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FOR IMMEDIATE RELEASE **No. 3673**

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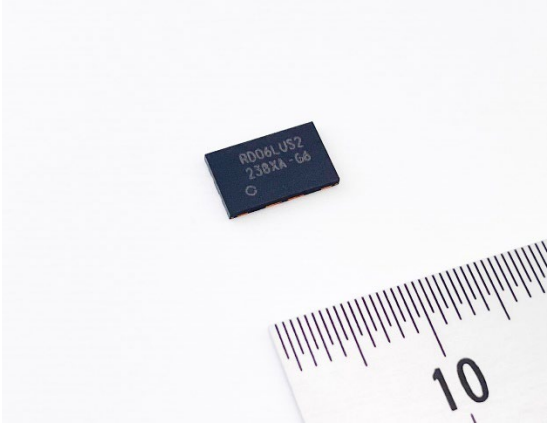
Mitsubishi Electric to Release 6.5W Silicon RF High-power MOSFET Samples for Commercial Handheld Two-way Radios

Will expand communication range and reduce power consumption



Silicon RF high-power MOSFET (RD06LUS2)

TOKYO, February 27, 2024 – Mitsubishi Electric Corporation (TOKYO: 6503) announced today that it will begin shipping samples of its new 6.5W silicon radio-frequency (RF) high-power metal-oxide semiconductor field-effect transistor (MOSFET) for use in RF high-power amplifiers of commercial handheld two-way radios (walkie-talkies) on February 28. The model, which achieves an industry-leading* 6.5W output power from a 3.6V single-cell lithium-ion battery, is expected to extend the range and reduce the power consumption of commercial radio equipment.

With the growing popularity of 3.6V lithium-ion batteries in smartphones, the commercial radio industry has been expected to develop higher power products using these batteries, which are less expensive than conventional 7.2V batteries. But until now, the use of 3.6V batteries resulted in reduced output power for commercial radio amplifiers which require higher output than smartphones, so the market has been waiting for MOSFETs capable of increasing the output power of 3.6V batteries.

* As of February 27, 2024 according to Mitsubishi Electric's research of 3.6V power amplifiers

In response, Mitsubishi Electric has now developed a high-power silicon MOSFET (RD06LUS2) that achieves unmatched power output and high drain efficiency** for commercial radios operating at 3.6V. In addition, a package containing two of these MOSFET chips can save space on printed circuit boards for commercial radios and contribute to lower assembly costs.

Product Features

1) Industry-leading 6.5W output power for extended radio range*

- Power density is improved by reducing on-resistance with a structure optimized for 3.6V operation.
- Package containing two MOSFET chips achieves unmatched 6.5W output power for 3.6V radios.
- Increased output power extends communication range by up to 27% versus existing model.***

2) Industry-leading 65% drain efficiency realizes reduced power consumption*

- Optimization for 3.6V operation achieves 65% drain efficiency.
- Increased drain efficiency reduces radio power consumption, resulting in extended operating time.

3) Two-MOSFET package reduces footprint and assembly costs

- New package with two MOSFET chips reduces footprint by 33% compared to two single-chip products.
- Compatibility with Surface Mount Technology (SMT) reduces package assembly costs.

Main Specifications

Model	RD06LUS2
Application	RF high-power amplifier for handheld two-way radios
Structure	Silicon N-channel MOSFET
Output power	6.5W typ. (520MHz)
Drain efficiency	65% typ. (520MHz)
Operating voltage	3.6V
Dimensions	8.0mm×4.9mm×0.75mm
Sample shipments	February 28, 2024

Future Developments

The new RD06LUS2 MOSFET will be released this July. In addition, samples of a companion MOSFET driver (RD00LUS2) will be shipped in March prior to its release in August. Also, for support, a two-stage evaluation board equipped with the RD06LUS2 MOSFET and RD00LUS2 driver, along with a nonlinear simulation model, will be released in May.

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.

** Efficiency of conversion from battery power to RF power output

*** Mitsubishi Electric's existing 4W RF high-power MOSFET (RD04LUS2)

Website

High-frequency devices: https://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 5,003.6 billion yen (U.S.$ 37.3 billion*) in the fiscal year ended March 31, 2023. For more information, please visit www.MitsubishiElectric.com

*U.S. dollar amounts are translated from yen at the rate of ¥134=U.S.$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2023