

Packaging Requirements for High Volume Wireless Communications

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Abstract:

We present an overview of present and anticipated high volume wireless communication applications, with emphasis on cellular and cordless phones, for MMICs and MICs. Packaging requirements are discussed for existing and emerging standards.

Wireless applications boom - an overview:

Classification of wireless services and systems: (1.) cellular phone, (2.) cordless phone, (3.) PCN, (4.) integrated cordless-cellular-pcn systems, (5.) wireless local area networks, and (6.) VSAT (very small aperture terminals).

Markets (present, near term, and futuristic): (1.) volume predictions, (2.) economic predications of volume predictions.

rf functions - the standards:

Cellular: (1.) AMPS (US analog, FM), (2.) IS-54 (US mixed mode analog-digital), (3.) GSM, DCS-1800 (European Digital), and (4.) similar additional standards.

Cordless: (1.) CT-2, (2.) DECT (Digital European Cordless), and (3.) Japan Digital Cordless.

Product realization - package requirements:

Level of integration: "bucket of parts", modules, or MMICs? rf and dc I/O's. Transmit powers, duty cycles, amplifier efficiencies, and talk times: (1.) thermal management issues, (2.) the cost of output network losses for power amplifiers. Size and shielding requirements. Preferred board assembly practices.

The packaging challenge:

Price targets. A brief survey of present alternatives. The apparent need for innovation. The potential rewards for the successful.

