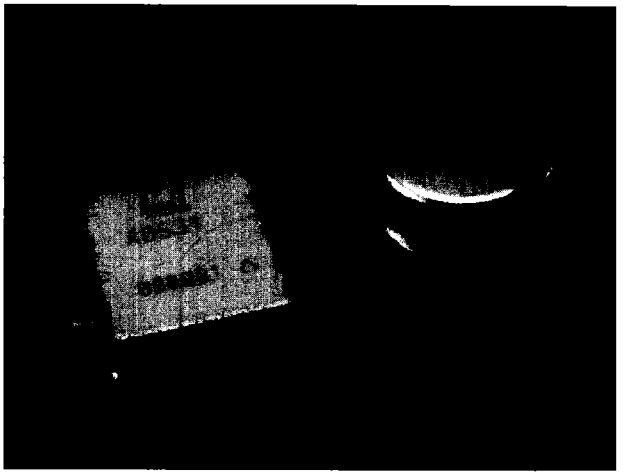
A0531 / SMA0531

2 to 500 MHz
TO-8 CASCADABLE AMPLIFIER



- ◆ AVAILABLE IN SURFACE MOUNT
- ◆ HIGH GAIN, TWO STAGES: 32 dB (TYP.)
- ◆ HIGH EFFICIENCY: 17 mA at +5 Vdc
- ◆ LOW NOISE FIGURE: 2.0 dB (TYP.)
- ◆ LOW POWER DRAIN: 85 mW at +5 Vdc
- ◆ LOW VSWR: 1.3:1 (TYP.)

Specifications*

Characteristics	Typical	Guaranteed 0° to 50°C	Guaranteed -54° to +85°C
Frequency (Min.)	1-600 MHz	2-500 MHz	2-500 MHz
Small Signal Gain (Min.)	31.7 dB	30.0 dB	29.0 dB
Gain Flatness (Max.)	±0.4 dB	±0.8 dB	±1.0 dB
Noise Figure (Max.)	2.0 dB	2.5 dB	3.0 dB
Power Output at 1 dB Compression (Min.)	2.5 dBm	1.5 dBm	0.5 dBm
VSWR Input/Output (Max.)	1.3:1	1.8:1	2.0:1
DC Current (Max.) at +5 Volts	17 mA	19 mA	21 mA

*Measured in a 50-ohm system at +5 Vdc Nominal.
Note: WJ-CA0531 is a standard WJ-A0531 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 ..... +36 dBm (Typ.)
Second Order Two-Tone Intercept Point ..... +30 dBm (Typ.)
Third Order Two-Tone Intercept Point ..... +14 dBm (Typ.)

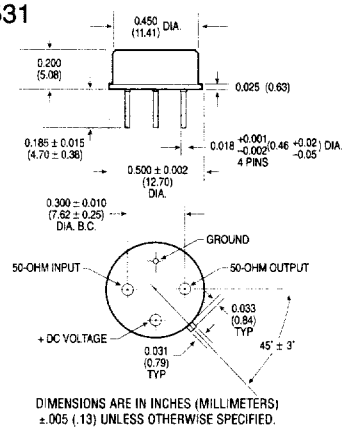
Absolute Maximum Ratings

Storage Temperature ..... -62°C to +125°C
Maximum Case Temperature ..... +125°C
Maximum DC Voltage ..... 10 Volts
Maximum Continuous RF Input Power ..... +10 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 approximately 2.0 grams (0.07 oz.)

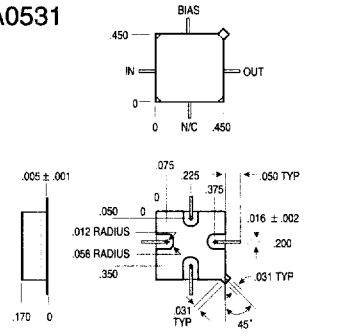
Outline Drawings

A0531



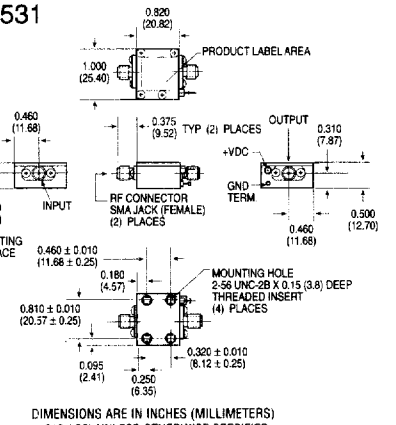
DIMENSIONS ARE IN INCHES (MILLIMETERS)
±.005 (.13) UNLESS OTHERWISE SPECIFIED.

SMA0531



DIMENSIONS ARE IN INCHES (MILLIMETERS)
±.010 (.25) UNLESS OTHERWISE SPECIFIED

CA0531

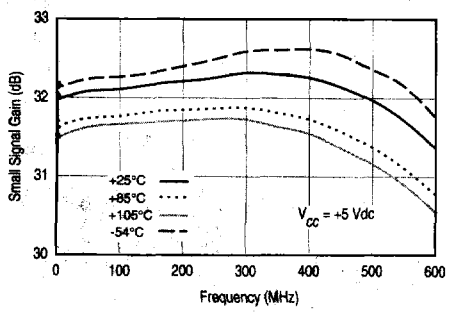


DIMENSIONS ARE IN INCHES (MILLIMETERS)
±.010 (.25) UNLESS OTHERWISE SPECIFIED.

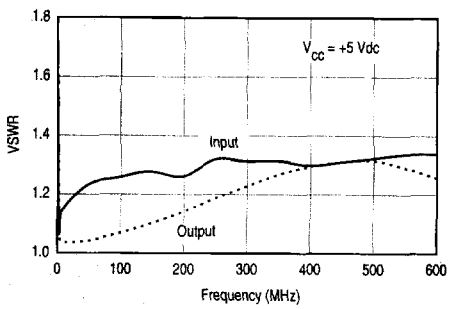
WJ Customer Service: 1-800-WJ1-4401 • FAX: 415-813-2758 • e-mail: mw.devices@wj.com

Typical Performance at 25°C

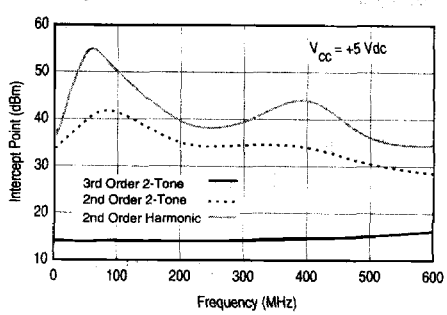
Small Signal Gain



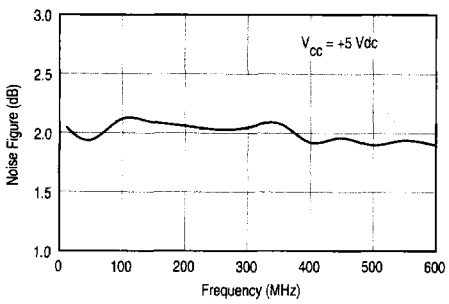
VSWR



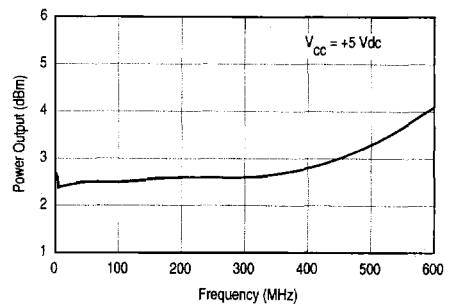
Intercept Point



Noise Figure



Power Output (1dB Gain Compression)



Typical Automatic Test Data

Linear S-Parameters (V_{CC} = +5 Vdc)

Frequency	S11		S21		S12		S22		VSWR		Gain
(MHz)	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang	In	Out	(dB)
1	0.070	-155.8	38.711	49.1	0.009	56.5	0.232	149.0	1.15	1.60	31.8
2	0.042	11.4	40.032	22.6	0.010	25.6	0.083	106.9	1.09	1.18	32.0
5	0.058	10.7	39.753	7.6	0.010	7.6	0.029	81.2	1.12	1.06	32.0
10	0.072	14.8	39.799	1.6	0.010	2.1	0.018	68.8	1.16	1.04	32.0
50	0.105	6.0	40.186	-14.3	0.010	-0.7	0.021	52.6	1.24	1.04	32.1
100	0.115	-3.7	40.313	-30.3	0.010	-2.4	0.033	60.9	1.26	1.07	32.1
150	0.122	-14.4	40.598	-46.1	0.010	-1.6	0.049	59.0	1.28	1.10	32.2
200	0.116	-25.9	40.783	-62.3	0.010	-1.5	0.067	51.8	1.26	1.14	32.2
250	0.138	-33.6	41.005	-78.4	0.010	-3.3	0.086	44.7	1.32	1.19	32.3
300	0.135	-41.0	41.316	-95.0	0.010	-1.0	0.103	36.2	1.31	1.23	32.3
350	0.136	-53.7	41.210	-112.0	0.010	-1.1	0.119	26.1	1.31	1.27	32.3
400	0.130	-61.8	41.013	-129.4	0.011	-2.6	0.129	14.5	1.30	1.30	32.3
450	0.135	-76.4	40.468	-147.3	0.011	-3.1	0.135	-0.2	1.31	1.31	32.1
500	0.139	-89.0	39.675	-165.6	0.012	-4.4	0.136	-15.6	1.32	1.32	32.0
550	0.158	-105.3	38.524	176.1	0.012	-5.9	0.127	-33.8	1.38	1.29	31.7
600	0.165	-121.9	37.006	157.4	0.012	-8.2	0.114	-58.7	1.39	1.26	31.4

Thermal Data: V_{CC} = +5 Vdc

Thermal Resistance (θjc) ..... 185°C/W
Transistor Power Dissipation (Pd) ..... 0.048 W
Junction Temperature Rise above Case (T_{jc}) ..... 9°C