







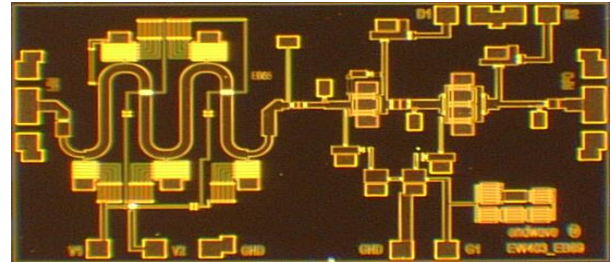


Features

-  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 Gate Bias Circuitry
-  100% DC and RF tested
-  Die Size: 2.7 x 1.5 x 0.1 mm

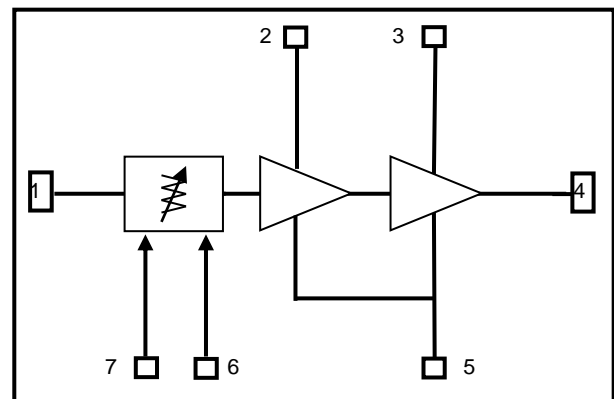
Device Photo



Description

The Endwave *EWG4001ZZ* is an integrated 0.15um 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. The chip has integrated ESD protection gate bias circuitry and may be used for a wide range of applications from defense electronics to commercial communication systems. All parts are 100% DC and RF tested and visually inspected using Mil-Std-883 Method 2010.

Block Diagram

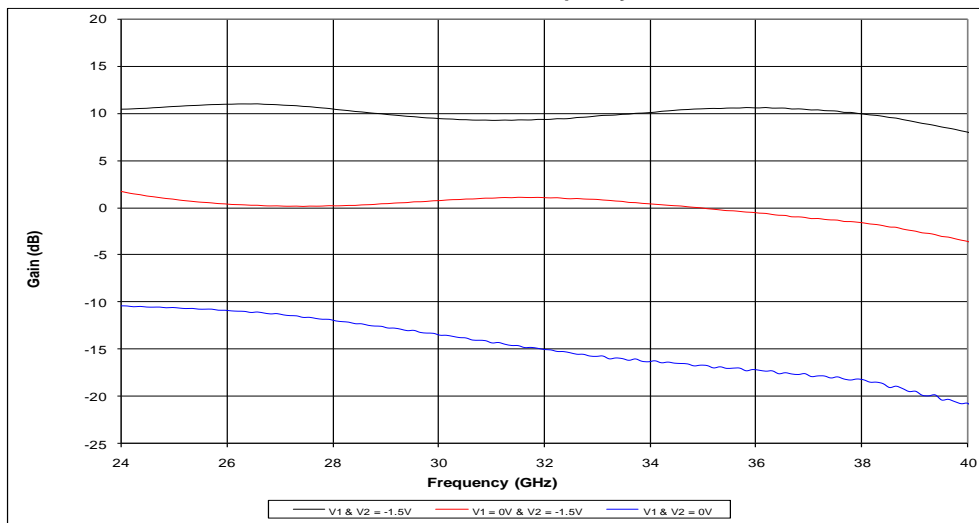


Electrical Characteristics (Temperature = +25 °C)

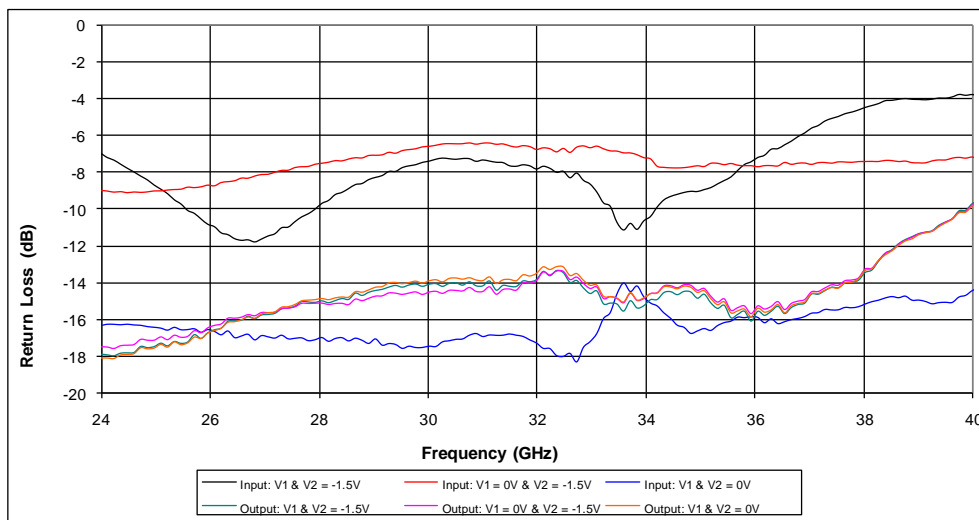
Parameter	Min.	Typ.	Max.	Units
Frequency Range	34		40	GHz
Gain (Max for Vctrl 1,2 = -1.5V)		10		dB
Dynamic Range (Gmax- Gmin)	20	24		dB
Input Return Loss (over dynamic range)		7		dB
Output Return Loss (over dynamic range)		14		dB
Output IP3 (min attenuation)		+29		dBm
Gain control Voltage ¹ (Vctrl 1,2)	-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

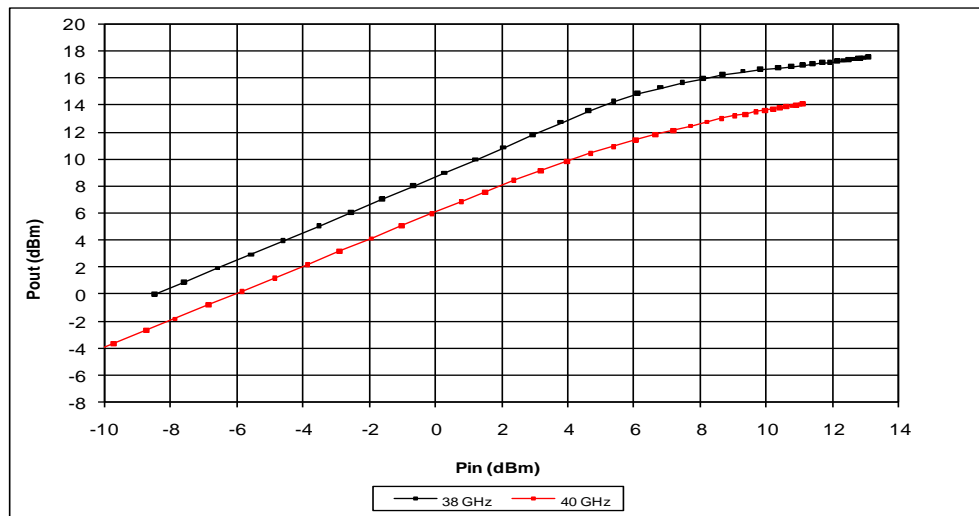
Variable Gain vs. Frequency



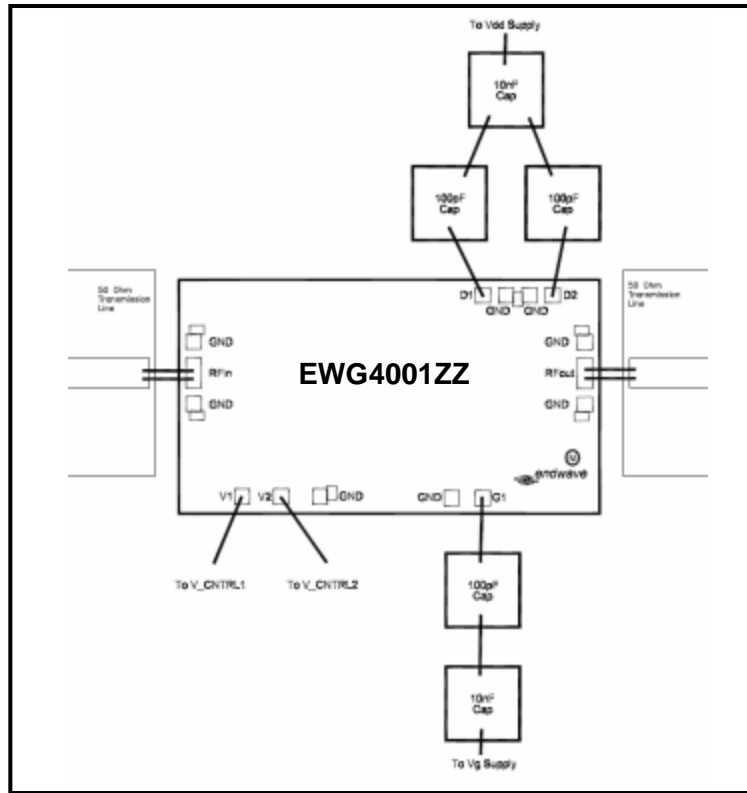
Input and Output Return Losses vs. Frequency



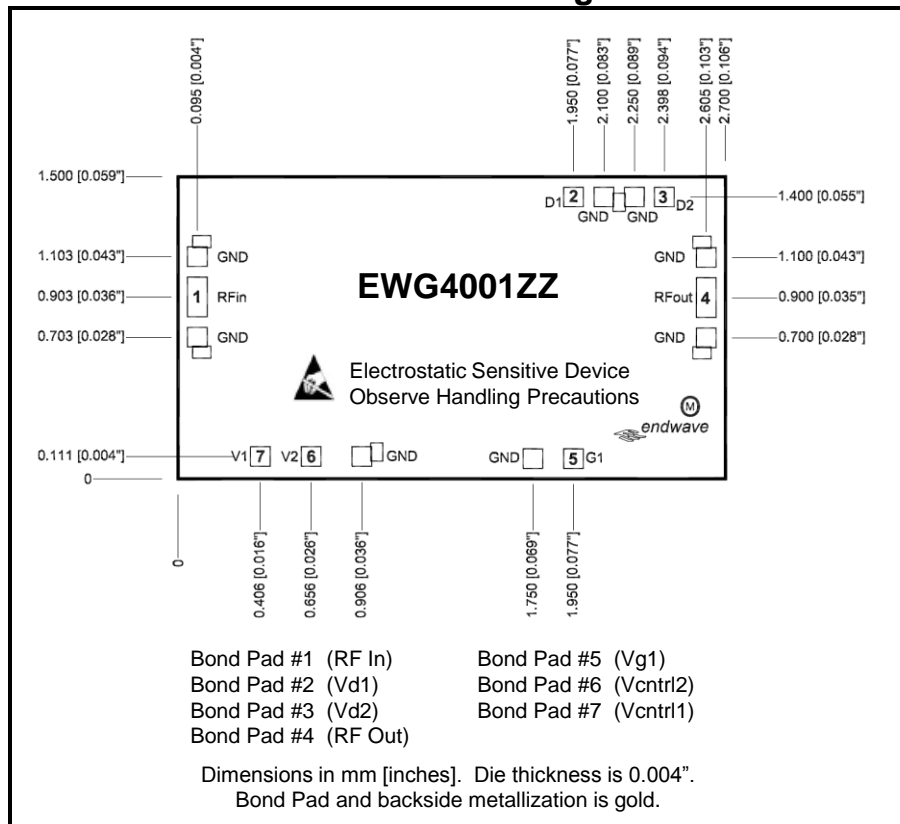
Pin vs. Pout @ Minimum Attenuation



Assembly Drawing



Outline Drawing



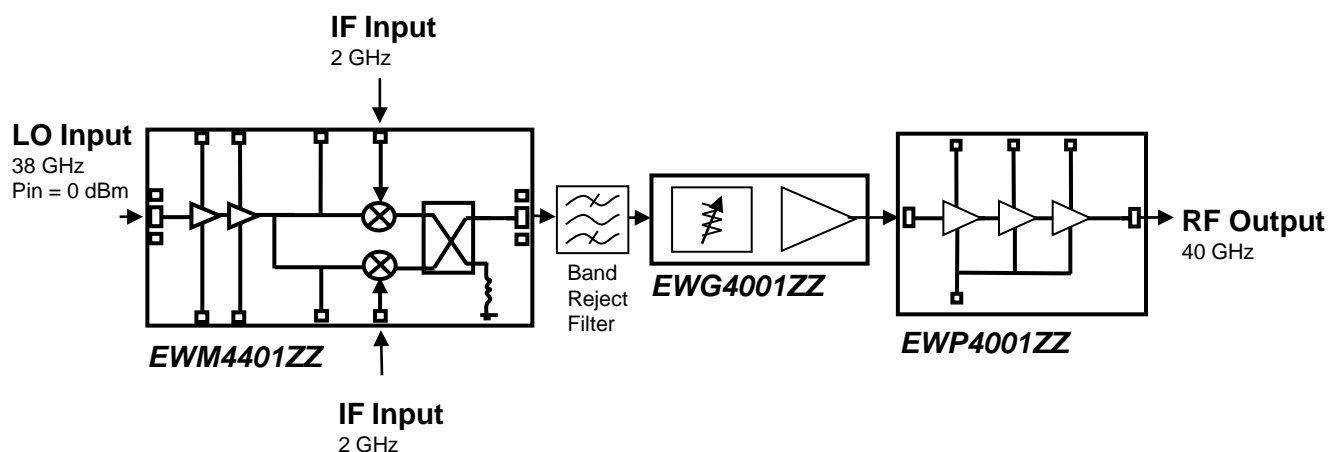
EWG4001ZZ

September 2009 – Rev 3
Development

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.

Ordering Information

Part Number	Description
EWG4001ZZ	RoHs Compliant bare die in waffle or gel packs