



**SKYWORKS®**

**ACA3748**  
 870 MHz, 25 dB Gain  
 CATV Power Doubler Amplifier  
 PRELIMINARY DATA SHEET

**FEATURES**

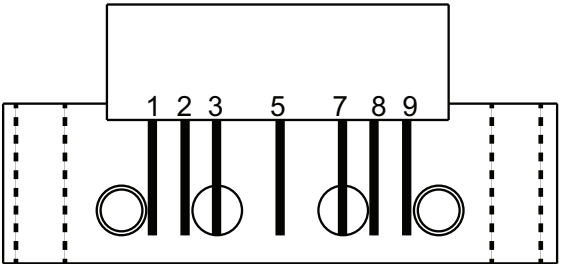
- 25 dB Gain
- 40 MHz to 870 MHz Operating Range
- 0.2 dB Gain Flatness
- 24 V Supply
- Supply Current: 430 mA (Typ.)
- Very Low Distortion & Noise
- Robust Design and Insensitive to Voltage Transients
- GaAs Monolithic IC-Based
- Standard SOT-115J Package
- Ruggedized design with integrated ring wave protection
- Superior ESD protection, > 7 kV

**APPLICATIONS**

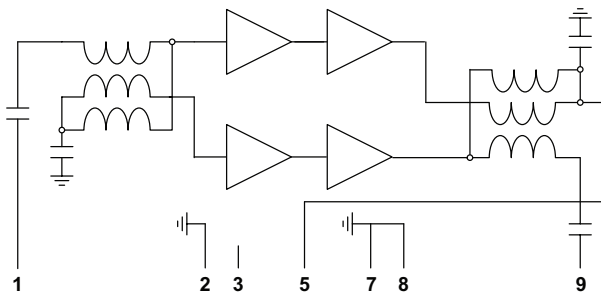
- Distribution Nodes and Line Extenders in CATV Systems

**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 2: SOT-115 Pinout**



**Figure 1: Simplified Hybrid Internal Arrangement**

**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 <sub>DD</sub>	-	+24	+28	V <sub>DC</sub>	
RF Power at inputs	-	-	-	+70	dBmV	single tone
Operating mounting Base temperature	T <sub>MB</sub>	-20	-	+100	□	
Storage Temperature	T <sub>STG</sub>	-40		+100	□	

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<sub>MB</sub> = 30°C, 75 Ω loading)

	Symbol	Min	Typ	Max	Unit	Conditions
Power Gain	G <sub>P</sub>	24	25	27	dB	f = 870 MHz
Slope cable equivalent	SL	-	1.0	-	dB	47 - 870 MHz
Gain Flatness	FL	-	0.5	-	dB	47 - 870 MHz (peak to valley)
Input Return Loss	S <sub>11</sub>	-	-	-20 -18 -16	dB	40 - 380 MHz 380 - 700 MHz 700 - 870 MHz
Output Return Loss	S <sub>22</sub>	-	-	-18 -16	dB	40 - 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
XMOD	-	-	-59 -55	-57 -	dBc	See Note 3 See Note 4
Noise Figure	-	-	5.0	7.0	dB	
Supply Current	-	-	430	460	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.
- (3) 79 flat NTSC channels at +48 dBmV per channel output.
- (4) 112 flat NTSC channels at +48 dBmV per channel output.

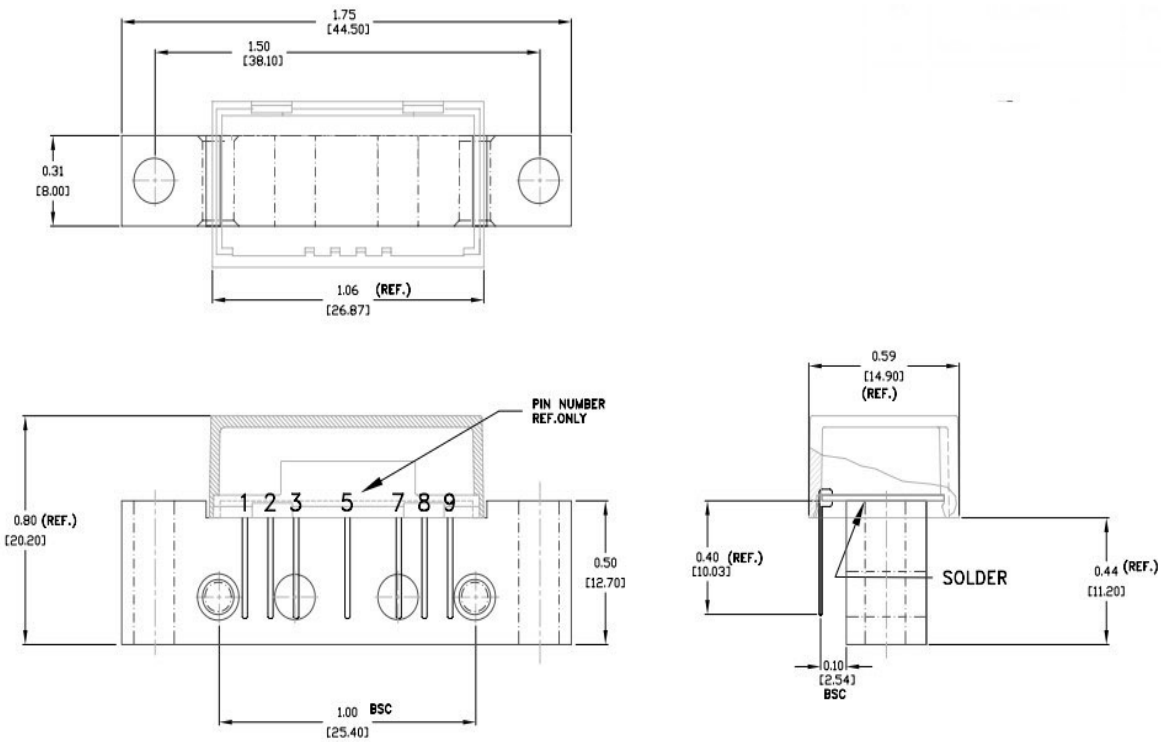


Figure 3: Hybrid Line Amp Physical Outline

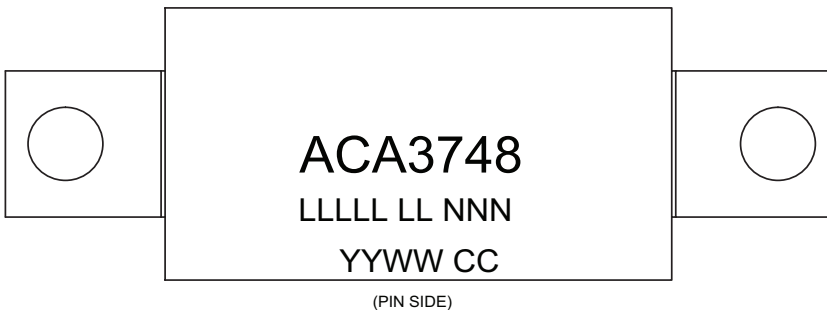


Figure 4: Branding Specification

**ORDERING INFORMATION**

<b>ORDER NUMBER</b>	<b>TEMPERATURE RANGE</b>	<b>PACKAGE DESCRIPTION</b>	<b>COMPONENT PACKAGING</b>
ACA3748V0	-20 °C to +100 °C	SOT-115J Hybrid Amplifier	100 Piece Box
ACA3748Q9	-20 °C to +100 °C	SOT-115J Hybrid Amplifier	Special Handling

NOTES

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