MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

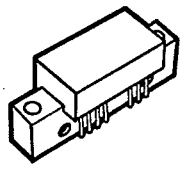
CA2876R
CA2876RH
CA2880R

22 dB
40–100 MHz
160 mWATT
WIDEBAND
LINEAR AMPLIFIERS

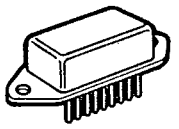
The RF Line
Wideband Linear Amplifiers

. . . 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.

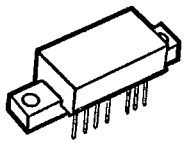
- Specified Characteristics at V_{CC} = −19 V, T_C = 25°C:
  Frequency Range — 40 to 100 MHz
  Output Power — 160 mW Typ @ 1 dB Compression, f = 100 MHz
  Power Gain — 22 dB Typ @ f = 50 MHz
  PEP — 175 mW Typ @ −32 dB IMD
  Noise Figure — 3 dB Typ @ f = 70 MHz
- All Gold Metallization for Improved Reliability
- Available in Bent Lead Option and Hermetic Package
- Specified for 75 Ohm Systems
- Low Power Consumption — I_{CC} = 73 mA Typ @ V_{CC} = −19 V



CA
CASE 714H-01, STYLE 1
CA2876R



SIP
CASE 826-01, STYLE 2
CA2876RH



CA, LOW PROFILE
CASE 714L-01, STYLE 1
CA2880R

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	±0.3	dB
Power Gain (f = 100 MHz)	P_G	21.25	22	22.75	dB
Noise Figure, Broadband (f = 70 MHz)	NF	—	3	3.5	dB
Power Output — 1 dB Compression (f = 40–100 MHz)	$P_{o\ 1dB}$	100	160	—	mW
Third Order Intercept (See Figure 11, f_1 = 70 MHz)	ITO	33	36	—	dBm
Input/Output VSWR (f = 40–100 MHz)	VSWR	—	1.1:1	1.2:1	—
Second Harmonic Distortion (Tone at 100 mW, f_{2H} = 100 MHz)	d_{so}	—	−50	−45	dB
Peak Envelope Power (Two Tone Distortion Test — See Figure 11) (f = 40–100 MHz @ −32 dB IMD)	PEP	100	175	—	mW
Supply Current	I_{CC}	65	73	80	mA

Note: Bent lead option for CA2876R is available in Case 714K-01 (Style 1).

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TYPICAL CHARACTERISTICS

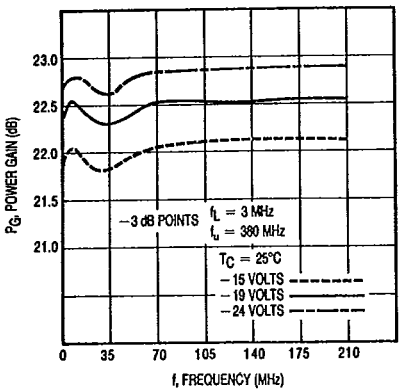


Figure 1. Power Gain versus Frequency

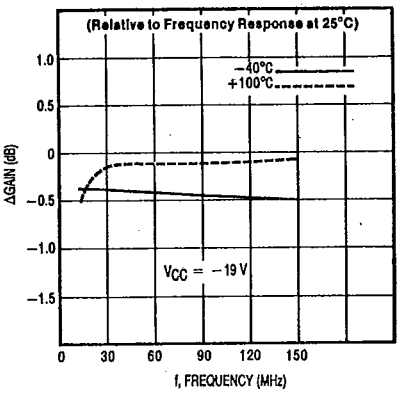


Figure 2. Relative Power Gain versus Temperature

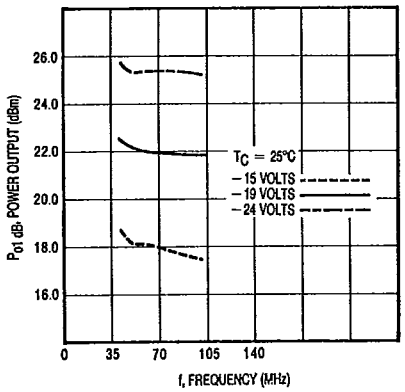


Figure 3. 1 dB Gain Compression versus Voltage

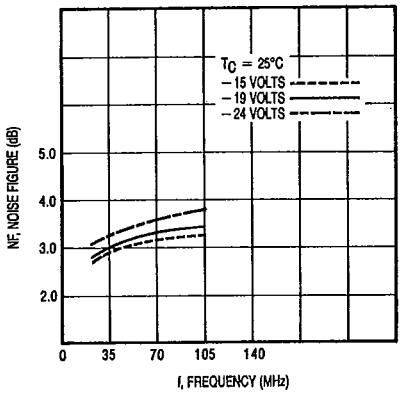


Figure 4. Noise Figure versus Voltage

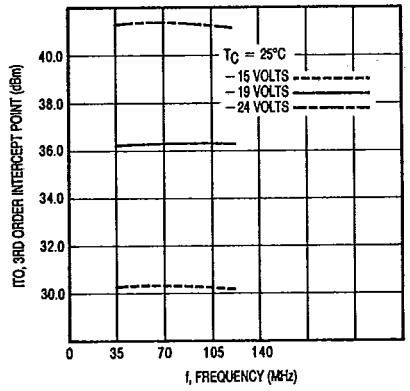


Figure 5. Third Order Intercept versus Voltage

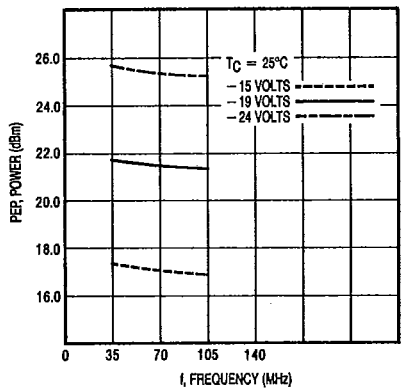


Figure 6. Peak Envelope Power versus Voltage

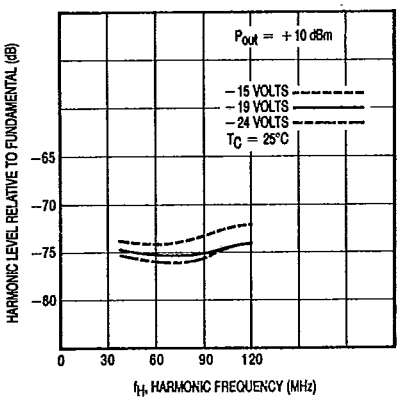


Figure 7. Second Harmonic Distortion versus Voltage

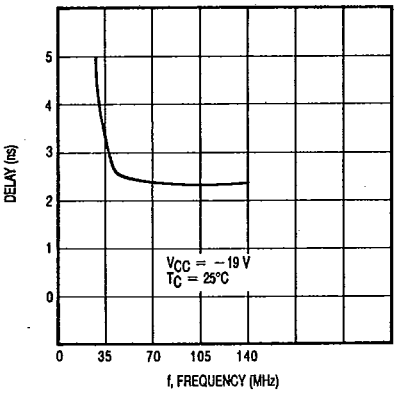


Figure 8. Group Delay versus Frequency

Biased at –19 Volts — T = 25°C Zo = 75Ω

Frequency (MHz)	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
40	-28.8	101	21.9	-26.1	-28.0	163	-39.3	108
50	-29.2	108	21.9	-35.0	-27.9	156	-43.4	123
70	-27.7	113	22.0	-52.5	-27.8	143	-43.0	-140
90	-26.6	106	22.1	-68.8	-27.9	132	-36.0	-129
100	-26.1	106	22.1	-77.8	-27.9	125	-33.3	-130

Magnitude in dB, Phase Angle in degrees.

Figure 9. S-Parameters

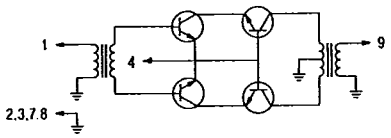
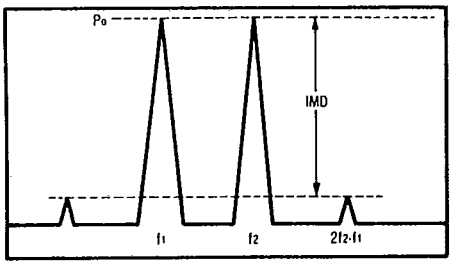


Figure 10. Functional Schematic



$ITO = P_o + \frac{IMD}{2}$ @ IMD > 60dB

PEP = 4X P_o @ IMD = -32dB

Figure 11. Intermodulation Test