

FEATURES

- 50 to 1218 MHz Frequency Range
- 18 dB Gain @ 1218 MHz
- +61 to +63.7 dBmV/channel Output Power
- +76.7 dBmV Total Composite Power (TCP)
- Single +24 Vdc Power Supply Input
- Operating Current = 900 mA (Pdiss = 21.6 Wdc)
- GaN Technology + Patent Pending Proven-Power™ Circuitry
- Halogen Free/RoHS Compliant

APPLICATIONS

- DOCSIS® and Euro DOCSIS® 3.1 (D3.1) Compliant Downstream (DS)
- Final Stage RF Amplifier for Node + 0 HFC and FTTC/FTTB Networks
- Output Stage RF Amplifier for D-CCAP/D-PHY Transmitters

PRODUCT DESCRIPTION

The ACA4741 is a highly linear high output power RF amplifier module in the industry standard SOT-115 package. Designed for Deep Fiber Node CATV infrastructure applications, the module consists of two parallel amplifiers in cascade forming a power doubler optimized for low distortion, high output power, and very high TCP. A GaN output stage utilizing patent pending Proven-Power™ circuitry minimizes operating current making the module ideal for “GREEN” applications.

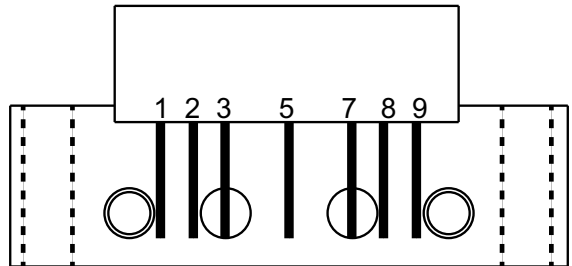


Figure 2: SOT-115 Pinout

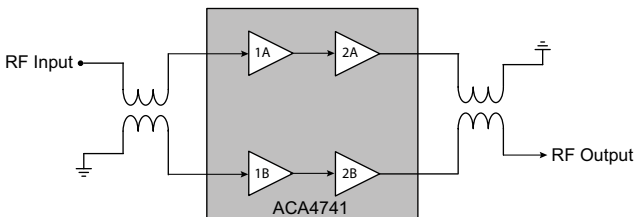


Figure 1: Block Diagram

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

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Supply (V_{DD})	-	+24	+28	V_{DC}	
RF Power at Input	-	-	+75	dBmV	Single Tone
Operating Mounting Base Temperature (T_{MB})	-20	-	+100	$^{\circ}C$	
Storage Temperature (T_{STG})	-40	-	+100	$^{\circ}C$	

Stresses in excess of the absolute ratings may cause permanent damage. Functional operation is not implied under these conditions. Exposure to absolute ratings for extended periods of time may adversely affect reliability.

Table 3: Operating Ranges

PARAMETER	MIN	TYP	MAX	UNIT
RF Input/Output Frequency (f)	50	-	1218	MHZ
Supply Voltage (V_{DD})	-	+24	-	V_{DC}
Case Temperature (T_c)	-40	-	+100	$^{\circ}C$

The device may be operated safely over these conditions; however, parametric performance is guaranteed only over the conditions defined in the electrical specifications.

ELECTRICAL CHARACTERISTICS

Table 4: Electrical Specifications (See Notes 1, 3, & 4)
 (T_A = +25 °C, V_{DD} = +24 V_{DC}, f = 50 to 1218 MHz, 75 Ω system)

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Gain (1218 MHz)	-	18	18.5	dB	f = 1218 MHz, See Note 3
Cable Equivalent Slope	-	1.25	-	dB	f = 50 - 1218 MHz, See Note 3
Gain Flatness to 1218 MHz	-	± 0.2	-	dB	See Notes 2 & 3
Noise Figure (NF)	-	5	-	dB	
Composite Triple Beat (CTB)	-	-80	-	dBc	See Note 1
Composite Second Order (CSO)	-	-70	-	dBc	See Note 1
Cross Modulation (XMOD)	-	-70	-	dBc	See Note 1
Composite Intermodulation Noise (CIN)	-	-57	-	dBc	See Note 1
Composite Carrier to Noise Ratio (CCNR)	55	57	-	dB	See Note 1
Total Composite Power (TCP)	-	76.7	-	dBmV	See Note 4
Input Return Loss (IRL)	-	-20	-18	dB	See Note 3
Output Return Loss (ORL)	-	-20	-18	dB	See Note 3
Supply Current	850	900	925	mA	

Notes: All specifications as measured on ANADIGICS evaluation assembly.

(1) Parts measured with 77 NTSC analog channels plus 111 equivalent digital SC-256-QAM channels to 1218 MHz, +62 dBmV output power and 22.6 dB tilt referenced to 1218 MHz.

(2) Peak deviation from a straight line between gain value at 50 MHz and 1218 MHz.

(3) Measured in application circuit.

(4) +63.7 dBmV/channel output power referenced to 1218 MHz, 163 equivalent 256-SC-QAM channels to 1090 MHz, 20.8 dB Tilt.

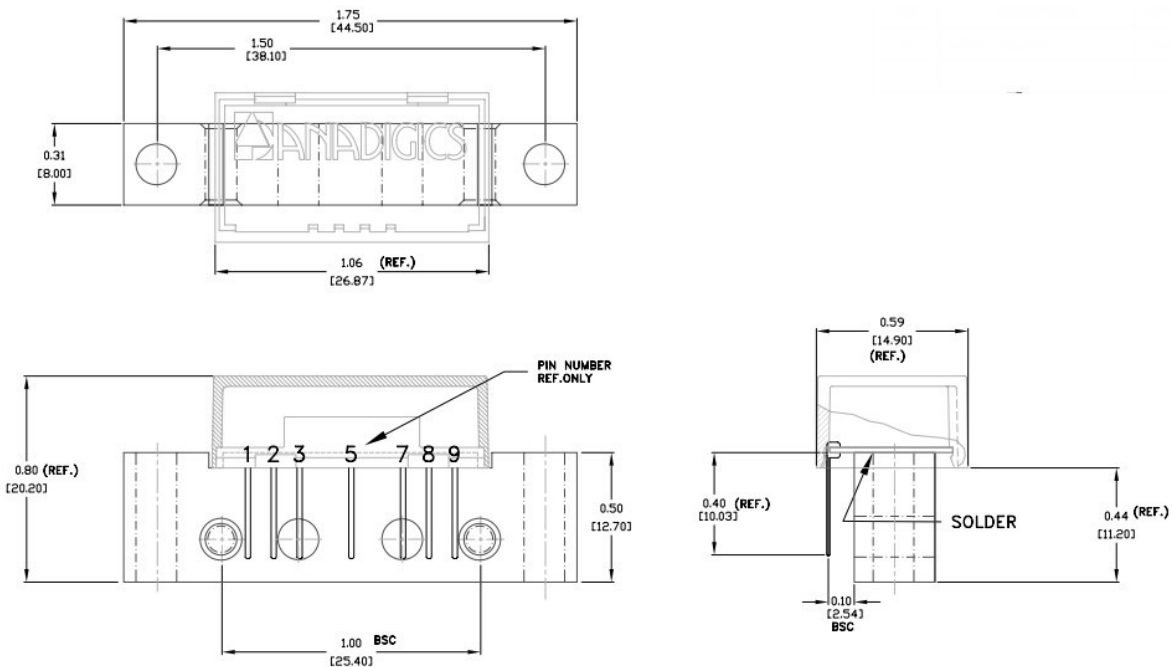


Figure 3: Hybrid Line Amp Physical Outline

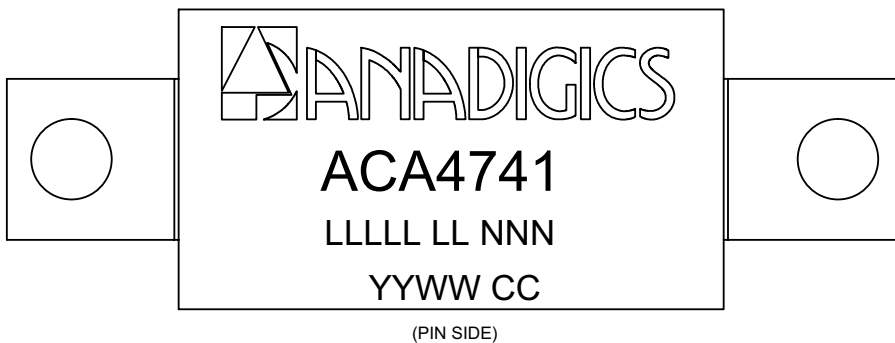


Figure 4: Branding Specification

ORDERING INFORMATION

ORDER NUMBER	TEMPERATURE RANGE	PACKAGE DESCRIPTION	COMPONENT PACKAGING
ACA4741V0	-20 °C to +100 °C	SOT-115J Hybrid Amplifier	100 Piece Box
ACA4741V9	-20 °C to +100 °C	SOT-115J Hybrid Amplifier	Special Handling



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