21 - 26.6 GHz GaAs MMIC Variable Gain Amplifier w/Detector

EWG2702ZZ

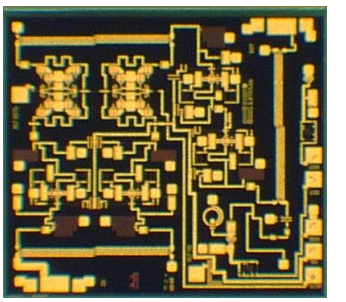
September 2009 – Rev 1
Production

Variable Gain Amplifier - Chip

Features

- Integrated VVA and RF Amp
- RF Bandwidth: 21 – 26.6 GHz
- Maximum Gain: 21 dB typical
- Dynamic Range: 30 dB typical
- Output IP3: +13 dBm (12 dB gain)
- Output P1dB: +7 dBm (max gain)
- 100% RF and DC tested
- Die Size: 2.67 x 2.36 x 0.1 mm

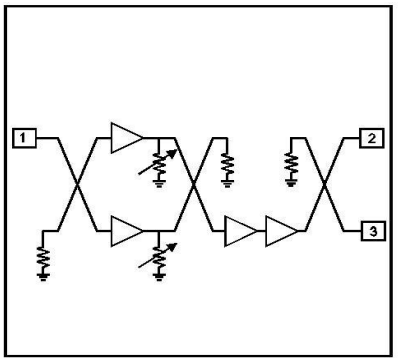
Device Photo



Description

The Endwave *EWG2702ZZ* is a 0.15um GaAs pHEMT variable gain amplifier MMIC with +13 dBm output IP3 at 12 dB gain, and +7 dBm output P1dB over the first 10 dB of attenuation. The chip 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.

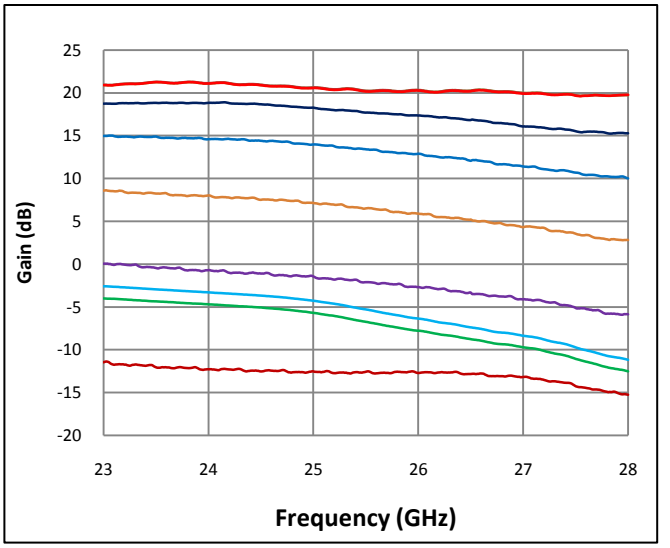
Block Diagram



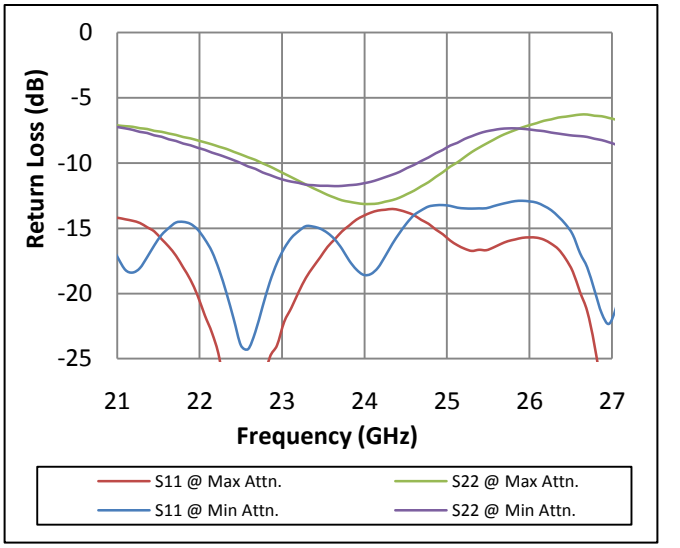
Electrical Characteristics (Temperature = +25 °C)

Parameter	Min.	Typ.	Max.	Units
Frequency Range	21		26.5	GHz
Dynamic Range		30		dB
Gain @ minimum attenuation		21		dB
Input Return Loss		12		dB
Output Return Loss		8		dB
Output IP3 @ 12 dB Gain		13		dBm
Output P1dB @ min attn to 10 dB attn		7		dBm
Control Voltages	-1.5		0	V
Drain Bias Voltages (Vd 1, 2)		4		V
Drain Bias Currents (Id1 + Id2 + Id3)		90		mA

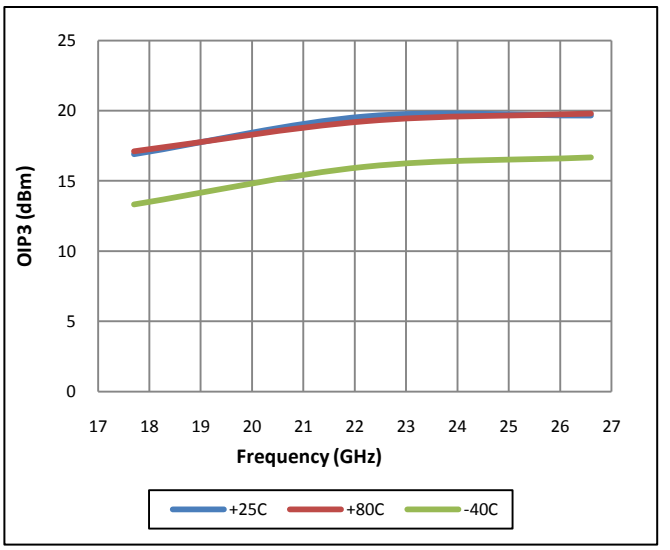
Variable Gain vs. Frequency
(Vd = +4V and Id = 75 mA)



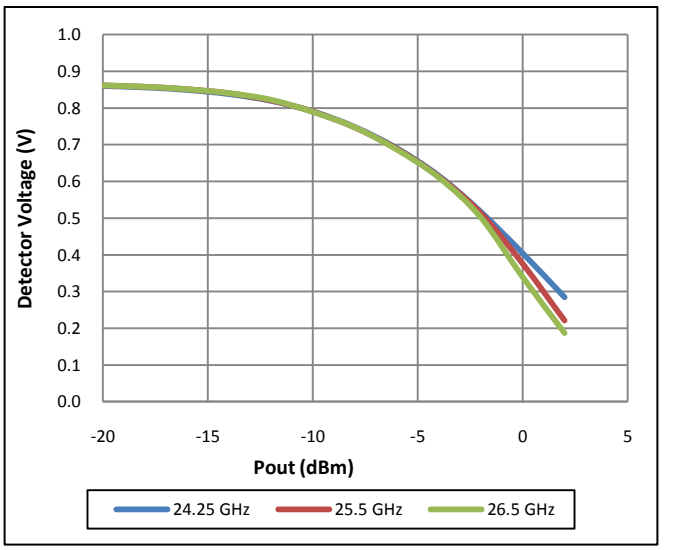
Return Loss vs. Frequency
(Vd = +4 V and Id = 75 mA)



OIP3 @ Min Attenuation vs. Frequency
(Vd = +4V and Id = 75 mA; -6.5 dBm Pout/tone)



Detector Voltage vs. Pout
(VD = +4 V and Id = 75 mA)



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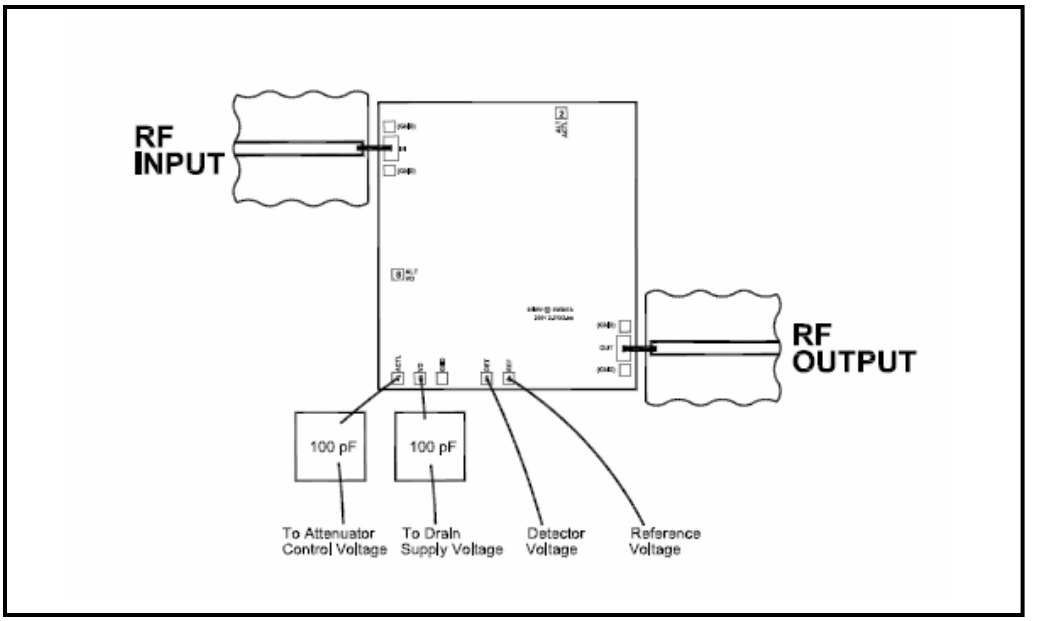
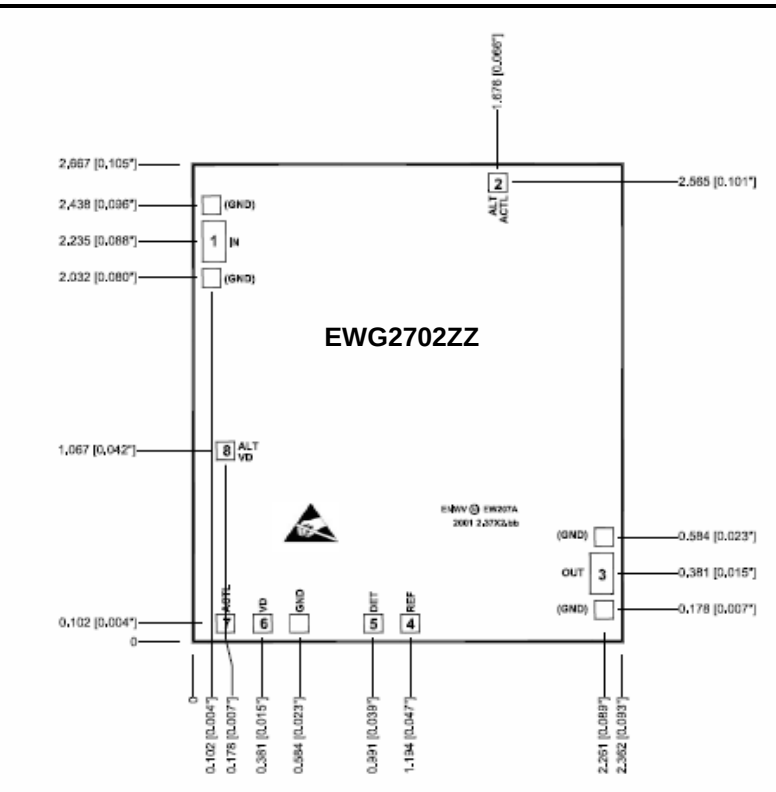
Assembly Drawing



Outline Drawing



Bond Pad #1 (RF In)	Bond Pad #5 (Det Out)
Bond Pad #2 (no connect)	Bond Pad #6 (Vd)
Bond Pad #3 (RFout)	Bond Pad #7 (Vctrl)
Bond Pad #4 (Det Ref)	

Dimensions in mm [inches]. Die thickness is 0.004".
Bond Pad and backside metallization is gold.

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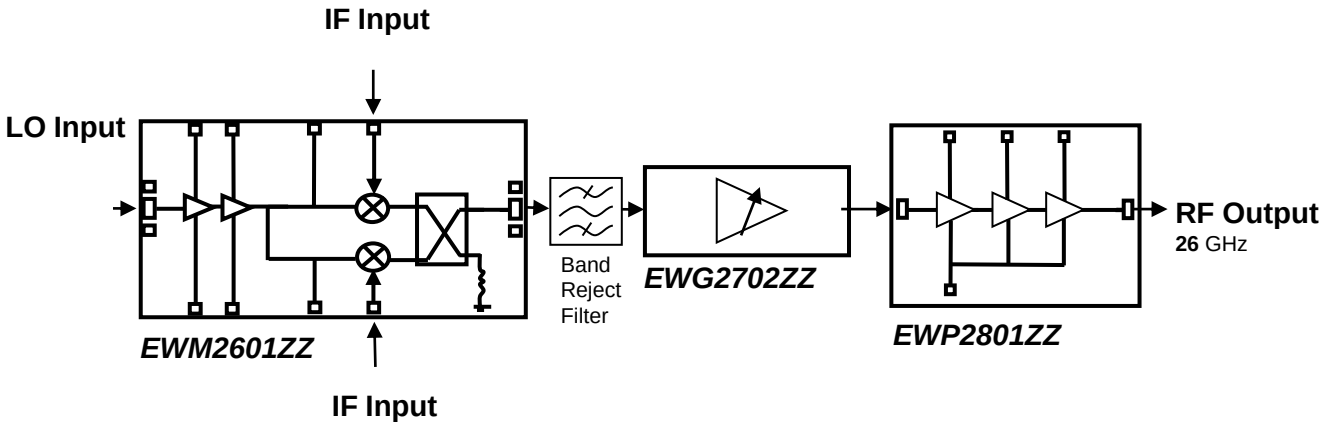
Absolute Maximum Ratings

RF Input Power (max gain)	-7 dBm
Supply Voltage (Vd1, 2, 3)	+5.5 V
Supply Current (Id1+ Id2+ Id3)	150 mA
Control Voltage (Vctrl)	-3.0 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
EWG2702ZZ	RoHs Compliant bare die in waffle or gel packs