Voltage-controlled capacitors and variable capacitance diodes

What is a variable capacitance diode?

In electronics, a varicap diode, varactor diode, variable capacitance diode, variable reactance diode or tuning diode is a type of diode designed to exploit the voltage-dependent capacitance of a reverse-biased p-n junction. Varactors are used as voltage-controlled capacitors.

Why does the capacitance of a varactor diode vary with the applied voltage?

As the width of the depletion regionvaries with the applied reverse voltage,the capacitance of the varactor diode varies with the applied voltage. A varactor diode is a voltage-dependent component whose output depends on the input voltage. It is used as a variable capacitor whose capacitance is controlled by adjusting the applied reverse voltage.

What is voltage variable capacitor diode (VVC)?

VVC Operation - Voltage Variable Capacitors diodes (VVCs) are also known as varicaps,varactors,and as tuning diodes. Basically,a VVC is a reverse biased

Can a varactor diode be used as a voltage-controlled variable capacitor?

When forward biased,the depletion region is gradually vanished with the forward voltage and diode goes in conduction state. So,operate a varactor diode as a voltage-controlled variable capacitor,it has to be connected in reverse bias.

What is a varactor diode?

The varactor diode is also referred to as a voltage variable capacitor,or VVC. The diode's name "varactor" is a contraction for "variable reactor." Similarly,"varicap" is a contraction for "variable capacitor." A semiconductor diode has a positive-acting p region doped with acceptor impurities.

What is a varicap diode?

The varicap are designed to have an high range variation of capacitance with respect to applied reverse voltage. The typical voltage-capacitance graph of a varactor diode is shown below. Varactor diodes are classified as Abrupt Varactor Diodes and Hyper-Abrupt Varactor Diodes.

In electronics, a varicap diode, varactor diode, variable capacitance diode, variable reactance diode or tuning diode is a type of diode designed to exploit the voltage-dependent capacitance of a reverse-biased p-n junction. Varactors are used as voltage-controlled capacitors. They are commonly used in voltage-controlled oscillators ...

Application of Varactor Diode. Voltage-Controlled Oscillators(VCOs): Varactor Diodes are used in VCOs. VCOs are used in Phase-locked Loops and Communication ...

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A varactor diode, also known as a varicap diode or variable capacitance diode, is a specialized diode that has the unique ability to vary its capacitance based on the applied reverse-biased voltage. Unlike conventional diodes that primarily conduct current in one direction, the varactor diode"s primary function is to act as a voltage-controlled capacitor.

Variable capacitor. A variable capacitor is a capacitor whose capacitance may be intentionally and repeatedly changed mechanically or electronically. Variable capacitors are often used in L/C circuits to set the resonance frequency, e.g. to tune a radio (therefore they are sometimes called tuning capacitors), or as a variable reactance, e.g. for impedance matching in antenna tuners, ...

a Variable Capacitance Diode Variable capacitance diodes can replace expensive mechanically adjustable capacitors in an RF project. Substituting a variable capacitance diode for an expensive mechanically adjustable capacitor can be done in many RF projects. But there are a few tricks that need to be learned. Take a look at how it"s done with

Low-voltage variable capacitance diode BB202 FEATURES oVery steep C/V curve oC0.2: 30.5 pF; C2.3: 9.5 pF oC0.2 to C2.3 ratio: min. 2.5 ... APPLICATIONS oElectronic tuning in FM radio oVoltage Controlled Oscillators (VCO). DESCRIPTION The BB202 is a variable capacitance diode, fabricated in planar technology, and encapsulated in the ...

OverviewSubstitutes for varicap diodesApplicationsOperationUse in a circuitHarmonic multiplicationSee alsoFurther readingAll semiconductor junction devices exhibit the effect, so they can be used as varicaps, but their characteristics will not be controlled and can vary widely between batches. Popular makeshift varicaps include LEDs, 1N400X series rectifier diodes, Schottky rectifiers and various transistors used with their collector-base junctions reverse biased, particularly the 2N2222 and BC547. Reverse biasing the emitter-base junctions of transistors also is quite effective as lo...

A varicap diode, also known as a variable capacitance diode or tuning diode, is a special type of semiconductor diode whose capacitance varies with the applied reverse bias voltage. This unique property makes varicap ...

A reverse biased diode acts like a (small) capacitor. The capacitance varies depending on the applied reverse bias voltage. Varicaps are designed to have a larger capacitance than normal diodes. Still, you are ...

As the reverse bias voltage is increased, the depletion region width increases, reducing the capacitance according to the formula C?1/?v. Varactor diodes are used in ...

I Introduction. The capacitance of the varactor diode is generally small, and its maximum value is tens of picofarads to hundreds of picofarads. The ratio of the ...

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Voltage Variable Capacitors: VVC Operation - Voltage Variable Capacitors diodes (VVCs) are also known as varicaps, varactors, and as tuning diodes. Basically, a Voltage Variable Capacitors is a reverse biased diode, and its ...

A Varicap diode functions as a voltage-controlled capacitor by varying its capacitance based on the applied reverse-bias voltage in a circuit. Varicap Diode: The Voltage-Controlled Capacitor. A Varicap diode, also ...

The article explores the working and characteristics of varactor diodes, focusing on their variable capacitance under reverse-bias operation, the factors influencing their efficiency and Q factor, ...

YOU ARE HERE: HOME > OSCILLATORS > VOLTAGE CONTROLLED OSCILLATORS What are voltage controlled oscillators? A voltage controlled oscillator or as more commonly known, a vco, is an oscillator where the principal variable or tuning element is a varactor diode.The voltage controlled oscillator is tuned across its band by a "clean" dc voltage applied to the varactor ...

The developed voltage-controlled double-resonance quartz crystal oscillator circuit: Circuit constants: pass capacitors: C 2 = 10 uF, C 3, C 4, C 8, C 9, and C 10 = ...

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