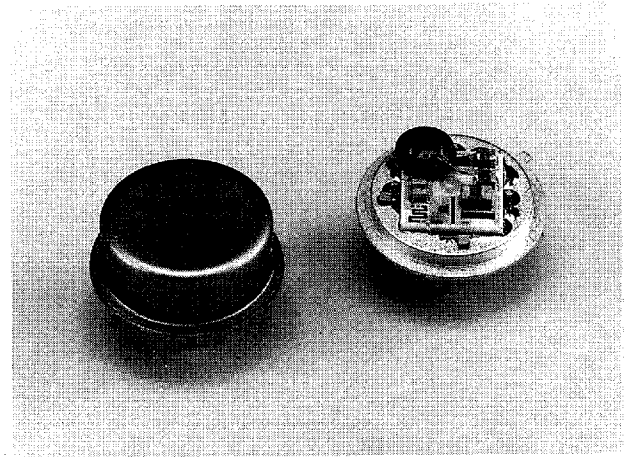


# WJ-A5 / SMA5

## 5 to 500 MHz TO-8 CASCADABLE AMPLIFIER

- ◆ AVAILABLE IN SURFACE MOUNT
- ◆ FLAT BANDWIDTH:  $\pm 2$  dB (TYP.)
- ◆ LOW VSWR:  $< 1.2:1$  INPUT,  $< 1.5:1$  OUTPUT (TYP.)
- ◆ WIDE POWER SUPPLY RANGE:  
+8 TO +20 VOLTS



### Specifications\*

Characteristics	Typical	Guaranteed	
		0° to 50°C	-54° to +100°C
Frequency (Min.)	3-550 MHz	5-500 MHz	5-500 MHz
Small Signal Gain (Min.)	14.8 dB	14 dB	13.5 dB
Gain Flatness (Max.)	$\pm 0.2$ dB	$\pm 0.7$ dB	$\pm 0.7$ dB
Noise Figure (Max.)	4.5 dB	5.5 dB	6.0 dB
Power Output at 1 dB Compression (Min.)	+8.5 dBm	+7 dBm	+7 dBm
VSWR (Max.) Input/Output	1.3:1	1.8:1	2.0:1
DC Current (Max.) at 15 Volts	25 mA	28 mA	30 mA

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

1. WJ-CA5 is a standard WJ-A5 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.....+41 dBm (Typ.)  
 Second Order Two Tone Intercept Point.....+36 dBm (Typ.)  
 Third Order Two Tone Intercept Point.....+22 dBm (Typ.)

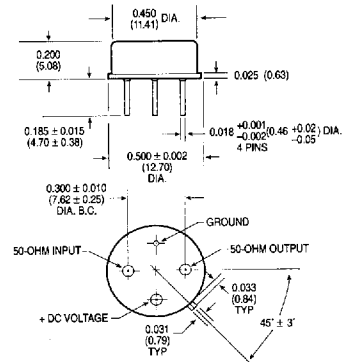
### Absolute Maximum Ratings

Storage Temperature .....-62°C to +125°C  
 Maximum Case Temperature .....125°C  
 Maximum DC Voltage.....+21 Volts  
 Maximum Continuous RF Input Power .....+13 dBm  
 Maximum Short Term RF Input Power.....50 Milliwatts (1 Minute Max.)  
 Maximum Peak Power .....0.5 Watt (3  $\mu$  sec Max.)  
 "S" Series Burn-in Temperature (Case) .....125°C

Weight approximately 2.0 grams (0.07 oz.)

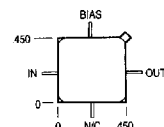
### Outline Drawings

A5



DIMENSIONS ARE IN INCHES (MILLIMETERS)  
 $\pm .005$  (.13) UNLESS OTHERWISE SPECIFIED

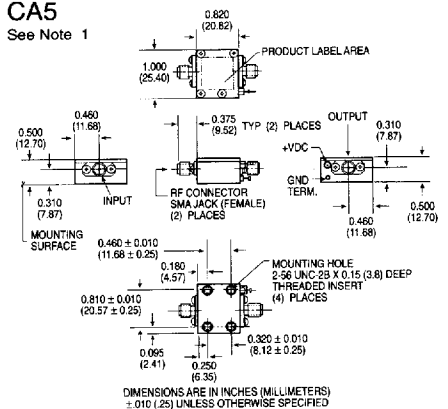
SMA5



DIMENSIONS ARE IN INCHES (MILLIMETERS)  
 $\pm .010$  (.25) UNLESS OTHERWISE SPECIFIED

CA5

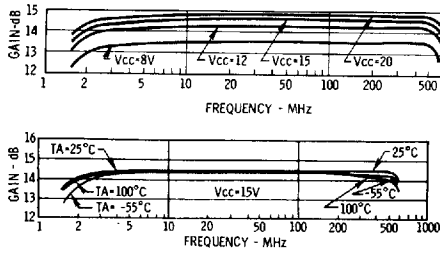
See Note 1



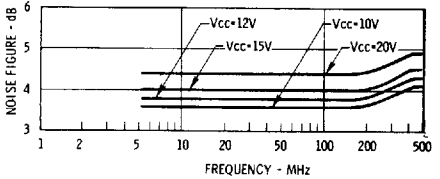
DIMENSIONS ARE IN INCHES (MILLIMETERS)  
 $\pm .010$  (.25) UNLESS OTHERWISE SPECIFIED

# Typical Performance at 25°C

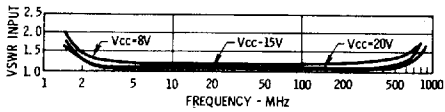
## Gain



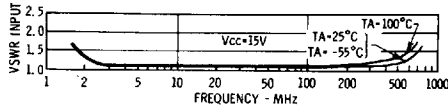
## Noise Figure



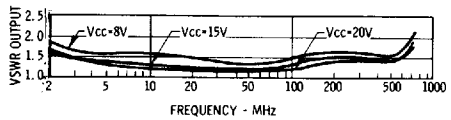
## Input VSWR



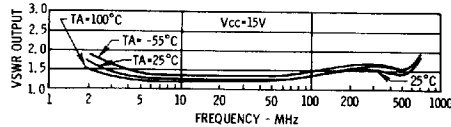
## Input VSWR Over Temperature



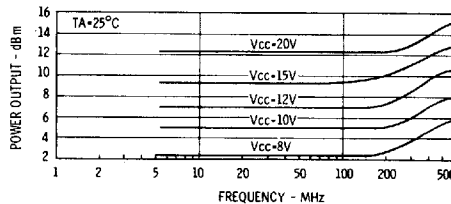
## Output VSWR



## Output VSWR Over Temperature

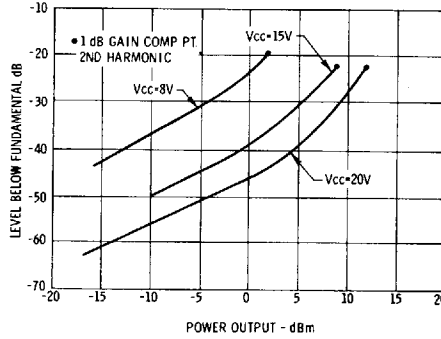


## Power Output\*

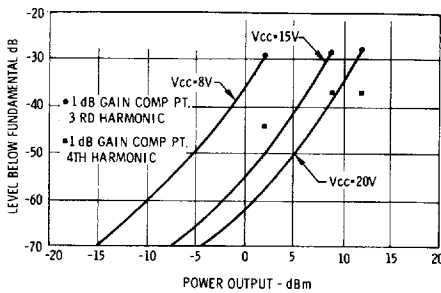


\* at 1 dB Gain Compression

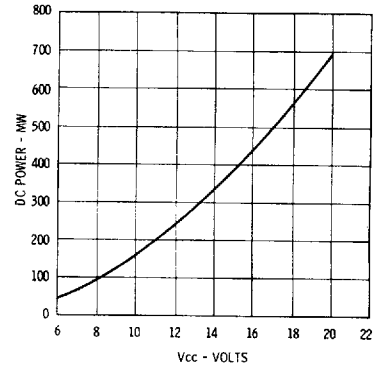
## Second Harmonic Suppression vs. Power Out



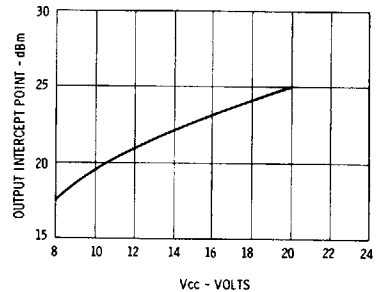
## Third Harmonic Suppression vs. Power Out



## DC Power Drain vs. Supply Voltage



## Two-Tone Third Order Output Intercept Point vs. Supply Voltage



## Typical Automatic Test Data

### Vcc = 15.0 V

Frequency MHz	VSWR IN	VSWR OUT	GAIN DB
2.0	1.8	1.0	15.3
5.0	1.4	1.1	15.1
10.0	1.3	1.1	15.0
50.0	1.2	1.1	15.2
100.0	1.3	1.2	15.0
200.0	1.2	1.3	14.9
300.0	1.2	1.4	15.0
400.0	1.2	1.4	15.2
500.0	1.1	1.4	15.5
600.0	1.2	1.3	15.7
700.0	1.2	1.3	15.4

### Linear S-Parameters

Frequency MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2.0	0.284	-104	5.82	-158.9	0.11	-1.8	0.023	-156
5.0	0.162	-143	5.69	-172.7	0.11	-1.9	0.056	-172
10.0	0.145	-156	5.60	-178.2	0.11	-1.5	0.043	-165
50.0	0.102	163	5.72	169.4	0.11	-2.1	0.066	76
100.0	0.118	151	5.63	158.2	0.11	-3.2	0.086	81
200.0	0.103	135	5.58	137.9	0.12	-7.0	0.112	51
300.0	0.088	105	5.65	116.7	0.12	-10.8	0.151	21
400.0	0.075	66	5.79	95.7	0.13	-14.5	0.166	-10
500.0	0.054	23	5.96	71.3	0.13	-20.6	0.165	-47
600.0	0.082	-25	6.10	44.5	0.13	-26.5	0.139	-95
700.0	0.100	-54	5.91	15.0	0.14	-31.4	0.126	-168

## Thermal Data: Vcc = 15 Vdc

Thermal Resistance  $\theta_{jc}$  ..... 45°C/W  
 Transistor Power Dissipation  $P_d$  ..... 0.198 W  
 Junction Temperature Rise Above Case  $T_{jc}$  ... 9°C

1