# 13 - 18 GHz
# 0.5W QFN Plastic Packaged Power Amplifier

February 2007 - Rev 27-Feb-07

**Mimix BROADBAND™**

**CMQ1631-QH**

**RoHS**

## Features

- 30 dBm Saturated Output Power Between 15.5~17.5 Ghz
- 21 dB (Typ) Linear Gain
- Unconditionally Stable
- Low Cost, Surface Mount Package
- 4mm x 4mm x 1.4mm
- RoHS Compliant
- 7 V, 770 mA

## Applications

- Military Ku Band
- VSAT
- Point to Point Radio
- Ku-Band Space

## General Description

The CMQ1631-QH is a pHEMT power amplifier packaged in a 4X4 QFN plastic package. The CMQ1631-QH is self contained with 50 ohm input and output matching. The CMQ1631-QH is unconditionally stable and the internal matching allows for a reduction in external components making this product a simple and low cost solution. RoHS compliance and standard surface mount package make it an ideal solution in all manufacturing environments. The power amplifier is intended for use in the extended Ku-Band satellite applications.
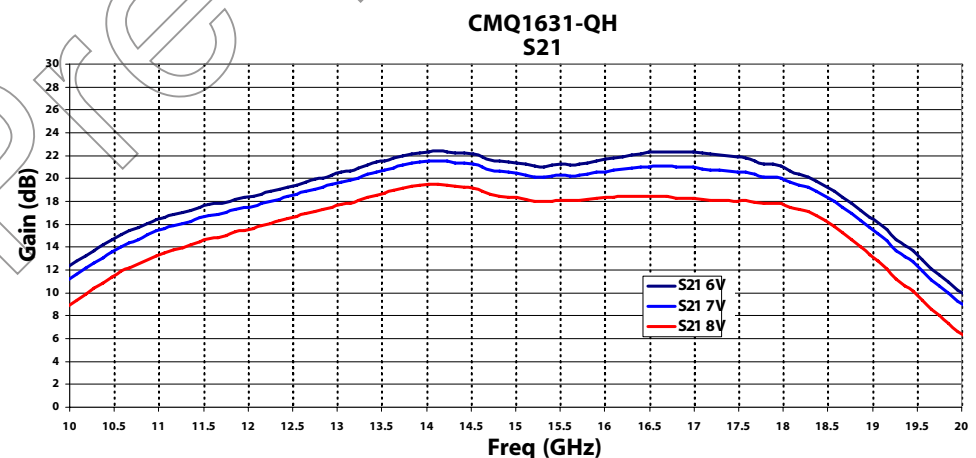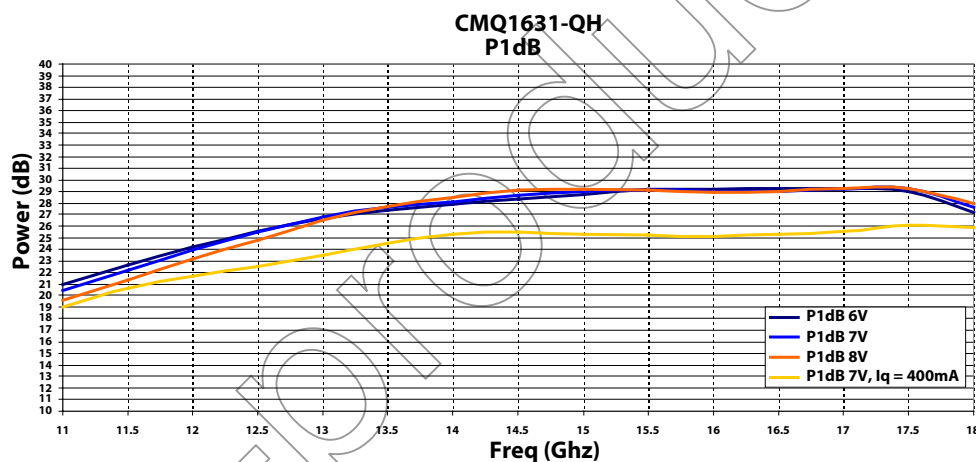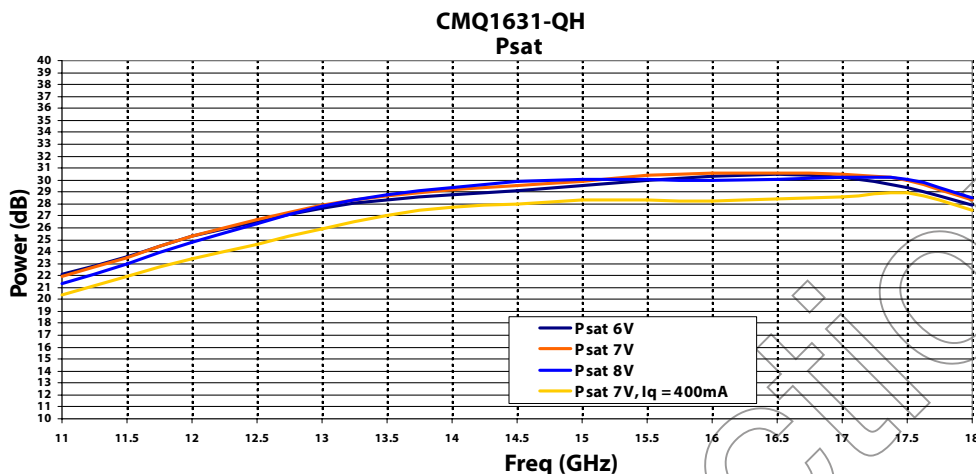
## Electrical Characteristics

| Parameter | Symbol | Min | Typ | Max | Min | Typ | Max | Min | Typ | Max | Units |
|-----------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| Operating Frequency | F | 13 | | 14.5 | 14.5 | | 17.5 | 17.5 | | 18 | GHz |
| Drain Current | Id | | 700 | | | 700 | | | 700 | | mA |
| Drain Voltage | Vd | 6 | 7 | | 6 | 7 | 8 | 6 | 7 | 8 | Volts |
| Gate Voltage (RF ON) | Vg | -2 | - | -0.2 | -2 | - | -0.2 | -2 | - | -0.2 | Volts |
| Linear Gain | S21 | | 20 | | | 21 | | | 21 | | dB |
| Input/Outpu VSWR | VSWR | | 2.0:1 | | | 2.0:1 | 3:1 | | | | dB |
| Noise Figure | NF | | 6 | | | 6 | | | 6 | | dB |
| Saturated Output Power | Psat | | 28 | | | 30 | | | 29 | | dBm |
| Power @ 1dB Compression Gain | P1dB | | 27.5 | | | 29 | | | 28 | | dBm |
| Gate Current | Igs | - | 0.5 | 5 | - | 0.5 | 5 | - | 0.5 | 5 | mA |

**Mimix Broadband, Inc., 10795 Rockley Rd., Houston, Texas 77099**
**Tel: 281.988.4600 Fax: 281.988.4615 mimixbroadband.com**
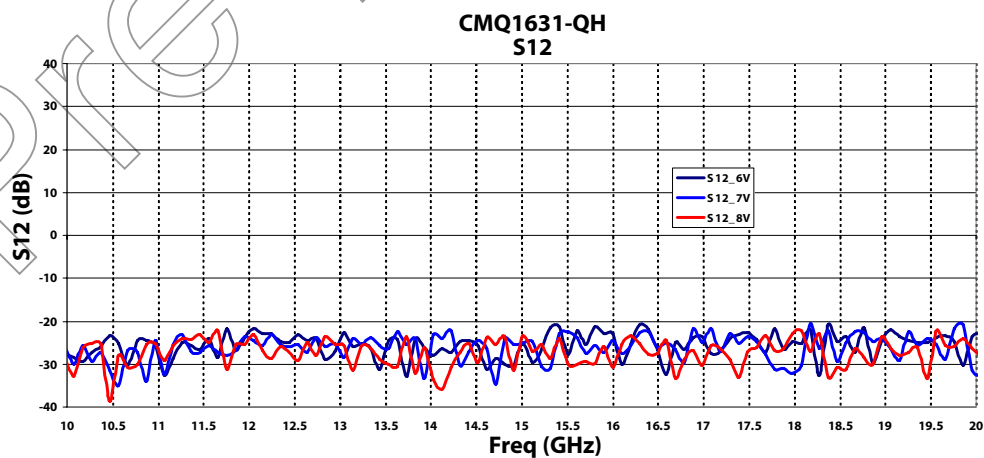
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**CMQ1631-QH**
**✕RoHS**

## Typical Performance



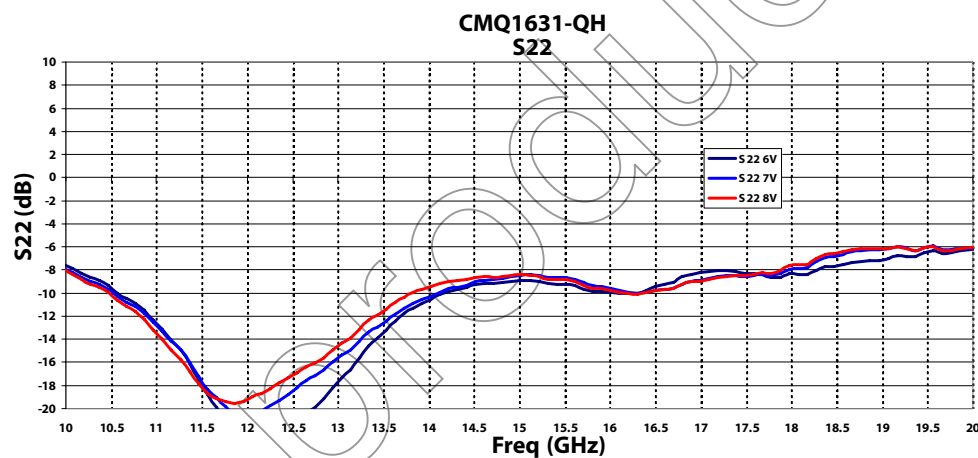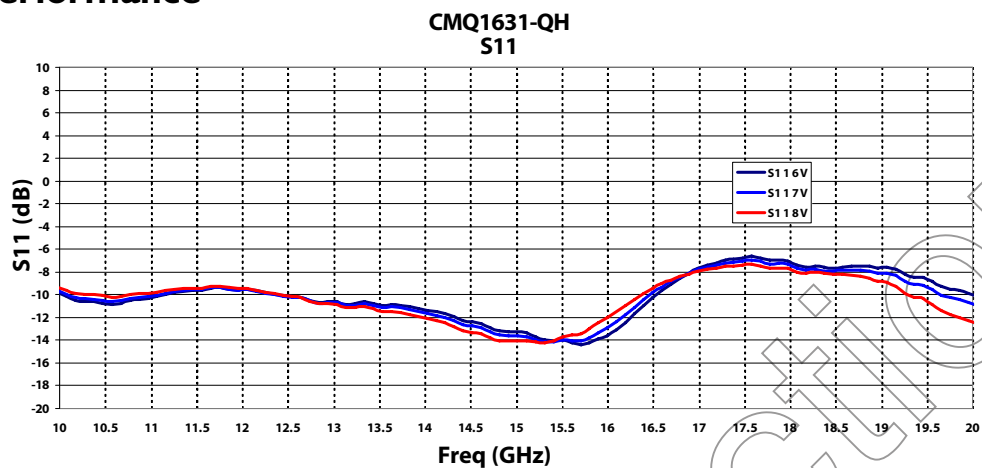CMQ1631-QH
Psat



CMQ1631-QH
P1dB



CMQ1631-QH
S21

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## Typical Performance



CMQ1631-QH
S11



CMQ1631-QH
S22



CMQ1631-QH
S12

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## Physical Dimensions

Pin 1 Dot
By marking
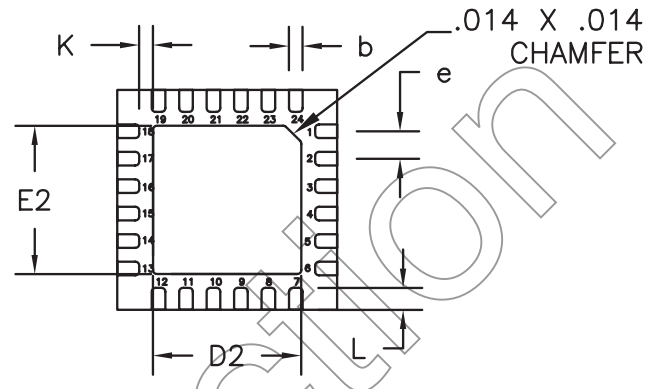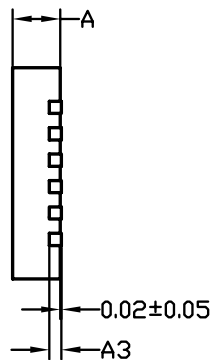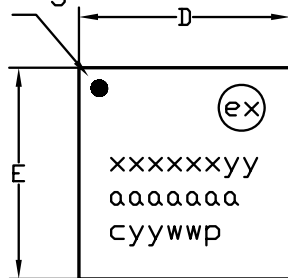


## BOTTOM VIEW
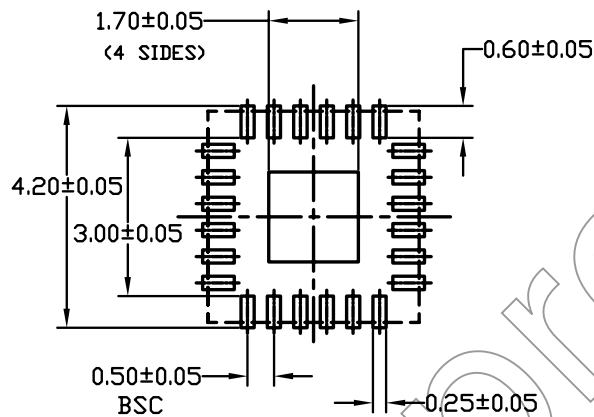
|    | MIN | TYP | MAX |
|----|-----|-----|-----|
| A  | 0.80 | 0.90 | 1.00 |
| A3 | | 0.20 REF | |
| b  | 0.20 | 0.25 | 0.30 |
| K  | 0.20 | – | – |
| D  | | 4.00 BSC | |
| E  | | 4.00 BSC | |
| e  | | 0.50 | |
| D2 | 2.45 | 2.60 | 2.75 |
| E2 | 2.45 | 2.60 | 2.75 |
| L  | 0.20 | 0.30 | 0.40 |

## Ordering Information

| Part Number for Ordering | Description |
|--------------------------|-------------|
| CMQ1631-QH-0G00 | Matte Tin plated RoHS compliant QFN4X4 24L surface mount package in bulk quantity |
| CMQ1631-QH-0G0T | Matte Tin plated RoHS compliant QFN4X4 24L Surface mount package in tape and reel |
| PB-CMQ1631-QH-0000 | CMQ1631-QH Evaluation Board |

We also offer this part with SnPb (Tin-Lead) or NiPdAu plating. Please contact your regional sales manager for more information regarding different plating types.

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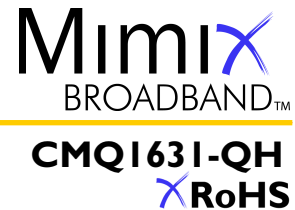
## Handling and Assembly Information

**CAUTION!** - Mimix Broadband MMIC Products contain gallium arsenide (GaAs) which can be hazardous to the human body and the environment. For safety, observe the following procedures:

- Do not ingest.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.

**Life Support Policy** - Mimix Broadband's products are not authorized for use as critical components in life support devices or systems without the express written approval of the President and General Counsel of Mimix Broadband. As used herein: (1) Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user. (2) A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

**Package Attachment** - This packaged product from Mimix Broadband is provided as a rugged surface mount package compatible with high volume solder installation. Care should be taken not to apply heavy pressure to the top or base material to avoid package damage. Vacuum tools or other suitable pick and place equipment may be used to pick and place this part. Care should be taken to ensure that there are no voids or gaps in the solder connection so that good RF, DC and ground connections are maintained. Voids or gaps can eventually lead not only to RF performance degradation, but reduced reliability and life of the product due to thermal stress.

**Mimix Lead-Free RoHS Compliant Program -** Mimix has an active program in place to meet customer and governmental requirements for eliminating lead (Pb) and other environmentally hazardous materials from our products. All Mimix RoHS compliant components are form, fit and functional replacements for their non-RoHS equivalents. Lead plating of our RoHS compliant parts is 100% matte tin (Sn) over copper alloy and is backwards compatible with current standard SnPb low-temperature reflow processes as well as higher temperature (260°C reflow) "Pb Free" processes.

**Part Numbering Designator -** For Mimix/Celeritek lead-free products, the letter "G" will be used in the part number for Matte Tin finished RoHSCompliant components and "L" will be used in the part number of NiPdAu finished RoHS Compliant components in the second position of the part number suffix, as shown below:

Example A: CXX1234-XX-0G00 = component bulk quantity Matte Tin finished RoHScompliant parts
Example B: CXX1234-XX-0L0T = component in tape and reel NiPdAu finished RoHS parts

For those customers not making the change at this time, Mimix/Celeritek will maintain production of current configurations. For questions and comments e-mail: ourearth@mimixbroadband.com.