VITESSE

Product Preview

VSC7111

500-800 MHz
Clock Recovery Unit

FEATURES

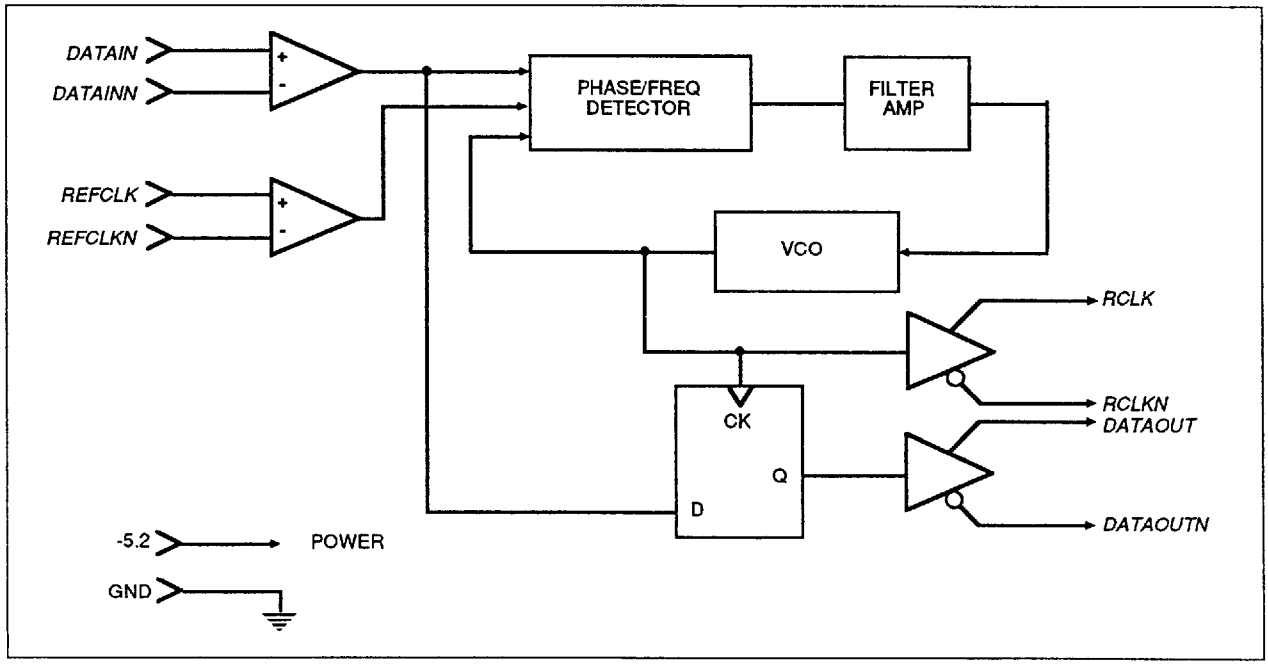
- 500-800 MHz Operating Range
- Fully Integrated Solution
- Single -5.2 V Supply
- ECL Compatible I/O Levels
- Production-Proven H-GaAs II E/D MESFET Process
- 28 Pin LDCC Package

GENERAL DESCRIPTION

The VSC7111 Clock Recovery Unit (CRU) is a GaAs integrated circuit which uses a fully integrated Phase-Locked Loop (PLL) to recover the bit-rate clock and retime the received data within the frequency range of 500 - 800 MHz. The incoming data is typically the hard-limited data output from a fiber-optic receiver, and is either 8B/10B encoded or has a transition density of 40% or greater.

The VSC7111 functions as follows: Each transition of the data is compared with the rising edge of the internal clock generated by an on-chip voltage controlled oscillator (VCO). Any difference in phase or frequency between the two edges generates an error output voltage from the phase/frequency detector. This error voltage is filtered, amplified and applied to the voltage control input of the VCO to correct its frequency or phase relative to the incoming data. The resulting VCO output is synchronous in phase and frequency with the bit rate clock of the input data. In addition, jitter introduced by the fiber-optic system will be filtered from the recovered clock by the narrow bandpass of the PLL. The center frequency of the PLL is selected with an input reference clock equal to 1/10 of the expected bit rate clock of the incoming data stream (e.g. 50 MHz for 500 MHz applications). The data and the recovered clock are applied to a D Flip-Flop which resynchronizes (retimes) the incoming data with the recovered clock.

VSC7111 BLOCK DIAGRAM



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