

FEATURES

- Wideband Operation: 5 MHz to 300 MHz
- Balanced 2 stage 75 Ohm design with 33 dB gain
- Low Noise Figure of 2.5 dB typ 5 MHz to 300 MHz
- Single +24V Supply, 125 mA
- 16 lead wide body SOIC package with heat slug

APPLICATIONS

- CATV Infrastructure & Head End Equipment
- Gain Block

PRODUCT DESCRIPTION

The ARA2032 is a high performance, low distortion, balanced designed for use in high frequency return path systems with a 24V supply. The device operates over a wide frequency range of 5 MHz to 300 MHz, has excellent OIP3, and can be used in many of today's demanding applications that require low noise figure and high gain. The typical gain and noise figure of the device over the 5 MHz to 300 MHz band is 32dB and 2.5dB, respectively.

Requiring a single +24 Volt supply, the ARA2032 design is implemented using ANADIGICS's own high-reliability GaAs MESFET process. The SOIC package provides a standard footprint and excellent thermal characteristics.

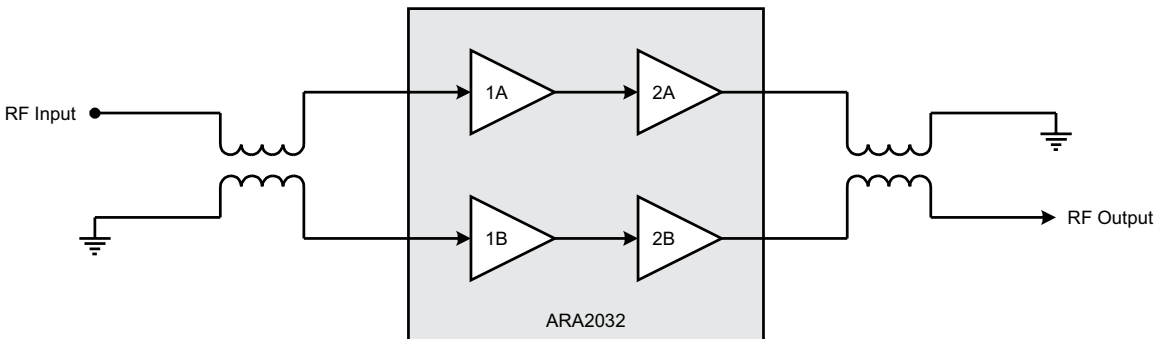
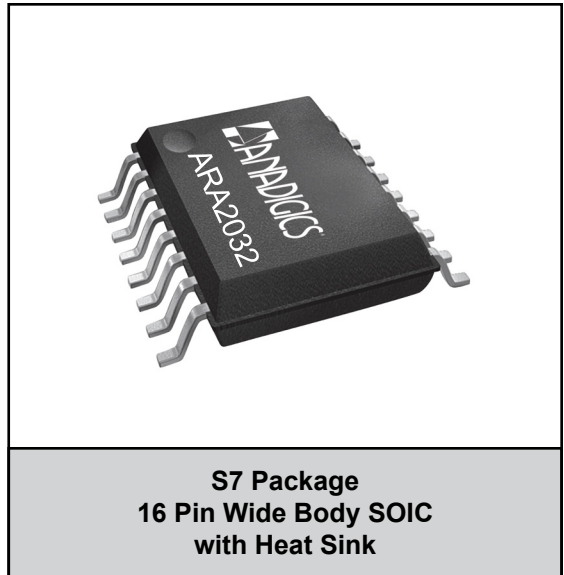


Figure 1: Block Diagram

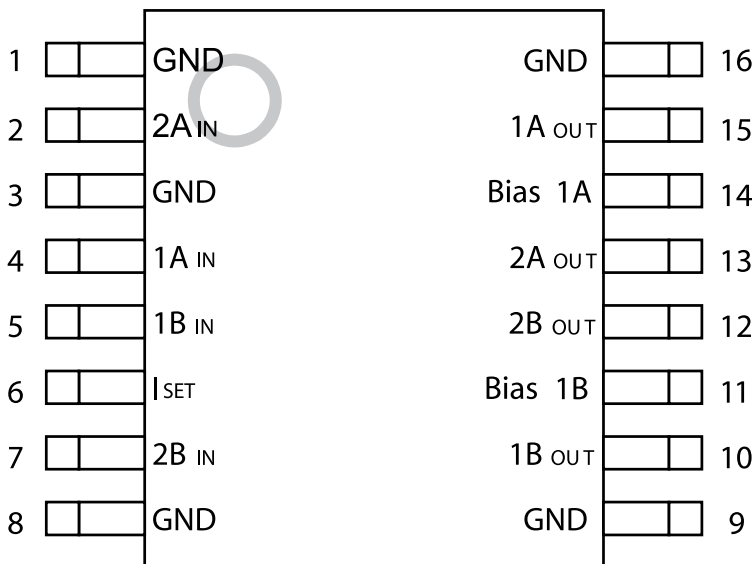


Figure 2: Pinout Diagram

Table 1: Pin Description

PIN	NAME	DESCRIPTION	PIN	NAME	DESCRIPTION
1	GND	Ground	9	GND	Ground
2	2A _{IN}	Amplifier 2A Input	10	1B _{OUT}	Amplifier 1B Output
3	GND	Ground	11	Bias 1B	Bias for 1B Amplifier
4	1A _{IN}	Amplifier 1A Input	12	2B _{OUT}	Amplifier 2B Output and Supply
5	1B _{IN}	Amplifier 1B Input	13	2A _{OUT}	Amplifier 2A Output and Supply
6	I _{SET}	Current Adjust	14	Bias 1A	Bias for 1A Amplifier
7	2B _{IN}	Amplifier 2B Input	15	1A _{OUT}	Amplifier 1A Output
8	GND	Ground	16	GND	Ground

ELECTRICAL CHARACTERISTICS

Table 2: Absolute Minimum and Maximum Ratings

PARAMETER	MIN	MAX	UNIT
Supply Voltage	0	+28	VDC
RF Input Power (P _{IN})	-	-	dBmV
Storage Temperature	-65	+150	°C
Soldering Temperature	-	+260	°C
Soldering Time	-	5.0	Sec
ESD Rating	TBD	-	V
	TBD	-	
MSL Level	2-260		

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 Conditions

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Voltage Supply, V _{DD}	-	+24	-	VDC	
Operating Frequency	5	-	300	MHz	
Case Temperature	-40	-	+110	°C	

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

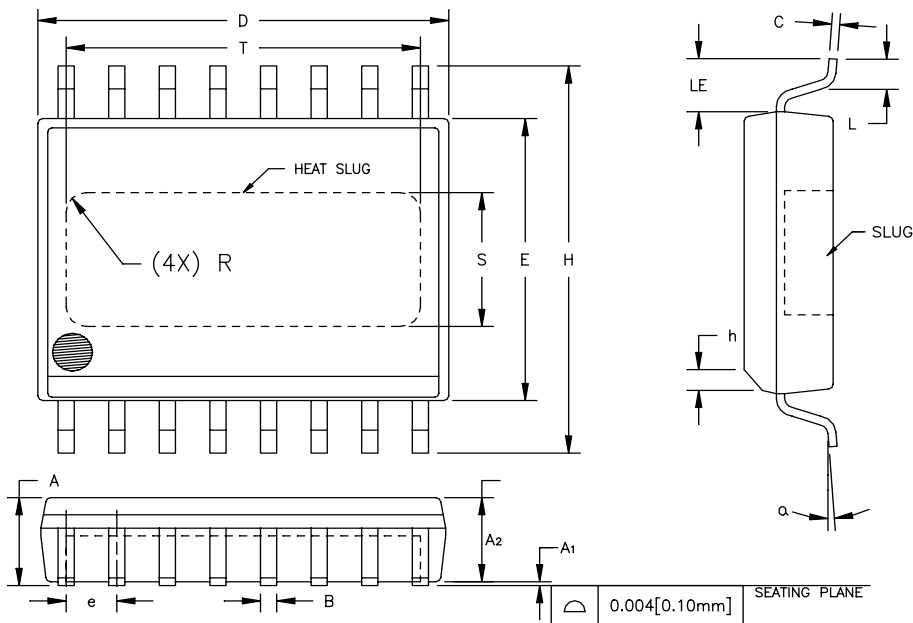
Table 4: Electrical Specifications - $V_{DD} = +24V$, $T_A = 25\text{ }^\circ\text{C}$

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Gain		33		dB	
Gain Flatness		± 0.5		dB	
Gain slope		± 0.7			
Noise Figure		2.5		dB	
CTB ⁽¹⁾		-64		dBc	
CSO ⁽¹⁾		-63		dBc	
Xmod ⁽¹⁾		-57			
Input Return Loss		19		dB	
Output Return Loss		19		dB	
Supply Current		125		mA	
Hum Mod		<-60		dBc	
Reverse Isolation		40		dB	

Notes:

(1) Distortion measured with 8 NTSC flat analog channels, +50 dBmV/ch output power.

PACKAGE OUTLINE



S _{MBO1}	INCHES		MILLIMETERS		NOTE
	MIN.	MAX.	MIN.	MAX.	
A	0.087	0.098	2.21	2.49	
A ₁	0.000	0.004	0.00	0.10	6
A ₂	0.087	0.094	2.21	2.39	
B	0.013	0.019	0.33	0.48	
C	0.007	0.009	0.18	0.23	
D	0.398	0.412	10.11	10.46	2
E	0.290	0.300	7.37	7.62	3
e	0.050	BSC	1.27	BSC	4
H	0.394	0.418	10.01	10.62	
h	0.010	0.028	0.25	0.71	
L	0.024	0.040	0.61	1.02	
LE	0.052	—	1.32	—	
a	0°	8°	0°	8°	
S	0.120	0.140	3.05	3.56	5
T	0.330	0.350	8.38	8.89	5
R	REF.	0.015	REF.	0.38	5

NOTES:

1. CONTROLLING DIMENSION: INCHES
2. DIMENSION "D" DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS AND GATE BURRS SHALL NOT EXCEED 0.006 [0.15mm] PER SIDE.
3. DIMENSION "E" DOES NOT INCLUDE INTER-LEAD FLASH OR PROTRUSIONS. INTER-LEAD FLASH AND PROTRUSIONS SHALL NOT EXCEED 0.010 [0.25mm] PER SIDE.
4. MAXIMUM LEAD TWIST/SKEW TO BE ±0.005 [0.13mm].
5. DIMENSIONS "s", "t" AND "R" INDICATE EXPOSED SLUG AREA.
6. STANDOFF HEIGHT (A₁) MEASURED FROM BOTTOM OF SLUG.

Figure 3: S7 Package Outline - 16 Pin Wide Body SOIC with Heat Slug

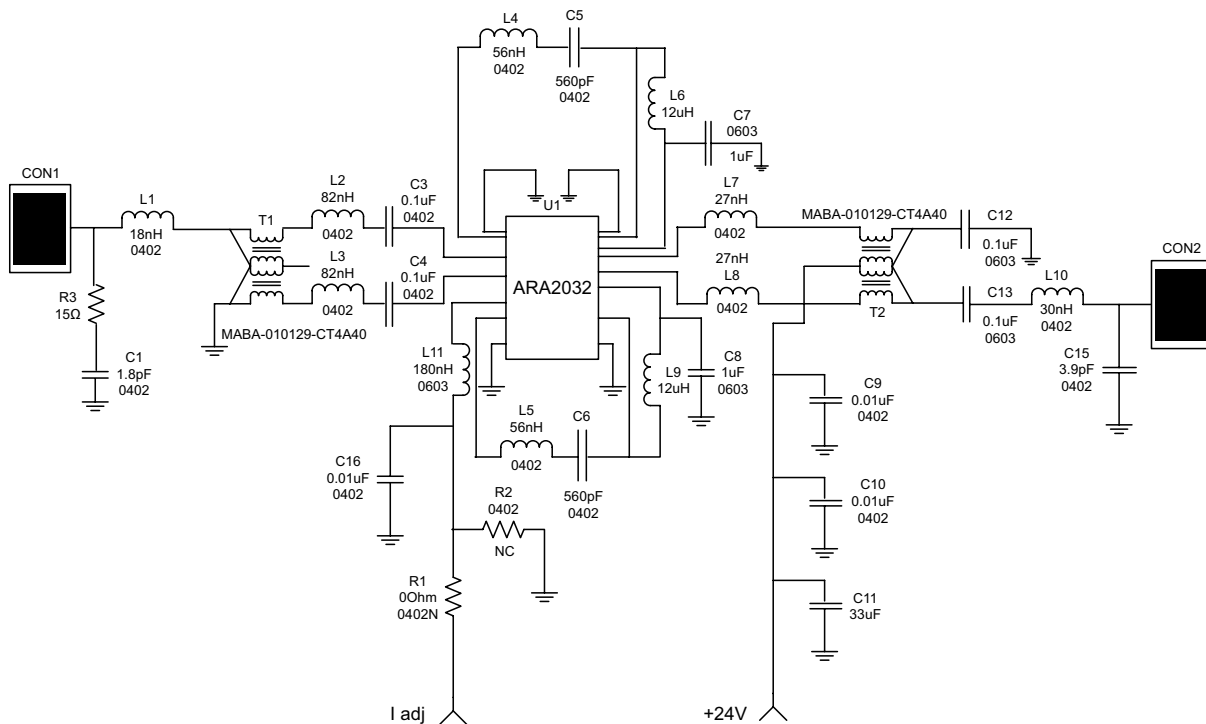


Figure 4: Reverse Amplifier Application / Reference Board Schematic

Table 5: List of Materials

ITEM	QTY	REFERENCE	PART NAME	VALUE
1	1	U1	ARA2032	-
2	1	C1	CAP0402	1.8pF
3	2	C3, C4	CAP0402	0.1uF
4	2	C7, C8	CAP0603	1.0uF
5	2	C12, C13	CAP0603	0.1uF
6	1	C15	CAP0402	3.9pF
7	2	C5, C6	CAP0402	560pF
8	3	C9, C10, C16	CAP0402	.01uF
9	1	C11	CAPA	33uF
10	2	L2, L3	IND0402	82nH
11	1	L1	IND0402	18nH
12	2	L4, L5	IND0402	56nH
13	2	L6, L9	IND0805 (Allied)	12uH
14	2	L7, L8	IND0402	27nH
15	1	L10	IND0402	30nH
16	1	L11	IND0603	180nH
17	2	T1-2	MABA-010129-CT4A40	-
18	2	CON1-2	N_FLANGE_MALE_SINGLE	-
19	1	R1	RES0402	0ohm
20	1	R2	RES0402	NC
21	1	R3	RES0402	15ohm

ORDERING INFORMATION

ORDER NUMBER	TEMPERATURE RANGE	PACKAGE DESCRIPTION	COMPONENT PACKAGING
ARA2032S7	-40 °C to +110 °C	RoHS-compliant 16 Pin Wide Body SOIC with Heat Sink	1,500 Piece Tape & Reel

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