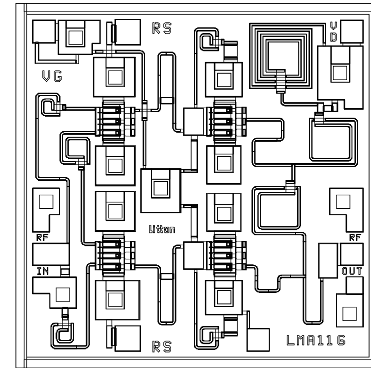
Features

- 4.5dB Typical Noise Figure
- 15dB Typical Gain
- 18dBm Saturated Output Power
- 12dB Input/Output Return Loss Typical
- 2-10GHz Frequency Bandwidth
- +8 Volts Single Bias Supply
- DC Decoupled RF Output
- Chip Size : 1.62mmX1.62mm (.064"X.064")
- Chip Thickness : 100µm
- Pad Dimension : 100µm^2



Description

The Filtronic LMA116 is a GaAs monolithic distributive amplifier which operates from 2 to 10GHz. This amplifier is self biased and four 450µm FETs are used to produce a typical gain of 15dB and a noise figure of 4.5dB. The LMA116 is suitable for gain block, low noise and driver amplifier applications. DC decoupled output RF port. Ground is provided to the circuitry through vias to the backside metallization.

Electrical Specifications at T_a=25°C

(V_{DD}=+8.0V, Zin=Zout=50Ω)

Symbol	Parameter	Test Conditions	Limit			Units
			Min.	Typ.	Max.	
BW	Operating Bandwidth		2		10	GHz
S21	Small Signal Gain	V_D=8V, V_G=3.5V, R_{S1}=5Ω	13	15		dB
Ids	Drain Operating Current		55	80	125	mA
ΔS21	Small Signal Gain Flatness			±1	±1.5	dB
NF	Noise Figure	@ .5Idss		4.5	5.5	dB
RLin	Input Return Loss			-10		dB
RLout	Output Return Loss			-14		dB
S12	Reverse Isolation		-35	-40		dB
P-1dB	1-dB Gain Compression Power		12.5	15		dBm

Absolute Maximum Ratings

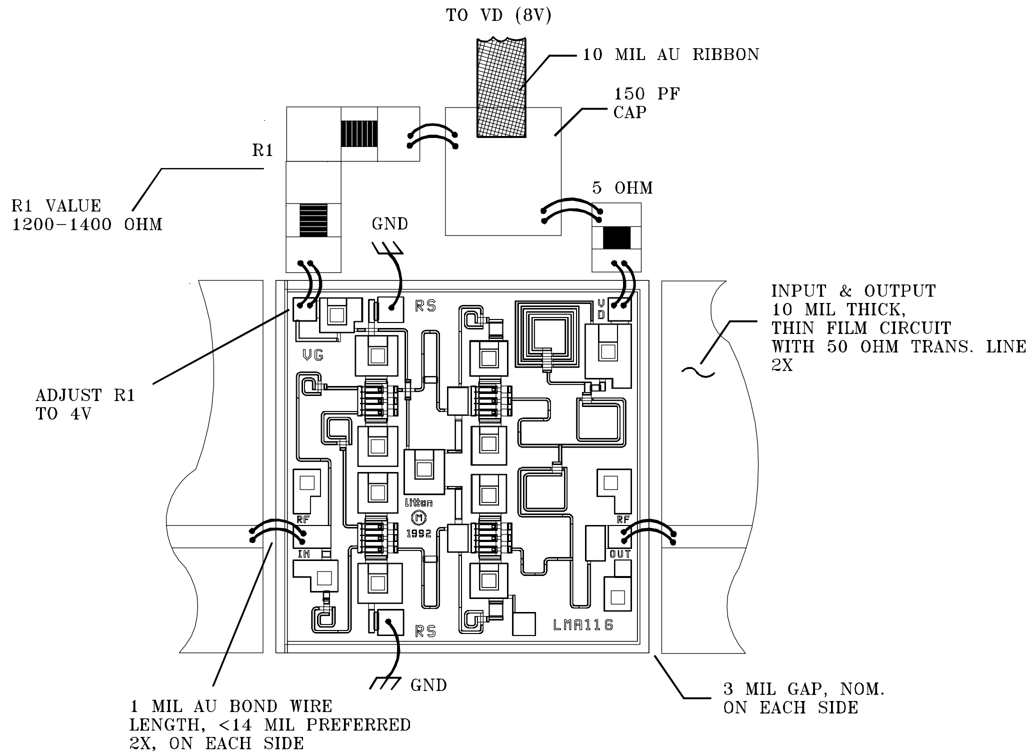
Symbol	Parameter/Conditions	Min.	Max.	Units
Vdd	Drain Supply Voltage		12	Volts
Idd	Total Drain Current		125	mA
Pin	RF Input Power		24	dBm
Pt	Power Dissipation		1.5	W
Tch	Operating Channel Temperature		150	°C
Tstg	Storage Temperature	-65	165	°C
Tmax.	Max. Assembly Temp. (1 min. max.)		300	°C

Notes :
1. This GaAs MMIC is susceptible to damage from Electrostatic Discharge. Proper precautions should be used when handling these devices.
2. Specifications subject to change without notice.
3. On-chip 5Ω resistor set Ids of 80mA typical.

Phone: (408) 988-1845 ***Internet:*** http://www.FiltronicSolidState.com ***Fax:*** (408) 970-9950

Assembly Diagram

SINGLE VOLTAGE SUPPLY SCHEME



Notes:

1.) Recommended lead bond technique is thermocompression wedge bonding with 0.001" (25µm) diameter wire. The bond tool force shall be 35-38 gram. Bonding stage temperature shall be 230-240°C, heated tool (150-160°C) is recommended. Ultrasonic bonding is not recommended.

2.) The recommended die attach is Ablebond silver epoxy, the stabilize bake temperature is set at 150°C for 45 minutes.

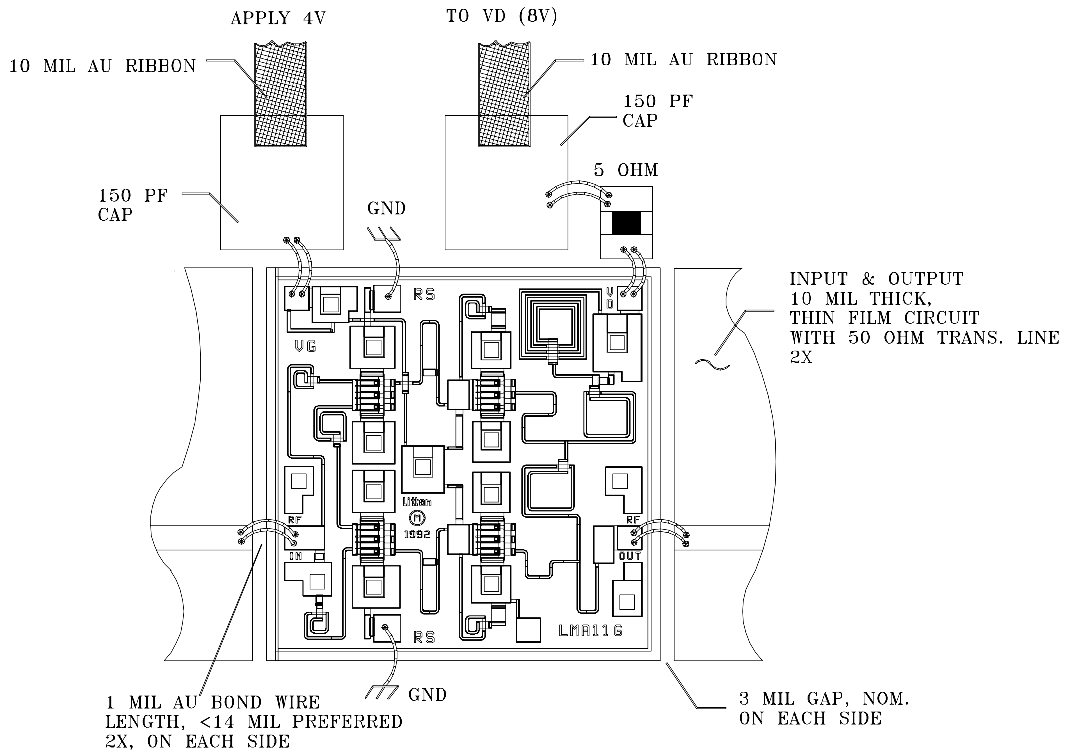
3.) Bond on bond or stitch bond acceptable.

4.) Conductor over conductor acceptable. Conductors must not short.

Phone: (408) 988-1845 *Internet:* http://www.FiltronicSolidState.com *Fax:* (408) 970-9950

Assembly Diagram

TWO VOLTAGE SUPPLY SCHEME



Notes:

1.) Recommended lead bond technique is thermocompression wedge bonding with 0.001" (25µm) diameter wire. The bond tool force shall be 35-38 gram. Bonding stage temperature shall be 230-240°C, heated tool (150-160°C) is recommended. Ultrasonic bonding is not recommended.

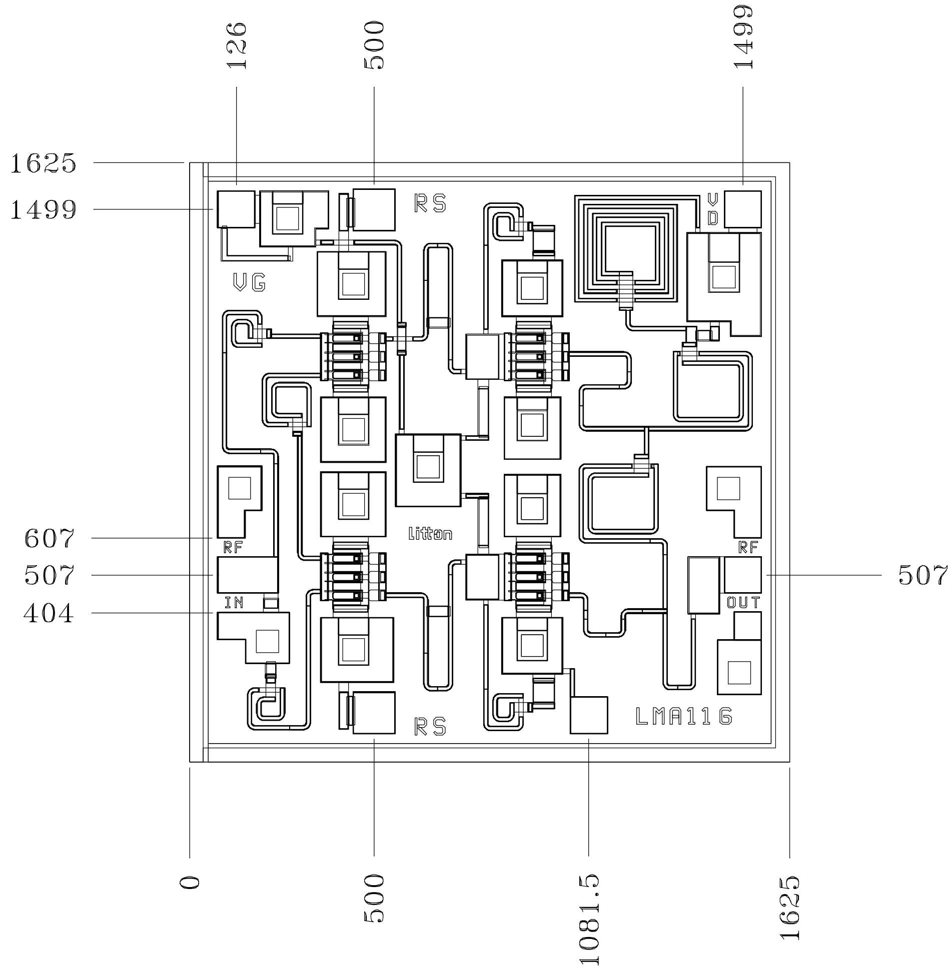
2.) The recommended die attach is Ablebond silver epoxy, the stabilize bake temperature is set at 150°C for 45 minutes.

3.) Bond on bond or stitch bond acceptable.

4.) Conductor over conductor acceptable. Conductors must not short.

Phone: (408) 988-1845 ***Internet:*** http://www.FiltronicSolidState.com ***Fax:*** (408) 970-9950

Mechanical Outline



Notes:
1.) Unless Otherwise specified.
2.) All units are in micron (µm).
3.) All bond pads are 100 X 100 μm^2.
4.) Bias pad (V_{DD}) size is 100 X 121.5 μm^2.

Phone: (408) 988-1845 *Internet:* http://www.FiltronicSolidState.com *Fax:* (408) 970-9950