CA2813C
CA2813CH

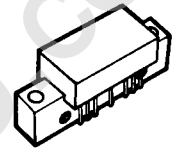
The RF Line

Wideband Linear Amplifiers

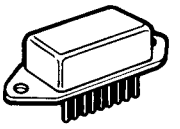
34 dB
40–300 MHz
160 mWATT
WIDEBAND
LINEAR AMPLIFIERS

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



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



CASE 826-01, STYLE 1
(SIP)
CA2813CH

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

ELECTRICAL CHARACTERISTICS (T_C = 25°C, V_{CC} = 15 V, 50 Ω system unless otherwise noted)

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

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TYPICAL CHARACTERISTICS

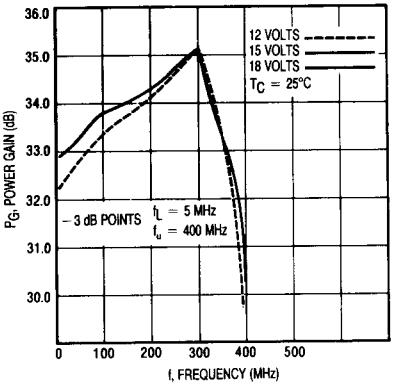


Figure 1. Power Gain versus Frequency

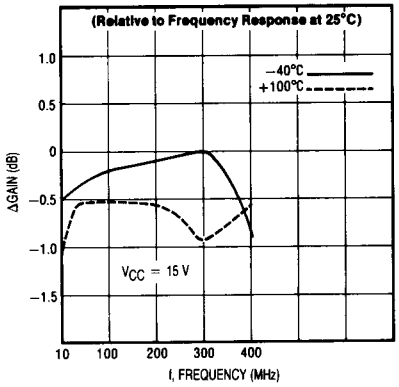


Figure 2. Relative Power Gain versus Temperature

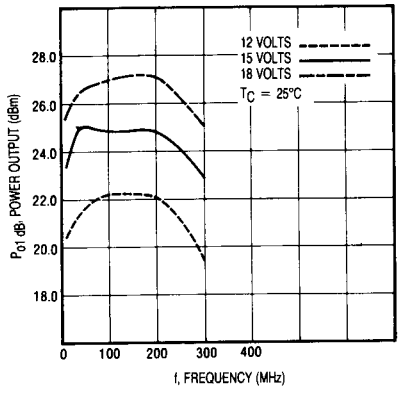


Figure 3. 1 dB Gain Compression versus Voltage

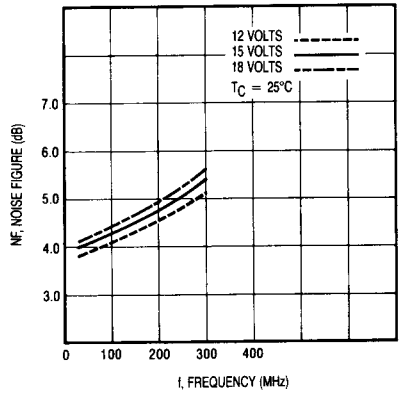


Figure 4. Noise Figure versus Voltage

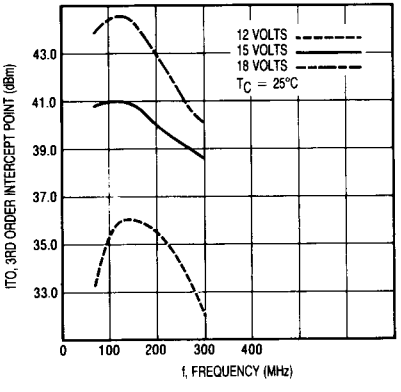


Figure 5. Third Order Intercept versus Voltage

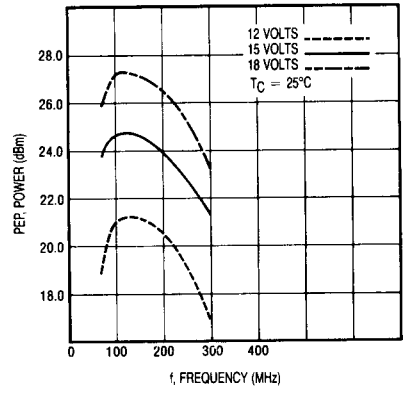


Figure 6. Peak Envelope Power versus Voltage

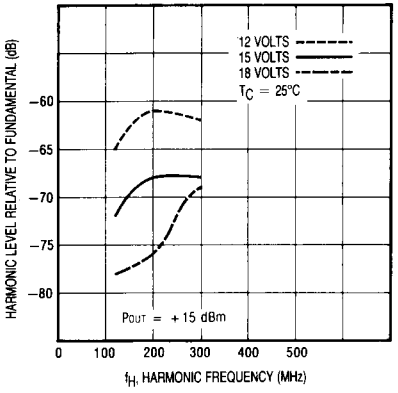


Figure 7. Second Harmonic Distortion versus Voltage

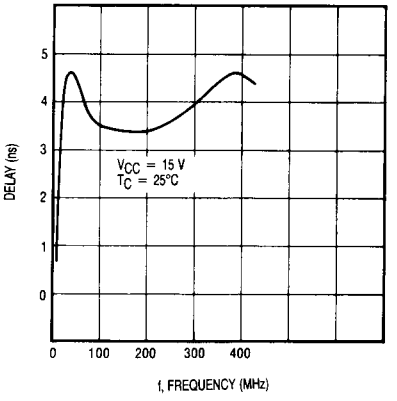


Figure 8. Group Delay versus Frequency

Biased at 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

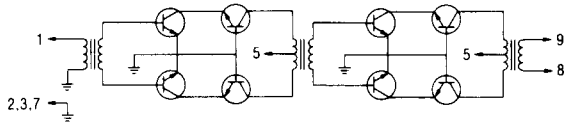
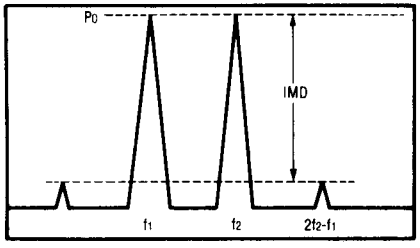


Figure 10. Functional Schematic



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

$$PEP = 4X\ P_O \text{ @ } IMD = -32dB$$

Figure 11. Intermodulation Test