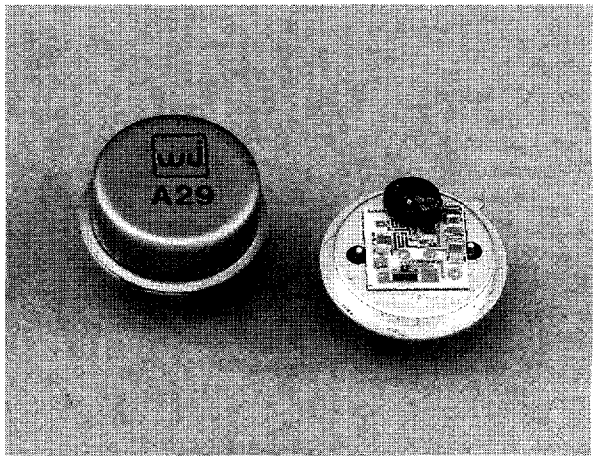
# WJ-A29 / SMA29




## 10 to 1500 MHz
## TO-8 CASCADABLE AMPLIFIER

- ◆ AVAILABLE IN SURFACE MOUNT
- ◆ HIGH OUTPUT POWER: +22 dBm (TYP.)
- ◆ HIGH THIRD ORDER I.P.: +34 dBm (TYP.)
- ◆ WIDE POWER SUPPLY RANGE: +10 TO +18 VOLTS

## Specifications*

| Characteristics | Typical | Guaranteed 0° to 50°C | Guaranteed -54° to +85°C |
|---|---|---|---|
| Frequency (Min.) | 5-1700 MHz | 10-1500 MHz | 10-1500 MHz |
| Small Signal Gain (Min.) | 6.5 dB | 5.5 dB | 5.0 dB |
| Gain Flatness (Max.) | ±0.2 dB | ±0.5 dB | ±0.7 dB |
| Noise Figure (Max.) | 9.0 dB | 10.0 dB | 10.5 dB |
| Power Output at 1 dB Compression (Min.) | +22.0 dBm | +20.0 dBm | +19.5 dBm |
| VSWR (Max.) Input/Output | < 1.7:1 | 2.0:1 | 2.0:1 |
| DC Current (Max.) at 15 Volts | 105 mA | 107 mA | 109 mA |

*Measured in a 50-ohm system at +15 Vdc Nominal.
Notes:
1. WJ-CA29 is a standard WJ-A29 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 .....>+40 dBm (Typ.)
Third Order Two Tone Intercept Point.....+34 dBm (Typ.)

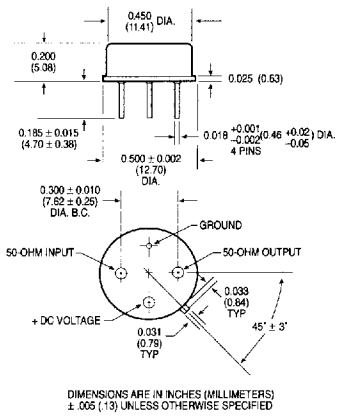
## Absolute Maximum Ratings

Storage Temperature .....-62°C to +125°C
Maximum Case Temperature .....125°C
Maximum DC Voltage.....+18 Volts
Maximum Continuous RF Input Power.....+19 dBm
Maximum Short Term RF Input Power.....125 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.)

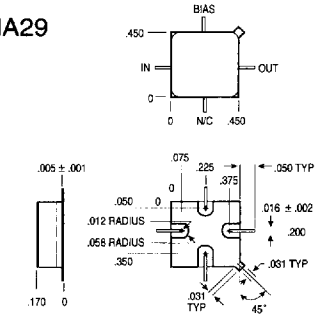
## Outline Drawings

A29



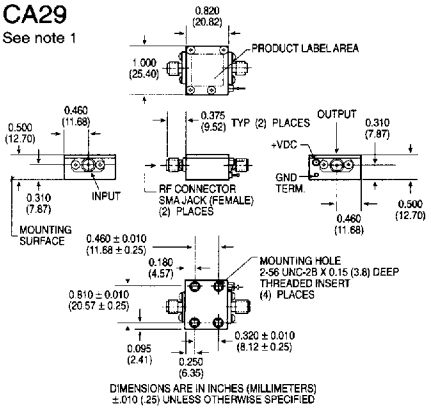

DIMENSIONS ARE IN INCHES (MILLIMETERS)
± .005 (.13) UNLESS OTHERWISE SPECIFIED

SMA29




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

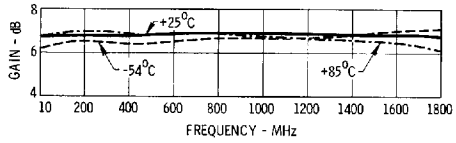
CA29
See note 1



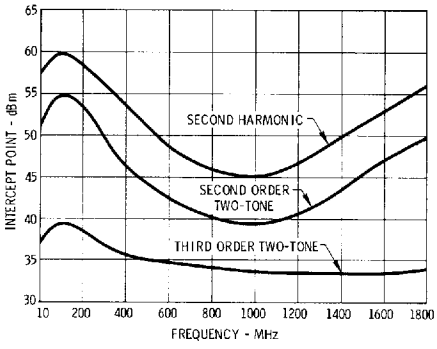

DIMENSIONS ARE IN INCHES (MILLIMETERS)
±.010 (.25) UNLESS OTHERWISE SPECIFIED

## Typical Performance at 25°C

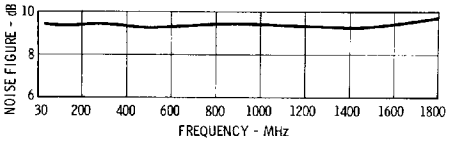
### Gain



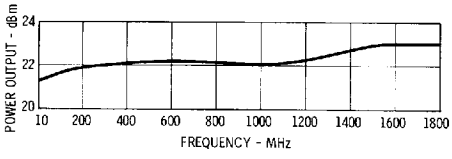

### Intercept Point

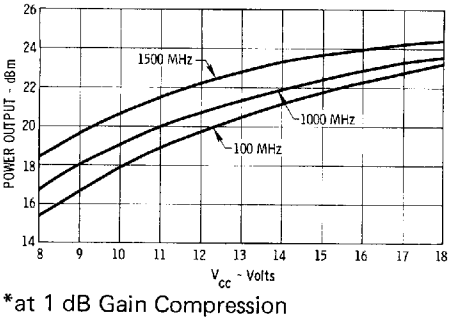



### Noise Figure



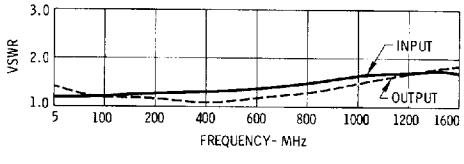

### Power Output *




*at 1 dB Gain Compression

### VSWR




## Typical Automatic Test Data

### $V_{CC}$ = 15.0 V

| Frequency MHz | VSWR IN | VSWR OUT | GAIN DB |
|---|---|---|---|
| 2.0 | 1.6 | 1.9 | 6.1 |
| 5.0 | 1.3 | 1.4 | 6.4 |
| 10.0 | 1.2 | 1.3 | 6.5 |
| 50.0 | 1.2 | 1.2 | 6.6 |
| 100.0 | 1.2 | 1.2 | 6.5 |
| 200.0 | 1.2 | 1.2 | 6.4 |
| 300.0 | 1.2 | 1.2 | 6.4 |
| 400.0 | 1.2 | 1.1 | 6.5 |
| 500.0 | 1.2 | 1.1 | 6.7 |
| 600.0 | 1.3 | 1.1 | 6.8 |
| 700.0 | 1.3 | 1.1 | 6.9 |
| 800.0 | 1.3 | 1.1 | 6.9 |
| 900.0 | 1.3 | 1.2 | 7.0 |
| 1000.0 | 1.3 | 1.2 | 7.1 |
| 1100.0 | 1.3 | 1.3 | 7.1 |
| 1200.0 | 1.4 | 1.4 | 7.0 |
| 1300.0 | 1.4 | 1.4 | 6.9 |
| 1400.0 | 1.4 | 1.5 | 6.8 |
| 1500.0 | 1.5 | 1.5 | 6.7 |
| 1600.0 | 1.6 | 1.6 | 6.4 |
| 1700.0 | 1.9 | 1.6 | 6.0 |

### Linear S-Parameters

| Frequency | S11 | | S21 | | S12 | | S22 | |
|---|---|---|---|---|---|---|---|---|
| MHz | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 2.0 | .242 | –94 | 2.020 | –152 | .197 | 32 | .302 | 150 |
| 5.0 | .121 | –129 | 2.097 | –170 | .207 | 12 | .152 | 152 |
| 10.0 | .098 | –150 | 2.113 | –176 | .209 | 6 | .123 | 160 |
| 50.0 | .092 | –178 | 2.132 | 174 | .212 | –1 | .103 | 165 |
| 100.0 | .086 | 174 | 2.116 | 167 | .212 | –5 | .099 | 159 |
| 200.0 | .082 | 173 | 2.100 | 154 | .211 | –11 | .089 | 144 |
| 300.0 | .084 | 173 | 2.088 | 142 | .212 | –16 | .076 | 132 |
| 400.0 | .089 | 175 | 2.119 | 129 | .214 | –21 | .056 | 128 |
| 500.0 | .101 | 166 | 2.150 | 117 | .213 | –28 | .042 | 133 |
| 600.0 | .111 | 155 | 2.181 | 103 | .213 | –34 | .033 | 150 |
| 700.0 | .117 | 145 | 2.202 | 89 | .211 | –40 | .038 | 173 |
| 800.0 | .123 | 135 | 2.220 | 76 | .211 | –46 | .059 | 178 |
| 900.0 | .133 | 120 | 2.244 | 62 | .212 | –51 | .083 | 169 |
| 1000.0 | .145 | 99 | 2.254 | 48 | .210 | –58 | .111 | 156 |
| 1100.0 | .147 | 81 | 2.252 | 34 | .210 | –64 | .136 | 142 |
| 1200.0 | .157 | 53 | 2.245 | 20 | .210 | –70 | .155 | 125 |
| 1300.0 | .158 | 28 | 2.226 | 6 | .211 | –76 | .175 | 106 |
| 1400.0 | .172 | –3 | 2.194 | –10 | .213 | –82 | .193 | 88 |
| 1500.0 | .201 | –37 | 2.155 | –26 | .217 | –89 | .206 | 68 |
| 1600.0 | .242 | –65 | 2.080 | –42 | .220 | –97 | .218 | 48 |
| 1700.0 | .313 | –93 | 1.999 | –58 | .223 | –105 | .221 | 31 |

## Thermal Data: $V_{CC}$ = 15 Vdc

Thermal Resistance $\theta_{jc}$ ..... 45°C/W
Transistor Power Dissipation $P_d$ ..... 0.031 W
Junction Temperature Rise Above Case $T_{jc}$ ... 46°C