

**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  $V_{CC} = 15\text{ V}$ ,  $T_C = 25^\circ\text{C}$ :
  - Frequency Range — 40 to 300 MHz
  - Output Power — 160 mW Typ @ 1 dB Compression,  $f = 300\text{ MHz}$
  - Power Gain — 34 dB Typ @  $f = 50\text{ MHz}$
  - PEP — 150 mW Typ @ -32 dB IMD
  - Noise Figure — 5 dB Typ @  $f = 300\text{ MHz}$
- All Gold Metallization for Improved Reliability
- Designed for 15 V Operation, Low Power Consumption
- Low VSWR for 75 Ohm System

**MAXIMUM RATINGS**

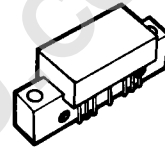
Rating	Symbol	Value	Unit
DC Supply Voltage	$V_{CC}$	28	Vdc
RF Power Input	$P_{in}$	+5	dBm
Operating Case Temperature Range	$T_C$	-20 to +90	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-40 to +100	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^\circ\text{C}$ ,  $V_{CC} = 15\text{ V}$ , 50  $\Omega$  system unless otherwise noted)

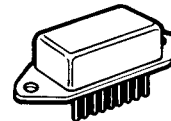
Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	40	—	300	MHz
Gain Flatness ( $f = 40\text{--}300\text{ MHz}$ )	—	—	$\pm 0.75$	$\pm 1.25$	dB
Power Gain ( $f = 50\text{ MHz}$ )	PG	33	34	35	dB
Noise Figure, Broadband ( $f = 50\text{ MHz}$ )	NF	—	3.5	4.5	dB
		—	5	6	
Power Output — 1 dB Compression ( $f = 300\text{ MHz}$ )	$P_{o1\text{ dB}}$	—	160	—	mW
Third Order Intercept (See Figure 11, $f_1 = 300\text{ MHz}$ )	ITO	38	2.0:1	—	dBm
Input/Output VSWR ( $f = 40\text{--}300\text{ MHz}$ )	VSWR	—	1.2:1	—	—
Second Harmonic Distortion (Tone at 10 mW, $f_{2H} = 300\text{ MHz}$ )	$d_{so}$	—	-50	—	dB
Reverse Isolation ( $f = 40\text{--}300\text{ MHz}$ )	—	—	40	—	dB
Peak Envelope Power (Two Tone Distortion Test — See Figure 11) ( $f = 40\text{--}300\text{ MHz}$ @ -32 dB IMD)	PEP	—	150	—	mW
Supply Current	$I_{CC}$	150	170	190	mA

**CA2813C**  
**CA2813CH**

**34 dB**  
**40-300 MHz**  
**160 mWATT**  
**WIDEBAND**  
**LINEAR AMPLIFIERS**



**CASE 714F-01, STYLE 1**  
**[CA (POS. SUPPLY)]**  
**CA2813C**



**CASE 826-01, STYLE 1**  
**(SIP)**  
**CA2813CH**

# CA2813C, CA2813CH

## TYPICAL CHARACTERISTICS

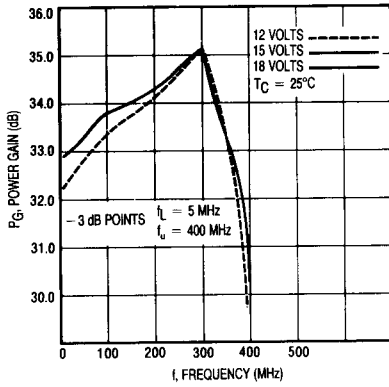


Figure 1. Power Gain versus Frequency

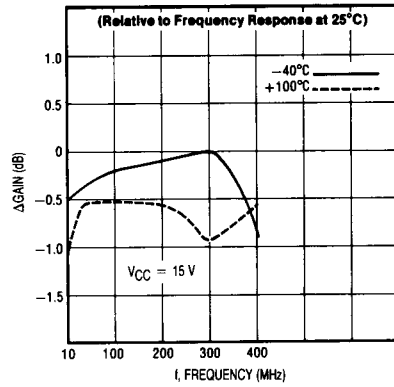


Figure 2. Relative Power Gain versus Temperature

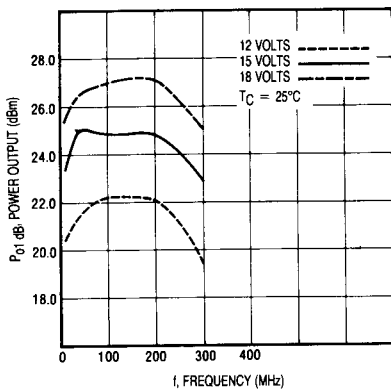


Figure 3. 1 dB Gain Compression versus Voltage

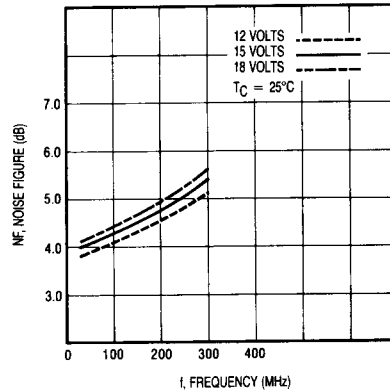


Figure 4. Noise Figure versus Voltage

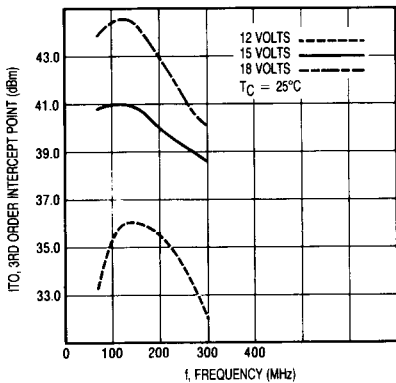


Figure 5. Third Order Intercept versus Voltage

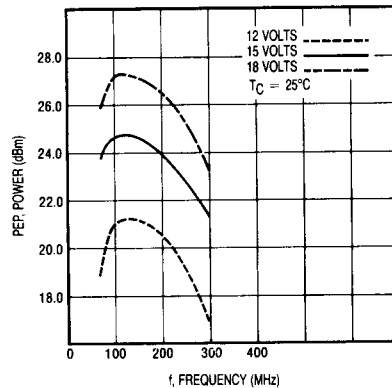


Figure 6. Peak Envelope Power versus Voltage

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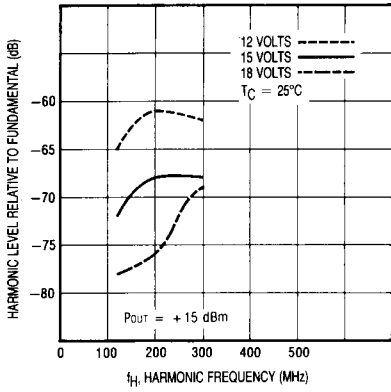


Figure 7. Second Harmonic Distortion versus Voltage

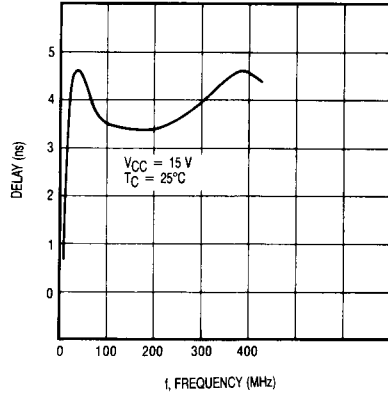


Figure 8. Group Delay versus Frequency

Biased at 15 Volts

T = 25°C Zo = 75Ω

Frequency (MHz)	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
10	-16.6	53.0	33.1	35.0	-48.1	39.1	-21.2	48.7
50	-32.3	-2.0	33.6	-44.9	-47.8	-21.0	-30.9	65.0
100	-41.4	119	34.2	-107	-47.7	-58.0	-30.3	22.6
200	-27.8	62.0	34.5	130	-48.6	-140	-38.5	-105
300	-26.1	-177	35.3	-10.2	-47.1	126	-23.3	84.5

Magnitude in dB, Phase Angle in degrees.

Figure 9. S-Parameters

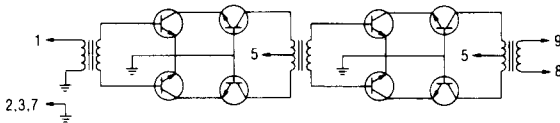
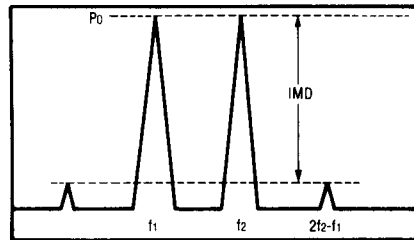


Figure 10. Functional Schematic



$$I_{70} = P_0 + \frac{IMD}{2} @ IMD > 60dB$$

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

Figure 11. Intermodulation Test