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Fermion: Dual Digital Potentiometer - 100K (Breakout)

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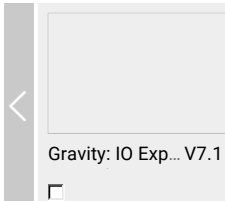* Model: | Rotation 300° | | Rotation 3600° | | Slide | | Dual Digital 100K |

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INTRODUCTION

Digital potentiometer is also called "Digital Pot" in short. It is a kind of mixed signal IC, which is able to dynamically change the internal resistors through MCU like Arduino. It can be applied to applications such as LED DC dimming, linear stable voltage source, oscillator, low pass filter or differential amplifier.

This breakout employs MCP42100 internally manufactured with two inpidual 100K digital pot. It features as small dimension and low power consumption. With our tutorial and sample code provided, you can quickly apply this module to your project. Compared to the traditional mechanical potentiometer, the digital pot features as flexible (program control), small size (ICs) and high reliability (without mechanical parts). It can replace the tradition one in many applications. Digital pot is usually used to change the sound volume in audio devices, such as smart loudspeaker, cell phone, and music player.

In addition, with a proper design op-amp circuit, the digital pot can also be applied to change some key parameters of the circuit dynamically, such as LED DC dimming (output current), linear stable voltage source (output voltage), oscillator (frequency and amplitude), low pass filter (bandwidth) and differential amplifier (gain).This breakout employs MCP42100 internally manufactured with two inpidual 100K digital pot POT0 and POT1. Each pot has 256 taps with a resistor of 100KΩ. It supports wide voltage supply (DC 2.7V - 5.5V) compatible with MCU of 3.3V and 5V. The breakout features as small size (20.0mm*18.0mm) and reserves the SO pin for multiple breakouts being configured in daisy-chain connection. If you have a I/O shield in hand, this breakout can be easily connected to it with the attached 5 pin male to male cable.

Arduino Connection Diagram

Two triangular waves out of phase can be observed from the oscilloscope. If we zoom in a section of the wave, the triangular wave is actually made up of many steps. Each steps correspond to one wiper position. The width of the step is about 1ms, because the program delay for 1ms between every wiper changes. The upstairs half cycle and the downstairs half cycle consist of 256 steps each, therefore the period of the triangular wave is 256*2=512ms. The digital pot can quickly change the wiper position and the settling time can up to micro seconds (18μs, typical).

FEATURES

- Low power, small dimension
- Dual Digital Potentiometer
- Compatible with 3.3V or 5.0V power supply

APPLICATIONS

- Sound volume or tone tuning
- LED DC dimmer, contrast control
- Programmable voltage source, filter, differential amplifier

SPECIFICATION

- Supply Voltage: 2.7～5.5V DC
- Static Operation Current: < 1 μA
- Potentiometer Value: 100 KΩ
- Resolution: 8 bits，256 taps for each potentiometer
- Number of Potentiometers: 2
- Interface: SPI
- Operation Temperature: -40℃～85℃
- Dimension: 20.0mm*18.0mm

DOCUMENTS

Product wiki
More Documents

SHIPPING LIST

- Dual Digital Pot (100K) V1.0 x1
- 5P male to male cable x1

REVIEW

Looks good and is easy to program up via Arduino on the PC. Next challenge to get it to work with my cheapo 4 channel RC and Arduino. Nicely made and very compact

★ ★ ★ ★ ★

Charles.　18/11/2020

FAQ

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