

MOTOROLA SEMICONDUCTOR TECHNICAL DATA

Order this data sheet
by CA4900/D

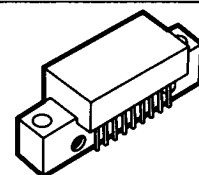
The RF Line Wideband Linear Amplifiers

... 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.

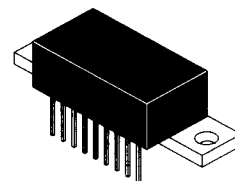
- Specified Characteristics at $V_{CC} = 24\text{ V}$, $T_C = 25^\circ\text{C}$:
 - Frequency Range — 10 to 1200 MHz
 - Output Power — 400 mW Typ @ 1 dB Compression, $f = 1\text{ GHz}$
 - Power Gain — 17 dB Typ @ $f = 50\text{ MHz}$
 - PEP — 360 mW Typ @ -32 dB IMD
 - Noise Figure — 6.5 dB Typ @ $f = 500\text{ MHz}$
 - ITO — 38 dBm Typ @ 752 MHz
- All Gold Metallization for Improved Reliability
- CA4912 is Optimized for 12 V Operation
- CA4915 is Optimized for 15 V Operation
- Thin Flange Version Available (Case 714T-01) by Adding Suffix "S" to Part Number

**CA4900,S
CA4912,S
CA4915,S**

**17 dB
10-1200 MHz
400 mW
WIDEBAND
LINEAR AMPLIFIERS**



CASE 714P-01
CA4900, CA4912, CA4915



CASE 714T-01
CA4900S, CA4912S, CA4915S

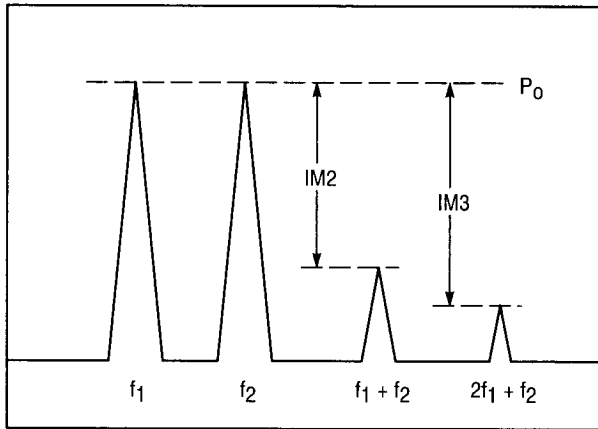
MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Supply Voltage	V_{CC}	28	V
		18	
		14	
RF Input Power	P_{in}	+14	dBm
Storage Temperature	T_{stg}	-55 to +125	$^\circ\text{C}$
Operating Case Temperature Range	T_C	-40 to +100	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$, $V_{CC} = 24\text{ V}$, 50 Ohm System)

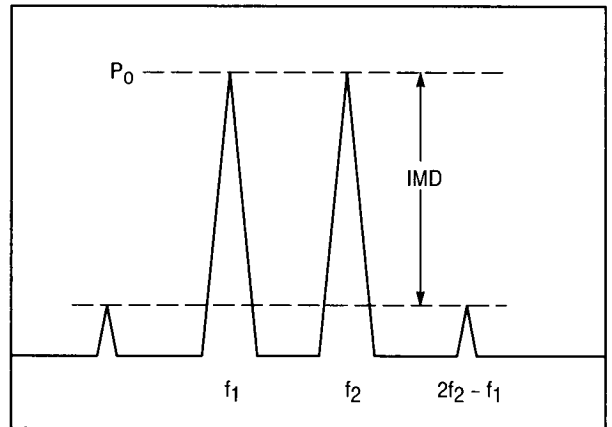
Characteristic	Symbol	Min	Typ	Max	Unit
Supply Current	I_{DC}	200	220	240	mA
		360	380	400	
Power Gain ($f = 50\text{ MHz}$)	PG	16	17	18	dB
Bandwidth	BW	10	—	1200	MHz
Gain Flatness ($f = 10 - 1200\text{ MHz}$)	FL	—	± 0.5	± 1	dB
Power Output — 1 dB Compression ($f = 1000\text{ MHz}$)	$P_{O\ 1dB}$	300	400	—	mW
Input/Output VSWR $f = 40 - 860\text{ MHz}$	VSWR	—	—	2:1	—
$f = 10 - 1200\text{ MHz}$		—	—	2.5:1	
Noise Figure, Broadband $f = 500\text{ MHz}$	NF	—	6.5	8	dB
$f = 1200\text{ MHz}$		—	7.5	9	
Third Order Intercept ($f_1 = 47\text{ MHz}$, $f_2 = 658\text{ MHz}$, See Figure 1)	ITO	37	38	—	dBm
Second Harmonic Distortion ($P_O = 100\text{ mW}$, $f_2 = 1200\text{ MHz}$)	dso	—	-50	-40	dB
Second Order Intermodulation Distortion ($P_O = 2.75\text{ dBm}$, $f_1 = 373\text{ MHz}$, $f_2 = 450\text{ MHz}$, See Figure 1)	IM2	—	-64	-60	dB
Peak Envelope Power ($f = 850\text{ MHz}$, See Figure 2)	PEP	—	360	—	mW
Intermodulation Distortion, 3 Tone ($f = 860\text{ MHz}$, $P_{sync} = 200\text{ mW}$, See Figure 3)	IM3	—	-60	—	dB





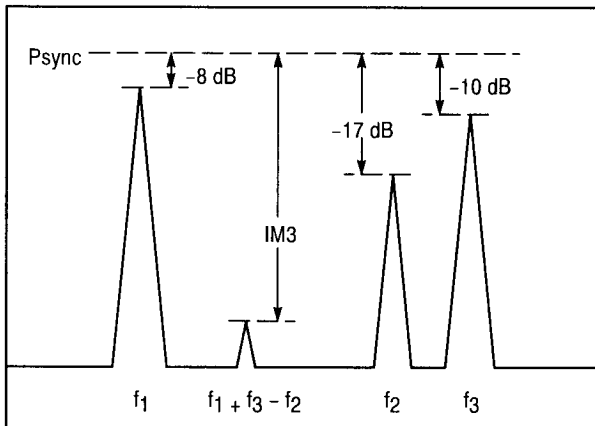
$$ITO = P_0 + IM3 / 2 @ IM3 > 60 \text{ dB}$$

Figure 1. 2-Tone Intermodulation Test A



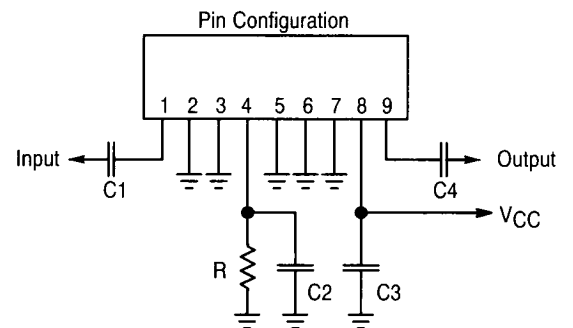
$$PEP = 4 \times P_0 @ IMD = -32 \text{ dB}$$

Figure 2. 2-Tone Intermodulation Test B



f_1 = Video
 f_2 = Sideband
 f_3 = Sound

Figure 3. 3-Tone TV Intermodulation Test



$C_{1,2,3,4} = 0.1 \text{ mF (chip)}$
 $R = 200 \text{ Ohms, 1 Watt}$

Figure 4. External Connections

CA4900 (Case 714P-01, Style 2)
CA4900S (Case 714T-01, Style 1)

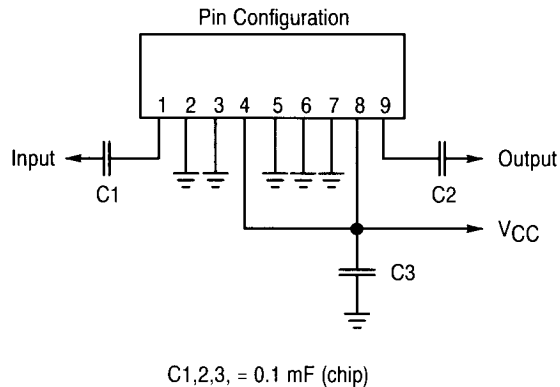

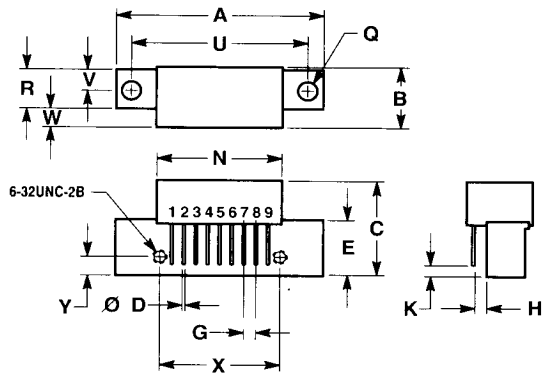


Figure 5. External Connections

**CA4912, CA4915 (Case 714P-01, Style 3)
CA4912S, CA4915S (Case 714T-01, Style 2)**

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OUTLINE DIMENSIONS



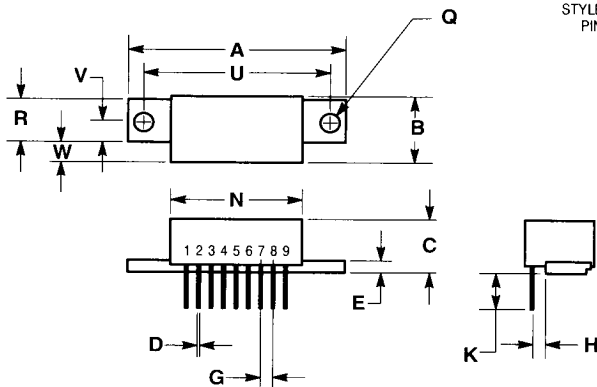
- STYLE 2:
 PIN 1. RF INPUT
 2. GROUND
 3. GROUND
 4. RESISTOR-GROUND
 5. GROUND
 6. GROUND
 7. GROUND
 8. V_{CC} 1
 9. RF OUTPUT

- STYLE 3:
 PIN 1. RF INPUT
 2. GROUND
 3. GROUND
 4. V_{CC} 1
 5. GROUND
 6. GROUND
 7. GROUND
 8. V_{CC} 2
 9. RF OUTPUT

NOTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982
 2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	44.33	44.57	1.745	1.755
B	—	14.85	—	0.585
C	—	22.09	—	0.870
D	0.49	0.55	0.019	0.022
E	12.45	12.95	0.490	0.510
G	2.42	2.66	0.095	0.105
H	2.42	2.66	0.095	0.105
K	1.78	2.79	0.070	0.110
N	26.80	27.55	1.055	1.085
Q	3.76	5.33	0.148	0.210
R	7.75	8.25	0.305	0.325
U	37.85	38.35	1.490	1.510
V	3.87	4.14	0.152	0.163
W	4.20	4.44	0.165	0.175
X	25.15	25.65	0.990	1.010
Y	4.07	4.31	0.160	0.170

CASE 714P-01



- STYLE 1:
 PIN 1. RF INPUT
 2. GROUND
 3. GROUND
 4. RESISTOR-GROUND
 5. GROUND
 6. GROUND
 7. GROUND
 8. V_{CC} 1
 9. RF OUTPUT

- STYLE 2:
 PIN 1. RF INPUT
 2. GROUND
 3. GROUND
 4. V_{CC} 1
 5. GROUND
 6. GROUND
 7. GROUND
 8. V_{CC} 2
 9. RF OUTPUT

NOTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982
 2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	44.33	44.57	1.745	1.755
B	13.97	14.27	0.550	0.570
C	10.93	11.93	0.430	0.470
D	0.44	0.50	0.017	0.020
E	3.05	3.30	0.105	0.130
G	2.42	2.66	0.095	0.105
H	2.42	2.66	0.095	0.105
K	6.48	7.74	0.255	0.305
N	26.67	27.17	1.050	1.060
Q	3.81	4.06	0.150	0.160
R	7.88	8.12	0.310	0.320
U	37.85	38.35	1.490	1.510
V	3.94	4.06	0.155	0.160
W	4.07	4.57	0.160	0.180

CASE 714T-01

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