

Toshiba Adds New High-Gain, High-Linearity GaAs FETs For WiMAX Equipment

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In an expansion of its terrestrial communication microwave device offering, Toshiba America Electronic Components, Inc. (TAEC) announced today at the IEEE MTT-S International Microwave Symposium that the company is now offering new high gain, high linearity internally matched gallium arsenide (GaAs) field effect transistors (FETs) targeted for use in amplifiers and microwave digital radios for 3.5GHz and 5GHz fixed wireless access (FWA) systems including Wireless Interoperability for Microwave Access (WiMAX) and the Unlicensed National Information Infrastructure (U-NII) compatible systems. Five new GaAs FETs, developed by Toshiba Corp. (Toshiba), provide a range of output power and gain to meet designers' requirements.

Microwave-based FWA systems provide point-to-point and point-to-multi-point signal transmission through the air over a terrestrial microwave platform, rather than through copper or fiber cables. As a result, FWA systems do not require satellite feeds or local phone service and can provide a wireless broadband alternative to cable modem or DSL connections.

To address the requirements of U-NII broadcast wireless systems, Toshiba has extended its Ultra-Linear (UL) GaAs FET product line with three devices in a new frequency range of 5.3GHz to 5.9GHz. Toshiba's UL process provides high gain, low intermodulation distortion and high

efficiency. The three new UL devices are the TIM5359-4UL, which achieves high gain of 10.5 decibels (dB) with output power (typ.) of 36.5 dB relative to 1 milliwatt (dBm); the TIM5359-8UL with 10.0dB gain and output power (typ.) of 39.5dBm and the TIM5359-16UL with 10.0dB gain and 42.5dBm output power (typ.). Toshiba's UL product offering now includes products from 4 watts (W) up to 16W, for use in point-to-point and point-to-multi-point microwave digital radio for terrestrial communications and fixed wireless access systems.

In addition, for fixed wireless system applications that require maximum output power levels, Toshiba has added two new devices to its Super Linear (SL) device family. For U-NII applications, the 60W TIM5359-60SL rounds out Toshiba's 5.3GHz to 5.9GHz product offering, with 9.0dB gain and output power (typ.) of 48.0dBm. This device can be used in a series in amplifier applications with the three new UL devices. For 3.5GHz fixed wireless systems such as WiMAX, Toshiba's 16W TIM3438-16SL features gain of 12.5dB and output power (typ.) of 42.5dBm.

"Recent progress in standardization of broadband wireless is expected to spur significant interest and growth in this market," said Toshi Nakamura, business development manager, Microwave Devices, for Toshiba America Electronic Components, Inc. "Although proprietary terrestrial microwave networks have been in existence for many years, recent support for WiMAX and U-NII FWA systems in leading personal computer and network chipset solutions, combined with other industry efforts to standardize FWA networks, is likely to help expand the market, particularly in geographic regions without widespread availability of DSL or cable."

"Our new devices provide a powerful combination of high gain, high linearity and output power up 48dBm," he continued. "This high output power level is sufficient to support advanced features including

orthogonal frequency division multiplexing (OFDM), a modulation scheme that enables broad band wireless systems to support non-line-of-site service." Traditional microwave communication systems have been point-to-point, with a requirement for line-of-site connectivity. OFDM eliminates the line-of-sight requirement, but requires a much higher peak output power to operate.

Toshiba's new SL and UL GaAs FETs for FWA systems are Lead(Pb)-Free, and are RoHS-compatible, which means that they meet the requirements of the European Union's Reduction of Hazardous Substances (RoHS) Directive, scheduled to take effect July 1, 2006.

Samples of Toshiba's high linearity internally matched GaAs FETs for fixed wireless access systems are slated for availability in the third quarter of 2005, with sample prices beginning at \$320.00 each for the 3.5GHz TIM3438-16SL.

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