Product Selection Guide

WJ Communications is now part of TriQuint Semiconductor

TriQuint SEMICONDUCTOR

Connecting the Digital World to the Global Network®

October 2008

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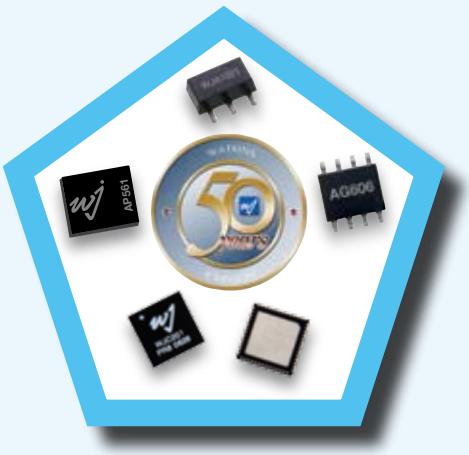


We're proud of our 50-year heritage, and Watkins Johnson foundation.

This guide contains a subset of the TriQuint-WJ products available from TriQuint. If you are unable to locate the product you need, please contact your local sales representative or the factory for more information.

About TriQuint Semiconductor

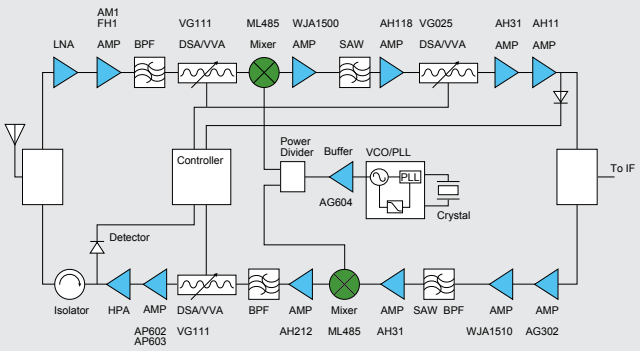
Corporate Headquarters – Hillsboro, OR

TriQuint Semiconductor is a leading supplier of high-performance RF components for wireless communications infrastructure and mobile devices. Our customers span a wide range, from start-ups working in their first offices to major global corporations. All our customers share a common desire for cost-conscious, high-performance solutions tailored to the rigorous requirements of present and next-generation design applications. At TriQuint, we 'Connect the Digital World to the Global Network®' with products based on key process technologies including Gallium Arsenide (GaAs), Surface Acoustic Wave (SAW), Bulk Acoustic Wave (BAW) and LDMOS (Laterally Diffused Metal Oxide Semiconductor). We're also releasing new devices based on continuing research advancements in high frequency gallium nitride (GaN). Our leadership in these areas enables TriQuint to offer customers a unique portfolio of products ideally matched to the demanding requirements of the international marketplace. TriQuint is headquartered in Hillsboro, Oregon and has additional design and manufacturing centers in Florida and Texas, plus design centers in Boulder, Colorado; Boston, Massachusetts; Greensboro, North Carolina, and Munich, Germany. The recent acquisition of WJ Communications adds a design center in the heart of Silicon Valley, California. Additional field application support and sales offices are located across the globe. Our customers are also served by a world-wide network of sales representatives and distributors.

TriQuint's heritage in custom design applications and uncompromising standards led Strategy Analytics to name TriQuint the number-one commercial GaAs Foundry in 2008. We continue pursuing the quality and reliability that led to this distinction, offering more solutions for specialized customer needs outside the realm of our extensive standard and application-specific product portfolios. Through our years of process and product development, TriQuint has amassed a large portfolio of innovative devices ideally suited to the needs of the communications designers and manufacturers. The process technologies used to make many of the power amplifiers, RF transistors, switches, SAW and BAW filters in use around the world today were developed initially in TriQuint laboratories.

TriQuint has brought all of WJ's standard products together into one easy-to-use Product Selection Guide. Here you will find a wide variety of products to suit your needs, from DC to 6 GHz. When designing new products or looking for a new spin on an established design, you can depend on our uncompromising quality and superior service. Take a look through our Product Selection Guide and discover just how easy it is to include high-performance, quality products from TriQuint-WJ in your next design.

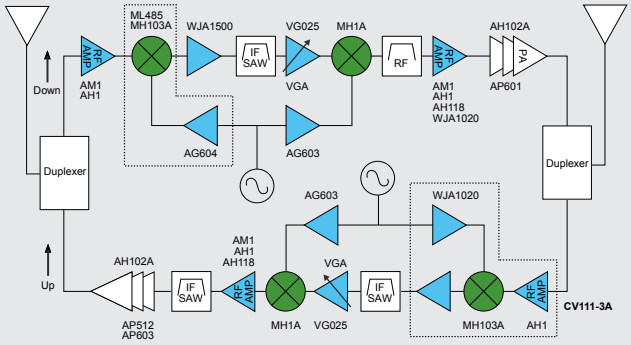
Be sure to see TriQuint's other Product Selection Guide, which features products for a wide variety of RF and millimeter wave applications.



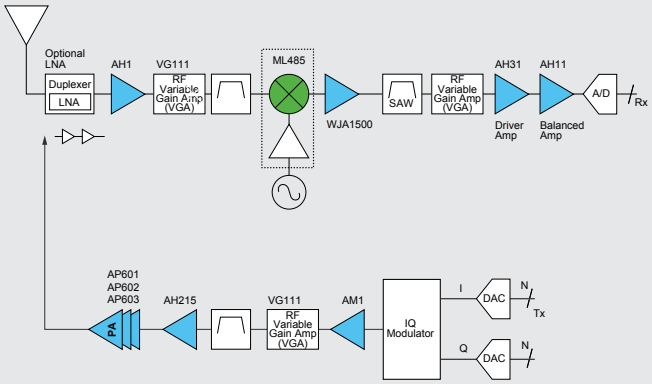
TD-SCDMA block diagram

Wide Variety of RF Products

TriQuint-WJ offers a variety of products for wireless infrastructure applications. Choose from TriQuint-WJ's high linearity, low-cost, high-performance and exceptional quality amplifiers, mixers, FETs and MCMs: suitable for cellular base stations targeted towards CDMA, W-CDMA, TD-SCDMA, 2G, 3G, GSM, and receivers and transmitters.



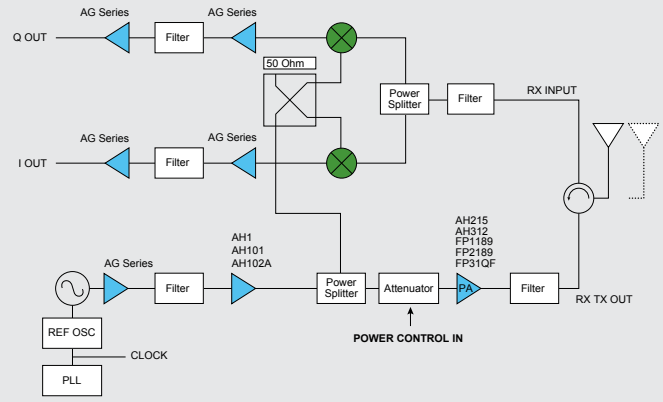
2.1 GHz Channel Selective Repeater



2.1 GHz BTS Transceiver

Semiconductors for RFID

TriQuint-WJ's semiconductor products are ideally suited for the challenging world of RFID readers. The combination of high dynamic-range and rugged reliability make them ideal for demanding RFID applications. Their versatility and ease of use allow them to form the core of any ANSI, ETSI, ISO or EPC compliant reader solution. Additionally, TriQuint-WJ's semiconductor products offer low cost, small size and robust performance in the global HF, UHF, and microwave frequency bands. Small size and excellent power efficiency make them applicable for PCMCIA, industrial, portable, and handheld applications.



RFID Block Diagram

WiMAX Power Amplifiers

TriQuint-WJ has built upon its expertise of InGaP HBT technology to offer amplifiers for WiMAX applications. These amplifiers satisfy the high linearity requirements as necessitated by high peak-to-average ratio of WiMAX signals. TriQuint-WJ's amplifiers are available for 2.5 GHz and 3.5 GHz frequencies, enabling applications from 2.3 to 3.8 GHz. These products are available in small form factor, lead-free/RoHS-compliant surface mount QFN packages.

Advantages

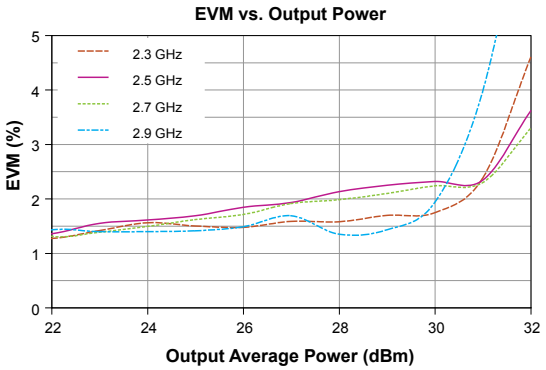
- High Dynamic Range
- Sophisticated Bias Circuitry to Compensate Performance for over Temperature
- Power Down Feature
- Single Supply Operation

Features

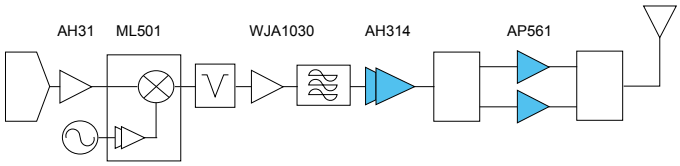
- 2.5 and 3.5 GHz
- Excellent EVM Performance
- P1dB of 33dBm (AH314/5) and 38.5dBm (AP561/2)
- Gain of 23dB (AH314/5) and 12dB (AP561/2)
- Lead-free/RoHS-Compliant/Green Packages
- Negative Supply is not Required

Applications

- 2.5 and 3.5 GHz WiMAX BTS
- 2.3 WiBro
- LTE
- BTS and CPE



AP561 EVM Performance



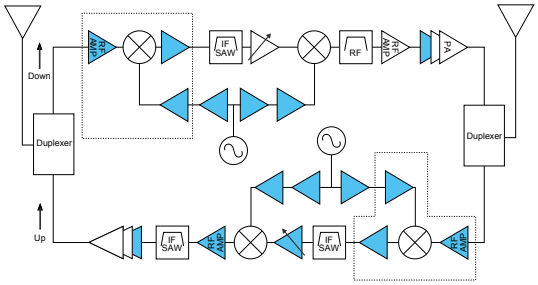
WiMAX BTS Block Diagram @2.5 GHz

Part Number	Frequency Range (MHz)	Gain (dB)	P1dB (dBm)	Pout (dBm)	EVM (%)	V_{cc} (V)	I_{cq} (mA)	Package Style
ECP053	2300 - 2700	13.5	5.3	28	43	5	250	SOIC-8 / 4x4 mm QFN16
ECP103	2300 - 2700	12	6.3	31	45	5	450	SOIC-8 / 4x4 mm QFN16
ECP203	2300 - 2700	10	6.3	32	47	5	800	SOIC-8 / 4x4 mm QFN16
AH212	1800 - 2700	27	5.5	30.5	46.5	5	400	SOIC-8 / 4x5 mm DFN12
AH314*	2300 - 2900	23	33	25	1.8	5	600	5x5 mm QFN20
AH315*	3300 - 3800	25	33	25	2.2	5	600	5x5 mm QFN20
AP561*	2300 - 2900	13	39	30	1.5	12	300	5x6 mm DFN14
AP562*	3300 - 3800	11.5	39	30	2.1	12	400	5x6 mm DFN14

NOTES: ***= New***

General Purpose Gain Block Amplifiers

The AG, EC and ECG series are a broad family of InGaP HBT general purpose gain block amplifiers that offer superior dynamic range and broadband gain performance over a wide frequency range in small form factor lead-free/RoHS compliant surface mount packages. These products are able to operate from DC to 6 GHz and offer flexibility as gain stages in almost any wireless application. They can be implemented into both current and next generation wireless infrastructure platforms where gain blocks are required to achieve system specifications. Configured as Darlington pairs, these gain block amplifiers are available in a variety of gain, power, and package combinations.



Advantages

- High Dynamic Range
- High Linearity Performance
- Broadband Gain Performance over Wide Frequency Range
- MTTF Values > 1000 Years @ 85°C
- Minimal Number of Discrete Passive Devices Needed for Operation

Features

- DC – 6000 MHz
- Single Voltage Supply
- Internally Matched to 50 Ohm
- Lead-free/RoHS-Compliant/Green Packages

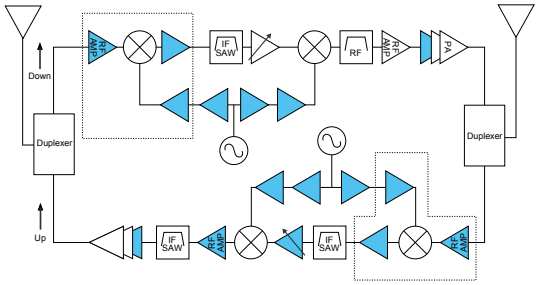
Applications

- General Purpose Amplification
- Wireless Infrastructure Equipment
- CATV
- 2G and 3G Repeaters
- RFID

Part Number	Frequency Range (MHz)	Gain (dB) 1 / 2 GHz	P1dB (dBm) 1 / 2 GHz	OIP3 (dBm) 1 / 2 GHz	NF (dB)	Min. V_{cc} (V)	V_{device} (V)	I_{cc} (mA)	Package Style
AG201	DC-6000	11 / 11	6.5 / 6	19.5 / 18.5	4.4	5	4	20	SOT-86 / SOT-363
AG203	DC-6000	20 / 17.5	8.0 / 7.5	21 / 20.5	3.1	5	4.1	20	SOT-86 / SOT-363
AG302	DC-6000	15.5 / 14.5	13.5 / 12	26 / 25	3.2	5	4.2	35	SOT-86 / SOT-363
AG303	DC-6000	20.5 / 18.5	14 / 12.5	26 / 25	3.0	5	4.2	35	SOT-86 / SOT-363
AG402	DC-6000	15 / 14.5	17 / 16	32.5 / 29.5	3.7	6	4.9	60	SOT-86 / SOT-89
AG403	DC-6000	21 / 19	18 / 16	31.5 / 28.5	3.0	6	4.9	60	SOT-86 / SOT-89
AG503	DC-6000	21 / 19	16 / 14.5	29 / 28	2.9	6	5	45	SOT-86 / SOT-89
AG602	DC-3500	14 / 13.5	18.5 / 18.5	33 / 33	4.4	6	5.2	75	SOT-89
AG603	DC-3000	18.5 / 16.5	19.5 / 18.5	33 / 33	3.8	6	5.2	75	SOT-89
AG604	DC-6000	21.5 / 18	19.5 / 19	33.5 / 33	3.5	6	5.2	75	SOT-86 / SOT-89
EC1019	DC-4000	20.5 / 18.5	19 / 19.5	34 / 31	2.9	6	4.7	70	SOT-86 / SOT-89
EC1078	DC-3500	20 / 17	21 / 20	37 / 33	3.5	7	5.6	96	SOT-89
ECG001	DC-6000	22.5 / 21.5	12.5 / 12.5	25 / 26	3.4	5	3.4	30	SOT-363 / SOT-89
ECG002	DC-6000	20 / 19.5	15.5 / 15	29 / 29	3.7	5	3.9	45	SOT-86 / SOT-363 / SOT-89
ECG003	DC-6000	20 / 19	24 / 23	39 / 36	3.5	9	7.2	110	SOT-89
ECG004	DC-6000	16 / 16	13.5 / 13	28 / 27	3.2	5	3.4	35	SOT-89
ECG005	DC-4000	22 / 21.5	18 / 17.5	34 / 32	3.4	6	4.8	65	SOT-89
ECG006	DC-5500	15 / 14	15.5 / 15	32 / 32	3.7	5	3.9	45	SOT-86 / SOT-363 / SOT-89
ECG008	DC-4000	15 / 14.5	24 / 23	40 / 37	4.6	9	7.3	120	SOT-89
ECG040	DC-4000	16 / 15	18.5 / 18	35 / 35	5.5	6	4.8	70	SOT-89
ECG055	DC-6000	20.5 / 20	18 / 18	34 / 32	3.4	6	4.8	65	SOT-86 / SOT-89
SCG002	DC-6000	21 / 20	15.5 / 15	29 / 29	3.7	5	3.9	45	SOT-89

+5V Active Bias General Purpose Gain Block Amplifiers

The WJA1xxx Series are high-performance broadband amplifiers that offer high linearity, housed in a low-cost surface-mount package. An internal active bias circuitry is designed to enable stable performance over temperature. These devices are Darlington pair amplifiers operating directly off a voltage supply where a dropping resistor is not needed. The WJA1xxx amplifiers use a high-reliability InGaP/GaAs HBT process technology and are internally matched to 50 Ohm. These products are available in small form factor, lead-free/RoHS-compliant SOT-89 package.



Advantages

- General Purpose, Cascadable
- High Linearity Performance
- Broadband
- Stable Performance over Temperature
- No Requirement for a Dropping Resistor

Features

- Low Current Draw
- Different Gain and OIP3 Levels Offered
- Operation Directly from 5V Supply
- Robust 1000V ESD, Class 1C
- Lead-free/RoHS-Compliant SOT-89 Package
- Unconditionally Stable

Applications

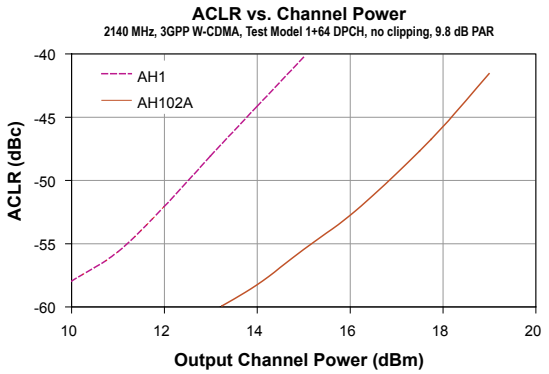
- Wireless Infrastructure
- General Purpose
- Cellular GSM, PCS, UMTS, W-CDMA, TD-SCDMA, and WiMAX
- IF Amplifier
- VHF/UHF Transmission
- CATV/ FTTH

Part Number	Frequency Range (MHz)	Gain (dB) @200 MHz	Gain (dB) @900 MHz	Gain (dB) @1900 MHz	OIP3 (dBm) @200 MHz	OIP3 (dBm) @900 MHz	OIP3 (dBm) @1900 MHz	P1dB (dBm)	NF (dB)	V_{cc} (V)	I_{cc} (mA)	Package Style
WJA1000	50 - 1200	19.5	18	15.3	39	34	29	19	5.3	5	85	SOT-89
*WJA1001**	50 - 3000	19.5	18.5	16.7	40	44	34	20	5.4	5	100	SOT-89
WJA1005	50 - 1200	19.2	18	14.9	36	34	27	17	5.1	5	65	SOT-89
WJA1010	50 - 2300	15	14.5	14	42	36	28.5	19	5.2	5	85	SOT-89
WJA1015	50 - 2300	15	14.5	14	40	37	28	17	5	5	65	SOT-89
WJA1020	50 - 4000	19.5	18.5	16.7	37	33.5	33	17	5.1	5	70	SOT-89
*WJA1021**	50 - 4000	19.5	18.5	16.7	38	40	37.5	20	5.6	5	90	SOT-89
WJA1025	50 - 4000	19.3	18.5	16.7	35	33	32	15.5	5	5	60	SOT-89
WJA1030	50 - 4000	14.5	14.5	14.5	38	37	36.5	19.3	5.5	5	80	SOT-89
WJA1035	50 - 4000	14.5	14.5	14.5	35	35	34	18	5.4	5	65	SOT-89
WJA1500	50 - 1000	19.2	17.5	-	44	33	-	20.5	5	5	95	SOT-89
WJA1505	50 - 1000	19	17.5	-	37	33.5	-	19	4.7	5	65	SOT-89
WJA1510	50 - 1000	14.2	14	-	47	36	-	20	5.4	5	95	SOT-89
WJA1515	50 - 1000	14	14	-	38.5	35.5	-	19	5	5	70	SOT-89

NOTES: *** = New**

High Linearity GaAs MESFET Amplifiers

TriQuint-WJ has an excellent choice of GaAs MESFET amplifiers for narrowband and broadband applications. These amplifiers are designed for superior linearity and gain performance, while offering a wide choice of output power. The combination of low noise and high IP3 make these amplifiers ideal for receiver and transmitter applications. These products are available in small form factor, lead-free/ RoHS-compliant surface mount packages.



Advantages

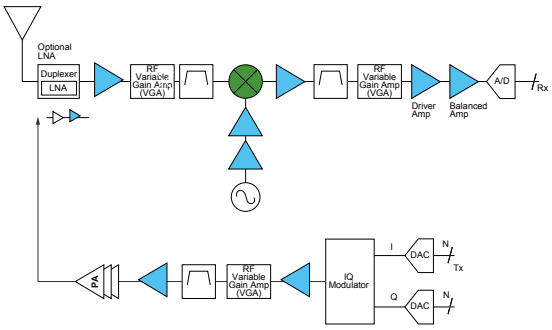
- High Dynamic Range
- High Linearity and Low Noise Performance
- Broadband Gain Performance over Wide Frequency Range
- MTTF Values > 1000 Years @ 85°C

Features

- Broadband
- Low Noise
- Single Voltage Supply
- Internally Matched to 50 Ohm
- Lead-free/RoHS-Compliant/Green Packages

Applications

- Wireless Infrastructure Equipment – CDMA, W-CDMA, GSM/GPRS/EDGE
- 2G and 3G Repeaters
- WLAN and ISM
- RFID



Part Number	Frequency Range (MHz)	Gain (dB)	NF (dB)	P1dB (dBm)	OIP3 (dBm)	V_{dd} (V)	I_{dd} (mA)	Package Style
AG101	60 - 3000	14	2.4	15	32	4.5	50	SOT-89
AG102	60 - 3000	14	2.4	18	36	4.5	70	SOT-89
AG103	50 - 870	13	3.0	20	36	5	150	SOT-89
AM1	60 - 3000	14	2.4	18	39	4.5	78	SOT-89
AH1	250 - 4000	14	3.2	21.5	42	5	150	SOT-89
AH1-1	250 - 4000	14	3.2	21.5	42	5	150	SOT-89
AH3	50 - 870	13	3.0	20	41	5	150	SOT-89
AH31[1]	50 - 1000	19	2.2	22	42	5	150	SOT-89
AH11	150 - 3000	12	4.1	24	46	5	300	SOIC-8
AH101	50 - 1500	13.5	3.5	26.5	47	9	200	SOT-89
AH102A	350 - 3000	14.5	3.1	27	46	9	200	SOT-89
AH103A	60 - 2700	29	2.5	27	46	4.5; 9	275	SOIC-8
AH202	50 - 2200	17	2.5	30	47	11	330	6x6 mm QFN28

[1] Performance shown at 240 MHz; all others at 900 MHz.

High Linearity InGaP HBT Driver Amplifiers

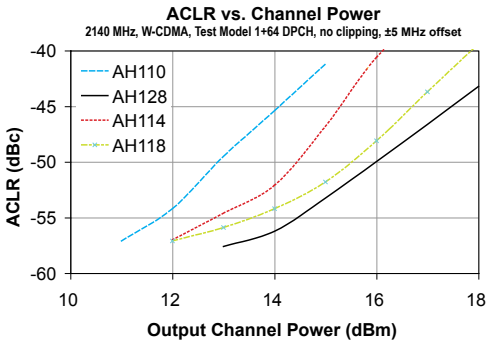
TriQuint-WJ's high linearity InGaP HBT driver amplifiers are single stage devices that operate off a single supply. These products have high OIP3 and P1dB parameters to meet requirements for gain block or pre-driver stage in base station and other wireless infrastructure equipment designs. The InGaP HBT amplifiers also have excellent linearity performance to meet system requirements.

Advantages

- High Dynamic Range
- Exceptional Linearity Performance
- High Level of Performance over Broad Frequency Range
- Suitable for Applications that Require Medium Power
- Active Bias Circuitry to Maintain High Linearity Performance over Temperature

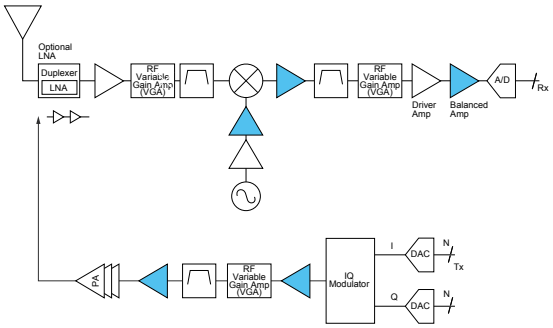
Features

- 60 – 3500 MHz
- Single Voltage Supply
- >35 dBm OIP3 Performance
- Adjustable Bias Current Capability
- Lead-free/RoHS-Compliant/Green Packages



Applications

- Pre-driver/Driver Amplifier in Wireless Infrastructure Equipment
- Final Stage Amplifiers for Ultra-Small Repeaters
- Defense/Homeland Security
- RFID



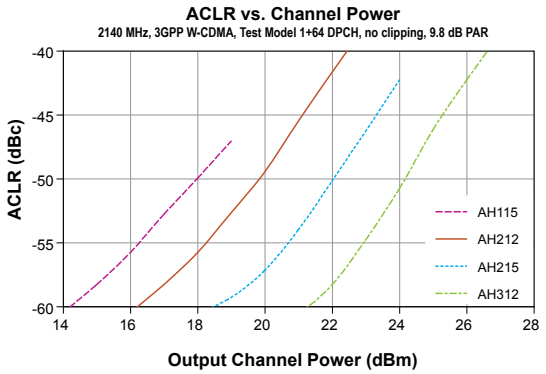
Part Number	Frequency Range (MHz)	Gain (dB)	NF (dB)	P1dB (dBm)	OIP3 (dBm)	V_{cc} (V)	I_{cc} (mA)	Package Style
AH110	50 - 2000	20.5	5	23	39	8	100	SOT-89
AH114	60 - 2500	19	5	24	40	5	150	SOT-89
AH118	60 - 3500	20.5	4	24	40	5	160	SOT-89
AH128*	60 - 3500	19.5	4.5	25	43	5	120	SOT-89
ECG015[1]	1800 - 2500	16.5	5	24	41	8	100	SOT-89
SCG015[1]	1800 - 2500	16.5	5	24	41	8	100	SOT-89
EC1089	10 - 2500	15.5	5.1	24	40	5	160	SOT-89
ECG012	60 - 2500	14	4.7	20	35	3	100	SOT-89

[1] Performance shown at 1.9 GHz, all others at 0.9 GHz.

NOTES: ***= New**

5V High Linearity InGaP HBT Intermediate Power Amplifiers

TriQuint-WJ's 5V high linearity InGaP HBT intermediate power amplifiers are ideal for gain block and pre-driver stage applications that need P1dB of 1/2W to 2W. These power amplifiers are able to deliver higher power while maintaining superior ACLR performance. The integrated active bias circuitry in the devices enable excellent linearity performance over temperature with little variance. They are suitable for current generation wireless infrastructure system and next generation platforms such as W-CDMA, WiBro, WiMAX, TD-SCDMA, and LTE where higher power is required.



Advantages

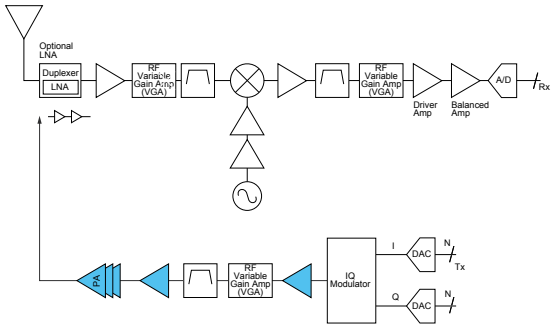
- High Dynamic Range
- Superior Linearity Performance
- Superior Performance for Various Narrow Band Applications
- Supports Applications that Require up to 2W of P1dB Power
- Active Bias Circuitry to Maintain High Linearity Performance over Temperature

Features

- 400 – 2700 MHz
- Single Voltage Supply: +5V
- Internal Active Bias Circuitry
- Lead-free/RoHS-Compliant/Green Packages

Applications

- Wireless Infrastructure Equipment
- WiBro/WiMAX
- WLAN, ISM
- 2G/3G Repeaters
- RFID



Part Number	Frequency Range (MHz)	Gain (dB)	NF (dB)	P1dB (dBm)	OIP3 (dBm)	V_{cc} (V)	I_{cc} (mA)	Package Style
AH115	1800 - 2300	14.5	6	28.5	44	5	250	SOIC-8
AH116	800 - 1000	17.5	7	28.7	43	5	250	SOIC-8
*AH125**	400 - 2300	19.5	6	28.5	47	5	160	SOT-89
AH212	1800 - 2700	27	5.5	30.5	46.5	5	400	SOIC-8 / 4x5 mm DFN12
AH215	400 - 2300	18	7	31	46	5	450	SOIC-8
*AH225**	400 - 2300	20	7	31.5	50	5	300	SOIC-8
AH312	400 - 2300	18	8	33	49	5	800	SOIC-8
*AH322**	400 - 2300	19	8	33.5	49	5	500	SOIC-8
*AH420**	800 - 2900	18	7	35.5	51	5	800	4x5 mm DFN12
ECP050	1800 - 2300	14.5	6	28.5	44	5	250	4x4 mm QFN16
ECP052	800 - 1000	17.5	7	28.7	43	5	250	4x4 mm QFN16
ECP100	400 - 2300	18	7	31	46	5	450	4x4 mm QFN16
ECP200	400 - 2300	18	8	33	49	5	800	4x4 mm QFN16

AH115, AH125, AH212, ECP050 data at 1.96 GHz. All other devices at 0.9GHz.

NOTES: *** = New**

+28V InGaP HBT Power Amplifiers

The AP60x series are surface-mount plastic-overmolded power amplifiers targeted for use as pre-drivers for HPA applications. The products, employing TriQuint-WJ's proprietary 28V InGaP HBT process, offer market-leading backoff linearity performance. "Class A" linearity performance is achieved concurrently with high efficiency performance. The devices also feature the integration of internal active biasing to offer compact solutions for a multitude of applications.

Advantages

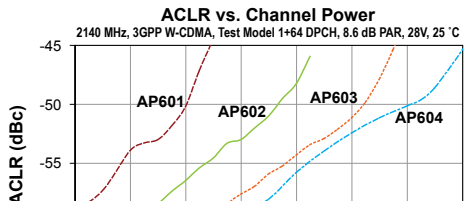
- Active Bias Circuitry
- Superior Backoff Linearity Performance

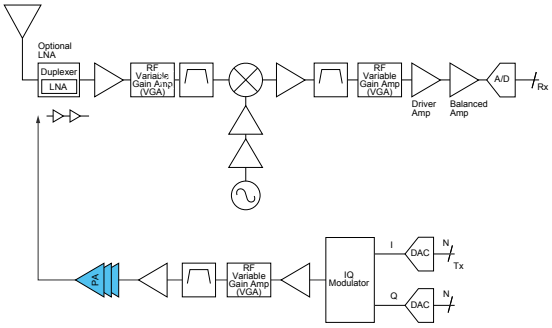
Features

- 800 – 2350 MHz
- Operates of 28V Supply on HPAs
- High Efficiency Performance
- Bias Adjustable
- Able to handle 7:1 VSWR @ 28V, 2.14 GHz near P1dB
- Lead-free/RoHS-Compliant/Green Package

Applications

- Wireless Infrastructure Equipment
- Pre-Driver and Driver Stage in HPAs
- Driver and Final Stage in Repeaters





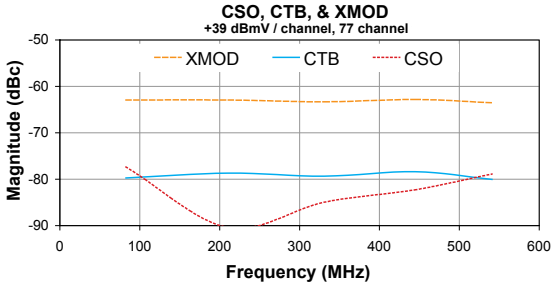
Part Number	Frequency Range (MHz)	Frequency (MHz)	Modulation	Gain (dB)	P1dB (dBm)	Average Pout (dBm)	ACLR[1] (dBc)	Efficiency (%)	IMD3[2] (dBc)	V_{cc} (V)	I_{cq} (mA)	Package Style
AP601	800 - 2350	940	W-CDMA	15.8	32.5	24	-50	17	-54	28	40	5x6 mm DFN14
		1960	W-CDMA	15	32.7	24	-49	17	-62	28	40	5x6 mm DFN14
		2140	W-CDMA	13.5	32.5	24	-51	17	-57	28	40	5x6 mm DFN14
AP602	800 - 2350	940	W-CDMA	15.5	35.7	27	-47	17	-62	28	80	5x6 mm DFN14
		1960	W-CDMA	14.5	35.5	27	-50	17	-51	28	80	5x6 mm DFN14
		2015	3c TD-SCDMA	13.7	36	23	-50	4	-71	28	100	5x6 mm DFN14
		2140	W-CDMA	13	35.7	27	-52	15.7	-47	28	80	5x6 mm DFN14
AP603	800 - 2350	940	W-CDMA	17	38.5	30	-52	16.6	-63	28	160	5x6 mm DFN14
		1960	W-CDMA	12	38.5	30	-49	14	-52	28	160	5x6 mm DFN14
		2140	W-CDMA	11.8	38.2	30	-50	14.6	-51	28	160	5x6 mm DFN14
AP604A*	700 - 2350	940	W-CDMA	16	42	33	-52	14	-48	28	320	TO-272 10pin
		2140	W-CDMA	13	40.5	33	-48	12.4	50	28	410	TO-272 10pin
AP631*	800 - 2350	940	W-CDMA	31	36	27	-52	11	-	28	135	5x6 mm DFN14
		1960	W-CDMA	28	36	27	-48	9	-	28	135	5x6 mm DFN14
		2015	3c TD-SCDMA	23	36	23.5	-50	5	-	28	135	5x6 mm DFN14
		2140	W-CDMA	23.7	36	27	-52	9	-	28	135	5x6 mm DFN14
AP632*	800 - 2350	940	W-CDMA	30	38.5	30	-50	11.5	-	28	240	5x6 mm DFN14
		1960	W-CDMA	25	38.5	30	-50	8	-	28	280	5x6 mm DFN14
		2140	W-CDMA	23.4	38.5	30	-48	10	-	28	280	5x6 mm DFN14

[1] WCDMA 3GPP Test Model 1+64DPCH, 65% clipping, 8.6 dB PAR @ 0.01% probability
[2] Characterized at the PEP of +24, +27, +30, and +33 dBm for the AP601, AP602, AP603, and AP604A, respectively.

NOTES: ***= New**

CATV Amplifiers

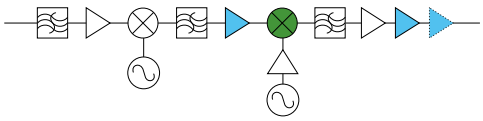
The AH2, AH22, and AG606 are general purpose amplifiers that are very well-suited for cable TV applications requiring gain flatness, high linearity, and wide bandwidth. Designed for 75 Ohm systems, these devices can operate from a single supply voltage and manufactured using TriQuint-WJ's highly reliable GaAs MESFET process. These products offer low noise performance and a high dynamic range. Other applications suitable for these products are cable modem and laser diode drivers. In addition, TriQuint-WJ has a wide variety of products that can be used for CATV transmission, headend, or STB applications.



AH22S CTB, XMOD, CSO vs. Frequency

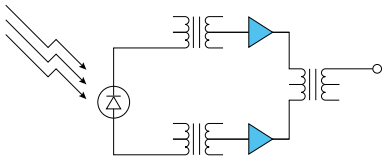
Advantages

- High Dynamic Range
- Low Noise Figure
- Excellent Gain Flatness, Linearity and Broadband Performance
- Designed for 75 Ohm Systems
- MTTF Values > 100 Years @ 85°C
- Able to Operate over a Wide Frequency Range and Ideal for Broadband Applications



Features

- 50 – 1000 MHz
- Single Voltage Supply: +5V or +7V
- Low Noise
- Lead-free/RoHS-Compliant/Green Packages



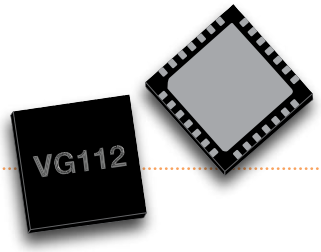
Applications

- CATV/DBS
- Cable Modem
- Laser Diode Driver

Part Number	Frequency Range (MHz)	Gain (dB)	NF (dB)	P1dB (dBm)	OIP2/3 (dBm)	V_d (V)	I_d (mA)	Pout (dBmV/ch, 77ch)	CSO/CTB (dBc)	Config	Package Style
AG101	60 - 3000	14	2.4	15	45 / 32	4.5	50	30	-62 / -73	SE	SOT-89
AG604	DC - 2700	18	3.5	19	50 / 33	>6	75	25	-71 / -76	SE	SOT-86 / SOT-89
AG606[1]	50 - 1000	13.5	4.5	20	73 / 37	>7	165	34	-80 / -68	PP	SOIC-8
AH101	50 - 1500	10.4	5.3	30	80 / 50	9	400	42	-70 / -68	PP	SOT-89
AH2	50 - 1000	14.8	3.5	20	52 / 40	5	150	34	-48 / -71	SE	SOT-89
AH22S[1]	50 - 1000	11.1	4.5	25.5	77 / 43	5	320	39	-77 / -74	PP	SOIC-8
AM1	60 - 3000	10.0	2.4	21	70 / 39	4.5	150	32	-80 / -82	PP	SOT-89
FP1189	50 - 4000	12.4	2.7	27	62 / 39	8	200	38	-74 / -68	PP	SOT-89

[1] All specs are for the devices on application boards in a push-pull configuration, including coupler and other losses as realized in actual applications. Intrinsic device gain is higher than listed within the application circuit.
SE: Single-Ended; PP: Push-Pull

Variable Gain Amplifiers



TriQuint-WJ's VG series are high-performance variable gain amplifiers, ideal for IF and RF frequencies. These devices have high dynamic range, constant OIP3, and P1dB performance over attenuation range. The VG product family offers excellent gain, linearity, and gain variation range. These devices are housed in low-cost SMT package.

Advantages

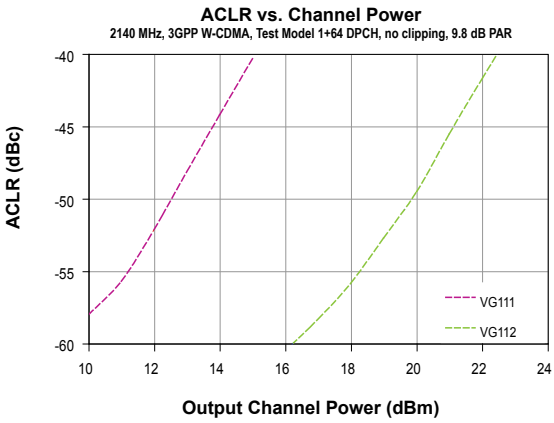
- High Dynamic Range
- Exceptional Linearity Performance
- Excellent Gain Variation Range, Controlled by 0-4.5V
- Suitable for Applications Requiring Medium Power

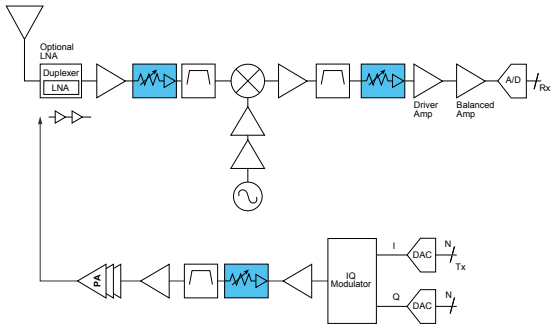
Features

- Constant IP3 and P1dB over Attenuation Range
- +5V Single Voltage Supply
- Lead-free/RoHS-Compliant Packages – SMT type
- MTTF > 100 Years @ 85°C

Applications

- Base Station Transmitters and Power Amplifiers – CDMA, W-CDMA, GSM/GPRS/EDGE
- 2G and 3G Repeaters





Part Number	Frequency Range (MHz)	Attenuation Range (dB)	Gain (dB)	NF (dB)	P1dB (dBm)	OIP3 (dBm)	I_{dd} (mA)	V_{ctrl} (V)	V_{dd} (V)	Package Style
VG025[1]	50 - 2200	20	15.5	4.5	22	42	150	0 - 4.5	5	4x4 mm QFN16
VG101[2]	750 - 1000	29	16	3.5	22	40	150	0 - 4.5	5	6x6 mm QFN28
VG111[3]	1800 - 2700	27	13.5	4.5	22	39.5	150	0 - 4.5	5	6x6 mm QFN28
VG112[3]	1800 - 2200	28	23	8.0	30	46	415	0 - 4.5	5	6x6 mm QFN28

[1] Parameters are shown for performance at 240 MHz in a tuned circuit.
[2] Parameters are shown for performance at 900 MHz in a tuned circuit.
[3] Parameters are shown for performance at 2140 MHz in a tuned circuit.

GaAs MESFETs

TriQuint-WJ has a family of discrete GaAs MESFET devices that meet the market's requirement for wireless transmitter and receiver applications. The FH series of products provide exceptional performance and high reliability to ensure the highest level of confidence for designers. These devices are packaged in lead-free/RoHS compliant packages and exhibit very low noise and high output IP3 to satisfy applications that require high linearity performance and dynamic range. This product family is suitable for wireless technologies such as GSM, GPRS, EDGE, CDMA, W-CDMA, and broadband applications for CATV.

Advantages

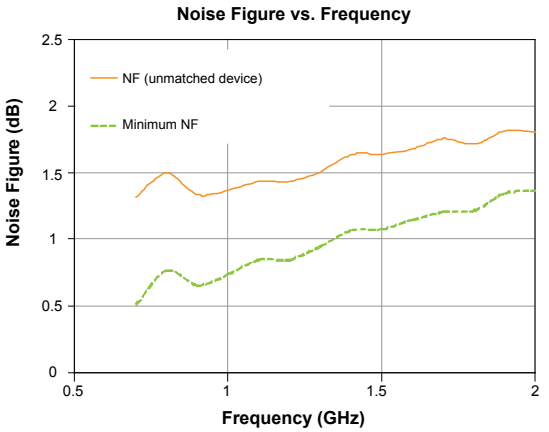
- High Dynamic Range
- Low Noise Figure
- High Output IP3 Performance
- MTTF Values > 100 Years @ 85°C
- Able to Operate over a Wide Frequency Range and can Address both Narrow and Broadband Applications

Features

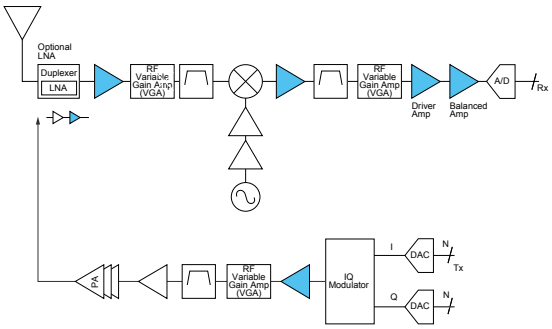
- 50 – 4000MHz
- Low Noise
- Lead-free/RoHS-Compliant/Green Packages

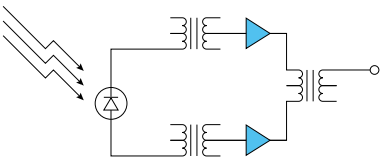
Applications

- Wireless Infrastructure Equipment
- CATV/DBS
- WLAN, ISM
- Defense and Homeland Security
- LNA Selections for Receivers



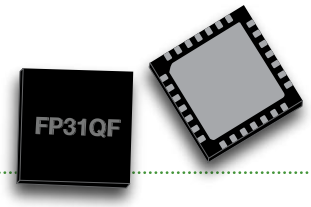
FH1 Noise vs. Frequency



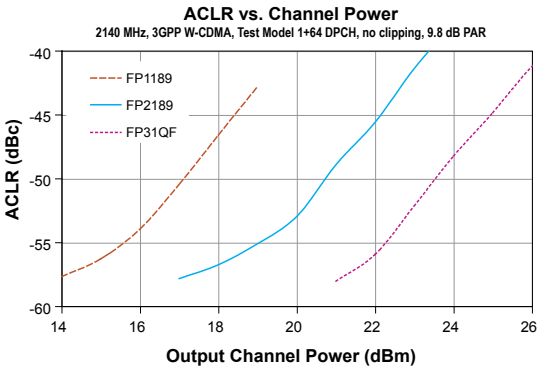


Part Number	Frequency Range (MHz)	I_{dss} (mA)	G_{msg} (dB)	G_{ss} (dB)	NF (dB)	P1dB (dBm)	OIP3 (dBm)	V_{dd} (V)	Package Style
FH1	50 - 4000	140	23	19	2.0	21	42	5	SOT-89
FH101	50 - 4000	140	23	19	2.0	18	36	5	SOT-89

GaAs HFETs



TriQuint-WJ's FP product family of GaAs Heterostructure-FET (HFET) devices are high efficiency, high power, high gain, and high quality amplifiers that are ideal for driver stage applications in wireless infrastructure equipment. These high reliability products achieve 0.5W to 2W of P1dB power and are housed in a small form factor SOT-89 / 28-lead QFN packages to optimize thermal efficiency. The FP amplifiers are highly efficient to reduce current consumption translating into less power dissipated and lower energy costs. Similar to the FH family of products, the FP products can also be used for CATV applications.



Advantages

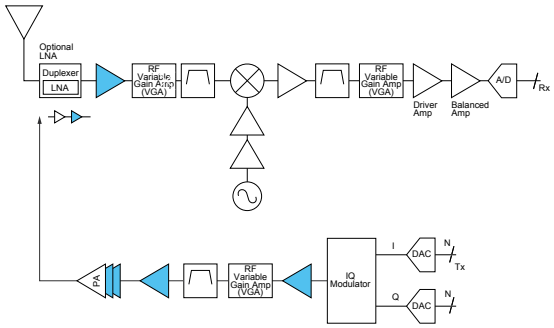
- High Efficiency to Minimize Current Consumption and Power Dissipated
- High Gain
- High Output IP3 Performance
- MTTF Values > 100 Years @ 85°C
- Able to Operate over a Wide Frequency Range and can Address both Narrow and Broadband Applications

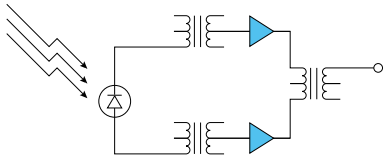
Features

- 50 – 4000 MHz
- High Drain Efficiency
- High Output IP3
- Lead-free/RoHS-Compliant/Green Packages

Applications

- Wireless Infrastructure Equipment
- CATV/DBS
- WLAN, ISM
- Defense and Homeland Security





Part Number	Frequency Range (MHz)	I_{dss} (mA)	GMO (mS)	V_p (V)	G_{msg} (dB)	G_{ss} (dB)	NF (dB)	P1dB (dBm)	OIP3 (dBm)	Package Style
FP1189	50-4000	290	155	-2.1	24	19	2.7	27	40	SOT-89
FP2189	50-4000	615	280	-2.1	24	18	4.5	30	44	SOT-89
FP31QF	50-4000	1170	590	-2.0	24	18	3.5	34	46	6X6 mm QFN28

Mixers

TriQuint-WJ offers an excellent portfolio for mixers, from a variety of different technologies, suitable for various applications. These technologies range from FETs to MMICs to diode mixers, thereby offering broadband, high IP3, and superior isolation performance.

Advantages

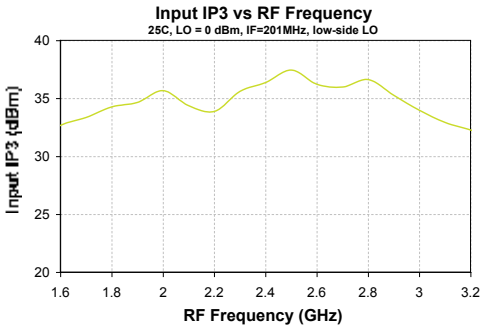
- Superior IP3 Performance in Order to Handle High Peak to Average Signal Ratios
- Excellent Isolation Performance
- Integrated LO Amp

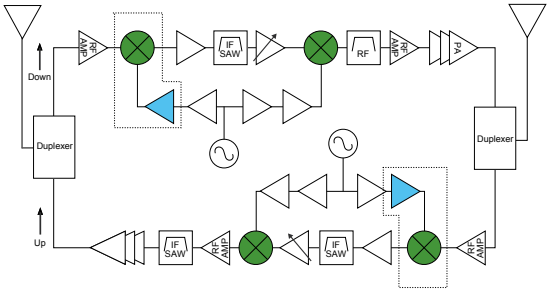
Features

- Broadband, up to 2.7 GHz
- High IP3 Performance
- Low Conversion Loss
- RoHS-Compliant SMT Packages

Applications

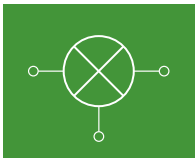
- Base Transceiver Stations – CDMA, W-CDMA, GSM/GPRS/EDGE
- 2G and 3G Repeaters





MMIC Mixers

Part Number	Frequency Range (MHz) RF	IF	LO	LO Power (dBm)	Conversion Loss (dB)	Input IP3 (dBm)	Input P1dB (dBm)	L-I Isolation (dB)	Package Style
MH1A	1700 - 2000	50 - 250	1450 - 1950	17	8.3	35	20	38	SOIC-8
MH103A	1900 - 2700	50 - 300	1600 - 2650	17	8.2	34	16	37	SOIC-8
MH203A	800 - 960	70 - 350	1000 - 1310	17	7.3	34	17.5	60	SOIC-8
MH205A	800 - 960	70 -120	700 - 890	17	7	35	18	55	SOIC-8



MMIC Mixers w/LO Amp

Part Number	Frequency Range (MHz) RF	IF	LO	LO Power (dBm)	Conversion Loss (dB)	Input IP3 (dBm)	Input P1dB (dBm)	Current (mA)	Voltage (V)	Package Style
ML401	1700 - 2200	50 - 250	1550 - 2150	0	8.2	30	20	105	5	SOIC-8
ML501	1900 - 2700	50 - 500	1600 - 2500	0	8.1	30	20	110	5	SOIC-8
*ML485**	1600 - 3200	50 - 300	1400 - 3500	0	8.5	35	20	40	5	MSOP-8

NOTES: *** = New***

High Intercept FET Mixers

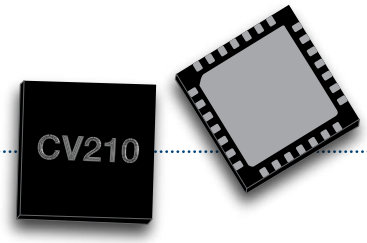
Part Number	Frequency Range (MHz) RF	IF	LO	LO Power (dBm)	Conversion Loss (dB)	Input IP3 (dBm)	Input P1dB (dBm)	L-R Isolation (dB)	Package Style
HMJ1	800 - 1000	20 - 100	700 - 980	17	7.7	39	23	29	J-PAK-18
HMJ5	40 - 1000	5 - 250	30 - 900	17	7.5	35	23	28	J-PAK-22
HMJ7	1000 - 2000	10 - 1000	1000 - 2000	21	8.5	34	23	24	J-PAK-22
HMJ7-1	1000 - 2000	10 - 1000	1000 - 2000	24	8.5	34	23	24	J-PAK-22

Diode Mixers

Part Number	Frequency Range (MHz) RF	IF	LO	LO Power (dBm)	Conversion Loss (dB)	Input IP3 (dBm)	L-R Isolation (dB)	Package Style
SME1400B-10	1 - 2200	1 - 2000	1 - 2200	10	6.2	19	35	S-PAK-3
SME1400B-13	1 - 2200	1 - 2000	1 - 2200	13	6.5	22	30	S-PAK-3
SME1400B-17	1 - 2200	1 - 2000	1 - 2200	17	6.5	27	30	S-PAK-3
WJZ1000H	1 - 2700	1 - 2000	1 - 2700	10	6.4	20	39	S-PAK-3
WJZ1010H	1 - 2500	1 - 2000	1 - 2500	13	6.5	22	38	S-PAK-3
WJZ1020H	1 - 2700	1 - 2000	1 - 2700	17	6.3	28	38	S-PAK-3
WJZ1030H	1 - 2500	1 - 2500	1 - 2500	17	6.7	27.5	42	S-PAK-3
WJZ1050H	10 - 3000	10 - 3000	10 - 3000	17	6.5	24	39	S-PAK-3
WJZ1070H	10 - 1000	10 - 1000	10 - 1000	7	7.3	17	55	S-PAK-3
WJZ2020H	800 - 1000	20 - 100	700 - 900	17	6.2	29	36	S-PAK-3
WJZ3000	10 - 1500	10 - 1500	10 - 1500	13	7.2	20	44	MS-PAK-6
WJZ3010	10 - 1000	10 - 1000	10 - 1000	7	7.0	19	53	MS-PAK-6
WJZ3020	10 - 250	10 - 250	10 - 250	7	6.9	19	64	MS-PAK-6
WJZ3030	10 - 500	10 - 500	10 - 500	7	6.8	20	60	MS-PAK-6

RF↔IF

Frequency Converters



TriQuint-WJ's frequency converters, CV series, are high-performance and highly integrated Multi-Chip Modules (MCMs) that combine RF, IF, LO amplifiers and mixers. TriQuint-WJ offers single-branch and dual-branch converters to suit a variety of applications. The CV product family is housed in a 6x6 mm QFN package.

Advantages

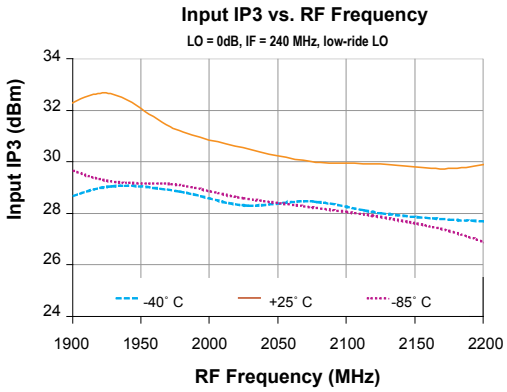
- Lower Design and Manufacturing Cost
- Verified and Optimized Solution
- Compact PCB Footprint

Features

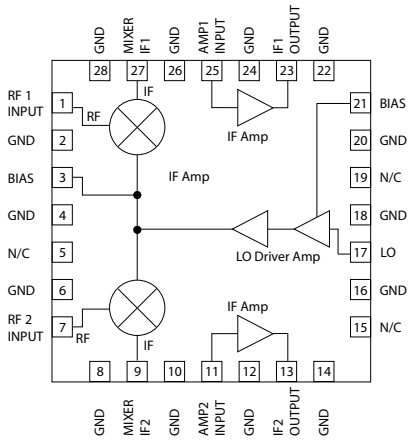
- High Dynamic Range
- Broadband
- Low Noise
- Single Voltage Supply
- Provision for External SAW Filters

Applications

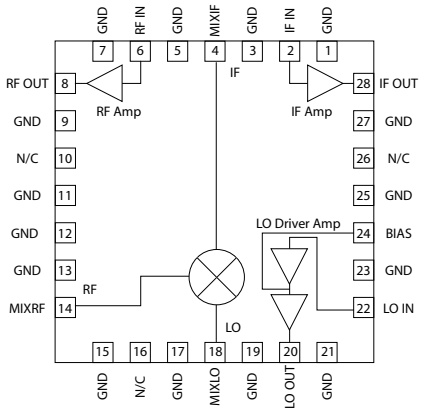
- Base Transceiver Stations – CDMA, W-CDMA, GSM/GPRS/EDGE
- 2G and 3G Repeaters
- Digital Pre-Distortion (DPD)



CV211-2A IIP3 Performance



CV2xx Dual-Branch Converter Functional Diagram



CV1xx Single-Branch Converter Functional Diagram

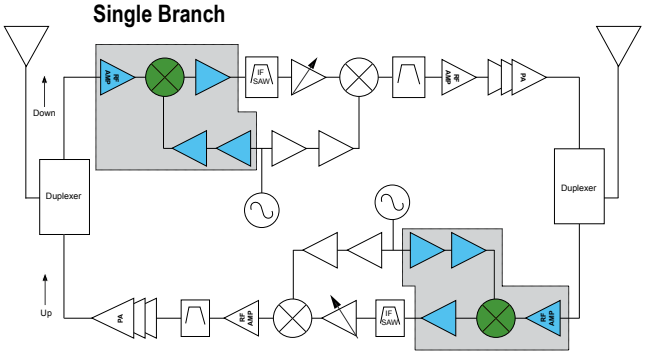
Single Branch Converters

Part Number	Frequency Range (MHz) RF	IF	LO	LO Power (dBm)	Conversion Gain (dB)	Output IP3 (dBm)	Output P1dB (dBm)	NF (dB)	Bias (V)	Current (mA)	Package Style
CV110-1A	800 - 915	65 - 120	680 - 850	0	22	37	20	5.0	5	360	6x6 mm QFN28
CV110-2A	800 - 960	200 - 250	550 - 760	0	22	37	20	5.0	5	360	6x6 mm QFN28
CV110-3A	800 - 960	200 - 350	1000 - 1310	0	22	37	20	5.0	5	360	6x6 mm QFN28
CV111-1A	1700 - 2000	65 - 250	1450 - 1935	0	21	38	21	5.3	5	360	6x6 mm QFN28
CV111-3A	1900 - 2200	65 - 300	1600 - 2135	0	21	38	21	5.3	5	360	6x6 mm QFN28

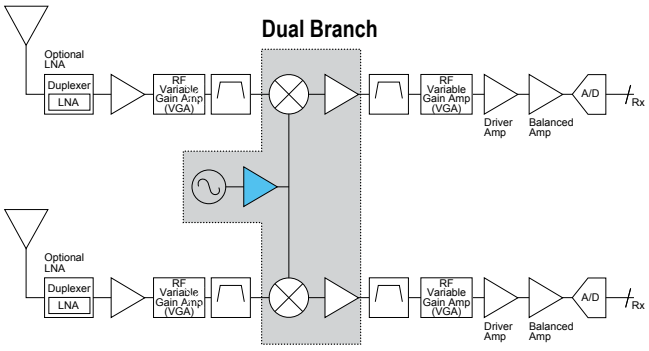
Dual Branch Converters

Part Number	Frequency Range (MHz) RF	IF	LO	LO Power (dBm)	Conversion Gain (dB)	Input IP3 (dBm)	Input P1dB (dBm)	NF (dB)	Bias (V)	Current (mA)	Package Style
CV210-1A	800 - 915	65 - 120	680 - 850	0	10	30	11.5	11	5	385	6x6 mm QFN28
CV210-2A	800 - 960	200 - 250	550 - 760	0	10	29.5	12	10	5	360	6x6 mm QFN28
CV210-3A	800 - 960	200 - 300	1000 - 1310	0	10.5	29	9.5	11.5	5	390	6x6 mm QFN28
CV211-1A	1700 - 2000	65 - 250	1450 - 1935	0	10	29.5	10	11	5	380	6x6 mm QFN28
CV211-2A	1900 - 2700	65 - 300	1600 - 2135	0	10	30	12.5	11	5	380	6x6 mm QFN28
CV221-2A	1900 - 2700	65 - 300	1600 - 2335	0	9	28	9	11	5	315	6x6 mm QFN28

Single Branch

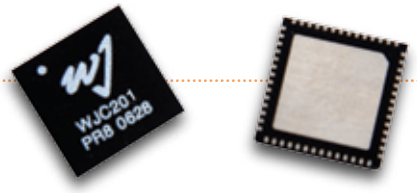


Dual Branch

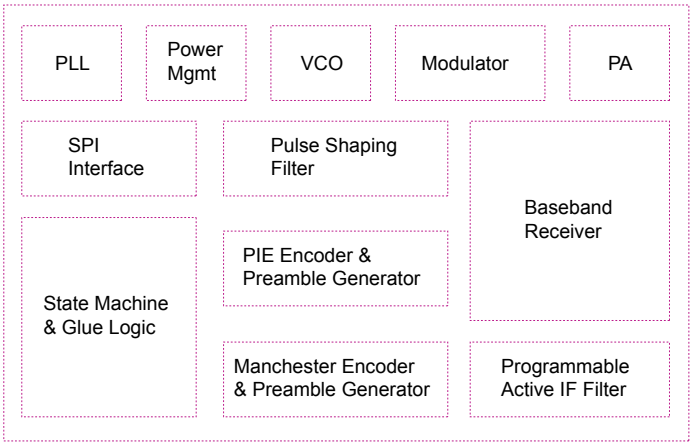


RFID

RFID UHF Gen2 Reader Chipset



The WJC201 is the industry's first highly integrated multi-protocol UHF RFID reader chipset that is fully compliant with the ISO 18000-6C (Gen2) and ISO 18000-6B standards. The chipset comprises a WJC201 reader chip and an ARM 7 microprocessor with the option for other types of processors. Additionally, the WJC201 has an integrated RF analog front-end, base band signal processing, a state-of-the-art power amplifier with maximum output power of 27dBm, and a wide-band VCO with worldwide RFID coverage (860 – 960 MHz). The WJC201 also extends an industry leading powe-saving option, and a cutting-edge receiver boasting sensitivity well over (–90) dBm making it an ideal solution for integration into mobile devices and RFID readers.



WJC200 Building Blocks

Frost & Sullivan
Product Innovation of 2007

Advantages

- Worldwide UHF RFID Coverage (860 – 960 MHz)
- Multi-protocol Support ISO 18000-6C (Gen2) and ISO 18000-6B
- Industry's Leading Power-Saving Options to Extend Mobile Battery Life
- Industry's Leading Power Dissipation ~ 1.27W at 24dBm Output Power
- State-of-the-art Receiver with Sensitivity of over –90dBm*

Features

- Fully Integrated PA with Maximum Output Power of (1/2 W) 27dBm
  - Option for External PA with Output Power of up to (1W) 30dBm
- Fully Integrated VCO Covering 860 – 960 MHz
- Programmable Digital Filter Allowing Configuration of Different Data Rates
  - Support Data Rate from 5 – 320 Kbps
  - Option for an External Filter Allowing up to 640 Kbps
- Support Gen2 Dense Reader Environment (DRE)
- 56-lead QFN Packaging

Applications

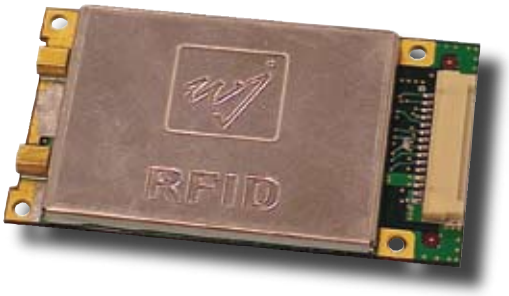
- Item Level Tracking Devices
- Handheld RFID Readers
- RFID Readers
- Forklift Readers
- Rugged Handheld PCs and PDA
- UHF Reader Modules, UHF PC Card, UHF Compact Flash Module, Custom Small Form Factor, and Cost Competitive Modules
- RFID Printers

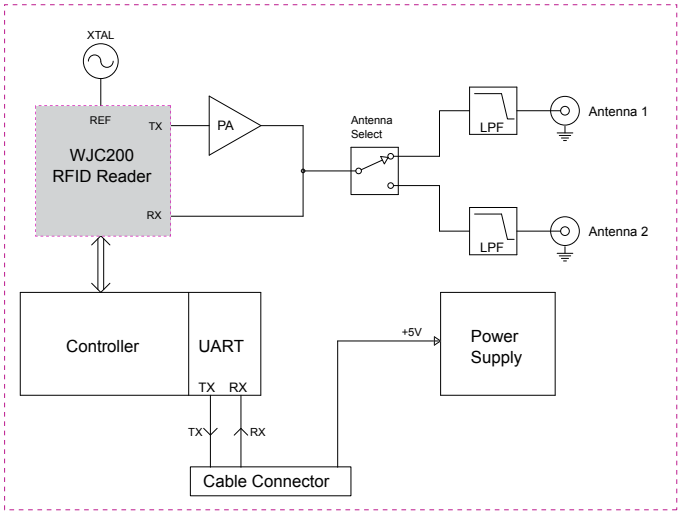
* 40 KBps FMO (–92) dBm receiver sensitivity

Next Generation RFID UHF Module

WJC200 Reader Chipset Enabled

The WJM series of UHF RFID reader modules are designed to enable OEMs, VARs, and System Integrators to add RFID UHF Gen2 capability to existing and new handheld readers, printers, and forklift readers. The WJM modules are cost-effective, small-form-factor, and designed with the WJC200 Gen2 reader chipset. At approximately the size of business card, the WJM modules come in two different models: **WJM3000**, high power (+30dBm) module; **WJM1000**, low power (+24dBm) module.





WJM Series Block Diagram

Advantages

- Cost Competitive
- Effective Power Management
- Superior Performance

Features

WJM3000 (High Power Module)

- Designed with WJC200 Reader Chipset
- ISO 18000-6C (Gen2) and ISO 18000-6B
- Dynamic RF Output Range +18dBm to +30dBm
- Power Saving Modes
- Small Form Factor (size of a typical business card)
- Dense Reader Environment

WJM1000 (Low Power Module)

- Designed with WJC200 Reader Chipset
- ISO 18000-6C (Gen2) and ISO 18000-6B
- Dynamic RF Output Range +10dBm to +24dBm
- Low Power Operation
- Small Form Factor (size of a typical business card)
- Special Integrated Commands for Printer Applications
- Multiple Reader Environment (MRE)

Applications

WJM3000 (High Power Module)

- Handheld Readers
- Forklift Readers
- Low Cost Readers

WJM1000 (Low Power Module)

- POS
- Printers
- Handheld
- Access Control

Frost & Sullivan
Product Innovation of 2007

RFID

Multi-Protocol RFID UHF PCMCIA Module

The WJR series of reader module are designed to enable OEMs, VARs, and System Integrators to add RFID UHF capability to handheld readers, printers, and forklift readers.

Advantages

- Worldwide Coverage
- Superior Performance
- Ease of Integration

Features

WJR7000 (for US and AP)

- FCC/ICC
- ISO 18000-6C (Gen 2), 0+
- Frequency 902 MHz – 928 MHz
- ½ W Minimal Gen 2 Dense Reader Environment (DRE) Capability
- Dynamic RF Output Power: 18dBm to 30dBm Range
- Higher Data Rate 40/240 KHz Miller
- 68-pin PCMCIA Type II PC Card Form Factor
- Serial Interface 3.3V CMOS Levels
- Two MMCX Antenna Ports

WJR7081 (for EU)

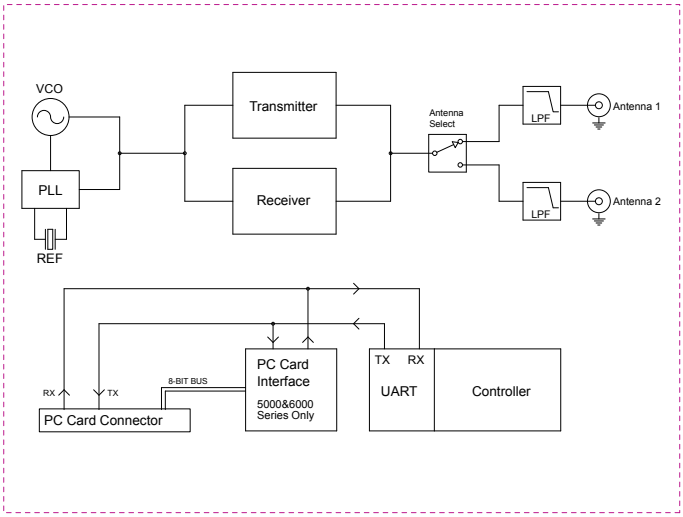
- EN 302 208, EN 300 220
- ISO 18000-6C (Gen 2), ISO 18000-6B
- Frequency 865 - 868 MHz, and 869.25 MHz
- Data Rate 40/100 KHz Miller, M=2
- 68-pin PCMCIA Type II PC Card Form Factor
- Serial Interface 3.3V CMOS Levels
- Two MMCX Antenna Ports

WJR7090 (for Korea)

- MIC
- ISO 18000-6C (Gen 2), ISO 18000-6B, and Class 1
- Frequency 910 MHz – 914 MHz
- Data Rate 40/40 KHz Miller, M=2
- 68-pin PCMCIA Type II PC Card Form Factor
- Serial Interface 3.3V CMOS Levels
- Two MMCX Antenna Ports

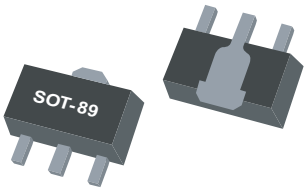
Applications

- Handheld Readers
- Forklift Readers
- PDA
- Printers
- Access Control
- Parking Applications

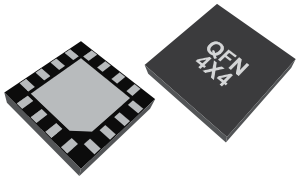


WJR Series Block Diagram

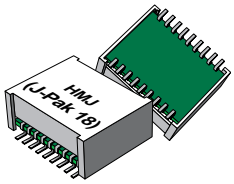
Package Information



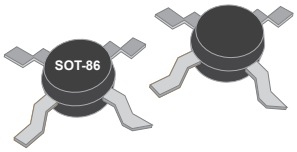
SOT-89



4x4 mm QFN16



11x13 mm J-Pak-18



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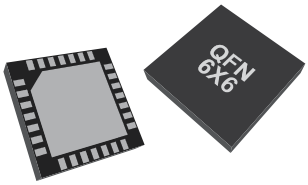
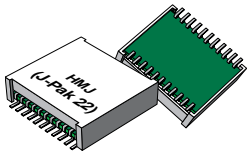
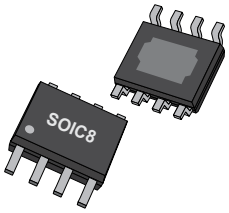


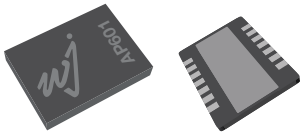
6x6 mm QFN36



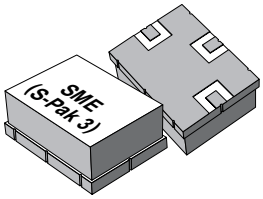
16x16 mm J-Pak-22



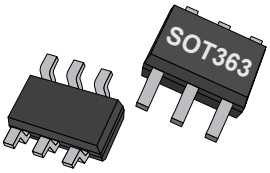
SOIC-8



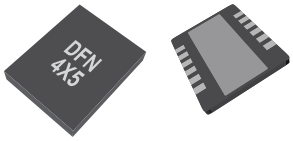
5x6 mm DFN14



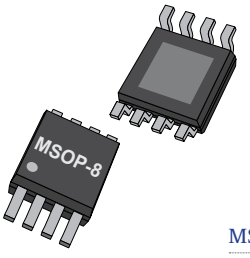
9x12 mm S-PAK-3



SOT-363



4x5 mm DFN12



MSOP-8

*Package images not drawn to scale

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