

**FEATURES**

- 12 dB Gain
- Balanced Design
- High Linearity
- Low Noise Figure
- Single Supply
- Wide Bandwidth

**APPLICATIONS**

- Driver Amplifier
- CATV - Distribution / Drop Amplifiers
- Settop Boxes
- Home Gateway

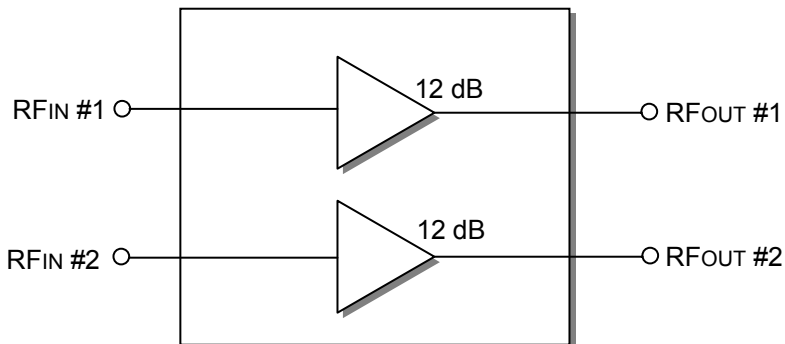


**Ordering Information**  
**ABA3100S3**  
**16 Pin SOIC Package**

**Description**

The ABA3100 is a monolithic IC intended for use in applications requiring high linearity such as: Cellular Telephone Base Station Driver Amplifiers, CATV Fiber Receiver/Distribution Amplifiers, CATV Drop Amplifiers, CATV Settop Boxes and Home Gateway. Supplied in a surface mount, 16 lead-SOIC package, it is well suited for use in amplifiers where small size, reduced component count, and high reliability are important.

**ABA3100 Block Diagram**



## Absolute Maximum Ratings

PARAMETER	MIN	MAX	UNITS
$V_{DD}/V_{RFOUT}$	0	12	$V_{DC}$
$V_{RFIN}$		0	$V_{DC}$
$RF_{IN}$		+ 10	dBm
Storage Temperature	- 65	+150	°C
Soldering Temperature		260	°C
Soldering Time		5.0	Sec.
Thermal Resistance		10	°C/W

## Electrical Specifications

( $T_A = +25\text{ }^\circ\text{C}$ ,  $RF = 50$  to  $1000$  MHz, Test System =  $75\Omega$ ,  $V_{DD} = +5V @ 150$  mA Typ )

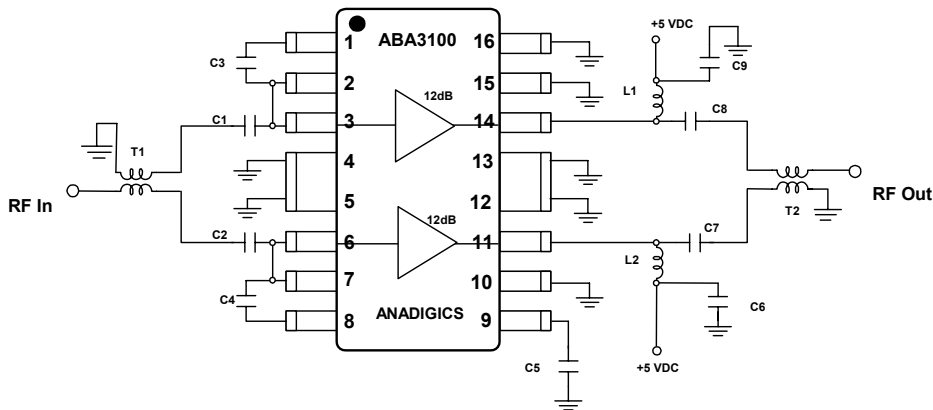
PARAMETER	MIN	TYP	MAX	UNITS
Gain	11	12	14	dB
Noise Figure 50 MHz - 350 MHz		2.5	3.0	dB
350 MHz - 550 MHz		2.7	3.5	dB
550 MHz - 860 MHz		3.2	4.0	dB
Input/Output Return Loss	10	18		
$CSO^1$		-72	-70	dBc
$CTB^1$		-75	-73	dBc
2nd Order Output Intercept Point (OIP2) <sup>2</sup>		60		dBm
3rd Order Output Intercept Point (OIP3) <sup>2</sup>		35		dBm
$I_{DD}$ ( $V_{DD} = 5.0V$ )	120	150	170	mA

- 132 channels, + 25 dBmV per channel, (measured at the output) 6 MHz channel spacing.
- Two tones, @ 397 MHz and 403 MHz, +4dBm per tone.

## Operating Ranges

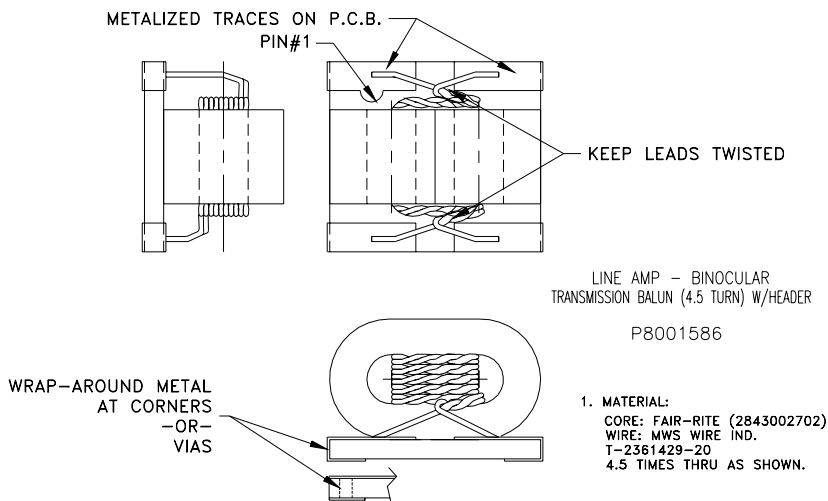
PARAMETER	MIN	TYP	MAX	UNITS
$V_{DD}$	4.5	5	9	Volts
Case Temperature	-40	-	85	°C

Test circuit for ABA3100 (5V, 150 mA typical bias)

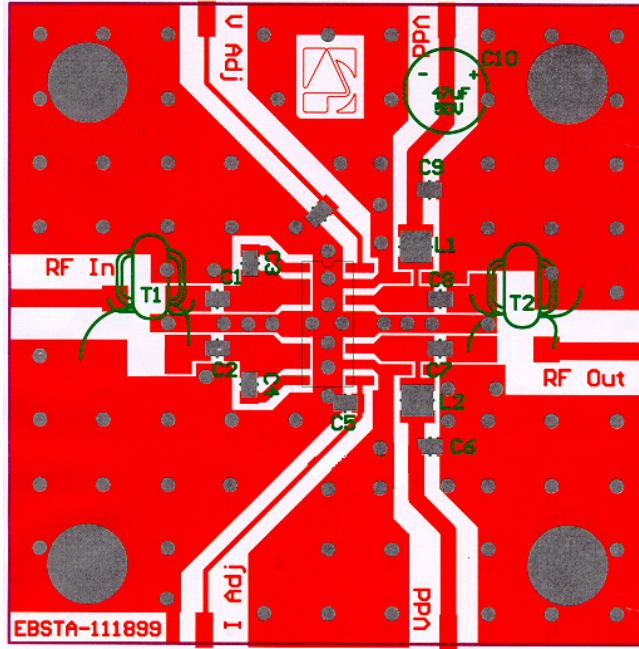


Pin	Description
1	Feedback #1
2	RF Input #1
3	RF Input #1
4	GND
5	GND
6	RF Input #2
7	RF Input #2
8	Feedback #2
9	Current Adjust
10	GND
11	RFOutput #2
12	GND
13	GND
14	RF Output #1
15	GND
16	GND

T2 Balun Drawing



ABA3100 Test Fixture Layout



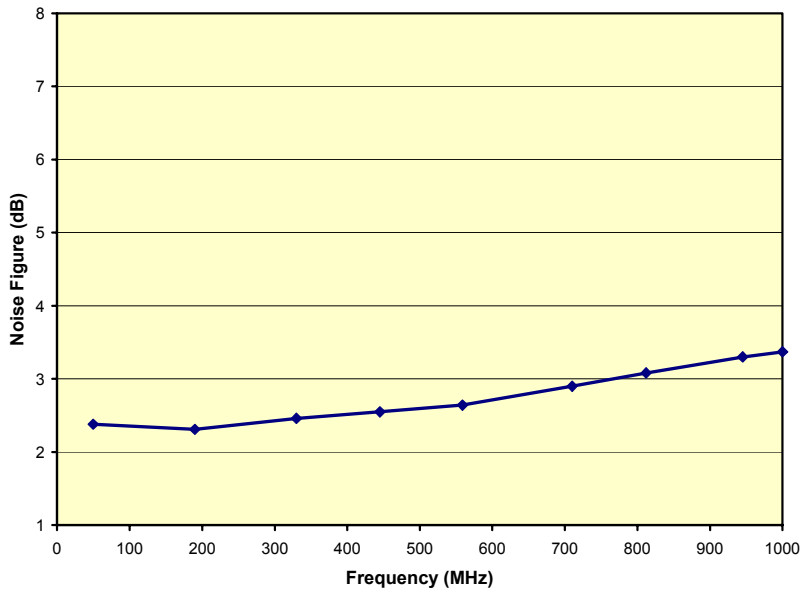
Parts List for ABA3100 Test Fixture

ITEM	DESCRIPTION	QTY	VENDOR	VENDOR P/N
C1 TO C9	0.01uF. CHIP CAP.	9	MURATA	GRM39X7R1103K25V
C10	47 uF ELEC. CAP.	1	DIGI-KEY CORP	P5275-ND
L1-L2	390 nH. CHIP INDUC.	2	COILCRAFT	1008CS-391XKBC
CONNECTORS	END LAUNCHED F CONNECTOR	2	LIGHTHORSE TECH	LT-FSF55NP
T1, T2 (BALUN)	FERRITE CORE WIRE	2	FAIR-RITE MWS WIRE IND.	2843002702 T-2361429-20
	PCB.	1	STAND. PRINTED CIRCUITS INC.	EBSTA-111899

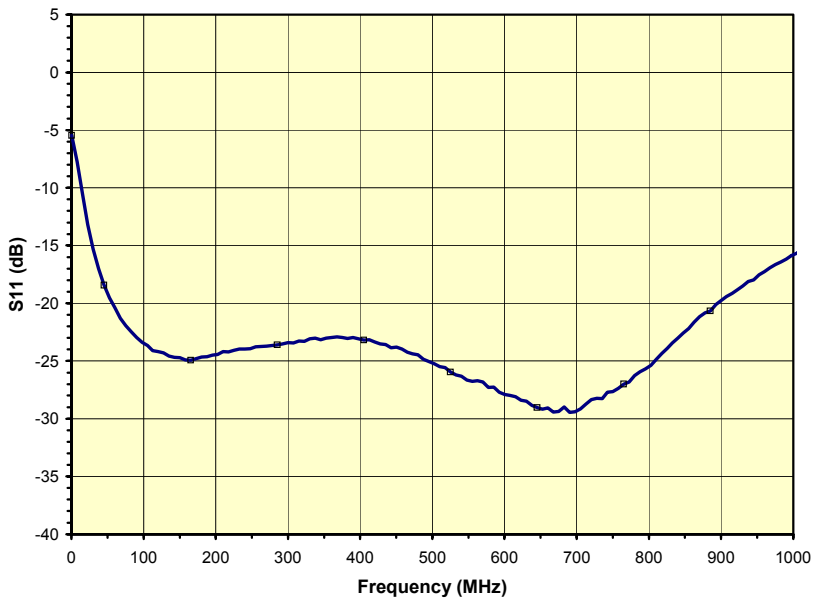
Notes:

T2 Balun: 4.5 Times thru as shown. (DWG. No. P8001586)  
 Connectors tabs must be reduced by 150 mils.  
 Device must be soldered on PC board.

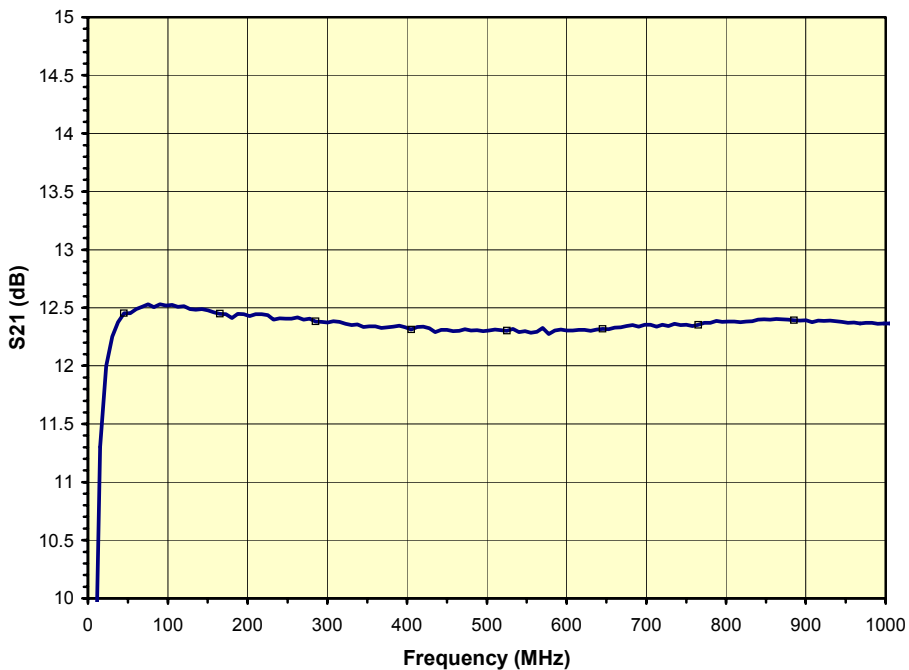
ABA3100 - Typical Noise Figure vs. Frequency



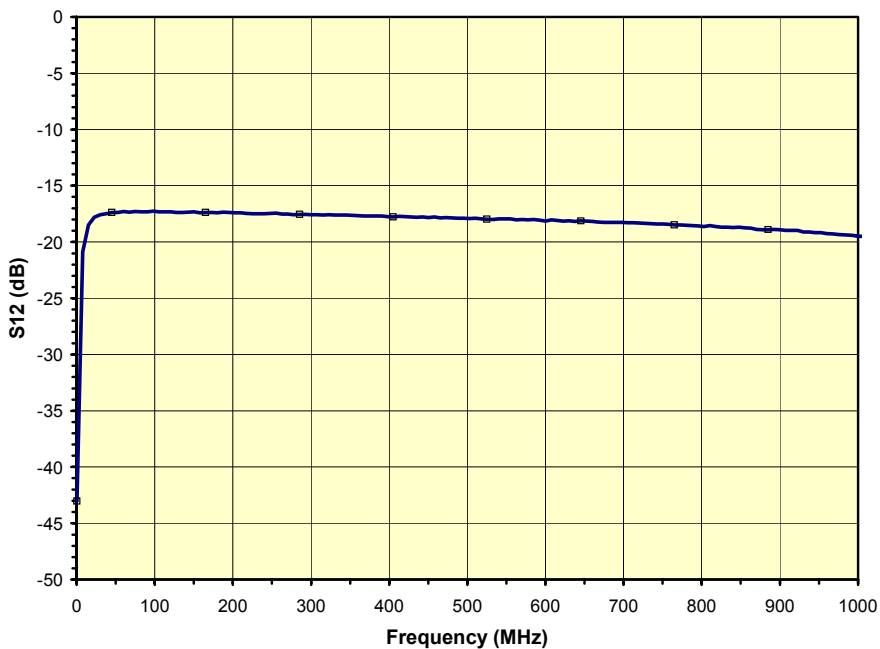
ABA3100 - Typical S11 vs. Frequency



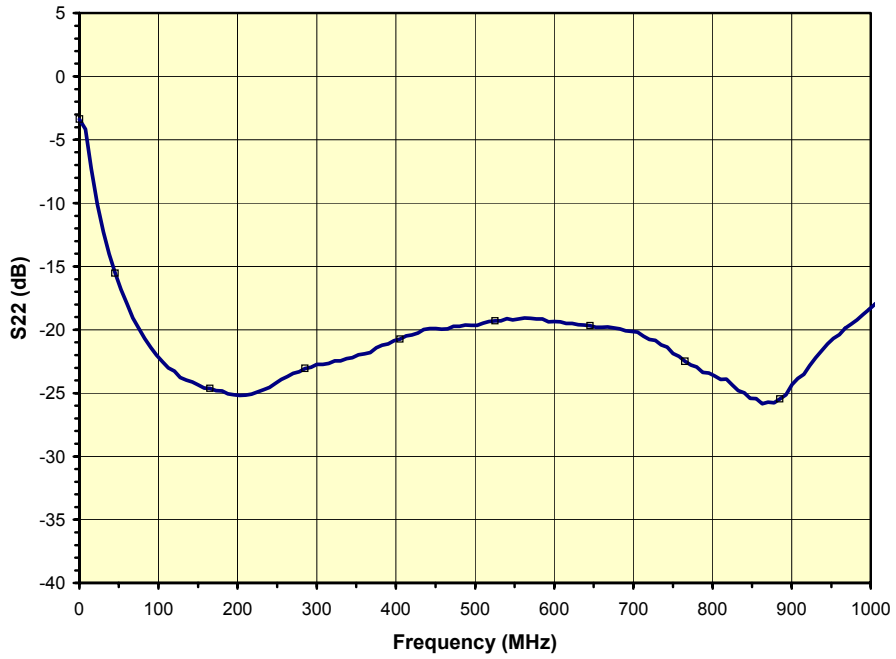
ABA3100 - Typical S21 vs. Frequency



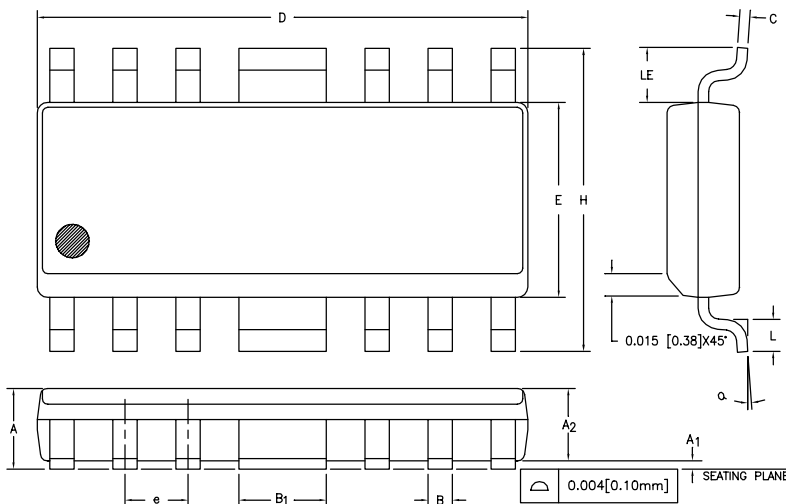
ABA3100 - Typical S12 vs. Frequency



ABA3100 - Typical S22 vs. Frequency



Package Outline



SYMBOL	INCHES		MILLIMETERS		NOTE
	MIN.	MAX.	MIN.	MAX.	
A	0.058	0.068	1.47	1.73	
A1	0.004	0.010	0.10	0.25	
A2	0.055	0.065	1.40	1.65	
B	0.013	0.020	0.33	0.50	
B1	0.062	0.070	1.58	1.78	
C	0.008	0.010	0.20	0.25	4
D	0.380	0.400	9.66	10.16	2
E	0.150	0.160	3.81	4.06	3
e	0.050	BSC	1.27	BSC	
H	0.226	0.244	5.74	6.20	
L	0.016	0.040	0.41	1.02	
LE	0.030	—	0.76	—	
α	0°	8°	0°	8°	

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. LEAD THICKNESS AFTER PLATING TO BE 0.013 [0.33mm] MAXIMUM.

0-006



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