



## ACA2788

1 GHz, 28 dB Gain  
CATV Power Doubler Amplifier  
PRELIMINARY DATA SHEET - Rev 1.0

### FEATURES

- 28 dB Gain
- 40 MHz to 1 GHz Operating Range
- 0.5 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 surge protection
- Superior ESD protection, >7kV

### APPLICATIONS

- Distribution Nodes, System Amplifiers, and Line Extenders in CATV Systems

### PRODUCT DESCRIPTION

The ACA2788 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 ACA2788 is offered in a standard SOT-115J package.

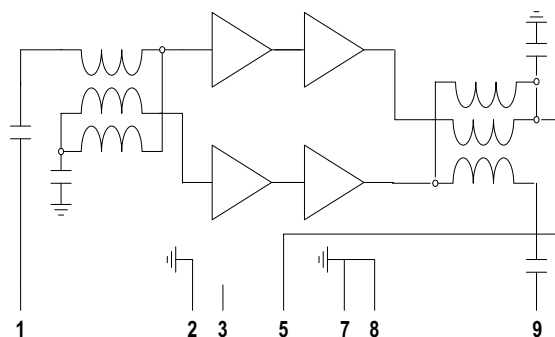


Figure 1: Simplified Hybrid Internal Arrangement

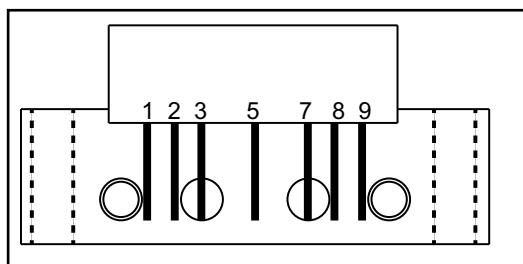
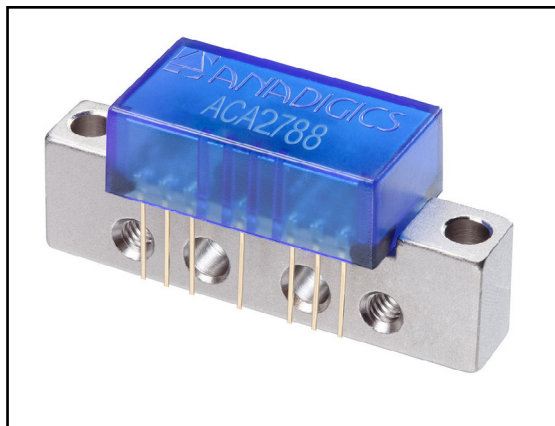


Figure 2: Hybrid Pinout

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 <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	°C	
Storage Temperature	T <sub>STG</sub>	-40		+100	°C	

**Table 3: Operating Ranges**

	Symbol	Min	Typ	Max	Unit	Conditions
RF Frequency	-	40	-	1000	MHz	

**Table 4: Electrical Characteristics**  
**(Test condition: 40 to 1000 GHz, T<sub>MB</sub> = 30°C, 75 Ω loading)**

	Symbol	Min	Typ	Max	Unit	Conditions
Power Gain	G <sub>P</sub>	27	28	29	dB	f = 1 GHz
Slope cable equivalent	SL	-	1.5	-	dB	47 MHz to 1 GHz
Gain Flatness	-	-	±0.5	-	dB	47 MHz to 1 GHz (peak to valley)
Input Return Loss	S <sub>11</sub>	-	-	-20 -17	dB	40 - 500 MHz 500 - 1000 MHz
Output Return Loss	S <sub>22</sub>	-	-	-19 -17	dB	40 - 500 MHz 500 - 1000 MHz
CTB	-	-	-70 -70	-65 -	dBc	See Note 1 See Note 2
CSO	-	-	-70 -70	-65 -	dBc	See Note 1 See Note 2
Noise Figure	-	-	3.5	5.0	dB	
Supply Current	-	-	430	445	mA	

**Notes:**

(1) 79 analog NTSC channels to 550 MHz + 75 digital QAM channels (at -6 dB offset) with 15.5 dB tilt referenced to +55 dBmV output power at 1GHz.

(2) 79 analog NTSC channels with flat output of +44 dBmV @ 550 MHz plus 53 digital channels to -6 dB offset to 1GHz.

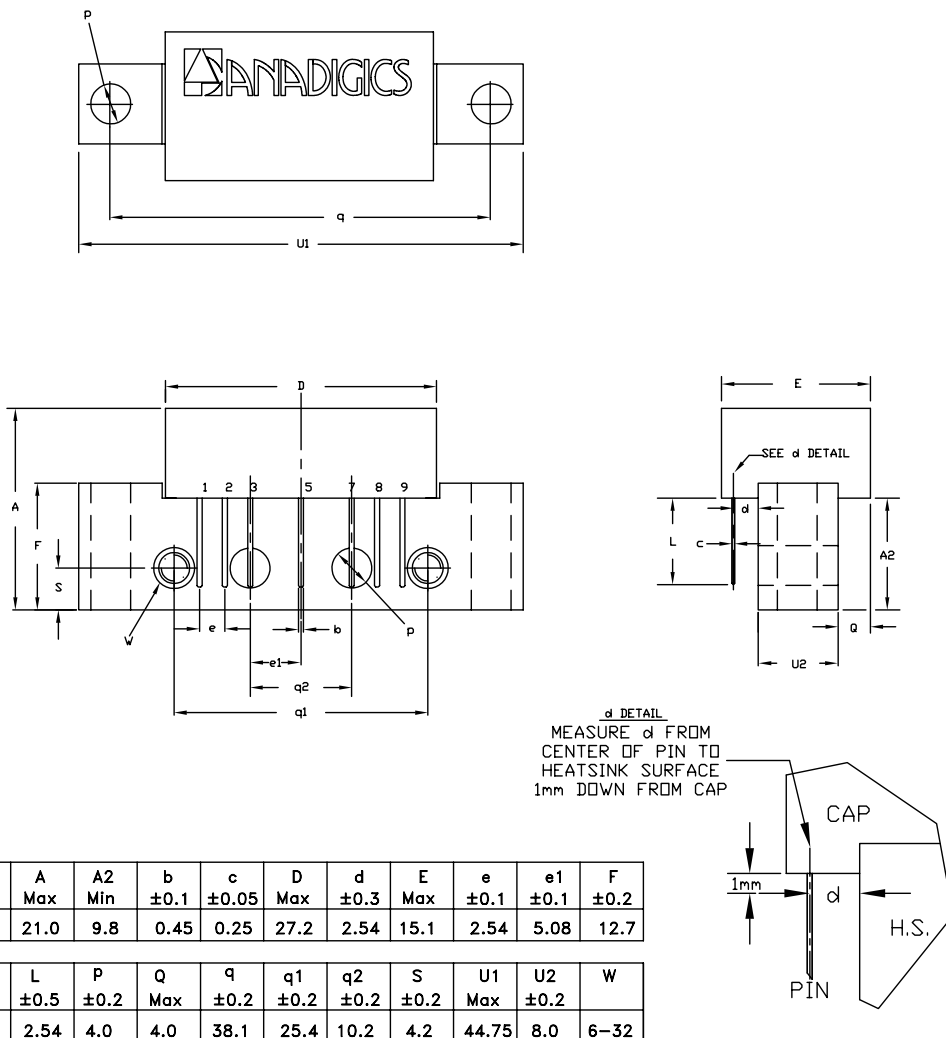


Figure 3: Hybrid Line Amp Physical Outline

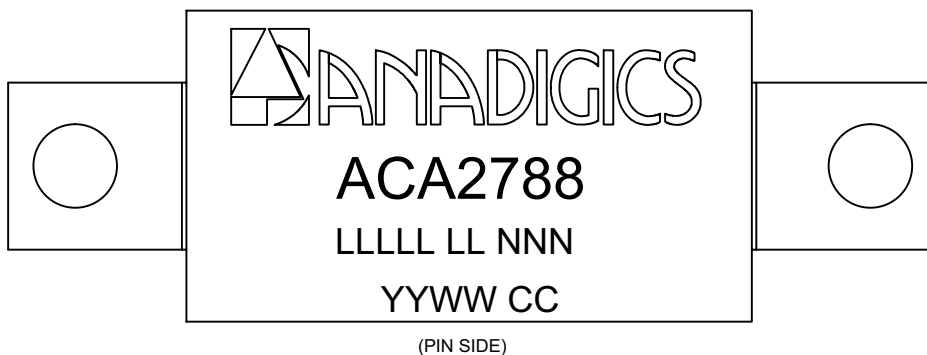


Figure 4: Branding Specification

**ORDERING INFORMATION**

ORDER NUMBER	TEMPERATURE RANGE	PACKAGE DESCRIPTION	COMPONENT PACKAGING
ACA2788V0	-20 °C to +100 °C	SOT-115J	100 Piece Box
ACA2788P9	-20 °C to +100 °C	SOT-115J	Special handling

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