

DesignWare 12-bit, 160 MSPS, 2.5 V Dual Current Steering DAC

Features

- ▶ IQ Matched DAC Pair
- ▶ 12-bit Resolution
- ▶ Up to 160 MSPS conversion rate
- ▶ 0.5 mA to 5 mA Differential Current Output
- ▶ Excellent Dynamic Performance: 68 dB SFDR
- ▶ 2.5 V ± 10% Analog Power Supply
- ▶ 1.1 V ± 10% Core Power Supply
- ▶ Low power dissipation
- ▶ Internal reference voltage generator
- ▶ Compact Area

Applications

- ▶ Broadband and multi-mode Wireless Communications transmission:
 - ▶ LTE, WiMAX, WCDMA, HSPA, WiFi, etc

Technology

- ▶ SMIC 40 nm LL (2.5 V IO)

Deliverables

- ▶ Databook
- ▶ Behavioral Verilog Model
- ▶ Abstract LEF and Timing LIB files
- ▶ GDSII Layout Database
- ▶ Assembly Guidelines

Reference Number

- ▶ 8551kq-II

Overview

This IP is a high performance, compact 12-bit 160 MHz current steering IQ-DAC instantiated in a 40 nm CMOS technology supplied at 1.1 V / 2.5 V.

The DAC provides differential current outputs to support single ended or differential configurations. The output currents can be used to drive directly two external resistive loads to obtain two complementary single-ended output voltages, or can be used to drive an external transformer (or amplifier) to obtain a single-ended output voltage.

The DAC uses a segmented thermometer decoded current steering architecture, combined with an improved two-dimensional centroid switching scheme, to achieve simultaneously very high update rates, 12-bit of intrinsic static accuracy, and very good dynamic characteristics.

An internal bandgap voltage reference, together with an external resistor, are used to set the full-scale current of the DAC.

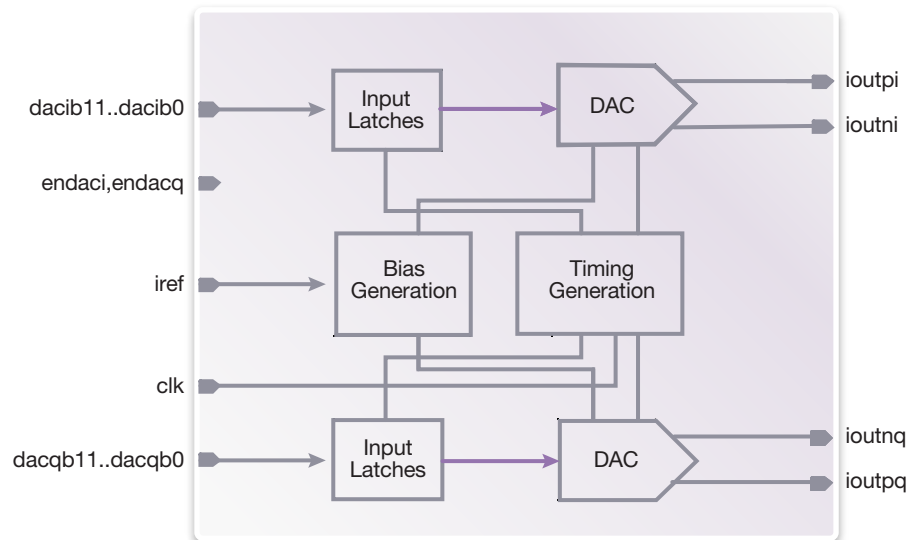


Figure 1: Functional Block Diagram

About DesignWare IP

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