HH1a-06 Palm Projector

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A video projector is commonly used as a display interface for teaching, business and entertainment. In this project, our goal is to make a palm-sized projector.

The 3 major advantages of the palm projector:

a) **Better Portability**: Our palm projector is much smaller and lighter than typical projectors, and it uses rechargeable battery to make it more portable.

b) **Lower Power Consumption**: Our palm projector more energy efficient because high brightness light-emitting diode (LED) array is used as light source.

c) **Wide connectivity**: Our palm projector can accept S-Video, VGA and Composition video signals to maximize its compatibility.

1. To examine the fundamentals principles of the projector and produce the system.
2. To optimize the internal video signal control of the projector by register settings
3. To design a power circuit for the projector board and rechargeable battery.
4. To design a current driver for the high brightness LED array.
For the projector, it uses a silicon micro-display panel to produce the image, with an output resolution of VGA (640 x 480) at 120 Hz and a 10” projection of 15 lumen value.
The power system is mainly divided into two parts:

a) **The Battery Charging Circuit**, which charges the battery and provides voltage conversion.

b) **The LED Current Driver**, which converts 12V DC input into constant 800 mA current output for turning the LED on safely.

**Purpose of LED Current Driver:**

- Uses constant current source to drive the LED light source
- Convert DC power with highly efficient buck converter

**Purpose of Battery Charger:**

- Allows battery recharging while turning on the projector
- Provides battery power after disconnected to power supply