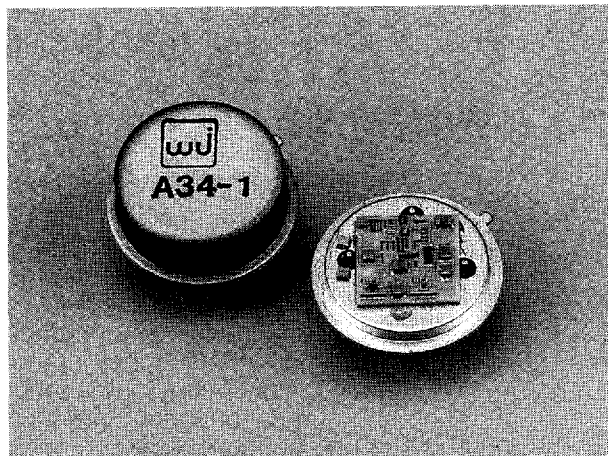


# WJ-A34-1 / SMA34-1

## 1.5 to 2.3 GHz TO-8 CASCADABLE AMPLIFIER

- ◆ AVAILABLE IN SURFACE MOUNT
- ◆ HIGH GAIN - TWO STAGES: 14.5 dB (TYP.)
- ◆ LOW PHASE DEVIATION FROM LINEARITY:  $< \pm 3.0^\circ$ , 1500-2300 MHz
- ◆ MEDIUM LEVEL OUTPUT: +8 dBm (TYP.)
- ◆ ULTRA WIDE TYPICAL BANDWIDTH: 0.1 TO 2.4 GHz



### Specifications\*

| Characteristics                            | Typical     | Guaranteed  |               |
|--------------------------------------------|-------------|-------------|---------------|
|                                            |             | 0° to 50°C  | -54° to +85°C |
| Frequency (Min.)                           | 0.1-2.4 GHz | 1.5-2.3 GHz | 1.5-2.3 GHz   |
| Small Signal Gain (Min.)                   | 14.5 dB     | 13.7 dB     | 12.5 dB       |
| Gain Flatness (Max.)                       | ±0.3 dB     | ±0.6 dB     | ±0.8 dB       |
| Noise Figure (Max.)                        | 5.7 dB      | 6.8 dB      | 7.3 dB        |
| Power Output<br>at 1 dB Compression (Min.) | +8.0 dBm    | +6.5 dBm    | +6.0 dBm      |
| VSWR (Max.) Input/Output                   | 1.6:1       | 2.0:1       | 2.0:1         |
| DC Current (Max.) at 15 Volts              | 34 mA       | 38 mA       | 40 mA         |

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

Notes:

1. WJ-CA34-1 is a standard WJ-A34-1 installed in a miniature SMA connector housing and guaranteed over 0°C to 50°C temperature range.

### Typical Intermodulation Performance at 25°C

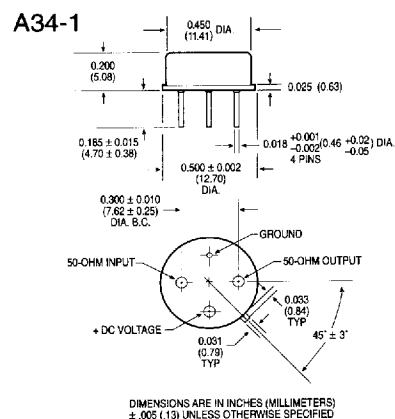
|                                            |                |
|--------------------------------------------|----------------|
| Second Order Harmonic Intercept Point..... | +45 dBm (Typ.) |
| Second Order Two Tone Intercept Point..... | +41 dBm (Typ.) |
| Third Order Two Tone Intercept Point.....  | +20 dBm (Typ.) |

### Absolute Maximum Ratings

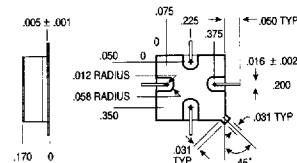
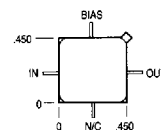
|                                             |                               |
|---------------------------------------------|-------------------------------|
| Storage Temperature .....                   | -62°C to +125°C               |
| Maximum Case Temperature .....              | 125°C                         |
| Maximum DC Voltage.....                     | +20 Volts                     |
| Maximum Continuous RF Input Power .....     | +10 dBm                       |
| Maximum Short Term RF Input Power.....      | 50 Milliwatts (1 Minute Max.) |
| 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



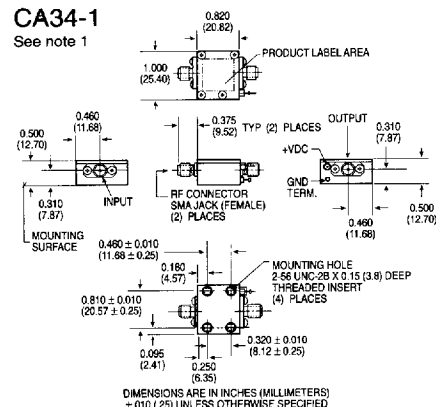
SMA34-1



DIMENSIONS ARE IN INCHES (MILLIMETERS  
+ 0.10 ( 25) UNLESS OTHERWISE SPECIFIED

CA34-1

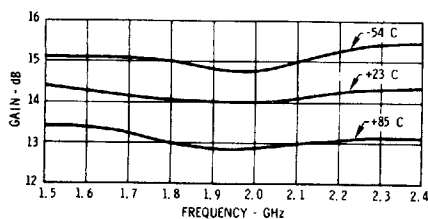
See note 1



## Typical Performance at 25°C

## Typical Automatic Test Data

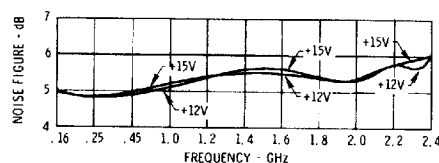
### Gain



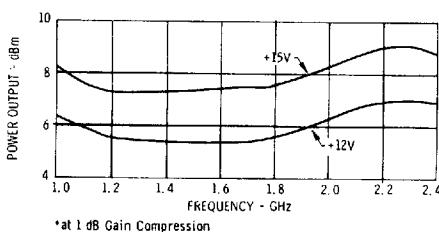
### V<sub>CC</sub> = 15.0 V

| Frequency<br>MHz | VSWR<br>IN | VSWR<br>OUT | GAIN<br>DB |
|------------------|------------|-------------|------------|
| 100.0            | 1.2        | 1.1         | 14.6       |
| 200.0            | 1.2        | 1.1         | 14.8       |
| 300.0            | 1.1        | 1.1         | 14.8       |
| 400.0            | 1.1        | 1.1         | 14.7       |
| 500.0            | 1.1        | 1.2         | 14.6       |
| 600.0            | 1.1        | 1.2         | 14.7       |
| 700.0            | 1.2        | 1.2         | 14.8       |
| 800.0            | 1.2        | 1.3         | 14.8       |
| 900.0            | 1.3        | 1.4         | 14.9       |
| 1000.0           | 1.4        | 1.4         | 14.9       |
| 1100.0           | 1.5        | 1.5         | 14.9       |
| 1200.0           | 1.6        | 1.6         | 14.8       |
| 1300.0           | 1.6        | 1.6         | 14.7       |
| 1400.0           | 1.6        | 1.6         | 14.6       |
| 1500.0           | 1.7        | 1.6         | 14.6       |
| 1600.0           | 1.7        | 1.6         | 14.5       |
| 1700.0           | 1.7        | 1.5         | 14.6       |
| 1800.0           | 1.6        | 1.5         | 14.5       |
| 1900.0           | 1.6        | 1.4         | 14.5       |
| 2000.0           | 1.5        | 1.4         | 14.6       |
| 2100.0           | 1.5        | 1.4         | 14.7       |
| 2200.0           | 1.4        | 1.4         | 14.8       |
| 2300.0           | 1.5        | 1.4         | 14.9       |
| 2400.0           | 1.7        | 1.5         | 15.0       |
| 2500.0           | 2.0        | 1.5         | 14.7       |

### Noise Figure



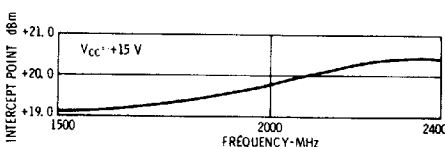
### Power Output\*



### Linear S-Parameters

| Frequency<br>MHz | S11  |      | S21   |      | S12  |      | S22  |      |
|------------------|------|------|-------|------|------|------|------|------|
|                  | MAG  | ANG  | MAG   | ANG  | MAG  | ANG  | MAG  | ANG  |
| 100.0            | .085 | -144 | 5.392 | -9   | .036 | 8    | .038 | -111 |
| 200.0            | .079 | -173 | 5.513 | -31  | .039 | -2   | .028 | 173  |
| 300.0            | .062 | 162  | 5.496 | -50  | .040 | -9   | .048 | 114  |
| 400.0            | .031 | 144  | 5.433 | -68  | .041 | -19  | .065 | 80   |
| 500.0            | .026 | -147 | 5.362 | -84  | .040 | -28  | .070 | 59   |
| 600.0            | .047 | -137 | 5.446 | -102 | .038 | -34  | .085 | 48   |
| 700.0            | .071 | -137 | 5.480 | -119 | .037 | -40  | .109 | 35   |
| 800.0            | .107 | -147 | 5.520 | -137 | .037 | -47  | .135 | 20   |
| 900.0            | .136 | -164 | 5.533 | -154 | .036 | -53  | .161 | 5    |
| 1000.0           | .170 | 178  | 5.529 | -172 | .035 | -59  | .181 | -10  |
| 1100.0           | .195 | 162  | 5.530 | 171  | .034 | -66  | .199 | -27  |
| 1200.0           | .217 | 145  | 5.497 | 153  | .033 | -74  | .219 | -43  |
| 1300.0           | .233 | 131  | 5.456 | 136  | .031 | -80  | .231 | -58  |
| 1400.0           | .235 | 113  | 5.380 | 118  | .029 | -87  | .235 | -74  |
| 1500.0           | .246 | 98   | 5.431 | 101  | .028 | -93  | .235 | -89  |
| 1600.0           | .249 | 81   | 5.281 | 85   | .028 | -98  | .225 | -104 |
| 1700.0           | .250 | 62   | 5.343 | 67   | .027 | -104 | .208 | -123 |
| 1800.0           | .245 | 48   | 5.295 | 50   | .026 | -109 | .195 | -143 |
| 1900.0           | .226 | 26   | 5.286 | 32   | .027 | -114 | .181 | -165 |
| 2000.0           | .214 | 5    | 5.400 | 14   | .027 | -121 | .175 | 170  |
| 2100.0           | .196 | -23  | 5.447 | -4   | .027 | -126 | .174 | 145  |
| 2200.0           | .181 | -57  | 5.524 | -23  | .027 | -131 | .173 | 121  |
| 2300.0           | .203 | -97  | 5.576 | -44  | .029 | -134 | .177 | 96   |
| 2400.0           | .247 | -134 | 5.592 | -66  | .029 | -141 | .185 | 67   |
| 2500.0           | .328 | -168 | 5.435 | -90  | .032 | -143 | .192 | 35   |

### Third Order Two Tone Intercept Point



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

Thermal Resistance  $\theta_{jc}$  ..... 45°C/W  
 Transistor Power Dissipation  $P_d$  ..... 0.247 W  
 Junction Temperature Rise Above Case  $T_{jc}$  ... 11°C