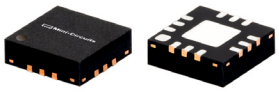
MMIC WIDEBAND, LOW NOISE

Monolithic Amplifier PMA3-14LN+

50Ω 0.05 to 10 GHz

THE BIG DEAL

- Flat Gain,22.6±0.7dB up to 10GHz
- P1dB, 22dBm typ. vs. OIP3, 30.4dBm Typ. up to 8GHz
- Low Noise Figure, 1.8dB Typ.
- 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

- Wi-Fi
- WLAN
- LTE/WCDMA/EDGE
- L, S and C-band Radar
- C-band Satcom

PRODUCT OVERVIEW

The PMA3-14LN+ is a GaAs PHEMT based wideband, low noise MMIC amplifier with a unique combination of low noise, high IP3, and high output power, over a wideband making it ideal for sensitive, high-dynamic range receiver applications. This design operates on a single supply of 6V, is well matched for 50Ω and comes in a tiny, low profile package (3 x 3 mm-12 lead), accommodating dense circuit board layouts.

KEY FEATURES

Feature	Advantages
Low noise, 1.8dB Typical up to 10GHz	Enables lower system noise figure performance.
High Dynamic Range • OIP3 30.4dBm Typ. up to 8GHz • P1dB 22dBm Typ. up to 8GHz	The PMA3-14LN+ matches industry leading IP3 performance relative to device size and power consumption. The combination of the Design and PHEMT structure provides enhanced linearity over a board frequency range as evidence in the IP3 being approximately 9-11dB above the P1dB point. This feature makes this amplifier ideal for use in: • Driver Amplifiers for complex waveform up converter paths • Drivers in linearized transmit systems • Secondary amplifiers in ultra-high dynamic range receivers
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.
Wide bandwidth with flat gain • ±0.7dB up to 10 GHz	Enables a single amplifier to be used in many wideband applications including defense, instrumentation and more.

REV. A
ECO-018630
PMA3-14LN+
MCL NY
230724

ELECTRICAL SPECIFICATIONS[1] AT 25°C AND 6V, UNLESS NOTED OTHERWISE

Parameter	Condition (MHz)	VDD = 6V Min.	Typ.	Max.	Units
Frequency Range		50		10000	MHz
Gain	50	20.0	22.4	24.3	dB
	2000	20.0	22.6	24.4	
	4000	20.0	22.6	24.3	
	8000	20.3	23.1	24.9	
	10000	-	21.6	-	
Input Return Loss	50		20		dB
	2000		16		
	4000		14		
	8000		20		
	10000		13		
Output Return Loss	50		17		dB
	2000		20		
	4000		18		
	8000		16		
	10000		18		
P1dB	50		22.0		dBm
	2000		22.9		
	4000		22.0		
	8000		19.8		
	10000		16.6		
OIP3 Pout = -5dBm/Tone	50		31.2		dBm
	2000		31.8		
	4000		30.7		
	8000		28.7		
	10000		26.0		
Low Noise Figure	50		1.8		dB
	2000		1.0		
	4000		1.1		
	8000		1.2		
	10000		2.1		
Device Operating Voltage		5.75	6	6.25	V
Device Operating Current			67	90	mA
Device Current Variation Vs. Temperature[2]			-23.1		uA/°C
Device Current Variation Vs. Voltage[3]			0.0115		mA/mV
Thermal Resistance, Junction to Ground Lead, at 85° C Stage Temperature			53.9		°C/W

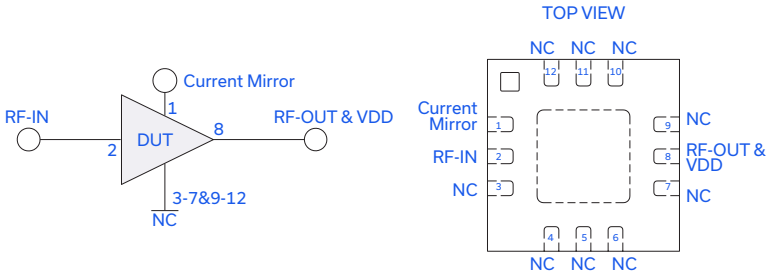
1. Measured on Mini-Circuits Characterization Test Board TB-PMA3-14LN+. See Characterization Test & Application Circuit (Fig. 1)
2. Device Current Variation vs. Temperature= (Current in mA at 85°C - Current in mA at -45°C)/130°C
3. Device Current Variation vs. Voltage = (Current in mA at 6.25V – Current in mA at 5.75V) / ((6.25V-5.75V) *1000 mA/mV)

MAXIMUM RATINGS[4]

Parameter	Ratings
Operating temperature (ground lead)	-40°C to 85°C
Storage temperature	-65°C to 150°C
Junction temperature	150°C
Total power dissipation	1.2 W
Input power (CW)	+25 dBm (5 minutes max.) +12 dBm (continuous)
DC voltage at VDD	8 V

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

SIMPLIFIED SCHEMATIC & PAD DESCRIPTION



Function	Pad Number	Description (See Figure 1)
Current Mirror	1	Current Mirror Pad. Feedback to RF-IN via L1. See details in Figure 1.
RF-IN	2	RF Input Pad.
RF-OUT & VDD	8	RF Output Pad & DC Pad.
NC	10	No Connection, Even Soldered on Test Board.
NC	3-7,9,11 & 12	No Connection, Grounded on Test Board
GND	Paddle, Index	Ground

CHARACTERIZATION TEST AND APPLICATION CIRCUIT

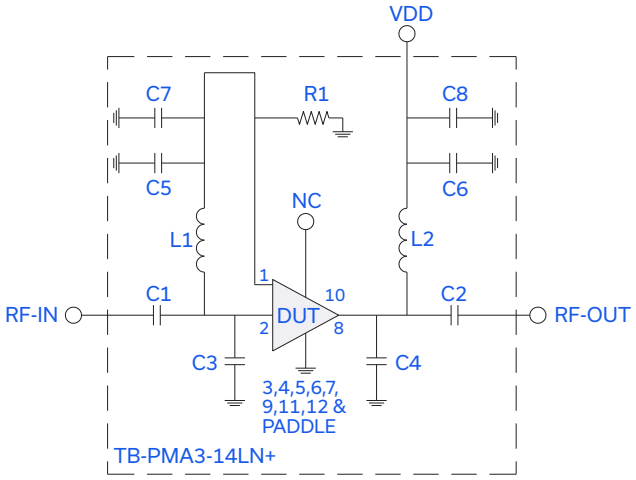
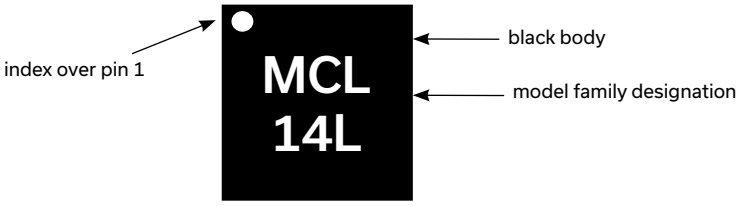


Fig 1. Application and Characterization Circuit
Note: This block diagram is used for characterization.
(DUT is soldered on Mini- Circuits Characterization test board TB-PMA3-14LN+)
Gain, Return loss, Output power at 1dB compression (P1dB), output IP3 (OIP3) and noise figure measured using Agilent's N5242A PNA-X microwave network analyzer.

Conditions:
1. VDD=6V
2. Gain and Return loss: Pin= -25dBm
3. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, -5 dBm/tone at output.

Component	Size	Value	Part Number	Manufacturer
C1 & C2	0402	0.01uF	GRM155R71H103KA88D	Murata
C3	0402	0.2pF	GJM1555C1HR20WB01D	Murata
C4	0402	0.1pF	GJM1555C1HR10WB01D	Murata
C5 & C6	0402	100pF	GRM1555C1H101JA01D	Murata
C7 & C8	0402	0.1uF	GRM155R71H104KE14J	Murata
L1 & L2	0402	900nH	0402DF-901XJRU	Coilcraft
R1	0402	510Ω	RK73H1ETTP5100F	KOA

PRODUCT MARKING



Marking may contain other features or characters for internal lot control

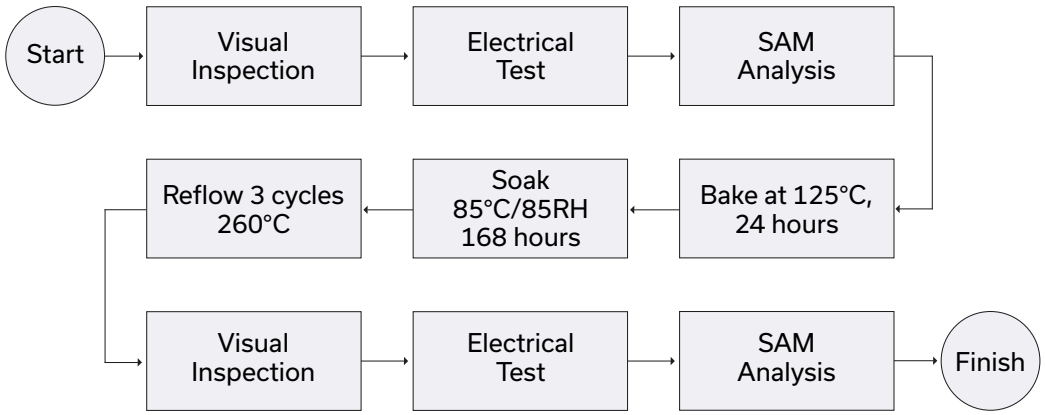
ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASH BOARD. TO ACCESS CLICK HERE

Performance Data	Data Table Swept Graphs S-Parameter (S2P Files) 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 or 2K devices
Suggested Layout for PCB Design	PL-725
Evaluation Board	TB-PMA3-14LN+
Environmental Ratings	ENV08T1

ESD RATING
Human Body Model (HBM): Class 1B(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 = 5.75V, Id = 64mA @ 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)
10	20.46	27.17	9.18	14.25	1.15	0.87	25.43	19.41	8.92
100	22.20	25.13	22.46	21.95	1.05	0.50	30.65	22.45	1.37
200	22.28	25.07	23.42	23.85	1.04	0.48	28.68	22.50	1.06
300	22.29	25.08	23.27	24.74	1.05	0.49	29.17	22.55	1.02
400	22.29	25.15	22.98	25.12	1.05	0.50	27.58	22.54	0.97
500	22.29	25.19	22.58	25.57	1.05	0.50	29.99	22.55	0.96
1000	22.28	25.22	19.66	27.67	1.05	0.52	29.94	22.67	0.94
1200	22.28	25.25	18.42	27.51	1.05	0.52	31.22	22.78	0.96
1400	22.27	25.35	17.29	26.20	1.06	0.54	29.62	22.80	0.91
1600	22.26	25.42	16.20	24.55	1.06	0.55	29.97	22.83	0.94
1800	22.25	25.45	15.30	22.84	1.06	0.55	31.54	22.80	0.96
2000	22.23	25.55	14.44	21.32	1.06	0.57	32.31	22.68	0.97
2200	22.21	25.62	13.69	20.06	1.07	0.58	33.26	22.75	0.93
2400	22.18	25.67	13.06	19.05	1.07	0.58	29.73	22.78	1.07
2600	22.17	25.86	12.58	18.29	1.08	0.60	28.43	22.65	0.98
2800	22.16	25.88	12.19	17.80	1.08	0.61	30.87	22.38	1.05
3000	22.16	25.94	11.94	17.47	1.08	0.62	29.72	22.10	0.99
3200	22.16	26.04	11.74	17.30	1.08	0.63	28.81	21.77	1.06
3400	22.16	26.12	11.63	17.22	1.09	0.64	28.42	21.40	1.04
3600	22.16	26.20	11.60	17.21	1.09	0.64	28.39	21.13	1.06
3800	22.18	26.24	11.60	17.36	1.09	0.65	28.66	21.56	1.05
4000	22.20	26.27	11.70	17.64	1.09	0.65	29.25	21.51	1.16
4200	22.22	26.35	11.87	18.05	1.10	0.66	30.11	21.70	1.14
4400	22.24	26.42	12.10	18.50	1.10	0.67	28.80	21.74	1.19
4600	22.27	26.45	12.36	19.04	1.10	0.67	29.16	21.61	1.14
4800	22.32	26.55	12.67	19.61	1.11	0.68	29.37	21.83	1.19
5000	22.37	26.55	13.02	20.26	1.11	0.68	30.08	21.69	1.21
5200	22.43	26.66	13.44	20.86	1.12	0.69	28.61	21.57	1.22
5400	22.48	26.67	13.87	21.44	1.12	0.68	29.58	21.33	1.27
5600	22.55	26.67	14.42	21.98	1.12	0.68	28.42	21.15	1.23
5800	22.61	26.80	15.06	22.61	1.12	0.69	29.99	21.12	1.22
6000	22.66	26.85	15.80	23.09	1.13	0.69	28.20	21.28	1.22
6200	22.73	26.92	16.75	23.01	1.13	0.69	28.94	21.09	1.10
6400	22.77	26.98	17.74	22.66	1.14	0.69	29.82	21.04	1.20
6600	22.81	27.06	19.02	21.83	1.15	0.69	30.01	21.24	1.14
6800	22.86	27.19	20.71	20.64	1.16	0.70	29.50	21.05	1.15
7000	22.91	27.25	22.82	19.57	1.16	0.70	28.62	20.90	1.17
7200	22.94	27.35	24.91	18.68	1.17	0.70	29.79	20.90	1.14
7400	22.94	27.41	26.72	17.99	1.18	0.70	28.14	20.60	1.16
7600	22.93	27.57	26.69	17.33	1.20	0.71	30.13	20.20	1.15
7800	22.92	27.73	25.02	16.70	1.22	0.72	28.81	20.10	1.19
8000	22.89	27.96	23.01	16.34	1.25	0.74	29.42	19.59	1.23
8200	22.84	28.11	20.99	16.14	1.27	0.75	28.14	19.10	1.23
8400	22.78	28.34	19.42	16.02	1.30	0.77	28.40	18.78	1.23
8600	22.70	28.59	18.18	16.27	1.34	0.79	27.50	18.22	1.25
8800	22.59	28.83	17.09	16.71	1.39	0.82	27.89	18.12	1.33
9000	22.46	29.19	16.24	17.37	1.45	0.84	28.51	18.14	1.45
9200	22.31	29.42	15.50	18.23	1.51	0.87	28.63	17.44	1.59
9400	22.13	29.81	14.75	19.22	1.60	0.89	27.39	17.01	1.65
9600	21.89	30.15	14.06	20.07	1.69	0.92	28.06	16.83	1.83
9800	21.59	30.58	13.41	20.21	1.80	0.94	26.04	16.17	2.00
10000	21.25	31.03	12.70	19.46	1.94	0.96	27.73	16.12	2.14

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 = 6.00V, 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)
10	20.89	27.66	9.92	14.72	1.16	0.87	24.88	19.95	8.89
100	22.53	25.52	26.78	19.12	1.05	0.49	32.71	22.79	1.40
200	22.61	25.47	28.52	20.23	1.05	0.48	32.00	22.83	1.07
300	22.62	25.39	28.32	20.81	1.04	0.47	28.43	22.87	1.00
400	22.62	25.46	27.58	21.06	1.05	0.49	30.39	22.86	0.96
500	22.62	25.45	26.99	21.32	1.05	0.49	30.91	22.87	0.96
1000	22.63	25.58	22.54	23.32	1.05	0.51	33.73	22.92	0.90
1200	22.63	25.59	20.87	24.16	1.05	0.52	33.97	23.00	0.92
1400	22.63	25.62	19.43	24.41	1.06	0.52	30.98	23.00	0.89
1600	22.62	25.68	18.05	24.10	1.06	0.54	32.38	22.95	0.94
1800	22.61	25.75	16.93	23.22	1.06	0.55	31.99	22.92	0.98
2000	22.60	25.84	15.88	22.03	1.06	0.56	33.50	22.86	0.96
2200	22.59	25.88	14.99	20.91	1.06	0.57	32.07	22.94	1.00
2400	22.57	25.97	14.25	19.87	1.07	0.58	28.97	22.79	0.99
2600	22.55	26.10	13.68	19.10	1.07	0.59	29.22	22.50	0.97
2800	22.55	26.16	13.24	18.54	1.07	0.60	31.43	22.36	1.03
3000	22.54	26.25	12.94	18.14	1.08	0.61	31.52	21.92	0.99
3200	22.54	26.29	12.70	17.92	1.08	0.61	29.87	21.69	1.06
3400	22.54	26.34	12.57	17.77	1.08	0.62	30.20	21.49	1.04
3600	22.53	26.47	12.53	17.70	1.09	0.63	31.03	21.37	1.03
3800	22.54	26.52	12.52	17.77	1.09	0.64	29.60	21.90	1.11
4000	22.55	26.60	12.64	17.97	1.09	0.65	31.64	21.79	1.13
4200	22.56	26.64	12.81	18.27	1.10	0.66	30.33	21.91	1.08
4400	22.57	26.66	13.07	18.59	1.10	0.66	30.28	21.97	1.14
4600	22.60	26.76	13.34	19.01	1.11	0.67	30.77	21.83	1.15
4800	22.63	26.76	13.69	19.35	1.11	0.67	30.89	22.05	1.21
5000	22.68	26.87	14.07	19.72	1.11	0.68	29.24	21.93	1.16
5200	22.72	26.91	14.51	20.03	1.11	0.68	29.97	21.86	1.23
5400	22.77	26.95	14.99	20.26	1.12	0.68	29.29	21.62	1.16
5600	22.82	26.99	15.59	20.43	1.12	0.68	29.23	21.43	1.22
5800	22.87	27.12	16.29	20.59	1.13	0.69	28.08	21.43	1.19
6000	22.91	27.15	17.12	20.67	1.13	0.69	28.84	21.59	1.16
6200	22.96	27.21	18.22	20.40	1.14	0.69	29.49	21.42	1.13
6400	23.00	27.29	19.35	20.07	1.14	0.69	28.29	21.37	1.15
6600	23.03	27.33	20.91	19.43	1.15	0.69	31.02	21.56	1.20
6800	23.07	27.42	23.06	18.62	1.16	0.69	31.03	21.38	1.14
7000	23.10	27.52	26.02	17.86	1.17	0.69	28.56	21.24	1.09
7200	23.13	27.58	29.47	17.22	1.17	0.69	29.56	21.23	1.14
7400	23.12	27.73	32.61	16.76	1.19	0.70	28.31	20.95	1.17
7600	23.10	27.88	30.41	16.31	1.21	0.71	30.40	20.55	1.11
7800	23.08	28.05	26.39	15.83	1.23	0.72	28.20	20.47	1.21
8000	23.05	28.21	23.62	15.56	1.25	0.74	29.02	19.97	1.19
8200	23.00	28.41	21.35	15.43	1.28	0.75	27.16	19.46	1.17
8400	22.94	28.65	19.60	15.34	1.32	0.77	27.01	19.14	1.20
8600	22.85	28.86	18.37	15.61	1.35	0.79	27.92	18.58	1.24
8800	22.75	29.19	17.29	16.02	1.41	0.82	27.46	18.48	1.36
9000	22.63	29.47	16.42	16.61	1.47	0.84	27.06	18.51	1.41
9200	22.49	29.74	15.72	17.39	1.53	0.86	26.86	17.80	1.56
9400	22.31	30.04	14.99	18.35	1.60	0.89	26.79	17.37	1.73
9600	22.09	30.44	14.31	19.15	1.70	0.91	27.46	17.19	1.83
9800	21.81	30.88	13.66	19.56	1.82	0.94	25.57	16.53	1.92
10000	21.48	31.29	12.98	19.18	1.95	0.96	26.56	16.48	2.13

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 = 6.25V, Id = 82mA @ 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)
10	21.19	27.68	10.44	14.65	1.14	0.86	29.15	20.47	8.86
100	22.77	25.75	31.56	17.49	1.05	0.48	32.57	23.19	1.39
200	22.84	25.71	34.55	18.33	1.05	0.47	29.47	23.25	1.04
300	22.85	25.68	34.35	18.78	1.04	0.47	30.81	23.28	1.01
400	22.86	25.67	33.07	19.02	1.04	0.47	31.73	23.27	0.99
500	22.86	25.68	32.09	19.15	1.05	0.48	30.72	23.27	0.93
1000	22.87	25.77	25.40	20.85	1.05	0.50	35.34	23.30	0.92
1200	22.88	25.81	23.22	21.68	1.05	0.51	32.63	23.34	0.95
1400	22.88	25.86	21.35	22.22	1.06	0.52	32.51	23.32	0.92
1600	22.88	25.94	19.69	22.43	1.06	0.53	30.94	23.26	0.92
1800	22.87	25.97	18.33	22.16	1.06	0.54	30.77	23.24	0.94
2000	22.87	26.03	17.14	21.55	1.06	0.55	31.18	23.18	0.97
2200	22.85	26.15	16.10	20.74	1.07	0.56	34.08	23.28	0.97
2400	22.84	26.20	15.24	19.89	1.07	0.57	31.38	23.04	1.00
2600	22.82	26.25	14.61	19.16	1.07	0.58	29.96	22.77	0.97
2800	22.82	26.34	14.08	18.63	1.07	0.59	29.95	22.70	1.03
3000	22.81	26.40	13.73	18.20	1.07	0.60	30.20	22.28	1.01
3200	22.81	26.49	13.48	17.98	1.08	0.61	31.69	22.12	0.99
3400	22.80	26.55	13.33	17.78	1.08	0.61	30.03	22.05	1.06
3600	22.79	26.60	13.27	17.66	1.08	0.62	30.66	22.03	1.05
3800	22.80	26.67	13.27	17.68	1.09	0.63	30.11	22.49	1.11
4000	22.80	26.76	13.38	17.79	1.09	0.64	31.10	22.43	1.09
4200	22.81	26.85	13.54	18.00	1.10	0.65	31.04	22.55	1.11
4400	22.81	26.86	13.83	18.20	1.10	0.65	29.49	22.49	1.13
4600	22.83	26.92	14.11	18.47	1.10	0.66	29.56	22.34	1.12
4800	22.86	26.98	14.47	18.69	1.11	0.66	30.55	22.51	1.20
5000	22.89	27.07	14.88	18.89	1.11	0.67	30.80	22.34	1.17
5200	22.94	27.10	15.35	19.01	1.11	0.67	29.21	22.27	1.15
5400	22.97	27.18	15.86	19.08	1.12	0.68	29.97	21.98	1.17
5600	23.02	27.21	16.51	19.10	1.12	0.68	29.46	21.77	1.22
5800	23.06	27.28	17.26	19.12	1.12	0.68	29.21	21.77	1.18
6000	23.10	27.31	18.16	19.10	1.13	0.68	30.09	21.90	1.16
6200	23.14	27.38	19.31	18.79	1.13	0.68	29.37	21.74	1.12
6400	23.17	27.50	20.56	18.54	1.14	0.69	29.64	21.70	1.13
6600	23.19	27.61	22.28	18.03	1.15	0.69	29.02	21.88	1.19
6800	23.22	27.65	24.93	17.40	1.16	0.69	30.14	21.72	1.21
7000	23.26	27.78	28.78	16.77	1.17	0.69	27.84	21.59	1.11
7200	23.27	27.81	34.48	16.29	1.18	0.69	28.84	21.59	1.16
7400	23.26	27.91	40.72	15.94	1.19	0.70	28.92	21.34	1.07
7600	23.24	28.03	31.93	15.58	1.21	0.71	28.65	20.95	1.16
7800	23.22	28.25	26.68	15.21	1.23	0.72	29.03	20.87	1.17
8000	23.18	28.46	23.63	15.00	1.26	0.74	27.72	20.39	1.17
8200	23.12	28.62	21.35	14.94	1.29	0.75	27.41	19.86	1.18
8400	23.07	28.91	19.63	14.85	1.33	0.77	28.00	19.54	1.24
8600	22.99	29.11	18.42	15.10	1.37	0.79	27.38	18.94	1.35
8800	22.89	29.30	17.36	15.49	1.41	0.81	27.06	18.86	1.33
9000	22.78	29.65	16.51	16.06	1.47	0.84	26.56	18.91	1.49
9200	22.64	29.89	15.84	16.76	1.53	0.86	26.75	18.18	1.59
9400	22.47	30.20	15.13	17.61	1.60	0.88	26.77	17.75	1.75
9600	22.26	30.61	14.45	18.36	1.70	0.91	25.97	17.57	1.87
9800	21.99	31.02	13.82	18.81	1.81	0.93	25.38	16.90	1.99
10000	21.68	31.37	13.16	18.63	1.93	0.95	25.97	16.87	2.10

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 = 5.75V, Id = 73mA @ 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)
10	21.43	27.97	10.37	14.21	1.13	0.86	27.48	18.56	8.41
100	23.03	26.02	31.19	15.66	1.04	0.47	29.11	21.26	0.93
200	23.14	25.83	34.00	16.68	1.04	0.44	32.57	21.28	0.71
300	23.17	25.90	35.38	17.12	1.04	0.45	33.38	21.29	0.70
400	23.18	25.71	34.52	17.25	1.03	0.43	32.67	21.30	0.69
500	23.17	25.82	34.35	17.39	1.04	0.45	27.90	21.32	0.67
1000	23.20	25.90	28.31	18.87	1.04	0.47	31.67	21.32	0.72
1200	23.21	25.95	25.68	19.83	1.04	0.48	32.24	21.31	0.68
1400	23.22	25.99	23.52	20.82	1.05	0.49	32.21	21.26	0.56
1600	23.23	25.96	21.39	21.67	1.04	0.49	29.78	21.08	0.58
1800	23.24	26.06	19.77	22.21	1.05	0.50	33.22	21.03	0.60
2000	23.24	26.11	18.38	22.02	1.05	0.51	35.44	20.94	0.64
2200	23.23	26.13	17.24	21.39	1.05	0.52	30.29	20.98	0.60
2400	23.22	26.21	16.43	20.56	1.05	0.53	30.60	20.71	0.67
2600	23.22	26.28	15.82	19.80	1.05	0.54	31.11	20.31	0.65
2800	23.23	26.34	15.32	19.25	1.05	0.54	30.14	20.18	0.61
3000	23.23	26.39	14.95	18.68	1.06	0.55	30.50	19.67	0.63
3200	23.24	26.48	14.68	18.41	1.06	0.56	30.60	19.29	0.69
3400	23.24	26.54	14.58	18.16	1.06	0.56	30.34	18.96	0.61
3600	23.25	26.58	14.46	17.96	1.06	0.57	28.39	18.84	0.68
3800	23.25	26.67	14.43	17.85	1.06	0.58	29.35	19.51	0.68
4000	23.27	26.74	14.49	17.82	1.07	0.59	30.75	19.38	0.74
4200	23.27	26.77	14.65	17.98	1.07	0.59	29.50	19.56	0.74
4400	23.28	26.78	14.96	18.08	1.07	0.59	30.51	19.56	0.74
4600	23.30	26.91	15.27	18.24	1.07	0.61	28.36	19.67	0.74
4800	23.34	26.95	15.59	18.28	1.07	0.61	29.10	20.10	0.78
5000	23.39	26.99	15.92	18.37	1.07	0.61	28.24	20.12	0.74
5200	23.43	27.02	16.41	18.31	1.07	0.61	28.37	20.46	0.74
5400	23.49	27.13	16.79	18.27	1.08	0.62	28.47	20.16	0.76
5600	23.54	27.14	17.29	18.16	1.07	0.62	27.89	20.07	0.79
5800	23.59	27.21	17.87	17.97	1.08	0.62	28.58	20.31	0.75
6000	23.65	27.21	18.44	17.66	1.07	0.62	28.50	20.59	0.79
6200	23.72	27.28	19.26	17.13	1.07	0.62	28.50	20.31	0.62
6400	23.77	27.31	19.84	16.79	1.07	0.61	28.52	20.22	0.64
6600	23.81	27.39	20.93	16.25	1.08	0.62	28.77	20.44	0.68
6800	23.85	27.47	22.13	15.51	1.08	0.61	27.62	20.15	0.66
7000	23.90	27.51	23.20	14.76	1.08	0.60	28.66	19.96	0.71
7200	23.95	27.61	23.62	14.10	1.08	0.60	26.90	19.97	0.66
7400	23.97	27.72	23.70	13.57	1.09	0.60	28.00	19.74	0.64
7600	23.99	27.82	23.16	13.03	1.10	0.60	26.92	19.41	0.65
7800	24.04	27.98	21.81	12.46	1.11	0.60	27.76	19.40	0.65
8000	24.06	28.02	20.78	12.14	1.11	0.60	27.44	19.03	0.65
8200	24.05	28.19	20.42	12.13	1.13	0.61	26.78	18.63	0.63
8400	24.07	28.29	19.69	12.01	1.14	0.62	26.52	18.45	0.70
8600	24.09	28.36	19.16	12.13	1.15	0.62	26.06	18.00	0.74
8800	24.11	28.54	18.43	12.21	1.16	0.64	26.50	17.99	0.76
9000	24.10	28.73	17.86	12.39	1.19	0.66	26.44	18.12	0.80
9200	24.10	28.91	17.22	12.61	1.21	0.68	25.95	17.51	0.94
9400	24.09	29.19	16.66	12.84	1.24	0.70	26.09	17.14	0.99
9600	24.05	29.50	16.26	13.17	1.27	0.73	25.45	16.98	1.06
9800	23.98	29.72	15.85	13.62	1.31	0.76	24.21	16.34	1.17
10000	23.89	29.93	15.24	14.19	1.35	0.78	24.86	16.26	1.32

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 = 6.00V, Id = 81mA 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)
10	21.68	28.13	10.89	13.85	1.12	0.85	26.60	19.21	8.37
100	23.24	26.29	31.41	14.54	1.04	0.47	29.94	21.92	0.99
200	23.35	26.09	31.05	15.43	1.03	0.44	32.75	21.95	0.76
300	23.38	26.08	31.58	15.79	1.04	0.44	33.31	21.95	0.72
400	23.38	26.04	31.48	15.89	1.03	0.43	28.26	21.96	0.67
500	23.39	26.09	31.60	16.00	1.04	0.44	32.15	21.97	0.65
1000	23.41	26.16	31.16	17.25	1.04	0.46	31.53	21.94	0.62
1200	23.43	26.17	28.82	18.06	1.04	0.47	36.84	21.91	0.66
1400	23.45	26.18	26.28	18.90	1.04	0.48	31.09	21.84	0.56
1600	23.46	26.22	23.61	19.71	1.04	0.48	32.96	21.67	0.58
1800	23.47	26.27	21.66	20.34	1.05	0.50	32.68	21.61	0.67
2000	23.47	26.32	19.96	20.53	1.05	0.50	30.55	21.54	0.59
2200	23.47	26.39	18.63	20.35	1.05	0.52	30.33	21.62	0.64
2400	23.46	26.44	17.63	19.78	1.05	0.52	30.10	21.31	0.69
2600	23.46	26.52	16.94	19.26	1.05	0.53	29.77	20.98	0.61
2800	23.47	26.56	16.37	18.83	1.05	0.54	31.23	20.86	0.69
3000	23.46	26.63	15.93	18.30	1.06	0.54	29.21	20.42	0.70
3200	23.47	26.65	15.64	18.06	1.06	0.55	31.91	20.18	0.66
3400	23.47	26.72	15.48	17.79	1.06	0.55	30.13	19.99	0.68
3600	23.47	26.78	15.35	17.59	1.06	0.56	30.41	19.99	0.65
3800	23.48	26.88	15.31	17.41	1.06	0.57	29.90	20.53	0.73
4000	23.48	26.92	15.35	17.34	1.06	0.58	31.53	20.46	0.72
4200	23.48	26.98	15.52	17.42	1.07	0.59	29.13	20.66	0.72
4400	23.48	27.00	15.85	17.38	1.07	0.59	30.16	20.62	0.70
4600	23.50	27.05	16.21	17.44	1.07	0.60	28.10	20.69	0.72
4800	23.53	27.15	16.50	17.40	1.07	0.61	30.12	21.09	0.75
5000	23.57	27.20	16.89	17.42	1.07	0.61	29.46	21.04	0.73
5200	23.61	27.27	17.43	17.27	1.07	0.61	29.46	21.31	0.73
5400	23.66	27.24	17.79	17.18	1.07	0.61	29.24	20.98	0.75
5600	23.70	27.33	18.31	17.04	1.07	0.62	28.36	20.76	0.84
5800	23.74	27.40	18.89	16.83	1.07	0.62	28.73	20.93	0.77
6000	23.80	27.35	19.46	16.53	1.07	0.61	28.69	21.15	0.71
6200	23.86	27.43	20.21	16.09	1.07	0.61	28.24	20.83	0.60
6400	23.91	27.53	20.70	15.79	1.07	0.62	29.29	20.69	0.68
6600	23.93	27.58	21.63	15.36	1.08	0.61	27.95	20.90	0.67
6800	23.97	27.66	22.50	14.75	1.08	0.61	27.66	20.60	0.68
7000	24.01	27.75	23.09	14.07	1.08	0.61	29.86	20.41	0.64
7200	24.05	27.80	22.88	13.53	1.09	0.60	27.81	20.39	0.64
7400	24.07	27.88	22.48	13.05	1.09	0.60	28.00	20.17	0.62
7600	24.08	28.01	21.76	12.59	1.10	0.60	27.27	19.85	0.66
7800	24.12	28.13	20.44	12.06	1.11	0.60	28.73	19.83	0.71
8000	24.14	28.22	19.61	11.81	1.11	0.60	25.98	19.48	0.68
8200	24.12	28.28	19.31	11.83	1.13	0.61	27.06	19.08	0.66
8400	24.14	28.50	18.68	11.73	1.14	0.62	26.17	18.89	0.68
8600	24.16	28.53	18.27	11.87	1.15	0.63	25.99	18.44	0.64
8800	24.17	28.76	17.62	11.97	1.17	0.65	26.32	18.44	0.75
9000	24.16	28.94	17.17	12.17	1.19	0.67	25.88	18.58	0.84
9200	24.16	29.12	16.59	12.39	1.22	0.68	24.94	17.96	0.90
9400	24.14	29.33	16.09	12.64	1.24	0.71	24.80	17.61	0.96
9600	24.10	29.66	15.74	12.97	1.28	0.74	24.89	17.46	1.11
9800	24.02	29.83	15.38	13.40	1.31	0.76	24.34	16.80	1.16
10000	23.93	30.14	14.83	14.02	1.36	0.79	24.17	16.74	1.34

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 = 6.25V, Id = 89mA @ 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)
10	21.87	27.96	11.20	13.62	1.10	0.83	26.74	19.86	8.39
100	23.40	26.43	29.08	13.82	1.04	0.46	31.35	22.54	0.95
200	23.51	26.32	27.69	14.56	1.04	0.44	30.27	22.55	0.76
300	23.53	26.25	27.89	14.89	1.03	0.43	32.28	22.56	0.68
400	23.55	26.21	27.90	15.00	1.03	0.43	32.74	22.57	0.68
500	23.54	26.25	28.09	15.07	1.04	0.43	32.89	22.60	0.67
1000	23.58	26.30	30.50	16.19	1.04	0.45	35.24	22.56	0.67
1200	23.60	26.33	30.31	16.93	1.04	0.46	30.96	22.52	0.63
1400	23.61	26.36	28.31	17.68	1.04	0.47	35.63	22.44	0.57
1600	23.63	26.40	25.42	18.47	1.04	0.48	32.49	22.27	0.62
1800	23.64	26.43	23.23	19.13	1.05	0.49	30.76	22.24	0.65
2000	23.65	26.45	21.25	19.45	1.05	0.49	33.32	22.20	0.60
2200	23.65	26.54	19.76	19.43	1.05	0.51	30.89	22.27	0.64
2400	23.64	26.58	18.67	19.01	1.05	0.51	31.79	21.93	0.59
2600	23.64	26.64	17.88	18.64	1.05	0.52	29.92	21.60	0.59
2800	23.64	26.72	17.24	18.24	1.05	0.53	35.14	21.54	0.66
3000	23.64	26.76	16.75	17.77	1.05	0.54	31.62	21.16	0.59
3200	23.65	26.77	16.42	17.56	1.05	0.54	30.69	21.00	0.64
3400	23.65	26.86	16.23	17.27	1.06	0.55	30.72	20.88	0.67
3600	23.64	26.88	16.10	17.07	1.06	0.55	30.72	20.93	0.62
3800	23.64	26.97	16.03	16.90	1.06	0.56	29.10	21.41	0.68
4000	23.65	27.05	16.07	16.77	1.06	0.57	30.31	21.39	0.72
4200	23.64	27.12	16.27	16.80	1.07	0.58	29.51	21.61	0.72
4400	23.64	27.21	16.59	16.72	1.07	0.59	29.83	21.59	0.68
4600	23.65	27.19	16.96	16.72	1.07	0.59	29.99	21.61	0.73
4800	23.68	27.29	17.27	16.64	1.07	0.60	29.30	21.94	0.80
5000	23.71	27.33	17.65	16.58	1.07	0.60	29.02	21.86	0.74
5200	23.75	27.38	18.19	16.44	1.07	0.61	28.60	22.06	0.76
5400	23.79	27.40	18.56	16.34	1.07	0.61	29.00	21.68	0.77
5600	23.83	27.43	19.07	16.19	1.07	0.61	29.01	21.40	0.83
5800	23.87	27.51	19.60	15.98	1.07	0.61	28.28	21.54	0.74
6000	23.92	27.56	20.16	15.73	1.07	0.61	27.41	21.68	0.73
6200	23.97	27.63	20.82	15.32	1.07	0.61	28.28	21.36	0.76
6400	24.02	27.67	21.25	15.10	1.07	0.61	27.91	21.19	0.65
6600	24.04	27.70	22.05	14.71	1.07	0.61	28.63	21.36	0.71
6800	24.07	27.79	22.69	14.17	1.08	0.61	27.50	21.05	0.68
7000	24.11	27.89	22.89	13.59	1.08	0.61	28.29	20.84	0.72
7200	24.14	27.96	22.41	13.10	1.09	0.60	27.17	20.81	0.68
7400	24.15	27.99	21.80	12.70	1.09	0.60	28.11	20.59	0.69
7600	24.15	28.13	20.99	12.29	1.10	0.60	27.45	20.26	0.63
7800	24.19	28.31	19.76	11.82	1.11	0.60	26.51	20.25	0.69
8000	24.21	28.34	18.94	11.59	1.12	0.60	26.88	19.89	0.69
8200	24.18	28.40	18.66	11.62	1.13	0.61	25.99	19.49	0.67
8400	24.20	28.61	18.08	11.55	1.15	0.62	26.12	19.30	0.63
8600	24.21	28.67	17.69	11.71	1.16	0.63	25.60	18.84	0.72
8800	24.22	28.82	17.09	11.81	1.17	0.64	26.22	18.85	0.76
9000	24.21	29.10	16.69	12.04	1.20	0.67	25.43	19.00	0.79
9200	24.20	29.32	16.15	12.24	1.22	0.69	24.70	18.39	0.93
9400	24.18	29.57	15.67	12.48	1.25	0.72	24.74	18.04	0.98
9600	24.14	29.79	15.33	12.82	1.29	0.74	24.42	17.88	1.08
9800	24.06	30.08	15.01	13.25	1.33	0.77	23.08	17.24	1.24
10000	23.96	30.27	14.48	13.82	1.37	0.79	23.58	17.17	1.35

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 = 5.75V, 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)
10	19.99	26.69	8.62	13.26	1.14	0.86	24.80	18.03	9.37
100	21.73	24.58	18.36	26.72	1.04	0.50	28.73	21.34	1.81
200	21.78	24.52	18.81	31.01	1.04	0.49	31.82	21.54	1.45
300	21.79	24.55	18.67	33.59	1.04	0.49	30.85	21.71	1.39
400	21.79	24.62	18.33	35.38	1.05	0.50	31.77	21.74	1.27
500	21.79	24.59	18.07	35.87	1.05	0.50	31.64	21.76	1.30
1000	21.76	24.71	16.10	28.03	1.05	0.53	30.00	21.72	1.26
1200	21.74	24.78	15.27	25.06	1.05	0.54	30.33	21.65	1.28
1400	21.72	24.87	14.50	22.77	1.06	0.55	29.20	21.61	1.19
1600	21.70	24.97	13.76	20.87	1.06	0.56	29.33	21.41	1.29
1800	21.67	25.03	13.13	19.39	1.07	0.57	28.69	21.38	1.29
2000	21.66	25.13	12.55	18.14	1.07	0.58	28.65	21.37	1.35
2200	21.63	25.24	12.01	17.11	1.07	0.59	30.66	21.49	1.38
2400	21.61	25.34	11.57	16.34	1.08	0.60	30.46	21.27	1.26
2600	21.59	25.42	11.24	15.75	1.08	0.61	27.92	20.95	1.36
2800	21.58	25.50	10.99	15.37	1.08	0.62	28.39	20.86	1.36
3000	21.58	25.60	10.83	15.15	1.09	0.63	27.60	20.26	1.37
3200	21.59	25.69	10.72	15.06	1.09	0.64	28.49	19.94	1.43
3400	21.60	25.75	10.72	15.09	1.09	0.64	28.19	19.60	1.44
3600	21.61	25.82	10.77	15.22	1.10	0.65	28.26	19.35	1.43
3800	21.64	25.89	10.85	15.50	1.10	0.66	28.74	20.00	1.52
4000	21.67	25.92	11.00	15.90	1.10	0.66	27.78	19.71	1.51
4200	21.69	25.99	11.18	16.43	1.11	0.67	29.01	19.71	1.59
4400	21.72	26.06	11.40	17.00	1.11	0.68	27.37	19.69	1.51
4600	21.75	26.16	11.56	17.65	1.12	0.69	26.92	19.62	1.55
4800	21.80	26.22	11.73	18.28	1.12	0.70	28.39	20.00	1.59
5000	21.84	26.27	11.89	19.01	1.13	0.71	28.56	20.01	1.58
5200	21.89	26.32	12.06	19.76	1.13	0.71	28.64	20.13	1.59
5400	21.94	26.37	12.24	20.50	1.13	0.72	28.05	20.04	1.68
5600	21.99	26.48	12.48	21.32	1.14	0.73	27.39	20.00	1.64
5800	22.04	26.49	12.78	22.43	1.14	0.73	27.54	20.12	1.65
6000	22.09	26.63	13.15	23.68	1.15	0.74	28.53	20.25	1.63
6200	22.15	26.67	13.67	25.08	1.16	0.74	29.09	20.18	1.59
6400	22.19	26.79	14.17	26.49	1.17	0.75	28.72	20.22	1.59
6600	22.21	26.91	14.82	27.60	1.18	0.75	29.06	20.34	1.63
6800	22.25	26.97	15.60	27.32	1.19	0.76	29.16	20.26	1.62
7000	22.28	27.16	16.51	26.58	1.22	0.77	28.93	20.19	1.65
7200	22.28	27.30	17.24	25.52	1.24	0.78	29.47	20.21	1.66
7400	22.26	27.46	17.88	24.77	1.26	0.79	29.89	20.06	1.74
7600	22.24	27.62	18.16	24.30	1.29	0.80	28.67	19.83	1.69
7800	22.25	27.85	18.17	23.86	1.32	0.81	29.16	19.77	1.74
8000	22.28	27.94	17.98	23.60	1.34	0.82	29.36	19.41	1.68
8200	22.23	28.11	17.68	22.96	1.38	0.83	29.85	18.97	1.67
8400	22.22	28.39	16.77	23.18	1.42	0.85	29.22	18.70	1.72
8600	22.24	28.51	15.71	23.57	1.44	0.86	29.14	18.24	1.68
8800	22.15	28.69	14.90	23.54	1.48	0.88	28.81	18.16	1.75
9000	21.99	28.99	14.29	23.72	1.54	0.90	29.60	18.11	1.88
9200	21.79	29.28	13.64	23.59	1.61	0.92	28.55	17.35	1.93
9400	21.56	29.59	12.84	22.77	1.68	0.94	30.81	16.95	2.05
9600	21.26	29.96	12.06	20.99	1.77	0.96	28.40	16.69	2.21
9800	20.89	30.39	11.26	18.65	1.88	0.98	27.82	16.03	2.35
10000	20.45	30.97	10.41	16.47	2.03	1.00	27.88	16.00	2.57

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 = 6.00V, Id = 67mA @ 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)
10	20.38	27.05	9.21	13.86	1.15	0.86	25.43	18.44	9.33
100	22.04	24.88	20.60	23.55	1.04	0.49	30.13	21.67	1.78
200	22.10	24.83	21.22	25.66	1.04	0.48	30.19	21.87	1.46
300	22.10	24.77	21.02	26.86	1.04	0.48	30.77	22.02	1.35
400	22.10	24.86	20.61	27.75	1.04	0.49	30.56	22.07	1.27
500	22.10	24.91	20.21	28.57	1.05	0.50	30.16	22.09	1.26
1000	22.08	25.02	17.72	31.05	1.05	0.52	31.69	22.00	1.24
1200	22.07	25.05	16.71	28.45	1.05	0.53	31.84	21.89	1.27
1400	22.06	25.10	15.80	25.62	1.06	0.54	30.72	21.83	1.18
1600	22.05	25.20	14.92	23.21	1.06	0.55	29.54	21.61	1.30
1800	22.02	25.28	14.22	21.29	1.06	0.56	30.85	21.60	1.28
2000	22.01	25.38	13.53	19.74	1.07	0.57	30.35	21.61	1.29
2200	21.99	25.46	12.92	18.48	1.07	0.58	29.92	21.73	1.30
2400	21.97	25.58	12.42	17.53	1.08	0.59	28.62	21.40	1.29
2600	21.95	25.69	12.05	16.80	1.08	0.60	29.63	21.01	1.35
2800	21.94	25.72	11.76	16.32	1.08	0.61	29.41	20.99	1.37
3000	21.93	25.84	11.58	16.01	1.09	0.62	29.73	20.40	1.37
3200	21.94	25.88	11.47	15.86	1.09	0.62	29.44	20.21	1.37
3400	21.95	26.00	11.46	15.82	1.09	0.64	28.54	20.05	1.43
3600	21.96	26.05	11.50	15.90	1.10	0.64	28.87	19.94	1.44
3800	21.98	26.13	11.58	16.11	1.10	0.65	29.82	20.57	1.47
4000	22.00	26.21	11.74	16.45	1.10	0.66	28.03	20.31	1.50
4200	22.02	26.19	11.95	16.92	1.10	0.66	29.58	20.32	1.50
4400	22.04	26.28	12.17	17.40	1.11	0.68	28.02	20.30	1.51
4600	22.06	26.38	12.34	18.00	1.12	0.69	29.87	20.15	1.54
4800	22.10	26.43	12.52	18.57	1.12	0.69	28.85	20.49	1.57
5000	22.14	26.50	12.68	19.17	1.12	0.70	28.50	20.47	1.55
5200	22.18	26.56	12.86	19.82	1.13	0.71	29.38	20.56	1.59
5400	22.22	26.64	13.05	20.41	1.13	0.71	28.65	20.43	1.60
5600	22.26	26.68	13.31	21.05	1.14	0.72	28.78	20.34	1.62
5800	22.30	26.78	13.64	21.84	1.15	0.72	29.51	20.45	1.65
6000	22.34	26.85	14.06	22.72	1.15	0.73	29.16	20.54	1.64
6200	22.39	26.96	14.61	23.37	1.16	0.74	30.40	20.49	1.59
6400	22.41	27.09	15.17	24.04	1.18	0.74	30.25	20.53	1.57
6600	22.43	27.14	15.89	24.21	1.19	0.75	30.02	20.64	1.61
6800	22.45	27.26	16.79	23.74	1.20	0.75	29.30	20.58	1.61
7000	22.47	27.44	17.78	23.22	1.23	0.76	29.11	20.52	1.61
7200	22.46	27.52	18.62	22.63	1.24	0.77	28.97	20.54	1.66
7400	22.44	27.77	19.33	22.23	1.28	0.79	31.01	20.41	1.71
7600	22.41	27.92	19.58	22.04	1.31	0.80	29.32	20.18	1.71
7800	22.42	28.06	19.49	21.86	1.33	0.81	31.51	20.14	1.78
8000	22.45	28.22	19.14	21.70	1.36	0.82	30.43	19.83	1.69
8200	22.39	28.48	18.66	21.33	1.41	0.84	28.74	19.41	1.71
8400	22.39	28.66	17.49	21.63	1.44	0.85	29.69	19.18	1.71
8600	22.41	28.76	16.25	22.03	1.45	0.86	28.08	18.74	1.69
8800	22.31	29.00	15.34	22.02	1.50	0.88	29.87	18.66	1.70
9000	22.16	29.38	14.64	22.24	1.57	0.90	29.64	18.62	1.82
9200	21.97	29.61	13.95	22.34	1.64	0.92	28.58	17.84	1.97
9400	21.75	29.92	13.13	22.01	1.71	0.94	29.29	17.44	2.07
9600	21.46	30.28	12.32	20.72	1.80	0.96	28.72	17.18	2.23
9800	21.11	30.63	11.52	18.73	1.90	0.98	27.34	16.51	2.33
10000	20.69	31.12	10.67	16.68	2.03	0.99	28.18	16.49	2.52

Typical Performance Data

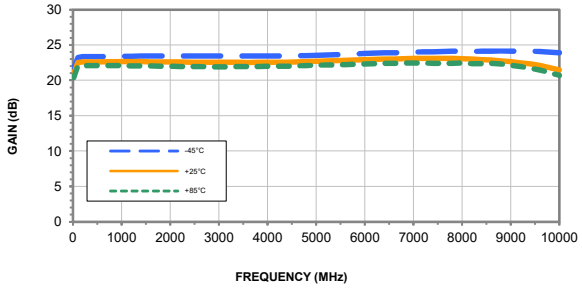
Definitions:
Input Return Loss = -S11 (dB)
Gain(Power Gain) = S21 (dB)
Reverse Isolation = -S12 (dB)
Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 6.25V, Id = 75mA @ Temperature = +85°C

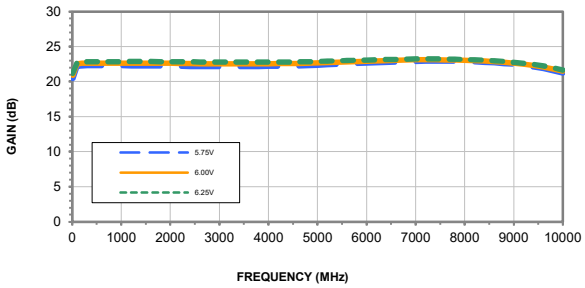
FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
10	20.68	26.96	9.63	14.19	1.12	0.84	25.28	18.79	9.29
100	22.29	25.10	23.01	21.20	1.04	0.48	29.55	21.98	1.84
200	22.35	25.12	23.80	22.47	1.04	0.48	30.16	22.18	1.48
300	22.35	25.06	23.49	23.19	1.04	0.48	30.79	22.32	1.30
400	22.35	25.13	22.95	23.80	1.04	0.49	29.96	22.37	1.27
500	22.35	25.08	22.44	24.34	1.04	0.49	30.28	22.39	1.30
1000	22.34	25.25	19.28	28.13	1.05	0.52	30.66	22.28	1.27
1200	22.33	25.28	18.07	28.36	1.05	0.53	31.06	22.16	1.26
1400	22.32	25.35	17.03	26.72	1.06	0.54	33.02	22.10	1.18
1600	22.31	25.43	16.02	24.54	1.06	0.55	31.62	21.86	1.29
1800	22.29	25.53	15.18	22.54	1.06	0.56	31.24	21.86	1.28
2000	22.28	25.58	14.42	20.86	1.07	0.57	31.03	21.89	1.23
2200	22.26	25.67	13.75	19.44	1.07	0.58	32.01	22.01	1.27
2400	22.25	25.75	13.18	18.33	1.07	0.59	30.07	21.66	1.29
2600	22.23	25.87	12.77	17.53	1.08	0.60	29.83	21.28	1.30
2800	22.22	25.92	12.44	16.96	1.08	0.60	31.20	21.29	1.40
3000	22.21	25.99	12.23	16.55	1.08	0.61	32.76	20.76	1.34
3200	22.22	26.09	12.11	16.34	1.09	0.62	29.31	20.65	1.37
3400	22.22	26.15	12.08	16.23	1.09	0.63	30.23	20.62	1.39
3600	22.22	26.22	12.13	16.24	1.09	0.64	28.89	20.60	1.42
3800	22.24	26.27	12.21	16.37	1.09	0.64	29.57	21.13	1.45
4000	22.26	26.36	12.39	16.63	1.10	0.65	29.45	20.92	1.49
4200	22.27	26.46	12.59	17.01	1.11	0.66	29.37	20.92	1.53
4400	22.28	26.47	12.83	17.41	1.11	0.67	28.08	20.86	1.47
4600	22.31	26.51	13.02	17.87	1.11	0.68	29.08	20.69	1.53
4800	22.34	26.61	13.20	18.37	1.12	0.69	29.90	20.96	1.52
5000	22.37	26.69	13.36	18.83	1.12	0.69	30.19	20.90	1.59
5200	22.40	26.74	13.53	19.34	1.13	0.70	30.06	20.96	1.54
5400	22.43	26.80	13.74	19.76	1.13	0.70	30.65	20.79	1.57
5600	22.47	26.91	14.01	20.24	1.14	0.71	28.92	20.65	1.65
5800	22.51	27.00	14.36	20.75	1.15	0.72	30.82	20.75	1.68
6000	22.54	27.09	14.78	21.34	1.16	0.73	28.84	20.80	1.61
6200	22.58	27.14	15.39	21.67	1.16	0.73	29.36	20.76	1.54
6400	22.59	27.25	16.00	21.93	1.18	0.74	29.95	20.81	1.56
6600	22.60	27.41	16.79	21.98	1.20	0.75	30.19	20.91	1.57
6800	22.61	27.49	17.80	21.61	1.21	0.75	28.92	20.86	1.61
7000	22.63	27.65	18.91	21.20	1.23	0.76	29.54	20.82	1.65
7200	22.61	27.78	19.85	20.80	1.25	0.77	28.27	20.84	1.67
7400	22.58	27.98	20.66	20.63	1.29	0.78	29.64	20.74	1.63
7600	22.55	28.16	20.89	20.54	1.32	0.80	28.69	20.50	1.73
7800	22.57	28.36	20.66	20.47	1.35	0.81	29.31	20.47	1.75
8000	22.59	28.45	20.16	20.36	1.37	0.82	28.60	20.21	1.75
8200	22.52	28.74	19.47	20.12	1.42	0.83	28.13	19.84	1.69
8400	22.54	28.89	18.06	20.55	1.45	0.85	28.41	19.64	1.76
8600	22.56	29.01	16.67	20.86	1.47	0.86	28.34	19.23	1.65
8800	22.46	29.26	15.66	20.89	1.52	0.88	28.53	19.14	1.74
9000	22.31	29.57	14.89	21.13	1.58	0.90	28.52	19.12	1.80
9200	22.13	29.84	14.18	21.30	1.65	0.91	26.87	18.36	1.96
9400	21.92	30.07	13.34	21.17	1.71	0.93	27.33	17.95	2.10
9600	21.64	30.46	12.51	20.27	1.80	0.95	27.04	17.70	2.21
9800	21.30	30.82	11.71	18.56	1.90	0.97	27.46	17.00	2.38
10000	20.89	31.21	10.84	16.70	2.01	0.99	26.75	17.01	2.47

Typical Performance Curves

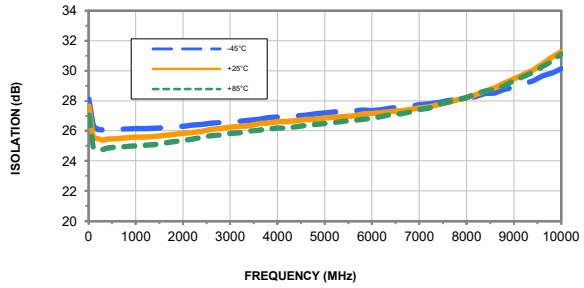
GAIN vs. FREQUENCY & TEMPERATURE
INPUT POWER = -25.00dBm, Vd = 6.00V



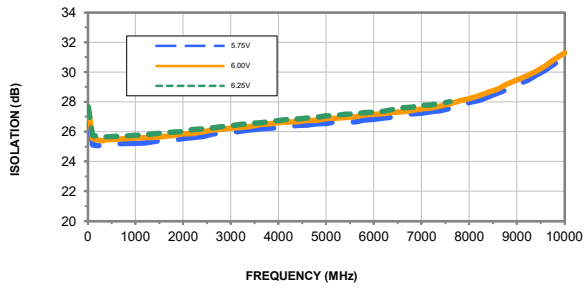
GAIN vs. FREQUENCY & DEVICE VOLTAGE
INPUT POWER = -25.00dBm, Temperature = +25°C



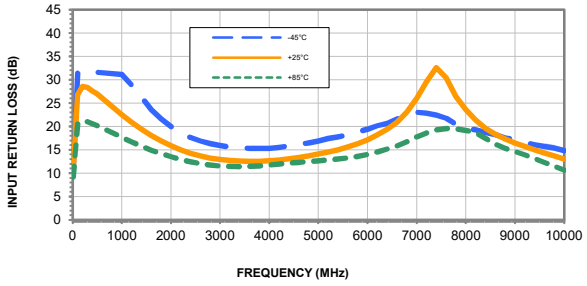
ISOLATION vs. FREQUENCY & TEMPERATURE
INPUT POWER = -25.00dBm, Vd = 6.00V



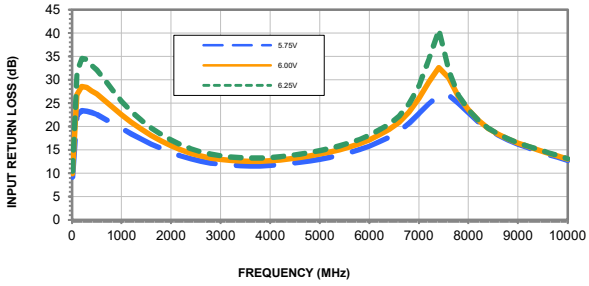
ISOLATION vs. FREQUENCY & DEVICE VOLTAGE
INPUT POWER = -25.00dBm, Temperature = +25°C



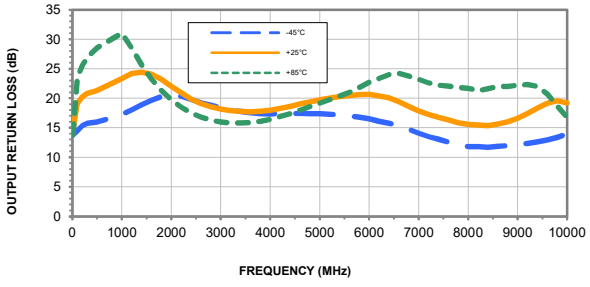
INPUT RETURN LOSS vs. FREQ. & TEMP.
INPUT POWER = -25.00dBm, Vd = 6.00V



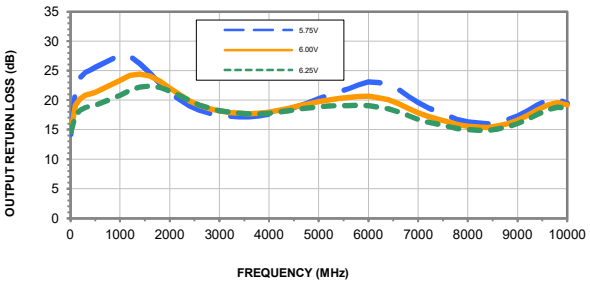
INPUT RETURN LOSS vs. FREQ. & DEVICE VOLTAGE
INPUT POWER = -25.00dBm, Temperature = +25°C



OUTPUT RETURN LOSS vs. FREQ. & TEMP.
INPUT POWER = -25.00dBm, Vd = 6.00V

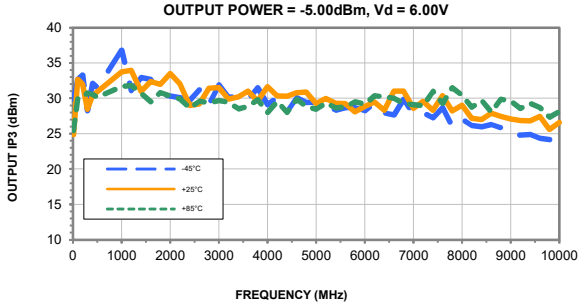


OUTPUT RETURN LOSS vs. FREQ. & DEVICE VOLTAGE
INPUT POWER = -25.00dBm, Temperature = +25°C

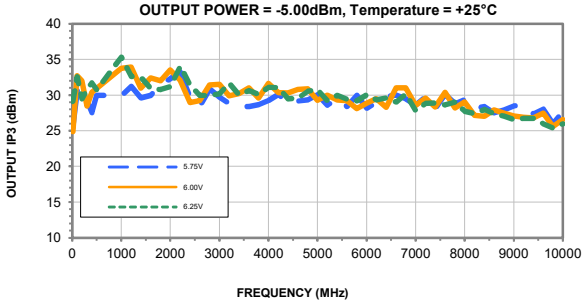


Typical Performance Curves

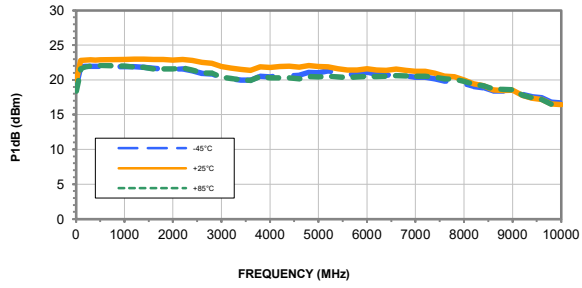
OUTPUT IP3 vs. FREQUENCY & TEMPERATURE
OUTPUT POWER = -5.00dBm, Vd = 6.00V



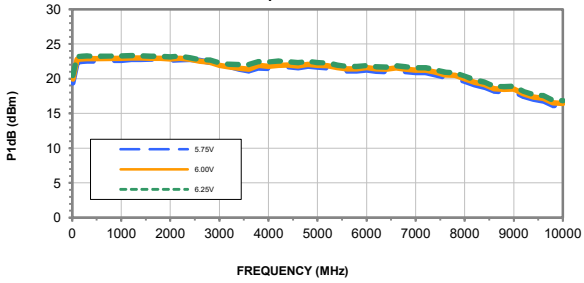
OUTPUT IP3 vs. FREQUENCY & DEVICE VOLTAGE
OUTPUT POWER = -5.00dBm, Temperature = +25°C



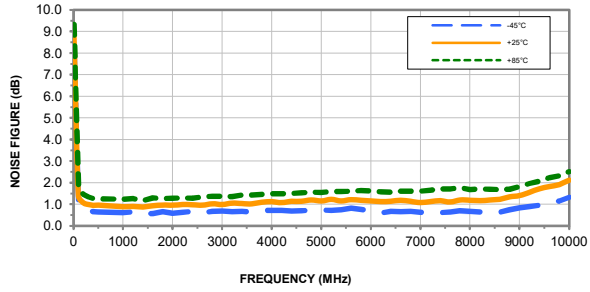
P1dB vs. FREQUENCY & TEMPERATURE
Vd = 6.00V



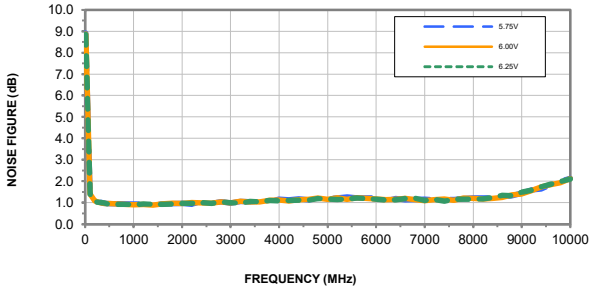
P1dB vs. FREQUENCY & DEVICE VOLTAGE
Temperature = +25°C



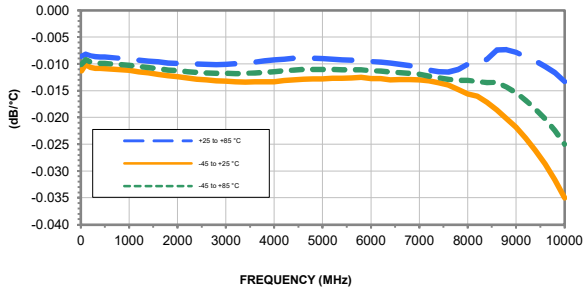
NOISE FIGURE vs. FREQUENCY & TEMPERATURE
Vd = 6.00V



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



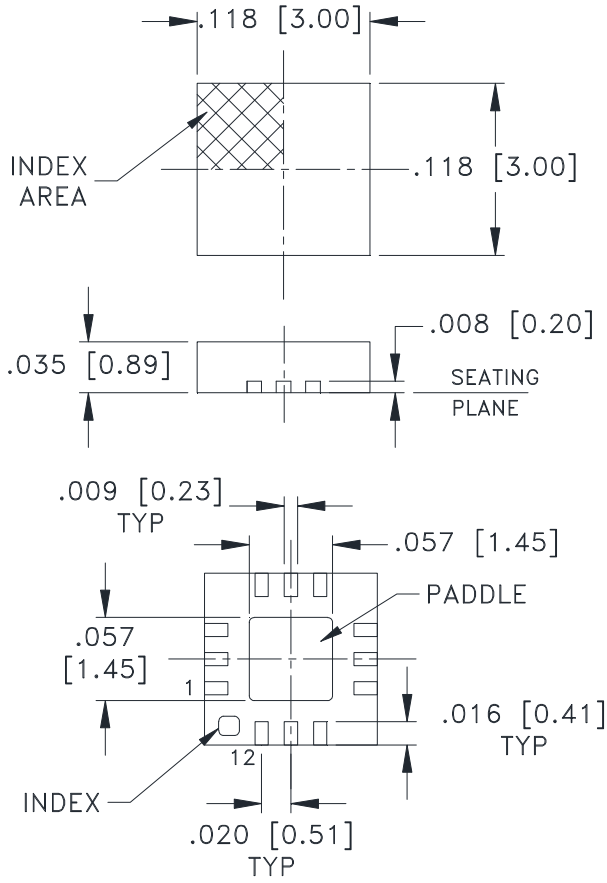
GAIN VARIANTS VS FREQUENCY & TEMPERATURE
INPUT POWER = -25.00dBm, Vd = 6.00V

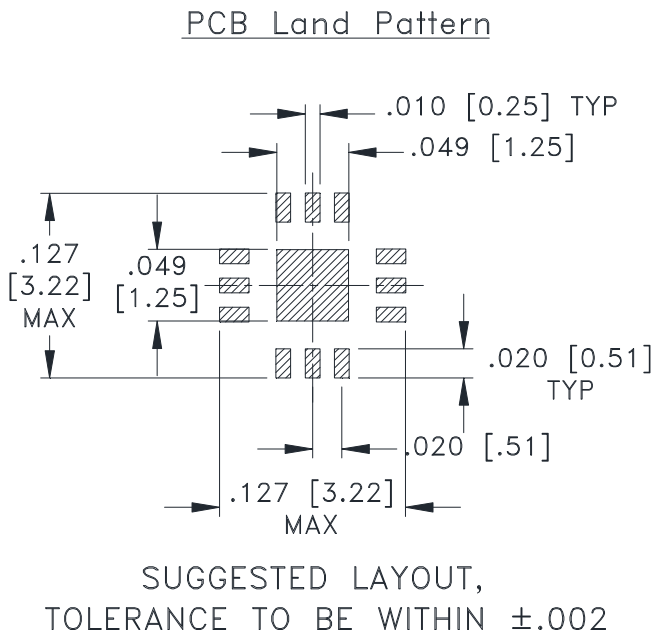


Case Style DQ

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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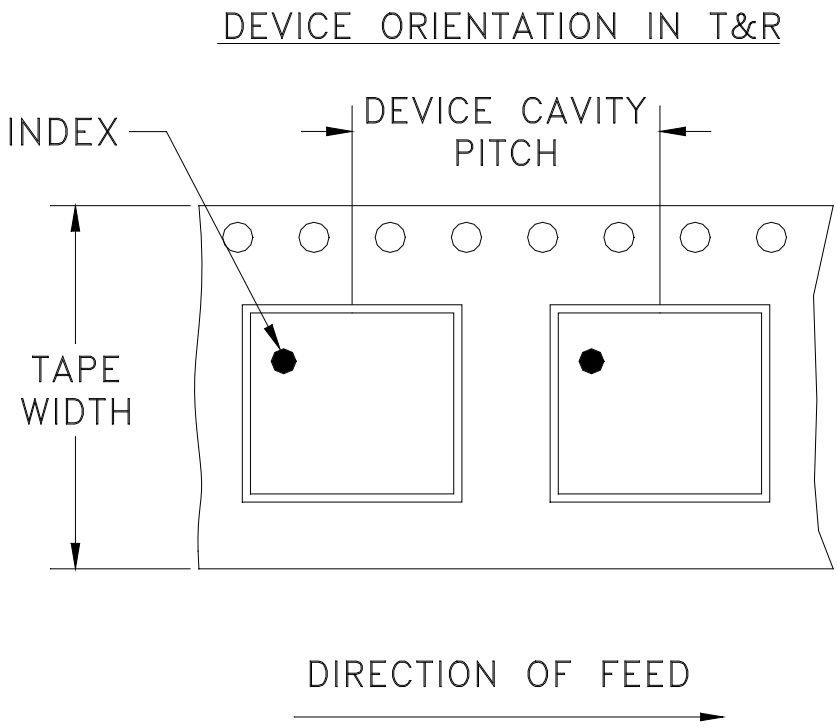
Tape & Reel Packaging TR-F66



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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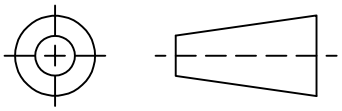
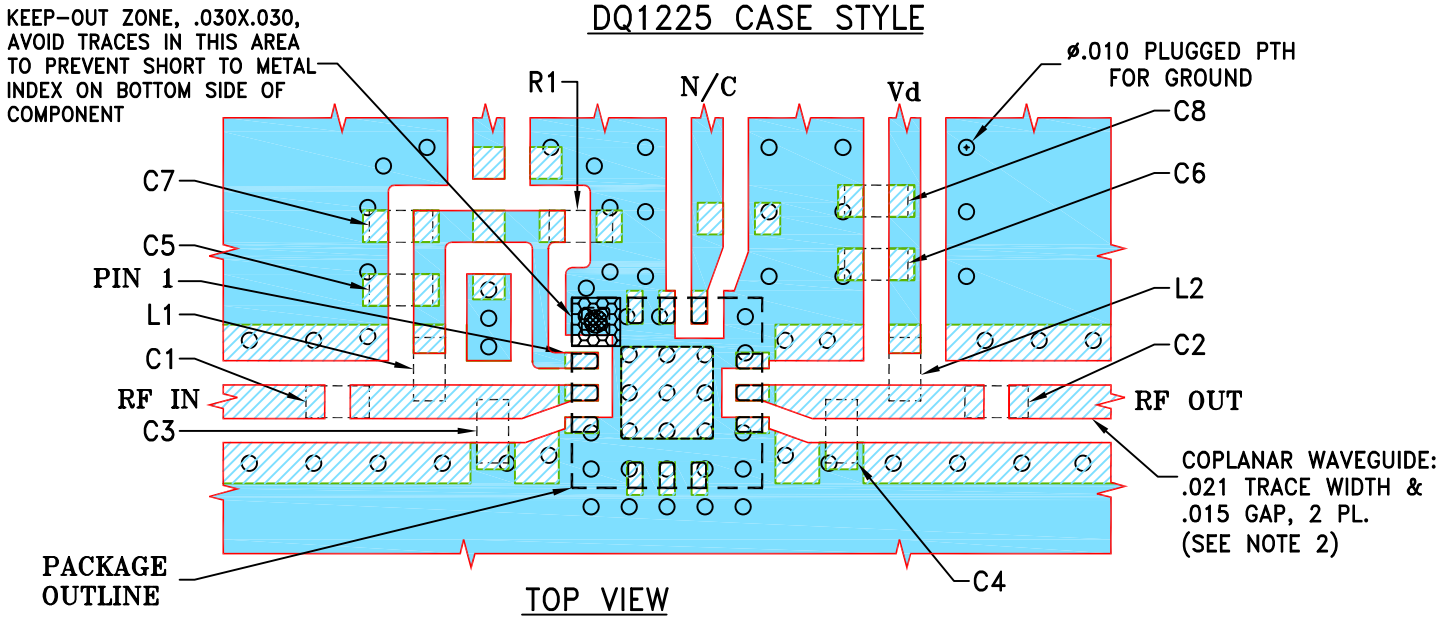
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	ECO-011385	NEW RELEASE	01/14/22	ITG	IL
A	ECO-018630	ADDED INDEX PIN	07/24/23	ITG	CT
B	ECO-019376	ADDED KEEP-OUT ZONE	09/29/23	ITG	IL

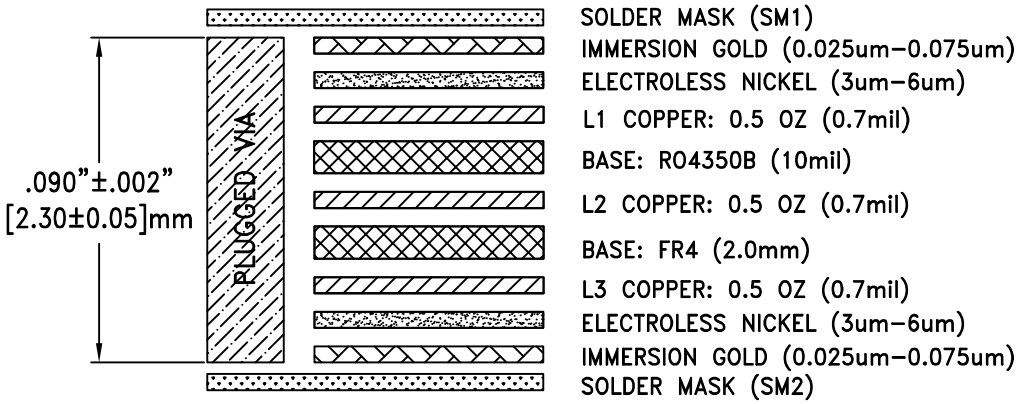
SUGGESTED MOUNTING CONFIGURATION FOR DQ1225 CASE STYLE



TOP VIEW

COMPONENT	SIZE
C1...C8	0402
L1,L2	0402
R1	0402

3 LAYER STACK-UP DIAGRAM



NOTES:

1. PCB IS MULTILAYER PCB, SEE STACK-UP DIAGRAM.
2. TRACE WIDTH & GAP PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010"±.001"; COPPER: 1/2 OZ. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
3. CHIP COMPONENT FOOT PRINTS SHOWN FOR REFERENCE. FOR COMPONENT VALUES REFER TO TB-PMA3-14LN+ OR TB-TSS-14LN+.
4. COPPER LAYERS L2 & L3 OF THE PCB ARE CONTINUOUS GROUND PLANES.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	ITG	01/13/22
TOLERANCES ON:	CHECKED	GF	01/13/22
2 PL DECIMALS ±	APPROVED	IL	01/13/22
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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

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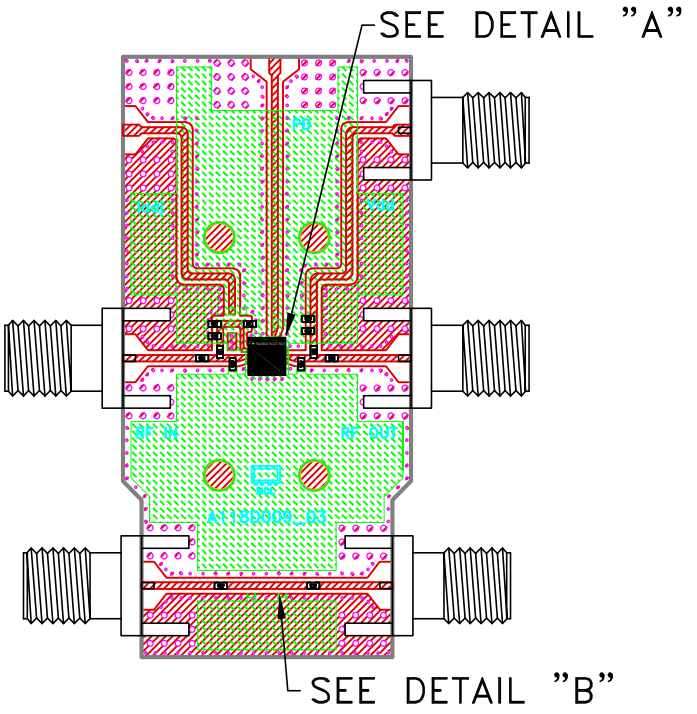
13 Neptune Avenue
Brooklyn NY 11235

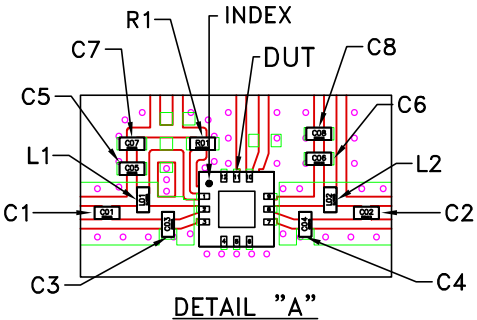
PL, DQ1225, TB-PMA3(TSS)-14LN+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-725	B

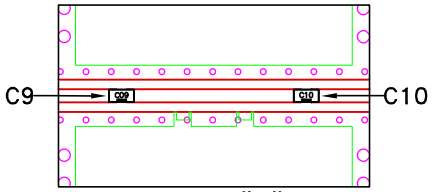
FILE:	SCALE:	SHEET:
98PL725	8:1	1 OF 1

Evaluation Board and Circuit

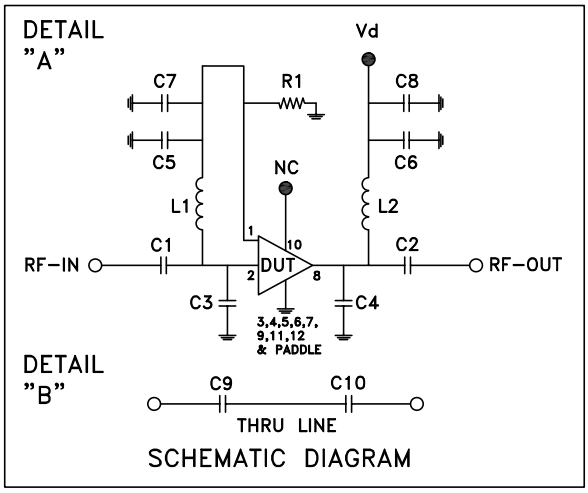




DETAIL "A"
LOCATION OF INTERCONNECTOR
AND UNITS COMPONENTS
(SCALE 3:1)



DETAIL "B"
LOCATION OF INTERCONNECTOR
AND UNITS COMPONENTS
(SCALE 3:1)



SCHEMATIC DIAGRAM

COMPONENTS	SIZE	VALUE	MANUFACTURER	PART NUMBER
C1,C2,C9,C10	0402	0.01 uF	Murata	GRM155R71H103KA88D
C3		0.2 pF		GJM1555C1HR20WB01D
C4		0.1 pF		GJM1555C1HR10WB01D
C5,C6		100 pF		GRM1555C1H101JA01D
C7,C8		0.1 uF		GRM155R71H104KE14J
L1,L2		900 nH	Coilcraft	0402DF-901XJRU
R1		510 Ω	KOA Speer	RK73H1ETTP5100F

Notes:

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

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Environmental Specifications **ENV08T1**

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

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

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

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