HVC326C Variable Capacitance Diode for Tuners Supports 10 V Low-Voltage Drive

— Provides same level of performance at lower voltage. Ideal for use in tuners for mobile TVs, VCRs, etc., with low cost and low power consumption. —

Tokyo, February 24, 2003 — Hitachi, Ltd. (TSE: 6501) today announced the development of the HVC326C, a variable capacitance diode for tuners that supports a drive voltage of 10 volts. Shipments in Japan are scheduled to begin on March 1, 2003.

By lowering the drive voltage from the 25 volts of earlier products to 10 volts, the HVC326C is directly compatible with the power supplies of typical TV sets and VCRs, which generally have a power supply voltage of around 10 volts. This means there is no need for a DC/DC converter to boost the voltage for the variable capacitance diode. In spite of its low drive voltage, however, the HVC326C achieves the same level high capacitance ratio (C1/C10 > 6) and low noise as earlier Hitachi variable capacitance diode products. This makes it possible to design products incorporating tuners that are cheaper, more compact, and can run for extended periods on battery power.

[Background]

Variable capacitance diodes are used in the electronic tuner circuitry of products such as TV sets and VCRs. Making use of the fact that their capacitance changes based on the voltage applied to them, they are employed in the selection of the wavelength to be received (the frequency allotted to the desired channel). Variable capacitance diodes generally have a drive voltage of about 25 volts, while TV sets and VCRs usually have a maximum power supply voltage of around 10 volts. This means that in order to use a conventional variable capacitance diode in a TV or VCR tuner it was also necessary to employ a DC/DC converter to boost the voltage. In recent years, however, demand has been growing for tuners that are sufficiently compact and low in power consumption to be used in mobile devices such as laptop computers with built-in TV functions.

Hitachi currently produces the HVC202B, a variable capacitance diode for tuners that uses 25-volt drive and achieves a high capacitance ratio (C2/C25 > 6.3). The new HVC326C reduces the drive voltage from 25 volts to 10 volts, thus eliminating the need for a voltage booster circuit and making it suitable for use in mobile devices. The HVC326C will make it possible to design products that are more compact, cheaper, and consume less power.

[Product Details]

The HVC326C achieves a low drive voltage of 10 volts and a high capacitance ratio of 6.0 minimum (C1/C10) through the use of Hitachi's newly developed C-process technology*[1] and improved production conditions. In comparison with Hitachi's existing HVC202B variable capacitance diode product, which requires 25-volt drive and has a capacitance ratio of 6.3 minimum (C2/C25), the HVC326C retains the high capacitance ratio while reducing the capacitance deviation, by approximately 15%. In addition, though lower voltage usually results in increased loss, the above-mentioned process improvements make it possible to minimize loss by maintaining uniform voltage-capacitance characteristics (CV characteristics) and limiting high-frequency series resistance (rs) to 1 Ω or less (VR = 1 V, f = 470 MHz).

The HVC326C uses the same compact surface-mount package UFP (Hitachi package code) as the HVC202B.

Hitachi plans to continue development work on compact packages with the aim of making mounted devices smaller and thinner. In addition, development of low-voltage variable capacitance diodes is ongoing, and Hitachi's lineup of such products will continue to grow in future.

Notes: 1. C-process technology: A process technology for diode PN junctions developed by Hitachi. In assures an optimal junction depth by using a lower temperature for impurity doping during junction formation.

< Typical Applications >

1) Electronic tuner circuitry for TVs and VCRs
2) Oscillator tuner circuitry for voltage controlled oscillators (VCO) and voltage controlled crystal oscillators (VCXO)
3) Electronic tuner circuitry for FM tuners

< Prices in Japan > (For Reference)

Product Code	Package	Unit Price for orders of 10,000 (yen)
HVC326C	UFP	8

< Specifications >

Product Code	Package	Voltage VR	Inter-Pin Capacitance	Capacitance Ratio n (C1/C10)	Series Resistance rs
HVC326C	UFP	15 V	C1 = 13.5 to 15.5 pF C10 = 1.9 to 2.2 pF	6.0 min.	1.0 Ω max.

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Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.
