

The RF Line
**36-Channel (450 MHz) CATV Hi-Slope
Input/Output Trunk Amplifier**

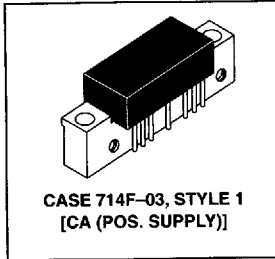
CA97901

... allows increased trunk length. Effectively reduces trunk distortion. 5.0 dB less output noise at low end.

Designed for broadband applications requiring low-distortion amplification. Specifically intended for CATV market requirements. These amplifiers feature ion-implanted arsenic emitter transistors and an all gold metallization system. The input amplifier is tuned for minimum noise figure while the output amplifier is tuned for minimum distortion.

- Specified Characteristics at $V_{CC} = 24\text{ V}$, $T_C = 25^\circ\text{C}$:
 Frequency Range — 40 to 450 MHz
 Power Gain — 15.6 dB Typ @ $f = 50\text{ MHz}$
 — 20.7 dB Typ @ $f = 450\text{ MHz}$
 Noise Figure — 5.7 dB Typ @ $f = 450\text{ MHz}$
 CTB — -66 dB @ $V_{Out} = 46\text{ dBmV}$
- All Gold Metallization System for Improved Reliability

15–20 dB
40–450 MHz
36-CHANNEL
CATV INPUT/OUTPUT
TRUNK AMPLIFIER



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
RF Voltage Input (Single Tone)	V_{in}	69	dBmV
DC Supply Voltage	V_{CC}	28	Vdc
Operating Case Temperature Range	T_C	-20 to +100	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +100	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($V_{CC} = 24\text{ V}$, $T_C = 25^\circ\text{C}$, 75 Ω system unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	BW	40	—	450	MHz
Power Gain — 50 MHz — 450 MHz	G_p	14.8 20.2	15.6 20.7	16.4 21.2	dB
Gain Slope	S	4.7	5.1	5.5	dB
Gain Flatness (Note 1)	—	—	—	± 0.2	dB
Return Loss — Input/Output ($f = 40\text{ MHz}$) ($f = 50\text{--}80\text{ MHz}$) ($f = 80\text{--}160\text{ MHz}$) ($f = 160\text{--}450\text{ MHz}$)	IRL/ORL	22 20 19 18	26 24 22 20	— — — —	dB
Composite Second Order Distortion ($V_{out} = +46\text{ dBmV}$ per ch., Ch. H20, 36-CH Flat) (Note 2)	CSO	—	-68	-65	dB
Cross Modulation Distortion ($V_{out} = +46\text{ dBmV}$ per ch., Ch. 2, 36-CH Flat) (Note 2)	XMD	—	-66	-65	dB
Composite Triple Beat ($V_{out} = +46\text{ dBmV}$ per ch., Ch. H20, 36-CH Flat) (Note 2)	CTB	—	-66	-65	dB
Noise Figure ($f = 50\text{ MHz}$) ($f = 450\text{ MHz}$)	NF	— —	4.6 5.5	6.0 6.8	dB
DC Current	I_{DC}	—	220	240	mA

NOTE 1 and NOTE 2 — See Next Page.

NOTES:

2. Flatness calculated is based upon the following gain curve:

$$G_f = G_{50} + \Delta G [\alpha (f-50) + \beta (f-50)^2 + \gamma (f-50)^3]$$

where: G_{50} = Gain at 50 MHz

G_f = Gain at frequency f MHz

ΔG = Gain slope between 50 MHz and 450 MHz

$$\alpha = 3.132 \times 10^{-3}$$

$$\beta = 1.993 \times 10^{-6}$$

$$\gamma = -8.934 \times 10^{-9}$$

3. The following Channels are turned on for the CTB, XMOD and CSO measurement:

Channel #	Frequency (MHz)	Channel #	Frequency (MHz)	Channel #	Frequency (MHz)
1	55.25	13	235.25	25	325.25
2	61.25	14	247.25	26	337.25
3	133.25	15	253.25	27	349.25
4	139.25	16	259.25	28	361.25
5	145.25	17	265.25	29	367.25
6	151.25	18	271.25	30	373.25
7	163.25	19	283.25	31	385.25
8	175.25	20	289.25	32	391.25
9	187.25	21	295.25	33	409.25
10	205.25	22	301.25	34	415.25
11	217.25	23	313.25	35	421.25
12	229.25	24	319.25	36	433.25