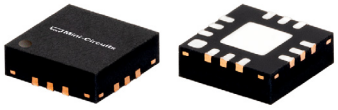
MMIC SURFACE MOUNT

Wideband Amplifier PMA3-15453+

50Ω 15 to 45 GHz High Dynamic Range

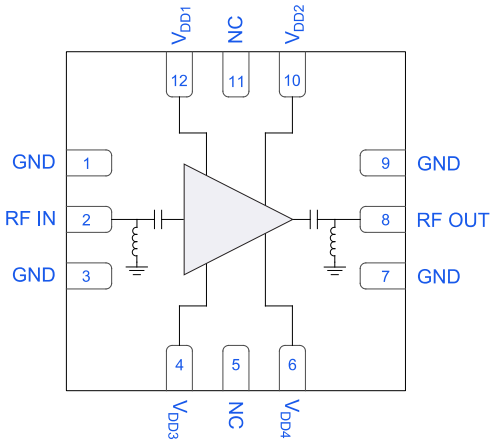
THE BIG DEAL

- Low Noise Figure, Typ. 3.2 dB
- High OIP3, Typ. +25 dBm
- P1dB, Typ. +17 dBm
- Single +5 V Positive Supply Voltage
- 3 × 3 mm, 12-Lead QFN-Style Package



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



APPLICATIONS

- Test & Measurement Equipment
- 5G mmWave and Back Haul Radio Systems
- Satellite Communications
- Radar, EW, and ECM Defense Systems

PRODUCT OVERVIEW

The PMA3-15453+ is a pHEMT based wideband, low noise MMIC amplifier with a unique combination of high dynamic range and low noise figure over a very broad bandwidth making it ideal for use in a wide variety of transmitter and receiver applications. This design operates on a single 5 V positive supply, is matched to 50Ω and comes in a tiny plastic package (3 × 3 × 0.89 mm), accommodating dense circuit board layouts.

KEY FEATURES

Feature	Advantages
Low Noise Figure, Typ. 3.2 dB	Enables lower system noise figure performance.
High Dynamic Range • OIP3, Typ. +25 dBm • P1dB, Typ. +17 dBm	Offer low noise figure with correspondingly high P1dB and OIP3 enables flexibility to achieve systems performance with multiple device cascade signal chains
3 × 3 mm 12-lead QFN-Style Package	Small footprint saves space in dense layouts while providing low inductance, repeatable transitions, and excellent thermal contact to the PCB.

Wideband Amplifier PMA3-15453+

50Ω 15 to 45 GHz High Dynamic Range

ELECTRICAL SPECIFICATIONS[1] AT +25 °C, V_S = +5 V, UNLESS NOTED OTHERWISE

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range		15		45	GHz
Gain	15	17.9	18.9	–	dB
	20	15.9	17.2	–	
	30	15.0	16.7	–	
	40	13.1	14.9	–	
	45	7.2	11.0	–	
Output Power at 1 dB Compression (P1dB)	15	–	+13.2	–	dBm
	20	–	+13.0	–	
	30	–	+17.1	–	
	40	–	+15.0	–	
	45	–	+12.1	–	
Output Third-Order Intercept (P_{OUT} = -5 dBm/Tone)	15	–	+21	–	dBm
	20	–	+23	–	
	30	–	+25	–	
	40	–	+25	–	
	45	–	+24	–	
Input Return Loss	15	–	20	–	dB
	20	–	11	–	
	30	–	13	–	
	40	–	20	–	
	45	–	10	–	
Output Return Loss	15	–	12	–	dB
	20	–	10	–	
	30	–	12	–	
	40	–	21	–	
	45	–	14	–	
Isolation	15 - 45	–	40	–	dB
Noise Figure	15	–	2.6	–	dB
	20	–	2.8	–	
	30	–	3.2	–	
	40	–	3.7	–	
	45	–	5.2	–	
Device Operating Voltage (V_S)	–	+4.75	+5.0	+5.25	V
Device Operating Current (I_S)[2]	–	–	128	–	mA
DC Current Variation vs. Temperature[3]	–	–	-19.23	–	µA/°C
DC Current Variation vs. Voltage[4]	–	–	0.03	–	mA/mV

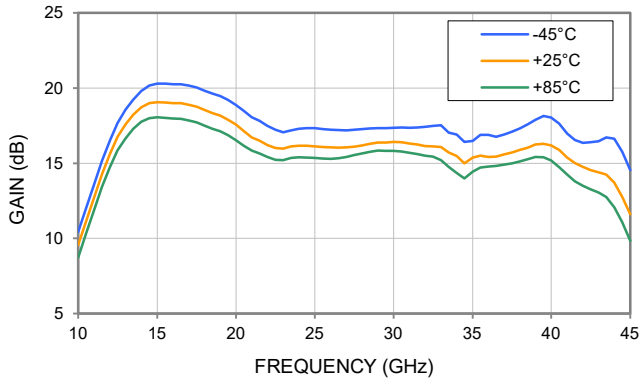
1. Tested in Mini-Circuits Characterization Test/Evaluation Board TB-PMA3-15453C+. See Figure 2. Board loss de-embedded to the device.
2. Current at P_{IN} = -25 dBm. Increases to 139 mA at P1dB.
3. ((Current at +85 °C - Current at -45 °C)) / (+130 °C))
4. ((Current at +5.25 V mA) - (Current at +4.75 V in mA)) / ((+5.25 V - +4.75 V) * 1000 mA/mV)

Wideband Amplifier PMA3-15453+

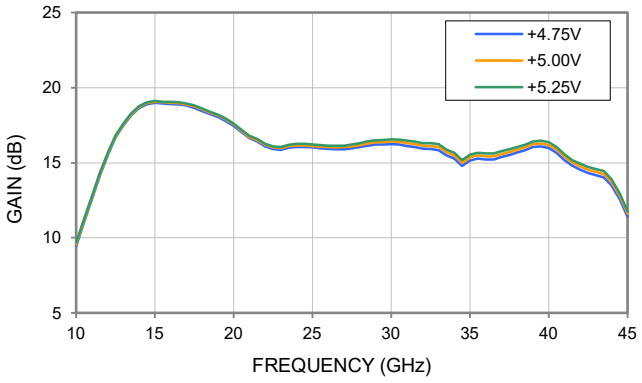
50Ω 15 to 45 GHz High Dynamic Range

TYPICAL PERFORMANCE GRAPHS

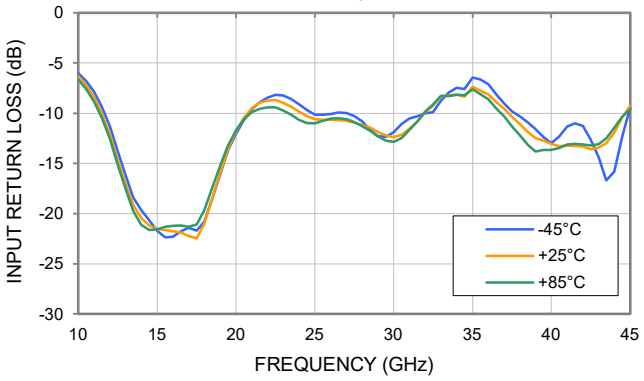
GAIN vs. TEMPERATURE,
P_{IN} = -25 dBm, V_S = +5 V



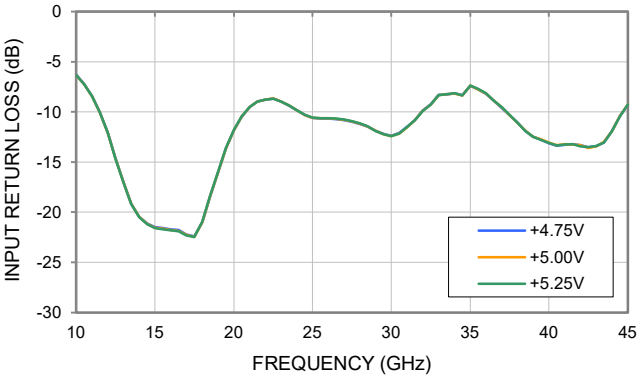
GAIN vs. DEVICE VOLTAGE,
P_{IN} = -25 dBm, TEMPERATURE = +25°C



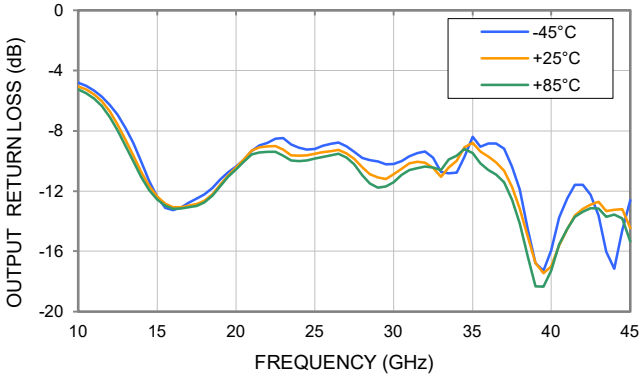
INPUT RETURN LOSS vs.TEMPERATURE,
P_{IN} = -25 dBm, V_S = +5 V



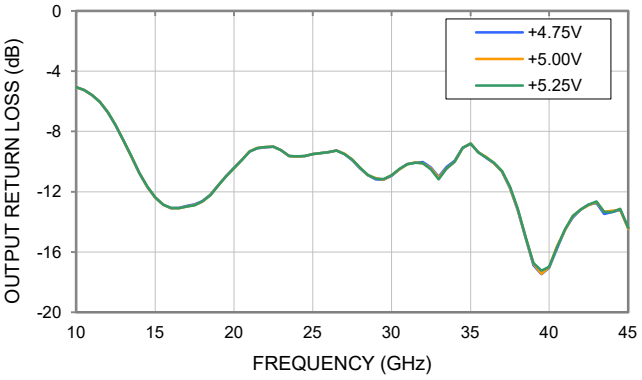
INPUT RETURN LOSS vs. DEVICE VOLTAGE,
P_{IN} = -25 dBm, TEMPERATURE = +25°C



OUTPUT RETURN LOSS vs. TEMPERATURE,
P_{IN} = -25 dBm, V_S = +5 V

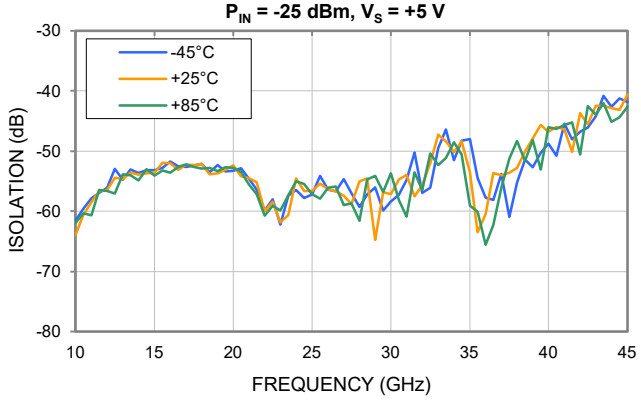


OUTPUT RETURN LOSS vs. DEVICE VOLTAGE,
P_{IN} = -25 dBm, TEMPERATURE = +25°C

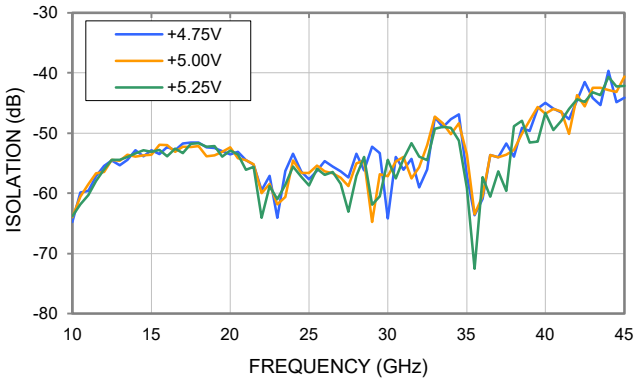


TYPICAL PERFORMANCE GRAPHS

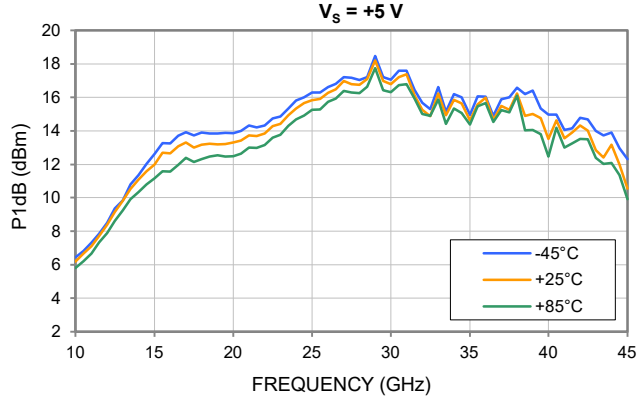
ISOLATION vs.TEMPERATURE, P_{IN} = -25 dBm, V_S = +5 V



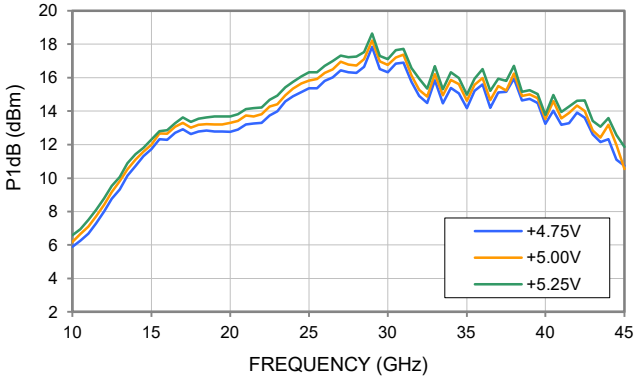
ISOLATION vs. DEVICE VOLTAGE, P_{IN} = -25 dBm, TEMPERATURE = +25°C



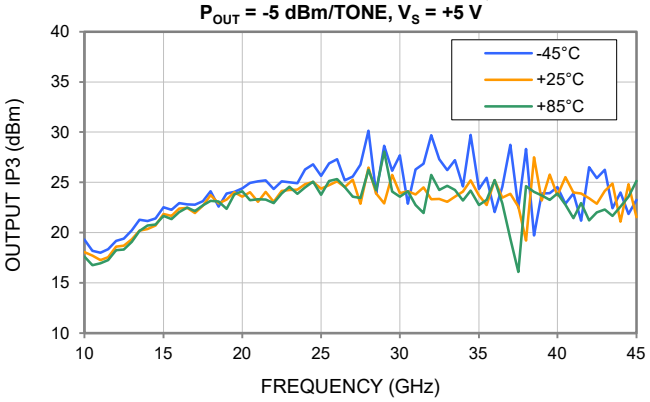
P1dB vs. TEMPERATURE, V_S = +5 V



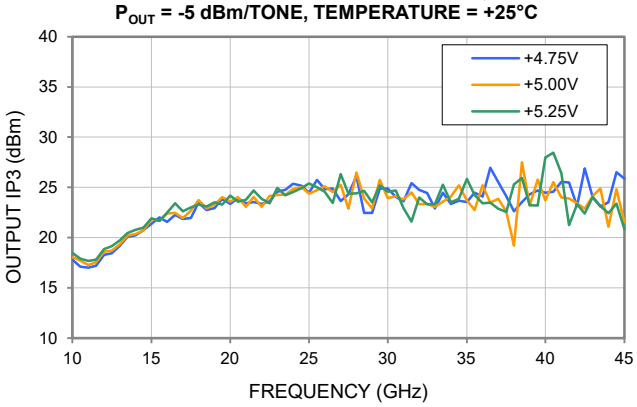
P1dB vs. DEVICE VOLTAGE, TEMPERATURE = +25°C



OUTPUT IP3 vs. TEMPERATURE, P_{OUT} = -5 dBm/TONE, V_S = +5 V



OUTPUT IP3 vs. DEVICE VOLTAGE, P_{OUT} = -5 dBm/TONE, TEMPERATURE = +25°C

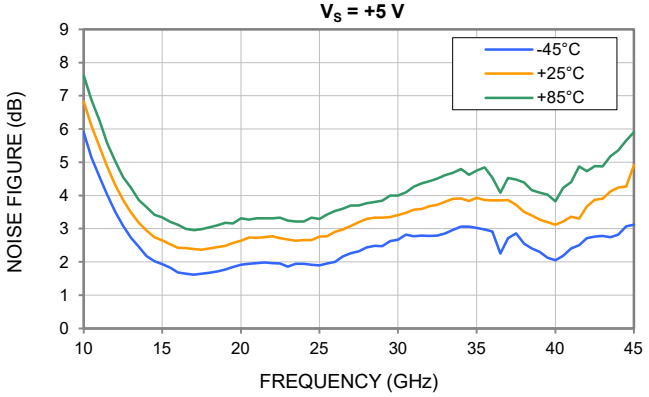


Wideband Amplifier PMA3-15453+

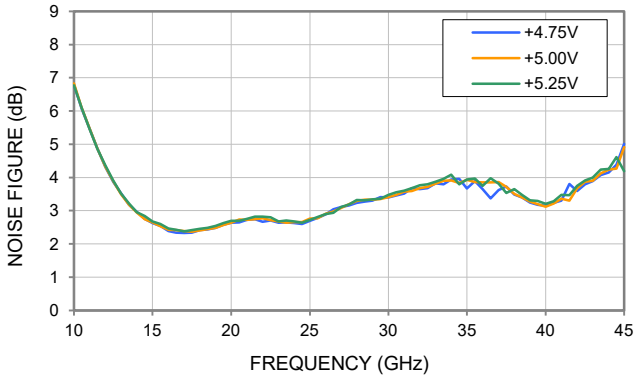
50Ω 15 to 45 GHz High Dynamic Range

TYPICAL PERFORMANCE GRAPHS

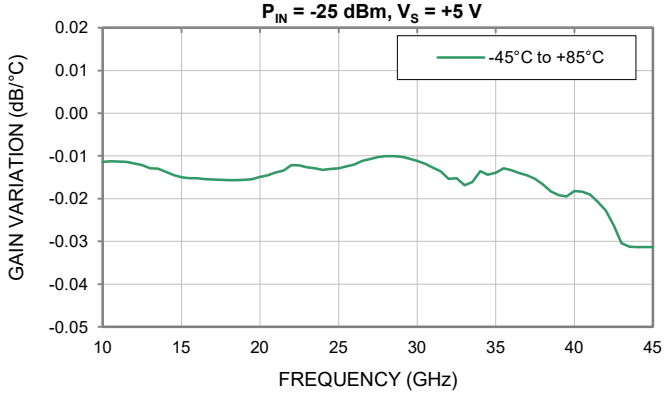
NOISE FIGURE vs. TEMPERATURE,
V_S = +5 V



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



GAIN VARIATION vs. TEMPERATURE,
P_{IN} = -25 dBm, V_S = +5 V



ABSOLUTE MAXIMUM RATINGS[5]

Parameter	Ratings
Operating Temperature	-45 °C to +85 °C
Storage Temperature	-65 °C to +150 °C
Junction Temperature[6]	+150 °C
Total Power Dissipation	1.62 W
Input Power (CW), V_S = +5 V	+23 dBm
DC Voltage at V_{DD1}, V_{DD2}, V_{DD3}, V_{DD4}	+10 V

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]	32.2 °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 PMA3-15453+

50Ω 15 to 45 GHz High Dynamic Range

FUNCTIONAL DIAGRAM

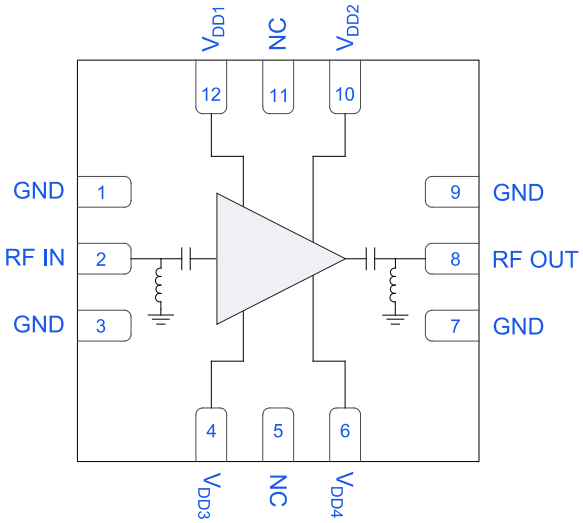


Figure 1. PMA3-15453+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description (Refer to Figure 2)
RF-IN	2	RF-IN Pad connects to RF Input port.
RF-OUT	8	RF-OUT Pad connects to RF Output port.
V_{DD1}	12	DC Input Pad connects to voltage input port V_{DD1}
V_{DD2}	10	DC Input Pad connects to voltage input port V_{DD2}
V_{DD3}	4	DC Input Pad connects to voltage input port V_{DD3}
V_{DD4}	6	DC Input Pad connects to voltage input port V_{DD4}
GND	1, 3, 7, 9	Connects to ground
NC	5, 11	Not used internally. Connected to ground on test board.

CHARACTERIZATION TEST BOARD

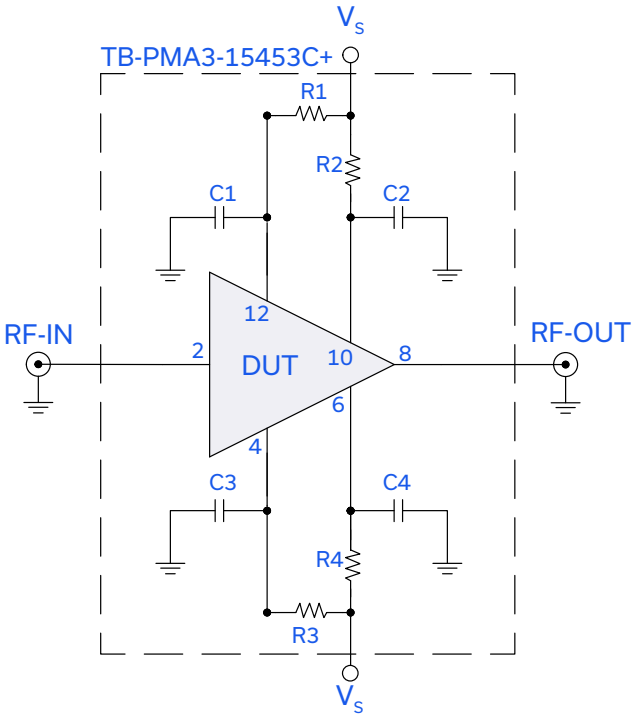


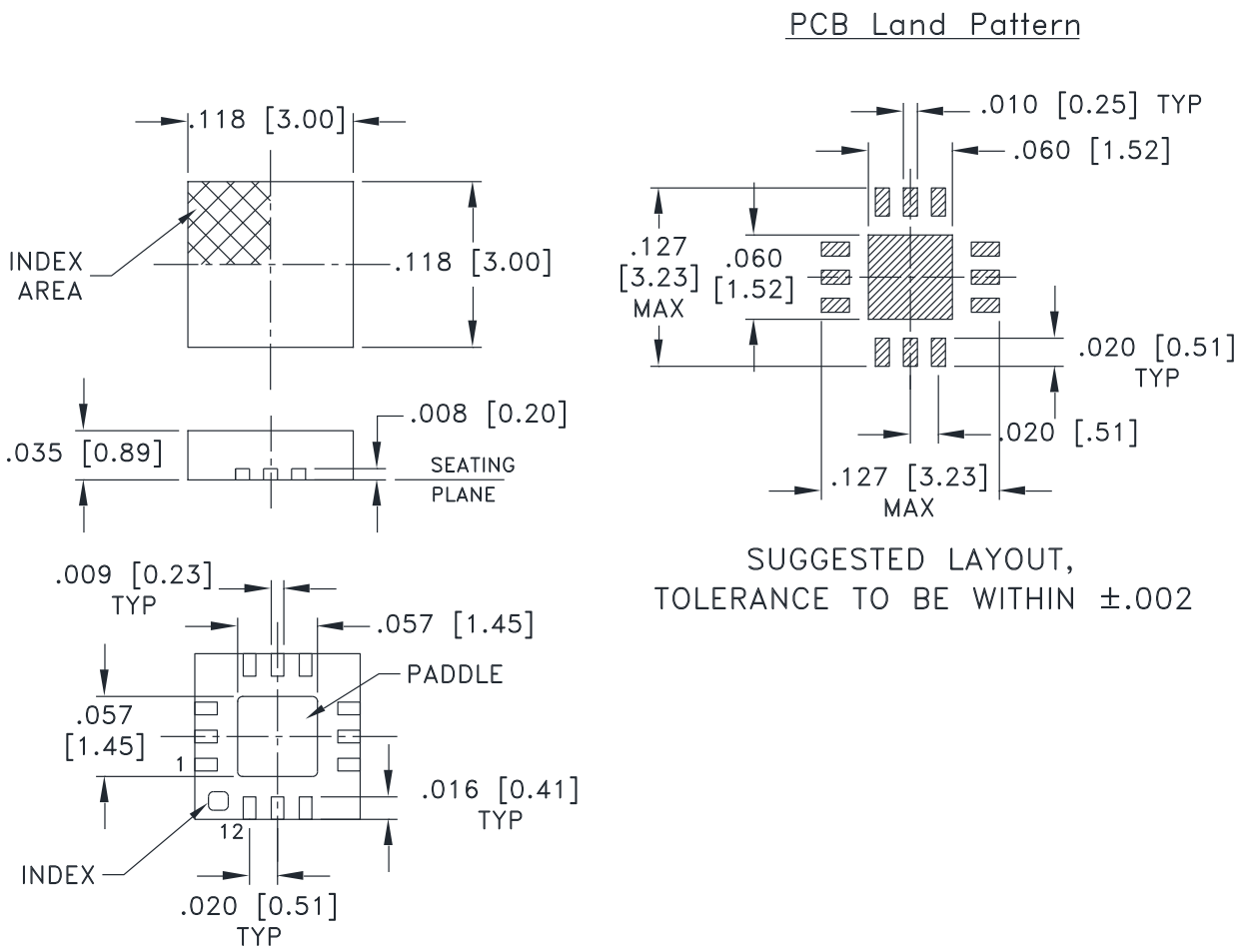
Figure 2. DUT soldered on Mini-Circuits Characterization Test Board: TB-PMA3-15453C+

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}= -25 dBm
2. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, -5 dBm/ tone at output.
3. V_S = +5 V

Component	Vendor	Vendor P/N	Value	Size
C1, C2, C3,C4	Murata	GRM1555C1H101JA01D	100 pF	0402
R1 , R3	KOA	SG73P1JTTD39R0F	39 Ω	0603
R2 , R4	KOA	SG73S1JTTD24R0F	24 Ω	0603

CASE STYLE DRAWING



Weight: .02 Grams
Dimensions are in inches [mm]. Tolerances in inches: 2 Pl. ±.01; 3 Pl.±.004 inches

Figure 3. DQ1225 Case Style Drawing

PRODUCT MARKING

Marking may contain other features or characters for internal lot control

Figure 4. PMA3-15453+ Product Marking

Wideband Amplifier PMA3-15453+

50Ω 15 to 45 GHz High Dynamic Range

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD 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-731
Evaluation Board	TB-PMA3-15453C+ Gerber File
Environmental Ratings	ENV08T1

NOTES

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits' standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/terms/viewterm.html

Typical Performance Data

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

TEST CONDITIONS: V_S = +4.75 V, I_S = 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)
10.0	9.4	64.8	6.3	5.1	170.7	0.8	17.8	5.9	6.8
10.5	11.0	59.9	7.2	5.3	87.2	0.8	17.1	6.2	6.1
11.0	12.6	59.6	8.4	5.6	77.0	0.8	17.0	6.7	5.5
11.5	14.1	57.2	10.0	6.1	53.6	0.8	17.2	7.3	4.9
12.0	15.5	55.4	12.1	6.7	41.0	0.8	18.3	8.0	4.3
12.5	16.7	54.6	14.6	7.6	35.1	0.9	18.4	8.8	3.9
13.0	17.5	55.3	17.0	8.6	37.1	0.9	19.2	9.3	3.5
13.5	18.2	54.4	19.1	9.7	32.5	0.9	20.1	10.1	3.2
14.0	18.7	52.9	20.4	10.8	26.4	0.9	20.2	10.7	3.0
14.5	18.9	53.8	21.1	11.7	29.2	0.9	20.7	11.3	2.8
15.0	19.0	52.9	21.5	12.4	26.3	0.9	21.4	11.7	2.6
15.5	18.9	53.5	21.6	12.9	28.7	1.0	22.0	12.3	2.5
16.0	18.9	52.3	21.7	13.1	25.1	1.0	21.6	12.3	2.4
16.5	18.9	52.9	21.8	13.1	27.0	1.0	22.2	12.7	2.3
17.0	18.8	51.7	22.2	12.9	24.0	1.0	21.8	12.9	2.3
17.5	18.7	51.6	22.4	12.8	24.0	1.0	21.9	12.6	2.3
18.0	18.5	51.6	21.0	12.6	24.6	1.0	23.5	12.8	2.4
18.5	18.2	52.4	18.5	12.2	27.4	1.0	22.8	12.8	2.4
19.0	18.1	52.5	16.0	11.6	27.8	1.0	22.9	12.8	2.5
19.5	17.8	53.0	13.6	11.0	29.7	1.0	23.8	12.8	2.6
20.0	17.5	53.5	11.8	10.4	31.8	1.0	23.4	12.8	2.6
20.5	17.0	53.1	10.5	9.9	30.5	1.0	23.9	12.9	2.6
21.0	16.6	54.5	9.5	9.3	36.1	1.0	23.4	13.2	2.7
21.5	16.4	55.2	9.0	9.1	39.5	1.0	23.5	13.3	2.7
22.0	16.1	59.5	8.8	9.0	66.5	1.0	23.4	13.3	2.7
22.5	15.9	57.1	8.7	9.0	51.2	1.0	23.6	13.7	2.7
23.0	15.9	64.1	9.0	9.2	117.6	1.0	24.6	14.0	2.6
23.5	16.0	56.3	9.4	9.6	48.7	1.0	24.7	14.6	2.7
24.0	16.1	53.5	9.8	9.7	35.5	1.0	25.4	14.9	2.6
24.5	16.0	56.4	10.3	9.6	50.4	1.0	25.2	15.1	2.6
25.0	16.0	57.7	10.6	9.5	59.2	1.0	24.5	15.4	2.7
25.5	16.0	56.2	10.7	9.4	50.3	1.0	25.7	15.4	2.8
26.0	15.9	54.7	10.7	9.4	42.3	1.0	24.8	15.8	2.9
26.5	15.9	55.5	10.7	9.3	46.8	1.0	24.9	16.0	3.0
27.0	15.9	56.4	10.8	9.5	52.1	1.0	23.7	16.4	3.1
27.5	16.0	57.4	11.0	9.9	59.2	1.0	24.3	16.3	3.2
28.0	16.0	53.4	11.2	10.5	38.1	1.0	26.1	16.3	3.2
28.5	16.1	56.2	11.5	10.9	52.6	1.0	22.5	16.6	3.3
29.0	16.2	52.3	11.9	11.2	33.7	1.0	22.4	17.8	3.3
29.5	16.2	53.3	12.2	11.2	38.3	1.0	24.9	16.5	3.4
30.0	16.2	64.1	12.4	10.9	132.7	1.0	24.9	16.3	3.4
30.5	16.2	54.0	12.1	10.5	40.8	1.0	24.1	16.8	3.5
31.0	16.1	56.1	11.5	10.2	51.9	1.0	23.6	16.9	3.5
31.5	16.0	54.3	10.8	10.1	41.9	1.0	25.4	15.7	3.7
32.0	15.9	59.0	9.9	10.0	72.0	1.0	24.8	14.9	3.6
32.5	15.9	56.0	9.3	10.4	50.9	1.0	24.4	14.5	3.7
33.0	15.8	47.4	8.3	11.0	18.7	1.1	22.9	15.8	3.8
33.5	15.5	49.0	8.3	10.4	23.2	1.0	24.4	14.5	3.8
34.0	15.3	47.7	8.1	10.0	20.3	1.0	23.3	15.4	3.9
34.5	14.8	46.9	8.3	9.1	19.2	1.0	23.7	15.1	4.0
35.0	15.2	57.1	7.4	8.8	57.0	1.0	23.5	14.2	3.7
35.5	15.3	63.6	7.8	9.4	124.8	1.0	24.5	15.2	3.9
36.0	15.2	61.0	8.2	9.8	95.4	1.0	24.1	15.6	3.7
36.5	15.2	53.7	8.9	10.1	42.7	1.0	27.0	14.2	3.4
37.0	15.4	54.0	9.6	10.7	45.8	1.0	25.5	15.1	3.6
37.5	15.5	51.7	10.3	11.8	36.3	1.0	24.1	15.2	3.7
38.0	15.7	53.9	11.0	13.2	48.4	1.0	22.6	15.9	3.5
38.5	15.8	49.1	11.9	15.1	28.9	1.0	23.5	14.6	3.4
39.0	16.0	49.6	12.5	16.9	31.6	1.0	24.3	14.7	3.2
39.5	16.1	46.0	12.8	17.5	21.3	1.0	24.7	14.5	3.2
40.0	16.0	45.0	13.1	17.1	19.7	1.0	24.5	13.3	3.1
40.5	15.7	46.0	13.4	15.8	22.5	1.0	24.6	14.0	3.2
41.0	15.2	46.6	13.3	14.5	25.0	1.0	25.6	13.2	3.3
41.5	14.8	47.7	13.2	13.7	29.0	1.0	25.5	13.3	3.8
42.0	14.5	44.5	13.3	13.2	20.6	1.0	23.1	13.9	3.6
42.5	14.3	41.5	13.5	12.9	14.8	1.0	26.9	13.6	3.8
43.0	14.2	44.2	13.4	12.8	20.4	1.0	24.0	12.6	3.9
43.5	14.0	45.3	13.0	13.5	23.7	1.0	23.1	12.2	4.1
44.0	13.5	39.7	11.9	13.3	13.0	1.0	23.5	12.3	4.2
44.5	12.5	44.9	10.4	13.2	25.6	1.0	26.5	11.1	4.4
45.0	11.4	44.1	9.3	14.4	26.6	1.1	25.9	10.7	5.0

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_S = +5 V, I_S = 136mA @ 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)
10.0	9.6	64.0	6.3	5.1	153.7	0.8	18.0	6.2	6.8
10.5	11.2	60.6	7.2	5.3	93.5	0.8	17.7	6.7	6.1
11.0	12.7	58.5	8.4	5.6	66.9	0.8	17.2	7.1	5.5
11.5	14.2	56.7	10.0	6.0	50.3	0.8	17.6	7.7	4.9
12.0	15.6	56.5	12.1	6.7	45.7	0.8	18.6	8.4	4.3
12.5	16.8	54.4	14.6	7.6	34.2	0.9	18.7	9.2	3.9
13.0	17.6	54.6	17.0	8.6	33.8	0.9	19.3	9.8	3.5
13.5	18.2	53.6	19.2	9.6	29.2	0.9	20.2	10.5	3.2
14.0	18.7	53.9	20.5	10.7	29.5	0.9	20.3	11.1	2.9
14.5	19.0	53.7	21.2	11.7	28.5	0.9	20.7	11.6	2.7
15.0	19.1	53.6	21.5	12.4	28.3	0.9	21.8	12.0	2.6
15.5	19.0	52.0	21.6	12.9	23.9	1.0	21.7	12.7	2.5
16.0	19.0	52.0	21.8	13.1	24.2	1.0	22.4	12.6	2.4
16.5	19.0	53.1	21.9	13.1	27.5	1.0	22.5	13.1	2.4
17.0	18.9	52.3	22.2	13.0	25.2	1.0	21.9	13.3	2.4
17.5	18.7	52.3	22.5	12.9	26.0	1.0	22.7	13.0	2.4
18.0	18.5	52.1	21.0	12.7	26.0	1.0	23.7	13.2	2.4
18.5	18.3	53.8	18.4	12.2	32.1	1.0	22.9	13.2	2.4
19.0	18.1	53.7	15.9	11.6	31.6	1.0	23.3	13.2	2.5
19.5	17.9	53.1	13.6	11.0	29.7	1.0	24.0	13.2	2.6
20.0	17.5	52.4	11.8	10.4	27.5	1.0	23.6	13.3	2.6
20.5	17.1	54.2	10.5	9.9	34.2	1.0	24.0	13.4	2.7
21.0	16.7	54.5	9.5	9.3	35.6	1.0	23.1	13.7	2.7
21.5	16.5	55.2	9.0	9.1	38.8	1.0	24.0	13.7	2.7
22.0	16.2	60.0	8.8	9.0	69.5	1.0	23.1	13.8	2.8
22.5	16.0	58.4	8.7	9.0	59.1	1.0	24.1	14.3	2.7
23.0	16.0	61.8	9.0	9.2	89.8	1.0	24.2	14.4	2.7
23.5	16.1	60.6	9.4	9.6	78.7	1.0	24.3	14.9	2.6
24.0	16.2	54.6	9.8	9.7	39.9	1.0	24.8	15.3	2.7
24.5	16.2	56.6	10.3	9.6	51.1	1.0	25.0	15.7	2.7
25.0	16.1	56.7	10.6	9.5	51.8	1.0	24.4	15.8	2.8
25.5	16.1	55.4	10.6	9.4	45.1	1.0	24.7	15.9	2.8
26.0	16.0	56.3	10.6	9.4	50.5	1.0	25.1	16.3	2.9
26.5	16.0	56.7	10.7	9.3	52.9	1.0	24.5	16.5	3.0
27.0	16.0	57.4	10.8	9.5	58.0	1.0	25.3	17.0	3.1
27.5	16.1	58.8	11.0	9.9	68.7	1.0	22.9	16.8	3.2
28.0	16.2	55.0	11.2	10.4	45.0	1.0	26.5	16.7	3.3
28.5	16.3	54.6	11.4	10.9	42.8	1.0	23.9	17.1	3.3
29.0	16.4	64.8	11.9	11.1	139.9	1.0	22.9	18.2	3.3
29.5	16.4	56.8	12.2	11.2	56.4	1.0	25.7	17.0	3.4
30.0	16.4	57.1	12.4	10.9	58.1	1.0	23.9	16.8	3.4
30.5	16.4	54.7	12.2	10.5	43.7	1.0	24.1	17.2	3.5
31.0	16.3	53.9	11.6	10.2	39.5	1.0	23.8	17.4	3.6
31.5	16.2	57.5	10.8	10.1	59.6	1.0	24.5	16.1	3.6
32.0	16.1	55.7	9.9	10.1	48.1	1.0	23.3	15.3	3.7
32.5	16.1	52.0	9.3	10.5	31.4	1.0	23.3	14.9	3.7
33.0	16.1	47.2	8.3	11.1	18.0	1.1	23.1	16.2	3.8
33.5	15.7	48.4	8.3	10.5	21.2	1.0	23.6	14.9	3.9
34.0	15.5	50.2	8.2	10.0	26.4	1.0	24.1	15.9	3.9
34.5	15.0	48.4	8.4	9.1	22.4	1.0	25.2	15.6	3.8
35.0	15.4	53.6	7.4	8.8	37.2	1.0	23.7	14.6	3.9
35.5	15.5	63.5	7.7	9.4	119.7	1.0	22.7	15.6	3.9
36.0	15.4	60.5	8.2	9.7	87.6	1.0	25.2	16.0	3.9
36.5	15.4	53.6	8.9	10.1	41.6	1.0	23.5	14.7	3.8
37.0	15.6	54.0	9.6	10.6	44.5	1.0	23.8	15.5	3.9
37.5	15.7	53.6	10.3	11.7	43.8	1.0	22.6	15.2	3.7
38.0	15.9	52.8	11.1	13.2	41.5	1.0	19.2	16.2	3.5
38.5	16.0	50.1	11.9	15.0	31.6	1.0	27.5	14.9	3.4
39.0	16.2	47.9	12.5	16.8	25.3	1.0	23.2	15.0	3.3
39.5	16.3	45.6	12.7	17.5	20.1	1.0	25.8	14.8	3.2
40.0	16.2	46.8	13.1	17.0	23.5	1.0	23.7	13.5	3.1
40.5	15.9	46.0	13.3	15.6	22.1	1.0	25.5	14.6	3.2
41.0	15.4	46.4	13.2	14.5	24.0	1.0	24.0	13.6	3.4
41.5	15.0	50.1	13.3	13.6	37.3	1.0	23.9	13.9	3.3
42.0	14.8	43.7	13.3	13.2	18.3	1.0	23.4	14.3	3.7
42.5	14.5	45.5	13.6	12.9	23.0	1.0	22.9	14.0	3.9
43.0	14.4	42.4	13.4	12.7	16.3	1.0	24.2	12.8	3.9
43.5	14.2	42.5	13.0	13.3	16.6	1.0	24.9	12.4	4.1
44.0	13.7	42.8	11.9	13.3	18.2	1.0	21.1	13.2	4.2
44.5	12.8	43.2	10.4	13.2	20.6	1.0	24.8	12.0	4.3
45.0	11.6	40.6	9.3	14.5	17.4	1.1	21.5	10.5	4.9

Typical Performance Data

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

TEST CONDITIONS: V_S = +5.25 V, I_S = 143mA @ 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)
10.0	9.7	63.8	6.3	5.1	148.7	0.8	18.5	6.6	6.8
10.5	11.3	61.9	7.3	5.3	107.0	0.8	17.9	6.9	6.1
11.0	12.8	60.3	8.5	5.6	81.6	0.8	17.7	7.5	5.4
11.5	14.3	58.0	10.1	6.0	57.4	0.8	17.8	8.1	4.9
12.0	15.7	56.0	12.1	6.7	43.0	0.8	18.8	8.8	4.4
12.5	16.8	54.4	14.7	7.6	34.0	0.9	19.1	9.5	3.9
13.0	17.6	54.4	17.1	8.6	32.8	0.9	19.7	10.1	3.5
13.5	18.3	53.9	19.2	9.6	30.1	0.9	20.5	10.9	3.2
14.0	18.8	53.4	20.5	10.7	27.7	0.9	20.8	11.4	3.0
14.5	19.0	52.9	21.2	11.7	25.9	0.9	21.0	11.8	2.8
15.0	19.1	53.1	21.6	12.4	26.6	0.9	21.9	12.3	2.7
15.5	19.1	52.8	21.7	12.9	26.0	1.0	21.6	12.8	2.6
16.0	19.0	53.8	21.8	13.1	29.6	1.0	22.5	12.9	2.5
16.5	19.0	52.6	21.9	13.1	25.8	1.0	23.4	13.3	2.4
17.0	19.0	53.3	22.3	13.0	28.3	1.0	22.6	13.6	2.4
17.5	18.8	51.8	22.5	12.9	24.3	1.0	23.0	13.4	2.4
18.0	18.6	51.7	21.0	12.6	24.5	1.0	23.3	13.5	2.5
18.5	18.4	52.2	18.4	12.2	26.5	1.0	23.1	13.6	2.5
19.0	18.2	52.2	15.9	11.6	26.4	1.0	23.5	13.7	2.5
19.5	17.9	53.9	13.6	11.0	32.2	1.0	23.3	13.7	2.6
20.0	17.6	52.9	11.8	10.4	29.1	1.0	24.2	13.7	2.7
20.5	17.2	53.6	10.4	9.9	31.6	1.0	23.6	13.8	2.7
21.0	16.8	56.1	9.5	9.3	42.4	1.0	23.8	14.1	2.8
21.5	16.6	55.6	9.0	9.1	40.5	1.0	24.7	14.2	2.8
22.0	16.3	64.1	8.8	9.0	109.8	1.0	23.9	14.2	2.8
22.5	16.1	58.8	8.7	9.0	61.2	1.0	23.4	14.7	2.8
23.0	16.0	61.0	9.0	9.2	80.7	1.0	24.9	14.9	2.7
23.5	16.2	58.6	9.4	9.6	62.0	1.0	24.2	15.4	2.7
24.0	16.3	55.6	9.8	9.6	44.2	1.0	24.5	15.7	2.7
24.5	16.2	57.3	10.3	9.6	54.6	1.0	24.9	16.1	2.6
25.0	16.2	58.7	10.6	9.5	64.6	1.0	25.4	16.3	2.7
25.5	16.2	55.9	10.6	9.4	47.2	1.0	25.0	16.3	2.8
26.0	16.1	56.9	10.6	9.4	53.4	1.0	24.6	16.7	2.9
26.5	16.1	56.5	10.7	9.3	50.7	1.0	23.4	17.0	2.9
27.0	16.1	58.5	10.7	9.5	64.4	1.0	26.3	17.3	3.1
27.5	16.2	63.1	10.9	9.8	110.2	1.0	24.4	17.2	3.2
28.0	16.3	57.1	11.1	10.4	56.2	1.0	24.4	17.3	3.3
28.5	16.4	53.9	11.4	10.9	39.3	1.0	24.7	17.5	3.3
29.0	16.5	61.9	11.9	11.1	98.6	1.0	23.5	18.6	3.3
29.5	16.5	60.5	12.2	11.2	84.6	1.0	25.2	17.3	3.4
30.0	16.6	54.4	12.4	10.9	41.7	1.0	24.6	17.1	3.5
30.5	16.5	57.5	12.2	10.5	59.4	1.0	24.7	17.6	3.6
31.0	16.5	54.3	11.5	10.2	40.5	1.0	22.9	17.7	3.6
31.5	16.4	51.6	10.8	10.1	29.6	1.0	21.6	16.6	3.7
32.0	16.3	53.9	9.9	10.1	38.4	1.0	24.0	15.9	3.8
32.5	16.3	54.5	9.3	10.5	40.7	1.0	23.3	15.3	3.8
33.0	16.2	49.3	8.3	11.2	22.3	1.1	23.3	16.7	3.9
33.5	15.9	49.0	8.2	10.4	22.2	1.0	25.3	15.3	4.0
34.0	15.7	49.1	8.1	10.0	22.9	1.0	23.5	16.3	4.1
34.5	15.2	51.3	8.4	9.1	30.6	1.0	23.9	16.0	3.8
35.0	15.5	59.1	7.4	8.8	69.0	1.0	25.8	15.0	3.9
35.5	15.7	72.6	7.7	9.4	332.2	1.0	24.2	15.9	4.0
36.0	15.6	57.4	8.1	9.7	59.9	1.0	23.4	16.5	3.7
36.5	15.6	60.6	8.9	10.1	90.7	1.0	23.5	15.2	4.0
37.0	15.8	56.4	9.5	10.6	56.9	1.0	22.9	15.9	3.8
37.5	15.9	59.6	10.3	11.7	85.9	1.0	22.5	15.8	3.5
38.0	16.1	48.8	11.1	13.1	25.9	1.0	25.3	16.7	3.7
38.5	16.2	47.9	11.9	15.0	24.2	1.0	26.0	15.1	3.5
39.0	16.4	51.6	12.5	16.7	37.9	1.0	23.2	15.2	3.3
39.5	16.5	51.4	12.8	17.2	38.1	1.0	23.2	15.0	3.3
40.0	16.4	46.7	13.1	17.0	22.8	1.0	28.0	13.8	3.2
40.5	16.1	49.5	13.3	15.7	32.3	1.0	28.5	15.0	3.3
41.0	15.5	47.9	13.2	14.5	28.0	1.0	26.4	13.9	3.5
41.5	15.2	46.0	13.2	13.6	22.8	1.0	21.2	14.3	3.5
42.0	14.9	44.4	13.4	13.2	19.4	1.0	23.3	14.6	3.7
42.5	14.7	44.8	13.5	12.9	20.7	1.0	22.4	14.6	3.9
43.0	14.6	43.2	13.4	12.6	17.5	1.0	24.1	13.4	4.0
43.5	14.4	43.7	13.1	13.4	18.8	1.0	23.1	13.1	4.2
44.0	13.9	40.7	11.9	13.4	13.9	1.0	22.4	13.6	4.3
44.5	12.9	42.3	10.4	13.1	18.1	1.0	23.4	12.6	4.6
45.0	11.8	42.2	9.3	14.4	20.5	1.1	20.8	11.9	4.2

Typical Performance Data

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

TEST CONDITIONS: V_S = +4.75 V, I_S = 129mA @ 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)
10.0	10.4	62.4	6.0	4.9	109.5	0.8	18.5	5.9	5.8
10.5	12.0	60.6	6.8	5.0	80.8	0.8	17.8	6.3	5.1
11.0	13.5	62.1	7.9	5.3	87.8	0.8	17.6	6.8	4.5
11.5	15.0	56.2	9.3	5.7	40.8	0.8	17.9	7.5	4.0
12.0	16.4	54.9	11.3	6.3	33.0	0.8	19.3	8.1	3.5
12.5	17.6	55.3	13.7	7.0	32.4	0.8	19.1	8.8	3.0
13.0	18.6	53.4	16.2	8.0	25.0	0.9	19.8	9.4	2.6
13.5	19.2	53.7	18.4	9.0	25.2	0.9	20.7	10.2	2.4
14.0	19.8	53.0	19.7	10.2	22.7	0.9	20.8	10.9	2.1
14.5	20.2	53.1	20.7	11.4	23.0	0.9	21.2	11.5	2.0
15.0	20.3	54.1	21.5	12.3	25.9	0.9	22.4	12.1	1.9
15.5	20.3	53.3	22.1	13.0	23.8	1.0	21.9	12.9	1.8
16.0	20.2	52.6	22.0	13.2	22.0	1.0	22.4	12.8	1.8
16.5	20.3	52.7	21.5	13.1	22.3	1.0	23.1	13.2	1.6
17.0	20.2	52.4	21.2	12.9	21.8	1.0	22.8	13.4	1.6
17.5	20.1	52.2	21.6	12.7	21.5	1.0	23.3	13.1	1.6
18.0	19.9	52.4	20.9	12.4	22.6	0.9	24.3	13.3	1.6
18.5	19.7	53.4	18.7	12.1	25.7	1.0	23.8	13.2	1.7
19.0	19.5	52.4	16.2	11.5	23.0	1.0	23.0	13.3	1.8
19.5	19.2	53.5	13.9	11.0	26.4	1.0	24.0	13.2	1.8
20.0	18.9	52.1	12.2	10.4	22.6	1.0	24.3	13.3	1.9
20.5	18.5	52.5	10.7	9.9	23.8	1.0	24.9	13.4	1.9
21.0	18.0	55.4	9.6	9.2	33.3	1.0	23.8	13.7	1.9
21.5	17.8	56.4	9.0	8.9	37.6	1.0	25.2	13.6	1.9
22.0	17.5	60.7	8.5	8.8	62.2	1.0	24.8	13.8	2.0
22.5	17.2	57.6	8.2	8.7	44.4	1.0	24.9	14.1	2.0
23.0	17.1	64.8	8.3	8.7	104.4	1.0	24.6	14.2	1.9
23.5	17.2	59.0	8.6	9.2	54.1	1.0	25.7	14.8	1.9
24.0	17.3	56.3	9.1	9.3	40.3	1.0	25.2	15.2	1.8
24.5	17.3	57.0	9.7	9.3	45.0	1.0	25.6	15.4	1.9
25.0	17.3	56.6	10.2	9.2	43.4	1.0	26.4	15.7	1.8
25.5	17.2	55.8	10.2	9.1	39.6	1.0	26.7	15.7	1.9
26.0	17.2	55.8	10.1	8.9	39.6	1.0	26.5	16.1	1.9
26.5	17.1	57.3	10.0	8.8	46.9	1.0	25.6	16.2	2.1
27.0	17.1	54.5	10.0	9.0	34.5	1.0	25.5	16.7	2.2
27.5	17.2	53.7	10.3	9.3	32.0	1.0	25.4	16.6	2.3
28.0	17.2	55.8	10.8	9.8	41.8	1.0	23.9	16.5	2.4
28.5	17.3	58.4	11.6	10.2	57.6	1.0	23.7	16.8	2.5
29.0	17.3	54.6	12.3	10.4	37.4	1.0	25.3	17.9	2.5
29.5	17.3	57.2	12.4	10.5	51.2	1.0	23.7	16.7	2.6
30.0	17.3	62.0	12.0	10.4	87.9	1.0	27.5	16.5	2.6
30.5	17.3	56.5	11.2	10.0	45.5	1.0	24.5	17.2	2.7
31.0	17.3	58.3	10.6	9.6	55.2	1.0	29.4	17.1	2.8
31.5	17.3	55.5	10.3	9.5	39.9	1.0	25.5	16.0	2.8
32.0	17.3	54.9	10.0	9.5	37.0	1.0	25.5	15.2	2.7
32.5	17.4	57.2	9.8	9.9	48.0	1.0	26.6	14.9	2.8
33.0	17.4	48.4	8.8	10.8	17.2	1.0	24.6	15.9	2.8
33.5	17.0	49.2	7.9	10.8	19.6	1.1	25.8	14.6	2.9
34.0	16.8	51.9	7.5	10.6	26.6	1.1	25.8	15.6	2.9
34.5	16.3	49.4	7.7	9.6	20.9	1.0	24.9	15.5	2.9
35.0	16.4	49.1	6.6	8.4	18.1	1.1	26.1	14.4	2.8
35.5	16.8	71.2	6.7	9.2	232.2	1.1	27.6	15.7	2.9
36.0	16.9	61.6	7.2	9.4	79.8	1.1	28.1	15.9	2.6
36.5	16.8	64.1	8.1	9.4	111.4	1.0	24.2	14.7	1.6
37.0	16.9	58.1	9.0	9.8	57.4	1.0	23.7	15.4	2.8
37.5	17.1	55.0	9.8	10.8	41.7	1.0	28.7	15.5	2.7
38.0	17.3	53.3	10.3	12.0	35.3	1.0	25.7	16.2	2.6
38.5	17.5	52.2	11.0	14.0	32.3	1.0	24.1	15.8	2.4
39.0	17.8	47.7	11.6	15.7	19.8	1.0	25.1	15.6	2.3
39.5	18.0	47.9	12.4	16.5	20.6	1.0	24.6	15.0	2.0
40.0	18.0	49.6	13.0	16.2	25.8	1.0	24.5	14.4	2.0
40.5	17.6	49.0	12.5	14.8	24.5	1.0	26.2	14.6	2.1
41.0	17.0	47.1	11.6	13.6	20.1	1.0	27.1	13.6	2.4
41.5	16.6	44.4	11.1	12.6	15.0	1.0	24.2	14.2	2.6
42.0	16.4	47.6	11.4	12.3	22.0	1.0	28.6	14.3	2.6
42.5	16.3	44.5	12.6	12.3	15.8	1.0	23.4	14.2	2.6
43.0	16.4	47.6	14.2	12.7	22.8	1.0	23.0	13.4	2.7
43.5	16.6	42.1	16.2	14.0	12.3	1.0	22.9	13.0	2.7
44.0	16.5	41.2	15.7	14.9	11.3	1.0	24.9	13.4	2.8
44.5	15.7	45.2	12.3	14.1	18.8	1.0	24.0	12.4	3.0
45.0	14.5	43.3	9.6	13.5	16.3	1.1	22.8	11.8	3.4

Typical Performance Data

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

TEST CONDITIONS: V_S = +5 V, I_S = 137mA @ 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)
10.0	10.4	61.6	6.0	4.8	99.2	0.8	19.3	6.4	5.9
10.5	12.0	59.5	6.8	5.0	70.7	0.8	18.2	6.8	5.1
11.0	13.6	57.9	7.9	5.3	53.4	0.8	18.0	7.3	4.6
11.5	15.1	57.0	9.4	5.7	44.3	0.8	18.3	7.8	4.0
12.0	16.5	56.1	11.3	6.3	37.3	0.8	19.2	8.5	3.5
12.5	17.7	52.9	13.8	6.9	24.7	0.8	19.4	9.4	3.1
13.0	18.6	54.8	16.2	7.8	29.2	0.9	20.2	9.8	2.7
13.5	19.2	53.0	18.4	8.8	23.4	0.9	21.3	10.8	2.5
14.0	19.8	53.7	19.6	10.1	24.5	0.9	21.1	11.3	2.2
14.5	20.2	53.2	20.7	11.4	23.1	0.9	21.4	12.0	2.0
15.0	20.3	53.2	21.7	12.4	23.2	0.9	22.5	12.6	1.9
15.5	20.3	52.8	22.4	13.1	22.4	1.0	22.2	13.3	1.8
16.0	20.2	51.7	22.3	13.3	20.0	1.0	23.0	13.2	1.7
16.5	20.2	52.5	21.8	13.1	21.9	1.0	22.8	13.7	1.6
17.0	20.2	52.6	21.4	12.8	22.3	1.0	22.8	13.9	1.6
17.5	20.0	52.5	21.7	12.5	22.3	0.9	23.1	13.7	1.6
18.0	19.8	52.1	20.8	12.2	21.9	0.9	24.1	13.9	1.7
18.5	19.6	53.6	18.5	11.8	26.2	0.9	22.6	13.8	1.7
19.0	19.5	52.3	16.0	11.2	22.9	0.9	23.9	13.8	1.8
19.5	19.2	53.3	13.7	10.8	25.7	1.0	24.1	13.9	1.9
20.0	18.9	53.3	12.1	10.4	25.7	1.0	24.4	13.9	1.9
20.5	18.5	52.9	10.7	9.9	24.9	1.0	25.0	14.0	2.0
21.0	18.1	54.6	9.6	9.3	30.5	1.0	25.1	14.3	2.0
21.5	17.8	56.4	8.9	9.0	37.5	1.0	25.2	14.2	2.0
22.0	17.5	59.9	8.5	8.8	56.6	1.0	24.4	14.3	2.0
22.5	17.2	58.0	8.2	8.5	46.3	1.0	25.1	14.8	2.0
23.0	17.0	62.2	8.3	8.5	76.9	1.0	25.0	14.8	1.9
23.5	17.2	57.4	8.6	8.9	44.7	1.0	24.9	15.3	2.0
24.0	17.3	56.4	9.1	9.1	40.9	1.0	26.3	15.8	1.9
24.5	17.3	57.8	9.7	9.2	48.8	1.0	26.8	16.0	1.9
25.0	17.3	57.3	10.2	9.2	46.5	1.0	25.7	16.3	1.9
25.5	17.3	54.1	10.2	9.0	32.5	1.0	26.9	16.3	2.0
26.0	17.2	56.4	10.1	8.9	42.1	1.0	27.3	16.6	2.0
26.5	17.2	56.7	9.9	8.8	43.7	1.0	25.2	16.8	2.2
27.0	17.2	54.7	10.0	9.0	35.0	1.0	25.6	17.2	2.3
27.5	17.2	57.0	10.3	9.4	46.4	1.0	26.8	17.2	2.3
28.0	17.3	59.3	10.8	9.8	61.9	1.0	30.1	17.0	2.4
28.5	17.3	57.2	11.7	9.9	49.7	1.0	23.9	17.2	2.5
29.0	17.3	56.0	12.3	10.0	43.7	1.0	28.6	18.5	2.5
29.5	17.3	59.8	12.4	10.2	68.2	1.0	26.1	17.2	2.6
30.0	17.4	58.4	11.9	10.2	57.2	1.0	27.7	17.1	2.7
30.5	17.4	57.3	11.1	10.0	49.2	1.0	22.9	17.6	2.8
31.0	17.4	54.8	10.5	9.7	36.5	1.0	26.3	17.6	2.8
31.5	17.4	50.3	10.3	9.5	21.4	1.0	26.9	16.4	2.8
32.0	17.4	56.9	10.0	9.4	45.8	1.0	29.7	15.7	2.8
32.5	17.5	56.1	9.9	9.8	41.8	1.0	27.3	15.3	2.8
33.0	17.5	49.5	8.8	10.7	19.3	1.0	26.2	16.6	2.9
33.5	17.0	46.4	7.9	10.8	14.1	1.1	27.2	15.2	3.0
34.0	16.9	51.5	7.4	10.8	25.2	1.1	24.6	16.2	3.1
34.5	16.4	48.3	7.6	9.7	18.1	1.0	29.8	16.0	3.1
35.0	16.5	48.0	6.4	8.4	15.7	1.1	24.4	15.0	3.0
35.5	16.9	54.5	6.6	9.0	33.2	1.1	25.5	16.1	3.0
36.0	16.9	57.8	7.1	8.8	49.9	1.0	22.1	16.1	2.9
36.5	16.8	58.1	8.1	8.8	54.8	1.0	24.6	14.9	2.3
37.0	16.9	53.8	9.0	9.2	34.4	1.0	28.7	15.9	2.7
37.5	17.1	61.0	9.8	10.4	81.8	1.0	22.5	16.0	2.9
38.0	17.3	55.3	10.3	11.9	43.8	1.0	28.3	16.6	2.6
38.5	17.6	51.4	10.9	14.5	29.3	1.0	19.7	16.2	2.4
39.0	17.9	52.7	11.6	16.8	34.6	1.0	23.9	16.4	2.3
39.5	18.1	50.3	12.4	17.3	27.0	1.0	23.9	15.3	2.1
40.0	18.0	48.8	13.0	15.9	23.2	1.0	24.5	15.0	2.1
40.5	17.6	50.8	12.3	13.7	29.6	1.0	22.9	15.0	2.2
41.0	17.0	45.5	11.3	12.5	16.5	1.0	23.9	14.0	2.4
41.5	16.5	48.1	11.0	11.6	22.4	1.0	21.2	14.1	2.5
42.0	16.4	46.8	11.3	11.6	19.6	1.0	26.5	14.8	2.7
42.5	16.4	46.1	12.6	12.2	18.8	1.0	25.4	14.7	2.8
43.0	16.4	44.2	14.4	13.6	15.5	1.0	26.3	14.0	2.8
43.5	16.7	40.8	16.7	16.0	10.6	1.0	22.4	13.7	2.7
44.0	16.6	42.6	15.8	17.2	13.3	1.0	24.0	13.9	2.8
44.5	15.8	41.3	12.3	14.6	12.0	1.0	21.9	13.0	3.1
45.0	14.5	41.8	9.4	12.6	13.7	1.1	23.3	12.3	3.1

Typical Performance Data

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

TEST CONDITIONS: V_S = +5.25 V, I_S = 145mA @ 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)
10.0	10.5	62.9	6.0	4.8	113.7	0.8	19.2	6.9	5.9
10.5	12.1	61.2	6.8	5.0	84.9	0.8	18.6	7.4	5.2
11.0	13.7	59.4	7.9	5.3	62.6	0.8	18.3	7.8	4.6
11.5	15.2	56.9	9.4	5.7	43.7	0.8	18.7	8.4	4.1
12.0	16.6	55.4	11.3	6.3	34.1	0.8	19.3	9.0	3.6
12.5	17.7	55.6	13.8	6.9	33.2	0.8	19.9	9.8	3.2
13.0	18.6	54.6	16.2	7.8	28.5	0.9	20.1	10.4	2.8
13.5	19.3	54.5	18.4	8.7	27.6	0.9	21.0	11.2	2.5
14.0	19.8	52.9	19.7	10.0	22.4	0.9	21.6	11.8	2.3
14.5	20.2	53.2	20.7	11.3	23.1	0.9	21.5	12.4	2.0
15.0	20.3	52.9	21.8	12.4	22.5	0.9	22.6	13.0	1.9
15.5	20.3	53.4	22.5	13.2	24.0	1.0	22.0	13.6	1.9
16.0	20.3	51.8	22.4	13.3	20.2	1.0	22.8	13.6	1.7
16.5	20.3	52.3	21.9	13.1	21.2	1.0	23.4	14.0	1.7
17.0	20.2	52.3	21.5	12.7	21.3	1.0	23.3	14.4	1.7
17.5	20.1	52.5	21.7	12.4	22.2	0.9	23.7	14.1	1.7
18.0	19.9	52.7	20.8	12.1	23.4	0.9	24.8	14.3	1.7
18.5	19.6	52.4	18.4	11.7	22.7	0.9	24.7	14.3	1.7
19.0	19.5	54.2	15.9	11.1	28.2	0.9	23.5	14.3	1.8
19.5	19.2	52.7	13.6	10.7	23.9	1.0	23.6	14.4	1.9
20.0	18.9	52.3	12.0	10.4	23.0	1.0	24.7	14.4	1.9
20.5	18.5	53.5	10.6	9.9	26.7	1.0	24.4	14.5	2.0
21.0	18.1	55.9	9.6	9.4	35.3	1.0	25.2	14.8	2.0
21.5	17.9	57.8	8.9	9.0	43.7	1.0	25.5	14.8	2.0
22.0	17.5	59.7	8.5	8.8	55.3	1.0	24.8	14.9	2.0
22.5	17.3	57.5	8.2	8.4	43.1	1.0	24.4	15.2	2.0
23.0	17.1	61.6	8.2	8.4	71.3	1.0	25.7	15.3	1.9
23.5	17.2	56.4	8.6	8.8	39.6	1.0	24.8	15.9	2.0
24.0	17.3	56.1	9.1	9.1	39.1	1.0	25.9	16.2	1.9
24.5	17.4	56.2	9.7	9.2	40.4	1.0	25.6	16.5	1.9
25.0	17.4	55.8	10.2	9.2	38.8	1.0	25.5	16.7	1.9
25.5	17.3	58.0	10.2	9.0	50.0	1.0	26.5	16.8	2.1
26.0	17.3	56.7	10.1	8.8	43.2	1.0	26.5	17.2	2.1
26.5	17.3	56.4	9.9	8.8	41.6	1.0	26.2	17.3	2.2
27.0	17.3	56.3	9.9	9.0	41.5	1.0	27.7	17.7	2.3
27.5	17.3	57.1	10.3	9.4	46.8	1.0	26.0	17.7	2.4
28.0	17.3	56.3	10.9	9.8	43.5	1.0	27.4	17.5	2.5
28.5	17.4	54.2	11.7	9.9	34.7	1.0	25.2	17.7	2.5
29.0	17.4	54.5	12.3	9.9	36.1	0.9	26.9	18.9	2.6
29.5	17.4	55.6	12.3	10.1	41.2	1.0	25.5	17.5	2.6
30.0	17.5	57.1	11.9	10.1	48.6	1.0	26.0	17.4	2.7
30.5	17.5	57.8	11.0	10.0	51.7	1.0	23.8	18.2	2.8
31.0	17.5	52.8	10.5	9.6	28.5	1.0	25.3	18.1	2.9
31.5	17.5	51.2	10.3	9.4	23.3	1.0	27.4	16.9	2.9
32.0	17.6	56.6	10.1	9.3	43.6	1.0	27.1	16.3	2.8
32.5	17.6	55.0	9.9	9.8	36.3	1.0	24.2	15.9	2.8
33.0	17.7	49.7	8.8	10.8	19.4	1.0	24.5	17.0	2.9
33.5	17.2	50.4	7.9	10.9	22.0	1.1	23.4	15.7	3.0
34.0	17.0	49.2	7.4	10.8	19.0	1.1	24.3	16.6	3.2
34.5	16.5	47.5	7.6	9.7	16.2	1.0	29.0	16.5	3.1
35.0	16.6	49.4	6.4	8.4	18.1	1.1	25.8	15.3	3.2
35.5	17.0	62.4	6.6	9.0	80.8	1.1	25.5	16.6	3.2
36.0	17.0	68.5	7.2	8.6	168.0	1.0	24.7	16.7	3.0
36.5	16.8	62.5	8.1	8.6	88.5	1.0	23.4	15.5	-0.4
37.0	17.0	56.1	9.1	9.0	43.8	1.0	26.7	16.2	3.1
37.5	17.2	53.9	9.8	10.3	35.8	1.0	26.3	16.3	2.9
38.0	17.4	57.3	10.3	11.9	54.4	1.0	26.0	17.0	2.7
38.5	17.7	53.4	10.9	14.7	36.4	1.0	27.9	16.6	2.6
39.0	18.0	48.1	11.6	17.1	20.4	1.0	27.5	16.6	2.4
39.5	18.3	46.3	12.4	17.3	16.8	1.0	23.6	16.0	2.0
40.0	18.2	47.9	13.0	15.5	20.8	1.0	24.0	15.3	2.1
40.5	17.7	49.1	12.3	13.4	24.2	1.0	26.8	15.3	2.2
41.0	17.1	50.3	11.3	12.1	28.3	1.0	24.9	14.6	2.4
41.5	16.6	46.4	11.1	11.3	18.3	1.0	23.8	14.8	2.3
42.0	16.4	44.7	11.3	11.4	15.3	1.0	22.5	15.3	2.7
42.5	16.5	45.5	12.6	12.2	17.2	1.0	24.1	15.2	2.8
43.0	16.6	42.8	14.4	14.0	13.1	1.0	26.6	14.6	2.9
43.5	16.8	41.6	16.6	16.9	11.5	1.0	23.6	14.2	3.0
44.0	16.7	42.0	15.8	18.0	12.3	1.0	30.4	14.6	2.9
44.5	15.8	42.9	12.4	14.4	14.3	1.0	24.0	13.5	3.0
45.0	14.6	43.8	9.4	12.0	16.9	1.0	21.6	12.5	3.5

Typical Performance Data

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

TEST CONDITIONS: V_S = +4.75 V, I_S = 130mA @ 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)
10.0	8.6	66.6	6.6	5.2	242.9	0.9	17.4	5.4	7.7
10.5	10.2	59.5	7.6	5.5	96.6	0.8	16.4	5.9	6.9
11.0	11.8	57.0	8.8	5.8	66.0	0.8	16.5	6.3	6.2
11.5	13.3	57.7	10.5	6.4	65.7	0.8	16.8	7.0	5.6
12.0	14.6	55.9	12.5	7.1	49.9	0.8	17.9	7.6	5.0
12.5	15.8	55.9	15.1	8.0	47.0	0.9	18.0	8.4	4.6
13.0	16.6	54.4	17.5	9.0	38.0	0.9	18.8	8.8	4.2
13.5	17.2	54.4	19.7	10.0	36.9	0.9	19.8	9.6	3.9
14.0	17.7	52.7	21.1	11.1	29.7	0.9	20.2	10.1	3.6
14.5	17.9	53.3	21.5	11.9	31.5	0.9	20.5	10.5	3.4
15.0	18.0	53.1	21.5	12.5	31.0	1.0	21.2	10.9	3.3
15.5	17.9	52.9	21.2	13.0	30.6	1.0	21.1	11.4	3.1
16.0	17.9	53.0	21.1	13.1	31.1	1.0	22.2	11.3	3.0
16.5	17.9	52.5	21.1	13.1	29.7	1.0	22.4	11.7	3.0
17.0	17.8	52.4	21.3	13.0	29.7	1.0	22.2	12.0	3.0
17.5	17.6	53.1	21.1	13.0	32.9	1.0	22.5	11.8	3.0
18.0	17.4	53.4	19.7	12.7	34.6	1.0	23.2	12.0	3.0
18.5	17.2	53.7	17.4	12.3	36.5	1.0	22.8	12.1	3.1
19.0	17.0	52.4	15.2	11.7	31.6	1.0	22.5	12.2	3.2
19.5	16.7	53.0	13.2	11.0	34.1	1.0	23.1	12.1	3.2
20.0	16.4	52.3	11.7	10.5	31.4	1.0	22.9	12.1	3.3
20.5	16.1	54.8	10.6	10.0	42.4	1.0	23.6	12.3	3.3
21.0	15.7	55.9	9.9	9.5	48.6	1.0	22.7	12.6	3.3
21.5	15.5	56.3	9.6	9.4	51.3	1.0	23.6	12.7	3.3
22.0	15.3	60.3	9.4	9.3	84.4	1.0	23.0	12.8	3.3
22.5	15.1	56.0	9.4	9.4	52.3	1.0	23.5	13.2	3.3
23.0	15.1	59.4	9.7	9.6	79.3	1.0	23.9	13.4	3.2
23.5	15.2	56.1	10.1	10.0	54.4	1.0	24.9	14.0	3.2
24.0	15.3	56.1	10.6	10.0	55.3	1.0	24.2	14.3	3.2
24.5	15.3	55.6	11.0	10.0	52.9	1.0	24.1	14.6	3.3
25.0	15.2	58.7	11.0	9.8	75.4	1.0	23.9	14.8	3.4
25.5	15.2	54.7	10.8	9.7	47.7	1.0	24.6	14.9	3.4
26.0	15.2	53.6	10.6	9.6	41.6	1.0	25.0	15.2	3.5
26.5	15.2	56.5	10.5	9.5	58.0	1.0	24.9	15.5	3.6
27.0	15.3	54.5	10.6	9.8	46.3	1.0	25.4	15.9	3.6
27.5	15.4	54.6	11.0	10.2	47.3	1.0	23.3	15.9	3.7
28.0	15.5	60.5	11.3	10.9	94.9	1.0	25.0	15.9	3.7
28.5	15.6	54.7	11.7	11.5	49.1	1.0	23.2	16.2	3.7
29.0	15.7	55.3	12.3	11.7	52.9	1.0	23.1	17.4	3.8
29.5	15.6	54.5	12.7	11.7	48.5	1.0	24.2	16.1	3.9
30.0	15.6	51.5	12.8	11.4	34.2	1.0	25.1	15.9	4.0
30.5	15.6	54.6	12.5	10.9	48.8	1.0	23.1	16.4	4.1
31.0	15.5	54.8	11.7	10.6	50.1	1.0	24.3	16.3	4.2
31.5	15.4	52.9	10.8	10.4	39.7	1.0	25.7	15.6	4.3
32.0	15.3	52.6	9.9	10.3	38.2	1.0	22.2	14.6	4.4
32.5	15.2	51.4	9.1	10.4	32.9	1.0	24.7	14.4	4.5
33.0	15.0	48.1	8.3	10.5	22.9	1.0	22.1	15.6	4.6
33.5	14.5	48.6	8.3	9.8	25.3	1.0	22.1	14.1	4.7
34.0	14.2	51.0	8.2	9.6	34.1	1.0	26.2	15.0	4.7
34.5	13.8	54.7	8.2	9.2	54.4	1.0	21.2	14.6	4.6
35.0	14.2	56.8	7.6	9.4	65.1	1.0	21.7	14.2	4.8
35.5	14.5	65.5	8.1	10.1	179.6	1.0	22.3	15.0	4.7
36.0	14.6	58.4	8.6	10.5	81.5	1.0	23.8	15.4	4.4
36.5	14.6	61.5	9.5	10.9	121.0	1.0	27.5	14.3	6.6
37.0	14.7	50.1	10.3	11.4	33.5	1.0	21.9	14.9	4.5
37.5	14.8	51.5	11.3	12.6	41.3	1.0	16.9	14.7	4.3
38.0	14.9	52.6	12.2	14.3	48.7	1.0	17.4	15.7	4.4
38.5	15.0	49.7	13.1	16.4	36.0	1.0	24.0	13.8	4.0
39.0	15.2	47.1	13.6	18.1	27.8	1.0	24.9	13.8	4.1
39.5	15.2	48.5	13.7	18.3	33.5	1.0	22.8	13.5	3.9
40.0	15.0	46.3	13.7	17.4	26.7	1.0	22.3	12.2	4.0
40.5	14.5	45.4	13.5	15.7	24.8	1.0	24.1	13.7	4.2
41.0	14.0	47.1	13.0	14.7	31.0	1.0	22.1	12.5	4.4
41.5	13.6	46.0	12.9	13.8	28.1	1.0	22.6	12.7	4.6
42.0	13.3	46.6	13.0	13.5	30.8	1.0	25.7	13.3	4.7
42.5	13.0	48.9	13.1	13.0	41.5	1.0	21.5	12.9	4.9
43.0	12.8	43.7	12.9	12.9	23.1	1.0	21.8	11.8	5.1
43.5	12.5	42.5	12.4	13.5	20.9	1.0	23.1	11.9	5.1
44.0	11.8	42.3	11.3	13.3	21.8	1.0	22.1	11.8	5.3
44.5	10.8	43.6	10.3	13.8	28.0	1.0	21.2	11.0	5.4
45.0	9.6	40.9	9.5	15.0	24.0	1.1	21.1	9.8	5.4

Typical Performance Data

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

TEST CONDITIONS: V_S = +5 V, I_S = 137mA @ 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)
10.0	8.7	61.9	6.6	5.3	140.7	0.9	17.6	5.8	7.6
10.5	10.3	60.4	7.6	5.5	105.5	0.8	16.7	6.2	6.9
11.0	11.9	60.7	8.9	5.9	99.4	0.8	17.0	6.7	6.3
11.5	13.4	56.5	10.5	6.4	56.3	0.8	17.3	7.3	5.6
12.0	14.7	56.6	12.5	7.1	53.5	0.8	18.2	7.9	5.0
12.5	15.8	57.0	15.1	8.0	53.0	0.9	18.3	8.6	4.6
13.0	16.6	53.8	17.5	9.0	35.4	0.9	19.1	9.2	4.2
13.5	17.3	54.1	19.7	10.0	35.2	0.9	20.2	9.9	3.9
14.0	17.7	54.9	21.1	11.1	37.7	0.9	20.7	10.3	3.7
14.5	18.0	53.0	21.6	11.9	30.3	0.9	20.8	10.8	3.4
15.0	18.0	54.1	21.6	12.6	34.4	1.0	21.6	11.1	3.3
15.5	18.0	53.2	21.3	13.0	31.4	1.0	21.3	11.6	3.2
16.0	18.0	53.6	21.2	13.2	33.1	1.0	22.0	11.6	3.1
16.5	17.9	52.6	21.2	13.2	29.8	1.0	22.5	12.0	3.0
17.0	17.9	52.2	21.3	13.1	28.8	1.0	22.1	12.4	3.0
17.5	17.7	52.6	21.1	13.0	30.8	1.0	22.7	12.1	3.0
18.0	17.5	52.9	19.6	12.8	32.6	1.0	23.1	12.3	3.0
18.5	17.3	52.8	17.4	12.3	32.4	1.0	23.1	12.5	3.1
19.0	17.1	53.3	15.2	11.7	34.7	1.0	22.4	12.5	3.2
19.5	16.8	52.7	13.2	11.1	32.4	1.0	23.8	12.5	3.2
20.0	16.5	52.8	11.7	10.6	32.9	1.0	24.1	12.5	3.3
20.5	16.2	53.5	10.6	10.1	36.1	1.0	23.2	12.6	3.3
21.0	15.8	55.5	9.9	9.6	46.4	1.0	23.3	13.0	3.3
21.5	15.6	57.2	9.6	9.4	56.3	1.0	23.3	13.0	3.3
22.0	15.4	60.7	9.4	9.4	86.9	1.0	22.9	13.2	3.3
22.5	15.2	59.1	9.4	9.4	73.6	1.0	23.9	13.6	3.3
23.0	15.2	59.9	9.7	9.6	82.3	1.0	24.6	13.8	3.2
23.5	15.4	57.3	10.1	10.0	62.1	1.0	23.8	14.3	3.2
24.0	15.4	55.0	10.6	10.0	48.3	1.0	24.5	14.7	3.2
24.5	15.4	55.4	11.0	10.0	51.0	1.0	25.1	14.9	3.3
25.0	15.3	57.1	11.0	9.8	62.2	1.0	23.8	15.2	3.3
25.5	15.3	57.9	10.8	9.7	68.0	1.0	25.1	15.3	3.4
26.0	15.3	56.1	10.5	9.6	55.1	1.0	25.3	15.7	3.5
26.5	15.3	55.9	10.5	9.5	53.3	1.0	24.5	15.9	3.6
27.0	15.4	59.0	10.6	9.8	76.1	1.0	23.6	16.4	3.7
27.5	15.5	58.7	10.9	10.2	74.5	1.0	23.5	16.3	3.7
28.0	15.7	61.6	11.3	11.0	105.4	1.0	26.3	16.3	3.8
28.5	15.8	54.7	11.7	11.5	48.3	1.0	24.2	16.6	3.8
29.0	15.8	54.1	12.3	11.8	45.4	1.0	28.1	17.7	3.8
29.5	15.8	56.8	12.7	11.7	62.3	1.0	24.1	16.4	4.0
30.0	15.8	53.7	12.8	11.4	43.4	1.0	23.6	16.3	4.0
30.5	15.8	58.1	12.5	10.9	71.6	1.0	24.1	16.7	4.1
31.0	15.7	60.9	11.7	10.6	98.0	1.0	22.7	16.8	4.3
31.5	15.6	53.5	10.8	10.5	41.9	1.0	21.9	15.9	4.4
32.0	15.5	56.4	9.9	10.4	58.2	1.0	25.7	15.0	4.4
32.5	15.4	50.4	9.1	10.4	28.8	1.0	24.2	14.9	4.5
33.0	15.2	52.3	8.3	10.6	36.2	1.0	24.7	15.9	4.6
33.5	14.8	51.1	8.3	9.9	33.0	1.0	24.2	14.4	4.7
34.0	14.4	48.6	8.2	9.7	25.3	1.0	23.2	15.3	4.8
34.5	14.0	50.6	8.2	9.2	33.1	1.0	24.2	15.1	4.6
35.0	14.4	59.1	7.6	9.5	83.3	1.0	22.8	14.4	4.7
35.5	14.7	60.1	8.1	10.2	94.0	1.0	23.3	15.5	4.8
36.0	14.8	65.6	8.6	10.6	181.9	1.0	25.3	15.6	4.5
36.5	14.8	62.3	9.5	10.9	129.5	1.0	22.9	14.5	4.1
37.0	14.9	56.1	10.3	11.4	65.4	1.0	19.4	15.2	4.5
37.5	15.0	51.2	11.3	12.6	38.7	1.0	16.1	15.1	4.5
38.0	15.1	48.3	12.2	14.2	28.9	1.0	24.6	16.1	4.4
38.5	15.3	51.6	13.1	16.3	44.0	1.0	24.1	14.0	4.2
39.0	15.4	48.2	13.8	18.3	30.5	1.0	23.7	14.1	4.1
39.5	15.4	53.0	13.7	18.4	55.0	1.0	23.2	13.8	4.0
40.0	15.2	46.0	13.7	17.3	25.3	1.0	23.9	12.5	3.8
40.5	14.7	46.3	13.5	15.6	26.7	1.0	22.8	14.2	4.2
41.0	14.2	45.6	13.1	14.5	25.6	1.0	21.4	13.0	4.4
41.5	13.8	45.2	13.1	13.7	25.0	1.0	22.9	13.3	4.9
42.0	13.5	50.6	13.1	13.4	47.5	1.0	21.2	13.5	4.7
42.5	13.3	42.5	13.2	13.1	19.3	1.0	22.0	13.5	4.9
43.0	13.0	44.0	13.1	13.2	23.3	1.0	22.3	12.4	4.9
43.5	12.8	42.0	12.5	13.7	19.3	1.0	21.7	12.0	5.2
44.0	12.1	45.1	11.5	13.6	29.5	1.0	22.6	12.1	5.4
44.5	11.1	44.4	10.3	13.8	29.9	1.0	23.6	11.3	5.7
45.0	9.8	42.7	9.6	15.4	28.6	1.1	25.1	9.9	5.9

Typical Performance Data

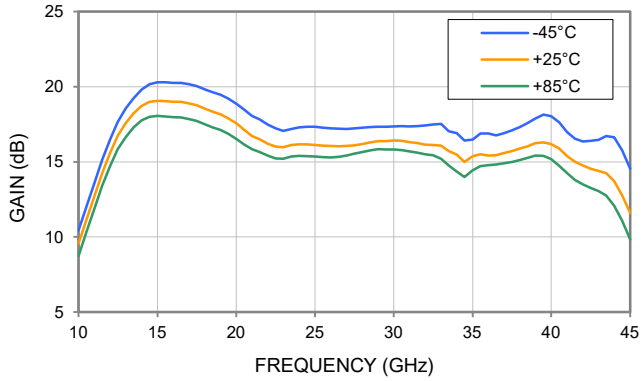
Definitions:
Input Return Loss = -S11 (dB)
Gain(Power Gain) = S21 (dB)
Reverse Isolation = -S12 (dB)
Output Return Loss = -S22 (dB)

TEST CONDITIONS: V_S = +5 V, I_S = 144mA @ Temperature = +25°C

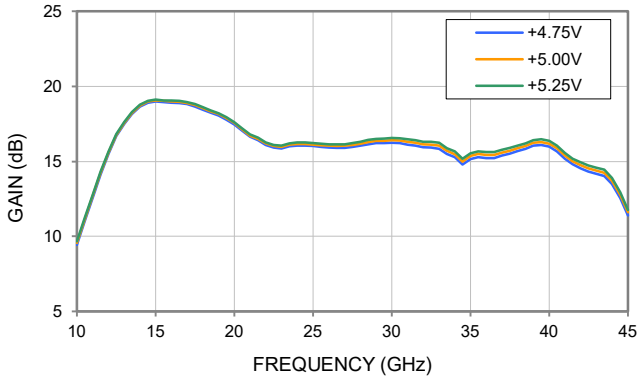
FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(GHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
10.0	8.8	61.3	6.7	5.3	129.7	0.9	17.9	5.9	7.7
10.5	10.4	63.5	7.6	5.5	150.2	0.8	17.2	6.5	6.9
11.0	12.0	60.6	8.9	5.9	97.7	0.8	17.2	6.9	6.3
11.5	13.5	55.2	10.5	6.4	48.3	0.8	17.6	7.5	5.6
12.0	14.8	56.1	12.6	7.1	50.0	0.8	18.7	8.2	5.1
12.5	15.9	56.1	15.1	7.9	47.3	0.9	18.7	8.9	4.6
13.0	16.7	53.8	17.5	9.0	35.1	0.9	19.3	9.5	4.2
13.5	17.3	54.6	19.7	10.0	37.3	0.9	20.1	10.1	3.9
14.0	17.8	53.4	21.1	11.1	31.4	0.9	20.7	10.5	3.6
14.5	18.0	54.3	21.7	11.9	34.7	0.9	21.1	11.0	3.5
15.0	18.1	54.2	21.7	12.6	34.7	1.0	21.5	11.4	3.3
15.5	18.1	53.2	21.4	13.0	31.1	1.0	21.7	11.8	3.2
16.0	18.0	53.0	21.3	13.2	30.7	1.0	22.5	11.8	3.1
16.5	18.0	53.1	21.2	13.2	31.0	1.0	23.0	12.2	3.0
17.0	17.9	52.9	21.3	13.1	30.7	1.0	22.6	12.5	3.0
17.5	17.8	52.1	21.1	13.0	28.6	1.0	22.9	12.3	3.0
18.0	17.6	53.1	19.6	12.8	33.1	1.0	24.2	12.6	3.0
18.5	17.3	54.1	17.3	12.3	37.3	1.0	23.5	12.7	3.1
19.0	17.2	53.6	15.2	11.7	35.5	1.0	23.1	12.8	3.2
19.5	16.9	54.0	13.2	11.1	37.2	1.0	23.7	12.7	3.2
20.0	16.6	54.2	11.7	10.6	38.8	1.0	23.9	12.8	3.3
20.5	16.2	54.2	10.6	10.1	39.2	1.0	23.8	13.0	3.3
21.0	15.9	55.3	9.9	9.6	44.9	1.0	22.8	13.2	3.3
21.5	15.7	57.2	9.6	9.4	56.1	1.0	24.2	13.2	3.3
22.0	15.5	59.7	9.4	9.4	77.2	1.0	23.7	13.4	3.3
22.5	15.3	59.1	9.4	9.4	73.1	1.0	24.1	13.9	3.3
23.0	15.3	64.6	9.8	9.7	141.6	1.0	24.2	14.1	3.3
23.5	15.4	56.5	10.2	10.0	56.0	1.0	24.2	14.6	3.2
24.0	15.5	56.4	10.6	10.0	56.0	1.0	24.4	15.1	3.3
24.5	15.5	57.6	11.0	10.0	64.4	1.0	25.1	15.3	3.3
25.0	15.4	58.2	11.0	9.9	69.4	1.0	24.4	15.6	3.4
25.5	15.4	56.4	10.8	9.7	56.2	1.0	24.9	15.7	3.5
26.0	15.4	56.9	10.5	9.6	59.6	1.0	25.5	16.0	3.6
26.5	15.4	58.5	10.5	9.5	71.4	1.0	25.2	16.3	3.6
27.0	15.5	53.9	10.6	9.8	41.9	1.0	25.3	16.8	3.7
27.5	15.7	56.6	10.9	10.2	58.0	1.0	27.3	16.8	3.8
28.0	15.8	54.0	11.3	11.0	43.2	1.0	22.3	16.7	3.8
28.5	15.9	58.2	11.8	11.5	71.2	1.0	24.5	16.9	3.8
29.0	16.0	59.3	12.3	11.8	80.9	1.0	24.5	18.1	3.9
29.5	16.0	50.3	12.8	11.7	29.1	1.0	26.0	16.8	3.9
30.0	16.0	54.2	12.9	11.4	45.3	1.0	23.5	16.7	4.0
30.5	15.9	59.2	12.5	11.0	80.2	1.0	22.6	17.1	4.2
31.0	15.9	53.2	11.7	10.6	39.9	1.0	24.3	17.3	4.3
31.5	15.8	57.9	10.9	10.5	68.1	1.0	24.0	16.2	4.3
32.0	15.7	53.2	9.9	10.4	39.2	1.0	26.4	15.3	4.5
32.5	15.6	53.1	9.1	10.5	38.4	1.0	21.8	15.1	4.6
33.0	15.4	48.4	8.3	10.7	22.6	1.0	22.5	16.3	4.7
33.5	14.9	51.2	8.3	10.0	32.7	1.0	24.9	14.8	4.7
34.0	14.5	53.1	8.2	9.7	41.9	1.0	25.8	15.8	4.6
34.5	14.2	52.8	8.2	9.2	42.2	1.0	22.1	15.4	5.0
35.0	14.6	59.3	7.6	9.5	83.2	1.0	23.3	14.8	5.0
35.5	14.9	58.2	8.0	10.2	73.6	1.0	22.7	15.7	4.7
36.0	15.0	68.5	8.6	10.6	248.9	1.0	24.3	16.1	4.7
36.5	15.0	60.2	9.5	10.9	99.3	1.0	23.5	14.8	6.0
37.0	15.1	56.4	10.3	11.4	66.0	1.0	20.9	15.5	4.5
37.5	15.2	54.6	11.3	12.5	55.7	1.0	17.6	15.6	4.5
38.0	15.3	50.4	12.2	14.2	36.0	1.0	22.2	16.3	4.4
38.5	15.5	54.4	13.1	16.3	59.2	1.0	23.4	14.2	4.3
39.0	15.6	46.8	13.7	18.2	25.4	1.0	21.1	14.3	4.2
39.5	15.6	42.8	13.7	18.4	16.5	1.0	24.0	14.0	4.0
40.0	15.4	48.1	13.6	17.3	31.3	1.0	23.9	12.7	4.1
40.5	14.9	45.0	13.4	15.6	22.4	1.0	22.4	14.3	4.2
41.0	14.4	49.1	13.0	14.4	37.3	1.0	23.6	13.4	4.4
41.5	14.0	42.6	13.0	13.5	18.1	1.0	20.6	13.5	4.3
42.0	13.7	47.0	13.1	13.4	31.0	1.0	22.0	14.0	4.8
42.5	13.5	48.0	13.3	13.1	35.3	1.0	24.2	13.9	4.8
43.0	13.2	43.3	13.1	13.1	21.2	1.0	22.7	12.7	5.1
43.5	13.0	44.8	12.5	13.8	25.8	1.0	20.0	12.2	5.3
44.0	12.3	44.2	11.4	13.6	25.9	1.0	22.0	12.6	5.3
44.5	11.3	42.1	10.3	14.0	22.4	1.1	23.1	11.7	5.4
45.0	10.0	42.4	9.6	15.6	27.3	1.1	23.7	10.4	5.9

Typical Performance Curves

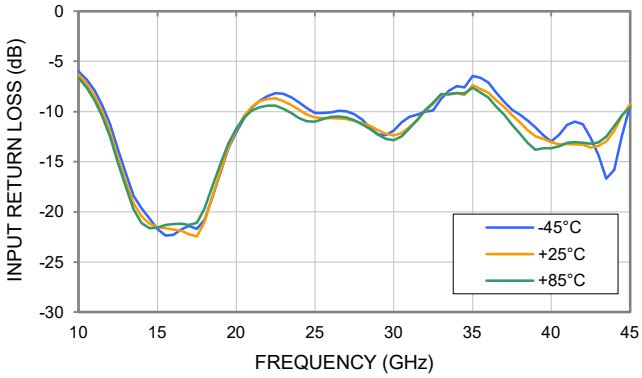
GAIN vs. TEMPERATURE,
P_{IN} = -25 dBm, V_S = +5 V



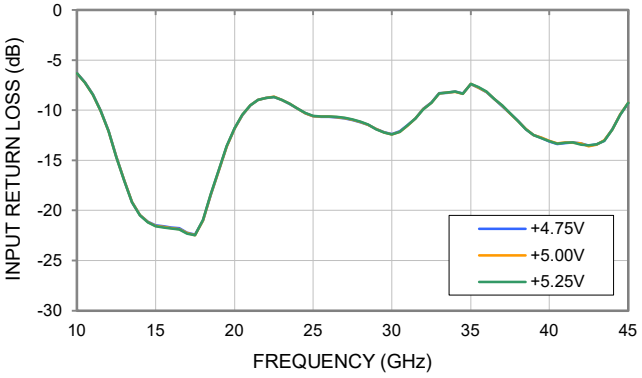
GAIN vs. DEVICE VOLTAGE,
P_{IN} = -25 dBm, TEMPERATURE = +25°C



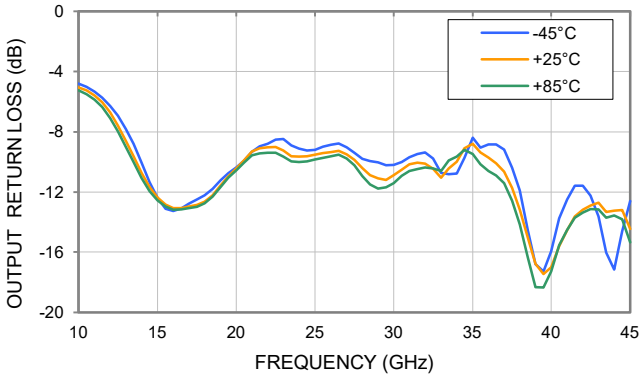
INPUT RETURN LOSS vs.TEMPERATURE,
P_{IN} = -25 dBm, V_S = +5 V



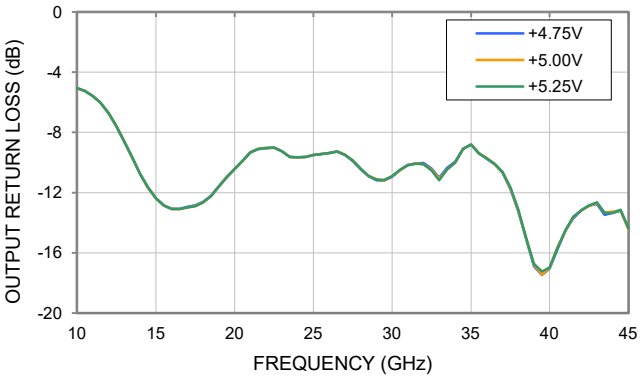
INPUT RETURN LOSS vs. DEVICE VOLTAGE,
P_{IN} = -25 dBm, TEMPERATURE = +25°C



OUTPUT RETURN LOSS vs. TEMPERATURE,
P_{IN} = -25 dBm, V_S = +5 V

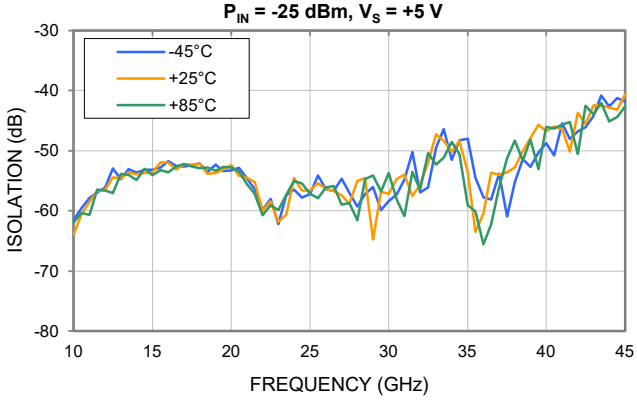


OUTPUT RETURN LOSS vs. DEVICE VOLTAGE,
P_{IN} = -25 dBm, TEMPERATURE = +25°C

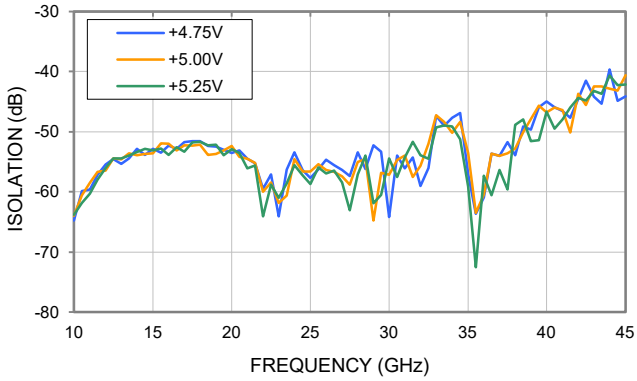


Typical Performance Curves

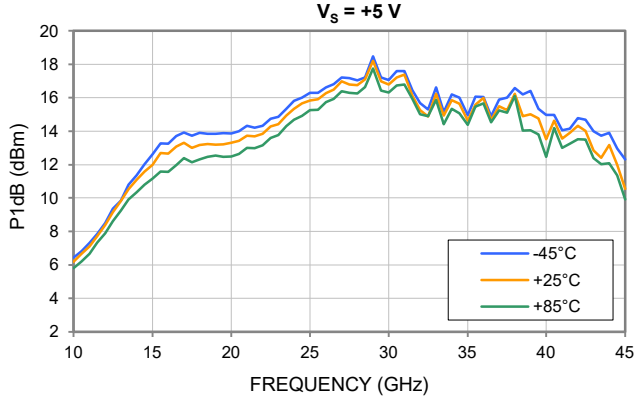
ISOLATION vs.TEMPERATURE,
P_{IN} = -25 dBm, V_S = +5 V



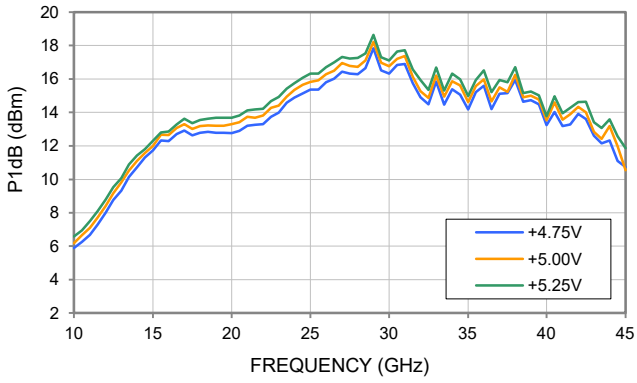
ISOLATION vs. DEVICE VOLTAGE,
P_{IN} = -25 dBm, TEMPERATURE = +25°C



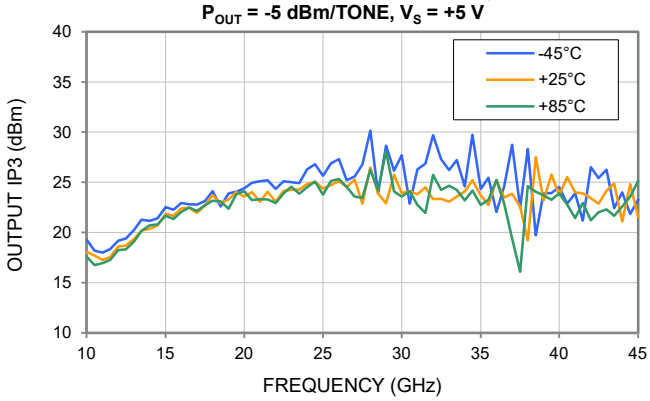
P1dB vs. TEMPERATURE,
V_S = +5 V



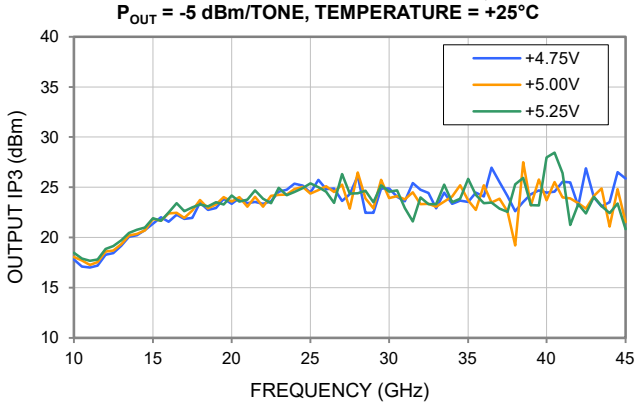
P1dB vs. DEVICE VOLTAGE,
TEMPERATURE = +25°C



OUTPUT IP3 vs. TEMPERATURE,
P_{OUT} = -5 dBm/TONE, V_S = +5 V

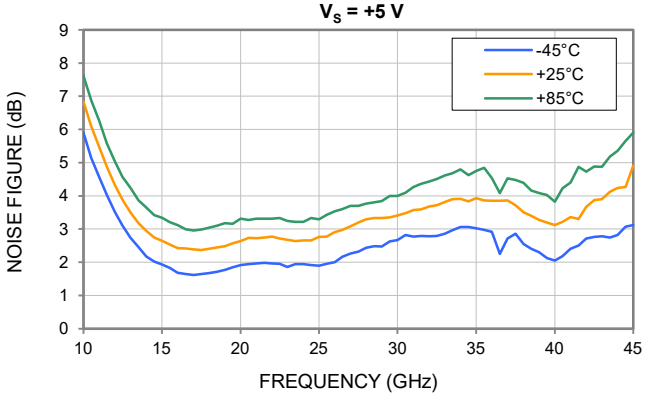


OUTPUT IP3 vs. DEVICE VOLTAGE,
P_{OUT} = -5 dBm/TONE, TEMPERATURE = +25°C

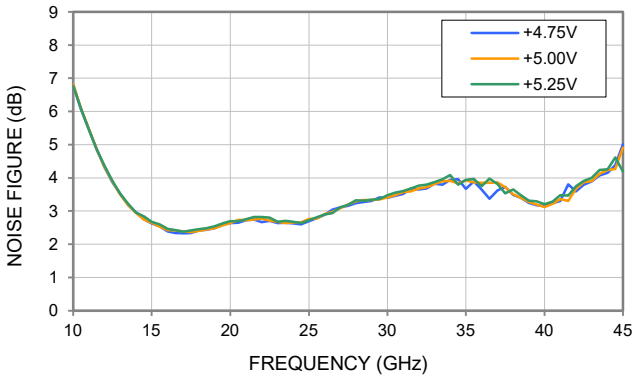


Typical Performance Curves

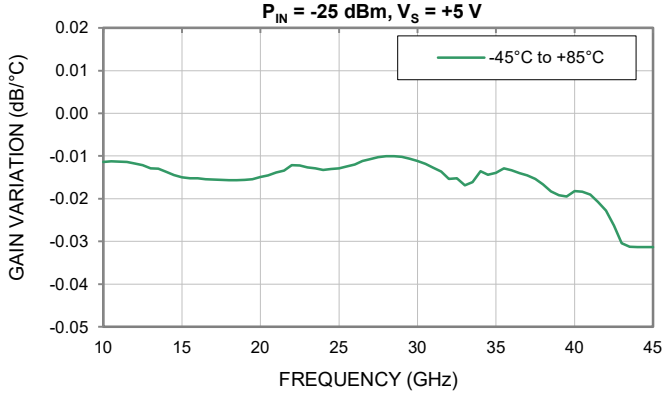
NOISE FIGURE vs. TEMPERATURE, V_S = +5 V



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



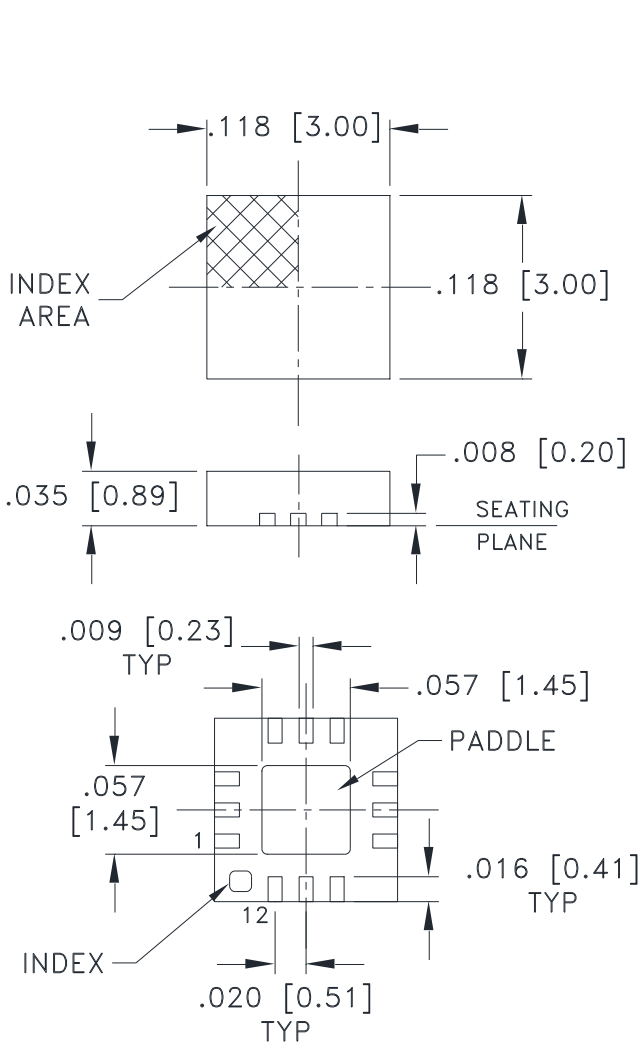
GAIN VARIATION vs. TEMPERATURE, P_{IN} = -25 dBm, V_S = +5 V



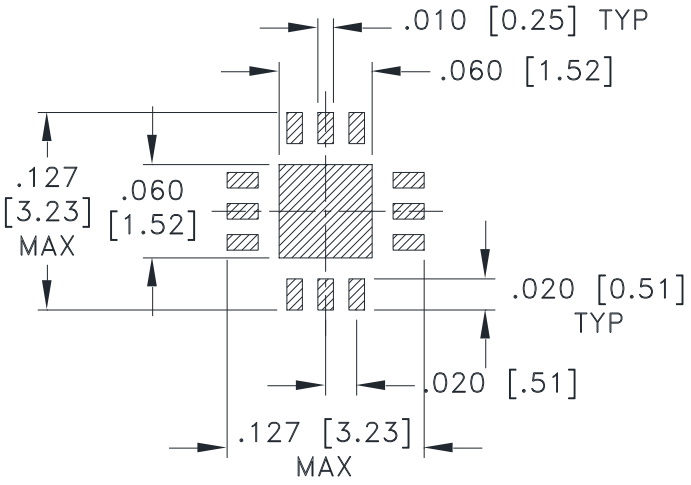
Case Style DQ

DQ1225

Outline Dimensions



PCB Land Pattern



SUGGESTED LAYOUT,
TOLERANCE TO BE WITHIN ±.002

Weight: .02 Grams

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

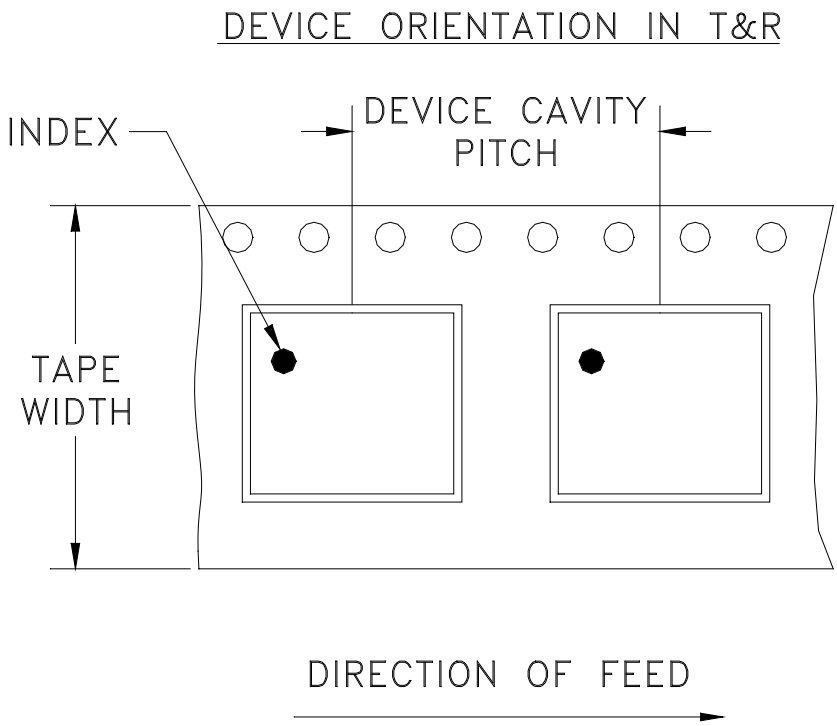
Notes:

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.

Mini-Circuits®
INTERNET http://www.minicircuits.com
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661
Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010
Mini-Circuits ISO 9001 & ISO 14001 Certified

This document and its contents are the property of Mini-Circuits.

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.

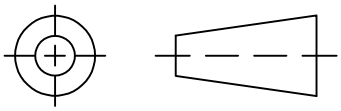
Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

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

Mini-Circuits®
INTERNET http://www.minicircuits.com
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661
Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010
Mini-Circuits ISO 9001 & ISO 14001 Certified

This document and its contents are the property of Mini-Circuits.

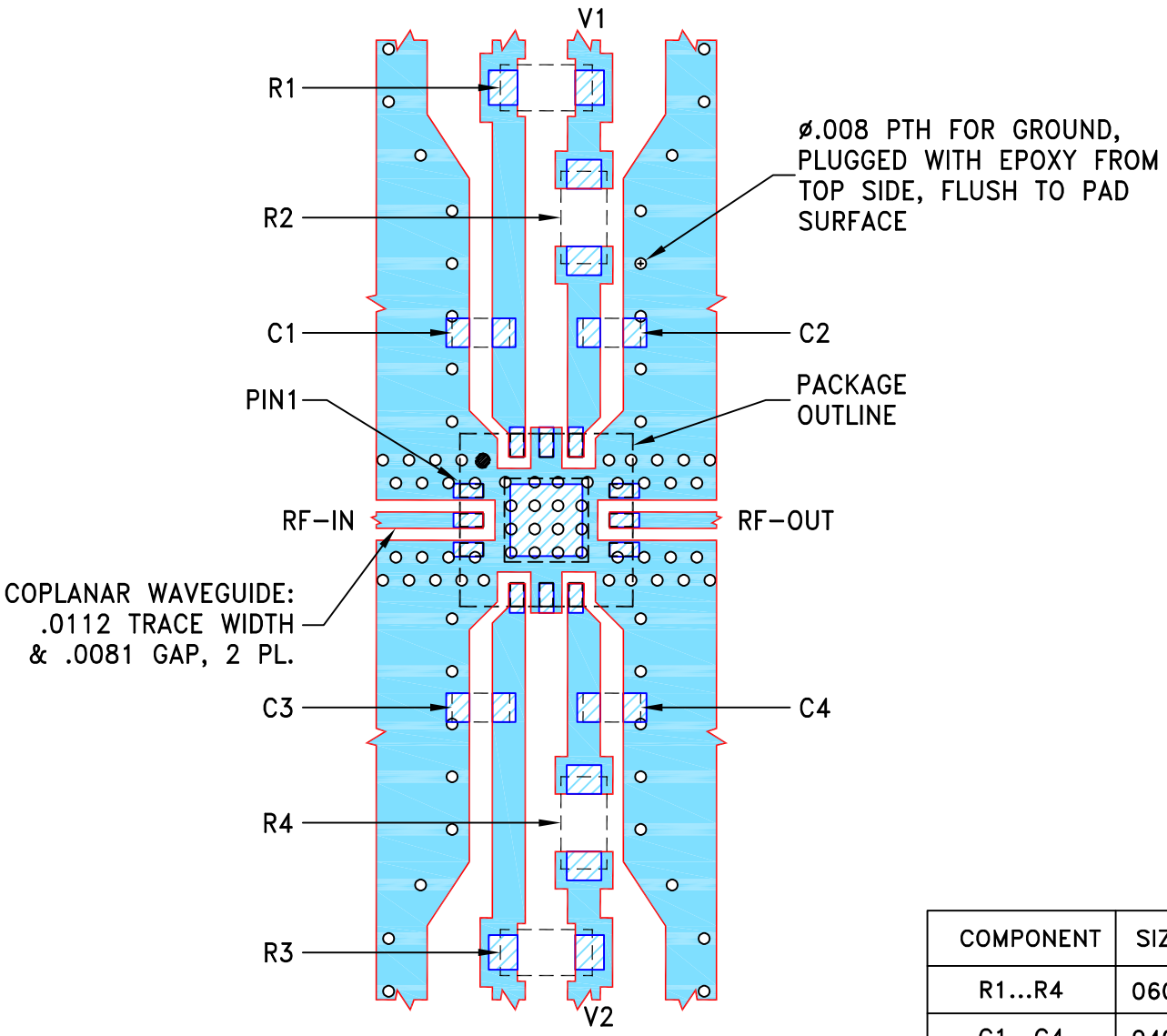
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	ECO-013378	NEW RELEASE	05/23/22	ITG	IL

SUGGESTED MOUNTING CONFIGURATION FOR DQ1225 CASE STYLE



COMPONENT	SIZE
R1...R4	0603
C1...C4	0402

NOTES:

1. TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .0066"±.0007". 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-PMA3-15453(C)+.
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	05/23/22
TOLERANCES ON:	CHECKED	GF	05/23/22
2 PL DECIMALS ±	APPROVED	IL	05/23/22
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

Mini-Circuits®

THIS DOCUMENT AND ITS CONTENTS ARE THE PROPERTY OF MINI-CIRCUITS. EXCEPT FOR USE EXPRESSLY GRANTED, IN WRITING, TO ITS VENDORS, VENDEE AND THE UNITED STATES GOVERNMENT, MINI-CIRCUITS RESERVES ALL PROPRIETARY DESIGN, USE , MANUFACTURING AND REPRODUCTION RIGHTS THERETO. THESE CONTENTS SHALL NOT BE USED, DUPLICATED OR DISCLOSED TO ANY OUTSIDE PARTY, IN WHOLE OR IN PART, WITHOUT WRITTEN PERMISSION OF MINI-CIRCUITS.

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

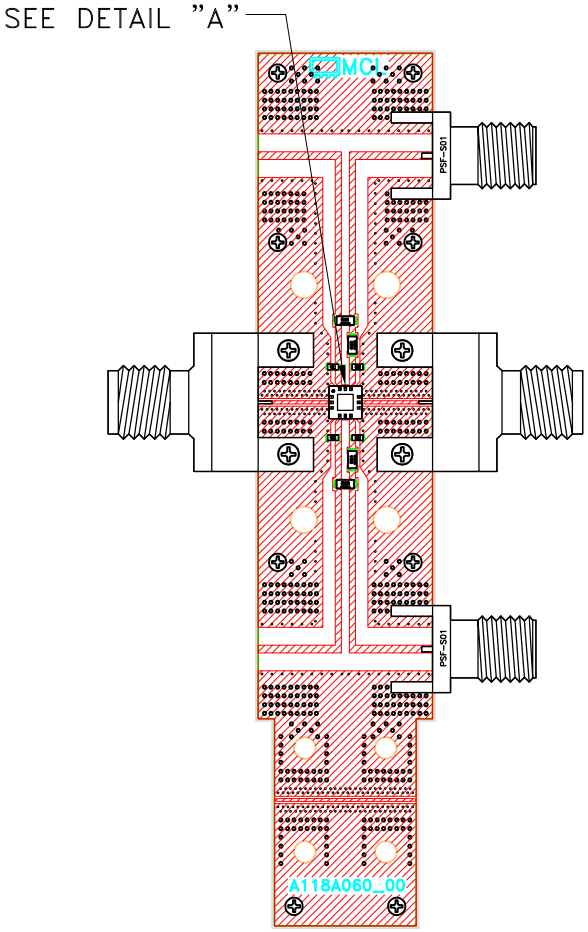
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

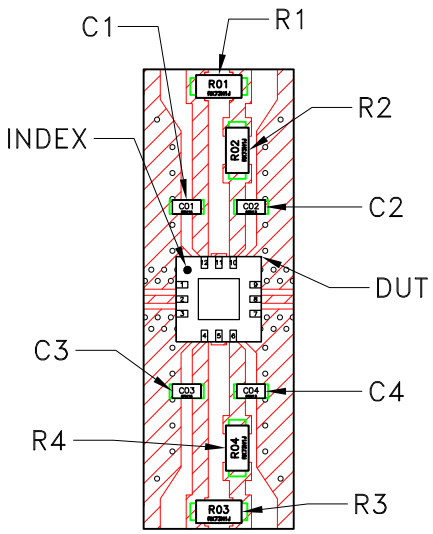
PL, DQ1225, TB-PMA3-15453(C)+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-731	OR

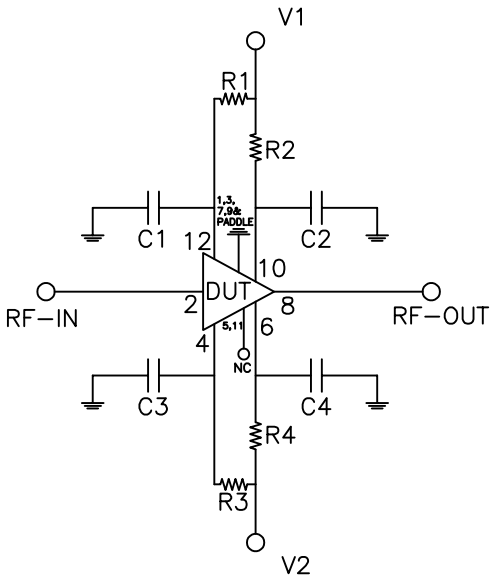
FILE:	SCALE:	SHEET:
98PL731	8:1	1 OF 1

Evaluation Board and Circuit





DETAIL "A"
(SCALE 2:1)



SCHEMATIC DIAGRAM

Component	Size	Value	Part Number	Manufacturer
R1,R3	0603	39Ohm	SG73P1JTTD39R0F	KOA Speer
R2,R4	0603	24Ohm	SG73S1JTTD24R0F	KOA Speer
C1,C2,C3,C4	0402	100pF	GRM1555C1H101JA01D	Murata

Notes:

1. 2.4mm Female Connectors.
2. PCB Material: Roger RO4350B or equivalent,
   Dielectric constant=3.5, Thickness=0.0066 inch

Mini-Circuits®

THIS DOCUMENT AND ITS CONTENTS ARE THE PROPERTY OF MINI-CIRCUITS.

Mini-Circuits

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

This document and its contents are the property of Mini-Circuits.

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

This document and its contents are the property of Mini-Circuits.