LOW NOISE, HIGH IP3

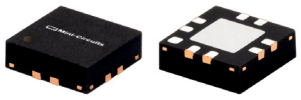
Monolithic Amplifier

PMA-545G2+

50Ω 1.1 to 1.6 GHz

THE BIG DEAL

- High Gain, 30.4 dB typ. at 1.4 GHz
- Ultra Low Noise Figure, 1.0 dB typ. at 1.4 GHz
- High IP3, 34 dBm typ. at 1.4 GHz
- Output Power, up to +22dBm typ. at 1.4 GHz
- Single Positive Supply Voltage, 5V
- Micro-miniature size - 3mm x 3mm
- Aqueous washable
- Protected by U.S. patent no. 8,803,612



Generic photo used for illustration purposes only

CASE STYLE: DQ849

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

APPLICATIONS

- Airborne Radar
- GPS
- INMARSAT

PRODUCT OVERVIEW

Mini-Circuits PMA-545G2+ is a E-PHEMT* based Low Noise MMIC Amplifier operating from 1.2 to 1.6 GHz with a unique combination of low noise and high Gain making this amplifier ideal for sensitive receiver applications. This design operates on a single +5V supply and is internally matched to 50 Ohms.

KEY FEATURES

Feature	Advantages
High Gain: 30 dB	Incorporating multiple stages of amplification, the PMA-545G2+ provides high gain reducing cost and PCB board space.
Ultra Low Noise: 1.0 dB NF at 1.4 GHz	Excellent Noise Figure, measured in a 50 Ohm environment – without any external matching. When combined with high gain of this design, it suppresses second stage NF contribution.
High IP3: +34 dBm IP3 at 1.4 GHz	Combining Low Noise and High IP3 makes this MMIC amplifier ideal for Low Noise Receiver Front End (RFE) giving the user advantages at both ends of the dynamic range: sensitivity & two-tone IM dynamic range
Output Power: +22 dBm at 1.4 GHz	The PMA-545G2+ maintains consistent output power capability over the full operating temperature range making it ideal to be used in remote applications such as LNB's as the L Band driver stage
Broad Band: 1.2 to 1.6 GHz	Covering GPS, INMARSAT, Radar
Internally Matched	No external matching elements required to achieve the advertized noise and output power over the full band
MCLP Package	Low Inductance, repeatable transitions, excellent thermal pad
Max Input Power +25dBm	Ruggedized design operates up to input powers often seen at Receiver inputs. Eliminating need for an external limiter.
High Reliability	Low, small signal operating current of 160 mA nominal maintains junction temperatures typically below 130°C at 85°C ground lead temperature

*Enhancement mode Pseudomorphic High Electron Mobility Transistor.

REV. B
ECO-010881
PMA-545G2+
TH/RS/CP/AM
211201

Monolithic Amplifier PMA-545G2+

ELECTRICAL SPECIFICATIONS[1] AT 25°C, VD=5V, ZO=50Ω, (REFER TO CHARACTERIZATION CIRCUIT)

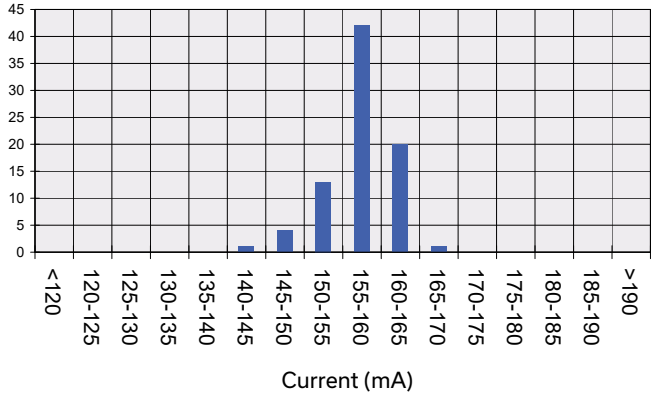
Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range		1.1		1.6	GHz
DC Voltage (V_d)		4.8	5.0	5.2	V
DC Current (I_d)[6]			158	186	mA
Noise Figure	1.1 1.4 1.6		1.0 1.0 1.1	1.4	dB
Gain	1.1 1.4 1.6	27.2	31.0 30.4 29.6	33.4	dB
Input Return Loss	1.1 1.4 1.6		11.5 13.1 14.6		dB
Output Return Loss	1.1 1.4 1.6		15.9 14.7 14.4		dB
Output IP3	1.1 1.4 1.6		33.6 33.6 34.3		dBm
Output Power @ 1 dB compression [2]	1.1 1.4 1.6	20.0	22.1 22.0 22.4		dBm
DC Current Variation vs. Temperature [3]			-0.156		mA/°C
DC Current Variation vs. Voltage			0.027		mA/mV
Thermal Resistance			48		°C/W

MAXIMUM RATINGS[4]

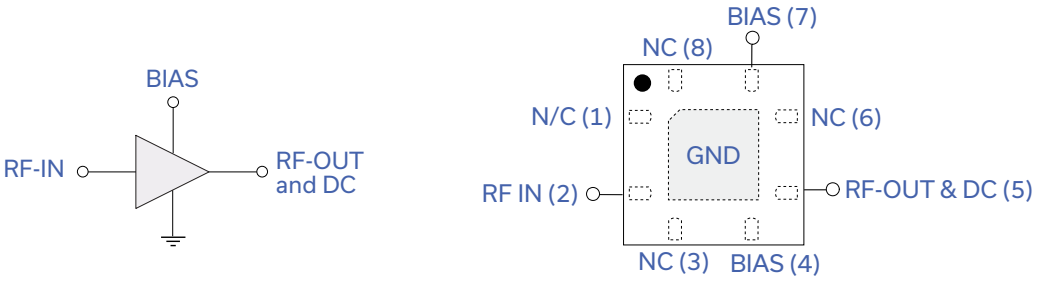
Parameter	Ratings
Operating Temperature [5]	-40°C to 85°C
Storage Temperature	-65°C to 150°C
Channel Temperature	150°C
DC Voltage (Pad 4,5,7)	6V
Power Dissipation	1.35W
Input Power	25dBm

(1) Measured on Mini-Circuits Characterization test board TB-607-3+
See Characterizatio Test Circuit (Fig. 1)
(3) (Current at 85°C - Current at -45°C)/130
(4) Permanent damage may occur if any of these limits are exceeded.
These maximum ratings are not intended for continuous normal operation.
(5) Defined with reference to ground pad temperature.

DC CURRENT HISTOGRAM



SIMPLIFIED SCHEMATIC AND PAD DESCRIPTION



Function	Pad Number	Description (See Application Circuit, Fig. 2)
RF-IN	2	RF input pad (connected to RF-IN via C1)
RF-OUT & DC	5	RF output pad (connected to RF-OUT via blocking external cap C2, and Supply voltage Vs via RF Choke L2)
BIAS	4 & 7	Bias pad 4 connects to Vs via L1 & pad 7 connects to Vs
GND	paddle in center of bottom	Connected to ground
NOT USED	1,3,6,8	No internal connection; recommended use: per PCB Layout PL-346

CHARACTERIZATION TEST CIRCUIT

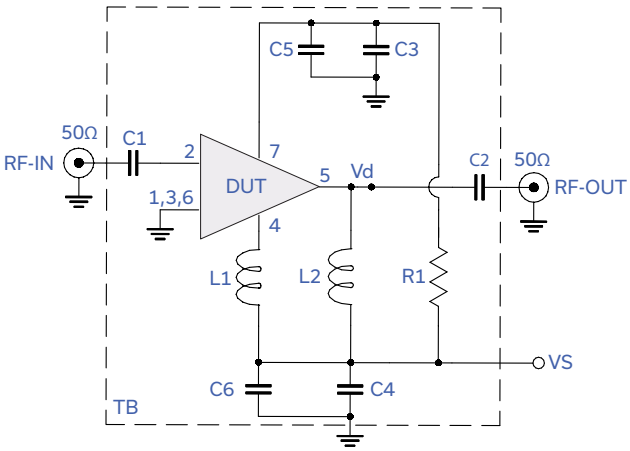
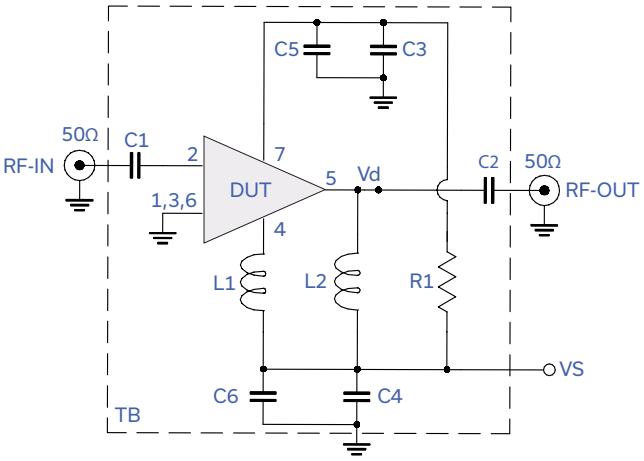


Fig 1. Block Diagram of Test Circuit used for characterization. (DUT soldered on Mini-Circuits Characterization Test Board TB-607-3) Gain, Output power at 1dB compression (P1dB), Output IP3 (OIP3), Noise Figure are measured using Agilent's N5242A PNA-X microwave network analyzer.

Conditions:
1. Gain: Pin=-25 dBm
2. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, 0 dBm/tone at output.
3. Vs adjusted for 5V at device (Vd), compensating loss of bias tee.

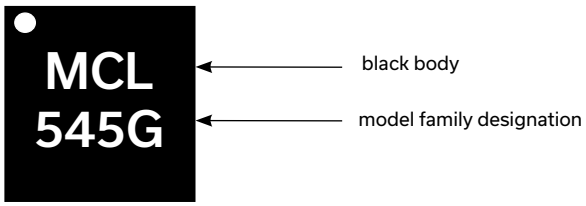
RECOMMENDED APPLICATION CIRCUIT

(refer to evaluation board for PCB Layout and component values)



Component	Description
DUT	PMA-545G2+
C1, C2, C5, C6	100 pF
C3, C4	1µF
R1	0 Ω
L1	36 nH
L2	47 nH

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	DQ849 Plastic package, exposed paddle, lead finish: tin-silver over nickel
Tape & Reel Standard quantities available on reel	F104 7" reels with 20, 50, 100, 200, 500, 1K, or 2K devices.
Suggested Layout for PCB Design	PL-346
Evaluation Board	TB-607-2+
Environmental Ratings	ENV08T1

ESD RATING

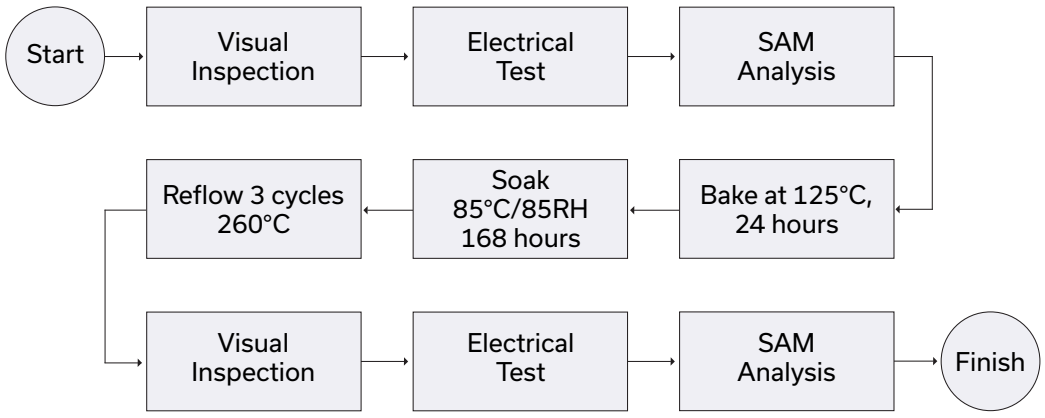
Human Body Model (HBM): Class 1B (500V to <1000V) in accordance with ANSI/ESD STM 5.1 - 2001

Machine Model (MM): Class M1 (passes 40V) in accordance with ANSI/ESD STM5.2-1999; passes 40V

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

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: Vd = 5V, Id = 145.30mA @ Temperature = +25degC

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)
700.0	31.57	68.28	12.92	19.00	32.05	1.04	33.44	21.71	0.95
800.0	31.36	61.86	12.18	18.76	15.52	1.05	33.30	21.89	0.86
900.0	31.21	60.69	11.96	18.52	13.75	1.05	33.42	21.91	0.92
1000.0	31.10	62.35	11.93	18.25	16.83	1.05	33.76	21.92	0.94
1100.0	30.99	60.61	12.07	17.91	13.96	1.05	34.10	22.05	0.94
1200.0	30.87	59.05	12.33	17.64	11.87	1.04	34.60	22.17	0.95
1210.0	30.85	58.05	12.35	17.61	10.60	1.04	34.38	22.18	0.93
1220.0	30.84	58.13	12.37	17.62	10.72	1.04	33.90	22.04	0.93
1230.0	30.82	57.83	12.43	17.57	10.38	1.04	33.79	21.96	0.93
1240.0	30.81	57.51	12.45	17.58	10.03	1.04	34.34	22.00	0.99
1250.0	30.79	58.28	12.49	17.56	10.97	1.04	34.70	22.08	0.97
1260.0	30.77	57.20	12.52	17.55	9.72	1.04	34.39	22.15	0.91
1270.0	30.76	56.52	12.55	17.55	9.02	1.04	34.51	22.19	0.96
1280.0	30.74	56.53	12.59	17.45	9.04	1.04	34.58	22.16	0.97
1290.0	30.72	57.18	12.65	17.49	9.78	1.03	34.18	22.09	1.01
1300.0	30.70	56.86	12.69	17.46	9.45	1.03	34.09	22.07	0.98
1310.0	30.68	56.59	12.73	17.46	9.19	1.03	34.11	22.07	0.98
1320.0	30.66	56.77	12.77	17.47	9.41	1.03	33.55	22.07	0.96
1330.0	30.63	56.74	12.83	17.47	9.41	1.03	34.26	22.02	0.99
1340.0	30.61	57.50	12.86	17.42	10.29	1.03	33.79	22.03	0.98
1350.0	30.59	56.48	12.90	17.43	9.18	1.03	34.57	22.21	0.96
1360.0	30.56	56.47	12.96	17.48	9.21	1.03	34.02	22.20	0.98
1370.0	30.54	55.65	13.03	17.46	8.41	1.03	34.04	22.16	0.98
1380.0	30.51	56.97	13.08	17.48	9.82	1.03	34.39	22.10	0.98
1390.0	30.49	56.00	13.13	17.48	8.83	1.03	34.35	22.16	0.96
1400.0	30.46	56.06	13.18	17.50	8.92	1.03	33.85	22.04	0.94
1410.0	30.43	54.88	13.26	17.53	7.82	1.03	33.90	22.01	0.93
1420.0	30.40	54.86	13.31	17.55	7.84	1.03	34.31	22.03	0.98
1440.0	30.34	55.11	13.42	17.59	8.14	1.03	33.93	22.21	0.94
1460.0	30.27	54.89	13.55	17.64	8.01	1.02	34.49	22.22	0.97
1480.0	30.20	55.26	13.69	17.72	8.44	1.02	33.92	21.88	0.97
1500.0	30.14	54.86	13.79	17.80	8.13	1.02	34.34	22.21	0.98
1520.0	30.06	54.21	13.97	17.84	7.64	1.02	34.38	22.14	1.03
1540.0	29.97	53.78	14.12	17.94	7.35	1.02	34.55	22.34	1.08
1560.0	29.89	52.59	14.29	18.05	6.49	1.02	34.30	21.98	1.00
1580.0	29.79	54.54	14.44	18.16	8.21	1.02	34.72	22.18	1.04
1600.0	29.71	53.74	14.64	18.31	7.59	1.02	34.81	22.37	1.02
1700.0	29.18	54.70	15.58	19.03	9.07	1.01	34.66	22.23	0.98
1800.0	28.57	52.00	16.72	19.59	7.20	1.01	34.74	22.41	1.05
1900.0	27.87	52.20	17.97	19.63	8.03	1.00	34.70	22.37	1.09
2000.0	27.12	51.54	19.31	18.83	8.13	1.00	34.50	22.48	1.09

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 = 4.75V, Id = 139.32mA @ Temperature = +25degC

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)
700.0	31.51	62.15	13.01	18.36	15.92	1.03	33.94	21.42	0.94
800.0	31.31	63.94	12.26	18.21	19.81	1.04	34.03	21.56	0.82
900.0	31.17	61.06	12.02	18.09	14.41	1.05	33.67	21.60	0.92
1000.0	31.06	59.40	12.00	17.88	12.03	1.05	33.83	21.65	0.93
1100.0	30.96	63.71	12.12	17.65	20.00	1.04	33.84	21.77	0.97
1200.0	30.84	56.37	12.36	17.41	8.74	1.04	34.49	21.89	0.97
1210.0	30.83	59.73	12.42	17.42	12.90	1.04	34.04	21.89	0.93
1220.0	30.81	56.26	12.44	17.39	8.68	1.04	33.55	21.78	0.92
1230.0	30.80	58.94	12.47	17.38	11.82	1.04	33.68	21.70	0.94
1240.0	30.78	59.44	12.49	17.36	12.54	1.04	33.73	21.73	0.96
1250.0	30.77	56.94	12.54	17.36	9.43	1.04	33.93	21.82	0.97
1260.0	30.75	56.08	12.57	17.34	8.57	1.04	33.76	21.87	0.91
1270.0	30.74	57.51	12.61	17.35	10.13	1.03	34.24	21.91	0.94
1280.0	30.72	56.47	12.63	17.27	9.00	1.03	34.51	21.89	0.95
1290.0	30.70	57.17	12.70	17.29	9.79	1.03	33.60	21.83	0.98
1300.0	30.68	55.33	12.73	17.25	7.95	1.03	34.32	21.81	0.98
1310.0	30.66	56.71	12.78	17.27	9.34	1.03	34.17	21.83	0.97
1320.0	30.63	57.09	12.83	17.29	9.78	1.03	33.89	21.82	0.94
1330.0	30.61	56.70	12.88	17.29	9.39	1.03	33.63	21.77	1.00
1340.0	30.59	56.58	12.92	17.25	9.28	1.03	33.79	21.78	0.97
1350.0	30.57	55.11	12.95	17.25	7.86	1.03	34.00	21.95	0.97
1360.0	30.54	57.15	13.02	17.27	9.98	1.03	34.60	21.94	0.99
1370.0	30.52	56.09	13.08	17.28	8.87	1.03	33.84	21.90	0.94
1380.0	30.50	56.32	13.13	17.30	9.14	1.03	33.97	21.85	1.00
1390.0	30.47	55.47	13.19	17.29	8.32	1.03	33.94	21.89	0.94
1400.0	30.44	54.97	13.23	17.32	7.88	1.03	33.70	21.80	1.00
1410.0	30.41	56.80	13.30	17.30	9.76	1.03	34.14	21.77	0.94
1420.0	30.39	56.09	13.36	17.34	9.04	1.03	33.67	21.77	0.97
1440.0	30.33	54.35	13.48	17.36	7.46	1.02	34.32	21.94	0.90
1460.0	30.26	55.00	13.62	17.42	8.12	1.02	34.03	21.96	0.97
1480.0	30.19	54.60	13.74	17.48	7.83	1.02	33.65	21.66	0.94
1500.0	30.12	54.53	13.86	17.55	7.84	1.02	34.23	21.95	1.01
1520.0	30.05	54.62	14.03	17.59	8.00	1.02	34.22	21.89	1.00
1540.0	29.96	53.77	14.19	17.64	7.34	1.02	34.13	22.08	1.08
1560.0	29.88	54.88	14.35	17.79	8.43	1.02	34.37	21.74	1.02
1580.0	29.79	53.61	14.52	17.87	7.38	1.02	34.29	21.94	1.07
1600.0	29.70	54.10	14.71	17.97	7.91	1.02	34.75	22.11	0.99
1700.0	29.19	53.65	15.68	18.55	8.04	1.01	35.24	22.00	0.98
1800.0	28.58	51.63	16.85	18.97	6.89	1.00	34.52	22.17	1.04
1900.0	27.89	52.03	18.11	18.88	7.84	1.00	34.47	22.12	1.09
2000.0	27.14	51.66	19.52	18.12	8.20	0.99	35.12	22.21	1.08

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 = 5.25V, Id = 152.28mA @ Temperature = +25degC

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)
700.0	31.63	64.74	12.89	19.36	21.20	1.04	33.05	22.03	0.97
800.0	31.41	64.36	12.16	19.06	20.59	1.05	33.55	22.23	0.85
900.0	31.25	64.59	11.95	18.76	21.45	1.05	33.68	22.23	0.92
1000.0	31.14	58.88	11.94	18.43	11.25	1.05	34.23	22.21	0.95
1100.0	31.03	60.65	12.07	18.06	13.98	1.05	34.17	22.35	0.96
1200.0	30.90	58.10	12.32	17.77	10.61	1.04	34.72	22.48	0.99
1210.0	30.88	59.50	12.37	17.74	12.50	1.04	34.47	22.49	0.94
1220.0	30.87	57.52	12.39	17.73	9.98	1.04	34.22	22.33	0.95
1230.0	30.85	58.49	12.42	17.71	11.17	1.04	33.99	22.22	0.97
1240.0	30.84	57.65	12.44	17.67	10.16	1.04	33.74	22.27	0.98
1250.0	30.82	56.21	12.49	17.67	8.64	1.04	34.53	22.37	1.00
1260.0	30.80	56.22	12.51	17.67	8.67	1.04	34.31	22.44	0.90
1270.0	30.79	56.99	12.54	17.67	9.48	1.04	34.21	22.48	0.98
1280.0	30.77	56.06	12.58	17.58	8.55	1.04	34.43	22.45	0.98
1290.0	30.74	55.69	12.65	17.58	8.22	1.03	34.05	22.36	1.02
1300.0	30.72	56.57	12.68	17.58	9.12	1.03	33.96	22.35	0.99
1310.0	30.70	56.48	12.74	17.60	9.06	1.03	34.15	22.36	0.98
1320.0	30.68	57.06	12.76	17.59	9.70	1.03	34.12	22.35	0.98
1330.0	30.66	57.37	12.81	17.59	10.09	1.03	34.28	22.29	1.01
1340.0	30.64	55.43	12.86	17.56	8.10	1.03	34.10	22.31	1.01
1350.0	30.61	56.93	12.89	17.58	9.66	1.03	34.11	22.50	0.97
1360.0	30.59	56.82	12.95	17.60	9.57	1.03	34.43	22.49	1.03
1370.0	30.56	57.88	13.02	17.61	10.86	1.03	33.71	22.44	0.97
1380.0	30.54	55.41	13.06	17.58	8.20	1.03	34.40	22.37	1.01
1390.0	30.51	56.47	13.12	17.59	9.30	1.03	34.46	22.42	0.98
1400.0	30.48	55.06	13.15	17.63	7.94	1.03	34.45	22.32	0.98
1410.0	30.45	54.89	13.24	17.67	7.82	1.03	33.81	22.27	0.96
1420.0	30.42	56.35	13.29	17.68	9.28	1.03	34.10	22.29	0.98
1440.0	30.36	55.65	13.40	17.71	8.64	1.03	34.74	22.48	0.95
1460.0	30.29	55.71	13.54	17.78	8.79	1.03	34.40	22.50	1.01
1480.0	30.22	55.41	13.67	17.86	8.57	1.02	34.03	22.13	0.98
1500.0	30.15	54.41	13.79	17.96	7.71	1.02	34.04	22.47	1.00
1520.0	30.07	54.09	13.95	18.00	7.52	1.02	34.16	22.39	1.02
1540.0	29.99	54.04	14.11	18.12	7.57	1.02	35.01	22.62	1.09
1560.0	29.90	53.83	14.26	18.23	7.47	1.02	33.88	22.21	1.03
1580.0	29.81	53.65	14.44	18.36	7.41	1.02	34.37	22.44	1.07
1600.0	29.71	53.93	14.61	18.50	7.75	1.02	34.60	22.64	1.01
1700.0	29.19	54.02	15.55	19.30	8.40	1.01	34.38	22.47	1.01
1800.0	28.57	53.45	16.65	20.01	8.52	1.01	34.50	22.66	1.06
1900.0	27.86	52.77	17.87	20.09	8.58	1.00	34.27	22.63	1.13
2000.0	27.11	51.52	19.20	19.25	8.13	1.00	35.02	22.75	1.13

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 = 5V, Id = 157.91mA @ Temperature = -45degC

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)
700.0	32.41	65.52	15.99	17.02	21.61	1.00	36.28	23.04	0.75
800.0	32.23	64.08	14.60	17.09	18.51	1.01	36.73	23.16	0.66
900.0	32.11	64.36	14.11	17.12	19.29	1.02	36.84	23.18	0.73
1000.0	32.01	61.29	14.01	17.08	13.69	1.02	36.68	23.21	0.72
1100.0	31.93	59.51	14.18	17.01	11.29	1.02	37.75	23.30	0.71
1200.0	31.82	57.88	14.34	16.77	9.47	1.01	36.68	23.39	0.76
1210.0	31.80	59.26	14.36	16.77	11.13	1.02	36.68	23.40	0.71
1220.0	31.79	56.34	14.37	16.71	7.97	1.01	38.10	23.30	0.69
1230.0	31.77	57.89	14.37	16.68	9.53	1.01	37.81	23.23	0.70
1240.0	31.76	57.62	14.39	16.66	9.26	1.01	37.42	23.26	0.74
1250.0	31.74	58.34	14.39	16.64	10.07	1.01	36.54	23.32	0.74
1260.0	31.73	58.47	14.40	16.60	10.24	1.01	37.57	23.37	0.69
1270.0	31.72	57.91	14.40	16.61	9.62	1.01	37.10	23.40	0.70
1280.0	31.70	57.68	14.43	16.51	9.38	1.01	38.54	23.38	0.74
1290.0	31.68	55.79	14.47	16.48	7.58	1.01	37.41	23.33	0.76
1300.0	31.66	56.85	14.47	16.47	8.58	1.01	37.64	23.33	0.75
1310.0	31.64	57.38	14.50	16.49	9.14	1.01	37.93	23.33	0.72
1320.0	31.62	55.95	14.53	16.47	7.77	1.01	37.52	23.33	0.75
1330.0	31.59	57.82	14.54	16.46	9.66	1.01	37.55	23.29	0.79
1340.0	31.57	56.24	14.58	16.44	8.07	1.01	38.50	23.28	0.75
1350.0	31.55	56.45	14.60	16.44	8.30	1.01	37.13	23.43	0.73
1360.0	31.53	57.35	14.63	16.44	9.23	1.01	39.88	23.41	0.75
1370.0	31.50	55.65	14.68	16.41	7.62	1.01	37.14	23.40	0.72
1380.0	31.48	56.17	14.71	16.44	8.10	1.01	36.87	23.33	0.80
1390.0	31.46	56.24	14.74	16.43	8.19	1.01	38.14	23.39	0.74
1400.0	31.43	57.49	14.75	16.45	9.49	1.01	38.01	23.31	0.75
1410.0	31.41	55.60	14.82	16.46	7.66	1.01	37.37	23.28	0.68
1420.0	31.38	55.23	14.87	16.49	7.37	1.01	37.40	23.27	0.73
1440.0	31.32	56.48	14.96	16.49	8.57	1.01	36.76	23.40	0.67
1460.0	31.26	56.12	15.04	16.56	8.29	1.01	39.02	23.42	0.76
1480.0	31.20	53.93	15.17	16.59	6.51	1.01	37.22	23.16	0.75
1500.0	31.14	55.52	15.25	16.68	7.88	1.01	37.44	23.42	0.73
1520.0	31.07	54.84	15.33	16.59	7.34	1.01	37.05	23.37	0.77
1540.0	30.99	55.51	15.49	16.70	8.01	1.00	38.62	23.53	0.81
1560.0	30.91	54.56	15.67	16.76	7.25	1.00	37.09	23.27	0.75
1580.0	30.83	53.55	15.86	16.84	6.54	1.00	36.31	23.42	0.80
1600.0	30.75	54.32	16.04	16.87	7.22	1.00	37.07	23.55	0.74
1700.0	30.26	53.27	17.16	17.20	6.82	1.00	37.87	23.47	0.72
1800.0	29.67	52.85	18.58	17.51	7.00	0.99	38.24	23.57	0.78
1900.0	29.00	52.03	20.25	17.38	6.91	0.99	36.94	23.61	0.78
2000.0	28.27	51.94	22.34	16.89	7.45	0.98	38.58	23.69	0.83

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 = 4.75V, Id = 146.13mA @ Temperature = -45degC

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)
700.0	32.20	64.37	15.93	16.94	19.37	1.01	37.83	22.45	0.75
800.0	32.04	64.99	14.56	17.04	20.98	1.02	36.71	22.56	0.65
900.0	31.93	63.49	14.09	17.03	17.82	1.02	36.94	22.61	0.70
1000.0	31.84	62.89	13.96	17.01	16.76	1.02	37.07	22.66	0.71
1100.0	31.77	58.65	14.13	16.93	10.41	1.02	36.98	22.75	0.73
1200.0	31.67	57.46	14.30	16.68	9.18	1.01	36.91	22.84	0.76
1210.0	31.65	58.59	14.33	16.66	10.48	1.01	37.84	22.86	0.72
1220.0	31.64	57.27	14.35	16.65	9.02	1.01	37.34	22.76	0.68
1230.0	31.62	58.02	14.34	16.60	9.84	1.01	35.99	22.69	0.66
1240.0	31.61	58.91	14.34	16.57	10.91	1.01	37.74	22.72	0.75
1250.0	31.60	58.38	14.37	16.54	10.29	1.01	36.63	22.79	0.74
1260.0	31.58	57.53	14.37	16.51	9.35	1.01	37.14	22.83	0.68
1270.0	31.57	58.12	14.38	16.50	10.02	1.01	37.01	22.87	0.71
1280.0	31.55	57.58	14.38	16.40	9.43	1.01	37.85	22.85	0.75
1290.0	31.53	55.38	14.43	16.39	7.34	1.01	37.60	22.80	0.75
1300.0	31.51	56.03	14.44	16.37	7.92	1.01	36.38	22.79	0.74
1310.0	31.49	56.65	14.47	16.39	8.53	1.01	37.54	22.79	0.73
1320.0	31.47	56.20	14.50	16.39	8.12	1.01	37.18	22.80	0.74
1330.0	31.45	57.10	14.51	16.37	9.03	1.01	36.81	22.74	0.76
1340.0	31.43	55.99	14.53	16.33	7.97	1.01	36.93	22.75	0.75
1350.0	31.41	57.28	14.57	16.34	9.27	1.01	38.57	22.90	0.74
1360.0	31.39	55.41	14.60	16.32	7.49	1.01	37.40	22.88	0.78
1370.0	31.37	58.31	14.64	16.36	10.49	1.01	37.19	22.86	0.71
1380.0	31.35	56.44	14.68	16.33	8.49	1.01	36.98	22.81	0.75
1390.0	31.32	56.89	14.72	16.34	8.96	1.01	37.84	22.86	0.73
1400.0	31.30	55.87	14.73	16.33	8.00	1.01	36.44	22.77	0.72
1410.0	31.27	56.20	14.79	16.36	8.33	1.01	36.84	22.74	0.70
1420.0	31.25	55.10	14.83	16.37	7.37	1.01	36.76	22.74	0.73
1440.0	31.19	55.66	14.92	16.39	7.92	1.01	37.02	22.88	0.68
1460.0	31.14	56.04	15.02	16.44	8.33	1.01	37.58	22.89	0.77
1480.0	31.07	55.37	15.11	16.48	7.78	1.01	37.05	22.62	0.72
1500.0	31.01	55.36	15.22	16.54	7.83	1.01	37.69	22.90	0.76
1520.0	30.95	54.53	15.30	16.48	7.18	1.00	37.77	22.85	0.76
1540.0	30.87	54.51	15.47	16.56	7.23	1.00	36.91	23.01	0.81
1560.0	30.80	54.64	15.63	16.63	7.42	1.00	36.60	22.74	0.75
1580.0	30.71	53.72	15.81	16.67	6.75	1.00	37.12	22.90	0.80
1600.0	30.63	54.18	16.00	16.74	7.19	1.00	37.83	23.03	0.76
1700.0	30.15	53.51	17.13	17.04	7.10	1.00	37.47	22.95	0.71
1800.0	29.57	52.87	18.53	17.34	7.10	0.99	37.98	23.07	0.78
1900.0	28.91	52.93	20.21	17.19	7.73	0.99	36.88	23.11	0.81
2000.0	28.19	50.71	22.29	16.78	6.53	0.98	37.70	23.17	0.81

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 = 5.25V, Id = 165.64mA @ Temperature = -45degC

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)
700.0	32.50	62.01	16.09	17.00	14.28	1.00	37.36	23.54	0.76
800.0	32.32	61.05	14.71	17.10	12.94	1.01	36.38	23.66	0.65
900.0	32.19	60.34	14.25	17.13	12.06	1.02	36.68	23.64	0.71
1000.0	32.09	59.40	14.11	17.11	10.93	1.02	36.45	23.66	0.73
1100.0	32.00	60.18	14.28	17.05	12.11	1.02	37.44	23.74	0.74
1200.0	31.88	57.25	14.42	16.79	8.76	1.01	37.82	23.82	0.76
1210.0	31.87	57.86	14.44	16.77	9.41	1.01	38.38	23.84	0.73
1220.0	31.85	60.64	14.44	16.77	12.97	1.01	37.92	23.74	0.70
1230.0	31.84	58.20	14.47	16.74	9.82	1.01	37.81	23.66	0.73
1240.0	31.82	57.64	14.47	16.70	9.22	1.01	37.29	23.69	0.77
1250.0	31.81	57.68	14.48	16.69	9.28	1.01	37.02	23.75	0.75
1260.0	31.79	57.87	14.49	16.63	9.51	1.01	39.39	23.80	0.68
1270.0	31.78	58.67	14.50	16.63	10.43	1.01	38.19	23.83	0.71
1280.0	31.76	57.22	14.49	16.54	8.84	1.01	37.17	23.81	0.75
1290.0	31.74	56.70	14.54	16.53	8.36	1.01	36.34	23.77	0.76
1300.0	31.72	56.93	14.54	16.50	8.60	1.01	37.88	23.76	0.76
1310.0	31.70	57.68	14.57	16.53	9.39	1.01	38.09	23.75	0.76
1320.0	31.68	56.41	14.59	16.51	8.14	1.01	38.44	23.76	0.73
1330.0	31.65	57.82	14.61	16.49	9.60	1.01	38.50	23.70	0.77
1340.0	31.63	58.29	14.65	16.45	10.16	1.01	37.76	23.71	0.78
1350.0	31.61	56.34	14.68	16.47	8.14	1.01	37.12	23.85	0.74
1360.0	31.59	56.47	14.71	16.47	8.29	1.01	38.64	23.83	0.75
1370.0	31.56	56.44	14.74	16.47	8.29	1.01	38.39	23.82	0.71
1380.0	31.54	57.34	14.79	16.49	9.22	1.01	37.12	23.75	0.78
1390.0	31.51	57.44	14.82	16.49	9.35	1.01	38.28	23.81	0.73
1400.0	31.49	55.53	14.84	16.49	7.54	1.01	37.35	23.73	0.74
1410.0	31.46	57.46	14.88	16.51	9.44	1.01	38.35	23.70	0.72
1420.0	31.44	55.83	14.93	16.53	7.85	1.01	38.21	23.69	0.75
1440.0	31.38	55.63	15.01	16.54	7.73	1.01	37.86	23.83	0.73
1460.0	31.32	55.78	15.12	16.60	7.94	1.01	37.91	23.83	0.76
1480.0	31.26	55.73	15.20	16.64	7.95	1.01	36.71	23.57	0.72
1500.0	31.19	55.85	15.32	16.71	8.13	1.01	37.75	23.84	0.78
1520.0	31.12	54.24	15.39	16.65	6.81	1.00	37.98	23.78	0.79
1540.0	31.05	54.88	15.55	16.74	7.41	1.00	38.11	23.94	0.82
1560.0	30.97	54.31	15.73	16.85	7.02	1.00	37.28	23.68	0.77
1580.0	30.88	54.37	15.90	16.84	7.15	1.00	37.55	23.83	0.81
1600.0	30.80	54.38	16.10	16.92	7.24	1.00	38.20	23.95	0.77
1700.0	30.30	52.22	17.27	17.25	6.03	1.00	37.72	23.87	0.73
1800.0	29.71	53.18	18.61	17.59	7.25	0.99	36.94	23.96	0.79
1900.0	29.03	52.42	20.37	17.44	7.21	0.99	38.33	24.02	0.83
2000.0	28.30	51.45	22.46	16.94	7.02	0.98	38.22	24.10	0.85

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 = 5V, Id = 135.95mA @ Temperature = +85degC

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)
700.0	30.82	64.38	11.37	20.83	21.89	1.06	31.08	20.30	1.18
800.0	30.59	64.38	10.87	20.23	22.23	1.07	31.40	20.52	1.09
900.0	30.45	61.97	10.76	19.61	17.06	1.07	31.52	20.39	1.20
1000.0	30.35	61.64	10.86	18.99	16.63	1.07	31.69	20.38	1.19
1100.0	30.25	58.75	11.06	18.43	12.09	1.06	31.83	20.56	1.22
1200.0	30.13	58.04	11.39	18.02	11.35	1.05	32.15	20.76	1.24
1210.0	30.12	57.30	11.43	17.99	10.45	1.05	31.99	20.79	1.22
1220.0	30.10	57.17	11.47	18.00	10.33	1.05	31.77	20.59	1.19
1230.0	30.09	58.40	11.51	17.95	11.91	1.05	31.92	20.43	1.23
1240.0	30.07	56.88	11.55	17.94	10.03	1.05	31.75	20.46	1.27
1250.0	30.06	56.87	11.60	17.93	10.05	1.05	31.85	20.57	1.23
1260.0	30.04	56.87	11.64	17.88	10.08	1.05	32.03	20.69	1.17
1270.0	30.02	56.40	11.69	17.90	9.57	1.05	32.15	20.75	1.24
1280.0	30.01	56.87	11.71	17.82	10.11	1.05	32.12	20.72	1.25
1290.0	29.99	56.24	11.78	17.82	9.45	1.05	32.05	20.63	1.28
1300.0	29.96	55.97	11.83	17.80	9.19	1.05	31.68	20.57	1.24
1310.0	29.94	56.69	11.89	17.84	10.02	1.05	32.03	20.60	1.24
1320.0	29.92	56.78	11.94	17.84	10.15	1.05	31.89	20.58	1.24
1330.0	29.90	56.67	12.00	17.84	10.07	1.04	31.82	20.49	1.27
1340.0	29.87	57.95	12.05	17.82	11.70	1.04	31.99	20.52	1.29
1350.0	29.85	57.99	12.12	17.84	11.80	1.04	32.10	20.75	1.25
1360.0	29.82	56.64	12.17	17.87	10.14	1.04	32.37	20.77	1.27
1370.0	29.80	55.76	12.22	17.84	9.20	1.04	32.06	20.69	1.24
1380.0	29.77	55.14	12.29	17.87	8.60	1.04	32.28	20.63	1.29
1390.0	29.75	55.62	12.36	17.89	9.13	1.04	32.13	20.68	1.26
1400.0	29.72	55.40	12.39	17.91	8.93	1.04	31.77	20.56	1.24
1410.0	29.69	55.90	12.47	17.93	9.50	1.04	31.99	20.49	1.24
1420.0	29.66	55.34	12.54	17.96	8.96	1.04	32.09	20.51	1.27
1440.0	29.60	55.06	12.66	18.01	8.75	1.04	32.21	20.73	1.20
1460.0	29.53	54.49	12.81	18.10	8.28	1.03	32.63	20.81	1.27
1480.0	29.46	55.08	12.92	18.18	8.94	1.03	31.70	20.32	1.24
1500.0	29.38	53.86	13.10	18.33	7.87	1.03	32.04	20.73	1.27
1520.0	29.32	54.16	13.17	18.30	8.21	1.03	32.26	20.63	1.31
1540.0	29.23	53.91	13.37	18.46	8.08	1.03	32.27	20.93	1.37
1560.0	29.14	55.62	13.52	18.63	9.96	1.03	31.81	20.42	1.29
1580.0	29.04	52.97	13.72	18.80	7.45	1.03	32.11	20.68	1.36
1600.0	28.95	54.18	13.89	18.94	8.66	1.03	32.48	20.95	1.27
1700.0	28.41	52.10	14.80	19.92	7.34	1.02	32.58	20.75	1.29
1800.0	27.78	51.70	15.77	20.95	7.61	1.02	32.78	20.99	1.35
1900.0	27.08	52.86	16.77	21.24	9.47	1.01	32.35	20.88	1.38
2000.0	26.32	51.63	17.80	20.49	8.99	1.01	32.75	21.05	1.42

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 = 4.75V, Id = 129.88mA @ Temperature = +85degC

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)
700.0	30.76	63.39	11.41	20.33	19.66	1.06	31.45	20.08	1.21
800.0	30.54	64.00	10.88	19.86	21.39	1.07	31.25	20.30	1.09
900.0	30.41	61.17	10.77	19.32	15.63	1.07	31.30	20.17	0.63
1000.0	30.31	60.43	10.87	18.81	14.53	1.07	31.45	20.16	1.17
1100.0	30.22	60.95	11.08	18.34	15.63	1.06	31.78	20.34	1.21
1200.0	30.11	57.96	11.41	17.94	11.28	1.05	31.95	20.53	1.24
1210.0	30.09	58.71	11.46	17.93	12.33	1.05	31.68	20.56	1.19
1220.0	30.08	57.34	11.48	17.91	10.55	1.05	31.48	20.37	1.15
1230.0	30.06	56.70	11.54	17.89	9.83	1.05	32.07	20.22	1.20
1240.0	30.05	57.60	11.57	17.86	10.92	1.05	31.54	20.25	1.22
1250.0	30.03	58.97	11.61	17.84	12.82	1.05	31.82	20.37	1.21
1260.0	30.01	56.84	11.66	17.83	10.07	1.05	32.06	20.47	1.16
1270.0	30.00	56.95	11.70	17.84	10.22	1.05	31.95	20.55	1.21
1280.0	29.98	56.84	11.73	17.74	10.11	1.05	31.90	20.51	1.24
1290.0	29.96	56.54	11.80	17.77	9.80	1.05	31.86	20.41	1.25
1300.0	29.94	58.08	11.84	17.75	11.73	1.05	31.68	20.38	1.22
1310.0	29.92	57.24	11.91	17.77	10.69	1.05	31.95	20.39	1.22
1320.0	29.90	56.66	11.95	17.79	10.03	1.04	31.72	20.39	1.21
1330.0	29.88	55.89	12.02	17.78	9.22	1.04	31.88	20.29	1.28
1340.0	29.85	56.54	12.07	17.75	9.98	1.04	32.11	20.33	1.26
1350.0	29.83	55.41	12.12	17.74	8.79	1.04	31.84	20.55	1.26
1360.0	29.80	55.54	12.18	17.77	8.96	1.04	32.09	20.57	1.25
1370.0	29.78	56.81	12.25	17.79	10.41	1.04	32.06	20.49	1.19
1380.0	29.75	55.07	12.31	17.79	8.55	1.04	31.83	20.43	1.26
1390.0	29.72	54.66	12.38	17.80	8.19	1.04	31.71	20.49	1.22
1400.0	29.70	54.91	12.42	17.84	8.47	1.04	31.89	20.37	1.24
1410.0	29.67	56.15	12.50	17.83	9.81	1.04	32.00	20.28	1.23
1420.0	29.64	54.79	12.56	17.86	8.42	1.04	31.94	20.31	1.23
1440.0	29.58	55.38	12.70	17.89	9.10	1.03	32.10	20.54	1.20
1460.0	29.51	55.28	12.83	18.00	9.07	1.03	31.97	20.60	1.24
1480.0	29.44	54.69	12.97	18.06	8.57	1.03	31.65	20.15	1.23
1500.0	29.37	53.84	13.12	18.16	7.86	1.03	32.16	20.55	1.26
1520.0	29.30	53.93	13.22	18.17	8.01	1.03	32.11	20.43	1.31
1540.0	29.22	54.97	13.41	18.32	9.14	1.03	32.38	20.74	1.33
1560.0	29.13	54.31	13.56	18.48	8.57	1.03	31.78	20.24	1.29
1580.0	29.03	53.80	13.74	18.61	8.20	1.03	32.00	20.50	1.30
1600.0	28.94	53.88	13.94	18.75	8.38	1.02	32.52	20.76	1.29
1700.0	28.41	52.02	14.86	19.61	7.28	1.02	32.31	20.57	1.26
1800.0	27.78	52.25	15.88	20.40	8.09	1.01	32.44	20.80	1.32
1900.0	27.09	52.44	16.95	20.59	9.00	1.01	32.29	20.69	1.38
2000.0	26.34	51.48	17.98	19.80	8.82	1.00	32.60	20.84	1.41

Typical Performance Data

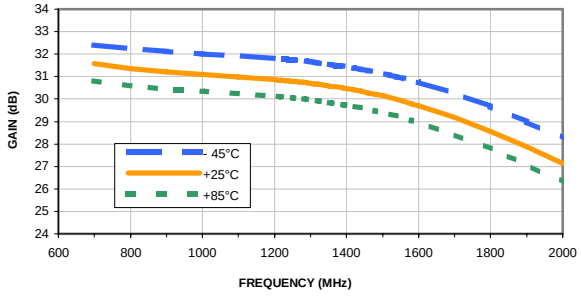
Definitions:
Input Return Loss = -S11 (dB)
Gain(Power Gain) = S21 (dB)
Reverse Isolation = -S12 (dB)
Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd =5.25V, Id = 141.96mA @ Temperature = +85degC

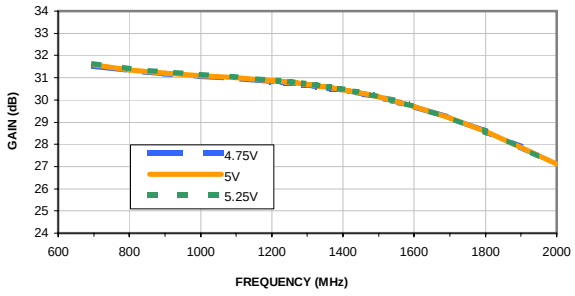
FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
700.0	30.86	70.44	11.36	21.21	43.79	1.07	31.33	20.42	1.21
800.0	30.63	61.99	10.85	20.45	16.81	1.07	31.59	20.68	1.13
900.0	30.48	63.08	10.76	19.75	19.31	1.07	31.38	20.57	1.20
1000.0	30.38	62.41	10.86	19.10	18.12	1.07	31.61	20.58	1.20
1100.0	30.27	63.01	11.08	18.48	19.70	1.06	31.72	20.74	1.24
1200.0	30.15	58.10	11.39	18.05	11.40	1.05	32.32	20.94	1.29
1210.0	30.14	57.78	11.42	18.02	11.02	1.05	31.80	20.99	1.24
1220.0	30.12	58.48	11.46	18.02	11.97	1.05	31.96	20.79	1.22
1230.0	30.11	56.12	11.53	17.98	9.16	1.05	31.79	20.62	1.22
1240.0	30.09	57.87	11.55	17.97	11.23	1.05	31.78	20.64	1.27
1250.0	30.08	56.77	11.59	17.95	9.91	1.05	31.97	20.77	1.25
1260.0	30.06	56.93	11.64	17.91	10.13	1.05	32.28	20.89	1.20
1270.0	30.04	58.61	11.68	17.92	12.30	1.05	32.43	20.95	1.25
1280.0	30.03	56.91	11.71	17.81	10.15	1.05	32.27	20.92	1.26
1290.0	30.00	57.42	11.79	17.87	10.81	1.05	31.91	20.82	1.31
1300.0	29.98	60.10	11.83	17.89	14.74	1.05	31.70	20.76	1.27
1310.0	29.96	57.27	11.89	17.89	10.69	1.05	32.30	20.77	1.29
1320.0	29.94	56.30	11.94	17.89	9.60	1.05	31.83	20.77	1.26
1330.0	29.91	55.96	12.00	17.88	9.26	1.04	31.99	20.69	1.32
1340.0	29.89	56.67	12.05	17.85	10.09	1.04	31.91	20.71	1.30
1350.0	29.86	55.63	12.11	17.89	8.99	1.04	31.88	20.93	1.27
1360.0	29.84	56.82	12.16	17.90	10.34	1.04	32.46	20.95	1.29
1370.0	29.81	54.78	12.22	17.88	8.22	1.04	31.80	20.86	1.24
1380.0	29.79	56.08	12.29	17.96	9.58	1.04	32.09	20.82	1.32
1390.0	29.76	55.08	12.35	17.95	8.57	1.04	31.92	20.86	1.28
1400.0	29.73	55.40	12.39	17.99	8.93	1.04	31.83	20.73	1.26
1410.0	29.70	54.95	12.47	17.99	8.52	1.04	32.07	20.65	1.25
1420.0	29.67	55.17	12.52	18.03	8.78	1.04	31.94	20.67	1.28
1440.0	29.61	54.99	12.64	18.08	8.67	1.04	32.29	20.91	1.23
1460.0	29.54	55.81	12.78	18.19	9.62	1.03	32.30	20.98	1.29
1480.0	29.47	53.38	12.94	18.29	7.37	1.03	31.79	20.51	1.26
1500.0	29.39	53.87	13.07	18.42	7.88	1.03	32.16	20.90	1.29
1520.0	29.32	54.32	13.15	18.41	8.36	1.03	32.16	20.78	1.34
1540.0	29.23	54.52	13.35	18.59	8.67	1.03	32.30	21.11	1.38
1560.0	29.14	54.04	13.50	18.79	8.31	1.03	32.02	20.59	1.30
1580.0	29.05	54.53	13.67	18.93	8.91	1.03	32.44	20.84	1.37
1600.0	28.95	54.46	13.85	19.13	8.95	1.03	32.42	21.10	1.34
1700.0	28.41	53.04	14.73	20.26	8.18	1.02	32.46	20.90	1.30
1800.0	27.77	52.45	15.70	21.47	8.30	1.02	32.56	21.14	1.40
1900.0	27.07	51.70	16.68	21.97	8.31	1.01	32.49	21.00	1.42
2000.0	26.31	52.17	17.63	21.09	9.59	1.01	32.55	21.17	1.45

Typical Performance Curves

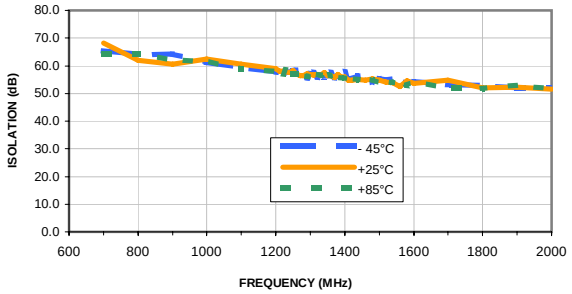
GAIN vs. FREQUENCY & TEMPERATURE
INPUT POWER = -25dBm, Vd = 5.00V



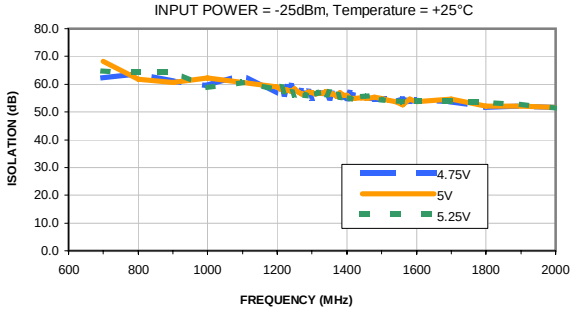
GAIN vs. FREQUENCY & DEVICE VOLTAGE
INPUT POWER = -25dBm, Temperature = +25°C



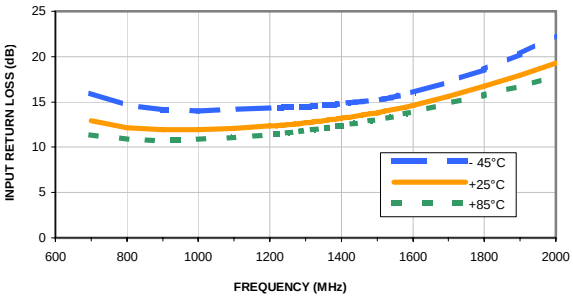
ISOLATION vs. FREQUENCY & TEMPERATURE
INPUT POWER = -25dBm, Vd = 5.00V



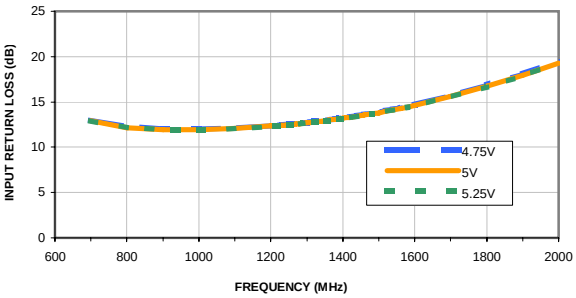
ISOLATION vs. FREQUENCY & DEVICE VOLTAGE
INPUT POWER = -25dBm, Temperature = +25°C



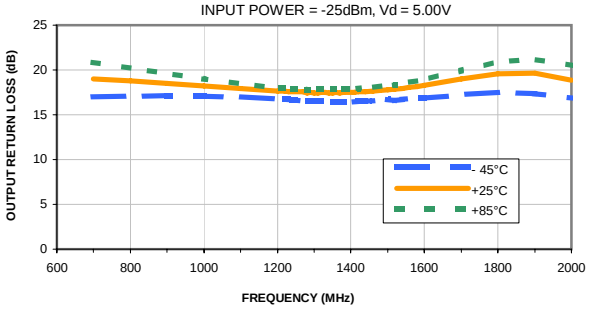
INPUT RETURN LOSS vs. FREQUENCY & TEMPERATURE
INPUT POWER = -25dBm, Vd = 5.00V



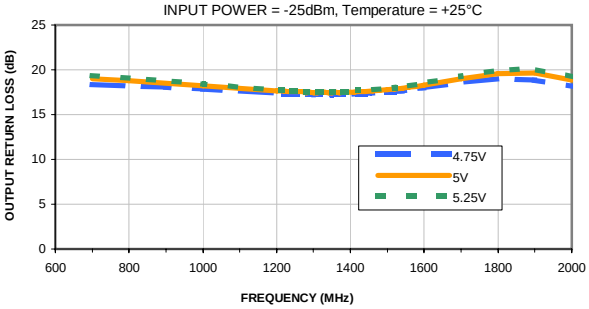
INPUT RETURN LOSS vs. FREQUENCY & DEVICE VOLTAGE
INPUT POWER = -25dBm, Temperature = +25°C



OUTPUT RETURN LOSS vs. FREQUENCY & TEMPERATURE
INPUT POWER = -25dBm, Vd = 5.00V

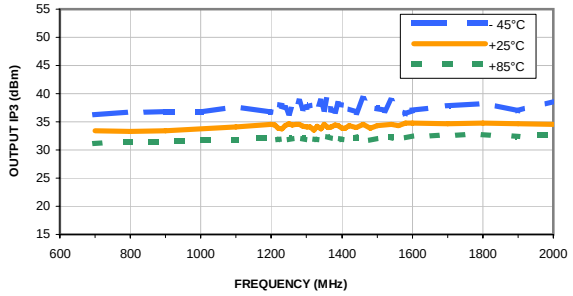


OUTPUT RETURN LOSS vs. FREQUENCY & DEVICE VOLTAGE
INPUT POWER = -25dBm, Temperature = +25°C

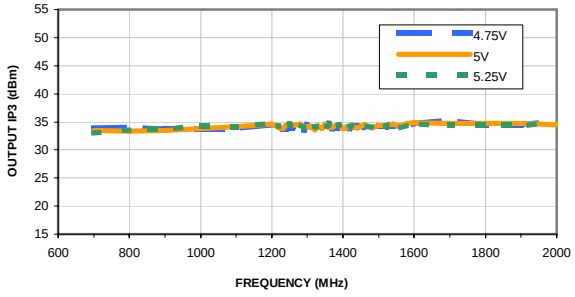


Typical Performance Curves

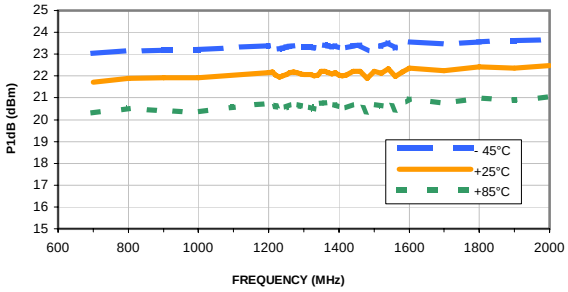
OUTPUT IP3 vs. FREQUENCY & TEMPERATURE
OUTPUT POWER = 0 dBm/tone, Vd = 5.00V



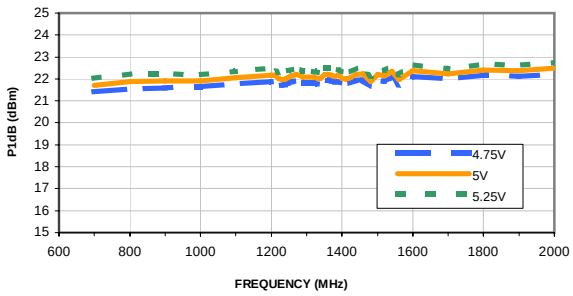
OUTPUT IP3 vs. FREQUENCY & DEVICE VOLTAGE
OUTPUT POWER = 0 dBm/tone, Temperature = +25°C



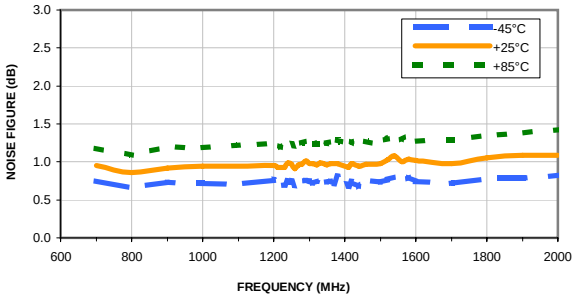
P1dB vs. FREQUENCY & TEMPERATURE
Vd = 5.00V



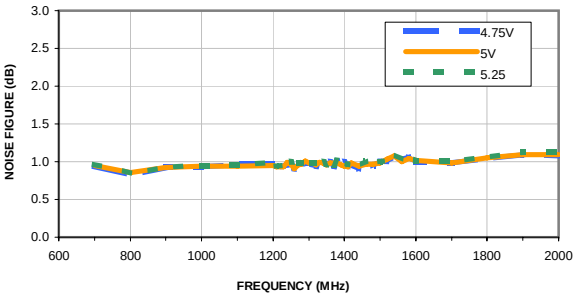
P1dB vs. FREQUENCY & DEVICE VOLTAGE
Temperature = +25°C



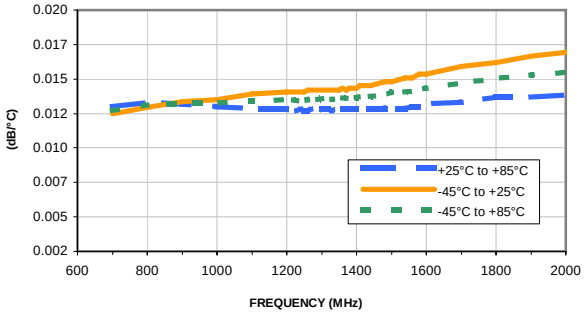
NOISE FIGURE vs. FREQUENCY & TEMPERATURE
Vd = 5.00V



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



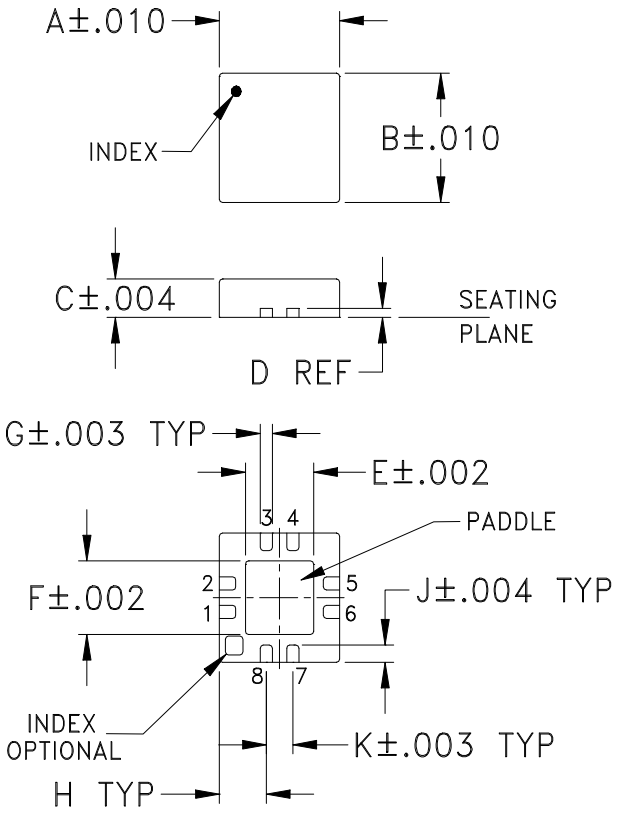
GAIN VARIATION vs. FREQUENCY & TEMPERATURE
INPUT POWER = -25dBm, Vd = 5.00V



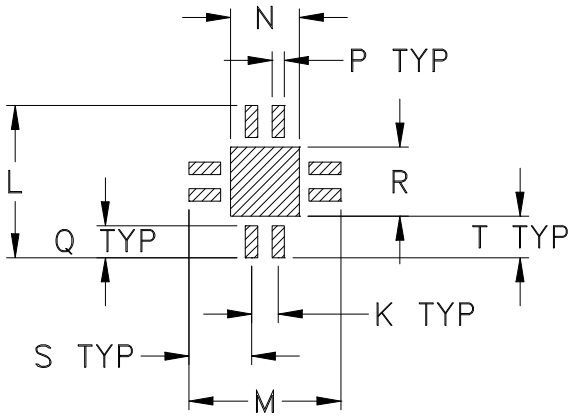
Case Style DQ

DQ849

Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L	M	N
DQ849	.118 (3.00)	.118 (3.00)	.035 (0.89)	.008 (0.20)	.067 (1.70)	.067 (1.70)	.012 (0.30)	.046 (1.17)	.016 (0.41)	.026 (0.66)	.148 (3.76)	.148 (3.76)	.067 (1.70)

CASE #	P	Q	R	S	T	WT. GRAM
DQ849	.012 (0.30)	.031 (0.79)	.067 (1.70)	.061 (1.55)	.041 (1.04)	.02

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

Notes:

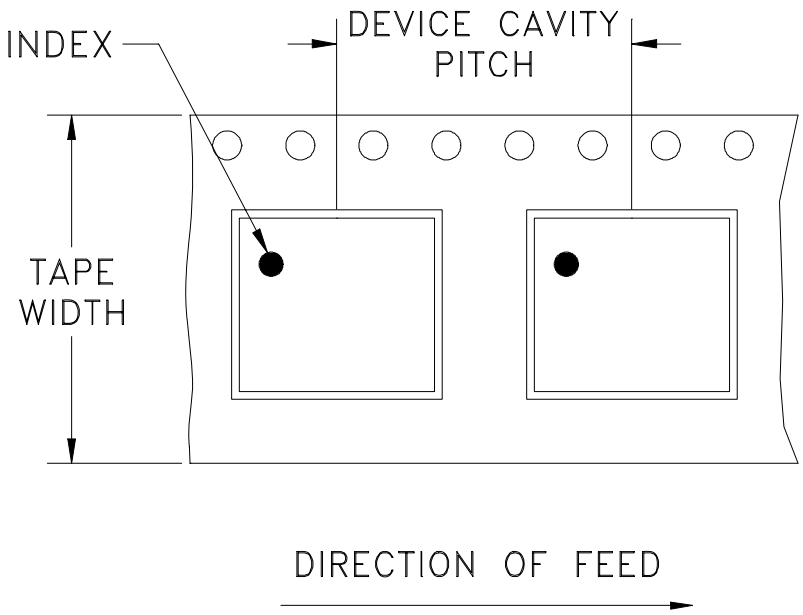
1. Case material: Plastic.
2. Termination finish:
   For RoHS Case Styles: Tin-Silver alloy plate over Nickel barrier or Matte-Tin plated. All models, (+) suffix. See Data sheet.
   For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

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Tape & Reel Packaging TR-F104

DEVICE ORIENTATION IN T&R



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

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

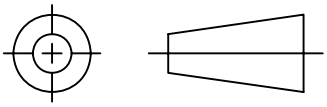
Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

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

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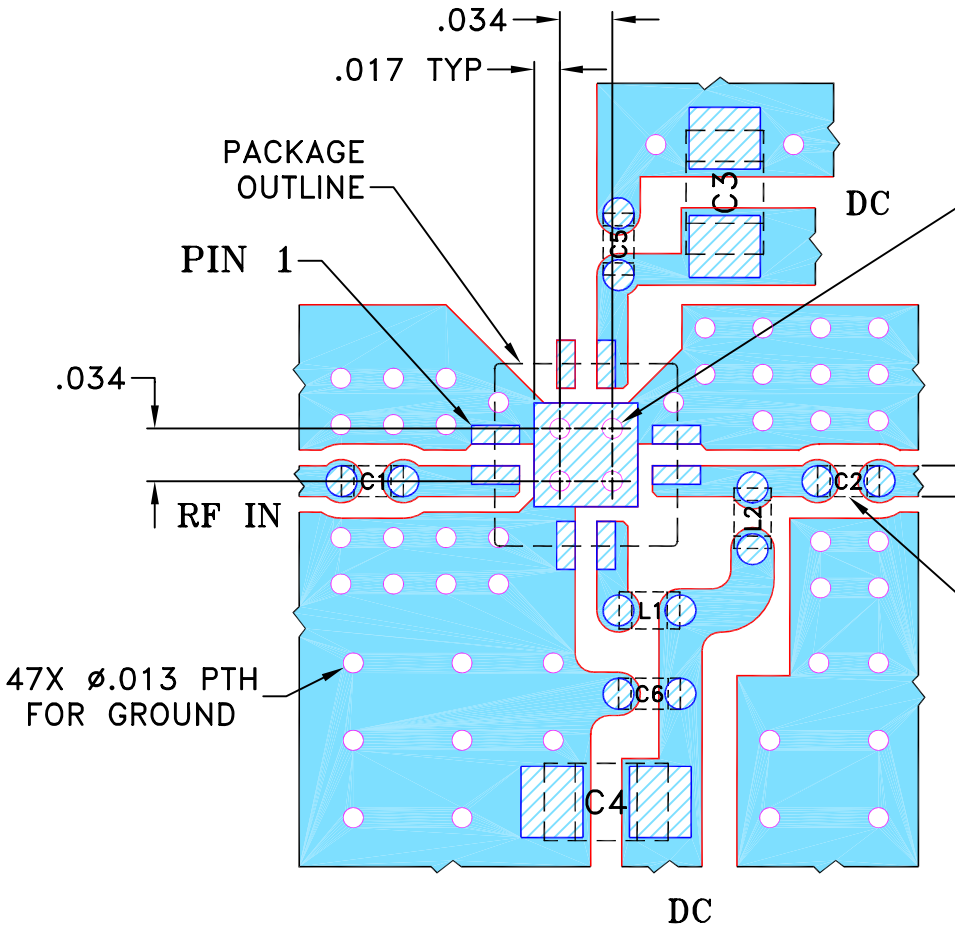
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M131697	NEW RELEASE	05/20/11	PW	MD
A	M132869	UPDATED COMPONENT TABLE AND NOTE 2	07/25/11	IL	RD

SUGGESTED MOUNTING CONFIGURATION FOR DQ849 CASE STYLE, "08AM08" PIN CODE



COMPONENT	SIZE
C1,C2,C5,C6	0402
C3,C4	0805
L1	0402
L2	0402

NOTES:
1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010" ± .001"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. 0805, 0402 SIZES CHIP FOOT PRINTS SHOWN FOR REFERENCE. FOR COMPONENT VALUES REFER TO TB-607+.
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	PW	04/29/11
TOLERANCES ON:	CHECKED	AV	05/12/11
2 PL DECIMALS ±	APPROVED	MD	05/20/11
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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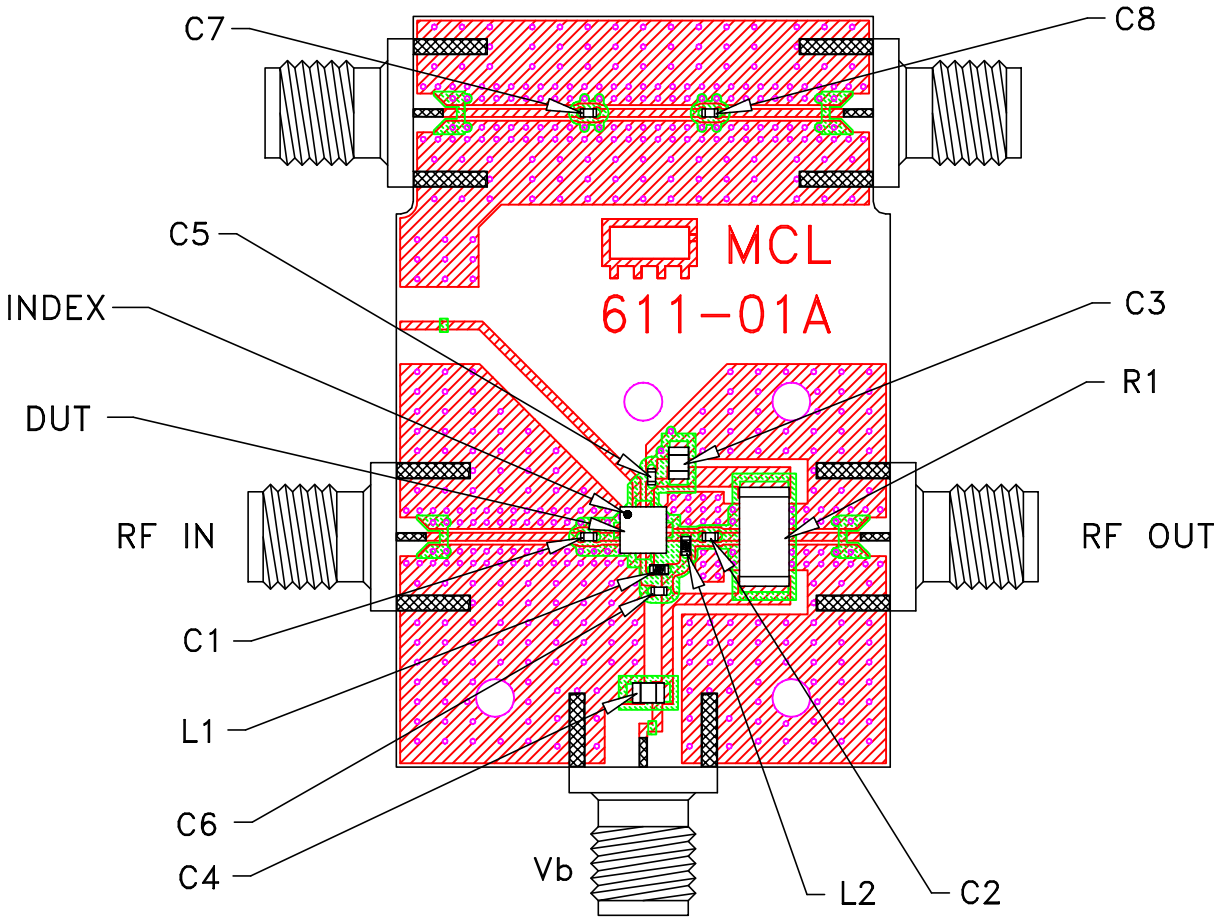
Mini-Circuits®
13 Neptune Avenue
Brooklyn NY 11235

PL, 08AM08, DQ849, TB-607+

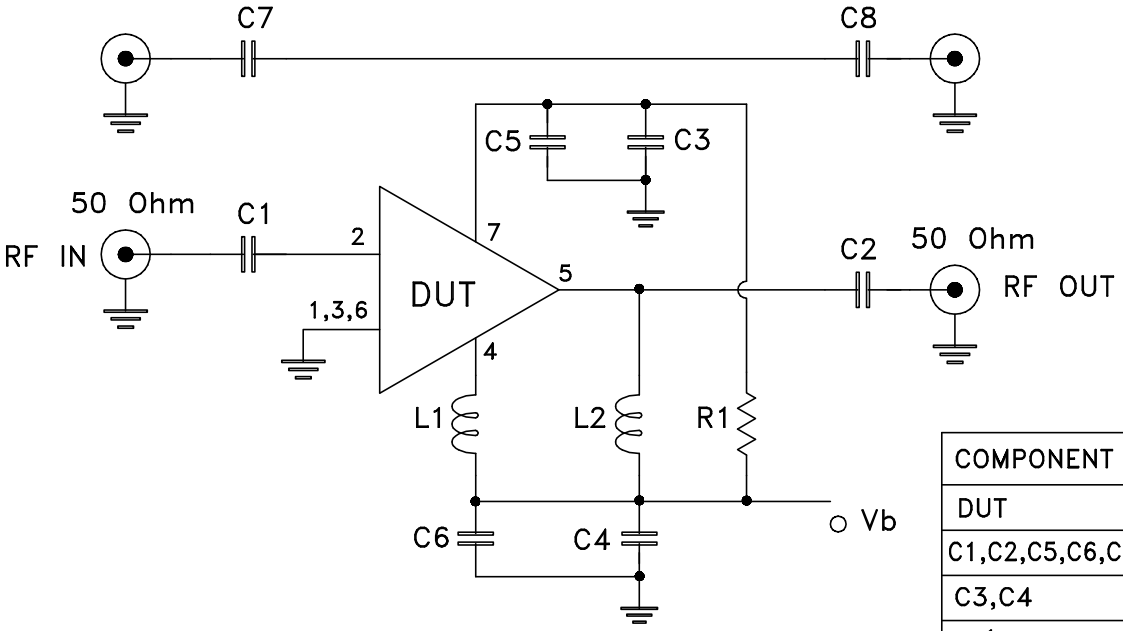
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-346	A

FILE:	SCALE:	SHEET:
98PL346	8:1	1 OF 1

Evaluation Board and Circuit



TB-607-2+



Schematic Diagram

COMPONENT	DESCRIPTION
DUT	PMA-545G2+, MCL
C1,C2,C5,C6,C7,C8	100 pF
C3,C4	1 uF
R1(SEE NOTE 3)	JUMPER, 0 Ohm
L1	36 nH
L2	47 nH

NOTES:

1. SMA Female connectors.
2. PCB material: Rogers RO4350 or equivalent, dielectric constant=3.5, dielectric thickness=.010 inch.
3. R1 is a Bridge and perform no RF function. Not required for multilayer Board.

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Environmental Specifications **ENV08T1**

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

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

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

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