5	18.2	20.7	4.4
13.50	19.8	-38.4	-15.5	-33.4	5.0	1.0	26.4	6.6	17.7	20.5	4.6
14.00	19.4	-37.7	-12.7	-30.1	4.7	1.0	27.0	7.6	17.7	20.4	4.7
14.50	19.0	-37.4	-11.4	-22.1	4.7	1.1	26.3	7.3	17.3	20.2	4.8
15.00	18.7	-37.1	-10.9	-17.9	4.6	1.0	25.9	7.2	17.2	20.1	5.0
15.50	18.5	-36.8	-10.5	-15.5	4.6	1.0	26.3	7.8	17.1	19.7	5.2
16.00	18.3	-36.7	-10.7	-15.0	4.6	1.0	25.3	6.9	16.7	19.4	5.4
16.50	18.2	-36.5	-12.2	-16.4	4.7	1.0	25.4	7.2	16.5	19.0	5.4
17.00	18.1	-36.0	-16.3	-18.6	4.8	1.0	24.1	6.0	15.9	18.8	5.4
17.50	17.8	-36.0	-29.2	-18.4	5.0	1.0	23.7	5.9	15.4	18.1	5.5
18.00	17.2	-36.0	-26.5	-15.1	5.3	1.0	22.8	5.7	14.5	17.5	5.6
18.50	16.4	-36.2	-34.9	-12.0	5.8	0.9	21.8	5.5	13.9	16.6	5.8
19.00	15.4	-36.9	-21.6	-9.7	6.7	0.9	20.8	5.4	12.9	16.0	6.0
19.50	14.5	-37.1	-16.5	-8.7	7.3	0.9	20.4	5.9	12.0	15.1	6.4
20.00	13.8	-37.3	-15.6	-8.9	8.2	0.9	19.6	5.9	11.2	14.6	6.8

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions

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

TEST CONDITIONS: V_{CC} = +6 V; V_C = +6 V; V_B = +5 V , I_{CC} = 109 mA, I_C = 7.39 mA, I_B = 11.10 mA @ Temperature = -45°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	IP-3 Input	1dB Comp. Output	3dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
4.00	18.9	-57.6	-6.6	-13.9	34.6	1.2	30.3	11.5	20.7	23.3	6.1
4.50	19.1	-53.1	-7.9	-14.1	21.5	1.1	30.0	10.8	20.6	22.8	5.4
5.00	19.2	-52.8	-9.2	-13.7	21.9	1.1	30.5	11.3	20.2	22.5	4.7
5.50	19.3	-51.3	-10.5	-14.0	19.1	1.0	30.1	10.9	20.1	22.4	4.0
6.00	19.3	-50.5	-11.5	-14.8	17.8	1.0	29.9	10.6	20.1	22.4	3.6
6.50	19.5	-49.4	-12.6	-15.5	15.7	1.0	29.3	9.9	20.0	22.3	3.3
7.00	19.6	-48.7	-13.7	-15.3	14.5	1.0	29.6	9.9	20.0	22.1	3.2
7.50	19.8	-47.3	-14.6	-14.1	12.3	1.0	29.8	10.0	20.0	21.9	3.2
8.00	19.9	-46.6	-15.3	-12.6	11.0	1.0	29.8	9.9	19.9	21.7	3.3
8.50	20.1	-45.9	-14.9	-11.7	9.9	1.0	29.2	9.1	20.0	21.5	3.4
9.00	20.2	-44.8	-13.6	-11.6	8.4	1.0	31.1	11.0	20.0	21.4	3.3
9.50	20.5	-44.3	-12.2	-10.7	7.5	1.0	29.4	8.9	20.1	21.4	3.5
10.00	20.4	-44.4	-11.4	-20.4	8.3	1.1	30.0	9.7	20.0	21.2	3.3
10.50	20.3	-43.0	-11.2	-21.6	7.2	1.1	30.5	10.3	20.0	21.1	3.0
11.00	20.4	-42.0	-12.1	-19.0	6.4	1.0	30.4	10.0	20.0	21.1	2.9
11.50	20.5	-41.2	-14.2	-17.8	5.9	1.0	30.0	9.5	19.7	20.6	2.9
12.00	20.6	-40.4	-16.8	-18.0	5.5	1.0	29.5	8.8	19.3	20.4	3.0
12.50	20.7	-39.8	-20.3	-19.0	5.1	1.0	28.9	8.1	19.1	20.0	3.1
13.00	20.7	-38.8	-20.2	-22.5	4.7	1.0	28.4	7.7	18.8	19.8	3.3
13.50	20.4	-38.1	-15.1	-34.8	4.4	1.0	28.4	8.0	18.3	19.6	3.4
14.00	19.9	-37.8	-11.8	-28.1	4.3	1.1	28.9	8.9	18.3	19.7	3.6
14.50	19.5	-37.2	-10.5	-20.9	4.1	1.1	28.6	9.1	17.9	19.7	3.7
15.00	19.2	-37.0	-9.8	-17.1	4.1	1.1	27.2	8.0	17.7	19.7	3.8
15.50	19.0	-36.5	-9.6	-15.4	4.0	1.1	28.8	9.9	17.8	19.6	4.0
16.00	18.8	-36.4	-10.1	-15.2	4.0	1.0	28.0	9.2	17.4	19.3	4.1
16.50	18.7	-36.2	-11.7	-16.4	4.2	1.0	28.3	9.6	17.3	19.1	4.1
17.00	18.5	-36.0	-15.0	-18.6	4.3	1.0	26.7	8.2	16.8	18.8	4.1
17.50	18.2	-35.9	-23.4	-18.9	4.6	1.0	26.7	8.4	16.4	18.2	4.2
18.00	17.7	-35.8	-24.4	-15.5	4.8	1.0	25.1	7.4	15.5	17.8	4.3
18.50	16.9	-36.1	-27.9	-12.1	5.2	0.9	24.0	7.1	14.9	17.1	4.5
19.00	15.9	-36.8	-22.0	-9.4	6.0	0.9	22.7	6.9	14.0	16.5	4.7
19.50	15.0	-37.1	-16.2	-8.2	6.6	0.9	22.0	7.0	13.2	15.5	4.9
20.00	14.4	-37.2	-15.6	-8.7	7.3	0.9	21.5	7.1	12.0	15.1	5.2

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions

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

TEST CONDITIONS: V_{CC} = +6 V; V_C = +6 V; V_B = +5.4 V , I_{CC} = 121 mA, I_C = 7.43 mA, I_B = 12.38 mA @ Temperature = -45°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	IP-3 Input	1dB Comp. Output	3dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
4.00	19.4	-57.3	-6.4	-13.9	31.1	1.2	30.4	11.1	21.0	23.6	6.2
4.50	19.6	-53.3	-7.7	-14.1	20.6	1.1	29.9	10.3	20.9	23.2	5.5
5.00	19.7	-53.8	-9.0	-13.8	22.9	1.1	30.1	10.4	20.6	22.9	4.8
5.50	19.8	-52.0	-10.3	-14.1	19.3	1.0	30.0	10.3	20.5	22.8	4.1
6.00	19.8	-51.4	-11.4	-14.8	18.5	1.0	29.7	9.9	20.5	22.8	3.6
6.50	20.0	-48.8	-12.4	-15.5	13.9	1.0	28.9	9.0	20.4	22.7	3.4
7.00	20.1	-48.2	-13.5	-15.3	13.0	1.0	29.9	9.8	20.5	22.6	3.2
7.50	20.2	-47.5	-14.5	-14.1	11.9	1.0	30.2	9.9	20.5	22.4	3.3
8.00	20.4	-46.9	-15.1	-12.5	10.9	1.0	29.1	8.8	20.4	22.2	3.3
8.50	20.5	-46.0	-14.6	-11.7	9.5	1.0	29.0	8.5	20.4	22.0	3.4
9.00	20.6	-45.3	-13.5	-11.5	8.6	1.0	30.6	10.0	20.4	21.9	3.4
9.50	20.9	-45.0	-12.1	-10.6	7.7	1.0	29.4	8.5	20.6	22.0	3.5
10.00	20.8	-44.4	-11.2	-20.2	7.9	1.1	29.8	9.0	20.5	21.8	3.2
10.50	20.6	-43.1	-11.1	-21.3	6.9	1.1	30.2	9.5	20.5	21.7	3.0
11.00	20.7	-42.5	-12.0	-18.8	6.5	1.0	29.8	9.1	20.4	21.7	2.9
11.50	20.9	-41.5	-13.9	-17.7	5.8	1.0	29.0	8.2	20.2	21.2	2.9
12.00	21.0	-40.7	-16.7	-17.8	5.4	1.0	29.6	8.6	19.7	20.9	3.0
12.50	21.1	-39.8	-20.1	-18.9	4.9	1.0	29.5	8.4	19.5	20.5	3.2
13.00	21.0	-39.0	-20.0	-22.3	4.6	1.0	28.4	7.4	19.0	20.3	3.3
13.50	20.8	-38.5	-14.9	-32.9	4.4	1.0	27.6	6.9	18.5	20.1	3.4
14.00	20.3	-37.7	-11.8	-29.5	4.1	1.1	28.9	8.6	18.5	20.2	3.6
14.50	19.9	-37.3	-10.3	-21.4	4.0	1.1	28.5	8.6	18.1	20.2	3.7
15.00	19.5	-37.0	-9.6	-17.3	4.0	1.1	26.6	7.0	17.8	20.2	3.8
15.50	19.3	-36.8	-9.5	-15.5	3.9	1.1	28.3	9.0	17.9	20.0	4.0
16.00	19.2	-36.6	-9.9	-15.2	4.0	1.0	27.5	8.3	17.4	19.7	4.1
16.50	19.0	-36.4	-11.4	-16.2	4.1	1.0	28.2	9.2	17.3	19.5	4.2
17.00	18.9	-36.2	-14.7	-18.4	4.2	1.0	26.3	7.4	16.9	19.2	4.2
17.50	18.6	-36.0	-22.3	-18.9	4.4	1.0	26.1	7.5	16.4	18.6	4.2
18.00	18.1	-36.1	-23.6	-15.7	4.7	1.0	24.9	6.9	15.5	18.1	4.3
18.50	17.3	-36.3	-25.7	-12.3	5.1	0.9	23.9	6.6	14.9	17.4	4.4
19.00	16.4	-36.7	-22.8	-9.5	5.6	0.9	22.9	6.5	14.0	16.7	4.7
19.50	15.5	-37.3	-16.0	-8.3	6.4	0.9	22.0	6.6	13.3	15.8	5.0
20.00	14.9	-37.2	-15.5	-8.8	6.9	0.9	21.2	6.4	12.2	15.3	5.2

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions

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

TEST CONDITIONS: V_{CC} = +6 V; V_C = +6 V; V_B = +5.8 V , I_{CC} = 133 mA, I_C = 7.47 mA, I_B = 13.58 mA @ Temperature = -45°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	IP-3 Input	1dB Comp. Output	3dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
4.00	19.5	-56.0	-6.5	-13.9	26.5	1.2	30.9	11.4	20.4	23.9	6.3
4.50	19.7	-53.5	-7.9	-14.1	21.2	1.1	29.9	10.1	20.2	23.5	5.6
5.00	19.8	-52.9	-9.2	-13.8	20.5	1.1	30.2	10.4	19.8	23.2	4.9
5.50	19.8	-53.1	-10.4	-14.1	21.7	1.0	29.4	9.5	19.7	23.1	4.2
6.00	19.9	-50.4	-11.5	-14.8	16.4	1.0	30.4	10.4	19.6	23.2	3.8
6.50	20.0	-48.8	-12.6	-15.5	13.9	1.0	29.3	9.3	19.5	23.1	3.4
7.00	20.2	-49.2	-13.6	-15.3	14.4	1.0	30.6	10.4	19.5	23.0	3.3
7.50	20.3	-48.1	-14.6	-14.1	12.7	1.0	30.2	9.9	19.5	22.8	3.3
8.00	20.4	-46.4	-15.2	-12.6	10.2	1.0	30.7	10.2	19.3	22.6	3.4
8.50	20.6	-46.0	-14.8	-11.6	9.5	1.0	28.4	7.9	19.4	22.5	3.4
9.00	20.7	-45.5	-13.5	-11.5	8.6	1.0	30.4	9.7	19.4	22.4	3.4
9.50	21.0	-45.1	-12.2	-10.6	7.8	1.0	29.9	9.0	19.5	22.4	3.5
10.00	20.9	-45.0	-11.3	-19.9	8.4	1.1	30.1	9.2	19.4	22.2	3.3
10.50	20.7	-43.4	-11.2	-21.0	7.1	1.1	30.1	9.3	19.5	22.1	3.0
11.00	20.8	-42.3	-12.0	-18.7	6.3	1.0	29.7	8.9	19.4	22.1	3.0
11.50	21.0	-41.5	-14.1	-17.6	5.8	1.0	29.2	8.3	19.1	21.7	2.9
12.00	21.1	-40.9	-16.7	-17.8	5.5	1.0	29.4	8.3	18.7	21.4	3.0
12.50	21.2	-39.9	-20.1	-18.8	5.0	1.0	29.0	7.8	18.6	20.9	3.2
13.00	21.1	-39.3	-20.2	-21.9	4.7	1.0	28.6	7.5	18.3	20.7	3.3
13.50	20.8	-38.4	-15.2	-31.5	4.3	1.0	27.6	6.8	17.8	20.5	3.5
14.00	20.4	-37.9	-11.9	-30.9	4.2	1.0	28.4	8.0	17.9	20.5	3.6
14.50	20.0	-37.5	-10.5	-21.9	4.1	1.1	28.2	8.2	17.6	20.6	3.8
15.00	19.6	-37.4	-9.7	-17.6	4.1	1.1	26.3	6.6	17.5	20.5	3.9
15.50	19.4	-36.9	-9.5	-15.7	4.0	1.1	27.5	8.1	17.5	20.2	4.0
16.00	19.3	-36.8	-9.9	-15.3	4.0	1.0	27.8	8.5	17.2	19.9	4.1
16.50	19.1	-36.7	-11.4	-16.1	4.1	1.0	27.5	8.4	17.0	19.7	4.2
17.00	19.0	-36.5	-14.4	-18.2	4.3	1.0	26.1	7.1	16.6	19.4	4.2
17.50	18.7	-36.1	-21.7	-18.8	4.4	1.0	25.1	6.3	16.1	18.8	4.2
18.00	18.2	-36.3	-22.6	-15.8	4.8	1.0	24.5	6.3	15.3	18.3	4.3
18.50	17.5	-36.2	-24.8	-12.5	5.0	0.9	23.8	6.3	14.7	17.5	4.5
19.00	16.6	-36.8	-23.5	-9.7	5.6	0.9	22.2	5.7	13.7	16.8	4.8
19.50	15.7	-37.4	-16.2	-8.4	6.4	0.9	22.0	6.4	12.9	15.8	4.9
20.00	15.1	-37.5	-15.4	-8.8	7.0	0.9	21.3	6.2	11.8	15.3	5.2

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions

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

TEST CONDITIONS: V_{CC} = +6 V; V_C = +6 V; V_B = +5 V , I_{CC} = 116 mA, I_C = 7.58 mA, I_B = 11.41 mA @ Temperature = +85°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	IP-3 Input	1dB Comp. Output	3dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
4.00	16.9	-56.1	-6.7	-13.7	37.6	1.2	30.4	13.5	20.6	23.2	7.8
4.50	17.1	-54.8	-8.1	-13.7	33.8	1.1	28.5	11.4	20.4	22.7	7.0
5.00	17.2	-52.4	-9.5	-13.4	26.9	1.1	29.0	11.7	20.1	22.5	6.2
5.50	17.3	-51.2	-10.8	-14.1	24.2	1.0	28.9	11.6	20.0	22.4	5.5
6.00	17.4	-50.1	-11.9	-14.8	21.8	1.0	28.5	11.2	20.0	22.4	5.1
6.50	17.5	-48.9	-12.7	-15.2	19.3	1.0	27.9	10.4	20.0	22.2	4.9
7.00	17.6	-48.5	-13.5	-15.2	18.3	1.0	29.0	11.4	20.0	22.1	4.9
7.50	17.7	-47.4	-14.1	-14.3	16.0	1.0	28.8	11.1	20.1	21.9	4.9
8.00	17.9	-46.3	-14.3	-12.8	13.8	1.0	28.3	10.4	19.9	21.7	5.0
8.50	18.0	-45.7	-14.0	-12.1	12.6	1.0	27.6	9.6	20.0	21.5	5.1
9.00	18.1	-44.5	-13.3	-11.7	10.7	1.0	28.2	10.1	20.0	21.4	5.1
9.50	18.5	-44.9	-12.7	-11.5	10.7	1.0	28.8	10.3	20.1	21.3	5.3
10.00	18.3	-43.6	-12.5	-20.6	10.1	1.0	28.8	10.5	19.9	21.1	4.9
10.50	18.3	-42.5	-12.7	-20.7	9.0	1.0	28.3	10.0	19.9	21.0	4.7
11.00	18.4	-41.3	-13.3	-19.5	7.9	1.0	28.1	9.8	19.9	21.0	4.8
11.50	18.5	-40.6	-14.8	-19.0	7.2	1.0	28.5	10.0	19.7	20.7	4.8
12.00	18.6	-39.7	-16.7	-19.5	6.6	1.0	27.9	9.3	19.2	20.4	5.0
12.50	18.6	-39.1	-18.0	-21.0	6.3	1.0	27.2	8.5	18.9	19.9	5.2
13.00	18.5	-38.3	-17.3	-24.7	5.8	1.0	26.4	7.9	18.2	19.7	5.3
13.50	18.3	-37.6	-14.6	-39.8	5.5	1.0	26.4	8.1	17.8	19.5	5.5
14.00	17.9	-37.0	-12.4	-24.9	5.2	1.0	27.2	9.3	17.3	19.4	5.7
14.50	17.6	-36.6	-11.7	-20.7	5.2	1.0	26.1	8.6	17.0	19.3	5.8
15.00	17.3	-36.3	-11.7	-17.4	5.1	1.0	26.2	8.9	16.7	19.1	6.0
15.50	17.1	-36.1	-11.5	-15.3	5.1	1.0	25.6	8.5	16.4	18.7	6.1
16.00	16.9	-35.9	-11.8	-15.2	5.1	1.0	25.0	8.0	16.0	18.4	6.3
16.50	16.8	-35.6	-14.2	-17.2	5.2	1.0	24.8	8.0	15.7	18.1	6.5
17.00	16.5	-35.2	-19.2	-19.7	5.4	1.0	23.5	6.9	15.0	17.7	6.6
17.50	16.0	-35.4	-30.6	-18.1	5.8	1.0	23.1	7.1	14.4	17.0	6.8
18.00	15.2	-35.6	-33.8	-13.9	6.4	1.0	22.2	7.0	13.4	16.4	7.0
18.50	14.2	-36.1	-28.5	-10.7	7.3	0.9	21.4	7.2	12.8	15.6	7.3
19.00	13.1	-36.4	-19.0	-9.1	8.2	0.9	19.8	6.7	11.8	14.9	7.5
19.50	12.2	-37.1	-16.5	-8.8	9.7	0.9	19.2	7.0	11.0	14.1	7.9
20.00	11.4	-37.1	-15.7	-9.5	10.8	0.9	19.2	7.8	10.3	13.5	8.4

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions

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

TEST CONDITIONS: V_{CC} = +6 V; V_C = +6 V; V_B = +5.4 V , I_{CC} = 129 mA, I_C = 7.63 mA, I_B = 12.90 mA @ Temperature = +85°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	IP-3 Input	1dB Comp. Output	3dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
4.00	17.1	-56.5	-6.8	-13.7	38.3	1.2	28.5	11.4	21.0	23.5	7.9
4.50	17.3	-54.7	-8.1	-13.7	32.5	1.1	29.4	12.1	20.8	23.0	7.1
5.00	17.4	-52.4	-9.5	-13.5	26.2	1.1	29.1	11.7	20.5	22.8	6.4
5.50	17.5	-51.9	-10.8	-14.1	25.6	1.0	28.9	11.4	20.4	22.7	5.7
6.00	17.6	-50.1	-11.9	-14.8	21.4	1.0	28.8	11.2	20.5	22.7	5.2
6.50	17.7	-49.1	-12.7	-15.2	19.1	1.0	27.9	10.2	20.4	22.6	4.9
7.00	17.8	-48.5	-13.5	-15.2	17.9	1.0	28.6	10.8	20.4	22.5	5.0
7.50	17.9	-47.2	-14.1	-14.3	15.3	1.0	28.1	10.2	20.5	22.3	5.0
8.00	18.0	-46.0	-14.3	-12.8	13.1	1.0	28.5	10.5	20.4	22.1	5.1
8.50	18.1	-45.3	-14.0	-12.0	11.8	1.0	27.4	9.3	20.4	21.9	5.1
9.00	18.3	-45.2	-13.3	-11.6	11.4	1.0	28.9	10.7	20.4	21.9	5.1
9.50	18.6	-44.8	-12.7	-11.4	10.4	1.0	28.3	9.6	20.4	21.8	5.4
10.00	18.5	-43.8	-12.5	-20.3	10.2	1.0	28.7	10.3	20.2	21.6	4.9
10.50	18.4	-42.4	-12.7	-20.5	8.7	1.0	28.4	9.9	20.3	21.5	4.8
11.00	18.5	-41.7	-13.3	-19.4	8.0	1.0	27.7	9.2	20.2	21.5	4.8
11.50	18.7	-40.6	-14.8	-18.9	7.2	1.0	27.5	8.8	20.0	21.1	4.9
12.00	18.8	-39.8	-16.7	-19.4	6.6	1.0	27.2	8.4	19.4	20.8	5.1
12.50	18.8	-39.2	-17.9	-20.8	6.2	1.0	26.9	8.1	19.1	20.4	5.2
13.00	18.7	-38.6	-17.3	-24.3	5.9	1.0	26.0	7.3	18.4	20.1	5.4
13.50	18.5	-37.8	-14.7	-40.1	5.5	1.0	25.6	7.2	17.9	19.9	5.6
14.00	18.1	-37.3	-12.5	-25.7	5.3	1.0	26.2	8.1	17.4	19.8	5.7
14.50	17.8	-36.8	-11.8	-21.2	5.2	1.0	25.6	7.8	17.1	19.7	5.9
15.00	17.5	-36.5	-11.7	-17.6	5.1	1.0	25.8	8.3	16.7	19.4	6.0
15.50	17.3	-36.2	-11.4	-15.3	5.1	1.0	24.8	7.5	16.4	19.0	6.2
16.00	17.1	-36.1	-11.7	-15.2	5.1	1.0	24.6	7.5	16.0	18.7	6.4
16.50	17.0	-35.6	-14.0	-17.1	5.1	1.0	24.7	7.7	15.6	18.3	6.6
17.00	16.8	-35.5	-18.9	-19.7	5.4	1.0	22.8	6.1	14.9	17.9	6.6
17.50	16.3	-35.3	-31.8	-18.3	5.6	1.0	22.5	6.2	14.4	17.1	6.8
18.00	15.5	-35.7	-33.9	-14.1	6.3	1.0	21.9	6.4	13.2	16.5	7.0
18.50	14.5	-36.2	-29.7	-10.9	7.1	0.9	20.7	6.2	12.7	15.7	7.3
19.00	13.5	-36.8	-19.2	-9.2	8.2	0.9	19.7	6.2	11.7	15.0	7.6
19.50	12.6	-37.0	-16.5	-8.8	9.3	0.9	19.1	6.5	11.1	14.2	7.9
20.00	11.8	-37.3	-15.8	-9.4	10.5	0.9	19.2	7.4	10.2	13.6	8.4

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions

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

TEST CONDITIONS: V_{CC} = +6 V; V_C = +6 V; V_B = +5.8 V , I_{CC} = 141 mA, I_C = 7.69 mA, I_B = 14.15 mA @ Temperature = +85°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	IP-3 Input	1dB Comp. Output	3dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
4.00	17.2	-57.3	-6.8	-13.7	41.5	1.2	29.5	12.2	20.2	23.7	8.0
4.50	17.5	-53.4	-8.1	-13.7	27.7	1.1	28.7	11.2	20.0	23.3	7.2
5.00	17.6	-52.2	-9.5	-13.5	25.0	1.1	29.2	11.7	19.7	23.1	6.4
5.50	17.6	-52.2	-10.8	-14.1	26.1	1.0	29.2	11.5	19.6	23.0	5.8
6.00	17.7	-50.5	-11.9	-14.8	22.0	1.0	29.7	12.1	19.5	23.1	5.2
6.50	17.8	-49.6	-12.7	-15.2	20.0	1.0	28.1	10.3	19.5	22.9	5.1
7.00	17.9	-48.4	-13.5	-15.2	17.6	1.0	28.8	10.8	19.5	22.8	5.0
7.50	18.0	-47.0	-14.0	-14.3	14.8	1.0	28.7	10.7	19.5	22.6	5.1
8.00	18.1	-47.3	-14.2	-12.8	15.0	1.0	28.8	10.7	19.5	22.4	5.1
8.50	18.2	-46.1	-13.9	-12.0	12.7	1.0	27.8	9.5	19.5	22.3	5.2
9.00	18.4	-44.9	-13.3	-11.6	10.8	1.0	28.7	10.4	19.5	22.2	5.2
9.50	18.7	-44.8	-12.7	-11.4	10.3	1.0	27.8	9.2	19.6	22.2	5.4
10.00	18.6	-43.3	-12.6	-20.1	9.5	1.0	27.9	9.4	19.4	21.9	5.0
10.50	18.5	-42.9	-12.7	-20.3	9.1	1.0	27.9	9.3	19.5	21.9	4.9
11.00	18.6	-41.7	-13.3	-19.3	8.0	1.0	27.1	8.5	19.4	21.9	4.9
11.50	18.7	-41.1	-14.8	-18.8	7.5	1.0	27.5	8.8	19.2	21.5	5.0
12.00	18.8	-40.2	-16.6	-19.4	6.9	1.0	27.2	8.3	18.8	21.2	5.1
12.50	18.9	-39.3	-17.8	-20.7	6.2	1.0	26.7	7.9	18.5	20.7	5.3
13.00	18.8	-38.5	-17.2	-24.0	5.8	1.0	25.9	7.2	17.9	20.4	5.5
13.50	18.5	-37.9	-14.8	-39.5	5.5	1.0	25.4	6.8	17.5	20.1	5.6
14.00	18.2	-37.5	-12.6	-26.4	5.4	1.0	25.7	7.5	17.2	19.9	5.8
14.50	17.8	-37.0	-11.8	-21.6	5.2	1.0	25.2	7.4	16.8	19.8	5.9
15.00	17.6	-36.6	-11.7	-17.9	5.2	1.0	25.3	7.7	16.6	19.5	6.1
15.50	17.4	-36.4	-11.4	-15.4	5.1	1.0	24.3	6.9	16.3	19.1	6.3
16.00	17.2	-36.1	-11.6	-15.1	5.1	1.0	23.8	6.6	16.0	18.8	6.4
16.50	17.1	-35.9	-13.8	-17.0	5.2	1.0	24.1	7.0	15.6	18.4	6.6
17.00	16.9	-35.7	-18.7	-19.5	5.4	1.0	22.5	5.6	14.9	18.0	6.7
17.50	16.4	-35.7	-32.3	-18.4	5.8	1.0	22.3	5.9	14.4	17.2	6.9
18.00	15.7	-35.9	-33.8	-14.3	6.3	1.0	21.3	5.6	13.4	16.5	7.1
18.50	14.7	-36.2	-31.1	-11.1	7.0	0.9	20.6	5.8	12.8	15.6	7.3
19.00	13.7	-36.7	-19.4	-9.3	8.0	0.9	19.4	5.7	11.8	15.0	7.6
19.50	12.8	-37.1	-16.5	-8.8	9.1	0.9	18.8	6.0	10.9	14.2	7.9
20.00	12.0	-37.1	-15.8	-9.4	10.1	0.9	18.8	6.7	10.3	13.6	8.4

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions

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

TEST CONDITIONS: V_{CC} = +6 V; V_C = +6 V; V_B = +5 V , I_{CC} = 117 mA, I_C = 7.61 mA, I_B = 11.52 mA @ Temperature = +105°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	IP-3 Input	1dB Comp. Output	3dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
4.00	15.9	-57.3	-7.4	-13.6	49.6	1.1	29.2	13.3	20.8	23.1	8.1
4.50	16.3	-53.0	-8.6	-13.6	31.1	1.1	28.6	12.3	20.5	22.7	7.2
5.00	16.4	-52.0	-10.0	-13.4	28.3	1.0	29.2	12.8	20.2	22.5	6.5
5.50	16.6	-50.7	-11.2	-14.2	25.1	1.0	28.1	11.6	20.1	22.3	5.8
6.00	16.6	-49.7	-12.2	-14.9	22.7	1.0	28.5	11.8	20.1	22.3	5.4
6.50	16.8	-48.9	-13.1	-15.3	21.1	1.0	27.6	10.9	20.0	22.2	5.2
7.00	16.9	-48.1	-13.8	-15.3	19.1	1.0	28.7	11.8	20.1	22.0	5.2
7.50	17.0	-47.0	-14.2	-14.4	16.6	1.0	29.3	12.3	20.1	21.8	5.2
8.00	17.1	-46.3	-14.5	-12.8	15.1	1.0	28.2	11.1	20.0	21.6	5.3
8.50	17.2	-45.6	-14.3	-12.1	13.7	1.0	28.3	11.1	20.0	21.5	5.4
9.00	17.4	-44.8	-13.5	-11.7	12.0	1.0	29.3	11.8	20.0	21.4	5.4
9.50	17.8	-44.4	-13.0	-11.7	11.0	1.0	28.0	10.3	20.1	21.3	5.6
10.00	17.7	-42.9	-13.1	-20.3	10.2	1.0	28.2	10.6	19.9	21.1	5.2
10.50	17.7	-42.4	-13.2	-20.1	9.6	1.0	28.2	10.6	19.9	21.0	5.1
11.00	17.8	-41.3	-13.6	-19.4	8.4	1.0	27.9	10.2	19.8	21.0	5.1
11.50	17.9	-40.4	-15.2	-19.3	7.7	1.0	27.8	9.9	19.6	20.6	5.2
12.00	17.9	-39.8	-16.7	-19.8	7.2	1.0	28.2	10.2	19.1	20.3	5.4
12.50	18.0	-39.0	-17.8	-21.1	6.7	1.0	26.9	8.9	18.7	19.8	5.5
13.00	17.9	-38.2	-17.5	-25.0	6.2	1.0	25.9	8.0	18.1	19.6	5.8
13.50	17.6	-37.5	-14.9	-38.1	5.8	1.0	26.3	8.6	17.6	19.4	6.0
14.00	17.3	-37.1	-12.7	-24.7	5.7	1.0	26.5	9.2	17.1	19.3	6.0
14.50	17.0	-36.5	-12.2	-20.5	5.5	1.0	25.7	8.7	16.8	19.2	6.2
15.00	16.7	-36.3	-12.2	-17.2	5.5	1.0	25.7	9.0	16.5	18.9	6.4
15.50	16.5	-36.0	-11.9	-15.2	5.4	1.0	25.0	8.5	16.1	18.5	6.6
16.00	16.3	-35.7	-12.5	-15.1	5.4	1.0	24.6	8.3	15.7	18.2	6.8
16.50	16.1	-35.4	-14.8	-17.2	5.5	1.0	23.9	7.8	15.4	17.8	7.0
17.00	15.8	-35.4	-19.7	-19.5	5.9	1.0	23.3	7.5	14.6	17.4	7.1
17.50	15.3	-35.4	-29.5	-17.7	6.4	1.0	22.2	6.9	14.1	16.6	7.3
18.00	14.4	-35.7	-34.9	-13.6	7.1	1.0	21.7	7.3	13.0	16.0	7.6
18.50	13.4	-36.1	-26.0	-10.6	8.0	0.9	20.8	7.4	12.5	15.2	7.7
19.00	12.3	-36.6	-18.7	-9.0	9.2	0.9	19.5	7.2	11.5	14.5	8.1
19.50	11.4	-37.0	-16.7	-8.8	10.6	0.9	18.9	7.5	10.7	13.7	8.5
20.00	10.6	-37.3	-15.8	-9.6	12.2	0.9	18.8	8.2	9.9	13.1	9.0

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions

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

TEST CONDITIONS: V_{CC} = +6 V; V_C = +6 V; V_B = +5.4 V , I_{CC} = 130 mA, I_C = 7.67 mA, I_B = 12.91 mA @ Temperature = +105°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	IP-3 Input	1dB Comp. Output	3dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
4.00	16.5	-57.5	-6.9	-13.7	46.2	1.2	28.9	12.3	21.2	23.5	8.1
4.50	16.8	-53.7	-8.2	-13.6	31.1	1.1	28.9	12.1	20.9	23.0	7.4
5.00	16.9	-52.9	-9.7	-13.4	29.8	1.1	29.6	12.8	20.6	22.8	6.6
5.50	16.9	-50.8	-11.0	-14.2	24.3	1.0	29.1	12.2	20.5	22.7	5.9
6.00	17.0	-50.2	-12.0	-14.9	23.3	1.0	28.5	11.5	20.6	22.7	5.5
6.50	17.1	-49.0	-12.8	-15.3	20.2	1.0	27.4	10.3	20.5	22.6	5.3
7.00	17.2	-48.0	-13.5	-15.3	18.2	1.0	28.4	11.1	20.5	22.4	5.3
7.50	17.4	-47.5	-14.0	-14.4	17.0	1.0	29.2	11.9	20.6	22.2	5.3
8.00	17.4	-46.5	-14.2	-12.8	14.8	1.0	28.4	11.0	20.4	22.0	5.4
8.50	17.5	-45.8	-13.9	-12.1	13.4	1.0	27.7	10.1	20.5	21.9	5.5
9.00	17.7	-44.7	-13.3	-11.7	11.6	1.0	28.5	10.8	20.4	21.8	5.5
9.50	18.0	-44.5	-12.8	-11.7	10.8	1.0	28.3	10.3	20.5	21.7	5.7
10.00	17.9	-43.1	-12.8	-20.3	10.1	1.0	27.6	9.7	20.2	21.5	5.3
10.50	17.9	-42.1	-13.1	-20.2	9.1	1.0	28.3	10.4	20.3	21.4	5.2
11.00	17.9	-41.6	-13.6	-19.4	8.6	1.0	27.9	10.0	20.2	21.4	5.2
11.50	18.1	-40.7	-15.0	-19.2	7.7	1.0	27.8	9.7	19.9	21.1	5.3
12.00	18.1	-39.8	-16.6	-19.8	7.1	1.0	27.6	9.5	19.4	20.7	5.5
12.50	18.2	-39.0	-17.7	-21.2	6.5	1.0	26.5	8.3	19.0	20.3	5.7
13.00	18.1	-38.4	-17.1	-24.9	6.2	1.0	25.6	7.6	18.3	20.0	5.8
13.50	17.8	-37.8	-14.7	-38.9	5.9	1.0	25.9	8.1	17.8	19.8	6.0
14.00	17.4	-37.3	-12.7	-25.3	5.7	1.0	25.8	8.3	17.2	19.6	6.1
14.50	17.1	-36.8	-12.2	-20.9	5.6	1.0	25.3	8.2	16.9	19.5	6.3
15.00	16.9	-36.4	-12.1	-17.5	5.5	1.0	25.1	8.3	16.5	19.2	6.5
15.50	16.7	-36.1	-11.9	-15.3	5.4	1.0	24.5	7.8	16.2	18.8	6.7
16.00	16.5	-36.1	-12.3	-15.1	5.5	1.0	24.0	7.6	15.7	18.5	6.8
16.50	16.3	-35.6	-14.6	-17.1	5.5	1.0	23.8	7.4	15.3	18.0	7.0
17.00	16.0	-35.4	-19.6	-19.6	5.8	1.0	22.5	6.5	14.5	17.6	7.2
17.50	15.5	-35.5	-29.9	-17.9	6.3	1.0	21.9	6.4	14.0	16.8	7.3
18.00	14.7	-35.6	-33.8	-13.8	6.9	1.0	21.2	6.6	12.9	16.2	7.6
18.50	13.6	-36.4	-27.5	-10.7	8.1	0.9	20.3	6.7	12.3	15.3	7.8
19.00	12.6	-36.7	-19.0	-9.1	9.1	0.9	19.2	6.6	11.3	14.7	8.1
19.50	11.7	-37.0	-16.5	-8.9	10.3	0.9	18.7	7.0	10.6	13.8	8.5
20.00	10.9	-37.3	-15.7	-9.7	11.9	0.9	18.7	7.8	9.7	13.3	9.0

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions

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

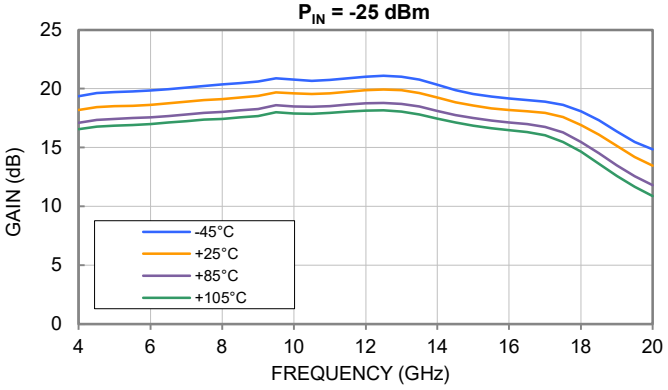
TEST CONDITIONS: V_{CC} = +6 V; V_C = +6 V; V_B = +5.8 V , I_{CC} = 142 mA, I_C = 7.73 mA, I_B = 14.26 mA @ Temperature = +105°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	IP-3 Input	1dB Comp. Output	3dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
4.00	16.5	-56.4	-7.1	-13.7	41.7	1.1	29.9	13.5	20.3	23.7	8.3
4.50	16.7	-53.2	-8.3	-13.6	29.8	1.1	28.4	11.7	20.0	23.3	7.5
5.00	16.8	-52.4	-9.8	-13.5	28.2	1.1	30.0	13.2	19.7	23.1	6.7
5.50	16.9	-51.6	-11.1	-14.2	26.5	1.0	29.8	12.9	19.6	23.0	6.0
6.00	17.0	-51.1	-12.1	-14.9	25.7	1.0	29.4	12.4	19.6	23.1	5.5
6.50	17.1	-49.5	-12.9	-15.2	21.6	1.0	28.4	11.3	19.5	22.9	5.4
7.00	17.2	-48.4	-13.6	-15.3	19.0	1.0	29.9	12.6	19.5	22.8	5.3
7.50	17.3	-47.2	-14.0	-14.4	16.4	1.0	28.6	11.2	19.5	22.6	5.4
8.00	17.4	-46.6	-14.2	-12.8	15.0	1.0	28.7	11.3	19.4	22.4	5.5
8.50	17.5	-45.2	-14.0	-12.1	12.7	1.0	28.9	11.4	19.5	22.3	5.6
9.00	17.6	-45.1	-13.3	-11.7	12.2	1.0	28.4	10.8	19.5	22.2	5.6
9.50	18.0	-45.2	-12.9	-11.6	11.8	1.0	27.9	9.9	19.6	22.1	5.7
10.00	17.8	-43.7	-12.9	-20.2	10.9	1.0	27.2	9.4	19.3	21.9	5.3
10.50	17.8	-42.1	-13.1	-20.1	9.1	1.0	27.4	9.6	19.4	21.8	5.3
11.00	17.9	-41.7	-13.6	-19.3	8.7	1.0	27.5	9.6	19.3	21.8	5.3
11.50	18.0	-40.9	-15.2	-19.1	8.0	1.0	27.3	9.3	19.1	21.4	5.4
12.00	18.1	-40.1	-16.6	-19.8	7.4	1.0	26.5	8.5	18.7	21.1	5.6
12.50	18.1	-39.2	-17.6	-21.1	6.7	1.0	25.9	7.8	18.4	20.6	5.7
13.00	18.0	-38.6	-17.1	-24.7	6.4	1.0	25.4	7.4	17.8	20.4	5.9
13.50	17.8	-37.9	-14.8	-39.8	6.0	1.0	25.5	7.7	17.4	20.0	6.1
14.00	17.4	-37.3	-12.7	-25.7	5.8	1.0	25.7	8.3	17.0	19.8	6.3
14.50	17.1	-36.8	-12.2	-21.3	5.6	1.0	25.0	7.9	16.6	19.7	6.4
15.00	16.9	-36.7	-12.2	-17.7	5.7	1.0	24.9	8.0	16.3	19.4	6.5
15.50	16.6	-36.4	-11.9	-15.4	5.6	1.0	23.7	7.0	16.0	18.9	6.7
16.00	16.5	-36.0	-12.3	-15.1	5.5	1.0	23.5	7.0	15.6	18.6	6.9
16.50	16.3	-35.9	-14.5	-17.0	5.7	1.0	24.0	7.6	15.3	18.1	7.1
17.00	16.1	-35.7	-19.4	-19.5	5.9	1.0	22.2	6.1	14.6	17.7	7.2
17.50	15.6	-35.6	-30.6	-18.1	6.4	1.0	21.6	6.0	14.0	16.9	7.4
18.00	14.8	-35.7	-34.4	-14.0	6.9	1.0	21.0	6.2	13.1	16.2	7.7
18.50	13.7	-36.4	-27.9	-10.8	8.0	0.9	20.1	6.4	12.5	15.4	7.9
19.00	12.7	-36.7	-18.9	-9.2	8.9	0.9	18.9	6.2	11.4	14.7	8.3
19.50	11.8	-36.9	-16.5	-8.9	10.1	0.9	18.5	6.7	10.6	13.8	8.6
20.00	11.0	-37.4	-15.7	-9.7	11.8	0.9	18.3	7.3	9.9	13.3	9.1

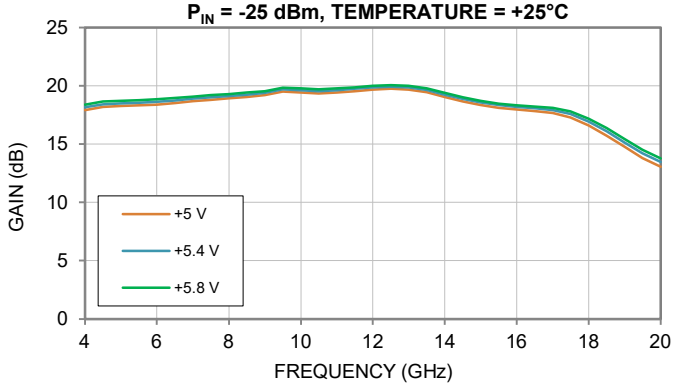
Typical Performance Curves

Note: The following data was taken on the Mini-Circuits Characterization Test Board TB-LVA-6183PNC+ (Figure 2). All data taken at nominal conditions V_{CC} = +6 V, V_C = +6 V, and V_B = +5.4 V unless noted otherwise.

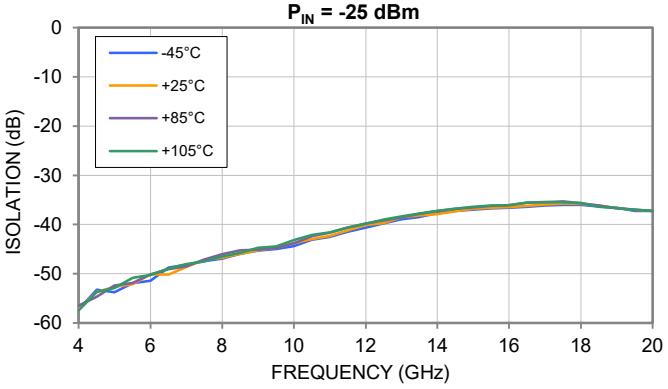
GAIN vs. TEMPERATURE
P_{IN} = -25 dBm



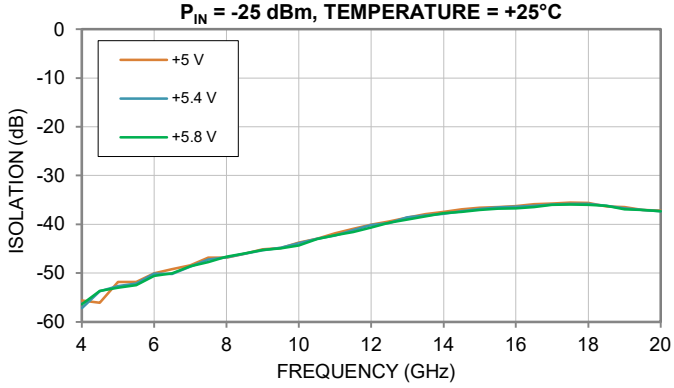
GAIN vs. BASE VOLTAGE (V_B)
P_{IN} = -25 dBm, TEMPERATURE = +25°C



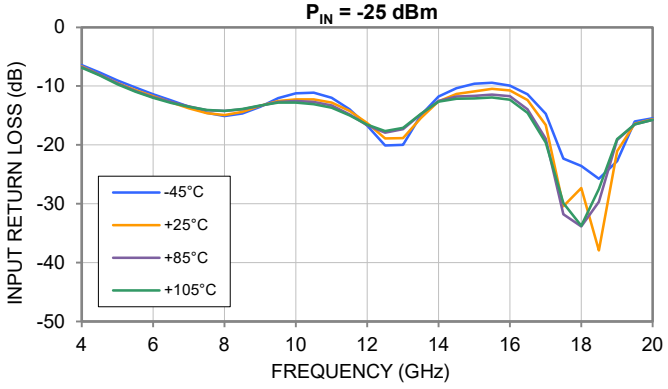
ISOLATION vs. TEMPERATURE
P_{IN} = -25 dBm



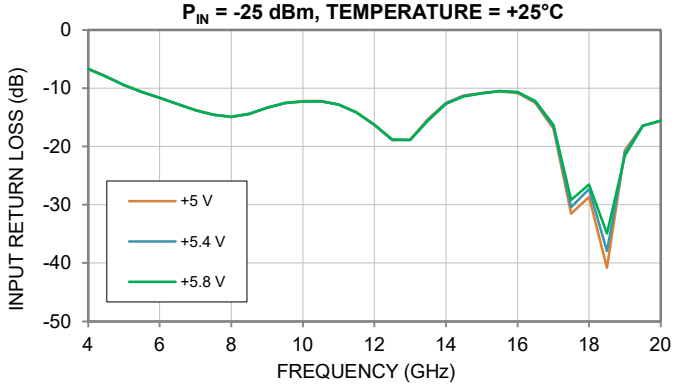
ISOLATION vs. BASE VOLTAGE (V_B)
P_{IN} = -25 dBm, TEMPERATURE = +25°C



INPUT RETURN LOSS vs. TEMPERATURE
P_{IN} = -25 dBm



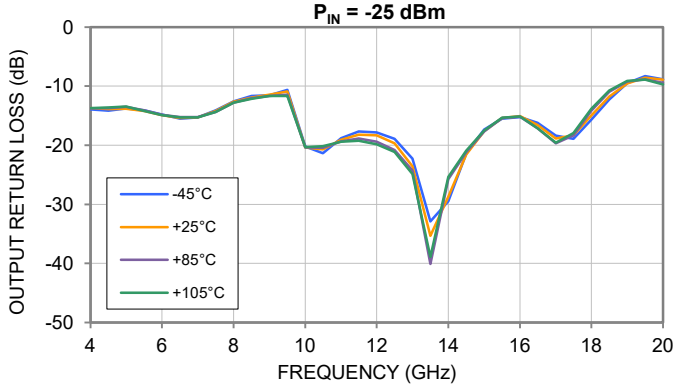
INPUT RETURN LOSS vs. BASE VOLTAGE (V_B)
P_{IN} = -25 dBm, TEMPERATURE = +25°C



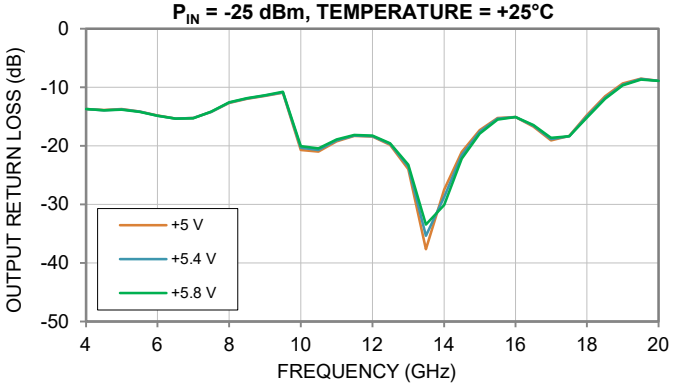
Typical Performance Curves

Note: The following data was taken on the Mini-Circuits Characterization Test Board TB-LVA-6183PNC+ (Figure 2). All data taken at nominal conditions V_{CC} = +6 V, V_C = +6 V, and V_B = +5.4 V unless noted otherwise.

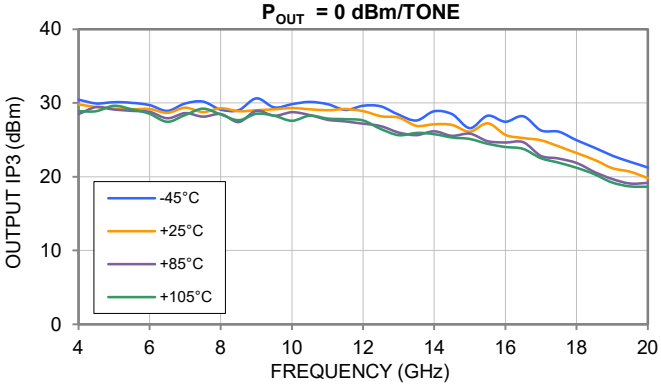
OUTPUT RETURN LOSS vs. TEMPERATURE
P_{IN} = -25 dBm



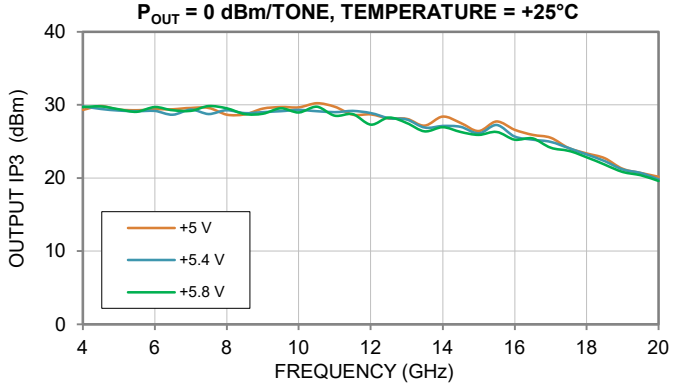
OUTPUT RETURN LOSS vs. BASE VOLTAGE (V_B)
P_{IN} = -25 dBm, TEMPERATURE = +25°C



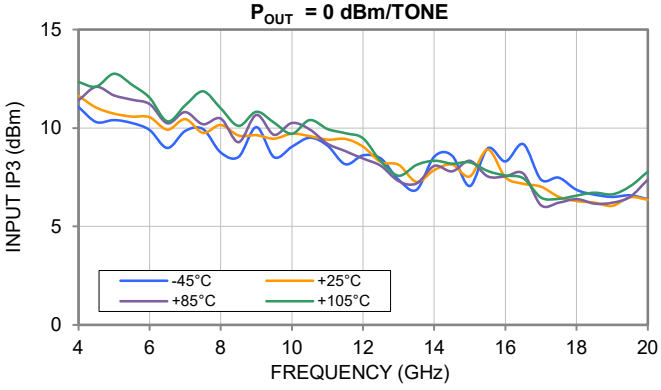
OUTPUT IP3 vs. TEMPERATURE
P_{OUT} = 0 dBm/TONE



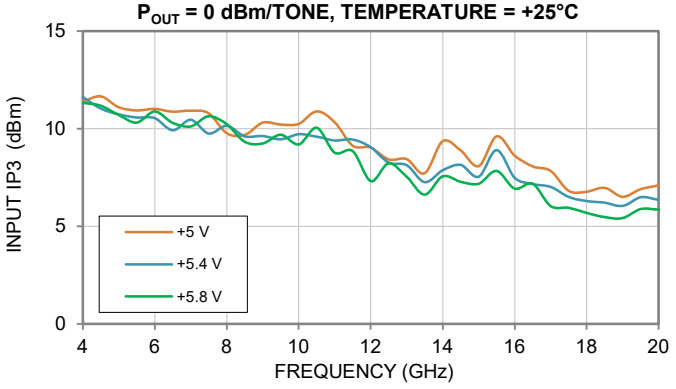
OUTPUT IP3 vs. BASE VOLTAGE (V_B)
P_{OUT} = 0 dBm/TONE, TEMPERATURE = +25°C



INPUT IP3 vs. TEMPERATURE
P_{OUT} = 0 dBm/TONE

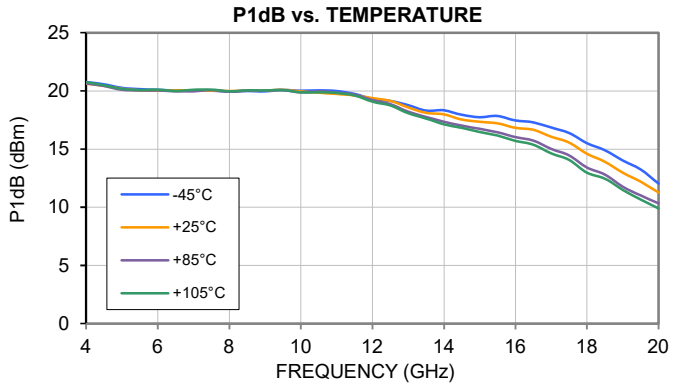


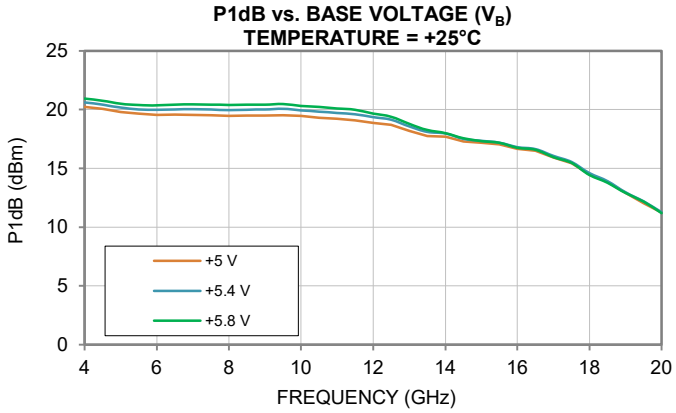
INPUT IP3 vs. BASE VOLTAGE (V_B)
P_{OUT} = 0 dBm/TONE, TEMPERATURE = +25°C

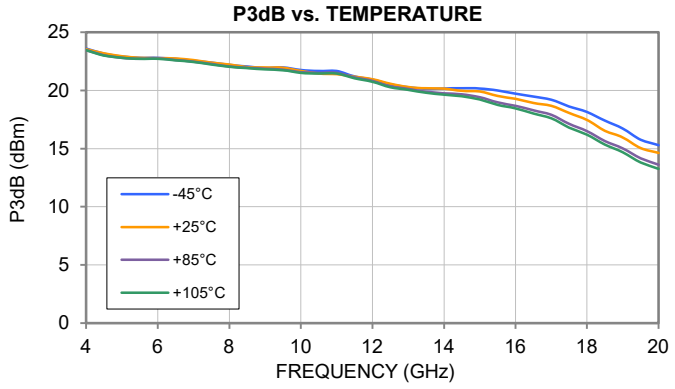


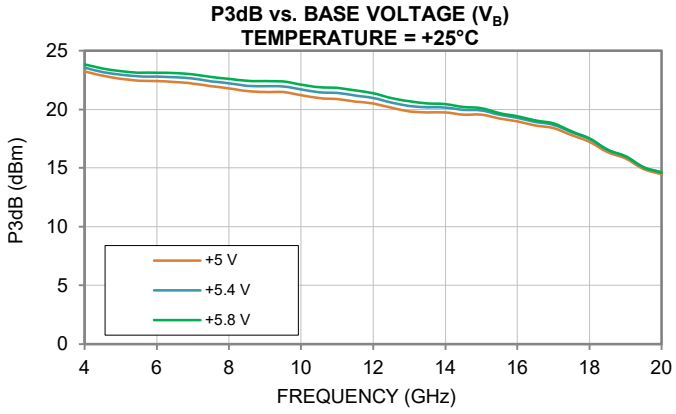
Typical Performance Curves

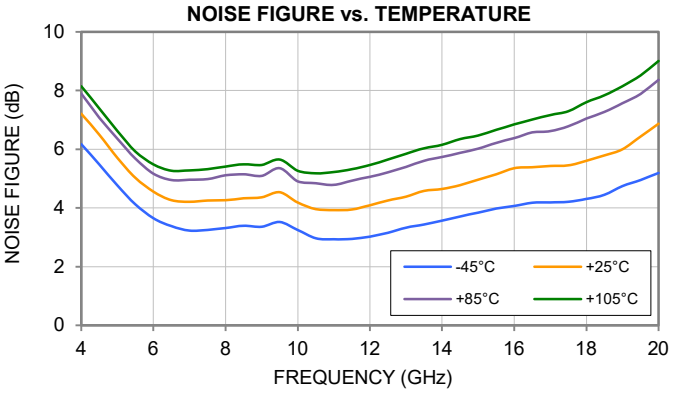
Note: The following data was taken on the Mini-Circuits Characterization Test Board TB-LVA-6183PNC+ (Figure 2). All data taken at nominal conditions V_{CC} = +6 V, V_C = +6 V, and V_B = +5.4 V unless noted otherwise.

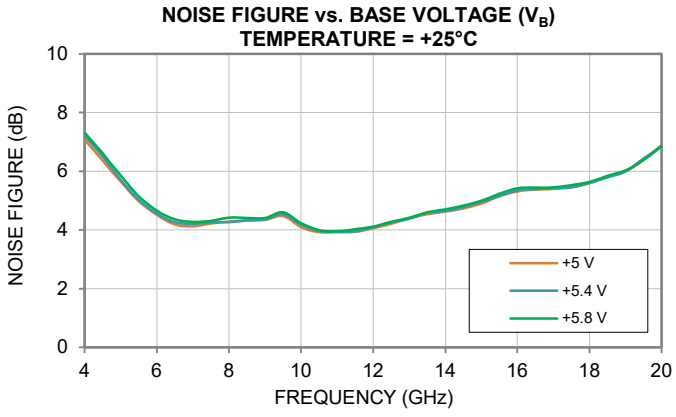






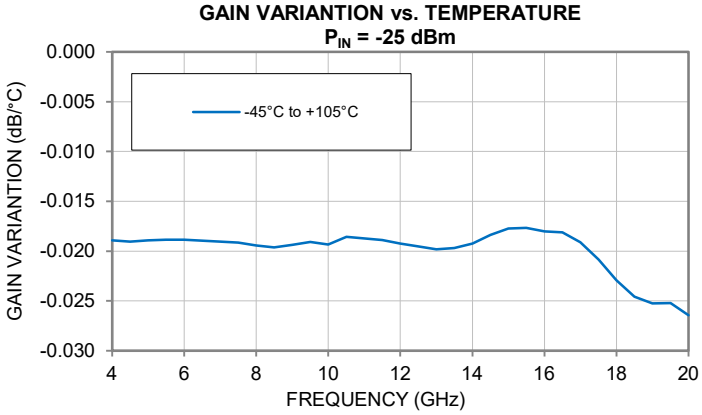


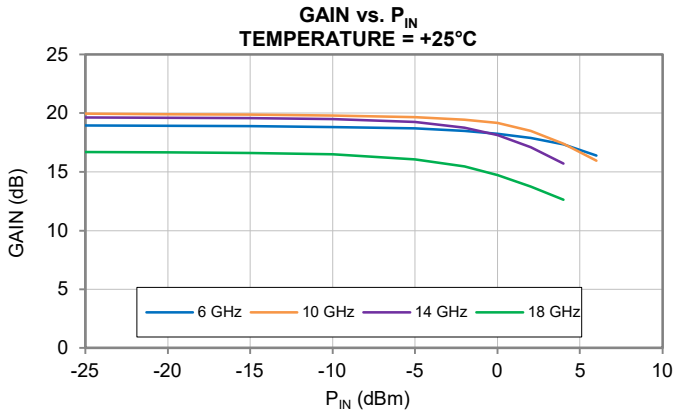


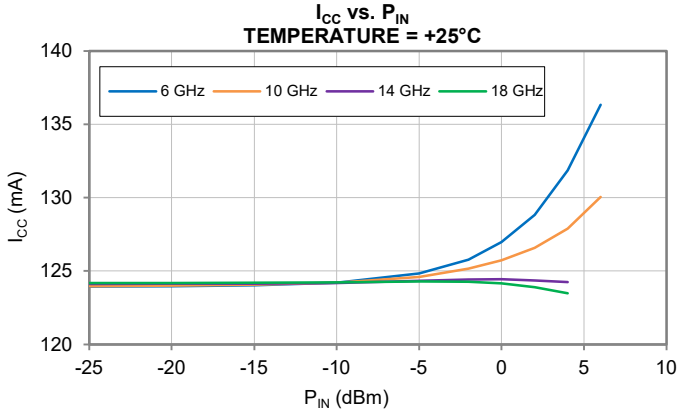


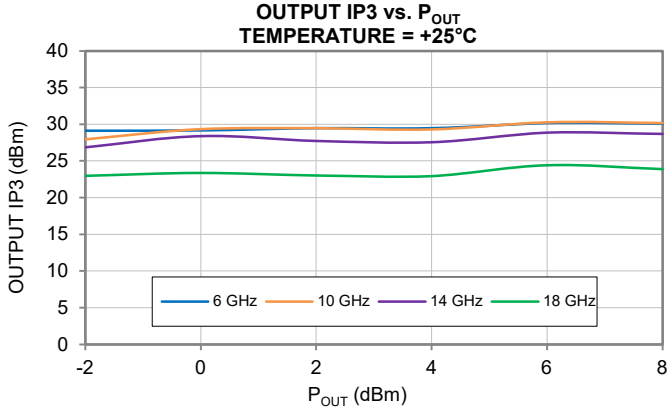
Typical Performance Curves

Note: The following data was taken on the Mini-Circuits Characterization Test Board TB-LVA-6183PNC+ (Figure 2). All data taken at nominal conditions V_{CC} = +6 V, V_C = +6 V, and V_B = +5.4 V unless noted otherwise.









Typical Performance Curves

Note: The following data was taken on the Mini-Circuits Characterization Test Board TB-LVA-6183PNC+ (Figure 2). All data taken at nominal conditions V_{CC} = +6 V, V_C = +6 V, and V_B = +5.4 V unless noted otherwise.

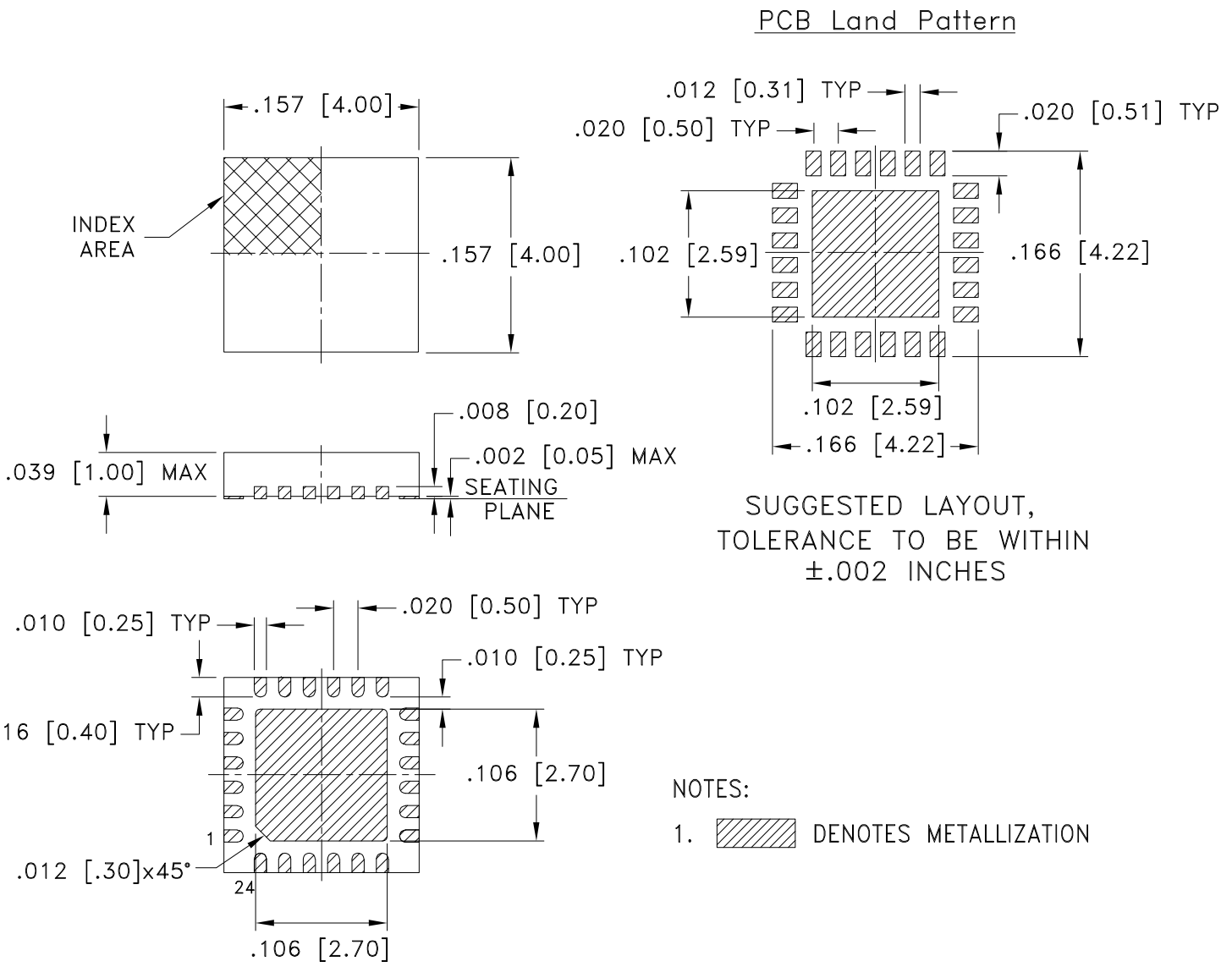
(RF Frequency = 6 GHz, RF Input Power = +3 dBm)



Case Style DG

Outline Dimensions

DG1847



Weight: .04 grams

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

Notes:

1. Case material: Plastic.
2. Termination finish:

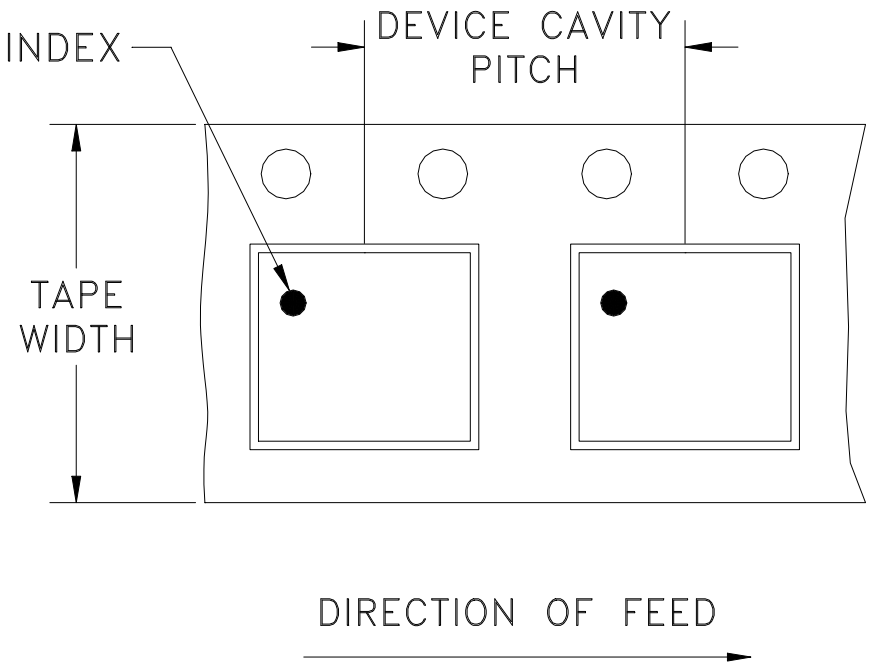
For RoHS Case Styles: Tin-Silver alloy plate over Nickel barrier or Matte-Tin or NiPdAu All models, (+) suffix. See model Data sheet.

For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

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RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F68

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel see note	
12	8	7	Small quantity standard	20
				50
				100
				200
				500
		7	Standard	1000
		13	Standard	2000
				3000
				4000

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.

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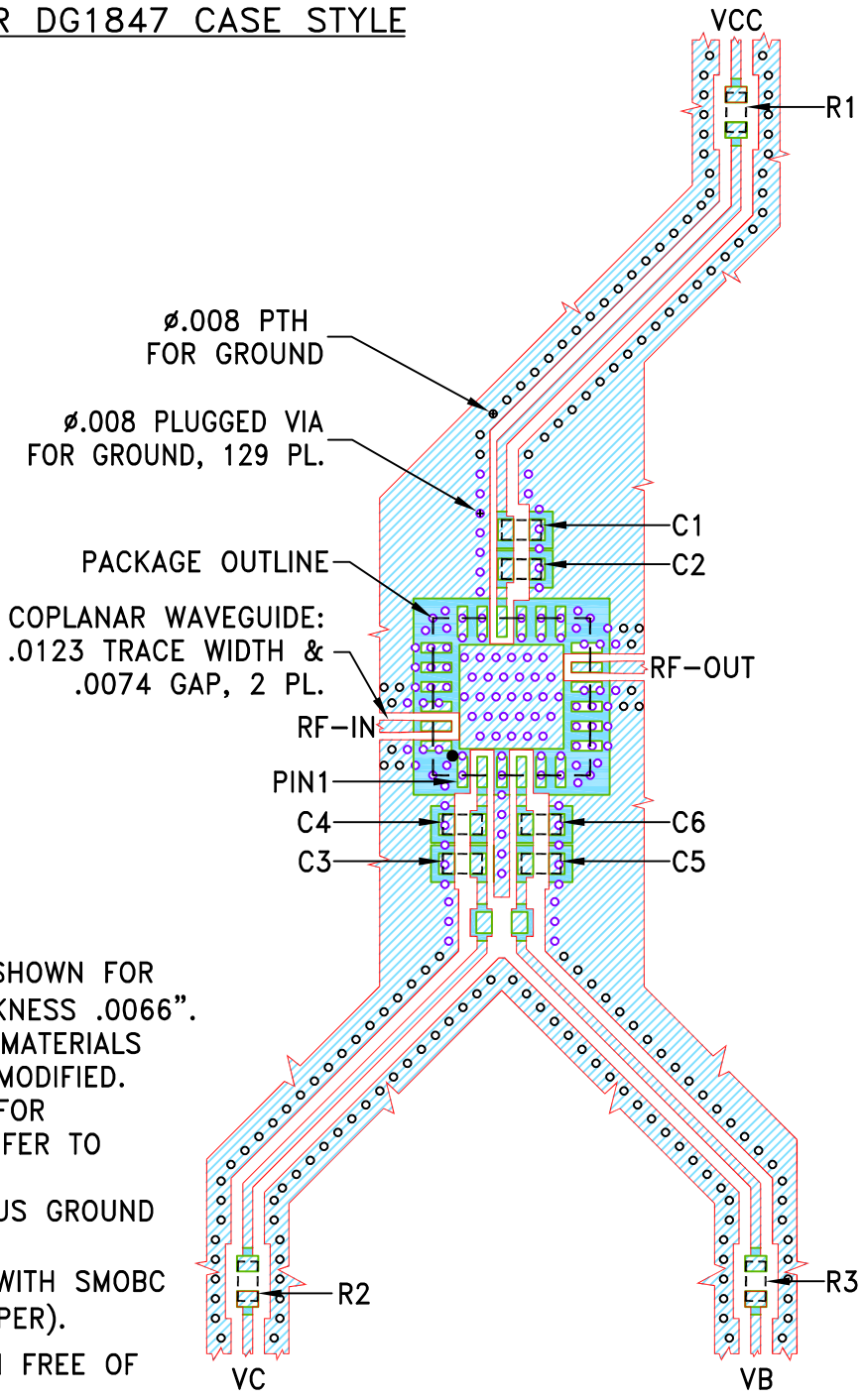
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THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	ECO-020867	NEW RELEASE	02/14/24	ITG	IL
A	ECO-021136	ADDED R1 THROUGH R3	03/12/24	ITG	CT

SUGGESTED MOUNTING CONFIGURATION FOR DG1847 CASE STYLE

COMPONENT	SIZE
C1-C6	0402
R1-R3	0402



NOTES:

1. TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .0066". COPPER: 1 OZ. 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-LVA-6183PNC+.
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	DRAWN	ITG	02/14/24
TOLERANCES ON:	CHECKED	GF	02/14/24
2 PL DECIMALS ±	APPROVED	IL	02/14/24
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

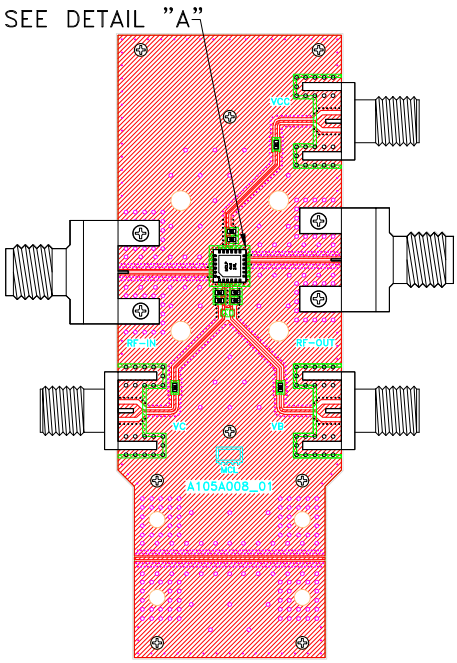
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

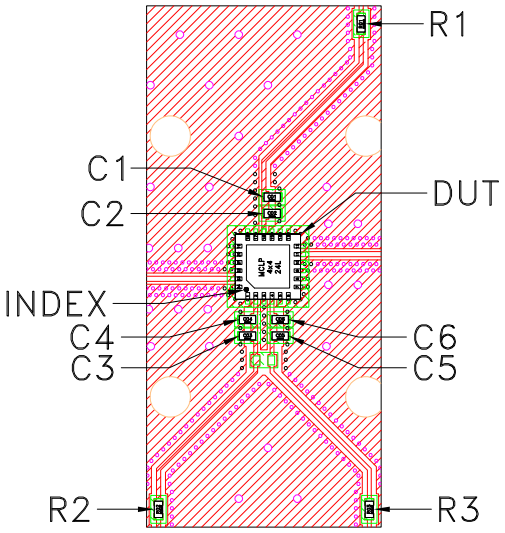
PL, DG1847, TB-LVA-6183PN(C)+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-777	A

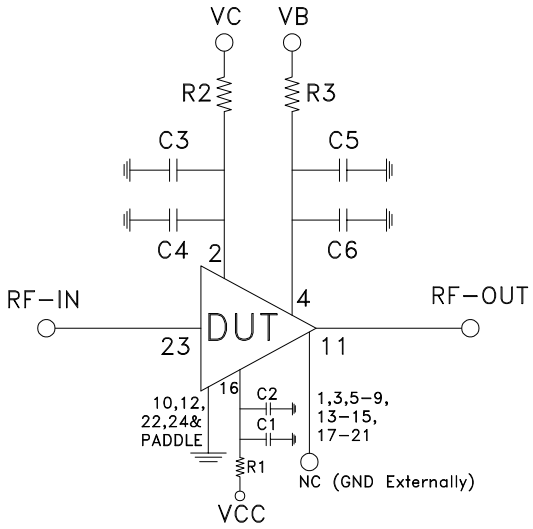
FILE:	SCALE:	SHEET:
98PL777	5:1	1 OF 1

Evaluation Board and Circuit





DETAIL "A"
LOCATION OF
UNITS COMPONENTS
(SCALE 2:1)



SCHEMATIC DIAGRAM

Component	Size	Value	Part Number	Manufacturer
C1,C3,C5	0402	0.1uF	GRM155R71H104KE14J	Murata
C2,C4,C6	0402	100pF	GRM1555C1H101JA01D	Murata
R1,R2,R3	0402	00hm	RK73Z1ETTP	KOA Speer

Notes:

1. 2.92mm Female Connectors.
2. PCB Material: Roger RO4350B or equivalent,
   Dielectric constant=3.5, Thickness=0.0066 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

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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
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

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