

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 = 3.9V, Id = 33.77 mA @ Temperature = +25degC

FREQ (MHz)	Gain (dB)	Isolation (dB)	Input Return Loss (dB)	Output Return Loss (dB)	Stability		IP-3 Output (dBm)	1dB Comp. Output (dBm)	Noise Figure (dB)
					K	Measure			
200	4.46	45.30	1.75	2.32	7.36	0.69	9.45	1.65	5.54
300	14.54	41.54	2.22	5.87	2.97	1.22	19.87	9.06	4.13
400	19.14	41.31	3.56	9.76	3.04	1.32	23.26	12.24	3.51
500	21.26	42.74	5.44	14.49	4.03	1.25	24.20	13.17	3.58
600	22.27	43.43	7.49	20.63	4.66	1.17	24.79	13.35	3.08
700	22.75	43.95	9.49	23.64	5.11	1.10	24.60	13.19	3.06
800	23.06	44.49	11.44	19.41	5.48	1.05	24.16	12.88	3.08
900	23.06	43.34	13.40	18.26	4.92	1.02	23.46	12.40	2.98
1000	23.09	42.78	15.08	16.61	4.65	0.99	23.30	12.20	2.99
1100	23.05	41.91	16.76	15.81	4.26	0.98	23.15	12.08	2.99
1200	22.97	41.28	18.32	15.29	4.02	0.96	23.19	11.96	2.97
1300	22.84	40.52	19.70	14.86	3.75	0.96	22.56	11.70	2.91
1400	22.69	40.10	20.91	14.48	3.63	0.95	22.26	11.43	2.91
1500	22.49	39.77	22.12	14.18	3.58	0.94	22.27	11.40	2.93
1600	22.32	39.10	22.07	14.32	3.39	0.94	22.02	11.30	2.99
1700	22.06	38.60	22.75	14.17	3.30	0.94	21.56	10.93	2.96
1800	21.81	38.51	22.60	13.99	3.35	0.94	21.42	10.73	3.03
1900	21.53	37.80	22.12	13.96	3.20	0.94	20.93	10.41	3.01
2000	21.23	37.56	22.15	13.68	3.21	0.93	20.94	10.42	3.04
2100	20.91	37.26	21.05	13.84	3.22	0.94	20.94	10.37	2.97
2200	20.55	37.17	20.09	14.17	3.32	0.94	20.69	10.18	3.01
2300	20.19	36.45	19.57	14.06	3.19	0.94	20.43	9.94	3.02
2400	19.81	36.40	18.67	14.18	3.30	0.95	20.37	9.81	2.93
2500	19.43	36.46	17.30	14.41	3.46	0.95	19.85	9.43	3.05
2600	19.07	35.88	16.78	14.27	3.36	0.95	19.99	9.46	3.10
2700	18.59	35.68	15.77	14.63	3.46	0.96	19.95	9.35	3.15
2800	18.17	35.62	14.89	14.56	3.58	0.97	19.68	9.06	3.14
2900	17.72	35.96	14.01	15.17	3.90	0.98	19.45	9.03	3.23
3000	17.30	35.26	13.30	14.83	3.75	0.99	19.32	8.71	3.21
3100	16.92	34.63	12.76	14.69	3.62	0.99	19.37	8.83	3.24
3200	16.45	34.78	11.96	15.19	3.85	1.01	18.61	8.60	3.35
3300	16.05	34.47	11.45	15.07	3.86	1.01	18.68	8.50	3.24
3400	15.50	34.61	10.70	15.94	4.13	1.04	18.59	8.33	3.43
3500	15.12	34.21	10.33	15.66	4.08	1.04	18.25	8.13	3.45
3600	14.79	33.87	9.98	15.38	4.03	1.04	18.29	7.87	3.52
3700	14.31	33.67	9.52	15.92	4.12	1.06	17.99	7.86	3.55
3800	13.86	33.94	8.96	16.08	4.40	1.08	18.01	7.58	3.67
3900	13.37	33.66	8.65	16.15	4.45	1.09	17.52	7.41	3.70
4000	12.92	34.20	8.02	16.10	4.85	1.11	17.50	7.25	3.83
4100	12.66	35.13	7.48	15.33	5.39	1.13	17.18	7.24	3.87
4200	12.23	33.82	7.12	15.94	4.82	1.15	17.09	7.05	3.89
4300	11.90	33.37	6.94	15.97	4.71	1.15	17.10	6.86	4.02
4400	11.48	32.73	6.64	16.36	4.52	1.17	16.53	6.72	4.12
4500	11.23	33.35	6.34	16.09	4.88	1.19	16.52	6.55	4.21
4600	10.86	33.04	6.14	16.23	4.85	1.20	16.52	6.43	4.30
4700	10.49	33.45	5.89	16.33	5.19	1.22	16.04	6.19	4.39
4800	10.10	32.82	5.76	16.16	5.00	1.22	15.93	5.97	4.51
4900	9.72	32.35	5.55	16.62	4.87	1.24	15.61	5.78	4.62
5000	9.33	31.87	5.20	16.66	4.65	1.26	14.92	5.39	4.83
5100	8.89	32.10	5.15	16.58	4.99	1.27	14.88	5.19	4.95
5200	8.47	33.22	4.76	16.38	5.69	1.30	14.47	4.84	5.17
5300	8.04	35.03	4.79	15.69	7.34	1.29	13.93	4.41	5.17
5400	7.40	34.05	4.58	15.35	6.86	1.30	13.48	4.08	5.44
5500	6.91	36.20	4.45	13.43	8.97	1.29	13.43	3.98	5.74



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 = 2.8V, Id =32.63 mA @ Temperature = +25degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
					K	Measure			
(MHz)	(dB)	(dB)	(dB)	(dB)			(dBm)	(dBm)	(dB)
200	4.21	45.11	1.79	2.39	7.68	0.71	9.05	1.18	5.63
300	14.09	42.07	2.28	5.93	3.45	1.21	18.47	8.14	4.18
400	18.54	41.78	3.66	9.71	3.52	1.30	21.58	10.79	3.56
500	20.54	42.91	5.61	14.33	4.53	1.24	22.53	11.71	3.65
600	21.47	44.30	7.72	20.87	5.71	1.16	22.89	11.89	3.15
700	21.88	44.13	9.78	34.56	5.83	1.10	22.77	11.79	3.15
800	22.12	43.78	11.75	26.61	5.69	1.06	22.43	11.60	3.12
900	22.09	42.28	13.70	23.33	4.94	1.03	22.05	11.38	3.04
1000	22.07	41.84	15.38	20.64	4.75	1.01	21.78	11.17	3.02
1100	21.98	40.67	17.04	19.31	4.24	0.99	21.74	11.08	3.03
1200	21.85	40.13	18.57	18.30	4.06	0.98	21.76	10.95	3.04
1300	21.69	39.41	19.87	17.72	3.82	0.97	21.22	10.76	2.97
1400	21.51	38.61	20.96	17.17	3.57	0.97	20.96	10.45	2.98
1500	21.28	38.45	22.05	16.81	3.59	0.96	20.98	10.43	3.00
1600	21.07	37.70	22.04	16.80	3.38	0.96	20.69	10.33	3.03
1700	20.79	37.35	22.56	16.56	3.35	0.96	20.28	10.01	3.01
1800	20.52	36.83	22.42	16.27	3.26	0.96	20.15	9.80	3.12
1900	20.23	36.49	21.99	16.19	3.24	0.95	19.77	9.54	3.11
2000	19.92	36.02	21.95	15.93	3.18	0.95	19.78	9.48	3.09
2100	19.60	35.72	20.92	15.90	3.18	0.95	19.68	9.51	3.04
2200	19.25	35.67	20.02	16.23	3.29	0.96	19.45	9.22	3.08
2300	18.89	35.13	19.47	16.08	3.22	0.96	19.25	8.95	3.11
2400	18.53	35.03	18.63	16.26	3.31	0.96	19.12	8.85	3.05
2500	18.15	35.01	17.38	16.45	3.43	0.97	18.74	8.57	3.16
2600	17.81	34.18	16.83	16.31	3.24	0.97	18.79	8.46	3.19
2700	17.35	34.27	15.84	16.88	3.44	0.98	18.72	8.37	3.25
2800	16.95	34.05	14.97	16.75	3.49	0.98	18.48	8.10	3.26
2900	16.52	34.32	14.11	17.24	3.75	1.00	18.23	8.00	3.36
3000	16.12	33.81	13.40	17.26	3.68	1.00	18.09	7.78	3.31
3100	15.77	33.07	12.83	17.16	3.51	1.00	18.11	7.76	3.35
3200	15.32	33.21	12.06	17.73	3.71	1.02	17.38	7.61	3.47
3300	14.93	32.91	11.54	17.63	3.72	1.03	17.34	7.55	3.42
3400	14.41	33.11	10.79	18.46	3.98	1.05	17.27	7.35	3.54
3500	14.05	32.66	10.42	18.49	3.91	1.05	17.00	7.19	3.55
3600	13.73	32.33	10.06	18.34	3.88	1.06	16.94	6.82	3.67
3700	13.26	32.25	9.59	19.00	4.01	1.07	16.68	6.91	3.74
3800	12.82	32.47	9.03	19.26	4.24	1.09	16.65	6.74	3.82
3900	12.35	32.38	8.68	19.21	4.38	1.10	16.20	6.42	3.89
4000	11.92	32.88	8.06	19.04	4.74	1.13	16.16	6.28	4.02
4100	11.67	33.55	7.52	18.31	5.13	1.15	15.92	6.21	4.03
4200	11.26	32.40	7.16	18.78	4.64	1.16	15.77	6.09	4.07
4300	10.95	31.91	6.96	18.48	4.49	1.17	15.74	5.81	4.20
4400	10.54	31.41	6.68	18.80	4.38	1.18	15.27	5.55	4.28
4500	10.28	31.75	6.38	18.89	4.59	1.20	15.21	5.64	4.41
4600	9.92	31.76	6.20	18.96	4.73	1.21	15.18	5.39	4.52
4700	9.55	31.94	5.93	19.09	4.93	1.23	14.70	5.32	4.63
4800	9.18	31.57	5.79	18.40	4.87	1.23	14.60	4.98	4.74
4900	8.80	31.10	5.60	18.61	4.75	1.24	14.30	4.72	4.84
5000	8.43	30.73	5.25	18.79	4.60	1.27	13.73	4.37	5.02
5100	8.01	31.04	5.20	18.51	4.97	1.27	13.62	4.25	5.15
5200	7.60	32.14	4.81	18.22	5.65	1.30	13.23	3.86	5.33
5300	7.18	33.46	4.83	17.34	6.87	1.30	12.75	3.51	5.39
5400	6.56	32.86	4.63	17.04	6.71	1.31	12.39	3.01	5.65
5500	6.08	34.59	4.49	15.06	8.39	1.31	12.22	2.93	5.98



MMIC Amplifier

MNA-5W+

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 = 34.20 mA @ Temperature = +25degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
					K	Measure			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
200	4.51	45.20	1.74	2.27	7.12	0.68	9.55	1.77	5.52
300	14.69	41.33	2.21	5.83	2.82	1.21	20.40	9.39	4.11
400	19.37	41.08	3.53	9.77	2.85	1.32	23.83	12.65	3.49
500	21.56	42.07	5.38	14.33	3.57	1.25	24.82	13.55	3.53
600	22.63	43.27	7.41	18.91	4.36	1.17	25.49	13.76	3.08
700	23.15	44.12	9.40	19.26	4.93	1.09	25.35	13.59	3.05
800	23.50	45.18	11.35	16.27	5.56	1.04	24.77	13.29	3.06
900	23.54	43.91	13.38	15.52	4.92	1.00	24.12	12.73	3.20
1000	23.59	43.54	15.09	14.28	4.71	0.98	23.91	12.55	2.96
1100	23.58	43.07	16.86	13.68	4.50	0.96	23.78	12.44	2.96
1200	23.53	42.34	18.57	13.29	4.18	0.95	23.79	12.35	2.94
1300	23.43	41.44	20.08	12.96	3.82	0.94	23.11	12.00	2.90
1400	23.31	41.01	21.43	12.65	3.69	0.93	22.84	11.76	2.89
1500	23.13	40.70	22.88	12.43	3.63	0.93	22.79	11.68	2.92
1600	22.98	40.21	22.86	12.58	3.50	0.93	22.59	11.65	2.94
1700	22.73	39.76	23.60	12.50	3.42	0.92	22.09	11.29	2.90
1800	22.48	39.25	23.56	12.39	3.32	0.92	21.92	11.13	3.01
1900	22.21	39.10	23.00	12.39	3.37	0.92	21.38	10.75	3.01
2000	21.91	38.67	23.06	12.14	3.31	0.92	21.45	10.74	3.01
2100	21.59	38.52	21.77	12.33	3.37	0.92	21.37	10.74	2.94
2200	21.22	38.54	20.68	12.67	3.53	0.93	21.19	10.55	2.96
2300	20.85	37.76	20.08	12.59	3.37	0.93	20.90	10.24	2.98
2400	20.46	37.64	19.14	12.71	3.47	0.93	20.85	10.17	2.96
2500	20.05	37.81	17.58	12.93	3.70	0.94	20.27	9.85	3.04
2600	19.68	37.23	17.01	12.85	3.60	0.94	20.45	9.81	3.05
2700	19.18	36.93	15.89	13.08	3.68	0.95	20.44	9.73	3.11
2800	18.74	36.71	14.98	13.05	3.74	0.95	20.16	9.50	3.11
2900	18.27	37.34	14.02	13.69	4.23	0.97	19.97	9.38	3.19
3000	17.82	36.67	13.31	13.26	4.08	0.97	19.81	9.14	3.17
3100	17.43	35.86	12.75	13.09	3.87	0.97	19.89	9.24	3.20
3200	16.93	36.12	11.90	13.52	4.18	0.99	19.16	8.90	3.27
3300	16.51	35.86	11.38	13.43	4.21	1.00	19.29	8.93	3.21
3400	15.93	35.94	10.59	14.22	4.49	1.03	19.16	8.66	3.38
3500	15.54	35.37	10.22	13.83	4.36	1.03	18.80	8.47	3.37
3600	15.21	34.94	9.85	13.54	4.27	1.03	18.89	8.29	3.47
3700	14.70	34.90	9.38	14.00	4.45	1.05	18.59	8.24	3.51
3800	14.24	35.08	8.83	14.10	4.70	1.07	18.63	8.09	3.60
3900	13.74	34.50	8.51	14.20	4.61	1.08	18.12	7.82	3.64
4000	13.27	35.23	7.88	14.21	5.13	1.10	18.11	7.70	3.78
4100	12.99	36.34	7.36	13.47	5.83	1.12	17.76	7.59	3.78
4200	12.54	35.10	7.00	14.03	5.26	1.14	17.66	7.54	3.85
4300	12.20	34.35	6.82	14.17	4.99	1.14	17.72	7.31	3.94
4400	11.77	33.74	6.52	14.47	4.80	1.16	17.08	7.14	4.04
4500	11.51	34.49	6.21	14.11	5.25	1.18	17.11	6.93	4.13
4600	11.13	33.94	6.02	14.22	5.08	1.19	17.14	6.94	4.24
4700	10.75	34.66	5.76	14.29	5.63	1.21	16.64	6.63	4.32
4800	10.35	33.83	5.64	14.30	5.32	1.21	16.53	6.33	4.46
4900	9.96	33.20	5.43	14.75	5.10	1.23	16.22	6.12	4.53
5000	9.56	32.77	5.07	14.74	4.88	1.26	15.46	5.70	4.73
5100	9.10	33.01	5.04	14.78	5.28	1.26	15.46	5.70	4.84
5200	8.66	34.18	4.65	14.62	6.04	1.29	15.06	5.16	5.06
5300	8.21	36.50	4.69	14.15	8.30	1.28	14.49	4.93	5.12
5400	7.55	35.02	4.47	13.85	7.33	1.30	13.97	4.27	5.37
5500	7.05	37.64	4.34	12.13	10.07	1.28	14.03	4.15	5.71



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IF/RF MICROWAVE COMPONENTS

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MMIC Amplifier

MNA-5W+

Typical Performance Data

Definitions:

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

TEST CONDITIONS: Vd = 3.9V, Id =32.60 mA @ Temperature = -45degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
					K	Measure			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
200	4.71	45.52	1.62	2.27	6.81	0.69	9.21	1.34	4.57
300	15.01	41.42	2.04	5.90	2.57	1.24	19.98	9.01	3.35
400	19.64	41.53	3.34	9.60	2.78	1.33	23.37	12.18	2.86
500	21.77	42.32	5.13	14.14	3.49	1.27	24.38	12.94	2.96
600	22.79	43.96	7.13	19.08	4.55	1.18	24.93	13.17	2.46
700	23.30	44.30	9.07	20.43	4.91	1.11	24.77	13.01	2.46
800	23.65	45.51	10.85	16.99	5.64	1.05	24.28	12.64	2.54
900	23.65	43.73	12.83	16.37	4.75	1.01	23.53	12.13	2.37
1000	23.69	43.49	14.40	14.94	4.64	0.99	23.29	11.94	2.40
1100	23.69	42.48	15.86	14.42	4.17	0.97	23.19	11.94	2.38
1200	23.64	42.01	17.19	14.15	3.99	0.96	23.25	11.85	2.39
1300	23.54	41.32	18.11	13.67	3.74	0.95	22.64	11.50	2.29
1400	23.42	40.59	18.73	13.31	3.49	0.94	22.35	11.29	2.30
1500	23.25	40.25	19.82	13.17	3.43	0.94	22.45	11.24	2.31
1600	23.12	39.73	19.86	13.32	3.29	0.94	22.16	11.21	2.34
1700	22.88	39.31	20.26	13.03	3.22	0.93	21.63	10.82	2.29
1800	22.64	38.98	20.12	12.86	3.18	0.93	21.49	10.65	2.40
1900	22.40	38.36	20.11	12.85	3.05	0.92	21.01	10.36	2.40
2000	22.14	38.16	20.48	12.60	3.06	0.92	21.06	10.39	2.41
2100	21.82	37.65	19.49	12.72	3.00	0.92	21.08	10.42	2.33
2200	21.46	37.58	18.53	13.23	3.11	0.93	20.86	10.28	2.35
2300	21.13	36.78	18.22	12.91	2.94	0.93	20.57	9.97	2.39
2400	20.78	36.62	17.77	12.90	3.00	0.93	20.50	9.86	2.32
2500	20.36	36.82	16.42	13.24	3.20	0.94	20.00	9.57	2.39
2600	20.03	36.27	16.15	13.00	3.12	0.94	20.06	9.54	2.45
2700	19.51	36.14	15.01	13.59	3.25	0.95	20.11	9.53	2.49
2800	19.12	35.93	14.41	13.26	3.29	0.95	19.82	9.24	2.52
2900	18.73	36.17	13.87	13.67	3.53	0.97	19.58	9.18	2.59
3000	18.23	35.97	12.84	13.73	3.61	0.98	19.49	8.89	2.55
3100	17.88	35.02	12.38	13.56	3.36	0.98	19.60	8.96	2.55
3200	17.42	34.99	11.64	13.93	3.50	0.99	18.81	8.67	2.62
3300	17.00	34.69	11.17	14.03	3.52	1.00	18.85	8.76	2.59
3400	16.47	34.82	10.48	14.67	3.75	1.02	18.82	8.47	2.69
3500	16.03	34.54	10.09	14.64	3.78	1.03	18.46	8.25	2.70
3600	15.71	34.27	9.78	14.32	3.77	1.04	18.54	8.08	2.80
3700	15.21	34.25	9.29	14.60	3.93	1.05	18.23	8.00	2.84
3800	14.77	34.67	8.82	14.62	4.25	1.07	18.25	7.87	2.93
3900	14.27	34.10	8.47	14.74	4.17	1.08	17.72	7.61	2.97
4000	13.82	35.00	7.79	14.71	4.71	1.11	17.78	7.52	3.10
4100	13.54	35.70	7.24	13.95	5.10	1.12	17.47	7.32	3.12
4200	13.17	34.07	6.92	14.54	4.38	1.14	17.38	7.33	3.13
4300	12.75	33.36	6.76	15.08	4.22	1.15	17.35	7.10	3.28
4400	12.37	33.68	6.32	15.13	4.43	1.18	16.82	6.79	3.38
4500	12.17	33.89	6.18	14.34	4.57	1.18	16.81	6.79	3.37
4600	11.76	32.96	6.10	14.77	4.29	1.18	16.80	6.66	3.47
4700	11.36	33.41	5.82	15.20	4.62	1.21	16.34	6.28	3.55
4800	10.99	32.66	5.77	14.81	4.42	1.21	16.22	6.20	3.63
4900	10.63	32.73	5.49	14.93	4.52	1.23	15.91	5.89	3.77
5000	10.29	31.85	5.16	15.05	4.11	1.25	15.33	5.54	3.90
5100	9.90	32.78	5.17	14.56	4.76	1.25	15.24	5.50	3.97
5200	9.61	34.15	4.73	14.29	5.44	1.28	14.82	4.99	4.11
5300	9.13	36.00	4.76	13.69	7.11	1.27	14.39	4.59	4.19
5400	8.48	33.44	4.49	13.89	5.54	1.29	13.81	4.20	4.42
5500	7.93	35.62	4.54	12.25	7.46	1.27	13.60	4.05	4.64



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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 = 2.8V, Id =31.82 mA @ Temperature = -45degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
					K	Measure			
(MHz)	(dB)	(dB)	(dB)	(dB)			(dBm)	(dBm)	(dB)
200	4.52	44.71	1.65	2.36	6.55	0.71	8.96	1.13	4.56
300	14.63	41.73	2.09	5.97	2.87	1.24	18.67	8.15	3.39
400	19.11	41.63	3.43	9.63	3.07	1.32	21.71	10.98	2.90
500	21.11	43.51	5.30	14.24	4.41	1.26	22.53	11.81	2.99
600	22.04	43.71	7.34	20.76	4.90	1.17	22.86	11.94	2.51
700	22.47	44.41	9.32	30.43	5.55	1.11	22.71	11.84	2.54
800	22.75	44.51	11.13	23.44	5.69	1.06	22.38	11.61	2.58
900	22.71	43.06	13.03	21.56	4.98	1.03	21.99	11.35	3.28
1000	22.71	42.30	14.59	19.29	4.62	1.01	21.69	11.15	2.40
1100	22.66	41.33	16.04	18.44	4.20	0.99	21.68	11.12	2.41
1200	22.56	40.66	17.27	17.74	3.96	0.98	21.73	11.05	2.40
1300	22.41	39.90	18.13	17.00	3.70	0.97	21.24	10.85	2.32
1400	22.25	39.31	18.66	16.51	3.52	0.97	20.97	10.62	2.33
1500	22.04	38.96	19.54	16.27	3.47	0.96	20.98	10.60	2.38
1600	21.87	38.22	19.55	16.24	3.26	0.96	20.79	10.48	2.33
1700	21.61	37.58	19.86	15.85	3.12	0.95	20.33	10.19	2.34
1800	21.36	37.34	19.62	15.53	3.12	0.95	20.22	10.04	2.47
1900	21.09	36.89	19.50	15.53	3.06	0.95	19.91	9.82	2.44
2000	20.82	36.55	19.80	15.19	3.03	0.95	19.95	9.78	2.47
2100	20.50	36.02	18.96	15.22	2.96	0.95	19.87	9.76	2.38
2200	20.15	36.00	18.07	15.69	3.07	0.96	19.67	9.60	2.40
2300	19.82	35.50	17.72	15.28	3.00	0.95	19.46	9.30	2.42
2400	19.48	34.98	17.27	15.21	2.94	0.95	19.35	9.24	2.36
2500	19.08	35.01	16.10	15.63	3.07	0.96	19.00	8.98	2.44
2600	18.77	34.61	15.77	15.31	3.03	0.96	19.00	8.94	2.49
2700	18.28	34.52	14.79	16.12	3.16	0.98	18.95	8.82	2.55
2800	17.92	34.26	14.19	15.78	3.18	0.98	18.76	8.60	2.58
2900	17.53	34.43	13.62	16.11	3.37	0.99	18.47	8.49	2.67
3000	17.06	34.18	12.65	16.51	3.42	1.00	18.36	8.22	2.62
3100	16.74	33.43	12.25	16.37	3.25	1.00	18.44	8.30	2.61
3200	16.31	33.33	11.55	16.83	3.34	1.02	17.66	8.05	2.73
3300	15.91	33.05	11.08	16.85	3.36	1.03	17.60	8.03	2.66
3400	15.42	33.18	10.42	17.55	3.56	1.04	17.58	7.78	2.82
3500	15.00	33.01	10.01	17.83	3.63	1.06	17.31	7.61	2.81
3600	14.68	32.65	9.70	17.52	3.58	1.06	17.26	7.33	2.91
3700	14.22	32.73	9.24	17.97	3.75	1.08	17.01	7.29	2.95
3800	13.81	32.86	8.82	18.04	3.94	1.09	16.96	7.27	3.07
3900	13.30	32.46	8.40	18.13	3.92	1.11	16.50	6.93	3.06
4000	12.90	33.23	7.79	18.09	4.35	1.13	16.49	6.87	3.24
4100	12.62	33.90	7.28	17.12	4.72	1.15	16.27	6.63	3.22
4200	12.25	32.50	6.93	17.57	4.14	1.16	16.14	6.62	3.24
4300	11.85	31.80	6.72	17.96	3.96	1.17	16.06	6.37	3.40
4400	11.53	32.00	6.30	18.14	4.08	1.20	15.64	6.08	3.48
4500	11.30	32.05	6.19	17.40	4.17	1.20	15.59	6.05	3.54
4600	10.87	31.51	6.08	17.81	4.09	1.21	15.51	5.85	3.63
4700	10.55	31.77	5.84	18.32	4.29	1.22	15.08	5.75	3.72
4800	10.17	31.32	5.72	17.39	4.21	1.23	14.99	5.43	3.79
4900	9.83	31.29	5.43	17.51	4.25	1.25	14.67	5.11	3.91
5000	9.49	30.55	5.11	17.96	3.94	1.27	14.16	4.82	4.13
5100	9.12	31.46	5.18	17.18	4.56	1.26	14.06	4.70	4.17
5200	8.83	32.42	4.82	17.07	5.05	1.29	13.64	4.31	4.29
5300	8.39	33.72	4.80	15.96	6.12	1.29	13.25	4.02	4.35
5400	7.78	31.86	4.50	16.24	5.12	1.31	12.80	3.47	4.57
5500	7.20	33.60	4.56	14.42	6.62	1.29	12.46	3.33	4.76



MMIC Amplifier

MNA-5W+

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 = 33.01 mA @ Temperature = -45degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
					K	Measure			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
200	4.76	44.95	1.62	2.24	6.21	0.68	9.31	1.59	4.55
300	15.14	40.98	2.04	5.87	2.37	1.24	20.44	9.27	3.31
400	19.84	41.30	3.31	9.58	2.62	1.34	23.87	12.45	2.86
500	22.02	42.16	5.09	13.96	3.30	1.27	24.93	13.21	2.93
600	23.10	43.47	7.07	17.94	4.13	1.18	25.54	13.43	2.47
700	23.64	44.41	9.02	18.16	4.74	1.10	25.43	13.25	2.47
800	24.03	45.81	10.82	15.22	5.53	1.04	24.88	12.93	2.51
900	24.06	44.34	12.86	14.74	4.81	1.00	24.07	12.36	2.38
1000	24.13	44.10	14.52	13.51	4.68	0.97	23.83	12.19	2.38
1100	24.16	43.42	16.07	13.06	4.34	0.96	23.75	12.13	2.39
1200	24.14	42.74	17.48	12.84	4.05	0.94	23.77	12.05	2.38
1300	24.06	42.34	18.49	12.44	3.90	0.93	23.07	11.75	2.28
1400	23.97	41.58	19.20	12.17	3.62	0.93	22.85	11.48	2.28
1500	23.82	40.81	20.45	12.05	3.38	0.92	22.86	11.53	2.31
1600	23.71	40.79	20.56	12.24	3.42	0.92	22.61	11.47	2.31
1700	23.48	40.08	21.06	12.05	3.24	0.92	22.06	11.06	2.27
1800	23.25	39.91	20.94	11.90	3.25	0.91	21.89	10.93	2.42
1900	23.01	39.36	20.91	11.93	3.15	0.91	21.40	10.59	2.38
2000	22.75	39.06	21.32	11.70	3.12	0.91	21.47	10.64	2.38
2100	22.43	38.58	20.10	11.88	3.07	0.91	21.47	10.67	2.32
2200	22.07	38.84	19.08	12.41	3.31	0.93	21.31	10.53	2.35
2300	21.72	37.79	18.72	12.14	3.05	0.92	20.99	10.18	2.35
2400	21.35	37.56	18.11	12.11	3.09	0.92	20.93	10.14	2.31
2500	20.91	37.85	16.63	12.49	3.35	0.93	20.39	9.82	2.38
2600	20.56	37.36	16.25	12.27	3.29	0.93	20.50	9.78	2.41
2700	20.02	37.25	15.11	12.81	3.45	0.95	20.54	9.75	2.47
2800	19.62	36.95	14.46	12.49	3.46	0.95	20.25	9.45	2.45
2900	19.20	37.26	13.76	12.94	3.75	0.96	20.01	9.42	2.55
3000	18.68	36.94	12.79	12.95	3.79	0.97	19.87	9.07	2.49
3100	18.30	36.05	12.29	12.75	3.56	0.97	20.05	9.24	2.49
3200	17.82	36.02	11.50	13.06	3.71	0.99	19.26	8.99	2.59
3300	17.38	35.76	10.99	13.15	3.75	1.00	19.36	8.93	2.52
3400	16.82	36.10	10.28	13.80	4.11	1.02	19.31	8.74	2.67
3500	16.37	35.59	9.87	13.66	4.04	1.03	18.93	8.56	2.69
3600	16.04	35.28	9.53	13.32	4.00	1.03	19.06	8.35	2.74
3700	15.52	35.01	9.03	13.64	4.06	1.05	18.72	8.32	2.81
3800	15.08	35.48	8.56	13.66	4.42	1.07	18.76	8.20	2.85
3900	14.56	34.62	8.22	13.84	4.20	1.08	18.19	7.88	2.93
4000	14.09	35.56	7.55	13.88	4.78	1.11	18.27	7.82	3.06
4100	13.80	36.59	7.03	13.11	5.36	1.12	17.93	7.57	3.06
4200	13.40	35.06	6.72	13.69	4.67	1.14	17.86	7.52	3.09
4300	12.96	34.17	6.55	14.25	4.42	1.16	17.85	7.35	3.20
4400	12.56	34.44	6.12	14.19	4.61	1.18	17.28	7.10	3.28
4500	12.37	34.95	5.95	13.40	4.90	1.18	17.28	7.03	3.33
4600	11.95	33.75	5.86	13.84	4.47	1.19	17.29	6.90	3.41
4700	11.54	34.03	5.58	14.30	4.73	1.22	16.84	6.72	3.52
4800	11.16	33.32	5.54	14.09	4.55	1.21	16.73	6.39	3.56
4900	10.79	33.27	5.24	14.19	4.58	1.24	16.41	6.24	3.62
5000	10.44	32.38	4.94	14.33	4.16	1.26	15.77	5.84	3.85
5100	10.03	33.36	4.94	13.98	4.85	1.26	15.72	5.81	3.90
5200	9.71	34.87	4.52	13.76	5.65	1.29	15.25	5.28	4.05
5300	9.20	37.06	4.56	13.29	7.72	1.28	14.85	4.95	4.15
5400	8.53	33.76	4.28	13.75	5.53	1.31	14.21	4.37	4.35
5500	7.96	36.09	4.32	12.06	7.58	1.28	14.09	4.26	4.53



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MMIC Amplifier

MNA-5W+

Typical Performance Data

Definitions:

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

TEST CONDITIONS: Vd = 3.9V, Id = 34.12mA @ Temperature = +85degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
					K	Measure			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
200	4.18	44.61	1.88	2.34	7.44	0.69	9.43	1.46	6.25
300	14.08	41.36	2.42	5.82	3.30	1.19	19.64	8.82	4.67
400	18.64	41.26	3.75	9.83	3.33	1.30	23.05	12.15	4.03
500	20.77	42.25	5.61	14.81	4.10	1.24	24.08	13.14	4.17
600	21.80	43.57	7.71	21.18	5.06	1.16	24.65	13.37	3.62
700	22.29	43.46	9.76	24.02	5.14	1.09	24.54	13.23	3.58
800	22.55	44.22	11.85	19.76	5.67	1.04	24.06	12.93	3.49
900	22.59	43.04	13.91	17.73	5.04	1.01	23.43	12.43	3.44
1000	22.60	42.48	15.86	16.14	4.76	0.99	23.17	12.26	3.46
1100	22.55	41.54	17.85	15.25	4.32	0.97	23.13	12.15	3.48
1200	22.44	40.91	19.77	14.80	4.09	0.96	23.11	12.00	3.48
1300	22.29	40.33	21.68	14.32	3.89	0.95	22.49	11.72	3.39
1400	22.12	40.04	23.36	14.01	3.83	0.95	22.26	11.45	3.40
1500	21.91	39.68	25.10	13.77	3.77	0.94	22.18	11.32	3.43
1600	21.72	39.05	25.15	13.97	3.60	0.94	21.92	11.29	3.42
1700	21.46	38.43	25.85	13.82	3.46	0.94	21.51	10.95	3.41
1800	21.17	38.11	25.60	13.79	3.44	0.94	21.34	10.73	3.49
1900	20.88	37.91	24.87	13.77	3.47	0.94	20.84	10.41	3.52
2000	20.58	37.61	24.69	13.50	3.47	0.94	20.85	10.41	3.51
2100	20.23	37.19	23.03	13.99	3.45	0.94	20.83	10.36	3.46
2200	19.89	37.04	21.76	13.95	3.52	0.94	20.57	10.16	3.51
2300	19.50	36.83	20.96	14.02	3.59	0.94	20.31	9.81	3.50
2400	19.13	36.23	20.05	13.88	3.49	0.94	20.24	9.74	3.44
2500	18.73	36.33	18.40	14.15	3.68	0.95	19.72	9.43	3.56
2600	18.36	35.91	17.63	14.23	3.66	0.95	19.86	9.29	3.60
2700	17.89	35.78	16.53	14.50	3.79	0.96	19.78	9.26	3.66
2800	17.47	35.62	15.58	14.36	3.88	0.97	19.50	8.98	3.69
2900	17.01	36.13	14.53	14.75	4.30	0.98	19.27	8.82	3.77
3000	16.61	35.18	13.89	14.29	4.01	0.98	19.12	8.58	3.69
3100	16.21	34.83	13.16	14.35	4.01	0.99	19.11	8.65	3.77
3200	15.76	34.97	12.35	14.75	4.25	1.00	18.39	8.36	3.83
3300	15.36	34.31	11.80	14.60	4.10	1.01	18.49	8.34	3.79
3400	14.84	34.61	11.08	15.05	4.45	1.02	18.32	8.06	3.98
3500	14.43	34.45	10.57	15.04	4.53	1.03	18.00	7.85	3.97
3600	14.08	34.02	10.13	14.88	4.44	1.04	18.02	7.67	4.07
3700	13.59	33.69	9.66	15.62	4.48	1.06	17.71	7.64	4.11
3800	13.20	34.09	9.14	15.54	4.82	1.07	17.75	7.47	4.19
3900	12.70	33.88	8.72	15.53	4.91	1.09	17.28	7.22	4.27
4000	12.26	34.33	8.11	15.43	5.30	1.11	17.20	7.03	4.42
4100	11.98	35.31	7.61	14.90	5.96	1.12	16.94	6.91	4.44
4200	11.55	34.11	7.20	15.54	5.37	1.14	16.78	6.92	4.49
4300	11.18	33.05	7.03	16.07	4.95	1.15	16.83	6.60	4.58
4400	10.82	33.01	6.72	15.86	5.03	1.17	16.26	6.42	4.71
4500	10.56	33.55	6.44	15.54	5.41	1.18	16.22	6.30	4.82
4600	10.17	33.37	6.20	15.78	5.44	1.19	16.23	6.14	4.94
4700	9.78	33.61	5.83	16.16	5.69	1.22	15.71	6.03	5.03
4800	9.38	32.87	5.82	16.00	5.48	1.22	15.60	5.65	5.19
4900	9.00	32.64	5.53	16.30	5.43	1.24	15.32	5.39	5.26
5000	8.65	32.16	5.18	16.05	5.16	1.26	14.59	5.05	5.49
5100	8.12	33.00	5.15	15.81	6.01	1.26	14.50	4.84	5.60
5200	7.72	33.58	4.83	15.74	6.49	1.29	14.22	4.50	5.84
5300	7.13	35.35	4.74	15.48	8.38	1.29	13.50	4.14	5.96
5400	6.59	34.86	4.50	14.51	8.13	1.30	13.17	3.60	6.25
5500	6.22	36.00	4.49	12.62	9.47	1.28	13.40	3.55	6.58



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IF/RF MICROWAVE COMPONENTS

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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 = 2.8V, Id = 32.57 mA @ Temperature = +85degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
					K	Measure			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
200	3.93	45.25	1.92	2.39	8.52	0.70	8.96	0.63	6.30
300	13.66	41.73	2.46	5.87	3.71	1.19	18.19	7.79	4.72
400	18.08	42.13	3.84	9.79	4.02	1.29	21.34	10.56	4.11
500	20.10	42.67	5.75	14.72	4.71	1.23	22.30	11.57	4.30
600	21.05	43.36	7.88	21.79	5.43	1.15	22.76	11.76	3.65
700	21.47	43.16	9.98	39.28	5.50	1.09	22.63	11.68	3.62
800	21.67	42.94	12.08	25.33	5.47	1.05	22.34	11.51	3.56
900	21.67	41.85	14.09	21.54	4.93	1.02	21.93	11.28	3.50
1000	21.64	41.44	16.02	19.21	4.77	1.00	21.60	11.09	3.49
1100	21.55	40.44	17.90	18.04	4.34	0.98	21.59	10.97	3.53
1200	21.40	39.86	19.65	17.31	4.14	0.97	21.57	10.86	3.52
1300	21.22	39.23	21.33	16.73	3.94	0.97	21.04	10.64	3.45
1400	21.02	38.74	22.78	16.34	3.81	0.96	20.83	10.39	3.46
1500	20.78	38.31	24.21	16.05	3.73	0.96	20.79	10.31	3.50
1600	20.55	37.72	24.33	16.20	3.59	0.96	20.51	10.21	3.50
1700	20.27	37.17	24.92	15.97	3.48	0.95	20.12	9.92	3.50
1800	19.97	36.83	24.69	15.90	3.46	0.95	20.01	9.68	3.56
1900	19.67	36.60	24.10	15.83	3.49	0.95	19.58	9.45	3.58
2000	19.36	35.90	23.88	15.53	3.34	0.95	19.58	9.37	3.60
2100	19.01	35.78	22.45	15.95	3.42	0.96	19.52	9.29	3.54
2200	18.67	35.68	21.30	15.80	3.51	0.96	19.28	9.02	3.59
2300	18.29	35.12	20.61	15.81	3.44	0.96	19.04	8.76	3.60
2400	17.93	34.94	19.72	15.71	3.50	0.96	18.95	8.63	3.56
2500	17.54	35.01	18.27	15.98	3.67	0.97	18.55	8.38	3.65
2600	17.19	34.61	17.55	15.98	3.65	0.97	18.60	8.25	3.72
2700	16.74	34.24	16.47	16.42	3.67	0.98	18.51	8.17	3.76
2800	16.33	34.12	15.55	16.20	3.76	0.98	18.23	7.90	3.79
2900	15.89	34.54	14.56	16.50	4.12	0.99	18.01	7.75	3.86
3000	15.52	33.74	13.91	16.26	3.91	0.99	17.84	7.47	3.79
3100	15.14	33.33	13.17	16.39	3.87	1.00	17.84	7.49	3.85
3200	14.70	33.34	12.39	16.83	4.03	1.01	17.12	7.28	3.96
3300	14.32	33.02	11.85	16.62	4.03	1.02	17.11	7.24	3.92
3400	13.84	32.94	11.13	16.99	4.17	1.03	17.01	6.99	4.06
3500	13.44	32.97	10.64	17.39	4.34	1.05	16.74	6.91	4.08
3600	13.10	32.58	10.19	17.32	4.27	1.06	16.67	6.64	4.20
3700	12.62	32.41	9.71	18.13	4.38	1.07	16.41	6.53	4.28
3800	12.24	32.80	9.19	18.18	4.71	1.09	16.40	6.40	4.34
3900	11.76	32.60	8.75	18.08	4.78	1.10	15.95	6.15	4.43
4000	11.35	33.12	8.13	17.90	5.19	1.12	15.86	5.94	4.56
4100	11.07	33.77	7.63	17.52	5.63	1.14	15.64	5.93	4.59
4200	10.67	32.63	7.23	18.07	5.09	1.16	15.47	5.85	4.65
4300	10.31	31.87	7.07	18.29	4.83	1.16	15.48	5.57	4.81
4400	9.97	31.81	6.76	18.00	4.89	1.18	15.01	5.42	4.87
4500	9.69	32.21	6.49	17.90	5.19	1.19	14.92	5.27	4.98
4600	9.31	31.99	6.24	18.23	5.20	1.21	14.92	4.97	5.12
4700	8.92	32.25	5.88	18.77	5.45	1.23	14.40	4.78	5.23
4800	8.54	31.84	5.85	17.96	5.41	1.23	14.29	4.62	5.36
4900	8.17	31.56	5.56	18.09	5.35	1.25	14.02	4.48	5.47
5000	7.82	30.92	5.24	18.05	5.02	1.27	13.42	4.10	5.66
5100	7.32	31.84	5.19	17.46	5.85	1.27	13.29	3.89	5.82
5200	6.93	32.28	4.88	17.42	6.22	1.29	13.00	3.49	6.06
5300	6.36	33.71	4.79	16.98	7.71	1.30	12.39	2.98	6.15
5400	5.83	33.53	4.54	16.01	7.75	1.31	12.12	2.74	6.51
5500	5.46	34.63	4.54	13.96	9.03	1.29	12.22	2.78	6.77



MMIC Amplifier

MNA-5W+

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 = 34.91 mA @ Temperature = +85degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP-3 Output	1dB Comp. Output	Noise Figure
					K	Measure			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Measure	(dBm)	(dBm)	(dB)
200	4.26	44.39	1.87	2.29	7.04	0.68	9.65	1.61	6.21
300	14.26	40.96	2.39	5.78	3.03	1.19	20.28	9.35	4.62
400	18.90	40.86	3.71	9.82	3.05	1.30	23.75	12.73	4.01
500	21.10	41.99	5.54	14.61	3.80	1.24	24.74	13.60	4.15
600	22.18	42.95	7.60	19.22	4.47	1.16	25.43	13.87	3.60
700	22.71	43.76	9.65	19.39	5.01	1.09	25.28	13.66	3.53
800	23.01	44.45	11.74	16.56	5.45	1.03	24.85	13.39	3.49
900	23.08	43.62	13.85	15.16	5.02	1.00	24.06	12.82	4.10
1000	23.13	43.25	15.83	13.93	4.81	0.97	23.91	12.60	3.38
1100	23.10	42.69	17.90	13.24	4.55	0.95	23.77	12.51	3.45
1200	23.02	41.96	19.98	12.91	4.24	0.94	23.73	12.40	3.42
1300	22.90	41.21	22.03	12.52	3.94	0.93	23.06	12.05	3.36
1400	22.75	41.11	23.94	12.26	3.95	0.93	22.83	11.81	3.38
1500	22.56	40.74	25.99	12.05	3.86	0.92	22.74	11.74	3.37
1600	22.39	40.28	25.95	12.25	3.75	0.92	22.56	11.67	3.39
1700	22.14	39.52	26.88	12.12	3.54	0.92	22.10	11.37	3.37
1800	21.86	39.47	26.60	12.15	3.63	0.92	21.96	11.16	3.47
1900	21.58	39.07	25.72	12.14	3.59	0.92	21.40	10.80	3.48
2000	21.28	38.41	25.55	11.91	3.44	0.92	21.39	10.84	3.51
2100	20.92	38.53	23.60	12.39	3.64	0.92	21.39	10.79	3.43
2200	20.58	38.32	22.15	12.41	3.70	0.93	21.17	10.52	3.45
2300	20.17	38.01	21.25	12.51	3.74	0.93	20.90	10.27	3.46
2400	19.79	37.55	20.27	12.38	3.69	0.93	20.84	10.21	3.44
2500	19.37	37.71	18.49	12.66	3.94	0.94	20.25	9.87	3.53
2600	18.99	37.10	17.65	12.76	3.84	0.94	20.45	9.83	3.57
2700	18.50	37.03	16.51	12.95	4.01	0.95	20.39	9.70	3.63
2800	18.06	36.75	15.53	12.86	4.06	0.95	20.09	9.44	3.65
2900	17.57	37.44	14.44	13.27	4.61	0.97	19.90	9.32	3.72
3000	17.16	36.33	13.80	12.76	4.22	0.96	19.75	9.05	3.65
3100	16.74	36.02	13.05	12.78	4.25	0.97	19.74	9.11	3.68
3200	16.26	36.12	12.21	13.11	4.50	0.99	19.06	8.86	3.77
3300	15.84	35.62	11.68	13.00	4.42	0.99	19.20	8.87	3.74
3400	15.30	35.83	10.92	13.48	4.76	1.01	19.02	8.59	3.90
3500	14.87	35.54	10.43	13.30	4.78	1.02	18.67	8.48	3.89
3600	14.52	35.17	10.00	13.13	4.72	1.03	18.76	8.13	3.97
3700	14.01	34.67	9.52	13.75	4.69	1.05	18.44	8.12	4.04
3800	13.60	35.29	8.99	13.61	5.17	1.06	18.50	8.06	4.10
3900	13.09	34.89	8.57	13.62	5.16	1.07	18.00	7.79	4.18
4000	12.63	35.61	7.97	13.60	5.75	1.10	17.95	7.63	4.33
4100	12.33	36.31	7.49	13.03	6.27	1.11	17.63	7.46	4.35
4200	11.89	35.20	7.07	13.61	5.72	1.13	17.50	7.39	4.44
4300	11.51	34.05	6.91	14.12	5.23	1.14	17.60	7.17	4.55
4400	11.14	33.99	6.60	13.95	5.31	1.15	16.96	7.01	4.63
4500	10.87	34.66	6.33	13.61	5.78	1.17	16.95	6.91	4.71
4600	10.47	34.38	6.08	13.77	5.76	1.18	16.96	6.71	4.84
4700	10.07	34.94	5.72	14.01	6.23	1.21	16.46	6.40	4.94
4800	9.65	33.79	5.71	14.12	5.76	1.21	16.34	6.29	5.09
4900	9.28	33.70	5.42	14.40	5.80	1.23	16.07	6.04	5.19
5000	8.91	33.20	5.08	14.12	5.49	1.25	15.24	5.50	5.36
5100	8.36	33.87	5.05	14.09	6.30	1.25	15.22	5.46	5.54
5200	7.94	34.67	4.74	14.04	6.97	1.28	14.93	5.10	5.71
5300	7.34	36.63	4.66	13.93	9.24	1.28	14.17	4.70	5.88
5400	6.78	36.02	4.42	13.07	8.84	1.29	13.80	4.17	6.16
5500	6.41	37.15	4.42	11.42	10.26	1.26	14.14	4.33	6.49



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