MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

T-74-09-01

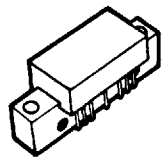
CA2818
CA2818H

18.5 dB
1–200 MHz
900 mWATT
WIDEBAND
LINEAR AMPLIFIERS

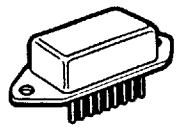
The RF Line
Wideband Linear Amplifiers

. . . 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} = 24 V, T_C = 25°C:
  - Frequency Range — 1 to 200 MHz
  - Output Power — 800 mW Typ @ 1 dB Compression, f = 200 MHz
  - Power Gain — 18.5 dB Typ @ f = 50 MHz
  - PEP — 800 mW Typ @ −32 dB IMD
  - Noise Figure — 5.5 dB Typ @ f = 150 MHz
  - ITO — 47 dBm Typ @ f = 150 MHz
- All Gold Metallization for Improved Reliability
- Refer to CATV Equivalent Model CA2418 for 75 Ohm Performance Data



CASE 714F-01, STYLE 1
(CA)
CA2818



CASE 826-01, STYLE 1
(SIP)
CA2818H

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} = 24 V, 50 Ω system unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	1	—	200	MHz
Gain Flatness f = 50–150 MHz f = 1–200 MHz	—	— —	±0.2 ±0.5	±0.5 ±1	dB
Power Gain (f = 50 MHz)	P_G	17.75	18.5	19.25	dB
Noise Figure, Broadband f = 30 MHz f = 150 MHz	NF	— —	4.5 5.5	6 7	dB
Power Output — 1 dB Compression (f = 150 MHz)	$P_{o\ 1dB}$	800	900	—	mW
Third Order Intercept (See Figure 11, f_1 = 150 MHz)	ITO	44	47	—	dBm
Input/Output VSWR (f = 1–200 MHz)	VSWR	—	1.7:1	2:1	—
Second Harmonic Distortion (Tone at 100 mW, f_{2H} = 1–200 MHz)	d_{so}	—	−60	−55	dB
Reverse Isolation (f = 1–200 MHz)	—	—	25	—	dB
Peak Envelope Power (Two Tone Distortion Test — See Figure 11) (f = 1–200 MHz @ −32 dB IMD)	PEP	600	800	—	mW
Supply Current	I_{CC}	190	205	220	mA

5

TYPICAL CHARACTERISTICS

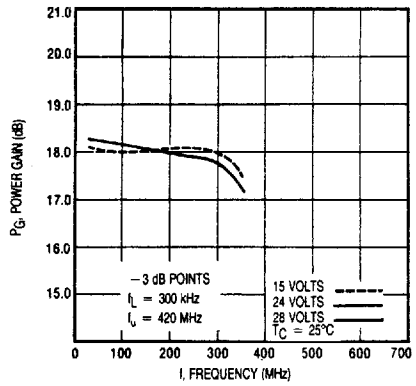


Figure 1. Power Gain versus Frequency

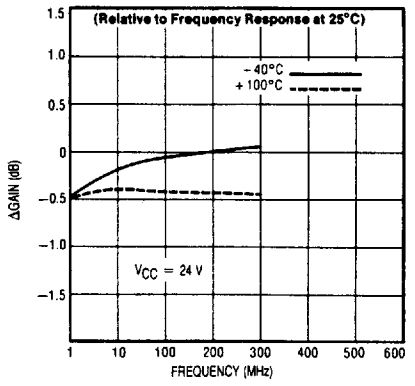


Figure 2. Relative Power Gain versus Temperature

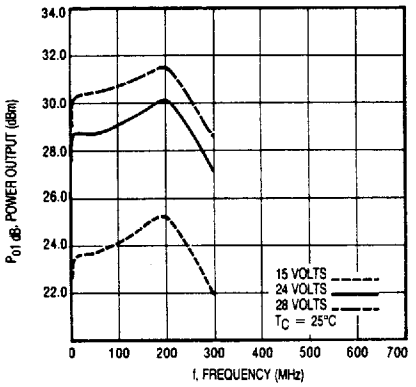


Figure 3. 1 dB Gain Compression versus Voltage

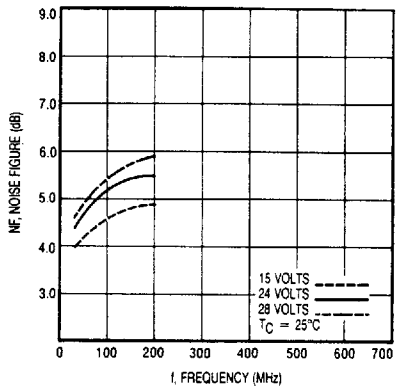


Figure 4. Noise Figure versus Voltage

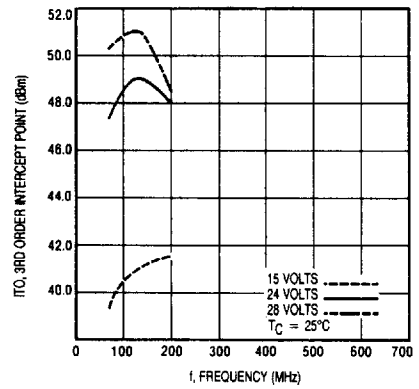


Figure 5. Third Order Intercept versus Voltage

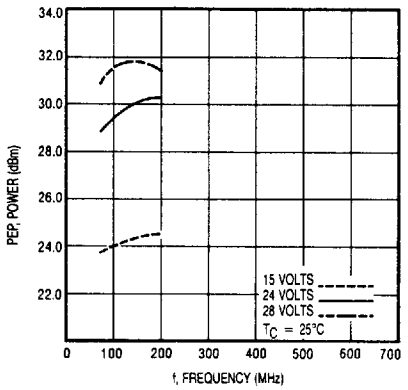


Figure 6. Peak Envelope Power versus Voltage

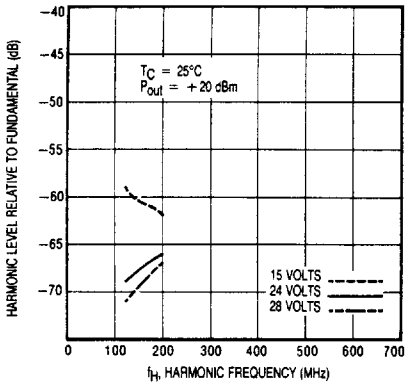


Figure 7. Second Harmonic Distortion versus Voltage

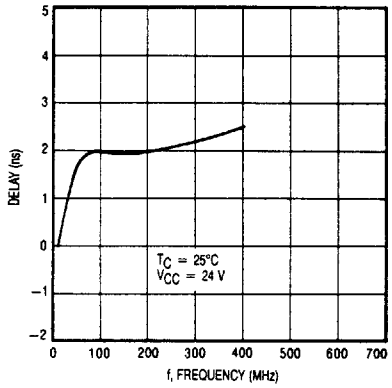


Figure 8. Group Delay versus Frequency

Biased at 24 Volts T = 25°C Zo = 50Ω

Frequency (MHz)	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
1	-11.6	23.5	17.8	9.7	-25.4	-167	-10.9	8.4
10	-11.1	0	18.2	-4.6	-24.9	-183	-11.0	0.4
50	-12.5	-14.2	18.2	-37.1	-25.0	154	-12.7	-9.6
100	-14.8	-18.0	18.2	-74.3	-24.9	128	-15.3	-24.0
200	-13.6	21.5	18.1	-147	-24.9	76.4	-22.7	43.0

Magnitude in dB, Phase Angle in degrees.

Figure 9. S-Parameters

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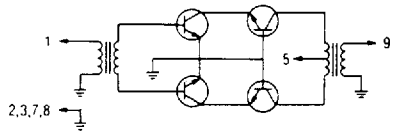
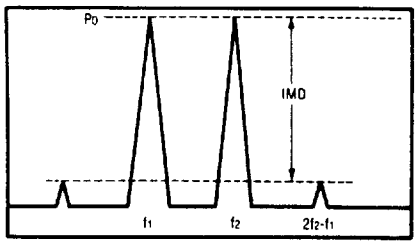


Figure 10. Functional Schematic



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

PEP = 4X P_O @ IMD = -32dB

Figure 11. Intermodulation Test