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Discriminator Application Notes

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Application Notes

What is Discriminator?

The discriminator functions to convert the change of the frequency into audio frequency, a unique system of detection only used for FM broadcasting. The detection of FM wave is made through the circuit in which the relation between the frequency and the output voltage is linear. FM wave detection methods as known as ratio detection, Foster-Seeley detection, quadrature detection, differential peak detection, etc.

FM Wave Detection Methods

Ratio Detection

Ratio detection is the most popular method in use at present. The impedance characteristic of a ceramic resonator is designed into the circuit, and then a coil as a detector is unnecessary. The fact is that adjustment is eliminated.

Quadrature Detection

This detection method was originally developed as a sound detector for TV sets, but recently it has become popular in the consumer market (FM tuners, car radios, etc.). The Quadrature Detection Method utilizes the phase characteristic.

An FM signal is supplied directly to one side of the multiplier's input with an IC to the other side of the multiplier's input an FM-IF signal, which is passed through the phase shifting circuit mainly composed of a tank circuit tuned to FM-IF, is applied. By taking advantage of the phase characteristic of the ceramic resonator as a discriminator, we can eliminate adjustment of the FM-IF circuit.

Differential Peak Detection

This detection method was developed by RCA as a sound detector for TV sets. The method has following features.

1. Can output large level.
2. Can function with only 1 synchronous coil.

Non-linearity of synchronous characteristics are compensated each other by applying rectified intermediate frequency voltage. Thus, linearity can be obtained.

