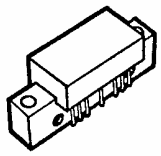
CA2875R
CA2875RH

The RF Line
Wideband Linear Amplifiers

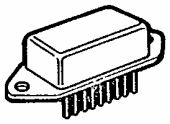
17.5 dB
40–100 MHz
400 mWATT
WIDEBAND
LINEAR AMPLIFIERS

... 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°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
- Available in Bent Lead Option and Hermetic Package
- Specified for 75 Ohm Systems



CA
CASE 714H-01, STYLE 1
CA2875R



SIP
CASE 826-01, STYLE 2
CA2875RH

5

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	−40 to +100	°C
Storage Temperature Range	T_{stg}	−55 to +125	°C

ELECTRICAL CHARACTERISTICS (T_C = 25°C, V_{CC} = −19 V, 75 Ω system unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	40	—	100	MHz
Gain Flatness (f = 40–100 MHz)	—	—	±0.1	±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 11, 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_{so}	—	−40	—	dB
Peak Envelope Power (Two Tone Distortion Test — See Figure 11) (f = 40–100 MHz @ −32 dB IMD)	PEP	250	300	—	mW
Supply Current	I_{CC}	140	155	170	mA

Note: Bent lead option for CA2875R is available in Case 714K-01 (Style 1).

TYPICAL CHARACTERISTICS

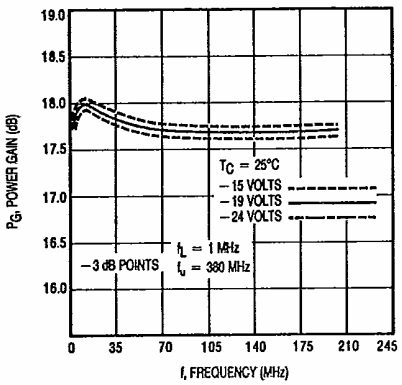


Figure 1. Power Gain versus Frequency

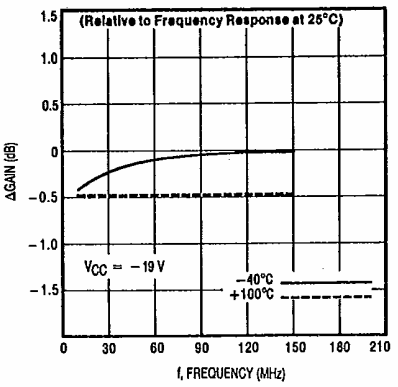


Figure 2. Relative Power Gain versus Temperature

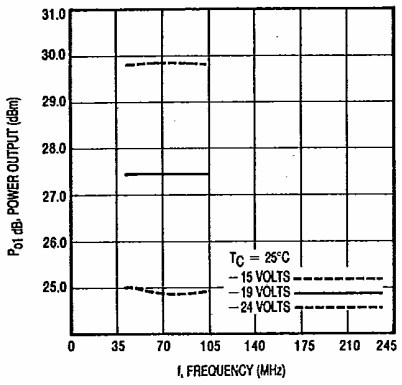


Figure 3. 1 dB Gain Compression versus Voltage

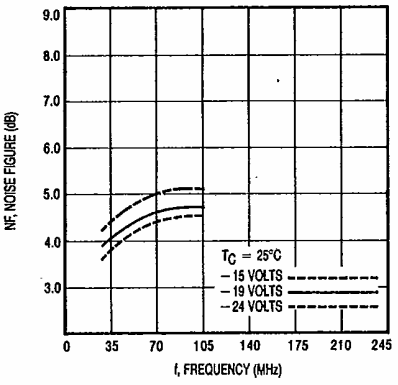


Figure 4. Noise Figure versus Voltage

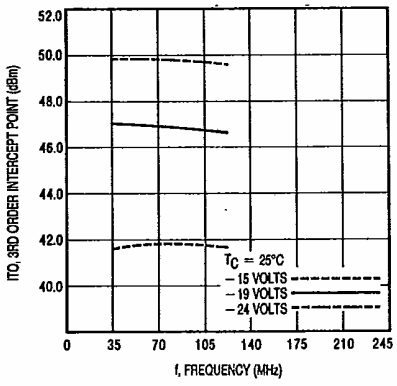


Figure 5. Third Order Intercept versus Voltage

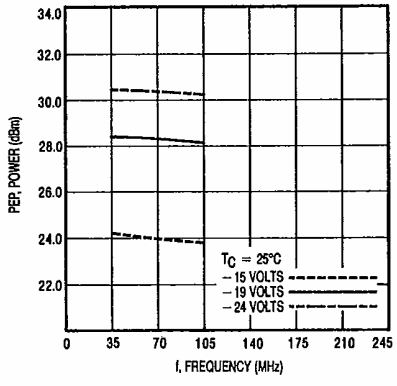


Figure 6. Peak Envelope Power versus Voltage

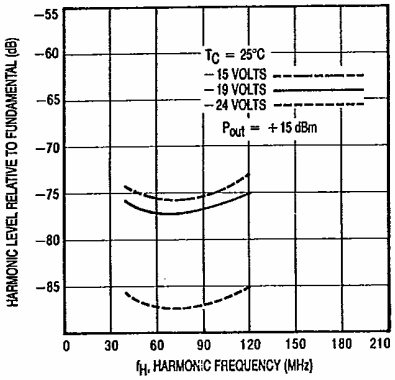


Figure 7. Second Harmonic Distortion versus Voltage

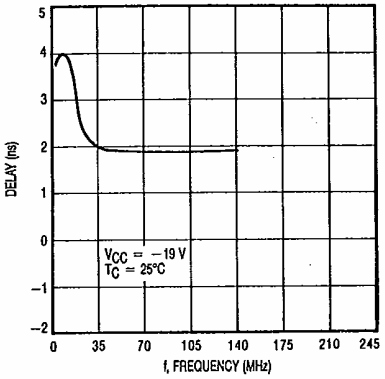


Figure 8. Group Delay versus Frequency

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.

Figure 9. S-Parameters

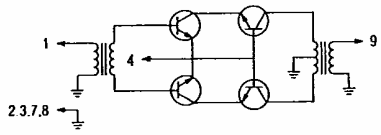
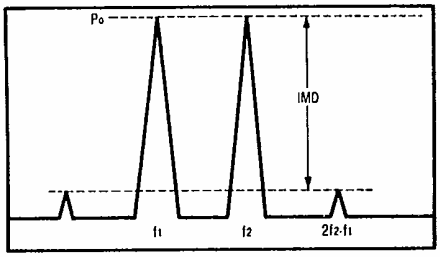


Figure 10. Functional Schematic



$$IT_O = P_O + \frac{IMD}{2} \text{ @ } IMD > 60dB$$

PEP = 4X P_O @ IMD = -32dB

Figure 11. Intermodulation Test