



WIDEBAND

# Microwave Amplifier

## ZX60-24A-S+

Mini-Circuits

50Ω 5 to 20 GHz SMA Female

### THE BIG DEAL

- Wideband, 5 to 20 GHz
- Gain, 24 dB typ and flatness,  $\pm 2.2$  dB typ.
- Output power at 1 dB compression, 18.3 dBm typ.
- Excellent isolation, 67 dB typ.
- Unconditionally stable
- Protected by US patent 6,790,049



Generic photo used for illustration purposes only

Model No.	ZX60-24-S+
Case Style	GC957
Connectors	SMA Female

### +RoHS Compliant

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

### APPLICATIONS

- Military and radar
- DBS
- Wideband isolation amplifier
- Microwave point to point radio
- Satellite systems

### PRODUCT OVERVIEW

The ZX60-24A-S+ two-stage amplifier provides high gain in a very small package, only 0.75" x 0.74" x 0.46" high. Internal compensating circuitry provides a consistent, flat response over the extra wide bandwidth. Designed for 50Ω SMA coax systems, the gold-plated package uses convenient 5V DC power, and has a nickel-plated brass cover and unibody construction for extra durability.

### KEY FEATURES

Feature	Advantages
Extra Wideband, 5-20 GHz	Wider frequency range supports a wider array of applications, from microwave radio and radar to military communications, satellite communications, and countermeasures
Excellent Gain Flatness, $\pm 2.2$ dB	$\pm 2.2$ dB gain flatness across entire bandwidth minimizes the need for external equalizer networks, making it a great fit for instrumentation, test lab, EW, or any other amplitude sensitive system
Excellent Isolation, 67 dB typ.	24-dB gain with reverse isolation of 67 dB typ. (43 dB typ. directivity) minimizes leakage, making the ZX60-24A-S+ an excellent choice for minimizing interactions between different microwave components. It is an ideal LO driver amplifier and provides designers system flexibility and robustness when integrating cascaded RF components. Can replace expensive isolators in many applications.
Unconditionally Stable	No risk of oscillation due to impedance mismatch.

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ZX60-24A-S+  
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### ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range		5.0		20.0	GHz
Gain	5.0	—	23.0	—	dB
	8.0	22.4	25.8	28.3	
	10.0	21.3	24.4	26.9	
	12.0	—	23.9	—	
	14.0	—	24.0	—	
	16.0	—	25.3	—	
	18.0	22.2	25.5	28.1	
	20.0	19.3	22.2	24.4	
Gain Flatness	5.0 - 20.0	—	±2.2	—	dB
Input Return Loss	5.0	—	10.1	—	dB
	8.0	10	17.5	—	
	10.0	—	17.4	—	
	12.0	10	21.2	—	
	14.0	—	17.0	—	
	16.0	—	15.7	—	
	18.0	—	11.5	—	
	20.0	—	7.6	—	
Output Return Loss	5.0	—	7.5	—	dB
	8.0	10	13.3	—	
	10.0	—	11.0	—	
	12.0	10	14.2	—	
	14.0	—	14.7	—	
	16.0	—	12.4	—	
	18.0	—	10.7	—	
	20.0	—	14.3	—	
Output IP3 @ Output Power +8 dBm / tone. (Tone spacing, 1 MHz)	5.0		30.5		dBm
	8.0		28.2		
	10.0		26.8		
	12.0		25.4		
	14.0		24.8		
	16.0		25.1		
	18.0		23.1		
	20.0		23.4		
Output Power @ 1 dB compression	5.0		17.4		dBm
	8.0		18.6		
	10.0		19.0		
	12.0		18.3		
	14.0		18.4		
	16.0		18.1		
	18.0		19.4		
	20.0		18.2		
Noise Figure	5.0		9.4		dB
	8.0		5.3		
	10.0		6.0		
	12.0		6.4		
	14.0		7.4		
	16.0		7.6		
	18.0		6.9		
	20.0		7.2		
Directivity (Isolation-Gain)		—	43	—	dB
DC Voltage		—	5.0	—	V
DC Current		—	270	295	mA





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# Microwave Amplifier

# ZX60-24A-S+

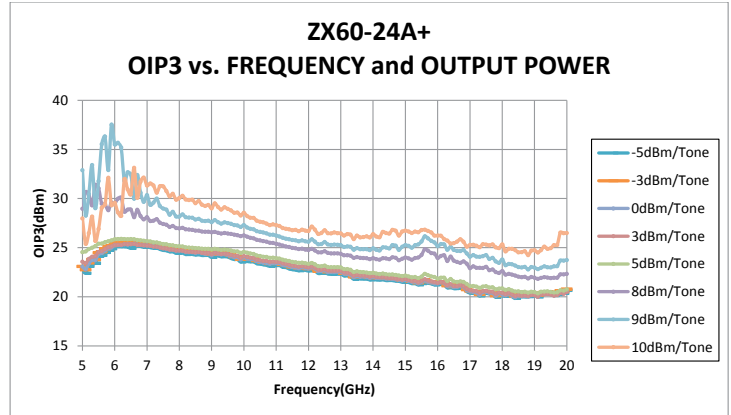
Mini-Circuits

50Ω 5 to 20 GHz SMA Female

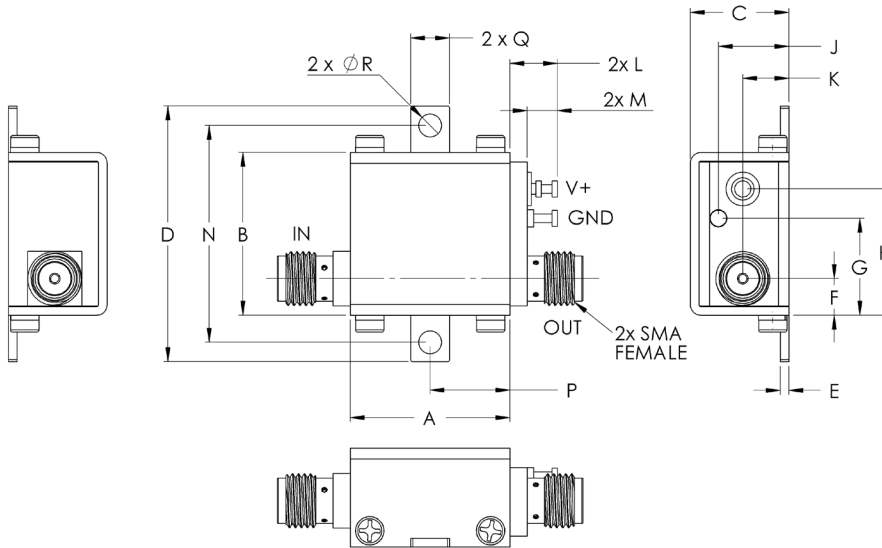
### ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-20°C to 85°C Base Plate Temp.
Storage Temperature	-55°C to 100°C
DC Voltage	5.5 V
Input RF Power (no damage)	+20 dBm
Power Dissipation	1.6 W

Permanent damage may occur if any of these limits are exceeded.



### OUTLINE DRAWING



**!** NOTE: When soldering the DC connections, caution must be used to avoid overheating the DC terminal. See Application Note [AN-40-010](#).

### OUTLINE DIMENSIONS (Inches/mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	wt
.74	.75	.46	1.18	.04	.17	.45	.59	.33	.21	.22	.14	1.00	.37	.18	.106	grams
18.80	19.1	11.68	30.0	1.02	4.32	11.4	14.99	8.38	5.33	5.59	3.56	25.40	9.40	4.57	2.69	23.0





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# Microwave Amplifier

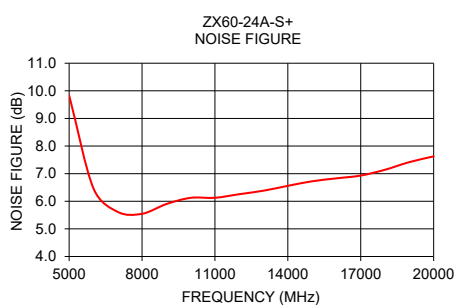
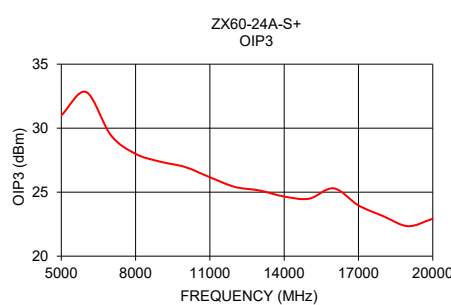
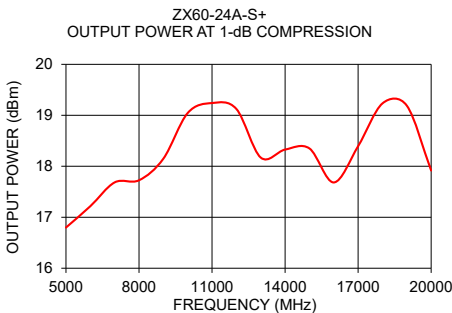
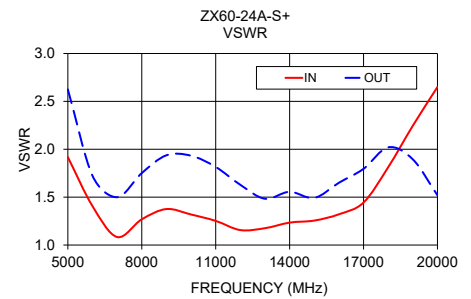
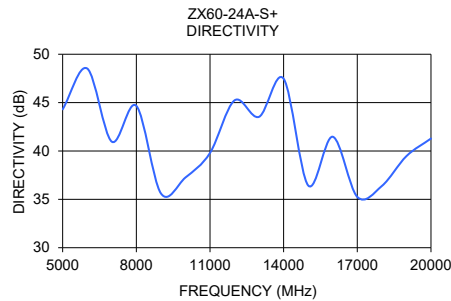
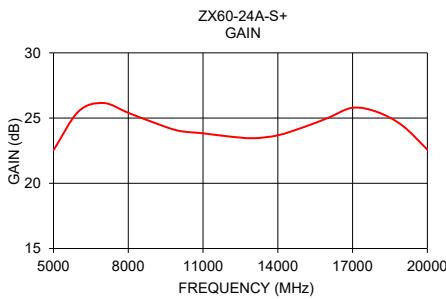
## ZX60-24A-S+

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50Ω 5 to 20 GHz SMA Female

### TYPICAL PERFORMANCE DATA/CURVES

Frequency (MHz)	Gain (dB)	Directivity (dB)	VSWR (:1)		Power Out @1 dB Compr. (dBm)	NF (dB)	OIP3 (dBm)
			IN	OUT			
5000	22.54	44.30	1.92	2.63	16.80	9.84	31.00
6000	25.50	48.52	1.41	1.72	17.22	6.47	32.82
7000	26.15	40.96	1.08	1.50	17.68	5.61	29.45
8000	25.40	44.67	1.27	1.75	17.73	5.55	27.99
9000	24.67	35.62	1.38	1.94	18.15	5.90	27.38
10000	24.04	37.26	1.32	1.93	19.05	6.12	26.96
11000	23.83	39.79	1.25	1.82	19.24	6.13	26.17
12000	23.60	45.23	1.16	1.63	19.12	6.26	25.41
13000	23.46	43.53	1.18	1.48	18.17	6.38	25.13
14000	23.68	47.46	1.23	1.56	18.33	6.56	24.66
15000	24.28	36.43	1.26	1.49	18.35	6.72	24.49
16000	25.00	41.47	1.32	1.65	17.68	6.83	25.30
17000	25.79	35.25	1.44	1.80	18.39	6.93	23.97
18000	25.46	36.38	1.81	2.02	19.23	7.14	23.13
19000	24.42	39.47	2.25	1.89	19.19	7.42	22.34
20000	22.58	41.29	2.65	1.52	17.92	7.63	22.92



- 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/terms/viewterm.html](http://www.minicircuits.com/terms/viewterm.html)



*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 = 5.00V, Id = 264.47mA @ Temperature = +25°C

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)
4000	15.74	65.63	7.74	4.29	81.60	0.73	22.50	13.26	19.59
4250	22.21	65.95	9.20	5.19	47.38	0.78	26.83	15.11	15.89
4500	21.99	65.82	9.19	5.69	50.01	0.82	27.79	16.22	13.35
4750	22.05	66.15	9.47	6.25	54.27	0.85	30.39	16.76	11.40
5000	22.54	66.84	10.04	6.97	59.07	0.88	31.00	16.80	9.84
5250	23.25	67.83	10.88	7.88	65.14	0.91	30.75	17.23	8.71
5500	24.05	69.33	11.99	8.96	75.11	0.93	30.63	17.66	7.76
5750	24.83	71.57	13.52	10.21	93.82	0.95	33.22	16.96	6.97
6000	25.50	74.02	15.45	11.52	120.46	0.96	32.82	17.22	6.47
6500	26.17	72.43	21.58	13.77	97.77	0.96	29.88	17.65	5.85
7000	26.15	67.12	27.93	13.99	53.56	0.96	29.45	17.68	5.61
7500	25.81	67.45	22.53	12.76	56.87	0.95	28.12	18.47	5.51
8000	25.40	70.07	18.53	11.27	78.08	0.94	27.99	17.73	5.55
8500	25.02	63.95	16.53	10.28	39.19	0.93	27.62	18.04	5.66
9000	24.67	60.29	16.02	9.92	26.47	0.92	27.38	18.15	5.90
9500	24.25	61.01	16.89	9.91	30.34	0.92	27.24	18.80	5.97
10000	24.04	61.29	17.23	9.95	32.20	0.91	26.96	19.05	6.12
10500	23.90	62.06	17.91	10.23	36.08	0.92	26.66	19.22	6.12
11000	23.83	63.62	19.02	10.76	44.18	0.93	26.17	19.24	6.13
11500	23.71	66.25	20.82	11.44	61.65	0.94	25.73	19.39	6.18
12000	23.60	68.83	22.80	12.42	85.61	0.95	25.41	19.12	6.26
12500	23.52	67.59	23.60	13.34	75.87	0.96	25.49	17.70	6.33
13000	23.46	66.99	21.85	14.22	71.76	0.97	25.13	18.17	6.38
13500	23.58	65.71	21.28	14.49	61.17	0.97	24.63	19.01	6.40
14000	23.68	71.14	19.60	13.25	111.29	0.96	24.66	18.33	6.56
14500	23.54	63.40	18.15	13.07	46.09	0.97	24.59	18.52	6.66
15000	24.28	60.71	18.92	14.09	31.44	0.97	24.49	18.35	6.72
15500	24.67	67.42	18.33	12.61	63.91	0.96	24.81	18.45	6.81
16000	25.00	66.47	17.18	12.20	54.58	0.96	25.30	17.68	6.83
16500	25.46	63.33	16.64	11.80	35.75	0.95	24.49	17.77	6.91
17000	25.79	61.04	14.82	10.92	25.76	0.95	23.97	18.39	6.93
17500	25.71	61.35	12.67	9.88	25.75	0.94	23.24	19.38	7.07
18000	25.46	61.84	10.79	9.43	26.84	0.96	23.13	19.23	7.14
18500	25.04	63.19	9.48	9.61	31.98	0.99	22.82	19.14	7.32
19000	24.42	63.89	8.32	10.20	36.20	1.04	22.34	19.19	7.42
19500	23.58	65.13	7.45	11.88	45.71	1.11	22.42	18.42	7.49
20000	22.58	63.87	6.90	13.71	44.08	1.15	22.92	17.92	7.63
20500	21.37	63.87	6.51	15.88	50.42	1.19	23.68	17.36	7.67
21000	19.70	64.48	6.26	17.20	64.93	1.21	24.49	17.12	7.85
21500	17.83	64.98	5.93	17.37	83.31	1.23	27.51	16.30	8.12
22000	15.49	63.41	5.51	16.08	87.27	1.25	23.43	16.38	8.46

*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 = 262.22mA @ Temperature = +25°C

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)
4000	16.16	65.49	7.73	4.32	76.67	0.74	20.98	12.86	19.51
4250	22.89	65.97	9.31	5.23	44.25	0.78	23.55	14.67	15.80
4500	22.57	66.08	9.23	5.71	48.35	0.82	24.63	15.72	13.24
4750	22.53	66.35	9.47	6.26	52.55	0.85	26.80	16.14	11.29
5000	22.97	66.64	10.03	6.97	54.86	0.88	27.10	16.11	9.76
5250	23.65	67.70	10.84	7.87	61.20	0.91	32.36	16.55	8.62
5500	24.42	68.86	11.93	8.96	68.08	0.93	33.75	16.96	7.68
5750	25.19	71.21	13.43	10.21	86.41	0.95	31.09	16.24	6.89
6000	25.84	73.75	15.32	11.55	112.22	0.96	32.03	16.48	6.40
6500	26.51	72.51	21.37	13.95	95.13	0.97	34.98	16.93	5.74
7000	26.49	67.42	28.53	14.25	53.48	0.96	33.61	16.94	5.54
7500	26.16	67.93	23.02	12.96	57.88	0.95	29.74	17.77	5.44
8000	25.77	71.26	18.80	11.45	86.20	0.94	29.92	17.01	5.47
8500	25.40	63.89	16.72	10.37	37.37	0.93	29.20	17.32	5.60
9000	25.06	60.69	16.17	10.02	26.58	0.92	28.63	17.46	5.84
9500	24.64	61.35	17.07	9.98	30.23	0.92	28.28	18.09	5.90
10000	24.43	61.46	17.41	10.05	31.48	0.92	27.95	18.34	6.06
10500	24.29	61.92	17.99	10.32	34.05	0.92	27.51	18.56	6.09
11000	24.23	63.70	18.88	10.87	42.67	0.93	26.93	18.59	6.08
11500	24.12	66.26	20.33	11.57	58.96	0.94	26.42	18.75	6.12
12000	24.03	69.11	21.92	12.57	84.30	0.95	26.13	18.47	6.17
12500	23.96	67.49	22.44	13.55	71.30	0.96	26.56	16.99	6.24
13000	23.91	66.93	20.97	14.43	67.67	0.97	26.08	17.49	6.32
13500	24.06	65.77	20.74	14.72	58.28	0.97	25.41	18.31	6.30
14000	24.20	70.54	19.44	13.31	97.87	0.96	25.69	17.62	6.49
14500	24.06	62.99	18.16	13.03	41.34	0.96	25.67	17.84	6.56
15000	24.83	60.57	18.86	14.17	29.05	0.97	25.71	17.64	6.65
15500	25.28	67.04	18.73	12.68	57.12	0.96	26.17	17.73	6.66
16000	25.63	66.13	17.47	12.29	48.90	0.96	26.08	16.98	6.76
16500	26.14	63.17	17.11	11.96	32.62	0.95	25.35	17.09	6.82
17000	26.54	60.74	15.39	11.06	22.99	0.95	25.21	17.62	6.87
17500	26.53	60.93	13.06	9.92	22.48	0.94	24.24	18.78	6.95
18000	26.29	61.55	11.02	9.28	23.62	0.95	24.13	18.79	7.07
18500	25.91	62.66	9.63	9.39	27.14	0.98	23.90	18.60	7.21
19000	25.32	63.34	8.43	9.95	30.57	1.03	23.33	18.57	7.30
19500	24.50	64.44	7.47	11.67	37.92	1.10	23.72	17.70	7.35
20000	23.52	63.53	6.94	13.88	38.21	1.15	24.85	17.28	7.49
20500	22.35	63.58	6.54	16.68	43.88	1.20	26.72	16.70	7.53
21000	20.66	63.81	6.29	18.66	54.25	1.22	29.31	16.43	7.72
21500	18.77	65.01	5.87	18.98	75.07	1.24	28.45	15.57	7.96
22000	16.35	63.37	5.43	16.97	78.55	1.26	29.16	15.63	8.33

*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 = 264.98mA @ Temperature = +25°C

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)
4000	15.65	65.62	7.71	4.27	81.92	0.73	23.36	13.60	19.68
4250	21.93	65.62	9.11	5.14	46.79	0.78	33.60	15.47	16.01
4500	21.73	65.70	9.12	5.65	50.51	0.82	30.38	16.63	13.45
4750	21.82	66.08	9.41	6.21	55.04	0.85	29.34	17.23	11.48
5000	22.33	66.78	10.00	6.92	59.84	0.88	29.85	17.35	9.92
5250	23.07	67.66	10.85	7.83	65.04	0.90	28.59	17.79	8.76
5500	23.89	69.16	11.95	8.90	74.73	0.93	28.72	18.20	7.82
5750	24.70	71.29	13.49	10.13	92.11	0.94	29.45	17.52	7.05
6000	25.38	74.11	15.43	11.43	123.13	0.95	29.38	17.75	6.54
6500	26.08	73.23	21.58	13.71	108.29	0.96	28.43	18.21	5.90
7000	26.06	67.55	27.68	13.95	56.84	0.96	28.10	18.22	5.67
7500	25.72	67.84	22.20	12.70	60.09	0.95	27.52	19.01	5.58
8000	25.29	69.97	18.28	11.21	77.97	0.94	27.26	18.26	5.61
8500	24.90	63.82	16.35	10.23	39.02	0.93	27.03	18.56	5.73
9000	24.55	60.25	15.86	9.90	26.67	0.92	26.91	18.71	5.97
9500	24.13	61.44	16.68	9.83	32.19	0.91	26.84	19.33	6.03
10000	23.92	61.24	17.08	9.87	32.37	0.91	26.60	19.56	6.18
10500	23.78	62.07	17.76	10.13	36.52	0.92	26.33	19.77	6.18
11000	23.70	63.61	18.92	10.65	44.66	0.93	25.88	19.78	6.22
11500	23.57	66.31	20.84	11.33	62.99	0.93	25.49	19.91	6.25
12000	23.45	68.47	23.17	12.31	83.49	0.95	25.15	19.68	6.31
12500	23.35	67.18	24.15	13.27	73.73	0.96	25.05	18.29	6.38
13000	23.28	66.64	22.25	14.12	70.39	0.97	24.75	18.77	6.48
13500	23.40	65.37	21.68	14.37	60.07	0.97	24.35	19.52	6.44
14000	23.47	70.71	19.75	13.10	108.31	0.96	24.26	18.88	6.62
14500	23.32	63.43	18.38	12.94	47.37	0.96	24.15	19.06	6.76
15000	24.04	60.59	19.05	13.91	31.83	0.97	23.94	18.90	6.80
15500	24.41	67.09	18.12	12.51	63.29	0.96	24.13	18.96	6.87
16000	24.73	66.74	16.80	12.18	57.94	0.96	24.53	18.27	6.90
16500	25.16	63.44	16.01	11.83	37.39	0.96	23.83	18.38	7.01
17000	25.44	60.94	14.13	10.96	26.39	0.95	23.34	18.89	7.04
17500	25.33	61.36	12.08	9.94	26.76	0.95	22.80	19.82	7.15
18000	25.04	62.08	10.33	9.39	28.64	0.96	22.66	19.71	7.24
18500	24.60	63.47	9.13	9.49	34.25	1.00	22.35	19.64	7.41
19000	23.98	64.24	8.10	9.95	39.04	1.04	21.95	19.72	7.52
19500	23.15	65.43	7.29	11.44	48.95	1.10	21.92	19.00	7.58
20000	22.19	64.24	6.84	13.31	47.74	1.15	22.12	18.58	7.75
20500	21.03	64.12	6.48	15.68	53.81	1.19	22.49	18.03	7.80
21000	19.37	64.48	6.25	17.36	67.47	1.21	22.79	17.82	7.98
21500	17.53	64.48	5.83	17.74	80.82	1.24	23.99	16.99	8.25
22000	15.19	62.87	5.41	16.04	84.15	1.26	21.70	17.09	8.61

*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 = 5.00V, Id = 256.72mA @ Temperature = -20°C

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)
4000	17.63	65.56	7.42	4.15	62.69	0.73	21.83	13.10	19.11
4250	26.19	66.08	9.91	5.31	31.47	0.77	23.83	14.82	15.11
4500	25.07	66.09	9.42	5.73	36.58	0.81	26.35	16.03	12.57
4750	24.57	65.87	9.46	6.17	39.06	0.84	29.42	16.73	10.64
5000	24.74	66.35	9.84	6.79	42.64	0.87	30.90	16.88	9.12
5250	25.27	67.21	10.57	7.67	47.25	0.90	35.79	17.42	7.92
5500	25.94	68.53	11.58	8.63	54.09	0.92	36.65	17.68	6.96
5750	26.63	70.28	12.78	9.74	64.45	0.94	37.35	17.14	6.28
6000	27.27	72.93	14.58	11.13	85.50	0.96	37.09	17.14	5.71
6500	27.95	73.67	19.92	13.96	91.86	0.97	38.17	17.89	5.16
7000	27.95	68.67	29.76	14.90	52.49	0.97	38.15	17.56	4.91
7500	27.63	67.56	25.61	13.24	47.12	0.96	36.17	18.44	4.81
8000	27.27	69.13	20.05	11.36	56.85	0.94	35.06	17.71	4.90
8500	26.95	64.67	17.72	10.39	34.32	0.92	35.31	18.02	4.97
9000	26.68	61.03	17.02	10.03	23.04	0.92	36.17	18.50	5.15
9500	26.27	60.82	17.90	10.22	23.80	0.92	36.89	18.77	5.24
10000	26.06	61.58	18.25	10.30	26.71	0.92	35.78	18.89	5.35
10500	25.90	61.51	17.96	10.45	27.07	0.92	35.25	19.45	5.44
11000	25.82	63.42	17.57	10.52	34.01	0.93	33.83	19.55	5.48
11500	25.76	66.22	18.26	11.24	48.02	0.94	32.41	19.50	5.50
12000	25.72	68.78	18.63	12.19	65.87	0.95	31.80	19.33	5.53
12500	25.75	67.79	18.72	13.96	59.85	0.97	31.58	18.06	5.59
13000	25.75	66.98	18.18	15.51	55.11	0.99	31.26	18.59	5.70
13500	25.92	65.88	19.26	15.02	47.58	0.98	30.46	18.56	5.67
14000	26.16	69.70	19.64	12.63	70.30	0.96	30.26	18.30	5.78
14500	26.07	63.33	18.61	11.85	33.65	0.95	29.61	18.43	5.84
15000	26.79	60.01	18.01	14.07	21.65	0.98	29.12	18.26	5.92
15500	27.56	65.43	18.07	13.20	36.65	0.97	29.31	17.97	5.95
16000	27.91	65.96	15.60	13.46	37.06	0.98	28.26	17.88	5.98
16500	28.58	62.68	14.94	13.51	23.42	0.99	28.29	18.10	6.20
17000	29.26	60.22	14.77	11.99	15.98	0.97	28.36	17.41	6.29
17500	29.46	60.31	12.84	9.59	14.78	0.93	27.65	18.33	6.48
18000	29.19	60.85	11.04	7.34	14.51	0.87	27.34	19.56	6.46
18500	29.01	61.80	10.05	6.87	15.70	0.87	26.90	19.33	6.57
19000	28.72	61.90	9.27	7.48	16.48	0.92	26.17	19.05	6.47
19500	28.30	62.50	8.22	9.61	19.27	1.03	25.89	18.25	6.53
20000	27.68	61.94	7.93	16.15	21.08	1.13	25.88	18.56	6.48
20500	26.68	61.51	7.60	30.64	22.76	1.17	26.28	17.90	6.55
21000	24.85	62.41	6.75	22.08	29.56	1.20	26.69	17.50	6.85
21500	22.68	64.35	5.56	17.36	42.90	1.26	28.86	16.80	7.22
22000	19.95	64.37	4.89	14.35	54.12	1.28	30.48	16.91	7.64



*Typical Performance Data***Definitions:**

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 4.75V, Id = 254.10mA @ Temperature = -20°C

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)
4000	18.57	65.59	7.39	4.22	56.90	0.74	20.28	12.50	19.07
4250	27.90	66.47	10.33	5.52	27.84	0.78	21.80	13.98	15.08
4500	26.48	65.90	9.53	5.81	30.76	0.82	23.69	15.02	12.53
4750	25.76	65.89	9.47	6.20	34.25	0.85	25.74	15.65	10.61
5000	25.80	66.38	9.81	6.80	37.88	0.87	26.61	15.78	9.10
5250	26.23	67.12	10.49	7.66	41.76	0.90	29.03	16.37	7.87
5500	26.85	68.34	11.47	8.62	47.52	0.92	29.26	16.65	6.98
5750	27.49	70.20	12.61	9.73	57.64	0.94	29.17	16.13	6.28
6000	28.10	71.88	14.33	11.12	68.66	0.96	28.83	16.13	5.69
6500	28.74	73.39	19.46	13.99	81.10	0.97	31.50	16.87	5.15
7000	28.74	68.74	29.27	15.01	48.41	0.97	30.92	16.57	4.88
7500	28.44	67.43	27.12	13.36	42.38	0.96	32.33	17.48	4.80
8000	28.11	69.02	20.84	11.44	51.09	0.94	32.32	16.76	4.87
8500	27.82	64.69	18.22	10.44	31.24	0.92	32.03	16.99	4.94
9000	27.57	61.25	17.42	10.05	21.39	0.92	31.82	17.47	5.14
9500	27.15	60.86	18.46	10.28	21.67	0.92	31.67	17.67	5.22
10000	26.92	61.66	18.89	10.38	24.49	0.92	31.96	17.80	5.31
10500	26.76	61.77	18.40	10.54	25.35	0.92	31.84	18.48	5.41
11000	26.68	63.63	17.63	10.62	31.62	0.93	32.10	18.65	5.48
11500	26.63	66.42	17.85	11.33	44.48	0.94	32.09	18.59	5.47
12000	26.59	69.21	17.76	12.28	62.51	0.96	32.05	18.40	5.51
12500	26.64	67.99	17.59	14.05	55.09	0.98	32.27	17.08	5.56
13000	26.65	67.51	17.00	15.64	52.62	0.99	31.87	17.59	5.65
13500	26.83	66.44	17.86	15.20	45.60	0.99	31.60	17.55	5.65
14000	27.14	69.28	18.39	12.69	59.69	0.96	31.03	17.23	5.76
14500	27.06	63.12	17.46	11.76	29.16	0.95	30.39	17.31	5.80
15000	27.77	59.69	16.31	14.17	18.55	0.98	30.17	17.09	5.90
15500	28.66	65.16	16.80	13.40	31.19	0.97	29.37	16.72	5.96
16000	29.01	65.93	14.70	13.48	32.35	0.99	26.36	16.53	5.98
16500	29.73	62.36	14.36	13.62	19.69	0.99	28.12	16.80	6.19
17000	30.58	59.78	15.17	12.21	13.12	0.97	27.68	16.07	6.26
17500	31.00	59.75	14.27	9.63	11.79	0.92	29.47	16.91	6.48
18000	30.88	60.17	12.37	7.10	11.18	0.84	29.79	18.43	6.41
18500	30.86	60.79	11.29	6.45	11.35	0.82	29.38	18.32	6.53
19000	30.72	60.85	10.29	7.00	11.62	0.88	29.66	18.01	6.40
19500	30.49	61.25	8.83	9.32	13.15	1.00	29.80	17.19	6.46
20000	29.93	60.74	8.28	16.78	14.44	1.13	30.60	17.55	6.42
20500	28.96	60.51	7.88	27.13	15.79	1.16	32.15	16.87	6.46
21000	27.18	61.64	6.98	19.10	20.83	1.19	31.18	16.39	6.74
21500	24.97	63.60	5.70	17.31	30.60	1.25	28.02	15.69	7.09
22000	22.11	64.89	4.98	15.41	45.64	1.28	27.46	15.77	7.47

*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 = 259.05mA @ Temperature = -20°C

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)
4000	17.12	65.45	7.44	4.13	65.55	0.73	23.24	13.48	19.20
4250	25.25	66.07	9.64	5.25	34.53	0.77	26.80	15.26	15.19
4500	24.33	65.81	9.32	5.70	38.36	0.81	31.11	16.52	12.65
4750	23.96	66.05	9.44	6.16	42.71	0.84	35.89	17.25	10.70
5000	24.21	66.52	9.86	6.79	46.27	0.87	34.44	17.49	9.21
5250	24.78	67.25	10.61	7.66	50.22	0.90	32.33	18.04	7.96
5500	25.49	68.61	11.65	8.63	57.55	0.92	32.53	18.28	7.06
5750	26.21	70.77	12.90	9.74	71.62	0.94	32.01	17.76	6.36
6000	26.87	72.56	14.74	11.14	85.84	0.95	32.20	17.76	5.76
6500	27.58	73.11	20.25	13.95	89.88	0.97	31.08	18.52	5.22
7000	27.58	68.19	29.72	14.85	51.83	0.97	30.64	18.17	4.95
7500	27.26	67.74	24.53	13.18	50.14	0.96	30.47	19.03	4.86
8000	26.88	69.20	19.48	11.31	59.75	0.94	29.93	18.33	4.95
8500	26.55	64.66	17.29	10.37	35.81	0.93	29.93	18.64	5.01
9000	26.27	61.06	16.65	10.03	24.21	0.92	30.20	19.13	5.22
9500	25.85	60.73	17.47	10.21	24.67	0.92	30.32	19.39	5.30
10000	25.65	61.52	17.85	10.28	27.77	0.92	30.00	19.50	5.45
10500	25.49	61.67	17.65	10.44	28.85	0.92	29.95	20.02	5.49
11000	25.40	63.60	17.59	10.50	36.40	0.93	29.44	20.10	5.56
11500	25.33	66.08	18.65	11.22	49.73	0.94	28.84	20.04	5.54
12000	25.28	68.80	19.41	12.20	69.57	0.95	28.45	19.90	5.59
12500	25.29	67.42	19.71	13.99	60.67	0.97	28.14	18.70	5.63
13000	25.28	66.94	19.10	15.51	58.13	0.98	27.97	19.23	5.75
13500	25.43	65.49	20.30	14.97	48.28	0.98	27.50	19.20	5.72
14000	25.62	69.71	20.49	12.62	74.99	0.95	27.31	18.98	5.84
14500	25.52	63.52	19.40	11.91	36.79	0.95	27.06	19.10	5.86
15000	26.22	60.06	19.37	14.07	23.36	0.97	26.58	18.96	5.97
15500	26.91	65.97	18.85	13.19	42.11	0.96	26.54	18.70	6.02
16000	27.25	66.30	16.00	13.56	41.75	0.98	26.97	18.62	6.07
16500	27.85	63.05	14.96	13.54	26.57	0.99	26.03	18.84	6.26
17000	28.40	60.40	13.99	11.94	17.89	0.97	25.91	18.21	6.32
17500	28.44	60.73	11.77	9.62	17.19	0.95	25.28	19.12	6.52
18000	28.07	61.32	10.13	7.49	17.19	0.90	25.05	20.05	6.50
18500	27.79	62.56	9.28	7.12	19.54	0.90	24.68	19.85	6.63
19000	27.41	62.75	8.69	7.74	20.95	0.95	24.07	19.68	6.56
19500	26.93	63.54	7.85	9.74	25.17	1.04	23.80	18.95	6.59
20000	26.29	62.65	7.71	15.84	26.57	1.14	23.62	19.26	6.61
20500	25.27	62.08	7.41	28.96	28.30	1.18	23.76	18.61	6.68
21000	23.43	62.95	6.56	23.22	36.66	1.22	23.76	18.25	7.01
21500	21.29	64.90	5.44	17.17	53.06	1.26	24.35	17.56	7.40
22000	18.63	64.36	4.80	13.90	62.04	1.28	24.88	17.70	7.83

*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 = 5.00V, Id = 264.90mA @ Temperature = +85°C

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)
4000	14.41	65.63	7.87	4.35	96.44	0.74	21.44	13.04	20.43
4250	19.88	65.67	8.90	5.11	58.86	0.78	25.74	14.91	16.89
4500	20.14	65.83	9.07	5.68	61.59	0.82	26.29	15.89	14.35
4750	20.48	66.30	9.49	6.34	66.64	0.85	28.60	16.33	12.41
5000	21.14	66.99	10.13	7.15	71.52	0.89	28.72	16.32	10.86
5250	21.96	68.07	10.99	8.13	78.68	0.91	36.04	16.71	9.68
5500	22.83	69.81	12.20	9.26	92.45	0.93	35.21	17.27	8.75
5750	23.65	72.00	13.79	10.51	114.16	0.95	35.80	16.58	7.91
6000	24.32	74.40	15.84	11.74	145.06	0.96	39.36	17.02	7.42
6500	24.97	72.39	22.02	13.49	111.61	0.96	32.34	17.15	6.78
7000	24.94	67.04	28.23	13.68	60.85	0.96	30.74	17.49	6.57
7500	24.58	68.76	22.35	12.55	75.97	0.95	29.10	18.13	6.50
8000	24.13	70.30	17.96	11.01	92.15	0.94	28.93	17.52	6.53
8500	23.68	63.51	15.89	9.93	42.88	0.92	28.26	17.85	6.67
9000	23.30	60.43	15.40	9.60	31.12	0.92	27.96	17.62	6.94
9500	22.89	61.13	16.24	9.55	35.46	0.91	27.48	18.36	6.99
10000	22.70	61.68	16.90	9.71	38.95	0.91	27.01	18.79	7.12
10500	22.56	62.11	18.09	10.13	42.20	0.92	26.66	18.69	7.14
11000	22.48	64.00	20.24	10.74	54.05	0.92	26.15	18.64	7.14
11500	22.31	66.79	23.02	11.25	77.11	0.93	25.71	18.89	7.20
12000	22.15	69.11	26.00	12.07	104.22	0.94	25.46	18.52	7.28
12500	22.03	67.39	28.85	12.65	87.54	0.95	25.57	17.43	7.37
13000	21.96	66.73	25.73	13.37	82.40	0.96	25.35	17.60	7.45
13500	22.06	65.84	23.30	13.51	73.43	0.96	24.69	18.75	7.44
14000	22.11	71.59	20.40	13.05	140.25	0.96	24.88	18.10	7.62
14500	22.00	62.91	17.99	13.46	52.17	0.97	24.98	18.12	7.70
15000	22.71	60.84	17.85	14.24	38.16	0.98	24.92	17.98	7.80
15500	22.98	67.36	16.41	12.74	76.62	0.97	25.13	18.28	7.92
16000	23.28	65.95	15.72	12.03	62.00	0.96	25.25	17.24	7.96
16500	23.60	63.25	14.95	10.72	42.53	0.94	24.76	17.03	8.08
17000	23.75	61.28	13.54	9.79	32.26	0.93	23.65	18.58	8.06
17500	23.57	61.61	12.44	8.65	32.58	0.91	23.20	18.98	8.09
18000	23.32	62.05	11.44	8.97	35.04	0.94	23.55	18.28	8.15
18500	22.98	63.17	10.42	9.87	41.65	0.98	23.19	18.41	8.31
19000	22.39	63.98	8.99	12.32	49.34	1.06	22.92	18.58	8.49
19500	21.46	65.08	7.89	15.27	61.60	1.13	23.09	18.24	8.63
20000	20.19	64.21	6.72	16.11	60.94	1.18	24.97	16.99	8.90
20500	18.60	64.25	6.00	14.77	69.31	1.21	26.31	16.54	9.17
21000	16.62	65.26	5.50	12.98	92.17	1.22	28.98	16.12	9.48
21500	14.70	64.90	5.54	11.62	108.61	1.19	25.72	15.50	9.70
22000	12.37	62.85	5.50	10.95	110.53	1.18	24.60	15.35	10.06

*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 = 264.33mA @ Temperature = +85°C

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)
4000	14.57	65.58	7.87	4.38	94.53	0.74	20.42	12.63	20.34
4250	20.24	66.00	8.97	5.16	59.12	0.78	23.34	14.46	16.82
4500	20.52	66.11	9.12	5.73	61.31	0.82	23.82	15.33	14.27
4750	20.83	66.46	9.53	6.39	65.43	0.86	25.32	15.66	12.33
5000	21.45	66.99	10.15	7.21	69.26	0.89	25.39	15.61	10.78
5250	22.24	68.02	11.00	8.21	76.01	0.92	29.05	16.00	9.61
5500	23.08	69.60	12.20	9.37	88.06	0.94	31.84	16.58	8.67
5750	23.87	71.51	13.79	10.68	105.63	0.95	28.31	15.88	7.87
6000	24.50	74.24	15.83	11.97	139.88	0.96	29.98	16.34	7.36
6500	25.13	72.46	22.03	13.86	110.80	0.96	31.83	16.45	6.69
7000	25.10	67.07	28.96	14.07	60.17	0.96	32.31	16.83	6.50
7500	24.77	68.44	22.93	12.88	71.99	0.95	30.30	17.47	6.43
8000	24.35	70.33	18.32	11.28	90.77	0.94	30.23	16.89	6.49
8500	23.93	63.51	16.14	10.15	41.97	0.93	29.22	17.21	6.64
9000	23.56	60.33	15.62	9.80	30.06	0.92	28.74	16.94	6.87
9500	23.15	61.26	16.48	9.76	35.22	0.91	28.14	17.69	6.93
10000	22.96	61.85	17.09	9.95	38.84	0.92	27.64	18.15	7.06
10500	22.83	62.21	18.19	10.40	41.67	0.92	27.27	18.01	7.08
11000	22.76	63.98	20.24	11.06	52.49	0.93	26.72	17.94	7.06
11500	22.62	67.07	22.87	11.57	77.25	0.94	26.22	18.22	7.12
12000	22.49	69.38	25.47	12.39	103.86	0.95	26.04	17.81	7.20
12500	22.39	67.77	27.48	12.95	88.04	0.95	26.46	16.75	7.26
13000	22.35	67.33	24.66	13.67	84.64	0.96	26.20	16.88	7.36
13500	22.48	66.51	22.52	13.82	75.74	0.96	25.30	18.08	7.32
14000	22.58	71.29	20.11	13.32	128.68	0.96	25.77	17.42	7.52
14500	22.49	62.60	17.81	13.69	47.65	0.97	25.91	17.43	7.61
15000	23.23	60.77	17.83	14.63	35.76	0.98	25.83	17.27	7.72
15500	23.55	66.99	16.74	12.99	69.02	0.97	25.93	17.61	7.78
16000	23.88	65.53	16.13	12.19	55.43	0.96	25.78	16.53	7.85
16500	24.24	62.95	15.44	10.77	38.37	0.94	25.16	16.29	7.96
17000	24.43	60.92	13.89	9.79	28.74	0.93	24.35	17.95	7.93
17500	24.26	61.10	12.65	8.57	28.38	0.91	23.80	18.37	7.96
18000	24.01	61.40	11.60	8.89	30.05	0.93	24.40	17.59	8.02
18500	23.66	62.55	10.53	9.93	35.98	0.98	24.20	17.70	8.16
19000	23.04	63.27	9.02	12.74	42.46	1.07	23.93	17.84	8.32
19500	22.05	64.43	7.88	16.22	53.68	1.14	24.36	17.50	8.47
20000	20.72	63.72	6.67	17.09	54.29	1.19	28.70	16.20	8.75
20500	19.08	64.26	5.94	15.42	65.67	1.22	31.72	15.73	9.00
21000	17.01	65.01	5.41	13.39	85.37	1.23	28.39	15.29	9.31
21500	15.05	65.02	5.47	11.85	105.57	1.20	30.72	14.67	9.52
22000	12.67	62.96	5.46	11.09	108.07	1.18	29.26	14.48	9.87

*Typical Performance Data***Definitions:**

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

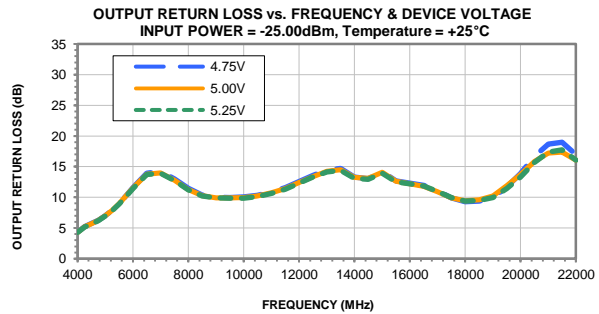
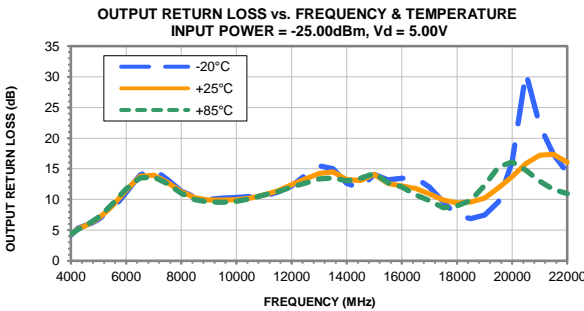
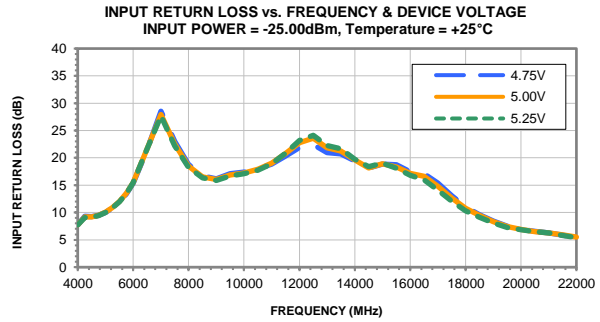
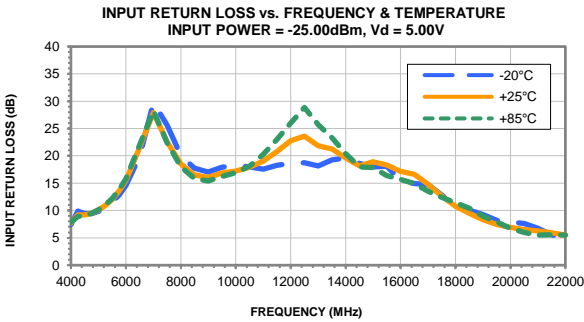
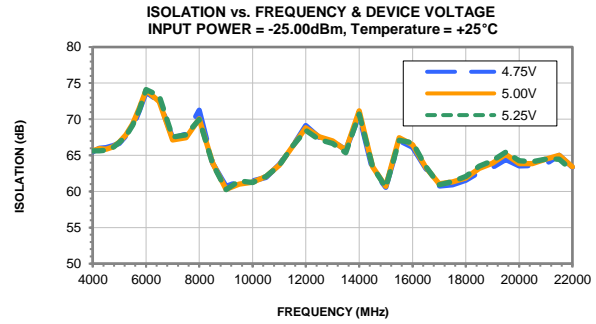
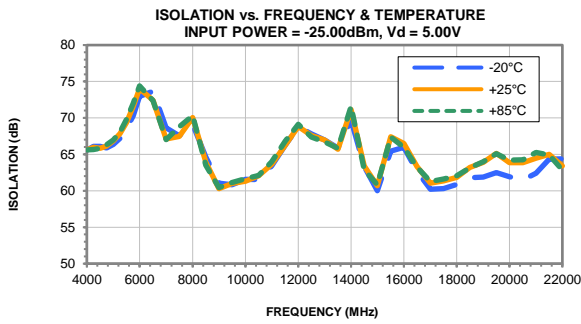
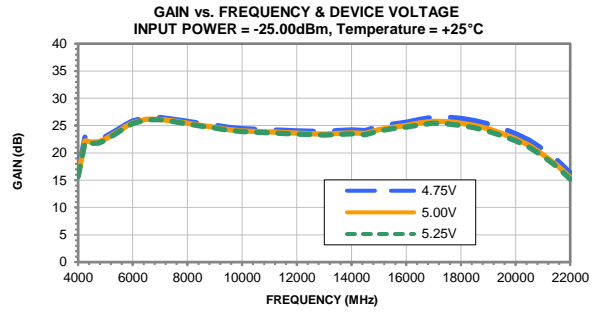
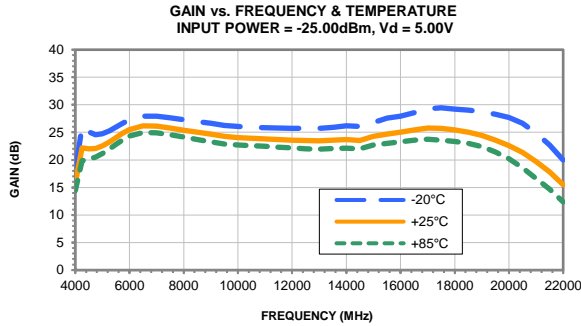
Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

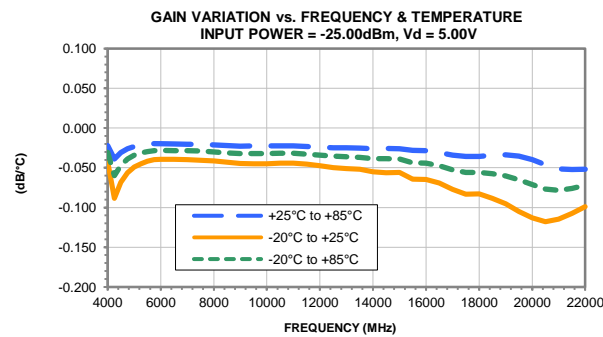
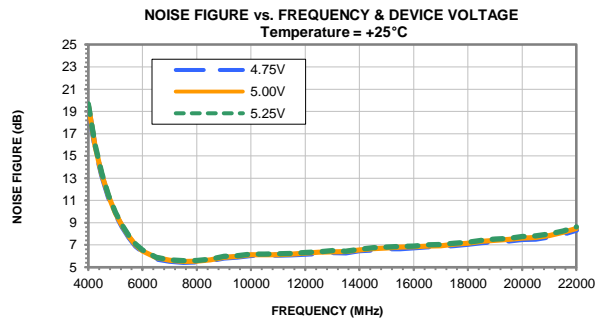
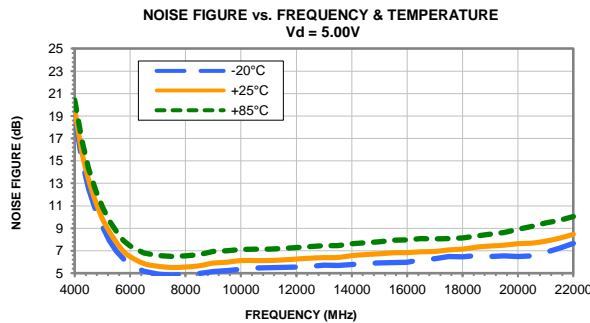
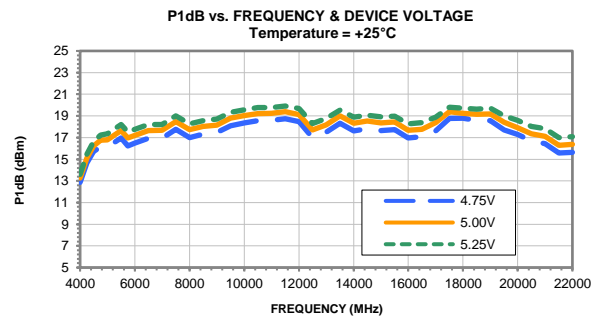
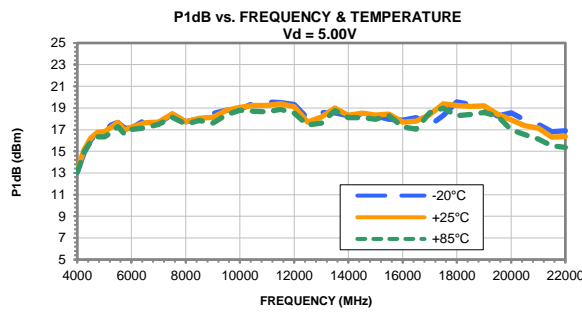
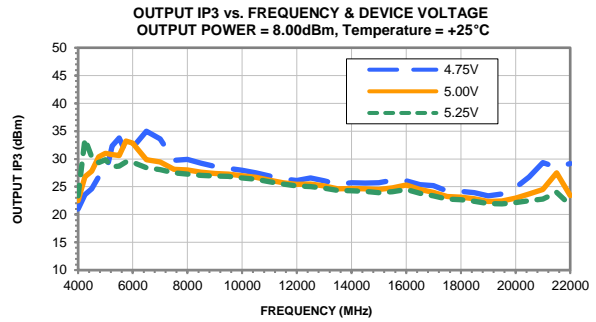
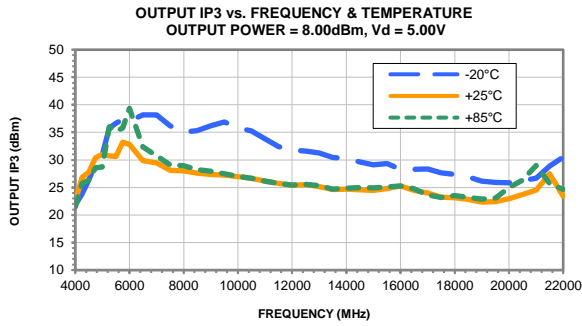
TEST CONDITIONS: Vd = 5.25V, Id = 265.19mA @ Temperature = +85°C

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)
4000	14.20	65.44	7.87	4.32	96.25	0.73	22.13	13.35	20.50
4250	19.50	65.87	8.83	5.06	62.41	0.78	29.02	15.27	16.98
4500	19.77	65.81	9.01	5.64	63.77	0.82	30.15	16.30	14.44
4750	20.14	66.23	9.46	6.30	68.39	0.85	32.49	16.83	12.50
5000	20.83	66.81	10.10	7.11	72.33	0.88	33.12	16.90	10.93
5250	21.69	67.98	10.98	8.09	80.14	0.91	31.88	17.28	9.77
5500	22.59	69.67	12.20	9.20	93.48	0.93	31.16	17.86	8.83
5750	23.43	71.79	13.81	10.44	114.11	0.95	33.26	17.18	8.02
6000	24.12	74.33	15.87	11.61	146.88	0.96	31.90	17.63	7.49
6500	24.79	72.82	22.01	13.22	119.22	0.96	30.33	17.71	6.84
7000	24.76	67.06	27.54	13.37	62.10	0.96	29.43	18.08	6.65
7500	24.38	68.89	21.86	12.31	78.61	0.95	28.63	18.67	6.58
8000	23.90	70.76	17.70	10.87	99.41	0.93	28.32	18.09	6.62
8500	23.44	63.46	15.69	9.83	43.67	0.92	27.87	18.41	6.76
9000	23.04	60.24	15.23	9.51	31.20	0.91	27.62	18.16	7.03
9500	22.63	61.17	16.04	9.43	36.54	0.91	27.24	18.91	7.07
10000	22.44	61.59	16.73	9.58	39.53	0.91	26.77	19.39	7.22
10500	22.31	61.92	18.01	9.98	42.38	0.91	26.39	19.27	7.22
11000	22.20	63.81	20.33	10.59	54.40	0.92	25.90	19.19	7.24
11500	22.02	66.82	23.40	11.06	79.72	0.93	25.52	19.42	7.31
12000	21.84	68.56	26.98	11.85	101.16	0.94	25.22	19.05	7.36
12500	21.68	67.19	30.94	12.38	88.68	0.94	25.12	18.06	7.45
13000	21.59	66.39	27.32	13.05	82.43	0.95	24.93	18.19	7.56
13500	21.66	65.56	24.11	13.17	74.24	0.96	24.46	19.28	7.54
14000	21.69	72.09	20.63	12.87	155.80	0.96	24.48	18.67	7.70
14500	21.56	62.93	18.02	13.41	54.95	0.97	24.47	18.66	7.79
15000	22.24	60.96	17.56	14.19	40.79	0.98	24.37	18.53	7.92
15500	22.47	67.16	15.89	12.70	79.08	0.97	24.55	18.82	7.99
16000	22.74	66.42	15.11	12.03	69.33	0.97	24.63	17.86	8.06
16500	23.02	63.59	14.27	10.60	46.93	0.95	24.26	17.62	8.18
17000	23.13	61.65	13.01	9.67	35.82	0.93	23.29	19.15	8.15
17500	22.93	62.07	12.11	8.48	36.57	0.91	22.92	19.39	8.20
18000	22.69	62.38	11.29	8.74	38.70	0.93	23.15	18.72	8.27
18500	22.38	63.46	10.40	9.59	45.80	0.97	22.79	18.94	8.43
19000	21.84	64.40	9.02	12.07	54.98	1.06	22.55	19.13	8.60
19500	20.96	65.50	7.97	15.03	68.58	1.12	22.58	18.91	8.76
20000	19.73	64.49	6.77	16.15	66.54	1.18	23.65	17.60	9.05
20500	18.16	64.88	6.03	14.51	78.36	1.21	24.27	17.15	9.34
21000	16.18	65.20	5.47	12.52	95.53	1.21	25.21	16.73	9.63
21500	14.29	64.93	5.51	11.07	112.92	1.18	23.30	16.17	9.88
22000	11.99	62.72	5.47	10.42	112.15	1.17	23.25	16.01	10.25

## Typical Performance Curves



## Typical Performance Curves

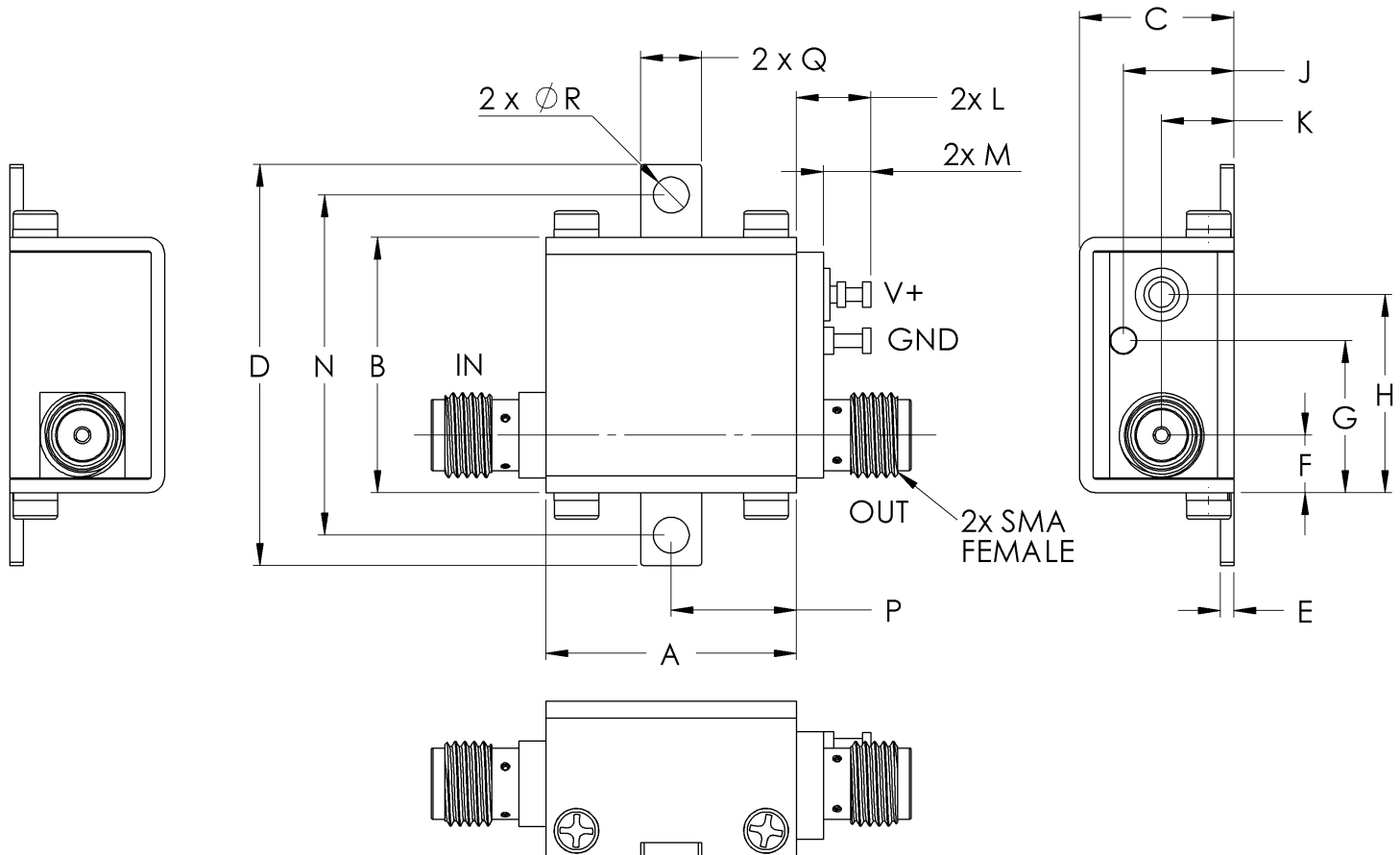


# Case Style

# GC

## Outline Dimensions

## GC957



CASE #.	A	B	C	D	E	F	G	H	J	K	L	M	N
GC957	.74 (18.80)	.75 (19.15)	.46 (11.61)	1.18 (30.07)	.04 (1.02)	.17 (4.32)	.45 (11.40)	.59 (14.86)	.33 (8.31)	.21 (5.44)	.22 (5.59)	.14 (3.56)	1.00 (25.4)

CASE #.	P	Q	R	WT GRAMS
GC957	.37 (9.40)	.18 (4.57)	.106 (2.69)	23.0

Dimensions are in inches (mm). Tolerances: 2Pl.  $\pm .03$ ; 3Pl.  $\pm .015$   
Tolerance on hole size and interaxes dimensions to be  $\pm .005$ .

### Note:

1. Case material: Brass
2. Case finish: Nickel plate

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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 Case Temperature	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Stabilization Bake	(non-operating) 125°C, 24 hours	- - -
Burn-in at Elevated Temp.	(DC on) 160 hours at 85° C	MIL-STD-202, Method 108
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, except 100°C