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-pinQuad 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 mm³ 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 mm³
- 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 ^[1] T_A=25°C

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Symbol	Parameter	Units	Absolute Maximum
Vdd	Drain Voltage, RF output to ground	V	5.5
Idd	Drain Current	mA	100
Vsd	Shutdown Voltage	V	5.5
Pin	CW RF Input Power with Vsd=0V	dBm	27
Pin	CW RF Input Power with Vsd=3V	dBm	27
Pd	Power Dissipation	mW	550
Tj	Junction Temperature	°C	150
Tstg	Storage Temperature	°C	-65 to 150

Thermal Resistance^[3]

(Vd=4.8V, Id= 53 mA, Tc=100 °C) $\theta jc = 58.58 \text{ °C/W}$

Notes:

- 1. Operation of this device is excess of any of these limits may cause permanent damage.
- 2. Source lead temperature is 25 °C. Derate $17 \text{ mW/}^{\circ}\text{C}$ for Tc > 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

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