

Low Noise & Power Amplifiers

Frequency Multipliers

Mixers & Detectors

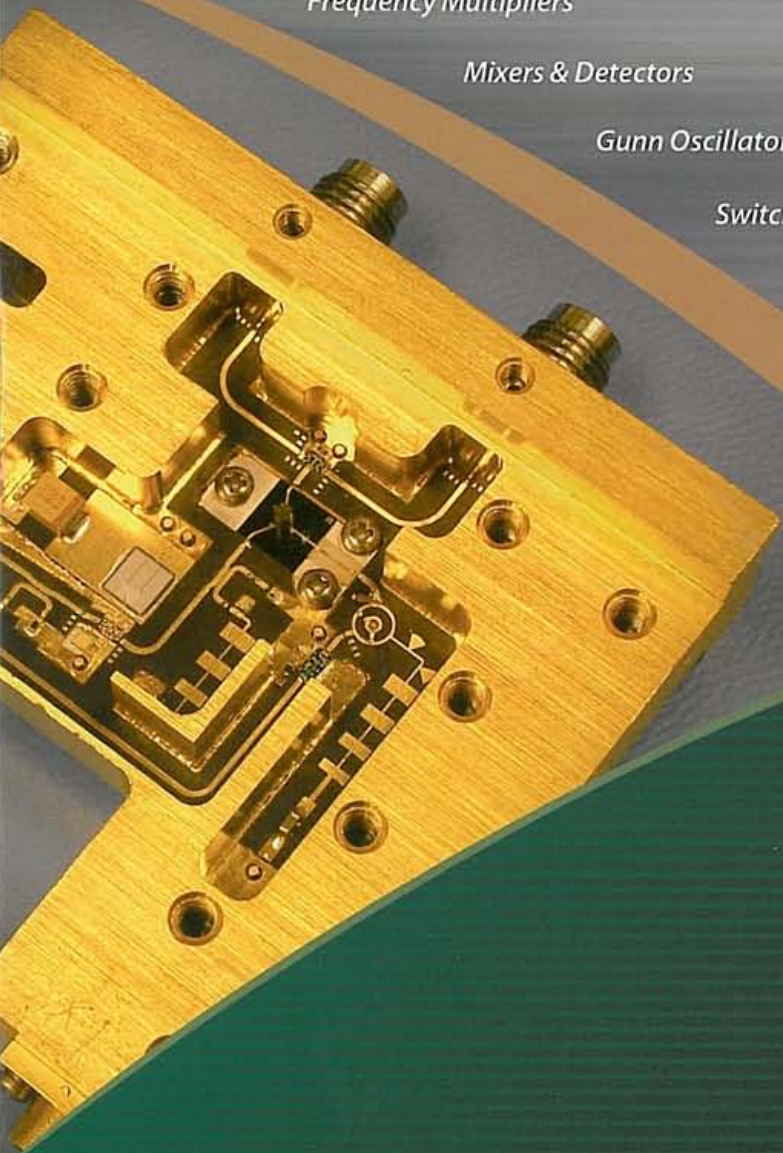
Gunn Oscillators & VCOs

Switches & Attenuators

Ferrite Devices

Custom Components & Subassemblies

Repair & Refurbishment Services



Millimeter Wave Components & Subsystems *Short Form Catalog*


RENAISSANCE
ELECTRONICS CORPORATION®

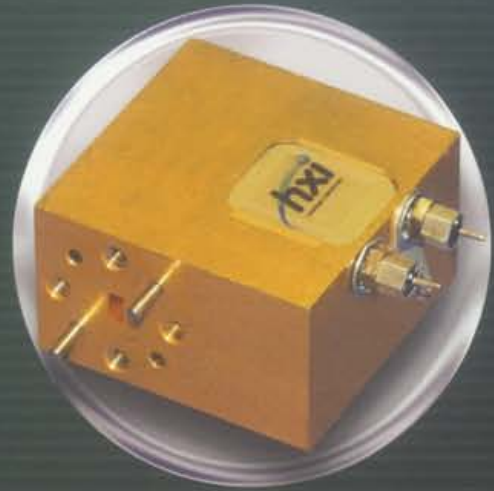
 **hxi** Millimeter Wave
Products
A Wholly-Owned Subsidiary of
Renaissance Electronics Corporation

Low Noise Amplifiers Power Amplifiers

Low Noise Amplifiers

- 18 GHz to 100 GHz
- Narrowband or broadband frequency coverage
- Coaxial and waveguide versions
- MMIC-Based

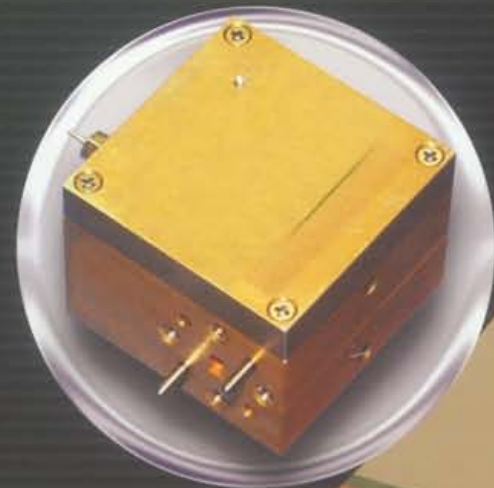
Model	Frequency Range	Noise Figure
HLNAK-XXX	21-25 GHz	2.2 dB typical
HLNAA-XXX	33-37 GHz	2.8 dB typical
HLNAV-XXX	57-63 GHz	4.0 dB typical
HLNAE-XXX	71-86 GHz	5.0 dB typical
HLNAW-XXX	92-96 GHz	5.5 dB typical



Power Amplifiers

- 18 GHz to 100 GHz
- Medium and high power
- Narrowband or broadband frequency coverage
- Coaxial and waveguide versions
- MMIC-Based

Model	Frequency Range	P1dB
HMPAK-XXX	21-25 GHz	+17 dBm typical
HMPAA-XXX	33-37 GHz	+17 dBm typical
HHPAA-XXX	33-37 GHz	>+30 dBm typical
HMPAV-XXX	55-65 GHz	+14 dBm typical
HHPAV-XXX	57-63 GHz	+22 dBm typical
HHPAW-XXX	92-96 GHz	+18 dBm typical



Mixers & Upconverters Detectors

Balanced Mixers

- 18 GHz to 100 GHz
- Narrowband or broadband frequency coverage
- Fixed or swept LO frequencies

Model	Frequency Range	Conversion Loss
HBM2803-XXX	33-37 GHz	6.0 dB typical
HBM1503-XXX	57-63 GHz	6.5 dB typical
HBM1003-XXX	92-96 GHz	7.0 dB typical



Balanced Upconverters

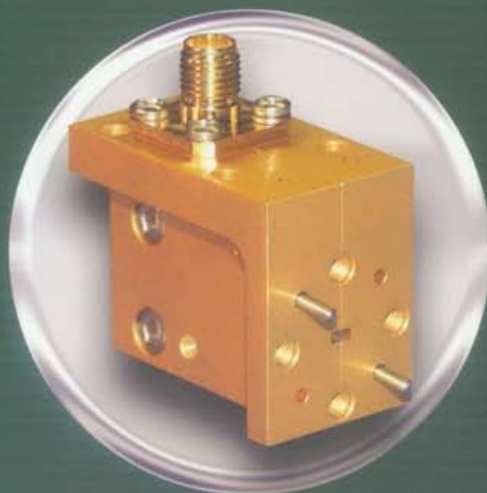
- 18 GHz to 100 GHz
- Narrowband or broadband frequency coverage
- Fixed or swept LO frequencies

Model	Frequency Range	Output Power
HBUC2805-XXX	33-37 GHz	+2 dBm typical
HBUC1505-XXX	57-63 GHz	+1 dBm typical
HBUC1005-XXX	92-96 GHz	0 dBm typical

Detectors

- 18 GHz to 100 GHz
- Full waveguide band frequency coverage
- Miniature designs available

Model	Frequency Range	Sensitivity
HFD28P	26.5-40.0 GHz	1000 mV/mW
HFD15P	50.0-75.0 GHz	600 mV/mW
HFD10P	75.0-110.0 GHz	300 mV/mW



Gunn Oscillators & VCOs Frequency Multipliers

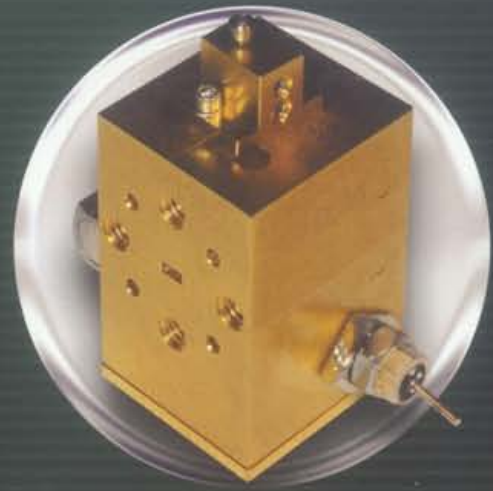
Gunn Oscillators & VCOs

- 7 GHz to 100 GHz models
- Up to 400 milliwatt output power
- Mechanical and varactor tuning available

Gunn Oscillator Model	Mechanical Tuning Range*	Output Power
HGM9.022690	8.75-9.25 GHz	+26 dBm
HGM22.522442	22.25-22.75 GHz	+24 dBm
HGM35.022328	34.75-35.25 GHz	+23 dBm
HGM60.021815	59.8-60.2 GHz	+18 dBm
HGM94.011610	93.8-94.2 GHz	+16 dBm

Gunn VCO Model	Varactor Tuning Range*	Output Power
HGV9.0012590	8.975-9.025 GHz	+25 dBm
HGV22.5012442	22.457-22.525 GHz	+24 dBm
HGV35.0012328	34.9725-35.025 GHz	+23 dBm
HGV60.0011915	59.975-60.025 GHz	+19 dBm
HGV94.0011610	93.975-94.025 GHz	+16 dBm

*Contact factory with specific requirements. Units with both mechanical and electrical tuning are available.

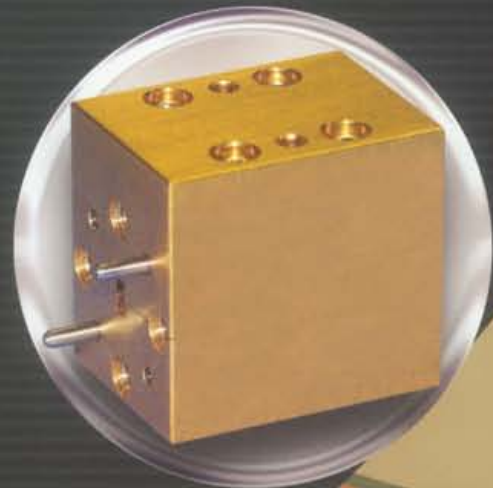


Frequency Multipliers

- 18 GHz to 140 GHz
- Active and passive designs
- Up to full band frequency coverage
- High output power available
- X2, X3 and higher order multipliers

Model	Mult. Factor	Frequency Range	Output Power
HMM2A*	X2	26.5-40.0 GHz	-2 dBm
HAFMA2-XXX	X2	33-37 GHz	+33 dBm
HAFMA3-XXX	X3	33-37 GHz	+33 dBm
HAFMV4-XXX	X4	57-63 GHz	+22 dBm
HAFMW6-XXX	X6	93.5-95.5 GHz	+18 dBm

*Passive Multiplier



PIN Switches & Attenuators Isolators & Circulators

PIN switches & PIN attenuators

- 18 GHz to 110 GHz
- Full band versions available
- On/off ratios to 50 dB
- Fast switching times
- SPST, SPDT and multi-throw models
- 1W+ power handling (HSWM & HBSW)

Switch Model	Frequency Range	Insertion Loss/ Isolation
HSW2801-XXX	26.5-40.0 GHz	1.5 dB / 30 dB
HSW2803-XXX	33-37 GHz	2.8 / >50 dB
HSWM22801-XX	26.5-40.0 GHz	1.5 dB / 30 dB
HSW1501-XXX	55-65 GHz	2.2 dB / 20 dB
HSW1001-XXX	90-98 GHz	2.2 dB / 15 dB
HBSW94-XXX*	93-95 GHz	1.0 dB / 35 dB

*HBSW94 features 10W CW, 1 kW peak power handling.



Attenuator Model	Frequency Range	Insertion Loss/ Isolation
HVA2803-XXX	26.5-40.0 GHz	1.8 dB / 30 dB
HVA1503-XXX	55-65 GHz	3.0 dB / 30 dB
HVA1003-XXX	90-98 GHz	3.5 dB / 30 dB



Ferrite Isolators & Circulators

- 18 GHz to 110 GHz
- Compact designs

Isolator Model*	Frequency Range	Insertion Loss/ Isolation
HMI28	34-36 GHz	0.4 dB / 20 dB
HMI15	59-61 GHz	0.7 dB / 20 dB
HMI10	93-95 GHz	0.8 dB / 18 dB

Isolator models listed; circulators (HMC series) also available with identical electrical specifications.

Custom Products Repair/Refurbishment Services



Custom Products

Renaissance/HXI engineers have extensive design experience in components and subsystems for radar and communications systems. Among the products developed are 35 and 94 GHz landing system transceivers, 35 and 94 GHz missile seekers, 77 GHz automotive radar front ends, 18 to 38 GHz point-to-point radio front ends, a complete 60 GHz radio (GigaLink), radiometers, MilSATCOM upconverters and test sets, ELINT receivers, weather radar components and subsystems to assist in medical research.



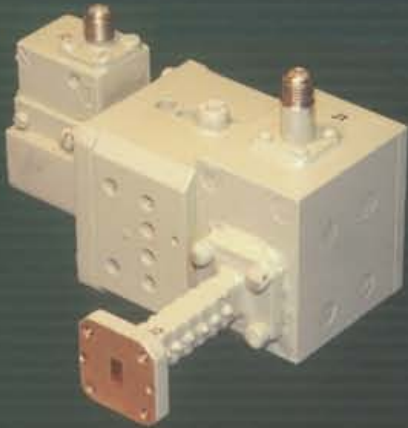
6-Way Power Combiner
for Q-Band



94 GHz FMCW Transceiver

Repair/Refurbishment Services

HXI offers repair and refurbishment services for a wide variety of legacy, obsolete and competitors' microwave and millimeter wave components used in military radar and communications equipment. We have serviced oscillators, frequency multipliers and mixers and our list is continuing to grow.



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