NEW RF TO MILLIMETERWAVE IC PRODUCTS FROM HITTITE

INSIDE.....

* 20 NEW PRODUCTS RELEASED!

Product Showcase

Ultra Wideband Driver Amp

HMC464

- 2 - 20 GHz
- +26 dBm P1dB
- 17 dB Gain
- 50 Ohm I/O’s

See Page 2

High Speed Freq. Dividers

HMC492/493/494LP3

- Divide-by-2, 4 & 8
- Low SSB Phase Noise to -152 dBc/Hz
- Single +5V Supply

See Page 3

High IP3 Downconverter

HMC377QS16G

- 800 - 1000 MHz
- 14 dB Conversion Gain
- -5 dBm LO Drive
- 11 dB Noise Figure

See Page 5

OFF-THE-SHELF

NEW RF TO MILLIMETERWAVE IC PRODUCTS FROM HITTITE

AUTUMN 2003

SiGe GAIN BLOCKS NOW OFFERED!

High Linearity Low Cost “Micro-X” MMIC Amplifiers to 6 GHz

Hittite announces the release of four new plastic packaged SiGe MMIC Gain Block Amplifiers which are ideal for wireless infrastructure/handhelds, test equipment, microwave radio and military COTS applications from DC to 6 GHz. The addition of this High Linearity Gain Block product line complements our existing InGaP HBT Gain Blocks and Driver Amps while demonstrating Hittite’s commitment to provide customers a One-Stop Source for all RF/microwave IC components.

The HMC476MP86, HMC477MP86, HMC479MP86, and HMC481MP86 are fabricated on a volume production qualified SiGe HBT (Silicon-Germanium Heterojunction Bipolar Transistor) process. These amplifiers are packaged in the industry standard Micro-P package which is equivalent in size, construction and footprint to “Micro-X” style packages. These new gain blocks are cascadable, require no external matching and use a minimal number of DC components. The inherent repeatability of SiGe HBT wafer processing coupled with automated plastic package IC assembly/test results in a consistent, compact and inexpensive MMIC Gain Block solution.

InGap HBT AMPLIFIER DELIVERS +43 dBm OUTPUT IP3!

Broadband Performance in Standard SOT89 Package

The HMC454ST89 is a high dynamic range GaAs InGaP Heterojunction Bipolar Transistor (HBT) ½ watt MMIC amplifier operating between 0.4 and 2.5 GHz. Packaged in a low cost industry standard SOT89, the amplifier is a Form / Fit / Function alternative to competitor SOT89 amps. Utilizing a minimum number of external components and a single +5V supply, the amplifier output IP3 can be optimized to +40 dBm at 0.9 GHz or +43 dBm at 2.0 GHz. Gain and P1dB are typically 18 dB/+24 dBm at 0.8 to 1.0 GHz and 13 dB/+27 dBm at 1.8 to 2.2 GHz. The high output IP3 and PAE coupled with the low VSWR of 1.4:1 makes the HMC454ST89 an ideal driver amplifier for Cellular/PCS/3G, WLL, ISM and Fixed Wireless applications. The HMC454ST89 data sheet and S-parameters are available at www.hittite.com. Sample requests and orders may be placed on-line as well.

HITTITE OPENS SALES OFFICE IN SHANGHAI!

To Support Hittite’s Customer Base in China & Hong Kong

Hittite Microwave has opened a fourth international office, Hittite Microwave CO. Ltd., (ShangHai Office), located in ShangHai, P.R.C.. This office will establish a consistent Hittite presence to service our expanding customer base in China and Hong Kong.

Mr. HuaLiang Xiong will lead the office as China Country Manager. Mr. Xiong has several years design, project management, applications and sales experience in the wireless telecommunication system and components industry. He reports to Thomas Hwang, HMC’s Asia Branch Manager in the Seoul, Korea field office. The ShangHai Office will support sales and application engineering inquiries both directly and through Hittite’s two China and Hong Kong representatives; Planet Technology, Ltd. and WaiTat Electronics, Ltd. Contact information may be found on page 7 of this newsletter.

Order Online at: www.hittite.com

12 Elizabeth Drive Chelmsford, MA 01824  Phone: 978-250-3343  Fax: 978-250-3373
Boston • London • Munich • Seoul • ShangHai
HMC465  
**GaAs PHEMT Wideband Driver Amp, DC - 10 GHz**

**Features**
- 17 dB Gain
- +22 dBm P1dB
- 2.5 dB Noise Figure
- Minimal Deviation from Linear Phase, ± 1°

**Consistent Gain, Phase & Power!**

The HMC465 is a GaAs MMIC PHEMT Distributed Driver Amplifier die which operates between DC and 10 GHz. The amplifier provides 17 dB of gain, 2.5 dB noise figure and +22 dBm of output power at 1 dB gain compression while requiring only 160mA from a +8V supply. Gain flatness is excellent at ±0.5 dB as well as +/-1° deviation from linear phase from DC - 10 GHz making the HMC465 ideal for test equipment as well as fiber optic modulator driver amplifier applications. The HMC465 amplifier I/O’s are internally matched to 50 Ohms facilitating easy integration into Multi-Chip-Modules (MCMs).

HMC464  
**GaAs PHEMT Ultra Wideband Driver Amp, 2 - 20 GHz**

**Features**
- +26 dBm P1dB
- 17 dB Gain
- +32 dBm Output IP3
- 50 Ohm I/O’s

**Efficient Broadband Power!**

The HMC464 is a GaAs MMIC PHEMT Distributed Driver Amplifier die which operates between 2 and 20 GHz. The amplifier provides 17 dB of gain, 2.7 dB noise figure and +26 dBm of output power at 1 dB gain compression while requiring 290mA from a +8V supply. Gain flatness is excellent at ±0.5 dB from DC - 20 GHz making the HMC464 ideal for EW, ECM and RADAR receiver or driver amplifier applications. The HMC464 amplifier I/O’s are internally matched to 50 Ohms facilitating easy integration into Multi-Chip-Modules (MCMs).

HMC462  
**GaAs PHEMT Wideband Self-Based LNA, 2 - 20 GHz**

**Features**
- 2.5 dB Noise Figure
- 15 dB Gain
- +15 dBm P1dB
- Single Supply, +5V @ 63 mA

**Excellent LNA or Driver!**

The HMC462 is a GaAs MMIC PHEMT Low Noise Distributed Amplifier die which operates between 2 and 20 GHz. The amplifier provides 15 dB of gain, 2.5 dB noise figure and +15 dBm of output power at 1 dB gain compression while requiring only 63mA from a single +5V supply. Gain flatness is excellent at <±0.5 dB from 6 - 18 GHz making the HMC462 ideal for EW, ECM and RADAR receiver or driver amplifier applications. The HMC462 amplifier I/O’s are internally matched to 50 Ohms facilitating easy integration into Multi-Chip-Modules (MCMs).
HMC496LP3
SiGe Direct Modulator RFIC, 4.9 - 6.0 GHz

**Features**
- High LO & Sideband Suppression, > 40 dBc
- Very Low Noise Floor, -159 dBm/Hz
- -3 to +3 dBm LO Drive
- Single Supply, +3.0V @ 104 mA

**High Linearity & Low Noise!**
The HMC496LP3 is a Direct Quadrature Modulator RFIC which is ideal for applications from 4.9 - 6.0 GHz including; wireless access points, cordless phones & P2P links. House in a compact 3x3 mm (LP3) SMT QFN package, the RFIC requires minimal external components & provides a low cost alternative to more complicated single & double upconversion architectures. The HMC496LP3 offers high carrier and sideband suppression, and a low broadband noise floor of -159 dBm/Hz. The LO can be driven in either differential or single-ended mode while the Baseband inputs will support DC – 250 MHz.

InGap HBT High Speed Divider Family Accepts Inputs to 18 GHz

**Features**
- Low SSB Phase Noise, to -152 dBc/Hz
- Single +5V DC Supply
- Standard Plastic SMT Package

**Divide-By-2, 4 & 8**
Introducing a family of SMT packaged HBT MMIC Frequency Dividers for commercial & military PLL applications. The HMC492LP3, HMC493LP3 & HMC494LP3 offer divide ratios of 2, 4 & 8 respectively in 3x3 mm (LP3) QFN SMT packages. These new products complement the company’s existing die, plastic & hermetic packaged Frequency Divider line while extending it to 18 GHz. The low additive phase noise coupled with the -4 dBm nominal output power helps synthesizer designers maintain excellent system noise performance.

HMC442LM1
GaAs PHEMT Medium Power Amplifier, 17.5 - 24.0 GHz

**Features**
- +23 dBm Psat
- 14 dB Gain
- 50 Ohm I/O’s
- SMT Eliminates Wirebonds!

**mmWave SMT Driver Amplifier!**
The HMC442LM1 is a broadband Driver Amplifier in a SMT leadless package. The amplifier provides 14 dB of gain and +23 dBm of saturated power at 27% PAE from a +5.0V supply. This 50 Ohm matched amplifier integrates DC blocks on the RF ports and makes an ideal linear gain block, transmit chain driver or LO driver for HMC SMT mixers. The LM1 is a true SMT millimeterwave package offering low loss & excellent I/O match, preserving MMIC chip performance. The HMC442LM1 can be easily integrated onto microwave radio PCBs for P2P & VSAT applications.
COMPACT MMIC LNA FAMILY FOR CELL/3G BTS

HMC375LP3

High IP3 GaAs PHEMT LNA, 1.7 - 2.2 GHz

Simplify your Receiver!
The HMC375LP3 high dynamic range GaAs PHEMT MMIC Low Noise Amplifier is ideal for GSM & CDMA cellular basestation front-end receivers operating between 1.7 and 2.2 GHz. This LNA has been optimized to provide 0.9 dB noise figure, 17 dB gain and +33 dBm output IP3 from a single supply of +5.0V @ 130mA. Input and output return losses are 15 dB typical with the LNA requiring only four external components to optimize the RF Input match, RF ground and DC bias. The HMC375LP3 shares the same package and pinout with the HMC356LP3 and HMC372LP3 high IP3 LNAs. A low cost, leadless 3x3 mm (LP3) SMT QFN package houses the low noise amplifier.

Features
- 0.9 dB Noise Figure
- 17 dB Gain
- +33 dBm Output IP3
- 50 Ohm I/O’s

HMC372LP3

High IP3 LNA & HMC373LP3 LNA with Bypass Mode, 700 - 1000 MHz

Single +5V Supply!
The HMC372LP3 and HMC373LP3 are GaAs PHEMT MMIC Low Noise Amplifiers that are ideal for GSM & CDMA cellular basestation front-end receivers operating between 700 and 1000 MHz. These LNAs have been optimized to provide 0.9 dB noise figure, 15 dB gain and +35 dBm output IP3 from a single supply of +5.0V @ 115mA. Input and output return losses are 23 and 14 dB respectively with the LNAs requiring only four external components to optimize the RF Input match, RF ground and DC bias. The HMC373LP3 offers an amplifier bypass mode where via a single control line, the LNA can be switched into a low 2.0 dB loss path.

Features
- <1 dB Noise Figure
- 15 dB Gain
- +35 dBm Output IP3
- 50 Ohm I/O’s

HMC356LP3

High IP3 GaAs PHEMT LNA, 350 - 550 MHz

For GSM / CDMA 450 Rx

The HMC356LP3 high dynamic range GaAs PHEMT MMIC Low Noise Amplifier is ideal for GSM & CDMA cellular basestation and Mobile Radio front-end receivers operating between 350 and 550 MHz. This LNA has been optimized to provide 1.0 dB noise figure, 17 dB gain and +35 dBm output IP3 from a single supply of +5.0V @ 100mA. Input and output return losses are 15 dB typical with the LNA requiring only four external components to optimize the RF Input match, RF ground and DC bias. The HMC356LP3 shares the same package and pinout with the HMC372LP3 and HMC375LP3 high IP3 LNAs. A low cost, leadless 3x3 mm (LP3) SMT QFN package houses the low noise amplifier.
HMC495LP3

**SiGe Wideband Direct Modulator RFIC, 250 - 3800 MHz**

**Features**
- High LO Suppression, >36 dBc
- -6 to +6 dBm LO Drive
- Very Low Noise Floor, -157 dBm/Hz
- Single Supply, +3.3V @ 108 mA

Covers All Cell/3G/BWA Bands!
The HMC495LP3 is a Direct Quadrature Modulator RFIC which is ideal for applications from 250 - 3800 MHz including: Cellular/3G, Broadband Wireless Access & ISM. Housed in a compact 3x3 mm (LP3) SMT QFN package, the RFIC requires minimal external components & provides a low cost alternative to more complicated single & double upconversion architectures. The HMC495LP3 offers high carrier suppression and a low broadband noise floor. Return loss on all ports is excellent & requires no external matching. The LO can be driven in either differential or single-ended mode while the baseband inputs will support DC – 250 MHz.

HMC377QS16G

**High IP3 Down Converter, 800 - 1000 MHz**

**Features**
- 14 dB Conversion Gain
- -5 dBm LO Drive
- +15 dBm Input IP3
- 11 dB Noise Figure

Integrated LO & IF Amps!
The HMC377QS16G is a linear downconverter receiver IC suitable for cellular infrastructure applications from 800 - 1000 MHz. An integrated mixer and high dynamic range IF amplifier achieves an input intercept point (IP3) of +15 dBm with an input P1dB of +3.5 dBm. The converter provides conversion gain of 14 dB and 11 dB single side band noise figure. The IC operates from a positive +5V rail consuming 135 mA of current while requiring only -5 dBm LO drive. The design requires no external baluns. The mixer supports IF frequencies between 50 and 250 MHz.

HMC387MS8

**High IP3 MMIC Mixer, 450 - 500 MHz**

**Features**
- +32 dBm Input IP3
- DC - 150 MHz IF
- 14.8 mm² MSOP8 Package
- GSM & CDMA
- 450 Basestations

Up or Down Conversion!
The HMC387MS8 is a high dynamic range passive SMT MMIC mixer covering 450 to 500 MHz RF. Excellent input IP3 performance of +32 dBm for down conversion and +29 dBm for up conversion is provided for both GSM/CDMA based cellular and Mobile Radio applications at an LO drive of +17 dBm. The mixer also has excellent performance with a +13 dBm LO drive yielding a +30 dBm input IP3. The HMC387MS8 input IP3 performance coupled with its high +22 dBm P1dB rivals traditional active FET mixers while offering a much smaller 14.8mm² standard IC footprint and no DC bias.
SiGe Gain Blocks Now Offered... (continued from page 1)

Table 1 summarizes the typical performance of the four new SiGe Gain Blocks. Across the product line small signal gain ranges from 15 to 20 dB at 1 GHz and 13 to 18 dB at 2 GHz. Output P1dB performance ranges from +13 to +20 dBm at frequencies less than 2.4 GHz and +10 to +15 dBm above 2.4 GHz. Output third order intercepts as high as +34 dBm are offered. Both return loss and reverse isolation are excellent over each amplifier's working bandwidth.

Hittite’s SiGe Gain Block products are based upon a Darlington feedback pair topology which results in a broad gain versus frequency response and reduced sensitivity to process variations. As shown in Figure 1, the amplifiers operate from a single positive supply voltage (Vs), ranging from +5 to +12 V, applied through a series resistor (Rbias) and RF bias choke (L1) connected to the RF output. The value of this choke is dependent on the frequency of operation. Optimized choke values for common frequencies are provided on the individual product data sheets. Depending on the supply voltage (Vs) available to the designer, the series resistor value is chosen from a data sheet table as well. The use of a resistor in series with the supply voltage (Vs) reduces the voltage to the device as the temperature rises, counteracting the inherent positive temperature coefficient of the device collector current. This results in consistent and reliable amplifier performance over temperature.

These devices are ideal for applications as driver amplifiers, IF gain blocks, high IP3 receive chain amplifiers and LO buffer amplifiers to drive Hittite Mixers. Table 2 shows the new SiGe Gain Block family matched to standard HMC single and double balanced mixers with LO frequency requirements between 300 and 6000 MHz.

The HMC476MP86, HMC477MP86, HMC479MP86 and HMC481MP86 SiGe Gain Blocks are Form, Fit and Functional replacements for competitor “Micro-X” packaged gain block amplifier products. Data sheets are available at www.hittite.com and list guaranteed min/max limits for key parameters such as gain and P1dB. These four new standard product MMIC Gain Blocks are available from stock for sampling or sale.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>HMC476MP86</th>
<th>HMC477MP86</th>
<th>HMC479MP86</th>
<th>HMC481MP86</th>
</tr>
</thead>
<tbody>
<tr>
<td>Band Width (Fmax)</td>
<td>6000</td>
<td>4000</td>
<td>5000</td>
<td>5000</td>
</tr>
<tr>
<td>Gain</td>
<td>20</td>
<td>17</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>1950</td>
<td>17</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>2400</td>
<td>16</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>3500</td>
<td>13</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>850</td>
<td>11</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>1950</td>
<td>13</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>2400</td>
<td>12</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>3500</td>
<td>13</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>P1dB</td>
<td>10</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>850</td>
<td>22</td>
<td>19</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>1950</td>
<td>2.4</td>
<td>3.9</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>2400</td>
<td>2.5</td>
<td>4.0</td>
<td>4.2</td>
</tr>
<tr>
<td></td>
<td>3500</td>
<td>2.6</td>
<td>4.0</td>
<td>4.4</td>
</tr>
<tr>
<td></td>
<td>850</td>
<td>4.0</td>
<td>4.2</td>
<td>5.5</td>
</tr>
<tr>
<td></td>
<td>1950</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2400</td>
<td>35</td>
<td>53</td>
<td>72</td>
</tr>
</tbody>
</table>

Table 1 – Hittite SiGe Gain Block Product Line

![Figure 1 – Typical Circuit for 1.8 - 2.2 GHz Applications](image)

Table 2 – Suggested HMC SiGe Gain Blocks for Hittite Mixer LO Buffers

<table>
<thead>
<tr>
<th>Hittite Mixer Part Number</th>
<th>LO Freq. Range (MHz)</th>
<th>LO Drive Required (dBm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMC387MS8</td>
<td>300 - 500</td>
<td>+13 to +19</td>
</tr>
<tr>
<td>HMC399MS8</td>
<td>540 - 900</td>
<td>+16 to +19</td>
</tr>
<tr>
<td>HMC350MS8</td>
<td>600 - 1200</td>
<td>+15 to +21</td>
</tr>
<tr>
<td>HMC207S8</td>
<td>700 - 2000</td>
<td>+11 to +15</td>
</tr>
<tr>
<td>HMC296MS8</td>
<td>1100 - 1700</td>
<td>+5 to +13</td>
</tr>
<tr>
<td>HMC400MS8</td>
<td>1400 - 2150</td>
<td>+15 to +19</td>
</tr>
<tr>
<td>HMC213MS8</td>
<td>1500 - 1500</td>
<td>+9 to +15</td>
</tr>
<tr>
<td>HMC316MS8</td>
<td>1500 - 3500</td>
<td>+15 to +19</td>
</tr>
<tr>
<td>HMC304MS8</td>
<td>1700 - 3000</td>
<td>+13 to +19</td>
</tr>
<tr>
<td>HMC285</td>
<td>1700 - 3500</td>
<td>+5 to +13</td>
</tr>
<tr>
<td>HMC175MS8</td>
<td>1700 - 4500</td>
<td>+9 to +15</td>
</tr>
<tr>
<td>HMC402MS8</td>
<td>1850 - 2530</td>
<td>+15 to +19</td>
</tr>
<tr>
<td>HMC218MS8</td>
<td>4500 - 6000</td>
<td>+7 to +13</td>
</tr>
<tr>
<td>HMC168C8</td>
<td>4500 - 8000</td>
<td>+8 to +15</td>
</tr>
</tbody>
</table>

Table 2 – Suggested HMC SiGe Gain Blocks for Hittite Mixer LO Buffers
UPATED S-PARAMETERS ON-LINE!

Product Specific Data is Now Linked to Each Part Number

Hittite Microwave has made it even easier for RF/Microwave Designers to include our solutions in their simulations. We are pleased to announce that we have updated the on-line S-parameter library for virtually all of our Amplifier, Attenuator, Mixer and Switch products. Visitors to our website can quickly scroll through and select any Hittite standard product part number of interest. A product summary table will appear that will give links to the data sheet pdf file and the S-parameter files as well as give general information about the product.

All S-parameter files reflect current product performance, and each data set has been de-embedded to either the package lead or to the most outward matching component, as appropriate. Measurements are recorded in either .s1p, .s2p format or more ports as required by multi-throw switches. The files are easily imported into any microwave simulation tool and each set of a product’s files is provided in compressed (.zip) format for fast downloading.

Most S-parameter files are over swept beyond the rated bandwidth of the product, so that the designer can readily simulate product performance both in and out of the operating band. For added accuracy, many of our mixer products include S-parameter files at multiple LO drive levels. Most amplifier products list S-parameters for multiple bias levels. Please contact our Applications Engineering Department for further information or if any assistance is required.

NEW AUTUMN 2003 SELECTION GUIDE AVAILABLE!

New for Autumn 2003, the HMC Product Selection Guide by Market includes a summary of 30 new products along with over 200 other products. The guide is organized by market applications for Broadband, Cellular/PCS/3G and Microwave/millimeterwave and includes system block diagrams with suggested HMC products for each system function. Information on Hittite’s Custom RFIC/MMIC/Module and Military & Space products/services is featured as well. Product data sheets can be found on-line. This replaces our Summer 2003 Selection Guide. Request your copy of the new Autumn 2003 Selection Guide at www.hittite.com by selecting the “Submit Inquiry/Feedback” left hand navigation button.

For More Information:

Hittite Microwave Corporation
USA Corporate Headquarters
12 Elizabeth Drive
Chelmsford, MA 01824
Phone: 978-250-3343
Fax: 978-250-3373
hmsales@hittite.com

Hittite Microwave Europe Limited
Inttec 4.1 Wade Road
Basingstoke, Hampshire RG24 8NE
Phone: +44 1256 817000
Fax: +44 1256 817111

Hittite Microwave Deutschland GmbH
Larstraße 1
DB3026 Rosenheim, Germany
Phone: +49 8031-975654
Fax: +49 8031-98883
germany@hittite.com

Hittite Microwave Asia Co., Limited
POSOCO Center Bldg. West Tower
11th Floor 892 Daechi-dong,
Kangnam-gu, Seoul, Korea 135-777
Phone: (82-2) 559-0638
Fax: (82-2) 559-0639
asia@hittite.com

Hittite Microwave Co., Limited
Shanghai Office
77 HongQiao Business Center
No. 2272, HongQiao Road
ShangHai, P.R.C.
china@hittite.com

NORTH AMERICA REPRESENTATIVES

CANADA
Contact HMC Sales Direct
USA North East:
MA, RI, ME, NH, VT, CT
dbm Technical Sales
978-256-7100
No. NJ & Metro NY/LI, So. CT
TSR Marketing
914-347-4984
So. NJ, E. PA
Micro Lambda
609-259-0400
USA Mid-Atlantic;
So. NJ, DE
Contact HMC Sales Direct
MD, VA, WV, DC
Vincent Pireo Electronics
410-489-9554
USA Mid-West;
IN, OH, MI, MN, WI, KY, W. PA
DyTec, Inc.
317-578-0474
ND, SD
Contact HMC Sales Direct
No. IL
TK Technologies Inc.
847-991-7160
MO, IA, KS, NB, So. IL
Contact HMC Sales Direct
USA South East;
FL, GA, NC, SC, AL, TN
Spartech South
321-727-8045
USA South West;
TX, OK, LA, AR
N & W Sales, Inc.
817-461-4443
AZ, NM
Saguro Technical Sales, Inc.
480-947-3724
So. NV
Contact HMC Sales Direct
USA West;
No. CA, No. NV

Custom & Wireless Sales
408-371-0222
OR, WA, ID
CCTC Sales Corporation
425-392-8129
So. CA
Rhino Engineering, Inc.
310-798-1069
CO, UT
W. Howard Associates, Inc.
303-766-5755
HI, MT, WY
Contact HMC Sales Direct
EUROPE, MIDDLE EAST, & AFRICA REPRESENTATIVES

Benelux;
Datron BV
+31-35-624-6648
Czech Republic;
Transtech Electronics Spol s.r.o.
+420 (2) 6122-1039
Finland;
Otos OY
+358-020-478-830
France;
Tech-Inter
+33-1-39-51-6699
Germany, Austria, & Switzerland;
Hittite Microwave Deutschland GmbH
+49 8031-975654
Israel;
Starlight Technologies, Inc.
+972-3-9410555
Italy;
Special-Ind SPA
+39-02-6074741
Spain, Portugal;
Altaxa Electronics S.A.L
+34-91-4403-385
+34-91-4403-386
Sweden, Norway, & Denmark;
Amtele AB
+46-8-556-466-00
South Africa;
RF Design Laboratory CC
+27-21-762-5305
United Kingdom & Ireland;
Link Microtek Ltd
+44-1256-355771
ASIA & SOUTH PACIFIC REPRESENTATIVES

China;
Planet Technology Ltd.
+86-21-545-4657
Wai Tat Electronics Ltd.
+852-2799-7393
India;
Syatron
+91-80-5591107/5531031
Indonesia, Malaysia, Philippines, Singapore;
MEDi Technologies, Pte., Ltd.
+65-6453-6831
Japan;
Nishi Tachntron Corp.
+81-3-3820-1716
Korea;
ENS Engineering
+82-2-562-9819
Taiwan R.O.C.;
Bandtek International Co., Ltd.
+886-2-2657-2615
AMERICAS DISTRIBUTION:

Future Electronics
800-Future-1
Exit 2754, Americas
www.FutureElectronics.com/1f

VISIT US AT WWW.HITTITE.COM AUTUMN 2003
What We Do

Hittite Microwave Corporation is an innovative designer and manufacturer of analog/digital ICs and MIC module assemblies for RF and microwave applications covering DC to 110 GHz. Hittite’s RFIC/MMIC products are developed using state-of-the-art GaAs, InGaP/GaAs, InP, SOI and SiGe semiconductor processes utilizing MESFET, PHEMT and HBT devices. Our products include:

- Power Amplifiers
- Gain Blocks
- Driver Amplifiers
- LNAs
- Attenuators
- Phase Shifters
- Switches
- Transceivers
- Mixers
- Converters
- IRMs
- Modulators
- VCOs
- Dividers/Detectors
- Multipliers
- PLOs / PLLs

We also design and supply highly integrated custom ICs, MCMs and sub-assembly hybrids that combine multiple functions for specific requirements. We select the most appropriate semiconductor and package technologies, uniquely balancing digital and RF integration techniques, to produce a product that is easy and cost effective for our customers to use.

Our custom and standard products support a wide range of wireless and wired communications applications including those listed below:

- Broadband: 802.11a/b/g, BLUETOOTH, UNII, MMDS, WLL, CATV, DBS
- Cellular: GSM, W-CDMA, PCS & UMTS 3G
- Microwave / Millimeterwave: P2P / P2MP / VSAT Radios, Test Equipment & Sensors
- Fiber Optic: OC-48 to OC-192
- Military & Space: RF to Millimeterwave Applications

Every component is backed by Hittite Microwave’s commitment to total quality. HMC is ISO9001-2000 certified, and every Hittite employee and subcontractor is responsible for maintaining the highest level of quality. We are constantly working towards improvement of our procedures and processes, thus providing our customers with products that meet or exceed all requirements, are delivered on-time and function reliably throughout their useful life.