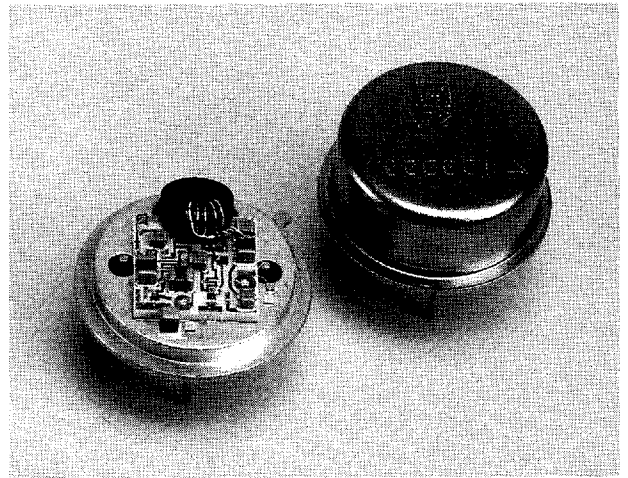


# WJ-A80/SMA80

## 20 to 500 MHz TO-8 CASCADABLE AMPLIFIER

- ◆ AVAILABLE IN SURFACE MOUNT
- ◆ HIGH REVERSE ISOLATION: 39 dB (TYP.)
- ◆ VERY LOW NOISE: 2.3 dB (TYP.)
- ◆ HIGH GAIN: 29 dB (TYP.)
- ◆ MEDIUM LEVEL OUTPUT: +14.3 dBm (TYP.)



### Specifications\*

Characteristics	Typical	Guaranteed	
		0° to 50°C	-54° to +85°C
Frequency (Min.)	10-550 MHz	20-500 MHz	20-500 MHz
Small Signal Gain (Min.)	29.0 dB	27.5 dB	26.5 dB
Gain Flatness (Max.)	±0.3 dB	±0.7 dB	±1.0 dB
Noise Figure (Max.)	2.3 dB	3.0 dB	3.4 dB
Power Output at 1 dB Compression (Min.)	+14.3 dBm	+13.0 dBm	+12.5 dBm
VSWR (Max.)			
Input	1.4:1	1.8:1	2.0:1
Output	1.8:1	2.1:1	2.3:1
DC Current (Max.) at 15 Volts	45 mA	49 mA	52 mA

\*Measured in a 50-ohm system at +15 Vdc Nominal.

Notes:  
WJ-CA80 is a standard WJ-A80 installed in a miniature SMA connector housing and guaranteed over 0°C to 50°C temperature range.

### Typical Intermodulation Performance at 25°C

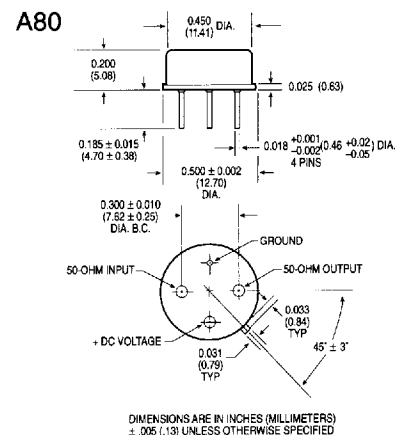
Second Order Harmonic Intercept Point .....+40 dBm (Typ.)  
 Second Order Two-Tone Intercept Point .....+33 dBm (Typ.)  
 Third Order Two-Tone Intercept Point .....+27 dBm (Typ.)

### Absolute Maximum Ratings

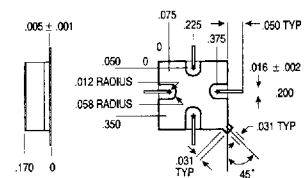
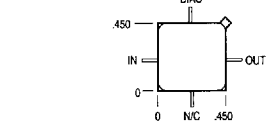
Storage Temperature .....-62°C to +125°C  
 Maximum Case Temperature .....125°C  
 Maximum DC Voltage .....+17 Volts  
 Maximum Continuous RF Input Power .....+6 dBm  
 Maximum Short-Term RF Input Power (1 Minute Max.) .....50 Milliwatts  
 Maximum Peak Power .....0.5 Watt (3 µsec Max.)  
 "S" Series Burn-In Temperature (Case) .....125°C

Weight: 2.0 Grams (0.07 oz.)

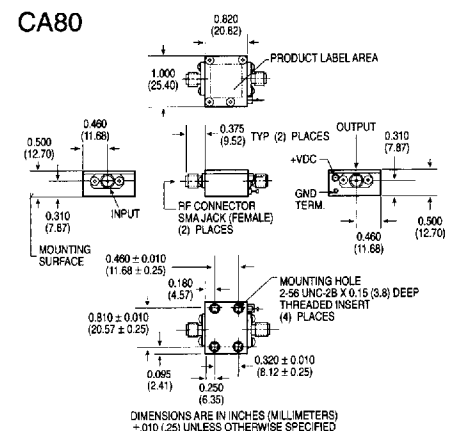
### Outline Drawings



### SMA80

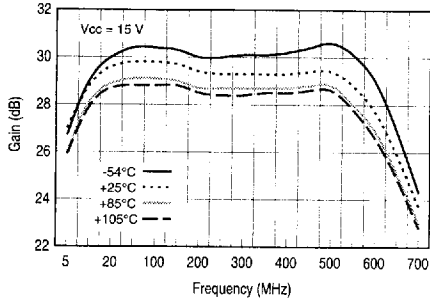


### CA80

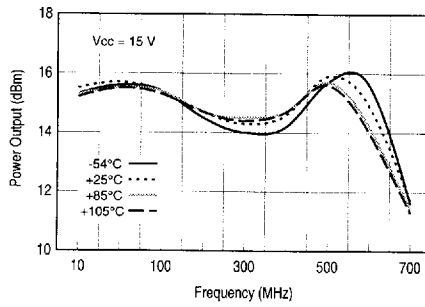


# Typical Performance at 25°C

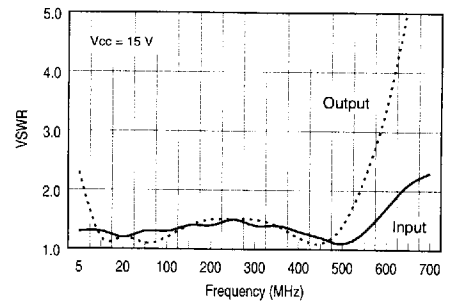
## Gain



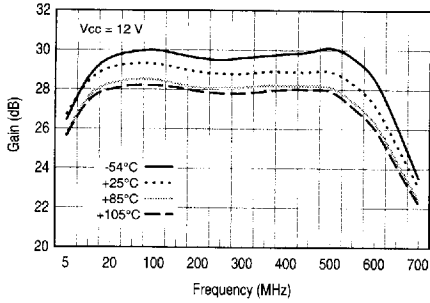
## Power Output (1 dB Gain Compression)



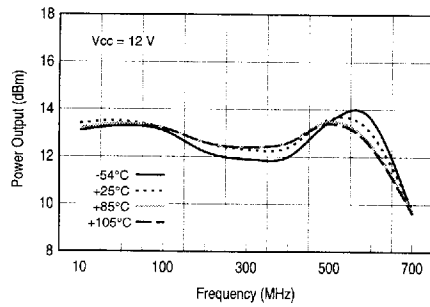
## VSWR



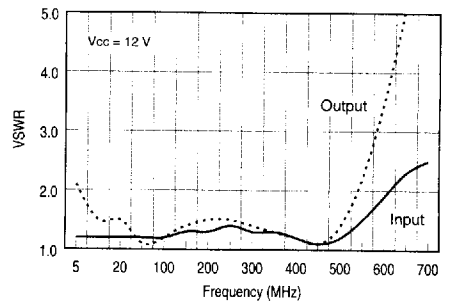
## Gain



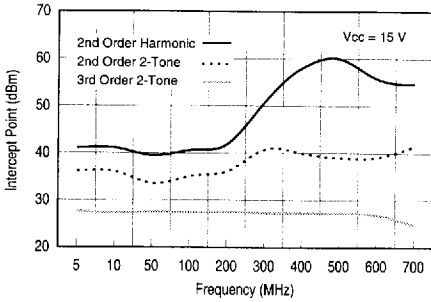
## Power Output (1 dB Gain Compression)



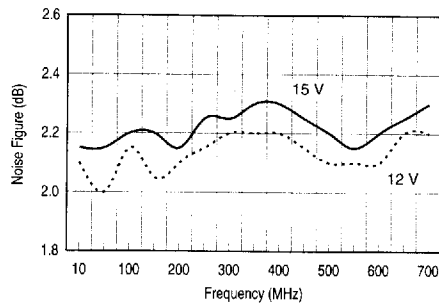
## VSWR



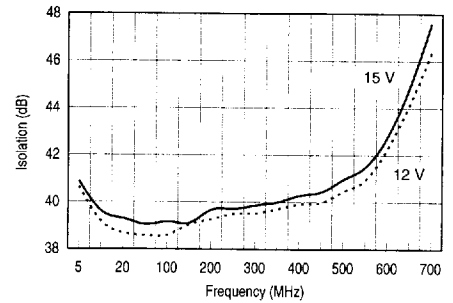
## Intercept Point



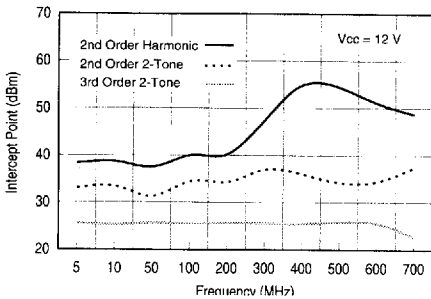
## Noise Figure



## Reverse Isolation



## Intercept Point



1

# Typical Automatic Test Data

## V<sub>CC</sub> = 15.0 V

Frequency MHz	VSWR IN	VSWR OUT	GAIN DB
5.0	1.3	2.3	27.0
10.0	1.3	1.5	28.8
20.0	1.2	1.2	29.6
50.0	1.3	1.1	29.8
100.0	1.3	1.2	29.8
200.0	1.4	1.5	29.4
300.0	1.4	1.5	29.3
400.0	1.3	1.2	29.3
500.0	1.1	1.4	29.4
600.0	1.7	3.4	27.7
700.0	2.3	7.3	23.7

## Linear S-Parameters

Frequency MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5.0	.115	-129	22.41	49	.01	1	.388	142
10.0	.114	-149	27.49	24	.01	-7	.199	125
20.0	.109	-161	30.22	6	.01	-5	.110	64
50.0	.112	-164	30.96	-16	.01	-14	.055	165
100.0	.135	-163	30.80	-41	.01	-21	.108	-103
200.0	.176	-175	29.51	-88	.01	-37	.195	-139
300.0	.180	161	29.03	-132	.01	-54	.187	-166
400.0	.146	121	29.21	-179	.01	-77	.083	164
500.0	.068	4	29.35	126	.01	-115	.083	-28
600.0	.260	-100	24.15	62	.01	-166	.548	-73
700.0	.391	-150	15.29	3	.01	133	.758	-110

## V<sub>CC</sub> = 12.0 V

Frequency MHz	VSWR IN	VSWR OUT	GAIN DB
5.0	1.2	2.1	26.7
10.0	1.2	1.5	28.4
20.0	1.2	1.5	29.1
50.0	1.2	1.1	29.3
100.0	1.2	1.2	29.3
200.0	1.3	1.5	28.9
300.0	1.3	1.4	28.8
400.0	1.2	1.2	28.9
500.0	1.2	1.4	28.9
600.0	1.9	3.5	27.2
700.0	2.5	7.3	23.1

## Linear S-Parameters

Frequency MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5.0	.087	-125	21.65	48	.01	1	.357	141
10.0	.078	-141	26.26	23	.01	-5	.199	123
20.0	.070	-157	28.57	6	.01	-3	.188	112
50.0	.075	-155	29.02	-16	.01	-15	.051	143
100.0	.101	-152	29.07	-42	.01	-23	.102	-113
200.0	.143	-165	27.86	-88	.01	-38	.184	-140
300.0	.146	168	27.42	-133	.01	-56	.181	-165
400.0	.106	123	27.93	179	.01	-84	.079	165
500.0	.084	-25	27.74	124	.01	-118	.181	-29
600.0	.303	-100	22.82	60	.01	-170	.555	-73
700.0	.423	-147	14.28	1	.01	128	.760	-110

## Thermal Data: V<sub>CC</sub> = 15 Vdc

Thermal Resistance  $\theta_{jc}$  ..... 45°C/W  
 Transistor Power Dissipation P<sub>d</sub> ..... 0.270 W  
 Junction Temperature Rise Above Case T<sub>jc</sub> ... 12.2°C