Fact Sheet

# MMM5062

**QUAD-BAND, SINGLE POWER SUPPLY, POWER AMPLIFIER MODULE**

*For GSM/GPRS Handsets*

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## FEATURES

- Single Power Supply E-mode GaAs MESFET Technology
- Internal 50-Ohm Input and Output Matching
- High Gain, Three-Stage Amplifier Design
- Typical 3.5 V Characteristics:
  - > Pout = 35.5 dBm, PAE = 50% for GSM850
  - > Pout = 35.2 dBm, PAE = 53% for GSM900
  - > Pout = 33.8 dBm, PAE = 44% for DCS1800
  - > Pout = 34.0 dBm, PAE = 43% for PCS1900
- Optimized and Guaranteed for Open-Loop Power Control Applications
- Small 7 mm x 7 mm Surface Mount Plastic Package

The MMM5062 is a Quad-Band, Single Power Supply, Power Amplifier Module for use in GSM/GPRS cellular handsets. By combining High Impedance Integrated Power Amplifier (HIIPA) packaging, and true Enhancement-mode (E-mode) GaAs wafer process technologies, this product is defining a new paradigm for 50-ohm power amplifier (PA) modules.

This PA module uses the HIIPA packaging technique to provide a 50-ohm solution without the need for additional external components. Design of the 50-ohm impedance matching network at the output of the die is accomplished with capacitors and inductors, where capacitors are integrated onto the die, and inductors are implemented by wire bonds of variable lengths. The tolerance of the capacitor values, together with the precision of the wire bonding process, allow a matching impedance value with less design variance than can be achieved by using passive components on a traditional radio board.

Because of its low off-state leakage current, this true Enhancement-mode device is designed to eliminate the drain-supply switch required for Depletion-mode pHEMT and MESFET devices. The E-mode GaAs technology helps to reduce the cost and size of the end product by eliminating both the negative voltage generator and the drain-supply switch within the handset power amplifier section, as well as eliminating additional passive components.

## TYPES OF APPLICATIONS

This innovative module supports quad-band applications in the GSM850/900, DCS1800, and PCS1900 frequency bands. It also is engineered for Class 10 GPRS operation. The wide band matching advantage brought by the HIIPA technique provides a flexible PA solution that is able to adapt to GSM/GPRS requirements that include handsets for:

- Triple-Band GSM/GPRS for European applications
- Dual- or Triple-Band GSM/GPRS for U.S. products
- Quad-Band to cover both European and North American markets

*BENEFITS TO YOU*

- Simplified design-in with integrated 50-ohm input and output impedance matching through the HIIPA packaging technology.
- Lower end-product cost due to fewer components with two power amplifiers in a single package.
- Simplifies design of next generation GSM dual-, triple-, and quad-band phones with wide band matching that supports Class 10 GPRS power amplifier functions in a single package.
- Reduces the cost and size of the end product by eliminating both the negative voltage generator and the drain-supply switch within the handset power amplifier section, as well as eliminating additional passive components.
- Lowers system cost and manufacturing costs due to fewer parts placements and simplified printed circuit board design with low external parts count.
- Reduces time-to-market with simplified design of wireless handsets due to integration of dual-band power amplifiers, with integrated 50-ohm input and output matching.
- Smaller, lighter GSM/GPRS handset with a PA module design that is optimized for operation from a single cell lithium-ion battery. Improved RF performance with a large ground plane connection through the backside metal contact on the surface mount package
- Higher circuit and system density and reduced printed circuit board space with a small 7 mm x 7 mm surface mount module package

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