

WJ-A22

WATKINS-JOHNSON CO 73 DE

9621629 0006106 5

10 TO 1500 MHz TO-8B CASCADABLE AMPLIFIER

- LOW POWER DRAIN: 90 mW @ 5 VDC
- HIGH GAIN: 20 dB (TYP.)
- WIDE BANDWIDTH: 10 - 1600 MHz (TYP.)
- LOW NOISE: 3.0 dB (TYP.)



Specifications

Characteristic	Typical	Guaranteed ²	
		0° - 50°C	-54° - +85°C
Frequency (Min.)	10 - 1600 MHz	10 - 1500 MHz	10 - 1500 MHz
Small Signal Gain (Min.)	20 dB	19 dB	18 dB
Gain Flatness (Max.)	±6 dB	±9 dB	±1.0 dB
Noise Figure (Max.)			
10 - 1000 MHz	2.5 dB	3.2 dB	3.7 dB
1000 - 1500 MHz	3.0 dB	3.8 dB	4.2 dB
Power Output at 1 dB Compression (Min.)			
10 - 1000 MHz	-1.0 dBm	-2.0 dBm	-2.5 dBm
1000 - 1500 MHz	+3.0 dBm	+1.5 dBm	+1.0 dBm
VSWR (Max.)			
Input	1.3:1	2.0:1	2.0:1
Output	1.5:1	2.0:1	2.0:1
DC Current (Max.) at +5 Volts	18 mA	21 mA	23 mA

Notes:

1. TO - 8B is larger than standard TO - 8 package. (See outline drawing)
2. Measured in a 50-ohm system at +5 VDC nominal

Typical Intermodulation Performance at 25°C

Second Order Harmonic Intercept Point	+27 dBm (Typ.)
Second Order Two Tone Intercept Point	+22 dBm (Typ.)
Third Order Two Tone Intercept Point	+13 dBm (Typ.)

Absolute Maximum Ratings

Ambient Operating

Temperature . . . -54°C to +100°C

Storage

Temperature . . . -62°C to +125°C

Maximum Case

Temperature . . . +125°C

Maximum DC

Voltage . . . 8 Volts

Maximum

Continuous RF

Input Power . . . +6 dBm

Maximum Short

Term RF Input

Power (1 Minute

Max.) . . . 50 Milliwatts

Maximum Peak

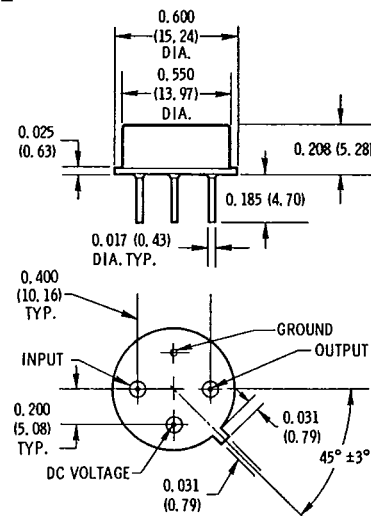
Power . . . 0.5 Watt
(3 μsec Max.)

"S" Series Burn-In

Temperature . . . 125°C

Outline Drawings

A22

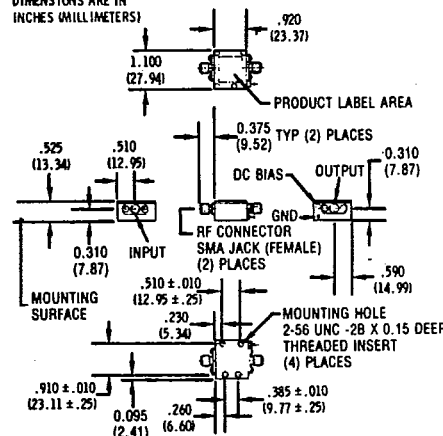


NOTE: DIMENSIONS ARE IN INCHES (MILLIMETERS).

Outline Drawings (Cont.)

CA22

DIMENSIONS ARE IN
INCHES (MILLIMETERS)

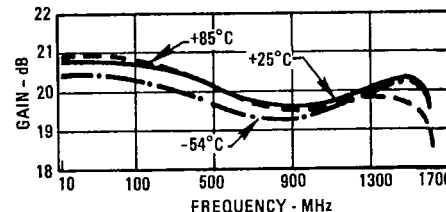


UNIT WEIGHT: 1.0 OUNCES MAX (20.0 GRAMS)

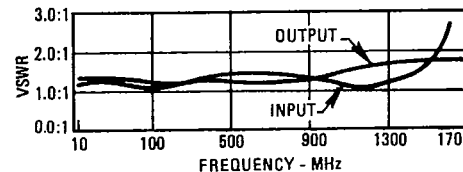
*WJ-A22 is standard WJ-A22 installed in miniature SMA connector housing and guaranteed over 0°C to 50°C temperature range.

Typical Performance at 25°C

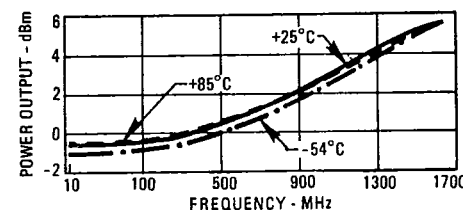
Gain



VSWR

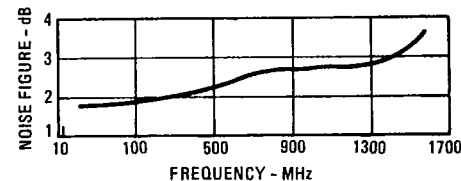


Power Output*

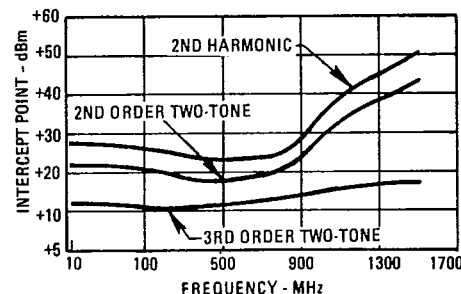


* at 1 dB Gain Compression

Noise Figure



Intercept Point



Typical Automatic Test Data

V_{CC} = +8 Vdc

FREQUENCY MHz	VSWR IN	VSWR OUT	GAIN dB
100.0	1.3	1.3	22.2
200.0	1.4	1.3	22.1
300.0	1.3	1.4	22.0
400.0	1.3	1.2	21.7
500.0	1.3	1.1	21.5
600.0	1.3	1.1	21.2
700.0	1.2	1.1	21.1
800.0	1.1	1.2	20.9
900.0	1.1	1.3	20.8
1000.0	1.1	1.6	20.7
1100.0	1.2	1.6	20.8
1200.0	1.2	1.8	21.0
1300.0	1.3	1.8	21.0
1400.0	1.2	1.9	21.3
1500.0	1.2	2.0	21.4
1600.0	1.7	2.0	21.0
1700.0	3.2	1.9	19.8

V_{CC} = +5 Vdc

FREQUENCY MHz	VSWR IN	VSWR OUT	GAIN dB
100.0	1.1	1.2	20.7
200.0	1.2	1.2	20.5
300.0	1.3	1.3	20.5
400.0	1.4	1.3	20.3
500.0	1.4	1.2	20.1
600.0	1.4	1.2	19.9
700.0	1.4	1.2	19.8
800.0	1.3	1.3	19.6
900.0	1.3	1.3	19.6
1000.0	1.1	1.5	19.6
1100.0	1.1	1.5	19.8
1200.0	1.1	1.6	20.0
1300.0	1.2	1.6	20.1
1400.0	1.3	1.6	20.4
1500.0	1.6	1.7	20.4
1600.0	2.5	1.7	19.6
1700.0	4.5	1.7	17.8

Linear S-Parameters

FREQUENCY MHz	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100.0	0.172	171	12.63	-27	0.01	-16	0.168	-24
200.0	0.177	168	12.74	-25	0.01	-3	0.132	-43
300.0	0.137	169	12.52	-82	0.00	-34	0.150	-64
400.0	0.140	159	12.16	-106	0.01	-41	0.111	-84
500.0	0.134	153	11.85	-130	0.01	-58	0.068	-98
600.0	0.128	148	11.42	-155	0.01	-60	0.052	-98
700.0	0.096	140	11.32	179	0.01	-65	0.048	-32
800.0	0.069	122	11.09	153	0.01	-86	0.104	-14
900.0	0.029	88	10.96	129	0.01	-92	0.145	-25
1000.0	0.038	-31	10.84	100	0.02	-97	0.216	-46
1100.0	0.078	-71	10.96	76	0.02	-127	0.242	-63
1200.0	0.184	-92	11.22	58	0.02	-139	0.276	-75
1300.0	0.117	-125	11.25	20	0.02	-165	0.293	-89
1400.0	0.075	-164	11.55	-9	0.02	-173	0.313	-100
1500.0	0.073	83	11.72	-42	0.02	159	0.331	-111
1600.0	0.265	16	11.22	-81	0.02	152	0.339	-126
1700.0	0.518	-26	9.77	-116	0.01	132	0.319	-141

Linear S-Parameters

FREQUENCY MHz	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100.0	0.028	-95	10.62	-27	0.01	-20	0.137	-19
200.0	0.083	-122	10.59	-55	0.01	-25	0.108	-41
300.0	0.139	-121	10.53	-82	0.01	-30	0.133	-52
400.0	0.159	-141	10.35	-107	0.01	-40	0.112	-65
500.0	0.174	-155	10.09	-130	0.01	-40	0.084	-68
600.0	0.180	-170	9.83	-157	0.01	-57	0.086	-76
700.0	0.164	100	9.74	178	0.02	-67	0.096	-54
800.0	0.141	171	9.55	151	0.02	-78	0.126	-46
900.0	0.113	156	9.55	126	0.02	-92	0.146	-50
1000.0	0.062	170	9.55	90	0.02	-106	0.204	-67
1100.0	0.056	177	9.77	72	0.02	-120	0.212	-79
1200.0	0.059	-173	10.00	45	0.02	-148	0.227	-86
1300.0	0.097	161	10.14	15	0.02	-169	0.228	-98
1400.0	0.113	186	10.41	-16	0.03	177	0.236	-105
1500.0	0.226	51	10.44	-53	0.02	170	0.249	-112
1600.0	0.432	5	9.55	-92	0.02	148	0.258	-125
1700.0	0.635	-34	7.76	-129	0.02	121	0.246	-136