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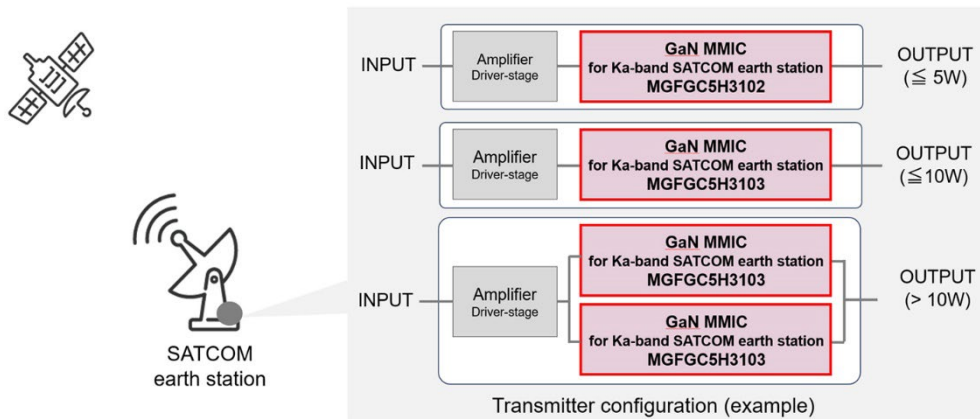
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Mitsubishi Electric to Ship Samples of GaN MMIC Power Amplifier for Ka-band SATCOM Earth Stations

Will enable smaller, lower-power Ka-band SATCOM earth stations for higher data capacity



Final stage circuitry example of transmitters for Ka-band satellite communication earth station

TOKYO, June 14, 2024 – [Mitsubishi Electric Corporation](https://www.mitsubishielectric.com) (TOKYO: 6503) announced today that it will begin shipping samples of 8W and 14W gallium nitride (GaN) monolithic microwave integrated circuit (MMIC) power amplifiers for use in Ka-band satellite-communication (SATCOM) earth stations from July 1.

While the mainstream frequency for satellite communications is currently the Ku-band (13GHz to 14GHz), the higher frequency Ka-band (27.5GHz to 31GHz) offers multi-beam technology and much wider bandwidth for transmitting more data. By adding more Ka-band products to its lineup, Mitsubishi Electric expects to meet the growing demand for high-capacity communications and contribute to smaller and more power-efficient satellite communications earth stations. These products will be exhibited in the USA at IEEE MTT-S International Microwave Symposium (IMS) 2024 in Washington, DC, on June 18–20.

The two new GaN MMIC power amplifiers will be shipped as customer-board-friendly bare chips. Suitable for emergency communications and Ka-band multi-carrier communications, they will support the power levels and frequencies required for Ka-band satellite communications transmitters capable of handling large amounts of data. In addition, thanks to a new GaN HEMT with high-output, high-efficiency, Mitsubishi Electric's new

chips achieve unsurpassed miniaturization and increased power added efficiency of more than 20% at maximum linear power.

Product Features

- 1) ***Expanded GaN HEMT lineup will support proliferation of satellite news gathering (SNG) and SATCOM emergency systems in addition to the usual SATCOM proliferation***
 - The two new GaN MMIC power amplifiers will help meet growing demand for various types of Ka-band satellite communications.
- 2) ***Industry’s smallest bare chip class will help downsize SATCOM earth stations***
 - Both power amplifiers use Mitsubishi Electric’s new GaN HEMT for high-frequency operation (to sub-millimeter waves) and small matching circuitry to realize the industry’s smallest bare chip class.
 - The power amplifier bare chips are covered with a proprietary moisture-resistant protective film, reducing the cost of additional moisture protection on customer boards.
- 3) ***Additional power efficiency of 20% will reduce power consumption in SATCOM earth stations***
 - The two GaN MMIC power amplifiers use Mitsubishi Electric’s proprietary matching circuitry for high-efficiency, low-distortion operation,* resulting in 20% additional power efficiency at maximum linear output power, while maintaining the low distortion required for Ka-band satellite communications.

Main Specifications

Model	MGFGC5H3102	MGFGC5H3103
Frequency	27.5–31.0GHz	
Saturated output power	39.0dBm (8W)	41.5dBm (14W)
Gain	20dB	20dB
Product type	Bare chip	
Chip size	2.77mm×1.39mm×0.05mm	2.77mm×2.41mm×0.05mm
Shipment date	July 1, 2024	

Note: Development partially subsidized by New Energy and Industrial Technology Development Organization (NEDO)

SATCOM systems are increasingly being deployed for emergency communications during natural disasters and for SNG by TV broadcasters in rural areas where fiber and/or cable networks are not available. They are also being deployed in emerging markets because they eliminate the need for constructing expensive terrestrial networks. Most existing SATCOM systems use Ku-band channels (already occupied by users), for which Mitsubishi Electric offers a range of nine GaN HEMTs for multi-carrier** and single-carrier*** Ku-band SATCOM earth stations.

Environmental Awareness

This product is compliant with the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) directive 2011/65/EU and (EU) 2015/863.

* Distortion characteristics affect communication quality of own and adjacent channels, so amplifiers must achieve low distortion.
 ** Voice, video and data communication method that uses carrier signals of various frequencies
 *** Communication method that uses a single-frequency carrier signal

Further Information

High-frequency devices website: www.MitsubishiElectric.com/semiconductors/hf/

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About Mitsubishi Electric Corporation

With more than 100 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. Mitsubishi Electric enriches society with technology in the spirit of its “Changes for the Better.” The company recorded a revenue of 5,257.9 billion yen (U.S.\$ 34.8 billion*) in the fiscal year ended March 31, 2024. For more information, please visit www.MitsubishiElectric.com

*U.S. dollar amounts are translated from yen at the rate of ¥151=U.S.\$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2024