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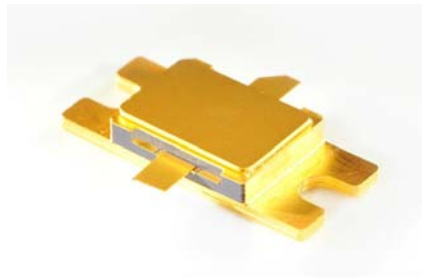
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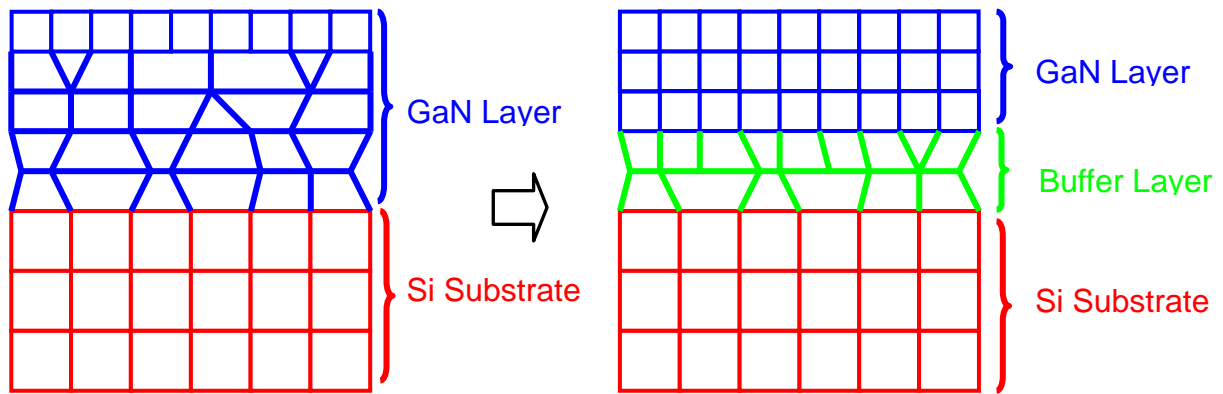
## **Mitsubishi Electric Develops High-output, High-efficiency GaN Power Amplifier on Si Substrate for Mobile Communications Base Stations**

**Tokyo, June 20, 2012** – Mitsubishi Electric Corporation (TOKYO: 6503) announced today it has developed a prototype high-output, high-efficiency 2GHz power amplifier for mobile communications base stations. The amplifier, which features a gallium nitride (GaN) transistor on a silicon (Si) substrate instead of a more costly silicon carbide (SiC), achieves a conversion efficiency rating of 70%, unprecedented among 2GHz power amplifiers with outputs of 150W or higher.



The amplifier is expected to lead to the development of smaller and more power-efficient base station transmitters. The installation of such equipment in tighter spaces will help expand wireless network coverage to accommodate increasing wireless traffic due to smartphone proliferation.

While amplifiers that use GaN transistors consume less power and have a higher output than amplifiers made with silicon transistors, they typically require a more robust substrate made of silicon carbide, which elevates the cost. Initial efforts to develop a GaN transistor using a Si substrate were hampered by deformation between the GaN layer and Si substrate, which led to increased loss and decreased power conversion efficiency. Eventually, however, the company designed a high-performance transistor by optimizing the GaN crystal structure and inserting a buffer layer between the GaN layer and Si substrate.



Optimized crystal structure of GaN on Si Substrate

Mitsubishi Electric’s new GaN power amplifier made with affordable silicon substrate achieves a power conversion efficiency of 70% at 2.1GHz, largely improving upon the 58% conversion efficiency of Si transistor amplifiers currently available commercially.

Going forward, Mitsubishi Electric expects to further downsize the power amplifier and its power supply and cooling units to enable even smaller mobile communications base stations.

Comparison of new and current amplifiers

	Frequency	Output	Power Conversion Efficiency	Size
<b>Mitsubishi Electric prototype GaN transistor amplifier</b>	<b>2.14GHz</b>	<b>170W</b>	<b>70%</b>	<b>23mm x 10mm x 4mm</b>
Si transistor amplifier currently available commercially	2.17GHz	150W	58%	21mm x 10mm x 4mm

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About Mitsubishi Electric

With over 90 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Embracing the spirit of its corporate statement, Changes for the Better, and its environmental statement, Eco Changes, Mitsubishi Electric endeavors to be a global, leading green company, enriching society with technology. The company recorded consolidated group sales of 3,639.4 billion yen (US\$ 44.4 billion\*) in the fiscal year ended March 31, 2012. For more information visit <http://www.MitsubishiElectric.com>

\*At an exchange rate of 82 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2012