

MAX32600 DAC Sine Wave Output Demonstration

April 3, 2015

1 Abstract

This document describes the DAC Sine Demo sample application provided for the MAX32600. This application demonstrates how to setup a 12-bit DAC to generate a sine wave, using the provided firmware APIs. The DAC generated signal is driven by an Op Amp configured as a follower.

2 Requirements

- MAX32600B EvKit
- Sample code for this application located in `Firmware/Applications/DACSineDemo`
- Olimex JTAG ARM-USB-TINY-H
- GNU ARM toolchain
- An oscilloscope for viewing the DAC output

3 Setup

- Load the compiled `max32600.elf` file onto the MAX32600 EvKit, and reset the part. The green LED should be on.
- To observe the output signal, connect a scope to either SMA connector J28 (OP AMP D OUT) or the pin headers on J42 (D OUT / GND)

4 Observation

- Press the button labeled "SW1 TEST", on the EvKit, to start the DAC output. The yellow LED should turn on
- The signal will drive until the user stops it with another toggle of "SW1 TEST" button, which will turn off the yellow LED.
- The output has the following characteristics:
 - Frequency: 1KHz
 - Common Mode Voltage: 0.375V
 - Peak to Peak Voltage: 0.75V

5 Source Code Overview

5.1 Drivers In Use

- Instruction Cache
- Clock Manager
- Power Manager
- IO Manager
- GPIO
- PMU
- AFE
- DAC

5.2 Interrupts Enabled

- GPIO
- PMU

5.3 Code Operation

- Enable Instruction Cache
- Setup Clocks; trim ring oscillator, set ADC and GPIO clocks
- Setup voltage reference module
- Setup OpAmp for external drive in “follower” mode
- Setup DAC rate and enable the DAC
- Prepare DAC with sine wave data pattern
- Setup GPIO “SW TEST” button for ADC trigger
- Setup GPIOs for green and yellow LEDs
- Wait for interrupts
- On GPIO button interrupt, toggle state and turn on or off the DAC signal along with the yellow LED for visual status