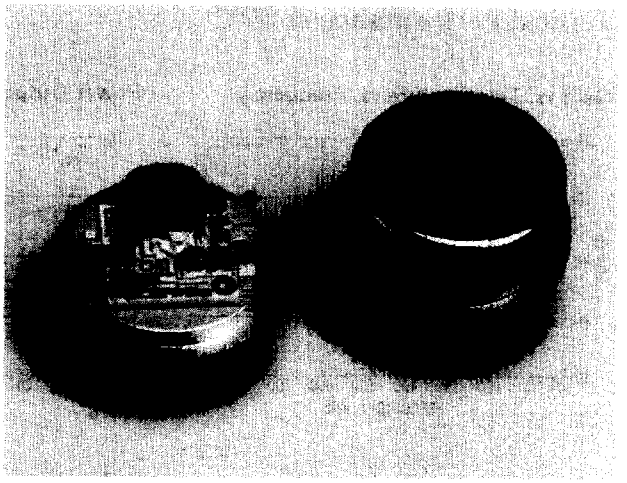
A181 / SMA181



10 to 500 MHz
TO-8 CASCADABLE AMPLIFIER

- ◆ AVAILABLE IN SURFACE MOUNT
- ◆ HIGH REVERSE ISOLATION: 22 dB (TYP.)
- ◆ HIGH OUTPUT POWER: +22 dBm (TYP.)
- ◆ HIGH THIRD ORDER I.P.: +35 dBm (TYP.)

Specifications*

Characteristics	Typical	Guaranteed 0° to 50°C	Guaranteed -54° to +85°C
Frequency (Min.)	5-400 MHz	10-250 MHz	10-250 MHz
Small Signal Gain (Min.)	16.5 dB	15.5 dB	14.5 dB
Gain Flatness (Max.)	±0.3 dB	±0.7 dB	±0.8 dB
Noise Figure (Max.)	3.8 dB	4.5 dB	5.0 dB
Power Output			
at 1 dB Compression (Min.)	+22.0 dBm	+20 dBm	+19.5 dBm
VSWR (Max.)			
Input	1.4:1	1.7:1	1.9:1
Output	1.4:1	1.9:1	2.1:1
DC Current (Max.) at 15 Volts	95 mA	104 mA	113 mA

*Measured in a 50-ohm system at +15 Vdc Nominal.
Notes:
WJ-CA180 is a standard WJ-A180 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 .....+54 dBm (Typ.)
Second Order Two-Tone Intercept Point .....+48 dBm (Typ.)
Third Order Two-Tone Intercept Point .....+35 dBm (Typ.)

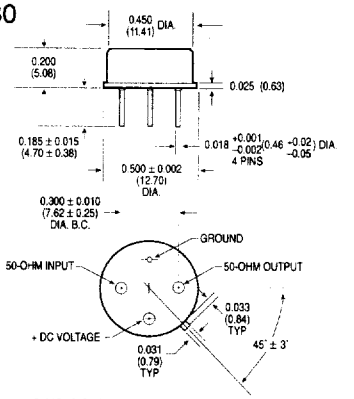
Absolute Maximum Ratings

Storage Temperature .....-62°C to +125°C
Maximum Case Temperature .....85°C
Maximum DC Voltage .....+17 Volts
Maximum Continuous RF Input Power .....+15 dBm
Maximum Short-Term RF Input Power (1 Minute Max.) .....100 Milliwatts
Maximum Peak Power .....0.5 Watt (3 µsec Max.)
"S" Series Burn-In Temperature (Case) .....85°C

Weight approximately 2.0 grams (0.07 oz.)

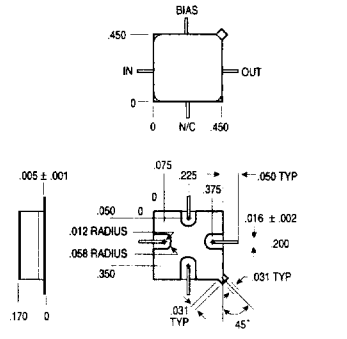
Outline Drawings

A180



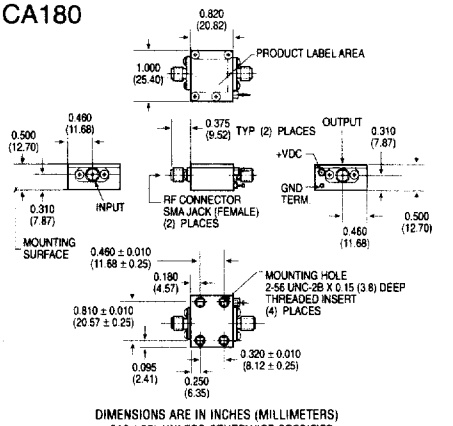
DIMENSIONS ARE IN INCHES (MILLIMETERS)
±.005 (.13) UNLESS OTHERWISE SPECIFIED

SMA180



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

CA180

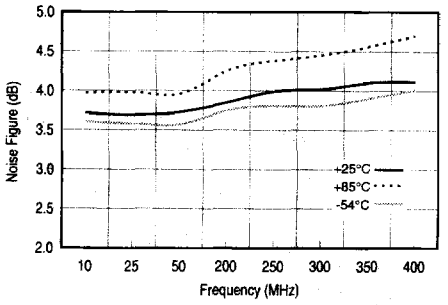


DIMENSIONS ARE IN INCHES (MILLIMETERS)
±.010 (.25) UNLESS OTHERWISE SPECIFIED

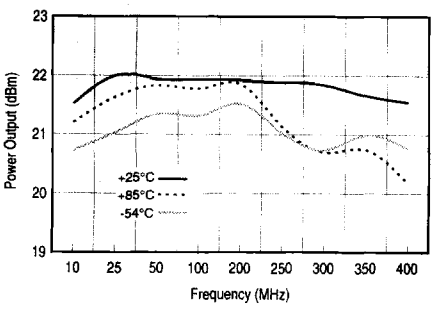
WJ Customer Service: 1-800-WJ1-4401 • FAX: 415-813-2758 • e-mail: mw.devices@wj.com

Typical Performance at 25°C

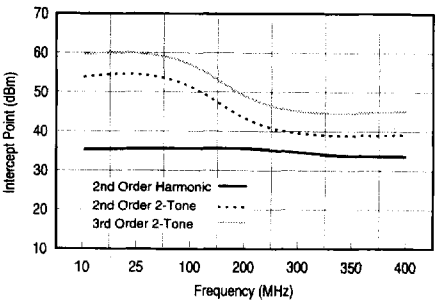
Noise Figure



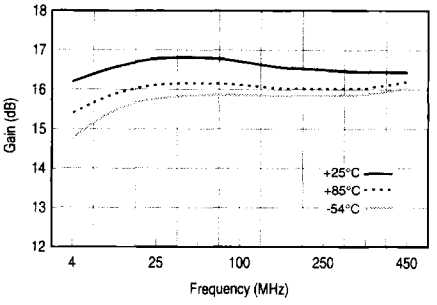
Power Output (1dB Gain Compression)



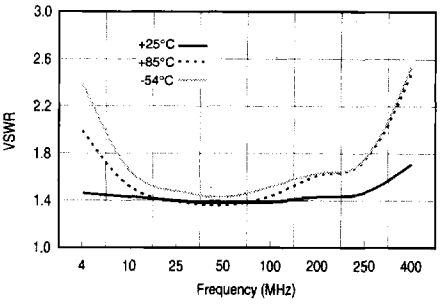
Intercept Point



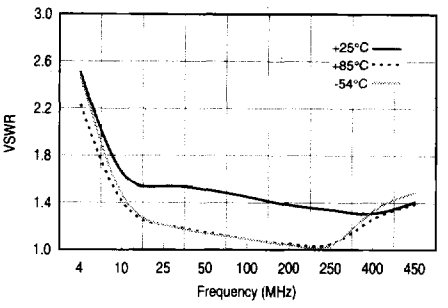
Gain



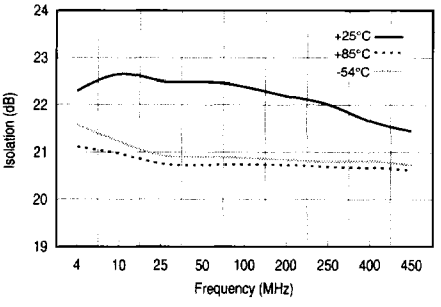
Output VSWR



Input VSWR



Reverse Isolation



Typical Automatic Test Data

V_{CC} = 15.0 V

Frequency MHz	VSWR IN	VSWR OUT	GAIN DB
5.0	2.2	2.2	15.2
10.0	1.4	1.6	15.5
50.0	1.1	1.3	15.8
100.0	1.1	1.4	15.7
150.0	1.1	1.5	15.7
200.0	1.1	1.6	15.7
250.0	1.0	1.7	15.7
300.0	1.0	1.8	15.8
350.0	1.1	2.0	15.9
400.0	1.1	2.2	16.0
450.0	1.3	2.5	16.1

Linear S-Parameters

Frequency	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5.0	.379	-78	5.81	-146	.075	18	.383	162
10.0	.189	-99	5.97	-165	.089	9	.235	159
50.0	.083	-159	6.16	172	.094	0	.165	179
100.0	.175	174	6.14	159	.095	-5	.180	-170
150.0	.063	154	6.13	148	.095	-8	.206	-167
200.0	.051	135	6.10	137	.095	-11	.237	-167
250.0	.041	107	6.13	136	.095	-14	.270	-169
300.0	.040	67	6.18	115	.095	-17	.305	-172
350.0	.058	29	6.25	104	.095	-20	.346	-176
400.0	.088	4	6.35	93	.095	-23	.389	178
450.0	.131	-11	6.45	81	.095	-26	.434	171

Thermal Data: V_{CC} = 15 Vdc

Thermal Resistance θ_{jc} .....148°C/W
Transistor Power Dissipation P_d .....0.622 W
Junction Temperature Rise Above Case T_{jc} .....92°C