

## K-band and millimeter-wave MMICs for emerging commercial wireless applications

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The recent K-band monolithic-microwave integrated-circuit (MMIC) technologies for the local multipoint distribution service systems and novel MMIC technologies for potential low-cost millimeter-wave MMICs are presented in this paper via a review of Fujitsu Quantum Devices Limited technology. The devices being demonstrated are a 23-26-GHz 2-W power amplifier module with a broad-band driver amplifier, a 19-33-GHz miniature low-noise amplifier, a frequency multiplier by four for K-band local oscillators, a flip-chip MMIC module for radar application, and three-dimensional MMIC image-rejection harmonic mixers. Through these devices, the recent trend of design and fabrication methodologies for the K-band and millimeter-wave devices will be described.

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