

down on the farm



Slot Machine Prototype Datasheet

Features:

- STM32VLDISCOVERY microcontroller with ARM Cortex-M3 processor.
- Lattice MachXO CPLD controls a tone generator for chime outputs
- 3 stepper motor-driven spinning reels with graphics, EasyDriver v4.4 motor controllers
- Two 4-digit 7-segment LED displays: Credit Balance, Credits Won
- Audible chime output when reels are spinning and to simulate coin drop
- LCD display for user messages
- User wins varying amounts of play credits if three symbols of a kind line up in the viewing window.
- Microcontroller reads WAV files from SD card and plays sound effects after each 15 seconds of inactivity and when user wins prize.
- Custom wood cabinet with reel lighting.

General Description:

This device is a play money slot machine that uses stepper motors to rotate reels containing symbols. The user wins play credits when symbols line up 3-of-a-kind in the viewing window. The results of each game round are calculated using a Random Number Generator, and the device keeps track of the number of credits won and the credit balance while displaying the values on 7-segment LED displays. Sound effects are produced when the microcontroller reads WAV files from an SD card using SPI and the open-source FAT file system module called FatFs. The microcontroller uses DMA to transfer the data to a D/A converter, then the converted data is output to an audio amplifier and speaker. The user is able to initiate game rounds and reload play credits by pressing the appropriate buttons. The chime outputs are produced by a repurposed mini piano pencil case tone generator that is activated by the CPLD. The output from the tone generator is amplified and sent to a speaker.

