11 bit DAC with Line Driver

Features

- 11 bit Resolution
- 35 MHz Conversion Rate
- DNL < +/- 0,5 LSB
- INL < +/- 0,5 %
- BiCMOS Technology

General Description

IMST's DAC is a general purpose voltage-output digital-to-analog converter (DAC) that can operate at a 2.5V to 3.3V single supply. The data is converted into an analog value with 11 bit precision referenced to ground and an external reference. The maximum supported clock frequency is 50 MHz. A fast settling line driver with wide band matching drives a transmission line to transmit the analog information to the terminated external analog receiver. The full scale output swing is specified with 1.7 V at 2.5V supply.

A 4-wire SPI running at 10MHz is implemented for communication with other IC's or DAC channels. The SPI registers are read and write registers used to control the DAC functions. The SPI's from multiple DACs can be daisy chained and controlled by a single FPGA.

A state machine with a calibration algorithm controls and cancels the gain error and offset error vs. process, temperature and voltage variation.

A BiCMOS process is used for the integration.

Block diagram