PRELIMINARY

CY8CLED04D01, CY8CLED04D02
CY8CLED03D01, CY8CLED03D02
CY8CLED04G01, CY8CLED03G01

PowerPSoC Intelligent LED Driver

1. Features

- Integrated power peripherals
  - Four internal 36V, 1A low side N-Channel power FETs
    - $R_{DS(ON)}$– 0.5Ω
    - Up to 2 MHz switching frequency
  - Four hysteretic controllers
    - Independently programmable upper and lower thresholds
    - Programmable minimum on/off timers
  - Four low side gate drivers with programmable drive strength
  - Four precision high side current sense amplifiers
  - Three 16-bit LED dimming modulators
    - DMM, SSDM, and PWM dimming
  - Six fast response (100 ns) voltage comparators
  - Six 8-bit reference DACs
  - Built in switching regulator eliminates external 5V supply
  - Multiple topologies including floating load buck, floating load buck-boost, and boost
- M8C CPU core
  - Processor speeds up to 24 MHz
- Advanced peripherals (PSoC® Blocks)
  - Eight digital PSoC Blocks provide:
    - 8 to 32-bit timers and counters
    - 6 to 12-bit incremental ADCs
    - DMX512 and DALI interfaces
    - Full-duplex UARTs
    - Multiple SPI masters or slaves
    - Connectable to all GPIO pins
  - Rail-to-Rail analog PSoC Blocks provide:
    - Up to 12-bit ADCs
    - Up to 9-bit DACs
    - Programmable gain amplifiers
    - Programmable filters and comparators
  - Complex peripherals by combining blocks
  - Capacitive sensing application capability
- **Programmable pin configurations**
  - 25 mA sink on all GPIO and function pins
  - Pull up, pull down, high Z, strong, or open drain drive modes on all GPIO and function pins
  - Up to 10 analog inputs on GPIO
  - Two 30 mA analog outputs on GPIO
  - Configurable interrupt on all GPIO
- **Flexible on-chip memory**
  - 16K Flash program storage 50,000 erase and write cycles
  - 1K SRAM data storage
  - In-System Serial Programming (ISSP)
  - Partial Flash updates
  - Flexible protection modes
  - EEPROM emulation in Flash
- Complete development tools
  - Free development software
    - PSoC Designer 5.0™
  - Full featured, In-Circuit Emulator and Programmer
  - Full speed emulation
  - Complex breakpoint structure
  - 128 kBytes trace memory
- Visual embedded design
  - LED based express drivers
    - Binning compensation
    - Temperature feedback
  - SSDM modulation technology
    - Reduces radiated EMI
    - Reduces low frequency blinking
- Applications
  - Stage LED lighting
  - Architectural LED lighting
  - General purpose LED lighting
  - Automotive and emergency vehicle LED lighting
  - Landscape LED lighting
  - Display LED lighting
  - Effects LED lighting
  - Signage LED lighting
- Device options
  - CY8CLED04D0x (56 pin QFN)
    - Four internal FETs with 0.5A and 1.0A options
    - Four external gate drivers
    - Built In switching regulator
  - CY8CLED03D0x (48 pin QFN)
    - Three internal FETs with 0.5A and 1.0A options
    - Three external gate drivers
    - Built In switching regulator
  - CY8CLED04G01
    - Four external gate drivers
  - CY8CLED03G01
    - Three external gate drivers