

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 SOT-115J Package
- Ruggedized design with integrated ring wave protection
- Superior ESD protection, > 7 kV

APPLICATIONS

- Distribution Nodes and Line Extenders in CATV Systems

PRODUCT DESCRIPTION

The ACA3748 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 with input and output transient voltage protection. The ACA3748 is offered in a standard SOT-115J package.

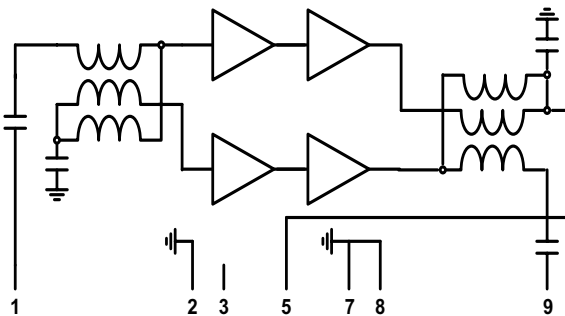


Figure 1: Simplified Hybrid Internal Arrangement

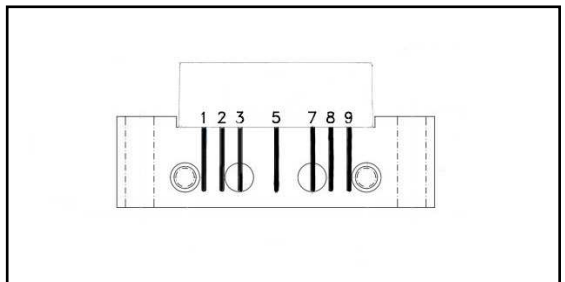


Figure 2: Hybrid Pinout

Table 1: SOT-115J 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)

	Symbol	Min	Typ	Max	Unit	Conditions
Power Gain	G _P	24	25	26	dB	f = 870 MHz
Slope cable equivalent	SL	-	1.5	-	dB	47 - 870 MHz
Gain Flatness	FL	-	0.5	-	dB	47 - 870 MHz (peak to valley)
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	-	-	-65 -65	-60 -	dBc	See Note 1 See Note 2
CSO	-	-	-65 -65	-60 -	dBc	See Note 1 See Note 2
Noise Figure	-	-	5.0	7.0	dB	
Supply Current	-	-	430	450	mA	

Notes:

(1) 79 flat NTSC analog channels @ +48 dBmV/CH output to 550 MHz, plus 53 flat analog channels @ +42 dBmV/CH above 550 MHz.

(2) 79 flat channels at +53 dBmV per channel output.

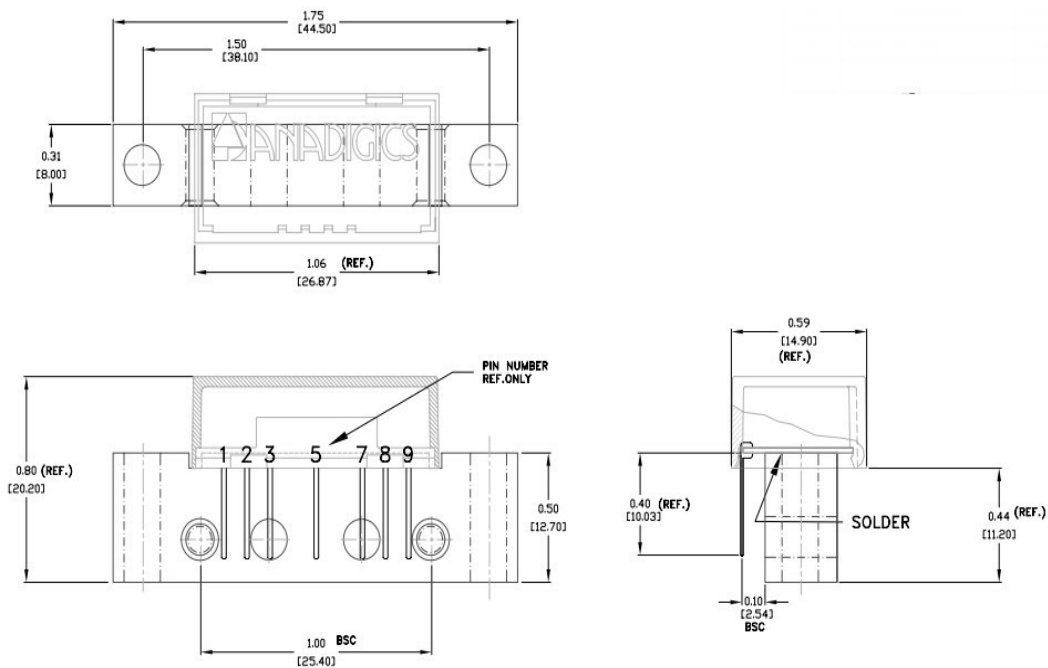


Figure 10: Hybrid Line Amp Physical Outline

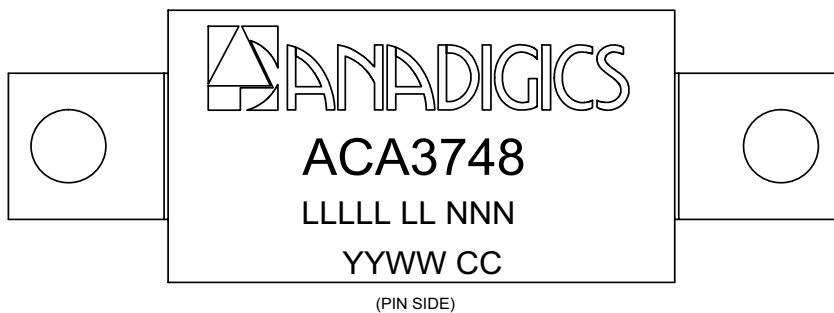


Figure 11: Branding Specification

ORDERING INFORMATION

ORDER NUMBER	TEMPERATURE RANGE	PACKAGE DESCRIPTION	COMPONENT PACKAGING
ACA3748V0	-20 °C to +100 °C	SOT-115J Hybrid Amplifier	100 Piece Box
ACA3748P9	-20 °C to +100 °C	SOT-115J Hybrid Amplifier	Special Handling

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