SUPER WIDEBAND, HIGH GAIN

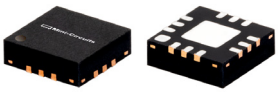
Monolithic Amplifier

PMA3-453+

50Ω 10 to 45 GHz

THE BIG DEAL

- Wideband, 10 to 45 GHz
- Usable down to 9 GHz
- High Gain, 25.5 dB typ. at 20 GHz
- Low NF, 1.6 dB typ. at 20 GHz
- P1dB, 10 dBm typ. at 20 GHz
- OIP3, 22 dBm typ. at 20 GHz
- Built-in Bias Tee and DC Blocks
- Patent Pending



Generic photo used for illustration purposes only

CASE STYLE: DQ1225

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- 5G
- Lab Instrument
- Satellite

PRODUCT OVERVIEW

The PMA3-453+ is a PHEMT based wideband, low noise MMIC amplifier with a unique combination of high gain and low noise figure over a very board bandwidth making it ideal for using as the first stage driver amplifier of receiver applications. This design operates on a single 4V supply, is matched to 50 Ohm and comes in a tiny plastic package (3 x 3 x 0.89mm), accommodating dense circuit board layouts.

KEY FEATURES

Feature	Advantages
Low NF (<3.0dB typ.) up to 30GHz	Enables lower system noise figure performance.
High Gain 20dB typ. up to 30GHz	Enables signal amplification without the need for multiple gain stage, minimizing the effect of subsequent stages on noise figure.
Built-in Bias Tee & DC Blocks	Minimizes the external component count & PC board space, making it less expensive and user friendly for system designers.
3 x 3mm 12-lead MCLP package	Tiny footprint saves space in dense layouts while providing low inductance, repeatable transitions, and excellent thermal contact to the PCB.

REV. C
ECO-011519
PMA3-453+
GY/RS/CP/AM
240401

ELECTRICAL SPECIFICATIONS[1] AT 25°C, Vs= +4V AND R1=18Ω, UNLESS NOTED OTHERWISE

Parameter	Condition (GHz)	Vs= +4 V			Units
		Min.	Typ.	Max.	
Frequency Range	—	10		45	GHz
Noise Figure	10 20 30 40 45		1.9 1.6 2.4 3.8 5.2		dB
Gain	10 20 30 40 45	22.5 22.2 14.5 10.4 —	25.3 25.5 18.2 14.1 9.1	29.2 31.1 23.9 18.1 —	dB
Input Return Loss	10 20 30 40 45		13 21 8 5 5		dB
Output Return Loss	10 20 30 40 45		12 10 9 15 7		dB
Output Power @ 1 dB compression	10 20 30 40 45		+8.5 +10.0 +11.0 +11.7 +10.1		dBm
Output IP3	10 20 30 40 45		+18.6 +22.0 +23.4 +21.9 +21.4		dBm
Supply Voltage (Vs)		+3.75	+4.0	+4.25	V
Device Operating Current (I_{DD})			68	112	mA
Device Current Variation vs. Temperature[2]			-50		µA/°C
Device Current Variation vs. Voltage			0.02		mA/mV
Thermal Resistance, junction-to-ground lead			106		°C/W

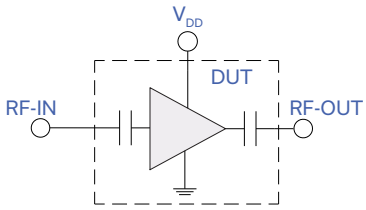
1. Measured on Mini-Circuits Characterization test board TB-PMA3-453+ with thru-line loss being deducted. See Characterization Test Circuit (Fig. 1)
2. Device Current Variation vs. Temperature = (Current at 85°C - Current at -45°C)/130°C

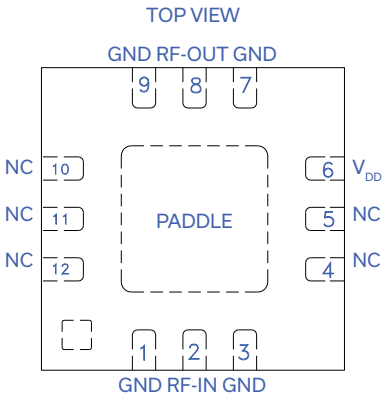
ABSOLUTE MAXIMUM RATINGS[3]

Parameter	Ratings
Operating Temperature (ground lead)	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Junction Temperature	+146°C
Total Power Dissipation	0.65W
Input Power (CW), Vs= +4V	+23 dBm (5 minutes max.) +13 dBm (continuous)
DC Voltage at Port 2 & 8	+2 V
DC Voltage (Vs)	+6 V

3. Permanent damage may occur if any of these limits are exceeded. Electrical maximum ratings are not intended for continuous normal operation.

SIMPLIFIED SCHEMATIC AND PAD DESCRIPTION





Function	Pad Number	Description (Fig. 1)
RF-IN	2	RF Input Pad. Connects to RF input
RF-OUT	8	RF Output Pad. Connects to RF output
V_{DD}	6	DC Power Supply Pad. Connects to Voltage Source Vs via R1
Ground	1,3,7,9 & Paddle	Connects to ground
No Connection	4,5,10,11& 12	Not used internally. Connected to ground on test board

RECOMMENDED APPLICATION AND CHARACTERIZATION TEST CIRCUIT

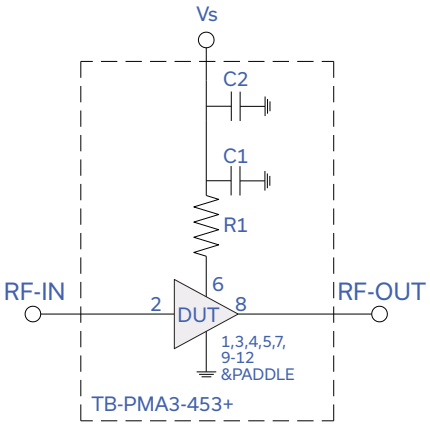
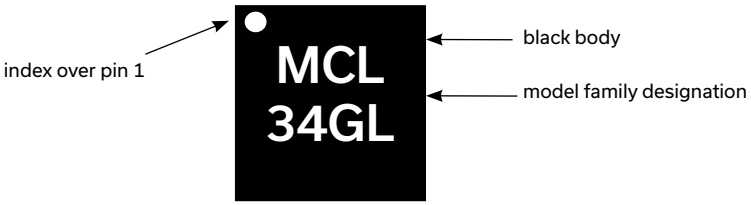


Fig 1. Application and Characterization Circuit
Note: This block diagram is used for characterization. (DUT is soldered on Mini-Circuits Characterization test board TB-PMA3-453+) Gain, Return loss, Output power at 1dB compression (P1 dB), output IP3 (OIP3) and noise figure measured using Agilent's N5245A microwave network analyzer.

Conditions:
1. Gain and Return Loss: P_{IN}= -25dBm
2. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, -5dBm/tone at output.

Component	Size	Value	Part Number	Manufacturer
R1	0603	18 Ohm	SG73G1JTTD18R0C	KOA
C1	0402	5 pF	GJM1555C1H5R0CB01D	Murata
C2	0402	0.1 uF	GRM155R71C104KA88D	Murata

PRODUCT MARKING



Marking may contain other features or characters for internal lot control

ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASH BOARD. TO ACCESS CLICK HERE

Performance Data	Data Table graphs, s-parameter data set (.zip file)
Case Style	DQ1225 Plastic package, exposed paddle, lead finish: Matte Tin
Tape & Reel **Standard quantities available on reel**	F66 7" reels with 20, 50, 100, 200, 500, 1K, 2K or 3K devices
Suggested Layout for PCB Design	PL-675
Evaluation Board	TB-PMA3-453+ (Without connectors) TB-PMA3-453C+ (With connectors)
Environmental Ratings	ENV08T1

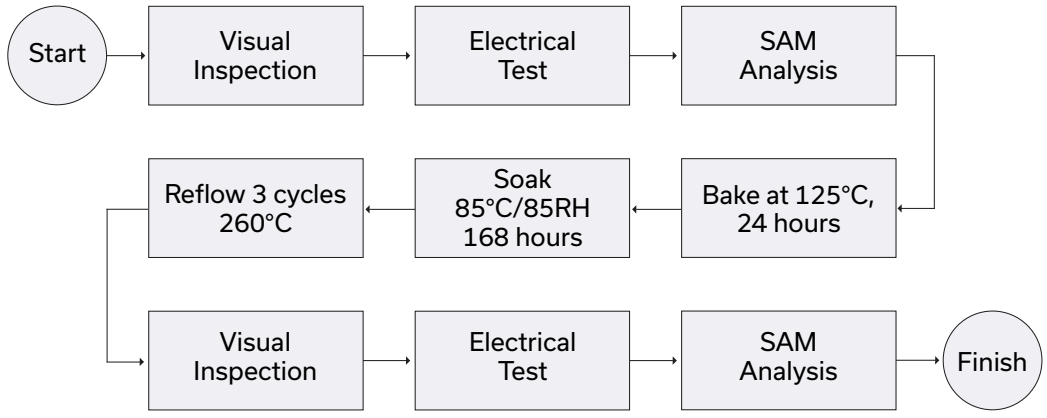
ESD RATING

Human Body Model (HBM): Class 1A (250 to <500V) in accordance with ANSI/ESD STM 5.1 - 2001

MSL RATING

Moisture Sensitivity: MSL1 in accordance with IPC/JEDEC J-STD-020D

MSL TEST FLOW CHART



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/MCLStore/terms.jsp

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: Vd = 4.00V, Id = 68mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
7000	7.38	66.16	4.18	5.42	205.54	0.99	2.49	-4.39	7.36
8000	19.18	62.70	9.27	9.75	63.74	1.00	13.28	3.34	3.62
9000	22.92	67.81	10.44	11.99	81.23	1.02	17.62	6.34	2.23
10000	25.39	60.57	12.03	12.15	27.79	1.00	18.22	8.15	1.81
11000	27.02	60.08	10.36	12.65	21.27	1.03	19.26	8.11	1.70
12000	28.20	61.13	8.44	15.64	20.35	1.11	18.58	8.65	1.77
13000	28.77	59.85	8.41	17.94	16.68	1.13	19.02	8.68	1.83
14000	28.70	56.31	10.46	12.54	11.52	1.03	19.73	8.62	1.79
15000	28.20	54.41	13.69	10.53	10.07	0.95	20.49	9.15	1.69
16000	27.68	51.56	16.58	10.77	7.96	0.93	21.06	9.41	1.61
17000	27.13	50.77	16.15	11.78	7.88	0.95	21.38	9.21	1.56
18000	26.59	49.29	14.63	12.22	7.08	0.96	20.90	8.94	1.57
19000	26.11	48.93	14.29	11.55	7.14	0.96	19.54	8.68	1.55
20000	25.73	47.20	15.35	10.87	6.16	0.93	20.34	9.44	1.59
21000	25.16	46.32	16.74	10.38	5.95	0.92	19.21	9.91	1.51
22000	24.01	46.70	14.76	9.21	6.80	0.90	20.96	10.65	1.54
23000	23.23	47.32	12.27	8.81	7.69	0.91	22.11	10.48	1.59
24000	22.43	47.48	10.86	8.69	8.39	0.92	21.63	11.05	1.65
25000	21.65	48.14	10.30	8.35	9.66	0.92	22.93	11.19	1.59
26000	20.86	48.38	9.42	7.72	10.38	0.92	21.22	11.06	1.81
27000	19.97	48.01	8.52	7.20	10.41	0.92	21.83	11.15	1.99
28000	19.25	46.14	7.97	7.34	8.98	0.95	22.33	11.16	2.16
29000	18.76	45.49	7.85	8.18	9.10	0.99	21.06	10.91	2.18
30000	18.34	45.90	8.17	9.27	10.56	1.02	20.56	11.16	2.27
31000	17.84	46.16	8.32	9.90	11.87	1.04	21.01	10.99	2.40
32000	17.21	46.83	7.76	9.49	13.33	1.04	21.75	10.56	2.70
33000	16.37	46.96	6.41	8.85	13.55	1.08	21.03	10.36	3.01
34000	15.53	46.49	5.04	8.37	12.50	1.13	21.29	10.24	3.39
35000	14.88	46.66	4.24	8.19	12.63	1.17	20.15	10.01	3.80
36000	13.96	47.31	3.78	8.01	14.28	1.19	21.30	9.83	3.98
37000	13.58	45.79	3.75	8.57	12.83	1.21	21.70	9.71	4.19
38000	13.19	44.82	4.16	9.15	12.93	1.21	22.13	10.31	4.10
39000	13.20	46.60	4.69	10.53	17.57	1.22	21.22	10.79	3.97
40000	13.59	44.74	4.93	12.17	14.53	1.24	22.37	11.68	3.86
41000	13.18	44.17	4.83	11.04	14.06	1.22	22.59	10.80	3.81
42000	12.05	44.69	4.50	9.22	15.66	1.19	22.72	10.40	4.16
43000	10.40	45.36	4.28	8.12	18.82	1.17	21.10	9.74	4.58
44000	8.52	52.61	4.40	7.75	53.79	1.14	21.79	9.25	5.12
45000	7.88	52.63	4.07	7.87	56.17	1.17	20.48	10.27	5.12
46000	7.69	49.10	3.74	8.36	37.46	1.22	19.38	10.38	4.97
47000	8.06	47.43	3.80	8.83	31.12	1.23	20.71	9.90	5.04
48000	9.73	45.19	4.53	8.03	21.64	1.14	19.56	10.44	4.73
49000	10.99	42.74	6.74	6.97	16.68	0.97	20.51	11.59	4.81
50000	10.73	42.82	12.03	6.87	20.79	0.84	20.31	12.44	5.56

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: Vd = 3.75V, Id = 63mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
7000	6.72	66.69	4.00	5.41	229.36	1.00	1.77	-5.07	7.38
8000	18.93	64.83	9.50	9.82	84.65	1.00	12.47	2.55	3.48
9000	22.62	69.03	10.61	12.09	97.34	1.02	16.77	5.68	2.29
10000	25.07	58.79	12.08	12.24	23.53	1.00	17.26	7.51	1.79
11000	26.69	60.80	10.21	12.69	23.91	1.04	18.50	7.58	1.81
12000	27.87	61.71	8.21	15.65	22.40	1.12	18.09	8.12	1.84
13000	28.47	57.87	8.16	18.25	13.64	1.14	18.55	8.06	1.93
14000	28.43	54.72	10.16	12.70	9.85	1.04	19.01	8.14	1.85
15000	27.95	52.49	13.35	10.63	8.31	0.95	19.76	8.69	1.75
16000	27.42	51.84	16.15	10.85	8.46	0.93	20.52	8.81	1.63
17000	26.86	49.85	15.83	11.89	7.31	0.95	20.86	8.73	1.61
18000	26.32	48.56	14.38	12.32	6.72	0.97	20.19	8.45	1.59
19000	25.83	48.32	14.04	11.64	6.88	0.96	19.62	8.19	1.58
20000	25.46	46.87	15.08	10.96	6.12	0.94	19.09	8.83	1.55
21000	24.91	46.06	16.61	10.48	5.95	0.92	19.04	9.31	1.54
22000	23.79	46.98	14.85	9.31	7.23	0.90	20.51	10.07	1.49
23000	23.02	47.30	12.32	8.90	7.89	0.91	21.02	9.90	1.56
24000	22.22	47.73	10.87	8.78	8.86	0.93	21.33	10.47	1.65
25000	21.45	48.31	10.29	8.43	10.11	0.93	22.13	10.61	1.69
26000	20.65	47.95	9.39	7.79	10.13	0.92	20.99	10.49	1.80
27000	19.77	46.74	8.51	7.24	9.25	0.92	21.02	10.58	1.95
28000	19.04	47.45	7.94	7.35	10.68	0.95	20.85	10.59	2.18
29000	18.55	45.02	7.78	8.20	8.79	1.00	21.39	10.33	2.14
30000	18.13	45.16	8.08	9.29	9.91	1.03	20.69	10.58	2.25
31000	17.62	46.59	8.21	9.90	12.74	1.04	21.48	10.41	2.43
32000	16.98	47.12	7.69	9.49	14.10	1.04	20.92	9.99	2.65
33000	16.14	47.52	6.33	8.81	14.75	1.08	20.86	9.89	2.96
34000	15.28	46.77	4.98	8.29	13.16	1.13	21.47	9.75	3.36
35000	14.61	46.42	4.19	8.06	12.52	1.16	21.60	9.48	3.82
36000	13.69	46.42	3.74	7.89	13.15	1.18	21.00	9.42	3.95
37000	13.31	46.45	3.72	8.43	14.11	1.21	22.28	9.33	4.16
38000	12.93	45.12	4.12	9.04	13.67	1.21	20.68	9.85	4.04
39000	12.97	47.36	4.66	10.44	19.57	1.22	21.20	10.33	3.94
40000	13.36	44.39	4.90	11.97	14.27	1.24	21.32	11.15	3.84
41000	12.94	45.29	4.78	10.92	16.33	1.22	21.38	10.27	3.87
42000	11.81	43.80	4.46	9.13	14.42	1.19	20.57	9.89	4.25
43000	10.17	46.40	4.26	8.11	21.70	1.17	22.22	9.26	4.53
44000	8.30	54.38	4.39	7.74	67.56	1.14	20.93	8.76	4.58
45000	7.68	53.78	4.06	7.86	65.49	1.17	20.43	9.97	5.07
46000	7.50	49.77	3.73	8.38	41.40	1.22	20.84	10.15	4.74
47000	7.88	49.30	3.80	8.83	39.42	1.23	20.26	9.67	5.08
48000	9.54	45.75	4.56	8.06	23.72	1.14	19.04	10.11	4.79
49000	10.80	43.42	6.78	7.06	18.59	0.97	21.39	11.19	4.78
50000	10.51	42.55	12.09	6.98	20.83	0.84	18.84	12.01	5.69

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: Vd = 4.25V, Id = 73mA @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
7000	7.94	72.53	4.35	5.43	411.03	0.98	2.76	-3.80	7.29
8000	19.39	61.47	9.09	9.68	53.60	1.00	14.08	4.07	3.47
9000	23.16	63.93	10.31	11.90	50.30	1.02	18.43	6.94	2.24
10000	25.64	64.95	11.98	12.07	44.52	1.00	18.54	8.62	1.80
11000	27.30	59.77	10.49	12.61	19.91	1.03	19.54	8.58	1.75
12000	28.48	63.04	8.63	15.65	24.72	1.11	19.37	9.24	1.80
13000	29.02	60.77	8.65	17.67	18.17	1.12	19.69	9.13	1.88
14000	28.92	56.45	10.72	12.39	11.46	1.02	20.17	9.04	1.79
15000	28.41	54.31	13.99	10.46	9.74	0.94	21.39	9.69	1.73
16000	27.89	51.75	16.96	10.71	7.95	0.93	21.65	9.83	1.65
17000	27.35	50.42	16.43	11.71	7.38	0.95	22.03	9.77	1.54
18000	26.82	49.92	14.84	12.16	7.41	0.96	21.20	9.51	1.57
19000	26.33	48.70	14.49	11.48	6.79	0.95	21.13	9.12	1.58
20000	25.95	47.19	15.60	10.79	6.00	0.93	20.60	9.86	1.59
21000	25.37	47.13	16.84	10.28	6.36	0.91	20.01	10.32	1.57
22000	24.19	46.84	14.70	9.12	6.75	0.90	21.01	11.05	1.50
23000	23.41	47.58	12.22	8.73	7.74	0.91	23.43	10.87	1.53
24000	22.60	47.81	10.85	8.61	8.51	0.92	21.75	11.57	1.62
25000	21.81	47.98	10.32	8.28	9.30	0.92	22.88	11.71	1.70
26000	21.02	48.09	9.44	7.65	9.84	0.91	21.31	11.59	1.82
27000	20.13	47.29	8.55	7.14	9.44	0.91	22.38	11.68	1.92
28000	19.42	46.74	8.00	7.28	9.42	0.94	22.08	11.68	2.15
29000	18.93	45.56	7.90	8.17	9.00	0.99	21.89	11.45	2.21
30000	18.52	45.42	8.24	9.26	9.82	1.02	21.58	11.60	2.31
31000	18.03	45.92	8.38	9.90	11.33	1.03	21.78	11.51	2.44
32000	17.40	47.07	7.84	9.53	13.47	1.04	21.35	11.10	2.68
33000	16.57	47.93	6.48	8.87	14.90	1.07	21.50	10.93	3.08
34000	15.75	46.88	5.09	8.46	12.84	1.13	21.91	10.82	3.43
35000	15.12	46.16	4.27	8.34	11.72	1.17	21.20	10.54	3.78
36000	14.19	47.36	3.81	8.14	14.14	1.19	20.63	10.39	4.01
37000	13.81	45.68	3.78	8.70	12.48	1.22	23.23	10.27	4.21
38000	13.40	45.63	4.18	9.23	13.93	1.21	21.24	10.85	4.10
39000	13.40	46.93	4.71	10.62	17.86	1.22	23.14	11.22	3.92
40000	13.80	45.55	4.95	12.26	15.65	1.24	22.59	12.14	3.86
41000	13.39	43.19	4.84	11.17	12.30	1.22	22.62	11.26	3.90
42000	12.26	45.33	4.51	9.26	16.46	1.19	22.28	10.86	4.11
43000	10.59	46.69	4.29	8.14	21.51	1.16	24.06	10.18	4.52
44000	8.71	50.95	4.42	7.75	43.54	1.14	21.75	9.68	5.08
45000	8.06	52.86	4.10	7.85	56.69	1.16	21.41	10.61	5.23
46000	7.84	48.39	3.75	8.34	33.98	1.22	20.31	10.68	4.90
47000	8.22	47.10	3.80	8.81	29.34	1.23	19.94	10.11	5.06
48000	9.89	44.72	4.52	7.95	20.00	1.14	19.16	10.72	4.70
49000	11.16	43.73	6.70	6.85	18.16	0.96	22.14	11.89	4.85
50000	10.92	43.53	11.89	6.75	21.88	0.84	19.89	12.92	5.48

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: Vd = 4.00V, Id = 73.00mA @ Temperature = -45°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
7000	9.20	71.38	3.32	4.96	248.88	1.00	4.16	-3.22	6.15
8000	20.99	60.04	8.54	9.19	36.32	1.00	14.71	4.53	2.55
9000	24.56	67.03	9.90	11.46	59.59	1.02	18.84	7.31	1.54
10000	26.93	62.18	11.82	11.41	27.32	0.99	19.29	8.88	1.23
11000	28.52	61.71	10.54	11.47	21.10	1.01	20.38	8.80	1.14
12000	29.70	66.80	8.43	14.11	32.12	1.10	19.93	9.35	1.24
13000	30.29	60.25	8.29	16.70	14.35	1.13	20.42	9.25	1.28
14000	30.20	58.82	10.50	11.68	12.64	1.02	21.19	9.30	1.19
15000	29.67	54.55	13.79	9.83	8.41	0.93	21.85	9.85	1.08
16000	29.13	52.65	16.32	9.99	7.39	0.91	22.34	10.12	1.08
17000	28.60	50.00	16.97	10.79	5.95	0.93	22.88	9.89	0.96
18000	28.11	49.46	15.20	11.50	5.94	0.95	21.67	9.48	1.00
19000	27.65	49.10	13.66	11.32	5.97	0.95	21.09	9.29	0.94
20000	27.35	47.67	14.29	10.73	5.28	0.93	21.71	9.99	0.94
21000	26.90	46.07	17.57	9.94	4.66	0.90	20.88	10.36	0.96
22000	25.60	46.68	14.32	8.55	5.44	0.88	21.78	11.06	0.94
23000	24.87	47.51	11.79	8.49	6.30	0.90	23.13	10.86	0.97
24000	24.15	48.08	11.19	8.57	7.27	0.91	23.02	11.52	1.07
25000	23.33	47.68	10.61	7.62	7.28	0.88	23.14	11.52	1.02
26000	22.38	48.14	8.65	6.88	7.80	0.89	21.96	11.30	1.18
27000	21.64	48.26	8.11	6.84	8.41	0.91	21.46	11.54	1.31
28000	21.06	47.02	8.46	6.91	7.90	0.91	22.06	11.54	1.37
29000	20.24	45.57	7.77	6.88	7.07	0.93	22.12	11.21	1.53
30000	19.73	45.30	7.57	8.25	7.66	1.01	21.93	11.47	1.69
31000	19.49	45.56	8.29	9.81	8.91	1.04	22.22	11.46	1.66
32000	18.95	46.29	8.64	8.57	10.05	0.99	22.00	10.90	1.83
33000	17.84	46.85	6.23	7.37	10.15	1.02	22.19	10.58	2.35
34000	16.90	45.44	4.54	7.55	8.33	1.12	22.81	10.45	2.71
35000	16.65	46.00	4.21	8.53	9.32	1.19	22.58	10.55	2.92
36000	15.68	46.22	3.89	7.82	10.12	1.17	22.13	10.28	3.01
37000	14.89	45.53	3.30	7.77	9.37	1.21	22.31	10.08	3.39
38000	14.43	45.13	3.31	8.59	9.72	1.25	21.45	10.50	3.48
39000	14.54	46.83	4.21	10.17	14.06	1.24	24.20	11.16	3.15
40000	15.03	44.04	4.42	11.55	10.35	1.26	25.65	11.91	2.92
41000	14.45	43.55	4.05	10.81	9.87	1.27	25.34	11.21	3.11
42000	13.78	44.70	4.21	10.44	12.42	1.25	21.15	11.36	3.17
43000	12.13	44.06	4.01	8.06	12.46	1.18	21.31	10.34	3.50
44000	9.55	51.31	3.51	6.60	32.49	1.13	23.84	9.97	4.46
45000	8.81	52.65	3.27	7.30	41.40	1.20	21.79	10.98	4.55
46000	9.30	49.00	3.82	9.63	31.26	1.26	21.61	10.83	4.16
47000	9.29	46.97	3.78	9.03	24.42	1.24	21.82	10.27	3.46
48000	10.22	44.76	3.25	7.20	14.48	1.20	21.59	10.74	4.73
49000	11.66	43.32	4.36	6.16	12.32	1.04	22.26	12.20	4.19
50000	12.51	41.67	9.97	6.47	13.60	0.84	20.09	13.14	3.64

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: Vd = 3.75V, Id = 68mA @ Temperature = -45°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
7000	8.59	64.46	3.20	4.96	117.39	1.01	4.41	-3.91	6.18
8000	20.78	63.57	8.71	9.27	56.32	1.00	13.88	3.75	2.63
9000	24.29	68.38	10.06	11.57	72.23	1.02	18.06	6.53	1.60
10000	26.64	60.10	11.91	11.49	22.32	0.99	18.48	8.37	1.20
11000	28.22	60.24	10.42	11.54	18.42	1.01	19.43	8.15	1.13
12000	29.39	63.00	8.24	14.12	21.33	1.11	19.81	8.81	1.25
13000	30.00	61.84	8.06	16.95	17.67	1.13	19.66	8.74	1.32
14000	29.94	57.13	10.18	11.83	10.67	1.02	20.48	8.82	1.15
15000	29.43	54.66	13.49	9.90	8.73	0.93	20.82	9.38	1.14
16000	28.89	52.91	16.03	10.06	7.82	0.92	21.78	9.65	1.03
17000	28.35	50.53	16.52	10.85	6.48	0.93	22.93	9.28	0.98
18000	27.86	49.51	14.94	11.58	6.15	0.95	21.57	8.87	1.01
19000	27.39	48.48	13.51	11.39	5.72	0.96	21.92	8.65	0.99
20000	27.10	47.24	14.16	10.80	5.18	0.93	21.76	9.36	1.00
21000	26.66	46.22	17.15	10.05	4.87	0.90	20.23	9.75	1.00
22000	25.40	46.51	14.49	8.68	5.48	0.88	21.22	10.47	0.94
23000	24.67	47.37	11.86	8.57	6.37	0.90	24.75	10.28	0.98
24000	23.95	47.39	11.16	8.64	6.88	0.92	21.00	10.93	0.97
25000	23.14	47.71	10.54	7.71	7.46	0.89	23.96	10.94	1.02
26000	22.21	47.45	8.75	6.96	7.41	0.89	22.02	10.70	1.16
27000	21.45	46.18	8.11	6.89	6.78	0.91	23.52	10.86	1.27
28000	20.84	45.81	8.32	6.96	7.03	0.91	20.85	10.96	1.29
29000	20.05	45.43	7.78	6.95	7.13	0.94	22.12	10.53	1.54
30000	19.54	45.04	7.59	8.26	7.60	1.01	21.37	10.77	1.68
31000	19.27	45.55	8.21	9.81	9.09	1.04	23.11	10.76	1.67
32000	18.73	46.14	8.46	8.61	10.08	0.99	22.40	10.30	1.82
33000	17.63	47.89	6.25	7.38	11.78	1.02	23.86	10.00	2.32
34000	16.68	46.78	4.54	7.49	9.96	1.12	22.58	9.86	2.74
35000	16.37	44.99	4.16	8.38	8.45	1.18	20.76	9.86	2.87
36000	15.40	46.02	3.83	7.71	10.03	1.17	21.32	9.74	3.02
37000	14.66	45.35	3.31	7.66	9.40	1.20	21.81	9.45	3.24
38000	14.22	44.61	3.34	8.50	9.42	1.24	20.49	10.00	3.46
39000	14.30	46.35	4.19	10.09	13.61	1.24	21.19	10.56	3.13
40000	14.78	45.03	4.42	11.40	11.88	1.26	30.04	11.30	3.00
41000	14.25	44.74	4.06	10.69	11.56	1.27	22.93	10.73	3.00
42000	13.53	45.47	4.18	10.33	13.86	1.25	23.10	10.76	3.19
43000	11.92	44.45	4.02	8.07	13.42	1.18	22.80	9.87	3.51
44000	9.39	50.77	3.58	6.65	31.53	1.13	24.03	9.52	4.29
45000	8.64	52.23	3.30	7.32	40.58	1.20	21.60	10.47	4.45
46000	9.03	48.79	3.70	9.56	30.78	1.27	20.41	10.34	3.87
47000	9.09	47.65	3.76	9.05	26.96	1.25	20.83	9.81	3.65
48000	10.13	45.43	3.37	7.29	16.35	1.20	19.98	10.22	3.92
49000	11.55	43.23	4.51	6.31	12.72	1.04	22.37	11.70	3.72
50000	12.31	42.28	10.01	6.63	15.08	0.85	19.25	12.63	3.97

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: Vd = 4.25V, Id = 78mA @ Temperature = -45°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
7000	9.76	64.96	3.45	4.95	114.18	0.99	5.18	-2.76	6.13
8000	21.18	64.80	8.35	9.13	60.90	1.01	15.54	5.26	2.61
9000	24.79	64.81	9.78	11.38	44.71	1.03	19.35	7.92	1.50
10000	27.17	63.81	11.76	11.31	31.96	0.99	19.73	9.47	1.19
11000	28.78	60.47	10.63	11.42	17.78	1.01	20.56	9.27	1.15
12000	29.97	62.74	8.59	14.13	19.61	1.10	20.93	9.95	1.20
13000	30.54	60.98	8.51	16.49	15.28	1.12	20.71	9.71	1.31
14000	30.42	58.50	10.77	11.55	11.92	1.01	21.53	9.86	1.22
15000	29.87	54.38	14.08	9.77	8.07	0.92	22.01	10.39	1.02
16000	29.33	52.34	16.62	9.92	6.97	0.91	23.27	10.68	0.97
17000	28.81	50.54	17.37	10.71	6.17	0.92	24.00	10.45	0.97
18000	28.33	50.69	15.51	11.41	6.65	0.95	22.47	10.05	0.95
19000	27.87	48.97	13.82	11.26	5.73	0.95	22.71	9.87	0.92
20000	27.57	47.98	14.47	10.66	5.33	0.93	22.16	10.56	0.95
21000	27.10	46.51	17.91	9.84	4.78	0.89	20.92	10.91	0.97
22000	25.78	46.48	14.19	8.46	5.19	0.87	22.57	11.60	1.00
23000	25.04	47.75	11.75	8.42	6.33	0.90	23.01	11.41	0.93
24000	24.33	48.46	11.22	8.50	7.42	0.91	23.31	12.08	1.01
25000	23.50	48.05	10.62	7.53	7.41	0.88	23.44	12.06	1.05
26000	22.54	47.91	8.61	6.82	7.43	0.89	22.55	11.93	1.21
27000	21.82	47.56	8.12	6.81	7.59	0.90	24.06	12.07	1.31
28000	21.24	46.60	8.54	6.88	7.38	0.90	21.35	12.08	1.37
29000	20.41	46.14	7.82	6.85	7.41	0.93	21.46	11.74	1.57
30000	19.91	45.36	7.59	8.26	7.57	1.01	21.55	12.03	1.70
31000	19.69	45.60	8.37	9.85	8.78	1.04	22.83	12.01	1.80
32000	19.16	46.73	8.75	8.51	10.34	0.98	22.43	11.44	1.81
33000	18.04	47.18	6.24	7.35	10.30	1.02	21.61	11.10	2.24
34000	17.12	45.44	4.53	7.64	8.12	1.13	22.13	11.03	2.75
35000	16.91	45.30	4.27	8.71	8.47	1.19	21.53	11.05	2.86
36000	15.94	46.15	3.93	7.97	9.84	1.17	22.13	10.79	3.06
37000	15.12	45.86	3.28	7.86	9.46	1.22	22.07	10.55	3.39
38000	14.64	45.55	3.29	8.64	9.92	1.26	21.26	11.02	3.48
39000	14.76	45.98	4.22	10.27	12.49	1.24	23.28	11.80	3.05
40000	15.25	43.59	4.43	11.69	9.63	1.26	24.01	12.37	2.93
41000	14.66	42.90	4.01	10.93	8.93	1.28	22.59	11.67	3.10
42000	14.02	42.88	4.23	10.56	9.87	1.25	22.11	11.81	3.17
43000	12.34	45.64	4.00	8.08	14.58	1.18	23.02	10.77	3.49
44000	9.71	51.52	3.45	6.54	32.13	1.13	23.13	10.34	4.41
45000	8.99	51.59	3.23	7.27	35.61	1.20	21.87	11.33	4.44
46000	9.53	47.80	3.85	9.69	26.65	1.26	20.79	11.17	4.18
47000	9.47	47.05	3.74	8.97	23.90	1.25	20.59	10.59	3.48
48000	10.33	45.32	3.14	7.14	14.88	1.21	22.06	11.07	4.74
49000	11.79	43.80	4.24	6.07	12.51	1.04	19.72	12.62	4.46
50000	12.70	42.30	9.91	6.35	14.16	0.84	17.65	13.64	3.97

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: Vd = 4.00V, Id = 65mA @ Temperature = +85°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
7000	5.57	66.61	4.83	5.80	300.74	0.98	0.90	-5.67	8.40
8000	17.61	61.73	10.07	10.24	71.13	0.99	12.20	2.23	4.35
9000	21.52	75.40	11.12	12.64	236.03	1.02	16.60	5.42	2.88
10000	24.07	59.56	12.40	12.85	29.39	1.00	17.28	7.31	2.45
11000	25.72	61.37	10.18	13.58	29.03	1.05	18.27	7.30	2.35
12000	26.90	60.85	8.28	17.42	23.16	1.13	17.77	7.97	2.40
13000	27.53	60.61	8.37	18.92	21.25	1.13	18.35	7.92	2.43
14000	27.47	55.28	10.61	12.90	11.99	1.03	18.99	8.00	2.39
15000	27.04	53.77	13.45	11.28	10.92	0.96	19.84	8.58	2.28
16000	26.52	50.76	16.04	11.61	8.47	0.95	20.83	8.72	2.22
17000	25.97	49.89	15.67	12.36	8.27	0.96	20.53	8.63	2.13
18000	25.40	49.14	14.37	12.69	8.11	0.97	19.84	8.34	2.12
19000	24.89	49.32	14.15	11.94	8.74	0.97	19.63	8.19	2.12
20000	24.45	47.38	15.95	11.01	7.41	0.94	19.94	8.91	2.07
21000	23.79	46.20	16.88	10.24	6.92	0.91	19.06	9.31	2.12
22000	22.70	46.97	14.28	9.39	8.26	0.91	20.55	10.11	2.11
23000	22.00	47.54	12.40	9.47	9.40	0.93	21.72	9.84	2.15
24000	21.25	48.18	11.40	9.51	10.92	0.95	21.30	10.58	2.22
25000	20.38	48.17	10.77	8.73	11.66	0.93	22.23	10.67	2.28
26000	19.56	47.81	9.55	7.96	11.64	0.93	20.93	10.55	2.41
27000	18.70	46.85	8.46	7.63	10.94	0.94	21.61	10.66	2.58
28000	18.01	46.53	7.86	7.87	11.23	0.97	20.05	10.85	2.59
29000	17.55	46.11	7.87	8.72	11.68	1.01	20.28	10.40	2.83
30000	17.16	45.65	8.06	10.21	12.27	1.05	21.26	10.71	3.00
31000	16.76	46.09	8.55	11.18	14.17	1.06	21.29	10.70	3.15
32000	16.08	46.81	8.01	10.30	16.01	1.06	21.80	10.22	3.31
33000	15.14	47.85	6.34	9.04	17.78	1.08	21.61	10.05	3.78
34000	14.34	47.43	4.96	8.60	16.41	1.14	20.59	9.93	4.19
35000	13.70	47.57	4.19	8.64	16.62	1.19	20.73	9.77	4.58
36000	12.94	48.09	3.97	8.61	18.90	1.20	21.08	9.44	4.79
37000	12.53	45.24	4.09	8.99	14.83	1.21	21.79	9.21	4.97
38000	12.14	45.65	4.58	9.39	17.46	1.19	21.67	9.79	4.90
39000	12.40	45.55	5.14	11.19	18.66	1.20	22.46	10.38	4.78
40000	12.68	46.01	5.33	12.24	20.00	1.21	23.15	11.29	4.71
41000	12.11	45.13	5.04	10.64	18.49	1.20	22.56	10.50	4.75
42000	10.86	46.94	4.70	9.05	24.18	1.17	21.14	10.44	5.20
43000	9.23	46.92	4.65	7.90	27.43	1.13	21.33	9.16	5.54
44000	7.49	56.56	4.78	7.37	101.08	1.09	21.10	8.82	6.35
45000	7.11	53.24	4.42	7.81	70.97	1.14	20.06	9.23	5.80
46000	6.98	50.62	4.19	9.05	54.76	1.21	21.11	9.24	5.75
47000	7.42	48.47	4.35	9.44	42.91	1.21	21.02	8.78	6.47
48000	8.97	46.09	5.06	7.90	28.50	1.10	21.36	9.79	5.55
49000	10.01	44.04	7.25	6.90	23.03	0.94	20.54	10.85	5.83
50000	9.69	44.81	12.18	6.94	30.86	0.84	22.03	11.51	6.62

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: Vd = 3.75V, Id = 60mA @ Temperature = +85°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
7000	4.93	70.49	4.64	5.79	494.67	0.99	-0.98	-6.18	8.51
8000	17.35	62.79	10.33	10.30	83.56	0.99	11.46	1.57	4.15
9000	21.22	66.65	11.27	12.74	89.59	1.02	16.30	4.77	2.99
10000	23.76	61.99	12.42	12.92	40.37	1.00	16.60	6.81	2.44
11000	25.39	59.15	10.02	13.63	23.26	1.05	17.66	6.79	2.31
12000	26.57	60.81	8.07	17.37	23.73	1.14	17.52	7.47	2.46
13000	27.23	59.82	8.12	19.31	19.89	1.14	17.75	7.44	2.51
14000	27.21	54.43	10.31	13.10	11.15	1.04	18.31	7.55	2.39
15000	26.80	53.32	13.11	11.38	10.64	0.97	19.27	8.15	2.28
16000	26.27	50.97	15.64	11.67	8.93	0.95	19.73	8.28	2.23
17000	25.71	50.01	15.38	12.46	8.64	0.97	19.92	8.18	2.13
18000	25.14	49.07	14.15	12.81	8.28	0.98	19.38	7.89	2.13
19000	24.62	48.33	13.91	12.05	8.04	0.97	19.10	7.61	2.13
20000	24.20	47.16	15.66	11.11	7.44	0.94	19.14	8.33	2.17
21000	23.56	45.86	16.78	10.37	6.86	0.92	18.58	8.87	2.13
22000	22.50	46.44	14.36	9.51	7.99	0.91	19.61	9.55	2.17
23000	21.80	47.22	12.41	9.57	9.30	0.93	20.32	9.29	2.10
24000	21.05	47.08	11.43	9.59	9.89	0.95	20.69	10.03	2.43
25000	20.20	47.98	10.75	8.83	11.68	0.94	21.96	10.13	2.31
26000	19.37	48.10	9.54	8.04	12.31	0.93	20.58	10.01	2.42
27000	18.52	47.54	8.46	7.67	12.11	0.94	21.61	10.21	2.57
28000	17.82	46.91	7.84	7.91	12.01	0.98	22.38	10.19	2.78
29000	17.35	46.67	7.81	8.76	12.74	1.02	20.48	9.85	2.90
30000	16.96	46.38	7.97	10.18	13.61	1.05	20.09	10.15	2.99
31000	16.55	46.88	8.44	11.12	15.81	1.06	20.55	10.13	3.10
32000	15.88	47.28	7.93	10.28	17.23	1.06	20.50	9.56	3.36
33000	14.91	48.08	6.28	8.98	18.60	1.09	21.33	9.39	3.77
34000	14.10	48.07	4.91	8.51	17.99	1.14	21.38	9.35	4.26
35000	13.45	47.05	4.14	8.47	15.93	1.19	21.36	9.17	4.62
36000	12.69	46.80	3.92	8.42	16.60	1.20	20.91	8.97	4.79
37000	12.28	45.62	4.04	8.84	15.74	1.20	21.34	8.75	5.13
38000	11.90	45.75	4.54	9.33	17.96	1.19	20.97	9.35	5.00
39000	12.17	45.38	5.09	11.08	18.63	1.20	21.15	9.85	4.79
40000	12.46	44.14	5.29	12.13	16.50	1.21	23.23	10.88	4.76
41000	11.88	44.28	5.03	10.54	17.18	1.20	20.63	9.99	4.71
42000	10.64	45.26	4.67	8.96	20.30	1.17	20.51	9.92	5.20
43000	9.02	47.79	4.61	7.88	30.91	1.13	21.71	8.81	5.54
44000	7.30	54.06	4.74	7.37	77.07	1.09	20.57	8.64	5.44
45000	6.93	52.65	4.39	7.81	67.53	1.14	19.44	8.93	6.24
46000	6.80	49.89	4.18	9.03	51.38	1.21	19.44	8.95	5.76
47000	7.25	47.65	4.34	9.45	39.80	1.22	21.69	8.58	6.55
48000	8.80	45.73	5.07	7.96	27.97	1.10	22.33	9.50	5.79
49000	9.83	44.34	7.31	6.99	24.53	0.95	19.24	10.55	6.19
50000	9.48	44.82	12.23	7.03	31.86	0.85	21.36	11.18	6.18

Typical Performance Data

Definitions:

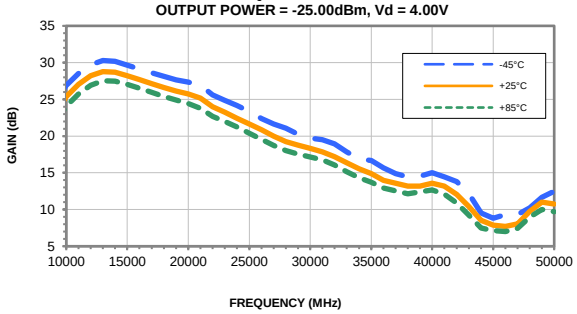
Input Return Loss = -S11 (dB)
Gain(Power Gain) = S21 (dB)
Reverse Isolation = -S12 (dB)
Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 4.25V, Id = 69mA @ Temperature = +85°C

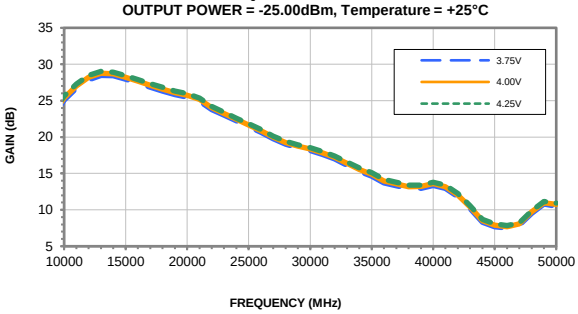
FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
7000	6.12	71.20	5.02	5.80	489.76	0.97	2.88	-5.10	8.32
8000	17.83	63.89	9.85	10.17	88.41	1.00	13.18	2.96	4.24
9000	21.77	64.96	10.97	12.54	68.57	1.02	17.19	6.02	2.88
10000	24.34	60.01	12.38	12.74	29.97	1.00	17.64	7.76	2.45
11000	26.00	59.24	10.31	13.57	22.07	1.05	18.85	7.75	2.30
12000	27.17	60.87	8.48	17.46	22.65	1.12	18.67	8.42	2.36
13000	27.78	59.41	8.59	18.63	18.12	1.12	18.94	8.34	2.40
14000	27.68	56.75	10.90	12.77	13.93	1.02	19.55	8.39	2.39
15000	27.25	54.19	13.76	11.20	11.20	0.96	20.41	8.85	2.31
16000	26.73	51.64	16.37	11.52	9.16	0.95	21.41	9.11	2.22
17000	26.18	49.83	15.93	12.27	8.02	0.96	21.46	9.02	2.14
18000	25.62	49.53	14.59	12.60	8.27	0.97	20.71	8.87	2.13
19000	25.10	48.88	14.34	11.87	8.11	0.96	20.66	8.60	2.11
20000	24.65	47.36	16.21	10.92	7.21	0.93	20.34	9.31	2.15
21000	23.98	46.71	16.94	10.15	7.17	0.91	19.57	9.69	2.08
22000	22.87	47.27	14.20	9.30	8.35	0.91	20.77	10.48	2.03
23000	22.17	47.40	12.34	9.40	9.06	0.93	22.55	10.20	2.12
24000	21.40	48.18	11.40	9.45	10.71	0.94	21.17	11.08	2.23
25000	20.53	48.09	10.79	8.66	11.34	0.93	22.24	11.17	2.27
26000	19.71	48.71	9.57	7.90	12.66	0.92	20.98	11.06	2.44
27000	18.85	47.80	8.51	7.60	11.98	0.94	22.78	11.26	2.61
28000	18.17	45.80	7.88	7.83	10.11	0.97	22.39	11.26	2.91
29000	17.70	46.56	7.95	8.71	12.14	1.01	20.95	10.91	2.90
30000	17.32	46.93	8.13	10.21	14.01	1.05	21.13	11.21	2.93
31000	16.93	47.55	8.61	11.18	16.49	1.06	21.34	11.20	2.96
32000	16.26	47.62	8.09	10.31	17.29	1.05	21.18	10.73	3.34
33000	15.32	48.60	6.39	9.08	19.08	1.08	20.29	10.60	3.68
34000	14.54	46.56	5.01	8.72	14.62	1.14	22.64	10.39	4.25
35000	13.93	47.34	4.24	8.81	15.98	1.19	20.90	10.11	4.60
36000	13.16	47.49	4.01	8.78	17.43	1.21	20.30	9.87	4.76
37000	12.75	46.19	4.13	9.10	16.27	1.21	21.07	9.61	5.03
38000	12.33	46.24	4.61	9.48	18.37	1.19	21.52	10.28	4.88
39000	12.59	46.41	5.19	11.27	20.32	1.20	22.63	10.42	4.67
40000	12.88	45.66	5.36	12.32	18.87	1.21	22.34	11.73	4.60
41000	12.30	45.42	5.09	10.70	18.82	1.20	21.75	10.87	4.66
42000	11.06	44.51	4.73	9.04	17.94	1.17	21.41	10.76	5.18
43000	9.42	47.41	4.67	7.90	28.51	1.13	22.09	9.46	5.49
44000	7.66	54.92	4.80	7.34	82.03	1.09	20.21	9.09	6.21
45000	7.27	53.43	4.42	7.79	71.31	1.14	21.70	9.48	5.95
46000	7.13	49.77	4.20	9.06	48.93	1.21	20.56	9.39	5.85
47000	7.56	48.96	4.36	9.42	44.71	1.21	20.62	9.01	6.69
48000	9.11	46.45	5.04	7.86	29.09	1.10	19.04	10.01	6.47
49000	10.17	44.56	7.20	6.79	23.76	0.94	21.55	11.07	6.12
50000	9.87	44.31	12.09	6.82	28.32	0.84	21.67	11.82	5.76

Typical Performance Curves

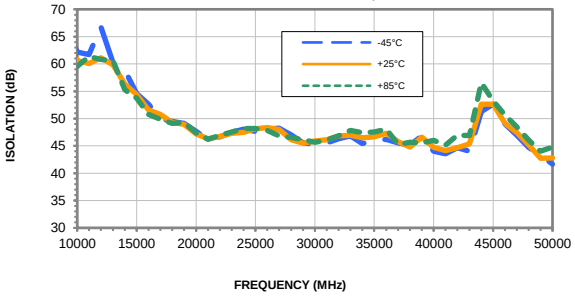
GAIN vs. FREQUENCY & TEMPERATURE
OUTPUT POWER = -25.00dBm, Vd = 4.00V



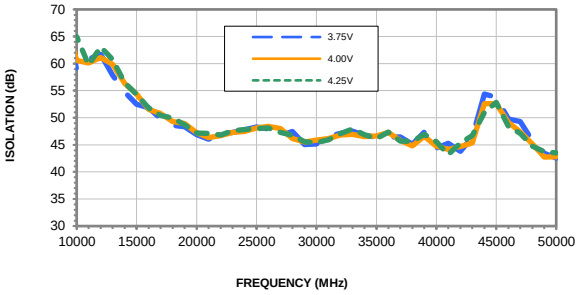
GAIN vs. FREQUENCY & DEVICE VOLTAGE
OUTPUT POWER = -25.00dBm, Temperature = +25°C



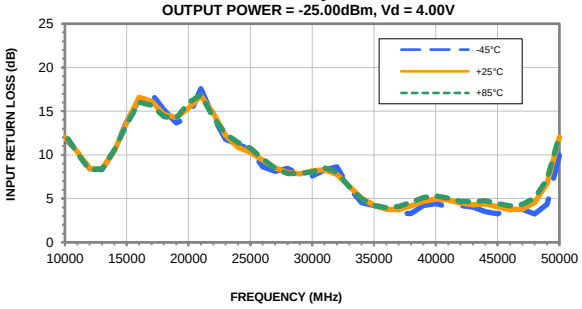
ISOLATION vs. FREQUENCY & TEMPERATURE
OUTPUT POWER = -25.00dBm, Vd = 4.00V



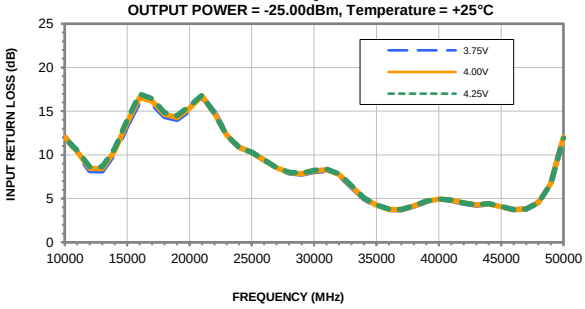
ISOLATION vs. FREQUENCY & DEVICE VOLTAGE
OUTPUT POWER = -25.00dBm, Temperature = +25°C



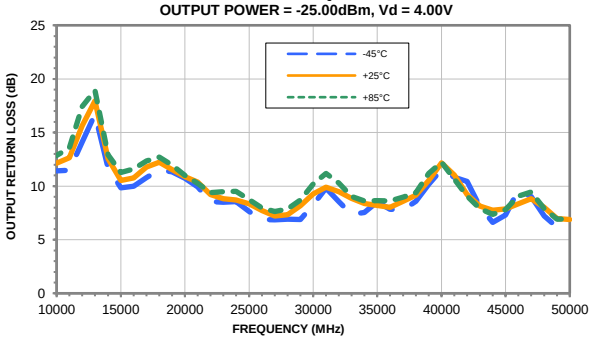
INPUT RETURN LOSS vs. FREQUENCY & TEMPERATURE
OUTPUT POWER = -25.00dBm, Vd = 4.00V



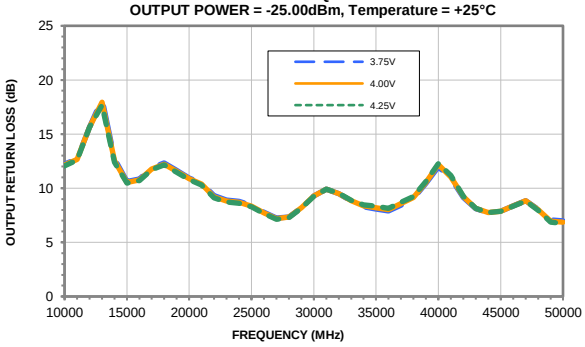
INPUT RETURN LOSS vs. FREQUENCY & DEVICE VOLTAGE
OUTPUT POWER = -25.00dBm, Temperature = +25°C



OUTPUT RETURN LOSS vs. FREQUENCY & TEMPERATURE
OUTPUT POWER = -25.00dBm, Vd = 4.00V

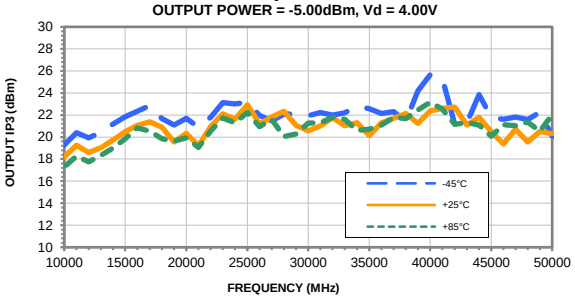


OUTPUT RETURN LOSS vs. FREQUENCY & DEVICE VOLTAGE
OUTPUT POWER = -25.00dBm, Temperature = +25°C

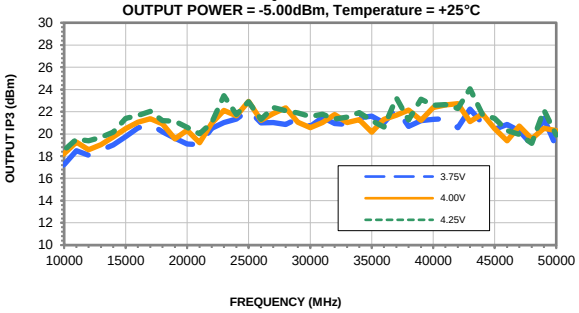


Typical Performance Curves

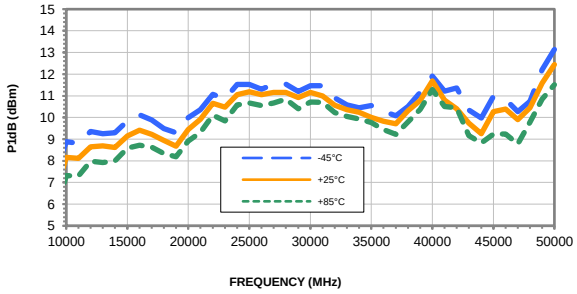
OUTPUT IP3 vs. FREQUENCY & TEMPERATURE
OUTPUT POWER = -5.00dBm, Vd = 4.00V



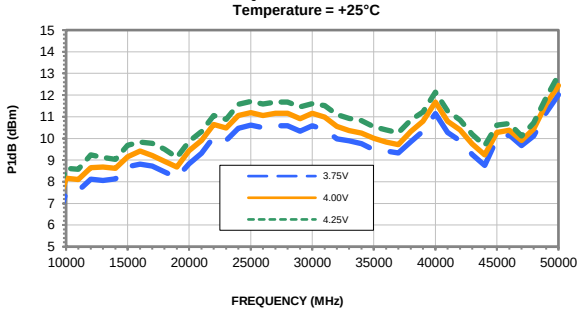
OUTPUT IP3 vs. FREQUENCY & DEVICE VOLTAGE
OUTPUT POWER = -5.00dBm, Temperature = +25°C



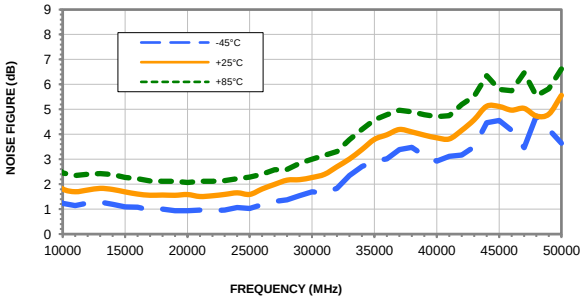
P1dB vs. FREQUENCY & TEMPERATURE
Vd = 4.00V



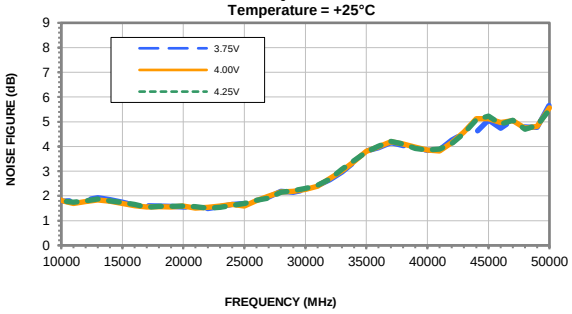
P1dB vs. FREQUENCY & DEVICE VOLTAGE
Temperature = +25°C



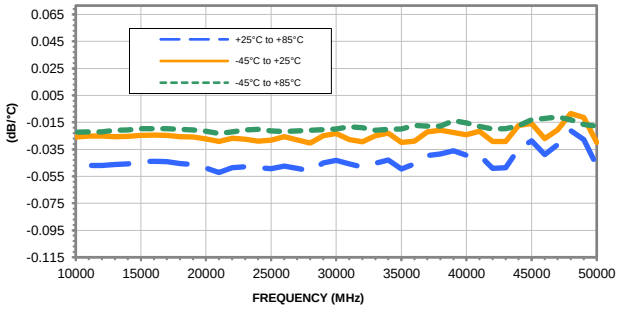
NOISE FIGURE vs. FREQUENCY & TEMPERATURE
Vd = 4.00V



NOISE FIGURE vs. FREQUENCY & DEVICE VOLTAGE
Temperature = +25°C



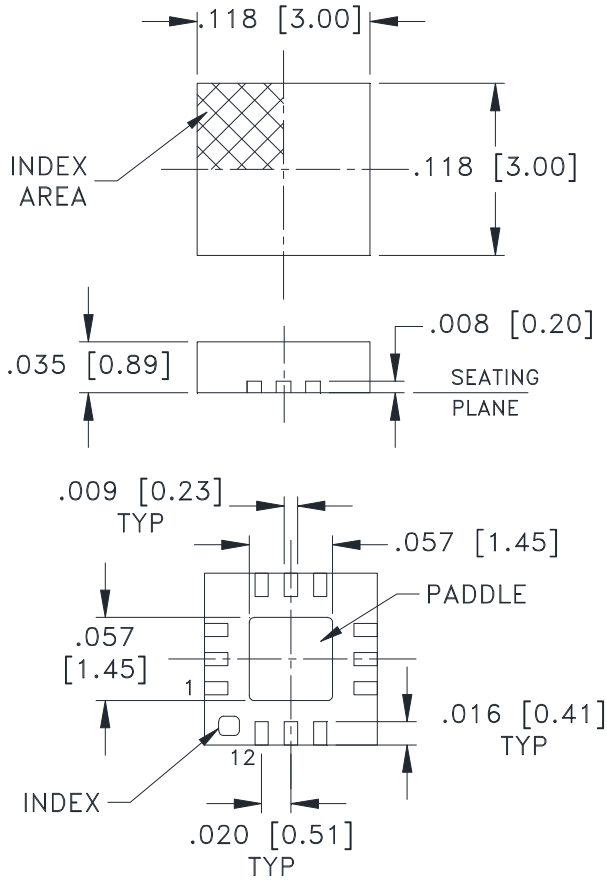
GAIN VARIATION vs. FREQUENCY & TEMPERATURE
OUTPUT POWER = -25.00dBm, Vd = 4.00V

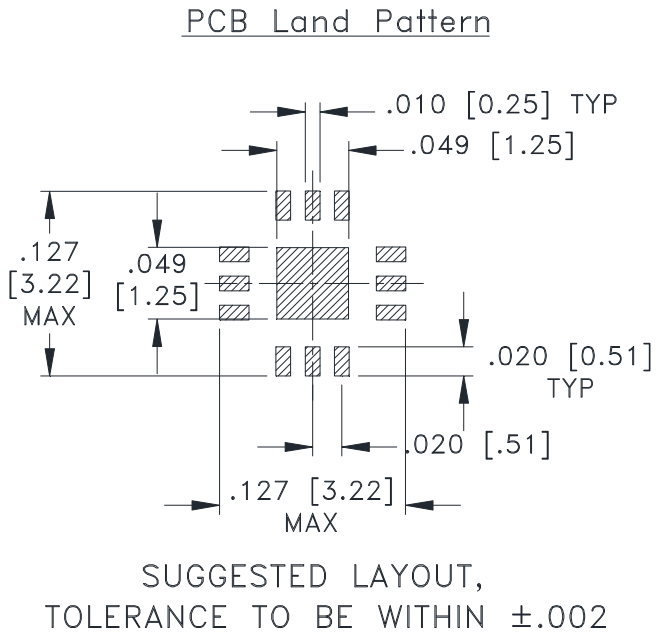


Case Style DQ

DQ1225

Outline Dimensions





Weight: .02 Grams

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

Notes:

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

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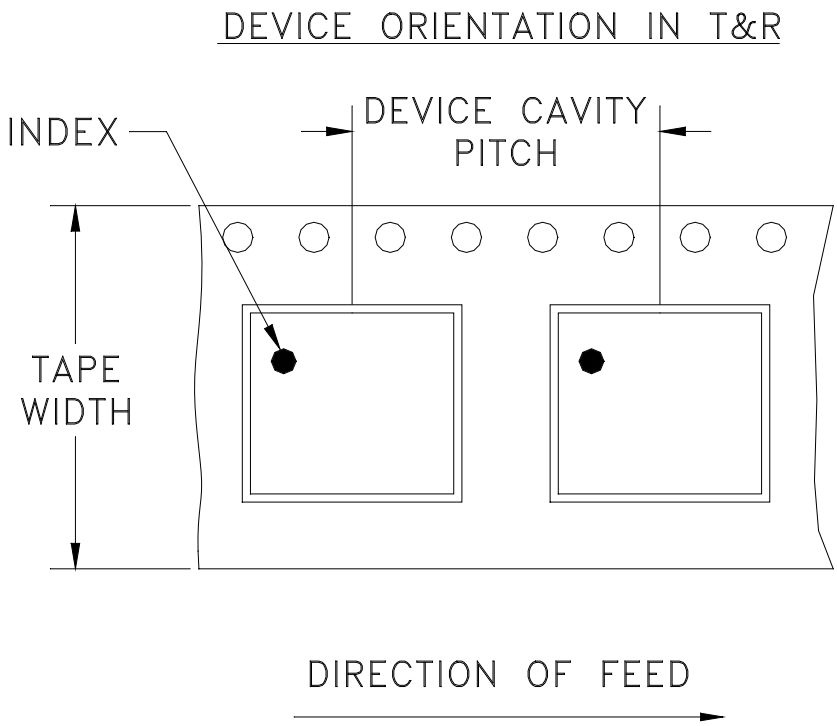
Tape & Reel Packaging TR-F66



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

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

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

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

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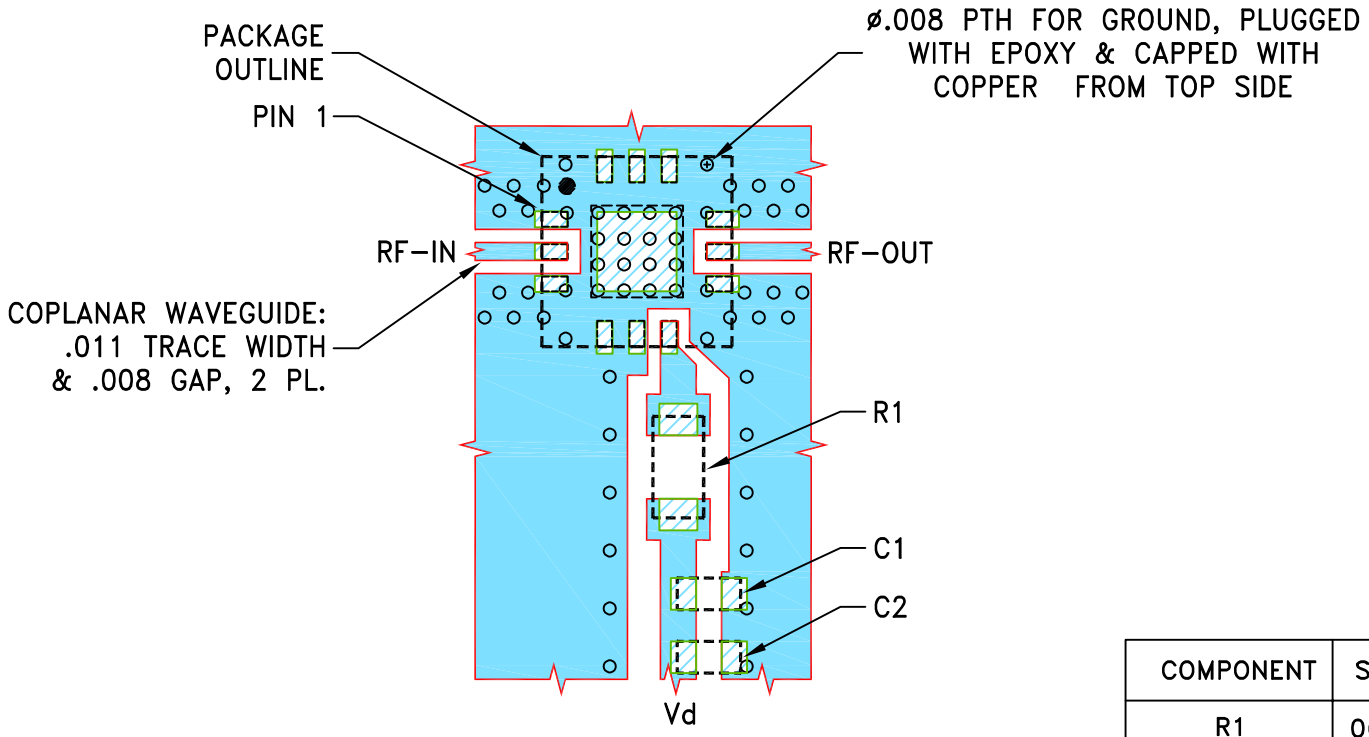
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	ECO-002696	NEW RELEASE	05/27/20	ITG	CC
A	ECO-011382	UPDATED LAYOUT AND NEW R1 SIZE	01/12/22	ITG	IL

SUGGESTED MOUNTING CONFIGURATION FOR DQ1225 CASE STYLE



COMPONENT	SIZE
R1	0603
C2,C2	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-PMA3-453C+.
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	05/27/20
TOLERANCES ON:	CHECKED	GF	05/27/20
2 PL DECIMALS ±	APPROVED	CC	05/27/20
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

Mini-Circuits®

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

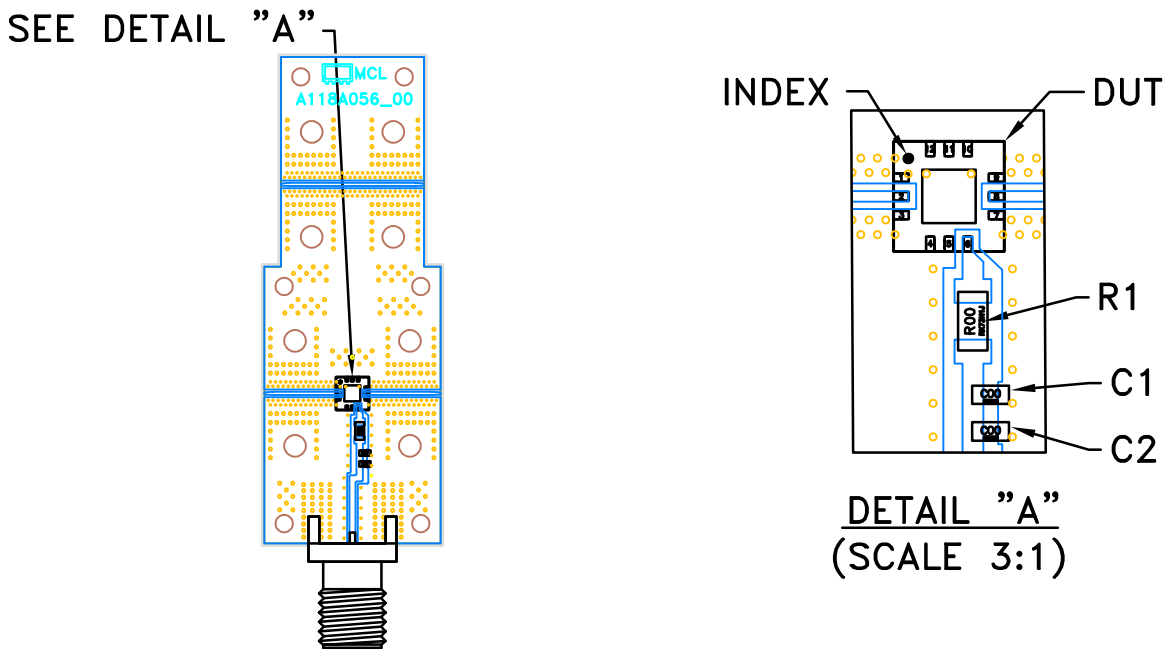
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

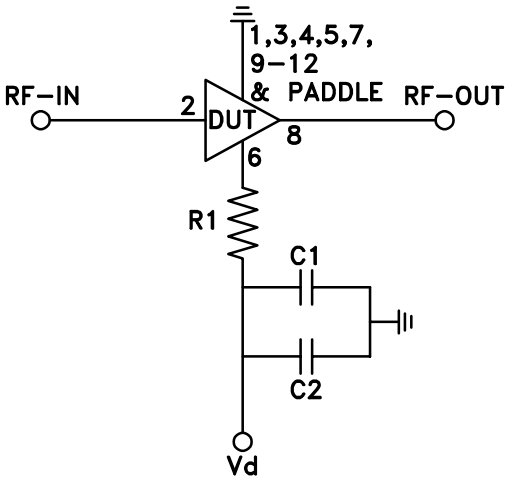
PL, DQ1225, TB-PMA3-453C+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-675	A

FILE:	SCALE:	SHEET:
98PL675	8:1	1 OF 1

Evaluation Board and Circuit





SCHEMATIC DIAGRAM

Component	Size	Value	Part Number	Manufacturer
R1	0603	18Ohm	SG73G1JTTD18R0C	Koa Speer
C1	0402	5pF	GJM1555C1H5R0CB01D	Murata
C2	0402	0.1uF	GRM155R71C104KA88D	Murata

Notes:

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

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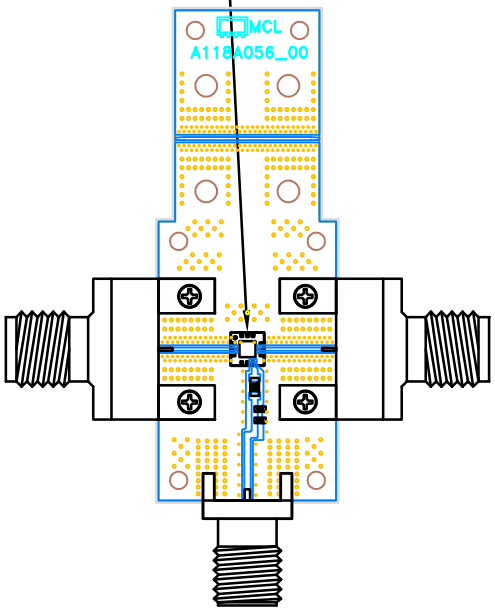
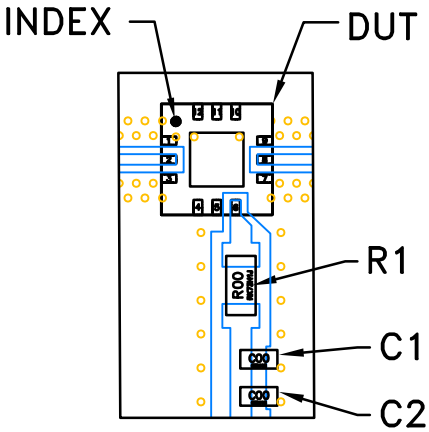
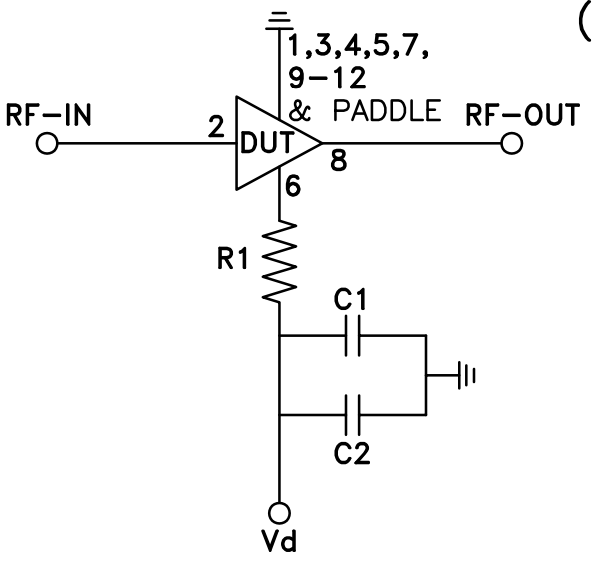
Evaluation Board and Circuit





DETAIL "A"
(SCALE 3:1)



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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 Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C or -65° to 150° Ambient Environment	Individual Model Data Sheet
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
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether +	MIL-STD-202, Method 215

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
	monoethanolamine at 63°C to 70°C	