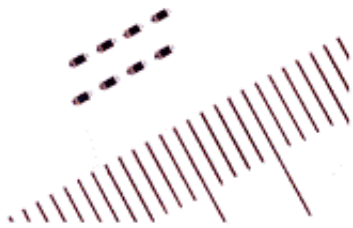


# Renesas Technology Releases Variable Capacitance Diodes in Ultra-Small SFP Package for Mobile Products

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Renesas Technology Corp. today announced the RKV5000DKK, RKV5010DKK, and RKV5020DKK ultra-compact ( $1.0 \times 0.6$  mm) variable capacitance diodes (varicap diodes) for use in TV / VCR tuners for mobile products such as laptop PCs and PDAs. Sample shipments will begin in Japan in August 2004.

The RKV5000DKK is designed for use in UHF tuners, and the RKV5010DKK and RKV5020DKK are for use in VHF tuners. Features of these varicap diodes are summarized below.

(1) Ultra-Compact ( $1.0 \times 0.6$  mm) Lead Pin Type

*Ideal for mobile products, these new varicap diodes employ SFP (Super small Flat Package)(Renesas Technology package code), a package type measuring only  $1.0 \times 0.6$  mm (excluding pins) and developed specifically*

*for diodes. This reduces the actual mounting area by approximately 40% from the company's earlier varicap diode package measuring  $1.2 \times 0.8$  mm (excluding pins). The lead pin type package makes simplifies mounting and visual confirmation. In addition, the package's mounting height is only 0.55 mm (maximum), making it suitable for use in compact products.*

**(2) Internal Capacitance Deviation Lowered 10% to Guaranteed Level of 1.8%**

*It is essential that the diodes employed in the same tuner have CV characteristics within a specified capacitance range (internal capacitance deviation). The three new varicap diode products have stable CV characteristics and reduce internal capacitance deviation by about 10%, from a guaranteed level of 2.0% (previous Renesas Technology varicap diode products) to 1.8%. These results in reduced tracking error in actual tuner operation, improved performance, and a need for fewer tuning processes on the production line.*

In addition, samples of the RKS1500DKK, a high-frequency switching diode for band switching in TV / VCR tuners that also employs the ultra-compact SFP package, are scheduled to begin shipping in August 2004 in Japan .

## **Product Background**

In recent years, mobile products such as laptop PCs and PDAs have become thinner and more compact while the variety of functions they offer has increased. This has boosted demand for models with built-in TV / VCR tuners. In response, efforts are being made to make such tuners more compact and cheaper, while increasing added value. Against this background, companies such as Renesas Technology have endeavored to supply a broad range of varicap diode products for use in electronic tuner circuitry. These varicap diodes are compact and offer different capacitance variation ratios in order to cover a wider tuning range. In addition, they deliver improved CV characteristics (linearity) to

the high-bias end.

Renesas Technology already mass produces tuner varicap diodes in the UFP (Ultra small Flat Package) (Renesas Technology package code) lead pin type measuring  $1.2 \times 0.8$  mm and 0.7 mm maximum mounting height (excluding pins) . To better meet current requirements, the company has now developed three new varicap diode products and a high-frequency switching diode product that are even more compact, measuring only  $1.0 \times 0.6 \times 0.55$  mm (maximum) (excluding pins) .

## Product Details

The RKV5000DKK, RKV5010DKK, and RKV5020DKK varicap diodes and RKS1500DKK high-frequency switching diode are manufactured using an optimized PN junction formation process that enables more compact size and uniform CV characteristics. Performance is comparable to the existing UFP package versions from Renesas Technology, the HVC202A, HVC306C, HVC300C, and HSC277, but the switch to the SFP package achieves a reduction of approximately 40% in the mounting area. In addition, more linear CV characteristics mean that internal capacitance deviation has been cut by about 10%, from a guaranteed level of 2.0% (maximum) to 1.8% (maximum).

Furthermore, the packaging quantity has been doubled, from 4,000 devices per reel to 8,000 devices. In spite of this, the guaranteed number of groups per reel remains unchanged. This means that the number of mounter restarts and group management defects is reduced, resulting in lower production costs.

In future Renesas Technology plans to broaden its product line still further by developing more tuner varicap diode and high-frequency switching diode products in SFP package versions.

More information at: [www.renesas.com/](http://www.renesas.com/)

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