ACA3747

870 MHz, 25 dB Gain
CATV Power Doubler Amplifier

ADVANCED PRODUCT INFORMATION - Rev 0.5

FEATURES

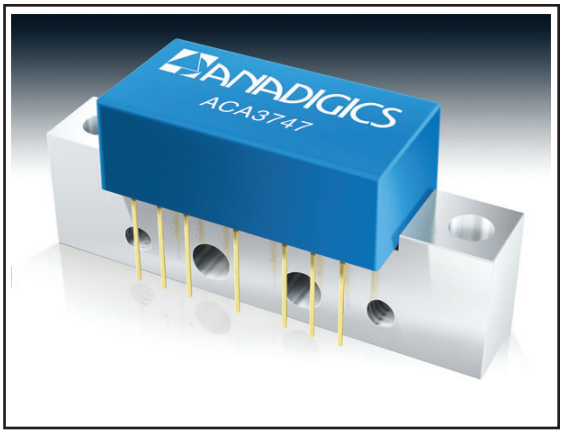
- 25 dB Gain
- 40 MHz to 870 MHz Operating Range
- 0.2 dB Gain Flatness
- 24 V Supply
- Supply Current: 430 mA (Typ.)
- Very Low Distortion & Noise
- Robust Design and Insensitive to Voltage Transients
- GaAs Monolithic IC-Based
- Standard SOT115J Package

APPLICATIONS

- Distribution Nodes and Line Extenders in CATV Systems

PRODUCT DESCRIPTION

The ACA3747 is a GaAs Hybrid Amplifier for CATV HFC distribution systems. It consists of two pairs of parallel amplifiers that are optimized for exceptionally low distortion and noise figure. The ACA3747 is offered in a standard SOT115J package.



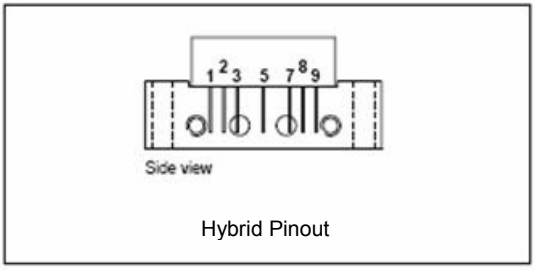


Figure 2: Hybrid Pinout

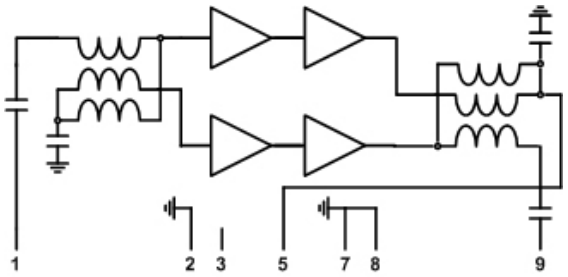


Figure 1: Simplified Hybrid Internal Arrangement

Table 1: SOJ115J Pinning

PIN	Description
1	RF Input
2	GND
3	GND or No Connection
5	24 V
7, 8	GND
9	RF Output

Table 2: Absolute Minimum and Maximum Ratings

	Symbol	Min	Typ	Max	Unit	Conditions
Supply Voltage	V_{DD}	-	+24	+28	V_{DC}	
RF Power at inputs	-	-	-	+70	dBmV	single tone
Operating mounting Base temperature	T_{MB}	-20	-	+100	°C	
Storage Temperature	T_{STG}	-40		+100	°C	

Table 3: Operating Ranges

	Symbol	Min	Typ	Max	Unit	Conditions
RF Frequency	-	40	-	870	MHz	

Table 4: Electrical Characteristics
(Test condition: 40 to 870 MHz, T_{MB} = 30°C, 75 Ω loading, see note 1)

	Symbol	Min	Typ	Max	Unit	Conditions
Power Gain	G_P	24	25	26	dB	f = 870 MHz
Slope cable equivalent	SL	-	0.5	-	dB	
Gain Flatness	FL	-	0.2	-	dB	See note 2
Input Return Loss	S_{11}	- - -	- - -	-20 -18 -16	dB	40 - 380 MHz 380 - 700 MHz 700 - 870 MHz
Output Return Loss	S_{22}	- - -	- - -	-20 -18 -16	dB	40 - 380 MHz 380 - 700 MHz 700 - 870 MHz
CTB	-	-	-70	-66	dBc	See note 1
CSO	-	-	-70	-63	dBc	See note 1
XMOD	-	-	-65	-58	dBc	See note 1
Noise Figure	-	-	5.0	7.0	dB	
Supply Current	-	-	430	450	mA	

Note:
1. 79 flat NTSC analog channels @ +48 dBmV/CH output to 550 MHz, plus 53 flat analog channels @ +38 dBmV/CH above 550 MHz.
2. Deviation (peak-to-valley) from best fit line between 40 MHz and 870 MHz.

Performance Data: S-Parameters

Figure 3: Input Return Loss vs. Frequency

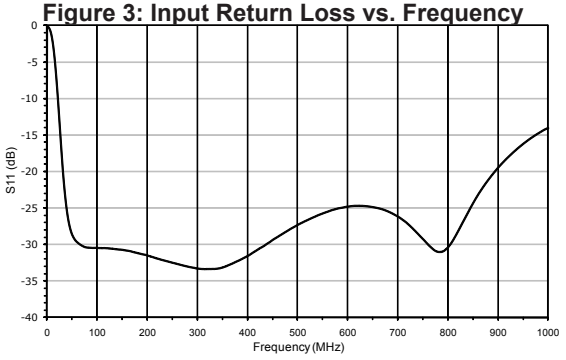


Figure 4: Gain vs. Frequency

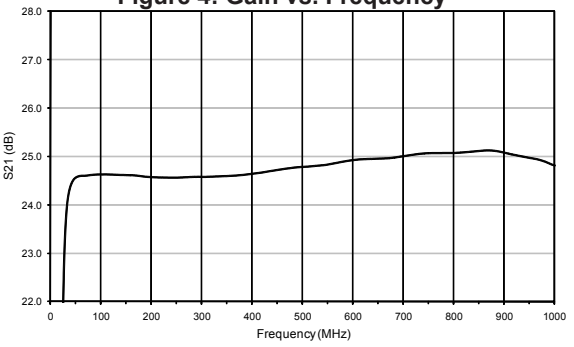


Figure 5: Reverse Isolation vs. Frequency

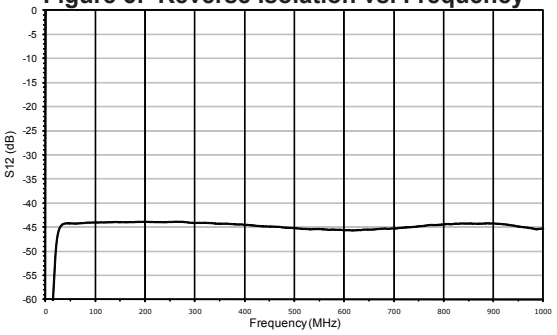
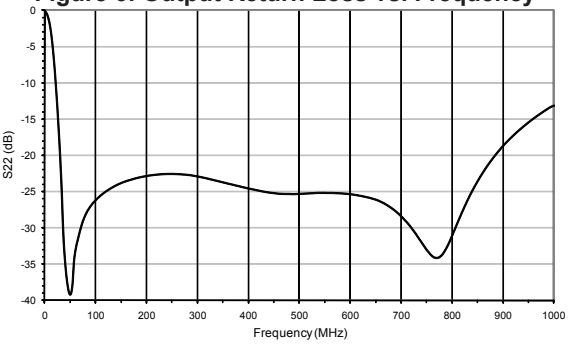


Figure 6: Output Return Loss vs. Frequency



Performance Data: Distortion

Figure 7: CSO vs. Frequency (Test Condition: See Note 1, Table 4)

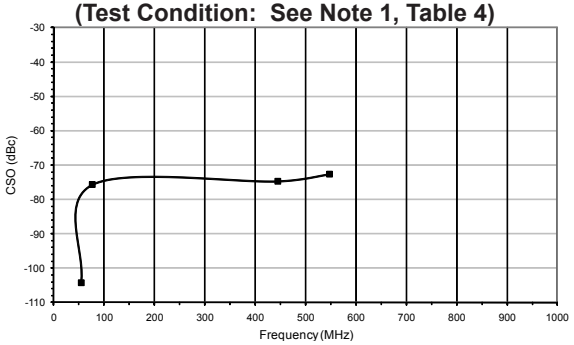


Figure 8: CTB vs. Frequency (Test Condition: See Note 1, Table 4)

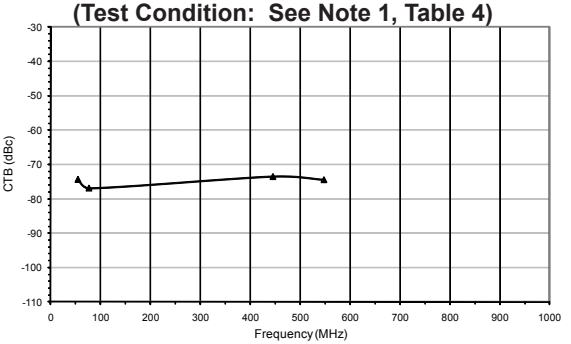
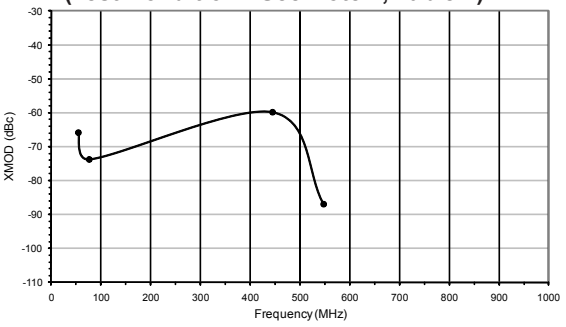


Figure 9: XMOD vs. Frequency (Test Condition: See Note 1, Table 4)



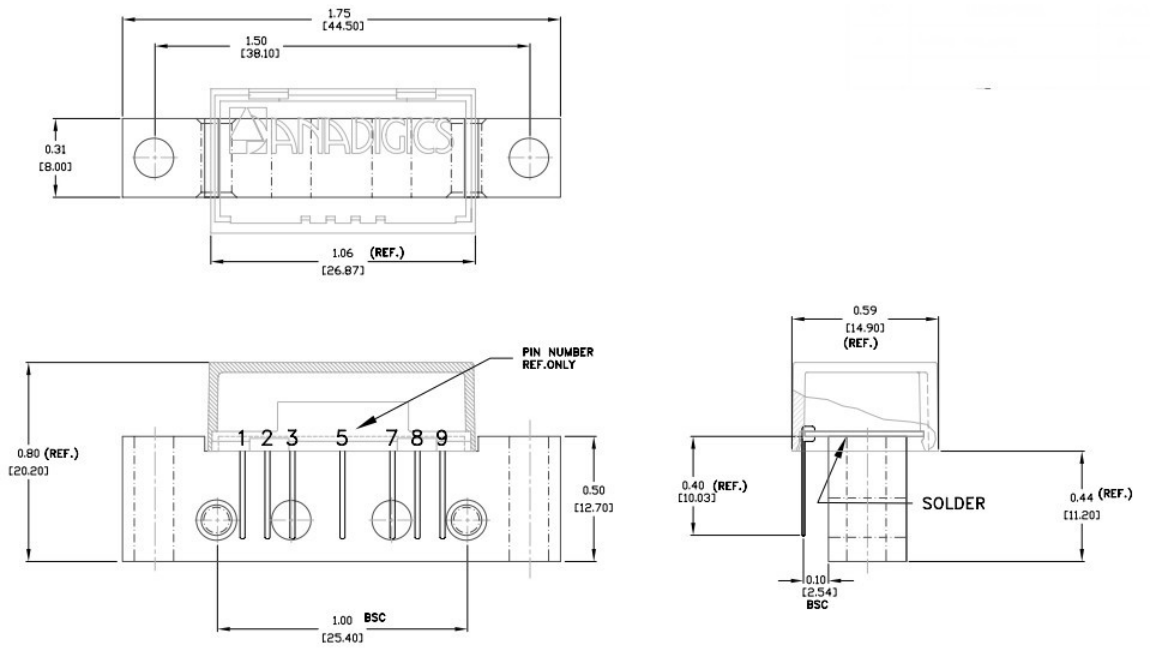


Figure 10: Hybrid Line Amp Physical Outline

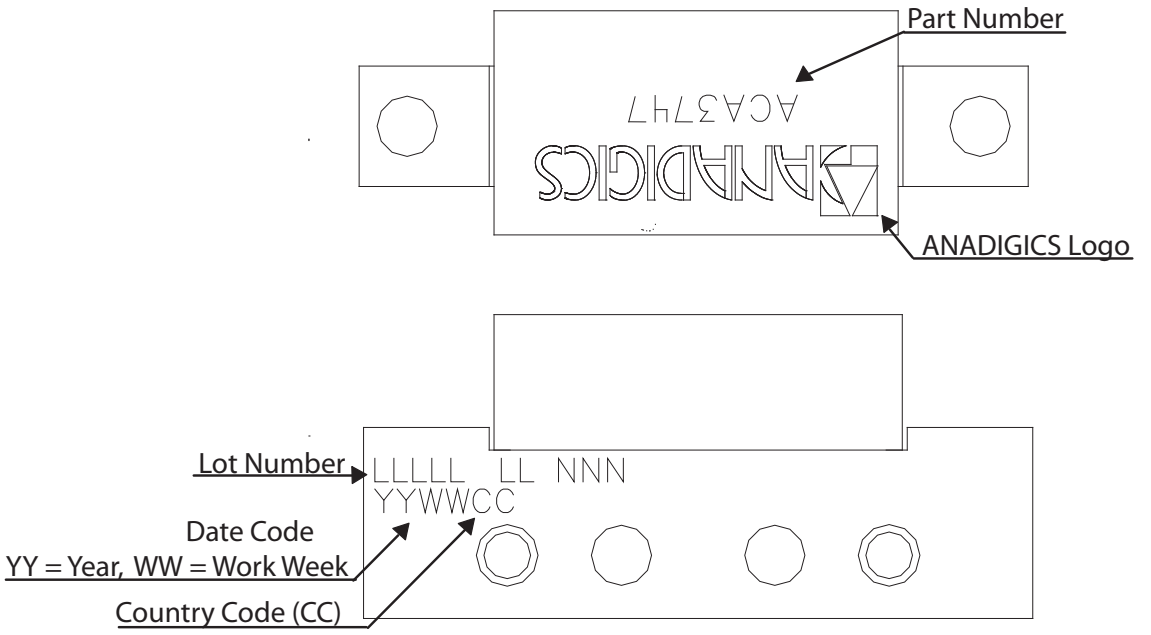


Figure 11: Branding Specification

ORDERING INFORMATION

ORDER NUMBER	UNIT	TEMPERATURE RANGE	PACKAGE DESCRIPTION	COMPONENT PACKAGING
ACA3747RJ6V0	1 piece	-20 °C to +100 °C	SOT115J Hybrid Amplifier	100 Piece Box (1)
ACA3747RJ6Q9	1 piece	-20 °C to +100 °C	SOT115J Hybrid Amplifier	25 Piece Box (2)

Notes:
(1.) The V0 order number should be used for 100 piece order increments (i.e. Full 100 piece boxes). For less than 100 pieces, use the Q9 suffix.
(2.) Order quantities less than 25 pieces will be shipped in a partially filled 25 piece box.

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