

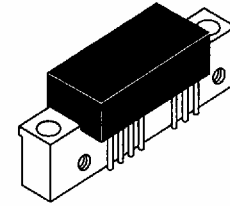
**CA2875CR**

**The RF Line**  
**Wideband Linear Amplifier**

... designed for amplifier applications in 50 to 100 ohm systems requiring wide bandwidth, low noise and low distortion. This hybrid provides excellent gain stability with temperature and linear amplification as a result of the push-pull circuit design.

- Specified Characteristics at  $V_{CC} = -19$  V,  $T_C = 25^\circ\text{C}$ :
  - Frequency Range — 40 to 100 MHz
  - Output Power — 400 mW Typ @ 1 dB Compression,  $f = 100$  MHz
  - Power Gain — 17.5 dB Typ @  $f = 100$  MHz
  - PEP — 300 mW Typ @ -32 dB IMD
  - Noise Figure — 4.5 dB Typ @  $f = 70$  MHz
  - ITO — 43 dBm @  $f = 70$  MHz
- All Gold Metallization for Improved Reliability
- Specified for 75 Ohm Systems

17.5 dB  
 40-100 MHz  
 400 mWATT  
 WIDEBAND  
 LINEAR AMPLIFIER



CASE 714H, STYLE 1  
 (CA)

**MAXIMUM RATINGS**

| Rating                           | Symbol    | Value       | Unit             |
|----------------------------------|-----------|-------------|------------------|
| DC Supply Voltage                | $V_{CC}$  | -28         | Vdc              |
| RF Power Input                   | $P_{in}$  | +14         | dBm              |
| Operating Case Temperature Range | $T_C$     | -20 to +100 | $^\circ\text{C}$ |
| Storage Temperature Range        | $T_{stg}$ | -40 to +100 | $^\circ\text{C}$ |

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^\circ\text{C}$ ,  $V_{CC} = -19$  V, 75  $\Omega$  system unless otherwise noted)

| Characteristic  | Symbol    | Min | Typ       | Max       | Unit |
|---|-----------|-----|-----------|-----------|------|
| Frequency Range   | BW        | 40  | —         | 100       | MHz  |
| Gain Flatness ( $f = 40-100$ MHz)   | —         | —   | $\pm 0.1$ | $\pm 0.2$ | dB   |
| Power Gain ( $f = 100$ MHz)   | $P_G$     | 17  | 17.5      | 18        | dB   |
| Noise Figure, Broadband ( $f = 70$ MHz)   | NF        | —   | 4.5       | 5         | dB   |
| Power Output — 1 dB Compression ( $f = 40-100$ MHz)   | $P_o$ 1dB | 315 | 400       | —         | mW   |
| Third Order Intercept (See Figure 10, $f_1 = 70$ MHz)   | ITO       | 42  | 43        | —         | dBm  |
| Input/Output VSWR ( $f = 40-100$ MHz)   | VSWR      | —   | —         | 1.1:1     | —    |
| Second Harmonic Distortion (Tone at 250 mW, $f_{2H} = 100$ MHz)                                 | $d_{50}$  | —   | -40       | —         | dB   |
| Peak Envelope Power (Two Tone Distortion Test — See Figure 10) ( $f = 40-100$ MHz @ -32 dB IMD) | PEP       | 250 | 300       | —         | mW   |
| Supply Current  | $I_{CC}$  | 140 | 155       | 170       | mA   |

TYPICAL CHARACTERISTICS

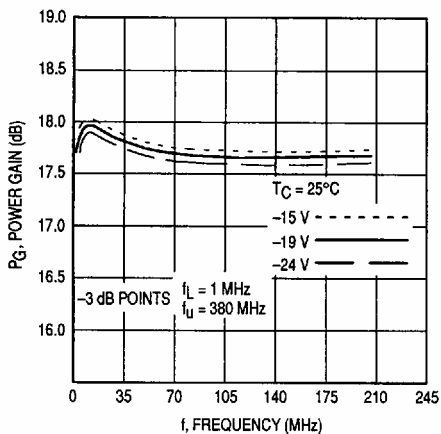


Figure 1. Power Gain versus Frequency

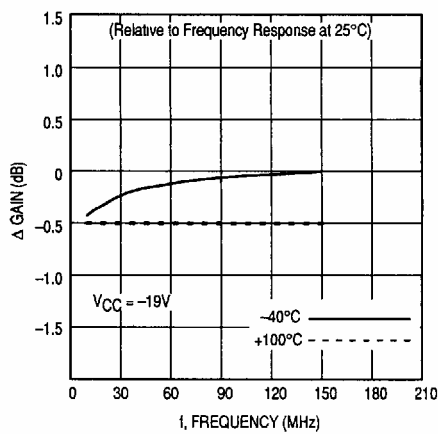


Figure 2. Relative Power Gain versus Temperature

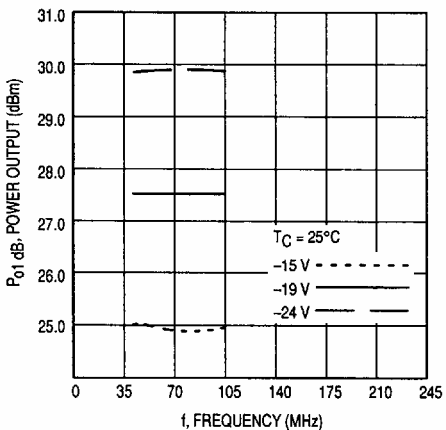


Figure 3. 1 dB Gain Compression versus Voltage

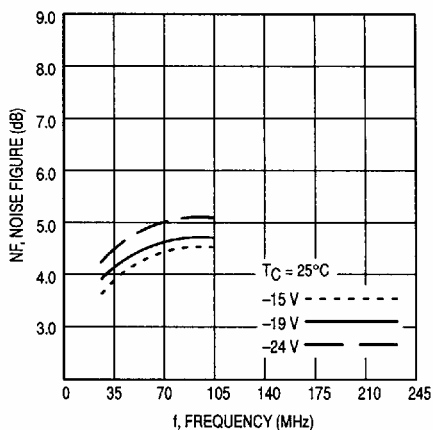


Figure 4. Noise Figure versus Voltage

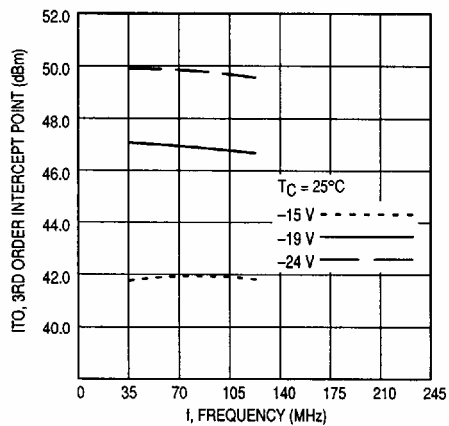


Figure 5. Third Order Intercept versus Voltage

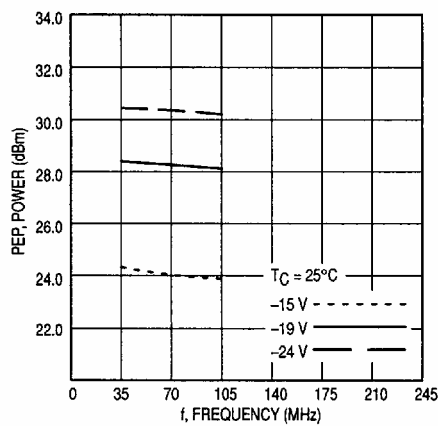


Figure 6. Peak Envelope Power versus Voltage

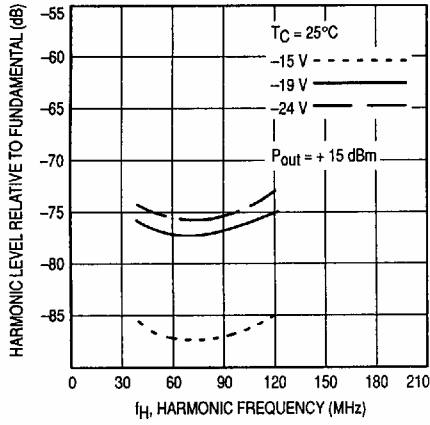


Figure 7. Second Harmonic Distortion versus Voltage

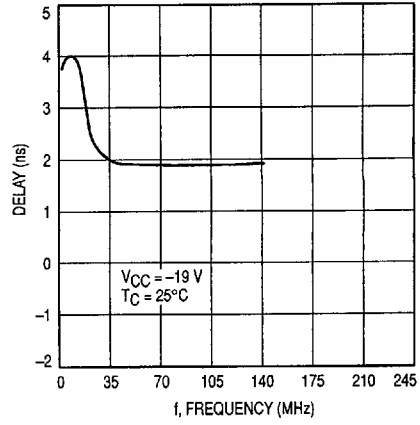


Figure 8. Group Delay versus Frequency

Biased at -19 Volts

T = 25°C Zo = 75Ω

| Frequency (MHz) | S11   |       | S21  |       | S12   |     | S22   |       |
|-----------------|-------|-------|------|-------|-------|-----|-------|-------|
|                 | Mag   | Ang   | Mag  | Ang   | Mag   | Ang | Mag   | Ang   |
| 40              | -32.1 | 14.8  | 17.6 | -27.4 | -24.2 | 161 | -40.5 | -31.1 |
| 50              | -32.7 | 2.0   | 17.6 | -34.3 | -24.3 | 156 | -39.4 | -38.1 |
| 70              | -33.4 | -16.0 | 17.6 | -48.1 | -24.3 | 147 | -36.0 | -57.2 |
| 90              | -32.8 | -27.0 | 17.5 | -60.9 | -24.4 | 138 | -32.4 | -76.7 |
| 100             | -32.6 | -34.0 | 17.5 | -68.0 | -24.5 | 133 | -30.3 | -87.7 |

Magnitude in dB, Phase Angle in degrees.

Table 1. S-Parameters

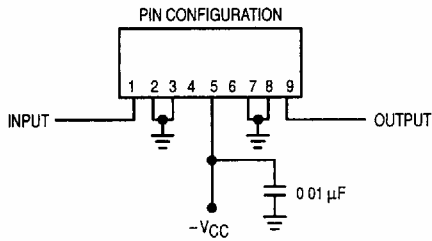
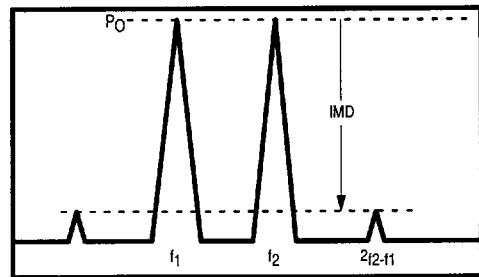


Figure 9. External Connections



$$ITD = P_0 + \frac{IMD}{2} @ IMD > 60dB$$

$$PEP = 4X P_0 @ IMD = -32dB$$

Figure 10. Intermodulation Test

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