

SUNSTAR 商斯达实业集团是集研发、生产、工程、销售、代理经销、技术咨询、信息服务等为一体的高科技企业，是专业高科技电子产品生产厂家，是具有10多年历史的专业电子元器件供应商，是中国最早和最大的仓储式连锁规模经营大型综合电子零部件代理分销商之一，是一家专业代理和分销世界各大品牌IC芯片和电子元器件的连锁经营综合性国际公司，专业经营进口、国产名厂名牌电子元件，型号、种类齐全。在香港、北京、深圳、上海、西安、成都等全国主要电子市场设有直属分公司和产品展示展销窗口门市部专卖店及代理分销商，已在全国范围内建成强大统一的供货和代理分销网络。我们专业代理经销、开发生产电子元器件、集成电路、传感器、微波光电元器件、工控机/DOC/DOM 电子盘、专用电路、单片机开发、MCU/DSP/ARM/FPGA 软件硬件、二极管、三极管、模块等，是您可靠的一站式现货配套供应商、方案提供商、部件功能模块开发配套商。商斯达实业公司拥有庞大的资料库，有数位毕业于著名高校——有中国电子工业摇篮之称的西安电子科技大学（西军电）并长期从事国防尖端科技研究的高级工程师为您精挑细选、量身订做各种高科技电子元器件，并解决各种技术问题。

微波光电部专业研制、代理经销高频、微波、光纤、光电元器件、组件、部件、模块、整机；电磁兼容元器件、材料、设备；微波CAD、EDA 软件、开发测试仿真工具；微波、光纤仪器仪表。欢迎国外高科技微波、光纤厂商将优秀产品介绍到中国、共同开拓市场。长期大量现货专业批发高频、微波、卫星、光纤、电视、CATV 器件：晶振、VCO、连接器、PIN 开关、变容二极管、开关二极管、低噪晶体管、功率电阻及电容、放大器、功率管、MMIC、混频器、耦合器、功分器、振荡器、合成器、衰减器、滤波器、隔离器、环行器、移相器、调制解调器；光电子元件和组件：红外发射管、红外接收管、光电开关、光敏管、发光二极管和发光二极管组件、半导体激光二极管和激光器组件、光电探测器和光接收组件、光发射接收模块、光纤激光器和光放大器、光调制器、光开关、DWDM 用光发射和接收器件、用户接入系统光收发器件与模块、光纤连接器、光纤跳线/尾纤、光衰减器、光纤适配器、光隔离器、光耦合器、光环行器、光复用器/转换器；无线收发芯片和模组、蓝牙芯片和模组。

更多产品请看本公司产品专用销售网站：[欢迎索取免费详细资料、设计指南和光盘](#)；产品凡多，未能尽录，欢迎来电查询

商斯达中国传感器科技信息网：<http://www.sensor-ic.com/>

商斯达工控安防网：<http://www.pc-ps.net/>

商斯达电子元器件网：<http://www.sunstare.com/>

商斯达微波光电产品网：[HTTP://www.rfoe.net/](http://www.rfoe.net/)

商斯达消费电子产品网：<http://www.icasic.com/>

商斯达实业科技产品网：<http://www.sunstars.cn/> 微波元器件销售热线：

地址：深圳市福田区福华路福庆街鸿图大厦1602 室

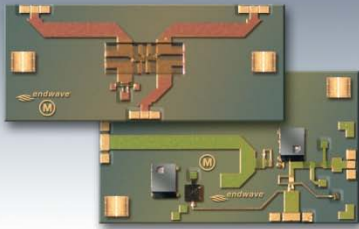
电话：0755-82884100 83397033 83396822 83398585

传真：0755-83376182 (0) 13823648918 MSN: SUNS8888@hotmail.com

邮编：518033 E-mail:szss20@163.com QQ: 195847376

深圳赛格展销部：深圳华强北路赛格电子市场2583 号 电话：0755-83665529

技术支持: 0755-83394033 13501568376



- *Amplifiers*
- *Attenuators*
- *Filters*
- *Mixers*
- *Multipliers*
- *Passives*
- *Prescalers*
- *VCOs*

Selection Guide • MAY 2010

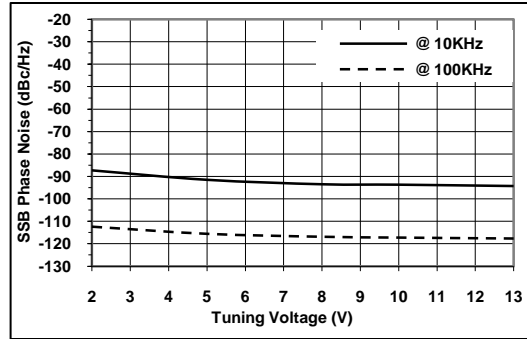
EWV0801YF

7.3 – 8.3 GHz InGaP / GaAs MMIC Dual Output VCO & Divide by 2

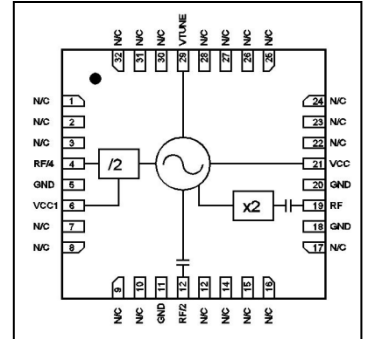
Features

- Dual Output Frequencies
- Push-push Architecture
- Phase Noise: -116 dBc/Hz @ 100 kHz
- Output Power at f_{out} : +13 dBm, typical
- Output Power at $f_{out/2}$: +8 dBm, typical
- Integrated Divide by 2 Prescaler
- ESD Protection Circuitry, HBM Class 1A
- 100% RF and DC tested
- Package: 5 x 5 mm, 32 Lead QFN
- RoHS Compliant

SSB Phase Noise @ RF Output vs Tuning Voltage



Functional Diagram



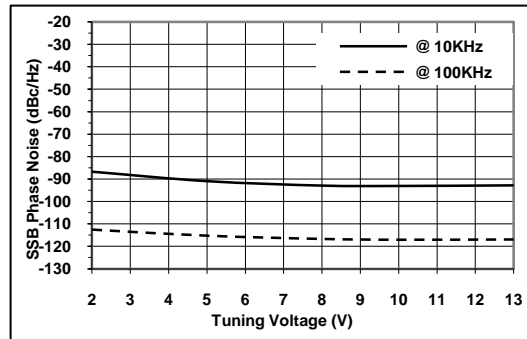
EWV0802YF

7.8 – 8.9 GHz InGaP / GaAs MMIC Dual Output VCO & Divide by 2

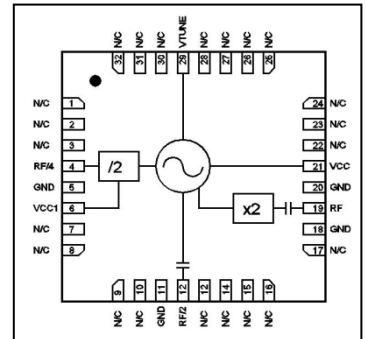
Features

- Dual Output Frequencies
- Push-push Architecture
- Phase Noise: -116 dBc/Hz @ 100 kHz
- Output Power at f_{out} : +13 dBm, typical
- Output Power at $f_{out/2}$: +9 dBm, typical
- Integrated Divide by 2 Prescaler
- ESD Protection Circuitry, HBM Class 1A
- 100% RF and DC tested
- Package: 5 x 5 mm, 32 Lead QFN
- RoHS Compliant

SSB Phase Noise @ RF Output vs. Tuning Voltage



Functional Diagram



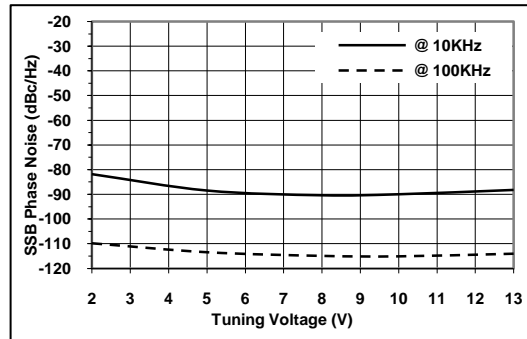
EWV0901YF

8.45 – 9.55 GHz InGaP GaAs MMIC Dual Output VCO & Divide by 2

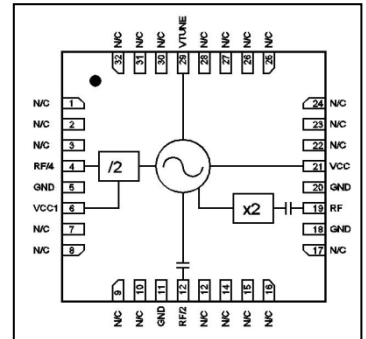
Features

- Dual Output Frequencies
- Push-push Architecture
- Phase Noise: -115 dBc/Hz @ 100 kHz
- Output Power at f_{out} : +12 dBm, typical
- Output Power at $f_{out/2}$: +10 dBm, typical
- Integrated Divide by 2 Prescaler
- ESD Protection Circuitry, HBM Class 1A
- 100% RF and DC tested
- Package: 5 x 5 mm, 32 Lead QFN
- RoHS Compliant

SSB Phase Noise @ RF Output vs. Tuning Voltage



Functional Diagram



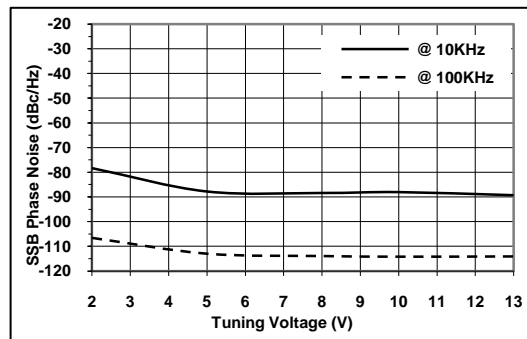
EWV1001YF

8.8 – 10.3 GHz InGaP GaAs MMIC Dual Output VCO & Divide by 2

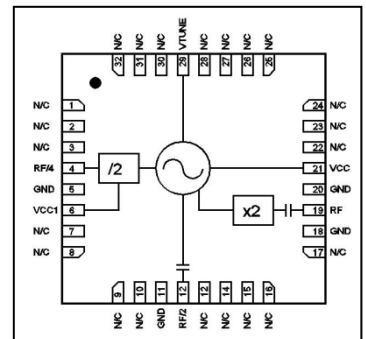
Features

- Dual Output Frequencies
- Push-push Architecture
- Phase Noise: -115 dBc/Hz @ 100 kHz
- Output Power at f_{out} : +12 dBm, typical
- Output Power at $f_{out/2}$: +8 dBm, typical
- Integrated Divide by 2 Prescaler
- ESD Protection Circuitry, HBM Class 1A
- 100% RF and DC tested
- Package: 5 x 5 mm, 32 Lead QFN
- RoHS Compliant

SSB Phase Noise @ RF Output vs. Tuning Voltage



Functional Diagram



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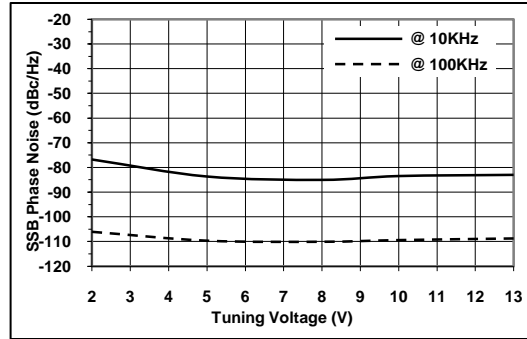
EWV1101YF

10.43 – 11.63 GHz InGaP / GaAs MMIC Dual Output VCO & Divide by 2

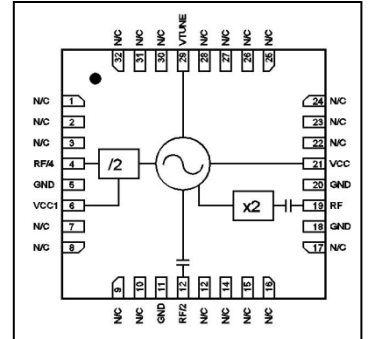
Features

- Dual Output Frequencies
- Push-push Architecture
- Phase Noise: -111 dBc/Hz @ 100 kHz
- Output Power at f_{out} : +10 dBm, typical
- Output Power at $f_{out/2}$: +12 dBm, typical
- Integrated Divide by 2 Prescaler
- ESD Protection Circuitry, HBM Class 1A
- 100% RF and DC tested
- Package: 5 x 5 mm, 32 Lead QFN
- RoHS Compliant

SSB Phase Noise @ RF Output vs. Tuning Voltage



Functional Diagram



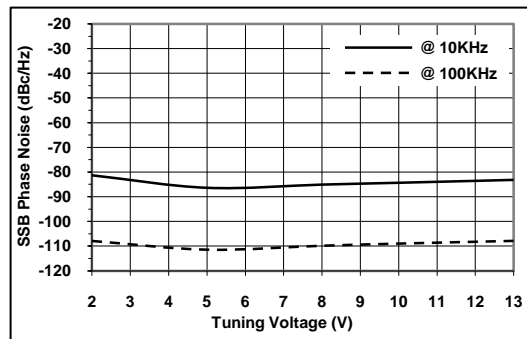
EWV1102YF

10.6 – 11.8 GHz InGaP / GaAs MMIC Dual Output VCO & Divide by 2

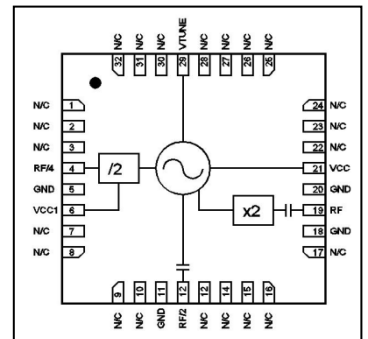
Features

- Dual Output Frequencies
- Push-push Architecture
- Phase Noise: -110 dBc/Hz @ 100 kHz
- Output Power at f_{out} : +10 dBm, typical
- Output Power at $f_{out/2}$: +6 dBm, typical
- Integrated Divide by 2 Prescaler
- ESD Protection Circuitry, HBM Class 1A
- 100% RF and DC tested
- Package: 5 x 5 mm, 32 Lead QFN
- RoHS Compliant

SSB Phase Noise @ RF Output vs. Tuning Voltage



Functional Diagram



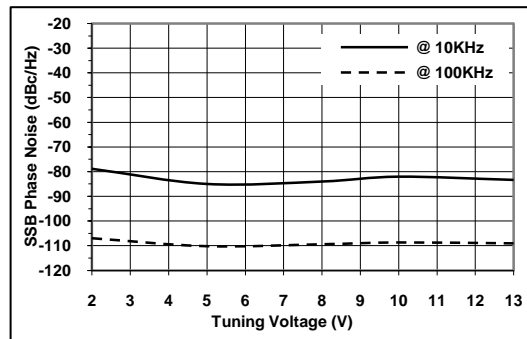
EWV1201YF

11.0 – 12.2 GHz InGaP GaAs MMIC Dual Output VCO & Divide by 2

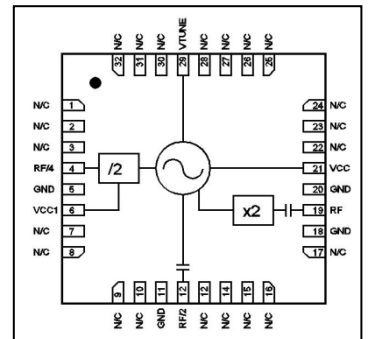
Features

- Dual Output Frequencies
- Push-push Architecture
- Phase Noise: -110 dBc/Hz @ 100 kHz
- Output Power at f_{out} : +10 dBm, typical
- Output Power at $f_{out/2}$: +10 dBm, typical
- Integrated Divide by 2 Prescaler
- ESD Protection Circuitry, HBM Class 1A
- 100% RF and DC tested
- Package: 5 x 5 mm, 32 Lead QFN
- RoHS Compliant

SSB Phase Noise @ RF Output vs. Tuning Voltage



Functional Diagram



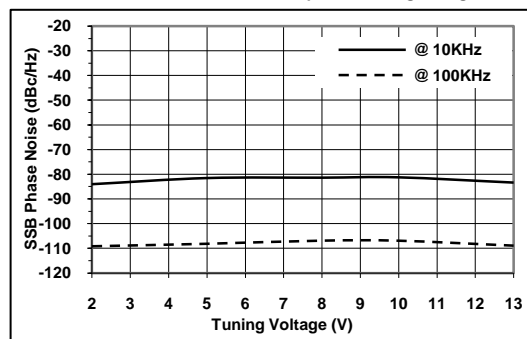
EWV1202YF

11.5 – 12.75 GHz InGaP GaAs MMIC Dual Output VCO & Divide by 2

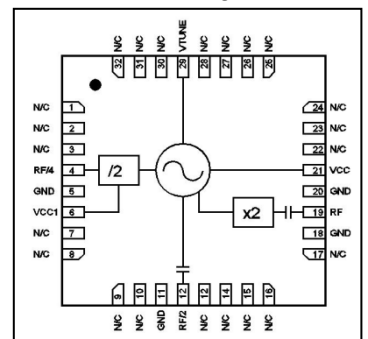
Features

- Dual Output Frequencies
- Push-push Architecture
- Phase Noise: -107 dBc/Hz @ 100 kHz
- Output Power at f_{out} : +10 dBm, typical
- Output Power at $f_{out/2}$: +9 dBm, typical
- Integrated Divide by 2 Prescaler
- ESD Protection Circuitry, HBM Class 1A
- 100% RF and DC tested
- Package: 5 x 5 mm, 32 Lead QFN
- RoHS Compliant

SSB Phase Noise @ RF Output vs. Tuning Voltage



Functional Diagram



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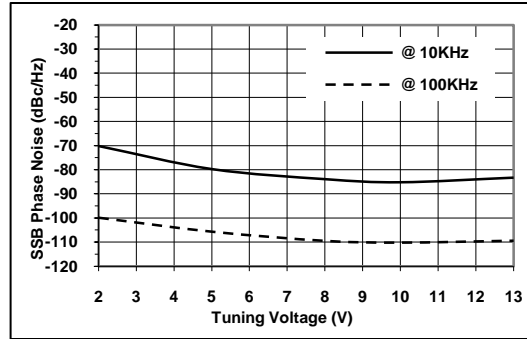
EWV1301YF

12.25 – 13.5 GHz InGaP / GaAs MMIC Dual Output VCO & Divide by 2

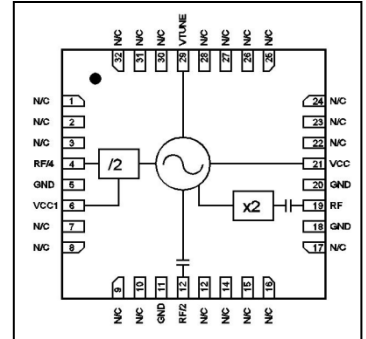
Features

- Dual Output Frequencies
- Push-push Architecture
- Phase Noise: -110 dBc/Hz @ 100 kHz
- Output Power at f_{out} : +10 dBm, typical
- Output Power at $f_{out/2}$: +9 dBm, typical
- Integrated Divide by 2 Prescaler
- ESD Protection Circuitry, HBM Class 1A
- 100% RF and DC tested
- Package: 5 x 5 mm, 32 Lead QFN
- RoHS Compliant

SSB Phase Noise @ RF Output vs Tuning Voltage



Functional Diagram



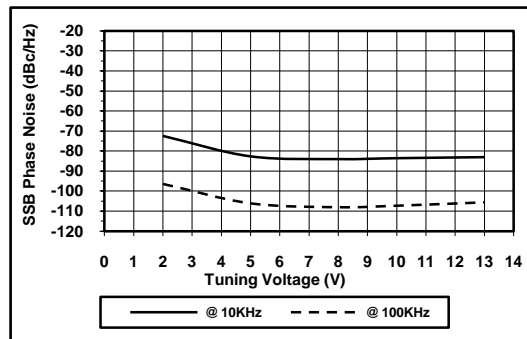
EWV1401YF

13.5 – 14.9 GHz InGaP / GaAs MMIC Dual Output VCO & Divide by 2

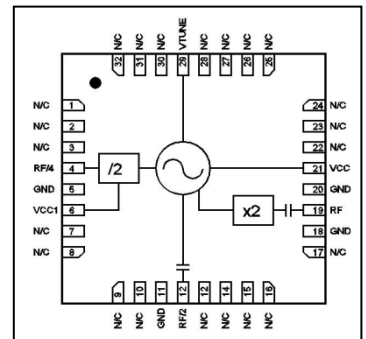
Features

- Dual Output Frequencies
- Push-push Architecture
- Phase Noise: -109 dBc/Hz @ 100 kHz
- Output Power at f_{out} : +10 dBm, typical
- Output Power at $f_{out/2}$: +8 dBm, typical
- Integrated Divide by 2 Prescaler
- ESD Protection Circuitry, HBM Class 1A
- 100% RF and DC tested
- Package: 5 x 5 mm, 32 Lead QFN
- RoHS Compliant

SSB Phase Noise @ RF Output vs. Tuning Voltage



Functional Diagram



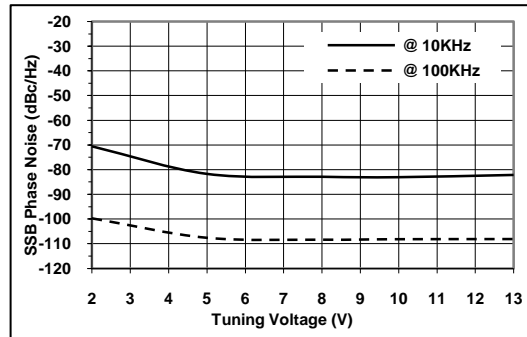
EWV1503YF

14.4 – 15.75 GHz InGaP GaAs MMIC Dual Output VCO & Divide by 2

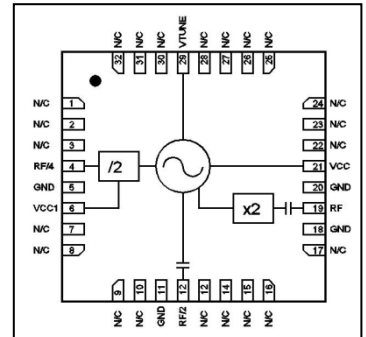
Features

- Dual Output Frequencies
- Push-push Architecture
- Phase Noise: -108 dBc/Hz @ 100 kHz
- Output Power at f_{out} : +11 dBm, typical
- Output Power at $f_{out/2}$: +5 dBm, typical
- Integrated Divide by 2 Prescaler
- ESD Protection Circuitry, HBM Class 1A
- 100% RF and DC tested
- Package: 5 x 5 mm, 32 Lead QFN
- RoHS Compliant

SSB Phase Noise @ RF Output vs. Tuning Voltage



Functional Diagram



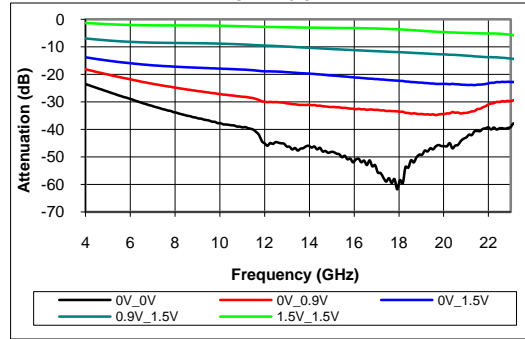
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EWA2001ZZ

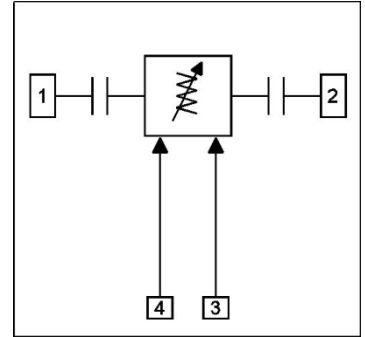
5 - 20 GHz GaAs MMIC Voltage Variable Attenuator

Features

- Broadband Performance: 5 to 20 GHz
- Dynamic Range: 23 dB, typical
- Input IP3: +21 dBm, typical
- Dual Voltage Control: -1.5 to 0 V
- ESD Protection Bias Circuitry
- 100% RF and DC tested
- Die Size: 1.5 x 1.5 x 0.1 mm
- RoHS Compliant



Block Diagram

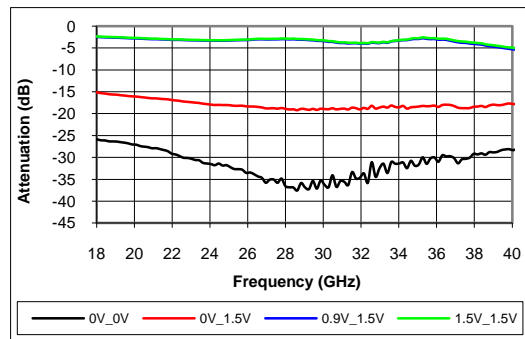


EWA4001ZZ

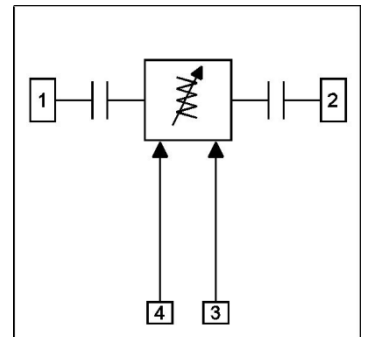
18 - 40 GHz GaAs MMIC Voltage Variable Attenuator

Features

- Broadband Performance: 18 to 40 GHz
- Dynamic Range: 22 dB, typical
- Input IP3: +20 dBm, typical
- Dual Voltage Control: -1.5 to 0 V
- 100% RF and DC tested
- Die Size: 1.5 x 1.5 x 0.1 mm
- RoHS Compliant



Block Diagram

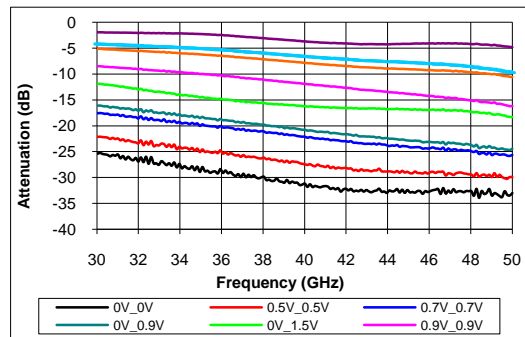


EWA5001ZZ

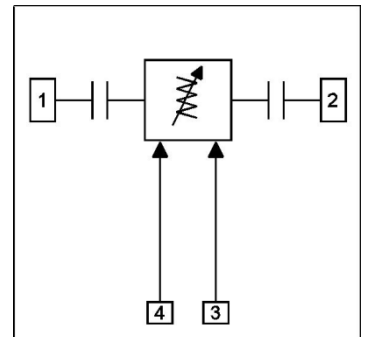
30 - 50 GHz GaAs MMIC Voltage Variable Attenuator

Features

- Broadband Performance: 30 to 50 GHz
- Dynamic Range: 26 dB, typical
- Input IP3: +13 dBm, typical
- Dual Voltage Control: -1.5 to 0 V
- ESD Protection Bias Circuitry
- 100% RF and DC tested
- Die Size: 1.5 x 1.32 x 0.1 mm
- RoHS Compliant



Block Diagram



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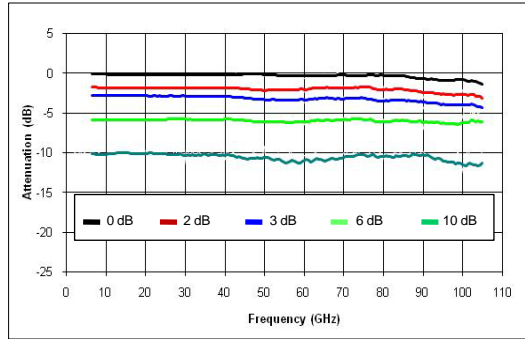
EWA65XXZZ

0 – 105 GHz GaAs MMIC Fixed Attenuator

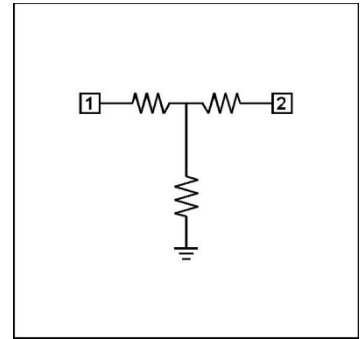
Features

- Fixed-level Attenuators: 0, 2, 3, 6, and 10 dB
- Ultra Broadband Response: 0 to 105 GHz
- Excellent Return Loss: 15 dB, typical
- Flat Attenuation Response
- On-Chip Ground Via
- Power Handling: 20 dBm, typical
- 100% RF and DC tested
- Die Size: 0.5 x 0.5 x 0.1 mm
- RoHS Compliant

Attenuation vs. Frequency



Block Diagram



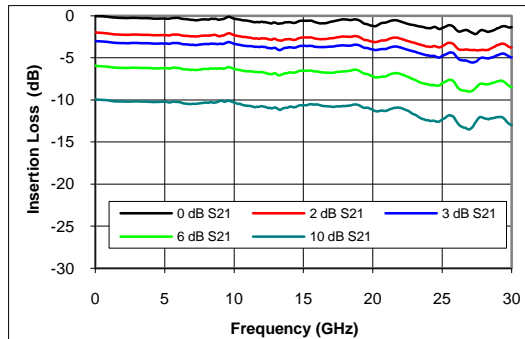
EWA30XXYA

0 – 30 GHz GaAs MMIC Fixed Attenuator

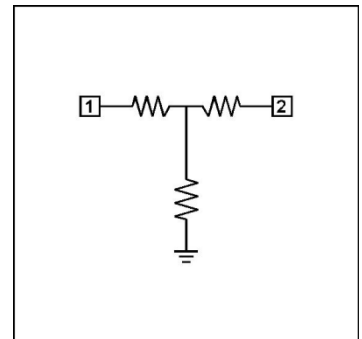
Features

- Fixed-level Attenuators: 0, 2, 3, 6, and 10 dB
- Broadband Response: 0 to 60 GHz
- Excellent Return Loss: 15 dB, typical
- Flat Attenuation Response
- On-Chip Ground Via
- Power Handling: 20 dBm, typical
- 100% RF and DC tested
- Package Size: 2 x 2mm, 6 lead, DFN
- RoHS Compliant

Attenuation vs. Frequency



Block Diagram



Please visit our website at www.endwave.com for complete data sheets on any of these devices.

EWE8601ZZ

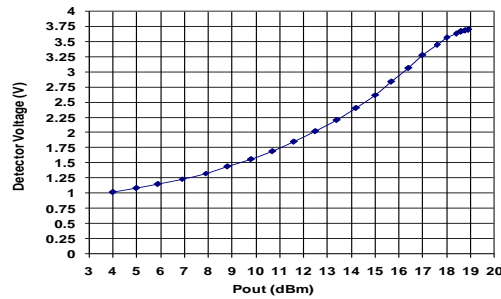
71 – 86 GHz MLMS™ Detector

Features

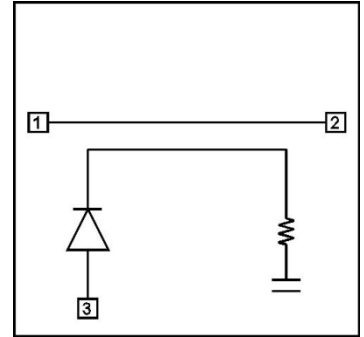
- RF Bandwidth: 71 to 86 GHz
- Insertion Loss: 0.5 dB, typical
- Operating Range: 15 dBm, typical
- In-Band Return Loss: <15 dB
- MLMS™ Technology Provides Excellent Performance and Repeatability
- 100% RF and DC tested
- RoHS Compliant
- Die size: 1.81 x 2.11 x 0.227 mm, height includes flipped diodes

Ideal for E-band Application

Detector Voltage vs. Pout @ 72.8 GHz



Block Diagram



EWO8601ZZ

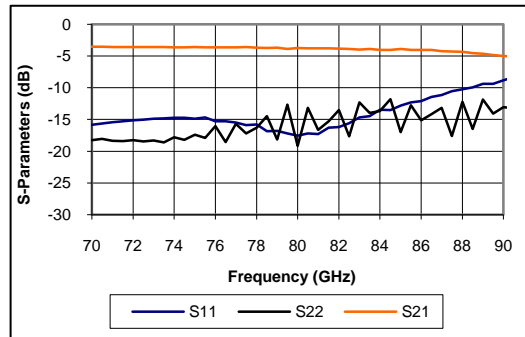
70 - 90 GHz MLMS™ Lange Coupler

Features

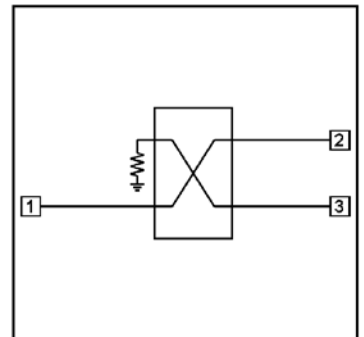
- Broadband performance: 71 to 86 GHz
- Insertion loss: -1 dB, typical
- In-band return loss: > 10 dB
- MLMS™ Technology Provides Excellent Performance and Repeatability
- 100% RF and DC tested
- Die size: 1.61 x 4.51 x 0.1 mm
- RoHS Compliant

Ideal for E-band Application

S-parameters vs. Frequency



Block Diagram



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SUNSTAR射频通信 <http://www.rfoe.net/> TEL:0755-83397033 FAX:0755-83376182 E-MAIL:szss20@163.com
Specifications and data presented may change without notice.

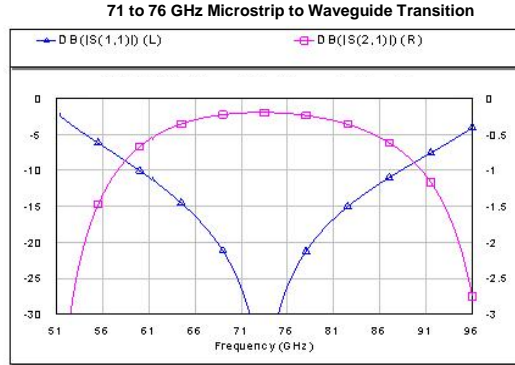
EWK7601ZZ

71 – 76 GHz MLMST™ Wave Guide Probe

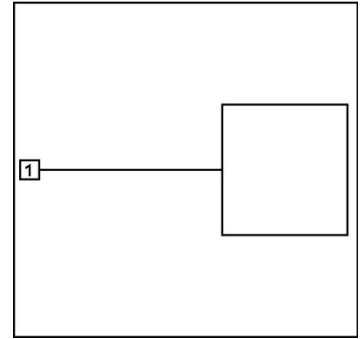
Features

- RF Bandwidth: 71 to 76 GHz
- Insertion Loss: 1 dB, typical
- Return Loss: 20 dB, typical
- MLMST™ Technology Provides Excellent Performance and Repeatability
- 100% RF and DC tested
- RoHS Compliant
- Die Size 0.81 x 2.11 x .1 mm

Ideal for E-band Application



Block Diagram



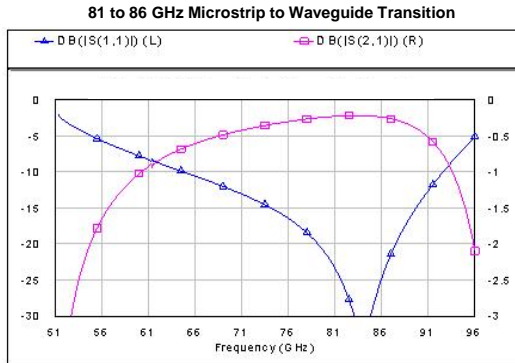
EWK8601ZZ

81 – 86 GHz MLMST™ Wave Guide Probe

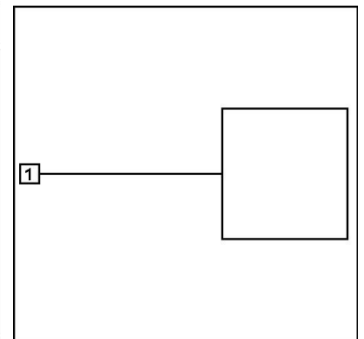
Features

- RF Bandwidth: 81 to 86 GHz
- Insertion Loss: 1 dB, typical
- Return Loss: 20 dB, typical
- MLMST™ Technology Provides Excellent Performance and Repeatability
- 100% RF and DC tested
- Die Size 0.81 x 2.11 x .1 mm
- RoHS Compliant

Ideal for E-band Application



Block Diagram



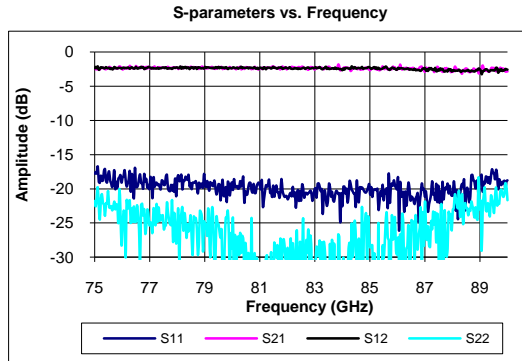
EWT9001ZZ

0 – 105 GHz MLMST™ 50 Ohm Line

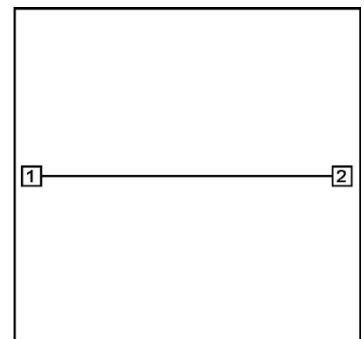
Features

- RF Bandwidth: 0 to 105 GHz
- Insertion Loss: 2.5 dB @ 90 GHz, typical
- Return Loss: 16 dB, typical
- MLMST™ Technology Provides Excellent Performance and Repeatability
- 100% RF and DC tested
- Die Size 1.47 x 2.59 x .1 mm
- RoHS Compliant

Ideal for E-band Application



Block Diagram



Please visit our website at www.endwave.com for complete data sheets on any of these devices.

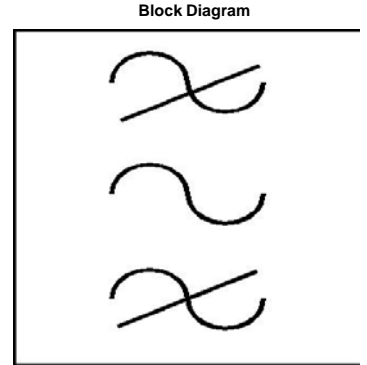
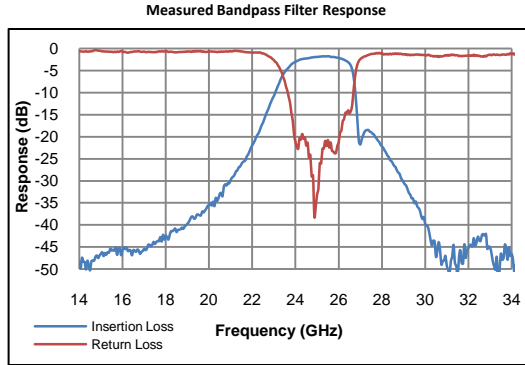
EWF2601AK

24.25 – 25.5 GHz Band Pass Filter

Features

- ☞ Pass Band: 24.25 to 25.5 GHz
- ☞ Insertion Loss: 3 dB, typical
- ☞ Return Loss: 15 dB, typical
- ☞ Low Side Reject Band: < 22 GHz
- ☞ High Side Reject Band: > 28 GHz
- ☞ Rejection: 20 dB, typical
- ☞ Package size: 7 x 7, 28 lead, QFN
- ☞ RoHS Compliant

Ideal for SMT Application



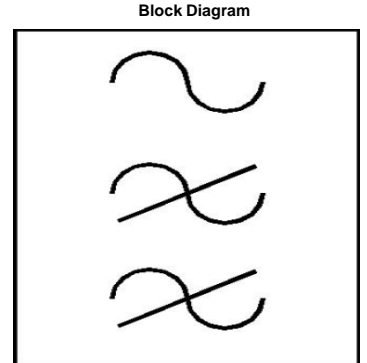
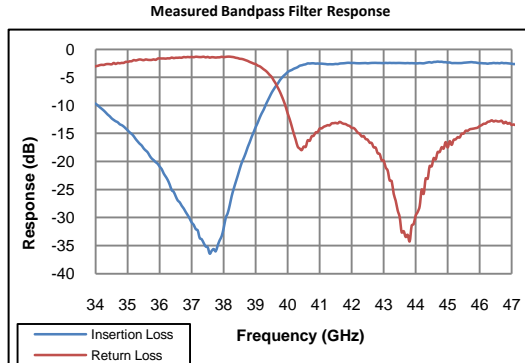
EWF4201AK

36.6 – 38.6 GHz Band Stop Filter

Features

- ☞ Pass Band: 40.5 to 47 GHz
- ☞ Insertion Loss: 3 dB, typical
- ☞ Return Loss: 15 dB, typical
- ☞ Reject Band: 36.6 to 38.6 GHz
- ☞ Rejection: 22 dB, typical
- ☞ Package size: 7 x 7, 28 lead, QFN
- ☞ RoHS Compliant

Ideal for SMT Application



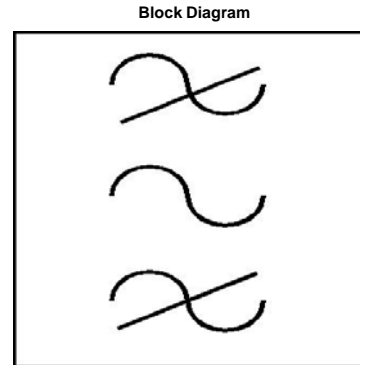
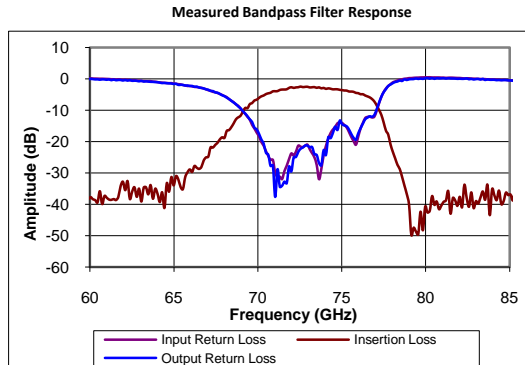
EWF7601ZZ

71 - 76 GHz MLMS™ Bandpass Filter

Features

- ☞ Broadband Performance: 71 to 76 GHz
- ☞ Insertion Loss: 4 dB, typical
- ☞ Return Loss: 16 dB, typical
- ☞ Low Side Rejection Frequency: < 67.8 GHz
- ☞ High Side Rejection Frequency: > 78.5 GHz
- ☞ Rejection: 20 dB, typical
- ☞ MLMS™ Technology Provides Excellent Performance and Repeatability
- ☞ Die size: 1.41 x 4.51 x 0.1 mm
- ☞ RoHS Compliant

Ideal for E-band Application



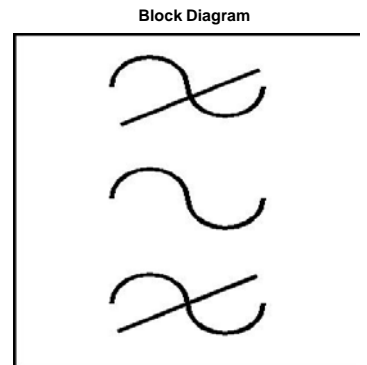
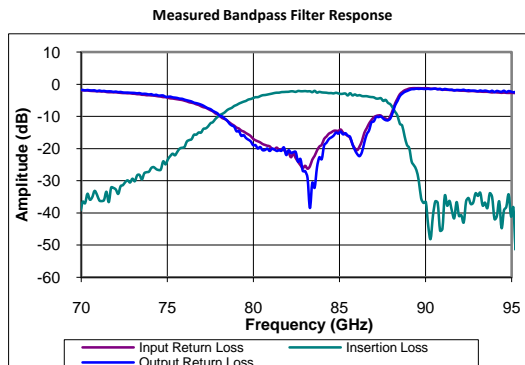
EWF8601ZZ

81 - 86 GHz MLMS™ Bandpass Filter

Features

- ☞ Broadband Performance: 71 to 76 GHz
- ☞ Insertion Loss: 4 dB, typical
- ☞ Return Loss: 16 dB, typical
- ☞ Low Side Rejection Frequency: < 76.2 GHz
- ☞ High Side Rejection Frequency: > 89.2 GHz
- ☞ Rejection: 20 dB, typical
- ☞ MLMS™ Technology Provides Excellent Performance and Repeatability
- ☞ Die size: 1.41 x 4.51 x 0.1 mm
- ☞ RoHS Compliant

Ideal for E-band Application



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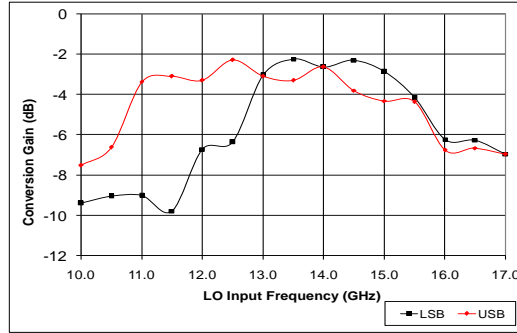
EWU1501YH

12 – 16 GHz GaAs MMIC Image Reject I/Q Upconverter

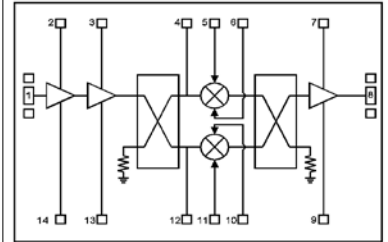
Features

- Integrated I/Q Mixer with LO Driver Amp
- RF & LO Frequency: 12 – 16 GHz
- IF Bandwidth: 0 - 3.5 GHz
- Conversion Gain: -3 dB, typical
- LO Drive Level: 0 dBm, typical
- Input IP3: +24 dBm, typical
- LO/RF Rejection: 38 dB, typical
- Image Rejection: 35 dB, typical
- 100% RF and DC tested
- Package: 6 x 6 mm 40 lead QFN
- RoHS Compliant

Conversion Gain vs. LO Frequency with 1GHz IF Input



Block Diagram



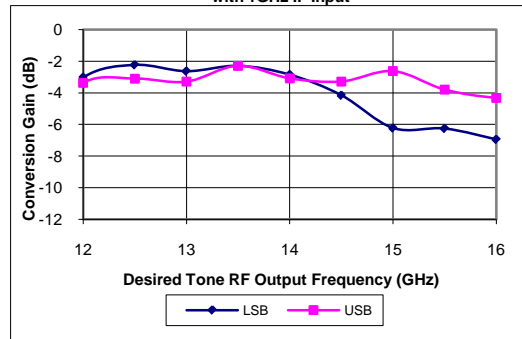
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12 – 16 GHz GaAs MMIC Image Reject I/Q Upconverter

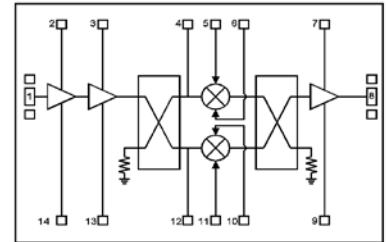
Features

- Integrated I/Q Mixer with LO Driver Amp
- RF & LO Frequency: 12 - 16 GHz
- IF Bandwidth: 0 - 3.5 GHz
- Conversion Gain: -2 dB, typical
- LO Drive Level: 0 dBm, typical
- Input IP3: +25 dBm, typical
- LO/RF Rejection: -40 dB, typical
- Image Rejection : -20 dB, typical
- 100% RF and DC tested
- Die size: 4.475 x 2.5 x 0.1 mm
- RoHS Compliant

Conversion Gain vs. RF Output Frequency with 1GHz IF Input



Block Diagram



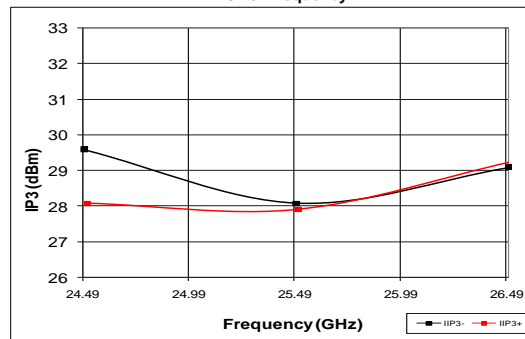
EWU2701ZZ

24.5 – 26.5 GHz GaAs MMIC Balanced Upconverter

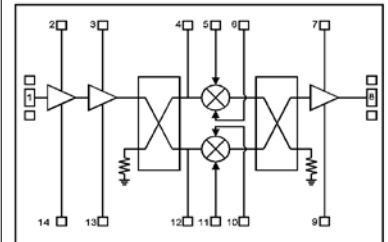
Features

- Integrated Balanced Mixer with LO Driver Amp
- IF Bandwidth: 0 - 4 GHz
- Conversion Gain: -11.5 dB, typical
- LO Drive Level: 3 dBm, typical
- Input IP3: +28 dBm, typical
- LO/RF Rejection: 12 dB, typical
- Sideband Suppression: 15 dB, typical
- 100% RF and DC tested
- Die size: 3.2 x 2.0 x 0.1 mm
- RoHS Compliant

IP3 vs. Frequency



Block Diagram



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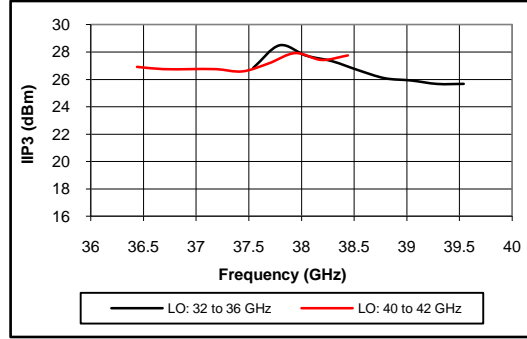
EWM4401ZZ

34 - 44 GHz GaAs MMIC Upconverter / Downconverter

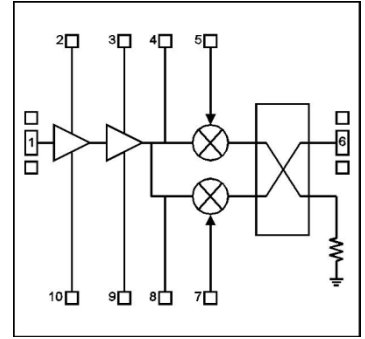
Features

- Integrated I/Q Mixer with LO Driver Amp
- RF & LO Frequency: 34 - 44 GHz
- IF Bandwidth: 0 - 4.5 GHz
- Both Direct Modulation & CW IF
- Conversion Gain: -11dB, typical
- LO Drive Level: 0 dBm, typical
- Input IP3: +27 dBm, typical
- LO/RF Rejection: 30 dB, typical
- Image Rejection: 20 dB, typical
- ESD Protection Circuitry
- 100% RF and DC tested
- Die size: 2.7 x 1.5 x 0.1 mm
- RoHS Compliant

IIP3 vs. Frequency (measured as an upconverter)
(IF: -4 dBm per tone @ 3.55 GHz; LO: 3 dBm)



Block Diagram

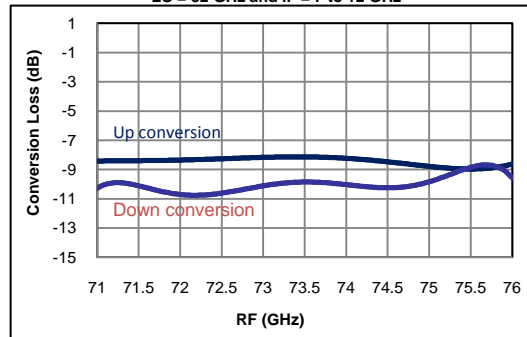


EWM7601ZZ

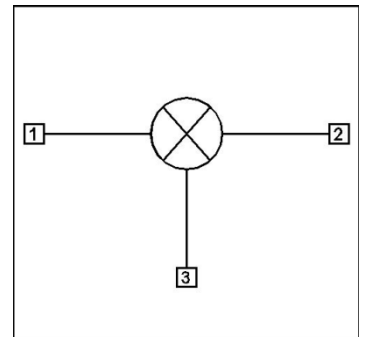
Features

- Sub-Harmonically Pumped Mixer (2LO)
- Broadband Performance: 71 to 76 GHz
- LO Drive Level: +18 dBm, typical
- Input P1dB: +8 dBm, typical
- Conversion Gain: -11 dB, typical
- MLMSTTM Technology Provides Excellent Performance and Repeatability
- 100% RF and DC tested
- RoHS Compliant
- Die size: 1.49 x 2.59 x 0.227 mm, height includes flipped diodes

Low Band Mixer: Conversion Gain vs. Frequency
LO = 32 GHz and IF = 7 to 12 GHz



Block Diagram



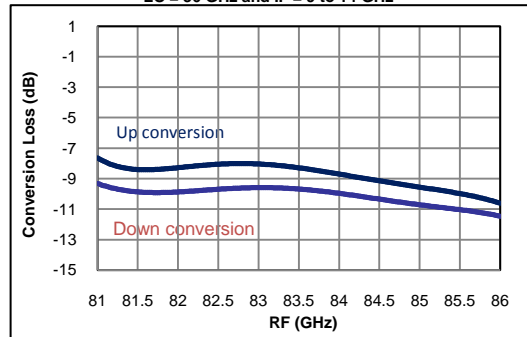
71-76 GHz MLMSTTM Mixer

EWM8601ZZ

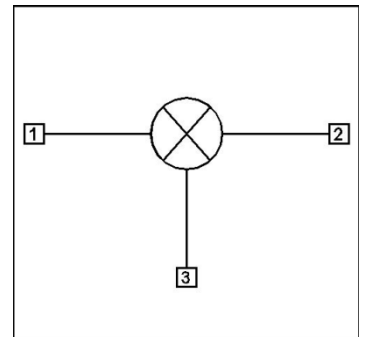
Features

- Sub-Harmonically Pumped Mixer (2LO)
- Broadband Performance: 81 to 86 GHz
- LO Drive Level: +18 dBm, typical
- Input P1dB: +8 dBm, typical
- Conversion Gain: -11 dB, typical
- MLMSTTM Technology Provides Excellent Performance and Repeatability
- 100% RF and DC tested
- RoHS Compliant
- Die size: 1.49 x 2.59 x 0.227 mm, height includes flipped diodes

High Band Mixer: Conversion Gain vs. Frequency
LO = 36 GHz and IF = 9 to 14 GHz



Block Diagram



81-86 GHz MLMSTTM Mixer

Ideal for E-band Application

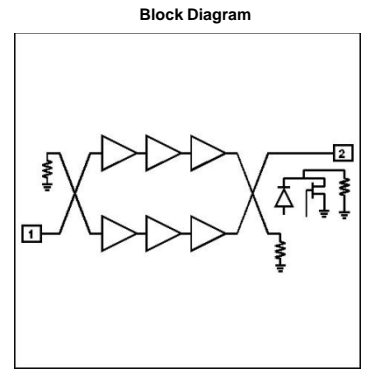
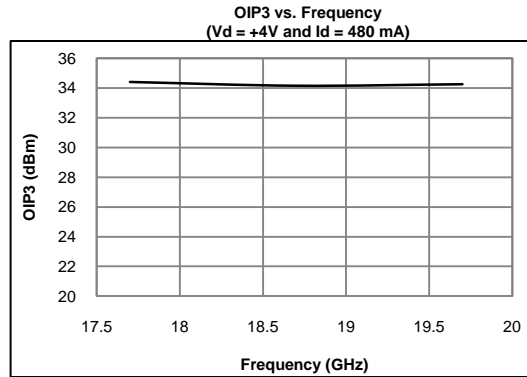
Please visit our website at www.endwave.com for complete data sheets on any of these devices.

EWP1801ZZ

17.5 – 20 GHz GaAs MMIC Medium Power Amplifier

Features

- Broadband Performance: 17.5 to 20 GHz
- Gain: 30 dB, typical
- Output IP3: +32 dBm, typical
- Output P1dB: +24 dBm, typical
- Psat: +27 dBm, typical
- 100% DC and RF tested
- Die size: 3.6 x 2.08 x 0.1 mm
- RoHS Compliant

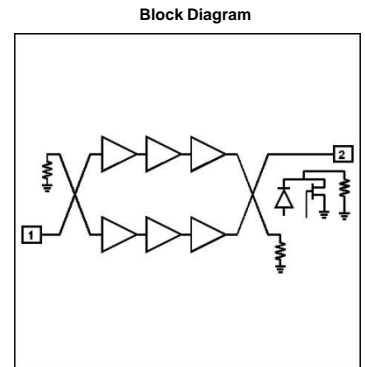
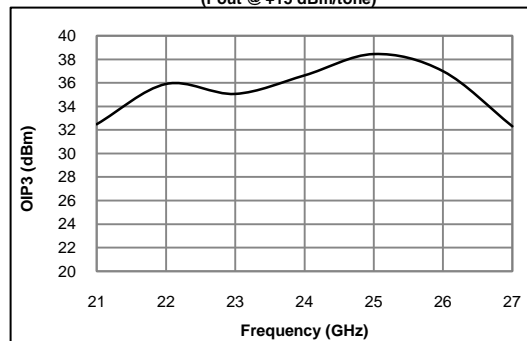


EWP2702ZZ

21 – 26.6 GHz GaAs MMIC Medium Power Amplifier

Features

- Broadband Performance: 21 to 26.6 GHz
- Gain: 26 dB, typical
- Output IP3: +31 dBm, typical
- Output P1dB: +22.5 dBm, typical
- Psat: +25 dBm, typical
- 100% DC and RF tested
- Die size: 3.4 x 1.78 x 0.1 mm
- RoHS Compliant

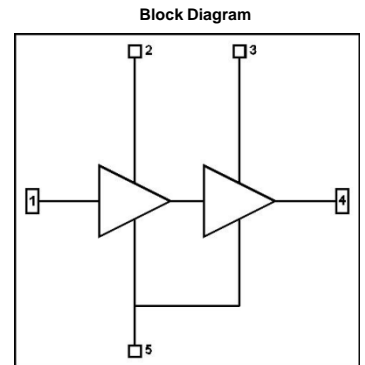
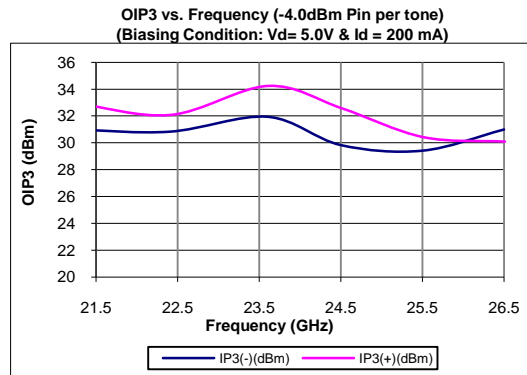


EWP2801ZZ

18 – 28 GHz GaAs MMIC Medium Power Amplifier

Features

- Broadband Performance: 18 to 28 GHz
- Small Signal Gain: 19 dB, typical
- Output IP3: +29 dBm @ 26.5GHz
- Output P1dB: +22 dBm @ 26.5 GHz
- ESD Protection Bias Circuitry
- 100% DC and RF tested
- Die size: 1.85 x 1.312 x 0.1 mm
- RoHS Compliant

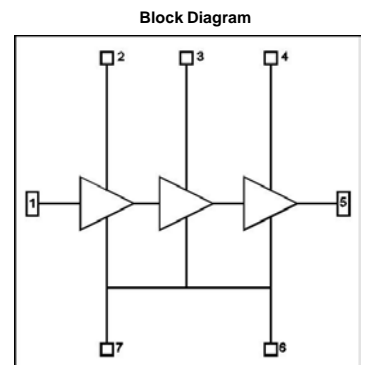
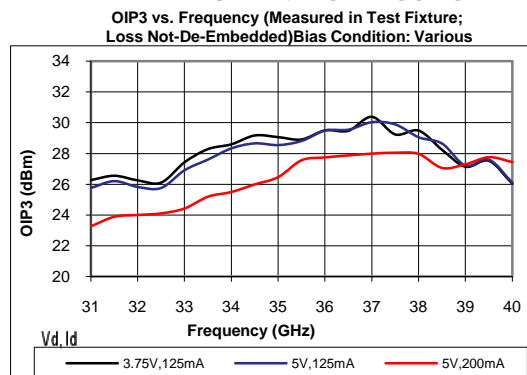


EWP4102ZZ

31 – 41 GHz GaAs MMIC Medium Power Amplifier

Features

- Broadband Performance: 31 to 41 GHz
- Small Signal Gain: 18 dB, typical
- Output IP3: +29 dBm, typical
- Output P1dB: +18 dBm, typical
- ESD Protection Bias Circuitry
- 100% DC and RF tested
- Die size: 2.0 x 1.5 x 0.1 mm
- RoHS Compliant



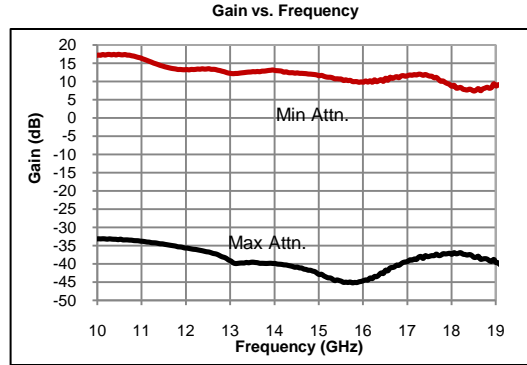
Please visit our website at www.endwave.com for complete data sheets on any of these devices.

EWG1501ZZ

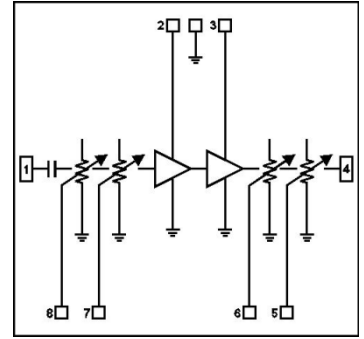
10 - 19 GHz GaAs MMIC Variable Gain Amplifier

Features

- Integrated VVA and RF Amp
- RF Bandwidth: 10 - 19 GHz
- Maximum Gain: 12 dB, typical
- Dynamic Range: 50 dB, typical
- Output IP3 at minimum attenuation: 22 dBm, typical
- Output P1dB at minimum attenuation: 17 dBm, typical
- 100% RF and DC tested
- Die Size: 3.0 x 1.5 x 0.1 mm
- RoHS Compliant



Block Diagram

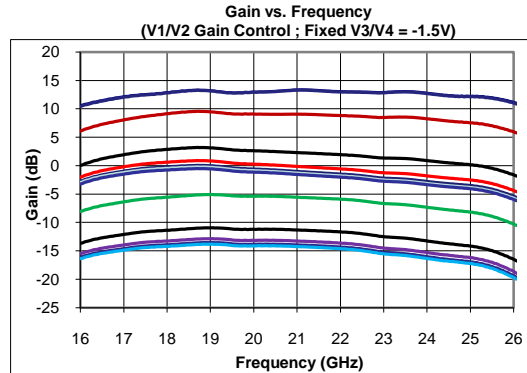


EWG2303ZZ

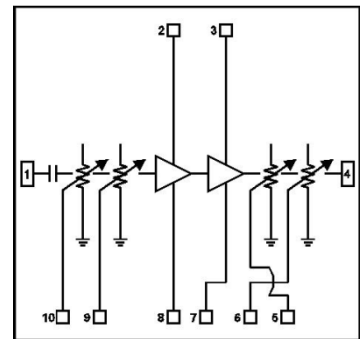
17.7 - 23.6 GHz GaAs MMIC Variable Gain Amplifier

Features

- Integrated VVA and RF Amp
- RF Bandwidth: 17.7 - 23.6 GHz
- Maximum Gain: 11 dB, typical
- Dynamic Range: 53 dB, typical
- Output IP3: +25 dBm (max gain)
- Output P1dB: +15 dBm (max gain)
- 100% RF and DC tested
- Die Size: 3.8 x 2.1 x 0.1 mm
- RoHS Compliant



Block Diagram

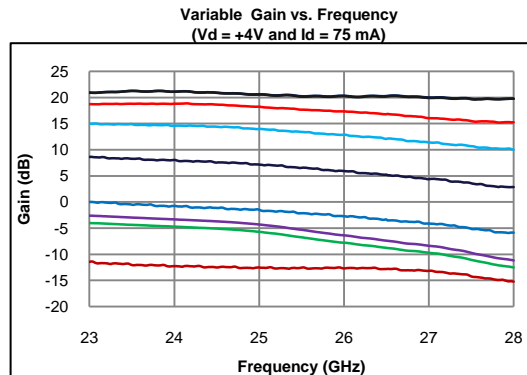


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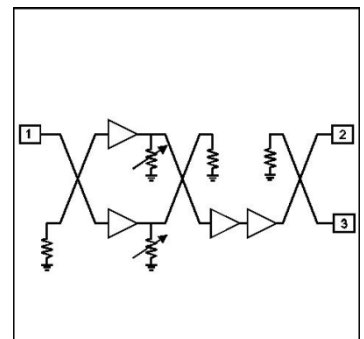
21 - 26.6 GHz GaAs MMIC Variable Gain Amplifier

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
- RoHS Compliant



Block Diagram

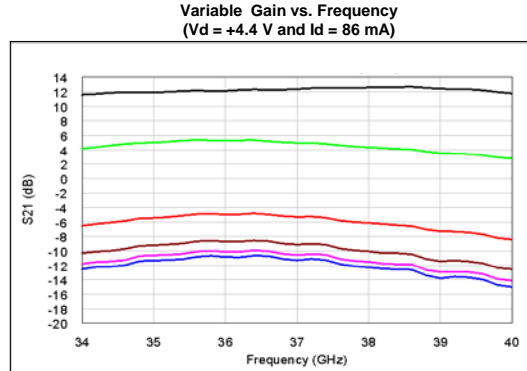


EWG4002ZZ

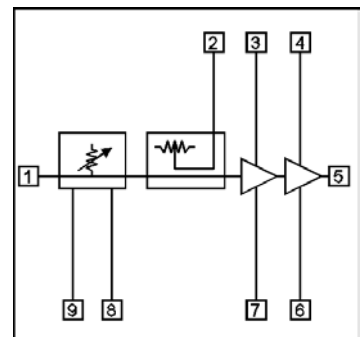
34 - 40 GHz GaAs MMIC Variable Gain Amplifier

Features

- Integrated VVA, Coupler and RF Amp
- RF Bandwidth: 34 to 40 GHz
- Maximum Gain: 11 dB, typical
- Noise Figure: 6.5 dB (max gain)
- Dynamic Range: 22 dB, typical
- Output IP3: +10 dBm (any gain)
- ESD Protection Bias Circuitry
- 100% RF and DC tested
- Die size: 3.0x1.5x 0.1 mm
- RoHS Compliant



Block Diagram



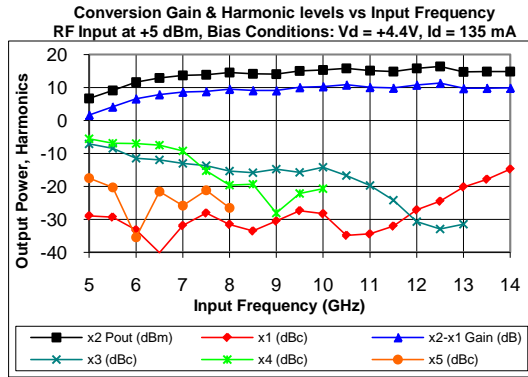
Please visit our website at www.endwave.com for complete data sheets on any of these devices.

EWX2801ZZ

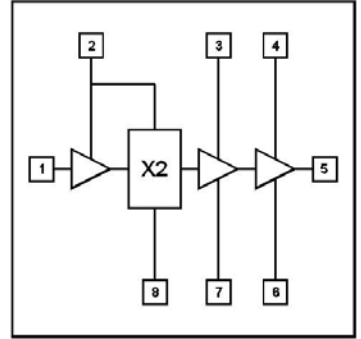
14 - 26 GHz GaAs MMIC x2 Active Frequency Multiplier

Features

- Broadband Performance: 14 to 26 GHz
- Wide Input Power Range: -10 to +10 dBm
- Output Power: +14 dBm, typical
- Fundamental Rejection: 25 dBc, typical
- Low Power Consumption: 0.6 Watts
- ESD Protection Bias Circuitry
- 100% DC and RF tested
- Die size: 2.7 x 2.0 x 0.1 mm
- RoHS Compliant



Block Diagram

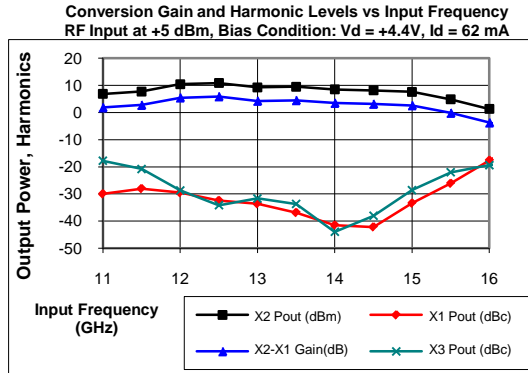


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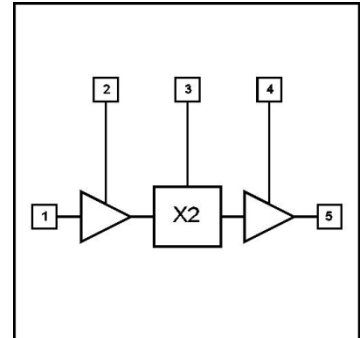
24 - 30 GHz GaAs MMIC x2 Frequency Multiplier

Features

- Broadband Performance: 24 to 30 GHz
- Wide Input Power Range: -10 to +10 dBm
- Output Power: +8 dBm, typical
- Fundamental Rejection: 35 dBc, typical
- Low Power Consumption: < 0.3 W
- Self Biased
- ESD Protection Bias Circuitry
- 100% DC and RF tested
- Die Size: 2.7 x 1.5 x 0.1 mm
- RoHS Compliant



Block Diagram

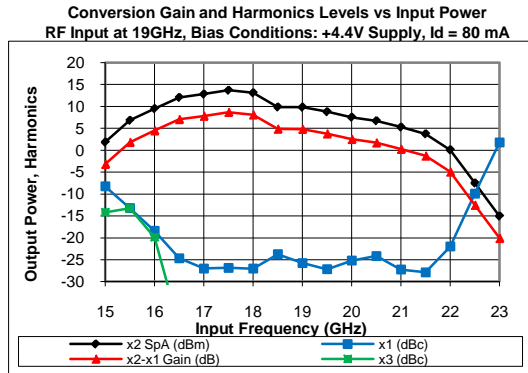


EWX4201ZZ

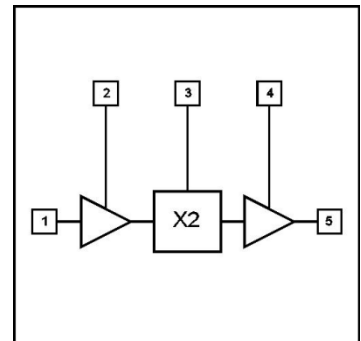
32 - 42 GHz GaAs MMIC x2 Active Frequency Multiplier

Features

- Broadband Performance: 32 to 42 GHz
- Wide Input Power Range: -8 to +8 dBm
- Output Power: +8 dBm, typical
- Fundamental Rejection: 20 dBc, typical
- Low Power Consumption: 0.36 Watts
- Self-biased
- 100% DC and RF tested
- Die size: 2.3 x 1.35 x 0.1 mm
- RoHS Compliant


















Block Diagram



Please visit our website at www.endwave.com for complete data sheets on any of these devices.






VCO

Model Number	Min Frequency (GHz)	Max Frequency (GHz)	F0 Output (dBm) Typ.	SSB Phase Noise @ 100 kHz (dBc/Hz) Typ.	Bias Current VCO/prescaler (mA) Typ.	Bias Voltage VCO/Prescaler (V) Typ.	Package Style
 EWW0801YF	7.3	8.3	13	-116	260 45	5	5x5 32-pin Plastic QFN
 EWW0802YF	7.8	8.8	13	-116	260 45	5	5x5 32-pin Plastic QFN
 EWW0803YF	7.5	8.6	12	-117	260 45	5	5x5 32-pin Plastic QFN
 EWW0901YF	8.45	9.55	12	-115	260 45	5	5x5 32-pin Plastic QFN
 EWW0902YF	8.9	9.9	12	-114	260 45	5	5x5 32-pin Plastic QFN
 EWW0910ZZ	8.68	8.98	18	-111	180	4.25	Bare Die
 EWW1001YF	8.8	10.3	12	-115	260 45	5	5x5 32-pin Plastic QFN
 EWW1002YF	9.5	10.9	8	-110	190 45	5	5x5 32-pin Plastic QFN
 EWW1010ZZ	10.14	10.44	18	-110	190	4.25	Bare Die
 EWW1101YF	10.43	11.63	10	-111	260 45	5	5x5 32-pin Plastic QFN
 EWW1102YF	10.6	11.8	10	-110	220 45	5	5x5 32-pin Plastic QFN
 EWW1103ZZ	11.06	11.66	10	-109	220 40	4.25 5	Bare Die
 EWW1104YF	10.2	11.3	10	-115	200 45	5	5x5 32-pin Plastic QFN
 EWW1201YF	11	12.2	10	-110	260 45	5	5x5 32-pin Plastic QFN
 EWW1202YF	11.5	12.75	10	-107	260 45	5	5x5 32-pin Plastic QFN

STATUS:  PRODUCTION  PRELIMINARY  DEVELOPMENT

Please visit our website at www.endwave.com for complete data sheets on any of these devices.

VCO (Continued)







Model Number	Min Frequency (GHz)	Max Frequency (GHz)	F0 Output (dBm) Typ.	SSB Phase Noise @ 100 kHz (dBc/Hz) Typ.	Bias Current VCO/Prescaler (mA) Typ.	Bias Voltage VCO/Prescaler (V) Typ.	Package Style
 EWV1301YF	12.25	13.5	10	-110	290 45	5	5x5 32-pin Plastic QFN
 EWV1302YF	12.5	13.75	10	-108	275	5	5x5 32-pin Plastic QFN
 EWV1303YF	12.05	13.25	10	-111	260 45	5	5x5 32-pin Plastic QFN
 EWV1401YF	13.5	14.9	10	-109	280 45	5	5x5 32-pin Plastic QFN
 EWV1402ZZ	13.7	14.34	11	-107	210 40	4.25 5	Bare Die
 EWV1510YE	14.5	15.5	8	-98	200	4.2	4x4 24-pin Plastic QFN
 EWV1503YF	14.4	15.75	11	-108	260 45	5	5x5 32-pin Plastic QFN
 EWV2301ZZ	21	23.6	8	-94	100	4.2	Bare Die
 EWV2601ZZ	24.5	26.5	5	-95	100 100	4.2 -5	Bare Die
 EWV3201ZZ	31.8	33.4	5	-94	100	4.2	Bare Die
 EWV3801ZZ	36.9	39.6	5	-94	110	4.2	Bare Die

Product Selection Guide

STATUS:  PRODUCTION  PRELIMINARY  DEVELOPMENT

Please visit our website at www.endwave.com for complete data sheets on any of these devices.

Prescaler




Model Number	RF In (GHz)	RF Out (GHz)	Divided Number (#)	Pin (dBm) Typ.	Pout (dBm) Typ.	Bias Current (mA) Typ.	Bias Voltage (V) Typ.	Package Style
 EWS1401ZZ	1 to 11	0.25 to 2.75	4	5	1	65	5	Bare Die
 EWS1701ZZ	1 to 12	0.5 to 6	2	5	-1	50	5	Bare Die
 EWS1702ZZ	1 to 19	0.125 to 2.375	8	5	-1	94	5	Bare Die
 EWS1301ZZ	1 to 12	0.25 to 3	4	3	-1.5	60	-5	Bare Die
 EWS1302ZZ	3 to 13	1.5 to 6.5	2	1.3	-6	70	-5	Bare Die
 EWS2001ZZ	1 to 21	0.125 to 2.625	8	3	-2.5	90	-5	Bare Die

Product Selection Guide











STATUS:  PRODUCTION  PRELIMINARY  DEVELOPMENT

Please visit our website at www.endwave.com for complete data sheets on any of these devices.

Voltage Variable Attenuator

Model Number	Frequency (GHz)	Min. Insertion Loss (dB) Typ.	IIP3 (dBm) Typ.	Dynamic Range (dB) Typ.	Control Voltage (V)	Package Style
 EWA2001ZZ	5 to 20	-1.7 to -4.5	21	23	-1.5 to 0	Bare Die
 EWA4001ZZ	18 to 40	-1.6 to -3.7	20	22	-1.5 to 0	Bare Die
 EWA5001ZZ	30 to 50	-1.9 to -4.7	13	26	-1.5 to 0	Bare Die










Fixed Attenuator

Model Number	Frequency (GHz)	Attenuation (dB)	Insertion Loss (dB)	Return Loss (dB) Typ.	Package Style
 EWA3000YA	0 to 30	0	0.5 @ 15 GHz	15	2x2 6-pin Plastic DFN
 EWA3002YA	0 to 30	2	2.4 @ 15 GHz	15	2x2 6-pin Plastic DFN
 EWA3003YA	0 to 30	3	3.4 @ 15 GHz	15	2x2 6-pin Plastic DFN
 EWA3006YA	0 to 30	6	6.5 @ 15 GHz	15	2x2 6-pin Plastic DFN
 EWA3010YA	0 to 30	10	10.6 @ 15 GHz	15	2x2 6-pin Plastic DFN
 EWA6500ZZ	0 to 105	0	0.2 @ 30 GHz	20	Bare Die
 EWA6502ZZ	0 to 105	2	1.8 @ 30 GHz	20	Bare Die
 EWA6503ZZ	0 to 105	3	2.9 @ 30 GHz	20	Bare Die
 EWA6506ZZ	0 to 105	6	5.9 @ 30 GHz	20	Bare Die
 EWA6510ZZ	0 to 105	10	10.2 @ 30 GHz	20	Bare Die

STATUS:  PRODUCTION  PRELIMINARY  DEVELOPMENT

Please visit our website at www.endwave.com for complete data sheets on any of these devices.

Filter





Model Number	Pass Band Frequency (GHz)	Insertion Loss (dB) Typ.	Return Loss (dB) Typ.	Rejection Frequency Band (GHz)	Rejection (dB) Typ.	Package Style
 EWF2601AK	24.25 to 25.5	3	15	< 22 and > 28	20	7x7 28-pin Plastic QFN
 EWF2602AK	25.5 to 26.5	3	15	< 23 and > 29	20	7x7 28-pin Plastic QFN
 EWF3801AK	37 to 47	3	12	34 to 35	22	7x7 28-pin Plastic QFN
 EWF3802AK	38.25 to 47	3	15	34.5 to 36.5	18	7x7 28-pin Plastic QFN
 EWF4201AK	40.5 to 47	3	15	36.6 to 38.6	22	7x7 28-pin Plastic QFN
 EWF4202AK	41.5 to 47	3	15	37.1 to 39.1	22	7x7 28-pin Plastic QFN
 EWF4203AK	42 to 47	3	15	38.1 to 40.1	22	7x7 28-pin Plastic QFN
 EWF7601ZZ	71 to 76	4	16	< 67.8 and > 78.5	20	Bare Die
 EWF8601ZZ	81 to 86	4	23	< 76.2 and > 89.2	20	Bare Die

Product Selection Guide

STATUS:  PRODUCTION  PRELIMINARY  DEVELOPMENT

Please visit our website at www.endwave.com for complete data sheets on any of these devices.

Passive

Model Number	Frequency (GHz)	Insertion Loss (dB) Typ.	Return Loss (dB) Typ.	Package Style
 EWT9001ZZ	0 to 105	2.5 @ 90 GHz	16	Bare Die
 EWO8601ZZ	71 to 86	1 @ 86 GHz	10	Bare Die
 EWK7601ZZ	71 to 76	1	25	Bare Die
 EWK8601ZZ	81 to 86	1	25	Bare Die





Detector

Model Number	Frequency (GHz)	Operating Range (dBm)	Insertion Loss (dB) Typ.	Return Loss (dB) Typ.	Package Style
 EWE8601ZZ	71 to 86	5 to 20	0.5	15	Stacked Die



STATUS:  PRODUCTION  PRELIMINARY  DEVELOPMENT

Please visit our website at www.endwave.com for complete data sheets on any of these devices.



UP Converter

Model Number	RF (GHz)	LO (GHz)	IF (GHz)	Conversion Gain (dB) Typ.	IIP3 (dBm) Typ.	LO Power (dBm) Typ.	Bias Current (mA) Typ.	Bias Voltage (V) Typ.	Package Style
 EWU1501YH	12 to 16	12 to 16	0 to 3.5	-3	24	0	200	4.2	6x6 40-pin Plastic QFN
 EWU1501ZZ	12 to 16	12 to 16	0 to 3.5	-2	25	0	200	4.2	Bare Die
 EWU1502ZZ	14 to 15.5	14 to 15.5	0 to 0.25	-2.5	23.5	0	200	4.2	Bare Die
 EWU2701ZZ	24.5 to 26.5	24.5 to 26.5	0 to 4	-11.5	28	3	67	4.4	Bare Die

UP/Down Converter

Model Number	RF (GHz)	LO (GHz)	IF (GHz)	Conversion Gain (dB) Typ.	Image Rej. (dBc) Typ.	IIP3 (dBm) Typ.	LO Power (dBm) Typ.	Bias Current (mA) Typ.	Bias Voltage (V) Typ.	Package Style
 EWM2801ZZ	24.5 to 26.5	22.3 to 28.7	0 to 4.5	-11	20	20	0	67	4.4	Bare Die
 EWM4401ZZ	34 to 44	34 to 44	0 to 4.5	-11	20	27	0	120	4.4	Bare Die










Mixer

Model Number	RF (GHz)	Typ. LO (GHz)	IF (GHz)	Conversion Gain (dB) Typ.	IP1dB (dBm) Typ.	LO Power (dBm) Typ.	Package Style
 EWM7601ZZ	71 to 76	30	DC to 15	-11	8	17	Stacked Die
 EWM8601ZZ	81 to 86	35	DC to 15	-11	8	18	Stacked Die


STATUS:  PRODUCTION  PRELIMINARY  DEVELOPMENT

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Power Amplifier

Model Number	Frequency (GHz)	Gain (dB) Typ.	OP1dB (dBm) Typ.	OIP3 (dBm) Typ.	Psat (dBm) Typ.	Bias Current (mA) Typ.	Bias Voltage (V) Typ.	Package Style
 EWP1503ZZ	13 to 15	20	15	21	18	105	4.2	Bare Die
 EWP1801YF	16 to 20	22	24	29	27	500	4	5x5 32-pin Plastic QFN
 EWP1801ZZ	17.5 to 20	30	24	32	27	500	4	Bare Die
 EWP2702ZZ	21 to 26.6	26	22	31	25	530	4.2	Bare Die
 EWP2801ZZ	18 to 28	19	22 @ 26.5 GHz	29 @ 26.5 GHz	24 @ 26.5 GHz	200	5	Bare Die
 EWP3101ZZ	27 to 31	19	31	42	33	2500	6	Bare Die
 EWP3201ZZ	26.5 to 32.5	19	25	34	28	1100	5	Bare Die
 EWP3801ZZ	35 to 42	17	29	36	31	850	6	Bare Die
 EWP4102ZZ	31 to 41	18	18 @ 38 GHz	29 @ 38 GHz	18 @ 38 GHz	125	3.75	Bare Die









Distributed Amplifier

Model Number	Frequency (GHz)	Gain (dB) Typ.	NF (dB) Typ.	OP1dB (dBm) Typ.	OIP3 (dBm) Typ.	Bias Current (mA) Typ.	Bias Voltage (V) Typ.	Package Style
 EWH1201ZZ	0 to 12	18	5	25	32	270	8	Bare Die

STATUS:  PRODUCTION  PRELIMINARY  DEVELOPMENT

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Variable Gain Amplifier



Model Number	Frequency (GHz)	Gain @ min attn. (dB)	OP1dB (dBm) Typ.	OIP3 (dBm) Typ.	Dynamic Range (dB) Typ.	Bias Current (mA) Typ.	Bias Voltage (V) Typ.	Package Style
 EWG1501YH	10 to 19	12	17 @ min attn	22 @ min attn	50	120	4.2	6x6 40-pin Plastic QFN
 EWG1501ZZ	10 to 19	12	17 @ min attn	22 @ min attn	50	120	4.2	Bare Die
 EWG2303ZZ	17.7 to 23.6	11	15 @ min attn	25 @ min attn	53	235	4.5	Bare Die
 EWG2602ZZ	24.5 to 26.5	9	-	14 @ any attn	20	46	4.4	Bare Die
 EWG2702ZZ	21 to 26.6	21	7 @ min attn	13 @ 12 dB Gain	30	90	4	Bare Die
 EWG2801ZZ	15 to 30	14	-	7 @ any attn (24.5 to 26.5 GHz)	18	67	5	Bare Die
 EWG4001ZZ	34 to 40	10	16.5 (37 to 40 GHz)	29 @ min attn (37 to 40 GHz)	24	120	5	Bare Die
 EWG4002ZZ	34 to 40	11	-	10 @ any attn	22	66	4.4	Bare Die

Product Selection Guide





STATUS:  PRODUCTION  PRELIMINARY  DEVELOPMENT

Please visit our website at www.endwave.com for complete data sheets on any of these devices.

Low Noise Amplifier

Model Number	Frequency (GHz)	Gain (dB) Typ.	NF (dB) Typ.	OP1dB (dBm) Typ.	OIP3 (dBm) Typ.	Bias Current (mA) Typ.	Bias Voltage (V) Typ.	Package Style
 EWL2701ZZ	24.5 to 26.5	28	4.2	13	22	74	4.4	Bare Die
 EWL4401ZZ	37 to 44	20	4.2	16	25	95	4.4	Bare Die

x2 Active Multiplier

Model Number	RF In (GHz)	RF Out (GHz)	Pin (dBm) Typ.	Pout (dBm) Typ.	Bias Current (mA) Typ.	Bias Voltage (V) Typ.	Package Style
 EWX2801ZZ	7 to 13	14 to 26	5	14	140	4.4	Bare Die
 EWX2801YG	7 to 12	14 to 24	5	13	140	4.4	5x5 20-pin Plastic QFN
 EWX3001ZZ	12 to 15	24 to 30	5	8	62	4.4	Bare Die
 EWX4201ZZ	16 to 21	32 to 42	5	8	80	4.4	Bare Die

STATUS:  PRODUCTION  PRELIMINARY  DEVELOPMENT

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