

# MGA-16116

Dual LNA for Balanced Application 450 – 1450 MHz



## Data Sheet

### Description

Avago Technologies' MGA-16116 is an ultra low-noise high linearity amplifier pair with built-in active bias and shutdown features for balanced applications in the 900MHz band. Shutdown functionality is achieved using a single DC voltage input pin. High linearity is achieved through the use of Avago Technologies' proprietary GaAs Enhancement-mode pHEMT process [1]. It is housed in a miniature 4.0 x 4.0 x 0.85mm 16-pin Quad Flat No-lead (QFN). The compact footprint coupled with ultra low noise and high linearity makes MGA-16116 an ideal choice for basestation transmitters and receivers.

For applications > 1450 MHz, it is recommended to use MGA-16216 1440-2350 MHz or MGA-16316 1950-2700 MHz. All 3 products share the same package and pin out configuration.

### Component Image

4.0 x 4.0 x 0.85 mm<sup>3</sup> 16-Lead QFN



Note:

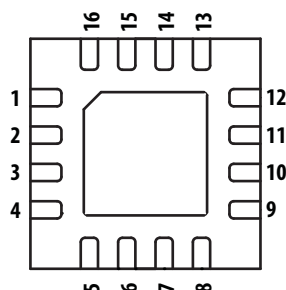
Package marking provides orientation and identification

"16116" = Device Code

"YYWW" = Date Code identifies year and work week of manufacturing

"XXXX" = Last 4 digit of assembly lot number

### Pin Configuration



Pin	Use	Pin	Use
1	RFIN1	9	RFOUT2
2	GND	10	GND
3	GND	11	GND
4	RFIN2	12	RFOUT1
5	Bias_out2	13	Not used
6	Vsd2	14	Bias_in1
7	Bias_in2	15	Vsd1
8	Not used	16	Vias_out2

### Features

- Ultra Low Noise Figure
- Variable Bias and Shutdown functionality
- High IIP3: +20dBm typ.
- GaAs E-pHEMT Technology [1]
- Small package size: 4.0 x 4.0 x 0.85 mm<sup>3</sup>
- RoHS and MSL1 compliant.

### Typical Performances

900 MHz @ 4.8V, 60mA (typ per amplifier)

- Gain: 18.6 dB
- NF : 0.25dB [2]
- IIP3 : 20.1 dBm
- P1dB : 21.2 dBm
- Shutdown voltage Vsd > 1.6V
- Total shutdown current (Vsd1, Vsd2 = 3V) : 1.84mA

### Applications

- Basestation receivers and transmitters in balanced configuration.
- Ultra low-noise RF amplifiers.

Notes:

1. Enhancement mode technology employs positive Vgs, thereby eliminating the need of negative gate voltage associated with conventional depletion mode devices.
2. Measured at RFin pin of packaged part, other losses deembedded.
3. Good RF practice requires all unused pins to be grounded.



**Attention: Observe precautions for handling electrostatic sensitive devices.**

ESD Machine Model = 90 V

ESD Human Body Model = 600 V

Refer to Avago Application Note A004R:

Electrostatic Discharge, Damage and Control.

### Absolute Maximum Rating<sup>[1]</sup> T<sub>A</sub>=25°C

Symbol	Parameter	Units	Absolute Maximum
V <sub>dd</sub>	Drain Voltage, RF output to ground	V	5.5
I <sub>dd</sub>	Drain Current	mA	100
V <sub>sd</sub>	Shutdown Voltage	V	5.5
P <sub>in</sub>	CW RF Input Power with V <sub>sd</sub> =0V	dBm	27
P <sub>in</sub>	CW RF Input Power with V <sub>sd</sub> =3V	dBm	27
P <sub>d</sub>	Power Dissipation	mW	550
T <sub>j</sub>	Junction Temperature	°C	150
T <sub>stg</sub>	Storage Temperature	°C	-65 to 150

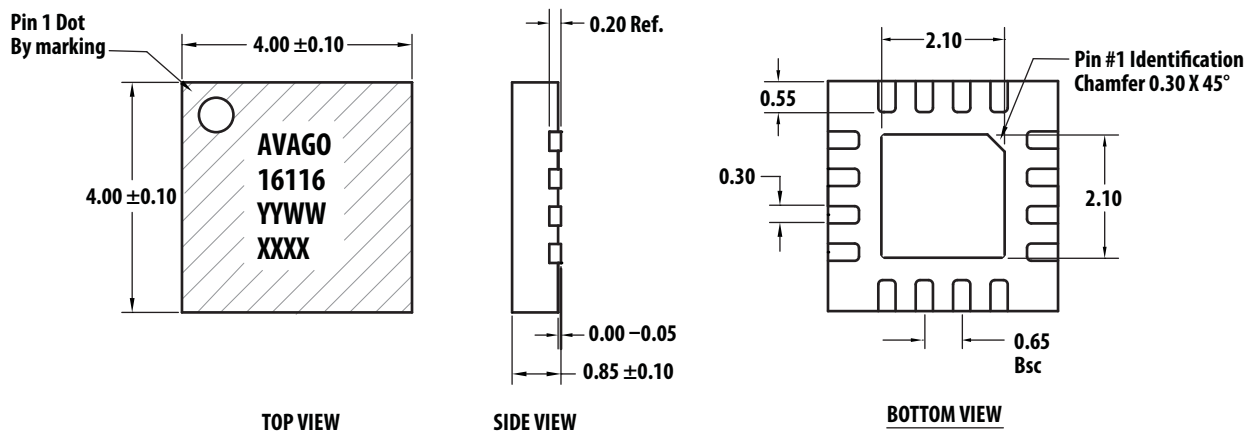
### Thermal Resistance<sup>[3]</sup>

(V<sub>d</sub>=4.8V, I<sub>d</sub>= 53 mA, T<sub>c</sub>=100 °C)  
 θ<sub>jc</sub> = 58.58 °C/W

Notes:

1. Operation of this device in excess of any of these limits may cause permanent damage.
2. Source lead temperature is 25 °C. Derate 17 mW/°C for T<sub>c</sub> > 118 °C.
3. Thermal resistance measured using 150 °C Infra-Red Microscopy Technique.

### Package Dimensions



### Part Number Ordering Information

Part Number	No. of Devices	Container
MGA-16116 - TR1G	1000	7 inch Reel
MGA-16116- BLKG	100	Antistatic Bag

For product information and a complete list of distributors, please go to our web site: [www.avagotech.com](http://www.avagotech.com)

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