








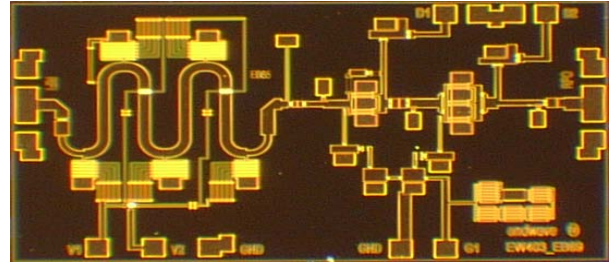


## EWG4001ZZ

### Features

-  Integrated VVA and RF Amp
-  Broad Bandwidth: 24 to 40 GHz
-  Maximum Gain: 10 dB, typical
-  Dynamic Range: 24 dB, typical
-  Output IP3: +29 dBm (max gain)
-  ESD Protection Bias Circuitry
-  100% DC and RF tested
-  Die Size: 2.7 x 1.5 x 0.1mm
-  RoHS Compliant

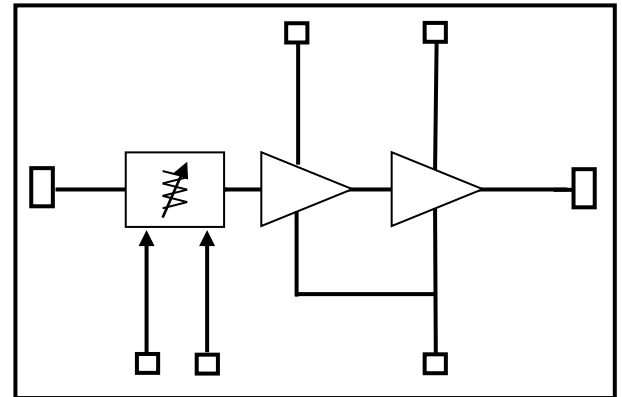
### Device Photo



### Description

The Endwave *EWG4001ZZ* is an integrated GaAs pHEMT variable gain amplifier MMIC which provides 10 dB of gain and 24 dB dynamic range with +29 dBm output IP3 at maximum gain. The high dynamic range is achieved through the use of a voltage variable attenuator following a fixed gain amplifier. Maximum VVA flexibility is achieved through independent monotonic VVA control. This device has integrated ESD Protection Bias Circuitry and can be used for a wide range of applications from defense electronics to commercial communication systems. All die are 100% DC and RF tested and visually inspected to Mil-Std-883 Method 2010.

### Block Diagram

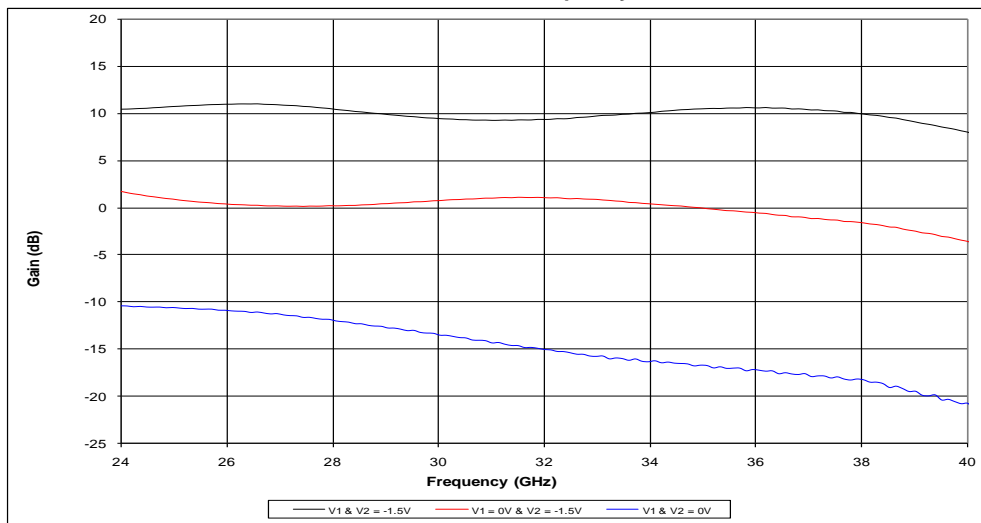


### Electrical Characteristics (Temperature = +25 °C)

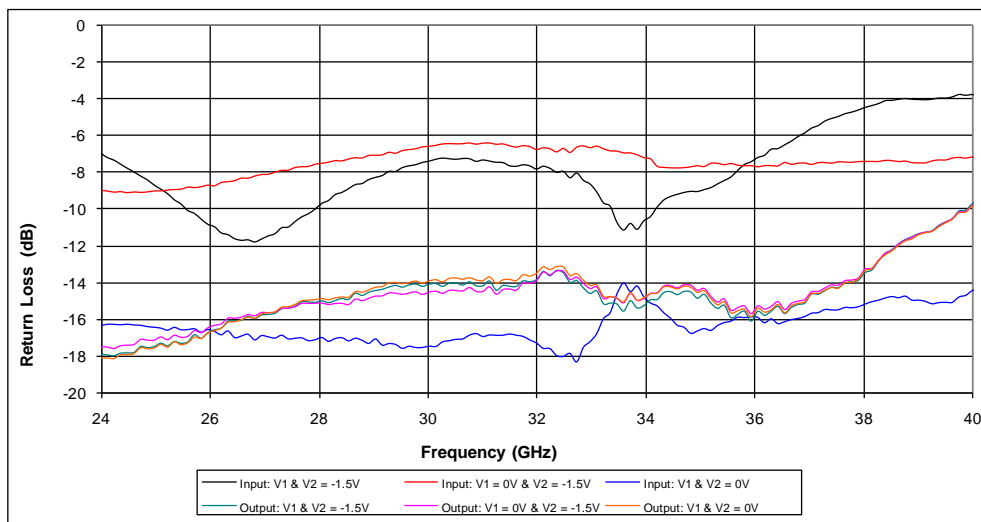
Parameter	Min.	Typ.	Max.	Units
Frequency Range	34		40	GHz
Gain (Max for Vctrl 1,2 = -1.5V)		10		dB
Dynamic Range (Gmax– Gmin)	20	24		dB
Input Return Loss (over dynamic range)		7		dB
Output Return Loss (over dynamic range)		14		dB
Output IP3 (min attenuation)		+29		dBm
Gain control Voltage <sup>1</sup> (Vctrl 1,2)	-1.5		0	V
Drain Bias Voltages (Vd1,2)		+5		V
Drain Bias Currents (Id1 + Id2)		120		mA
Gain Bias Voltages (Vg1)		-0.8		V

Note 1: Min gain for Vctrl 1, 2 = 0 volts

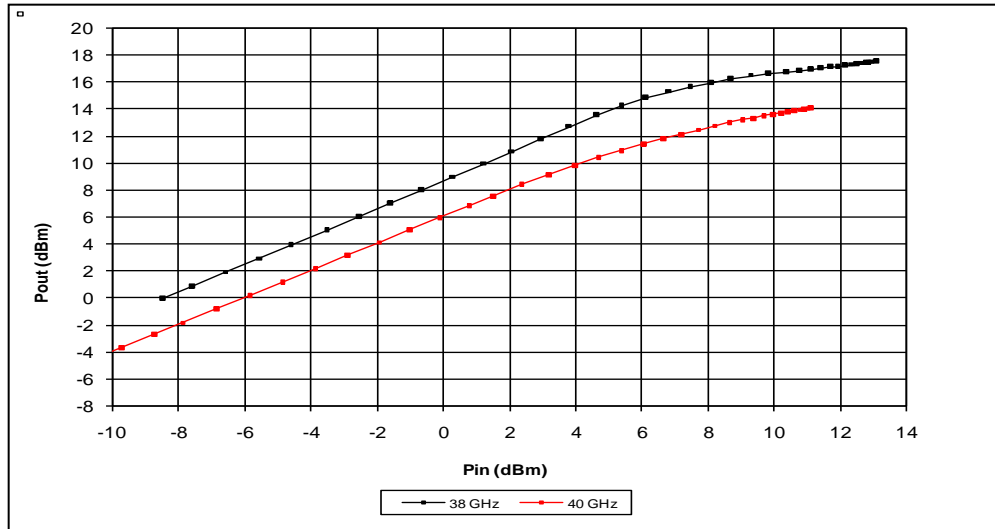
Variable Gain vs. Frequency



Input and Output Return Losses vs. Frequency



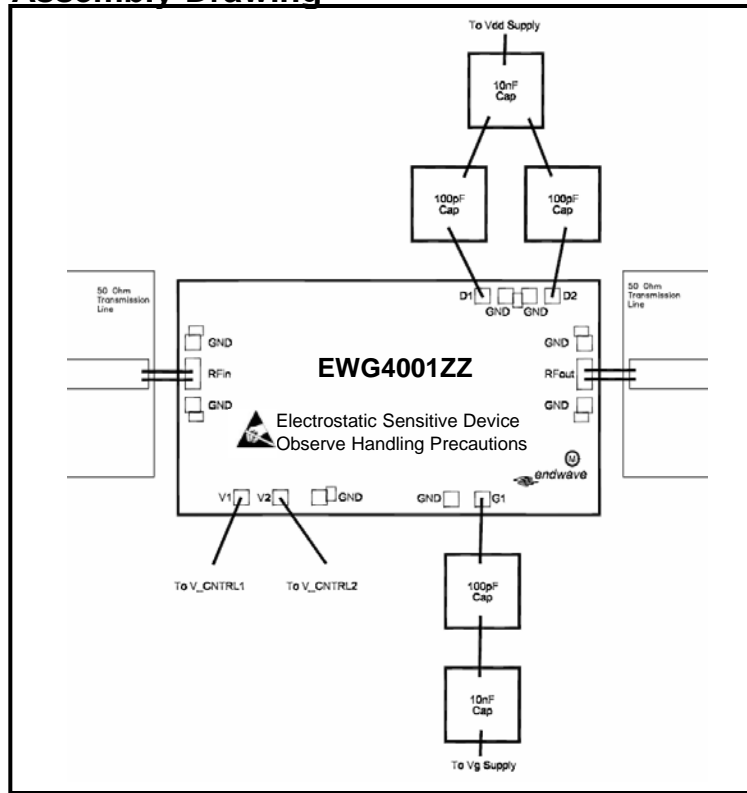
Pin vs. Pout @ Minimum Attenuation



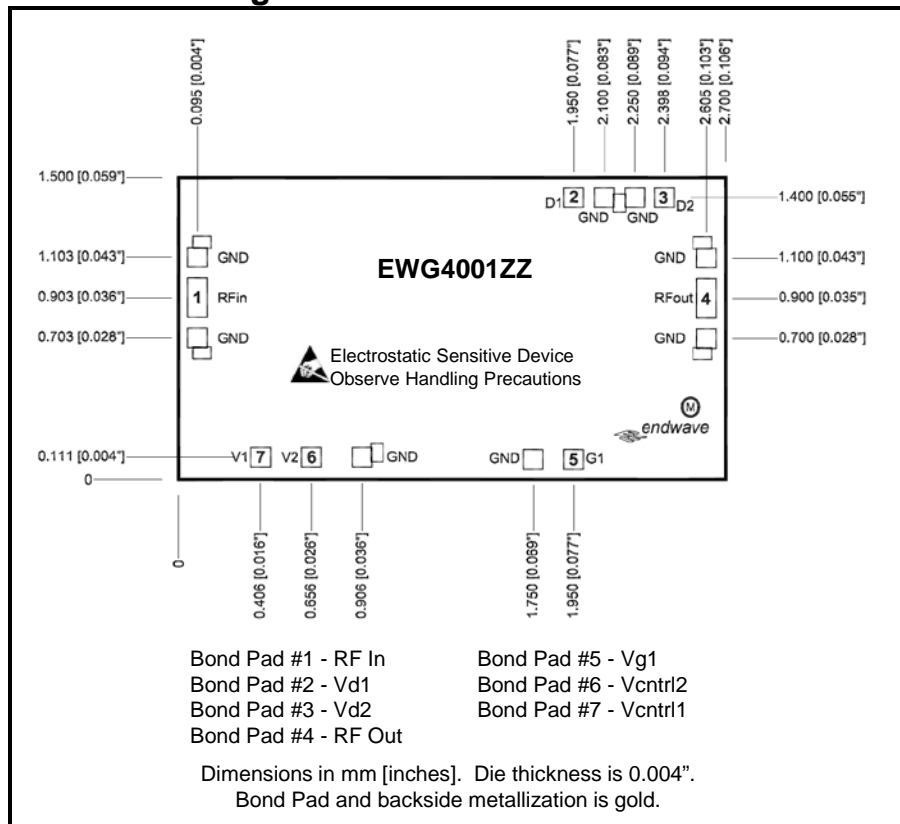
## EWG4001ZZ

September 2009 – Rev 3  
*Development*

### Assembly Drawing



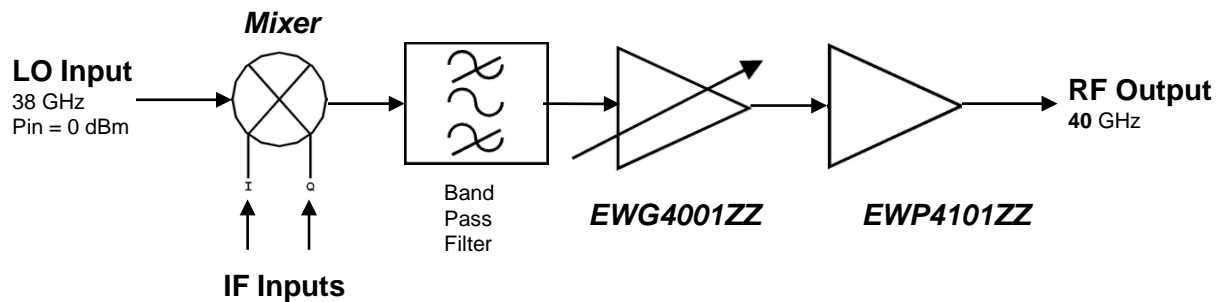
### Outline Drawing



### Absolute Maximum Ratings

RF Input Power (max gain)	+18 dBm
Supply Voltage (Vd1, 2)	+5.5 V
Supply Current (Id1+Id2)	240 mA
Supply Voltage (Vg1, 2)	2.5 to 0V
Control Voltage (Vctrl1, 2)	-2.5 to 0V
Storage Temperature	-65 to +150°C
Operating Temperature	-40 to +85°C
Channel Temperature	175°C

### Typical Application



### Support Documentation

Support documentation including Assembly Notes, Application Notes and Qualification Procedures can be found on our website at [www.endwave.com](http://www.endwave.com).

### Ordering Information

Part Number	Description
EWG4001ZZ	RoHS compliant bare die in waffle or gel packs
EWG4001ZZ-EV	EWG4001ZZ in a connectorized test fixture