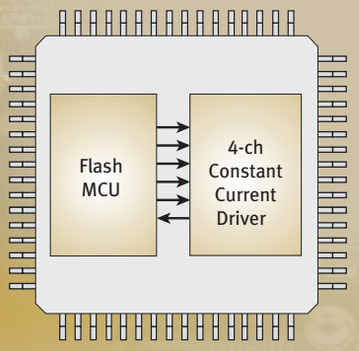
Empowered by Innovation

8-bit HCD/LED MCUs

NEC ELECTRONICS AMERICA

78K0 Microcontrollers with Constant Current Driver

With a high-performance flash microcontroller and four-channel constant high-current driver, the NEC Electronics µPD78F8024 and µPD78F8025 are well positioned for emerging high-power LED lighting applications. These devices offer valuable benefits from reduced system cost in space constrained system to intelligence to dim and adjust light quality. These devices are supported by a complete hardware and software development tool set.



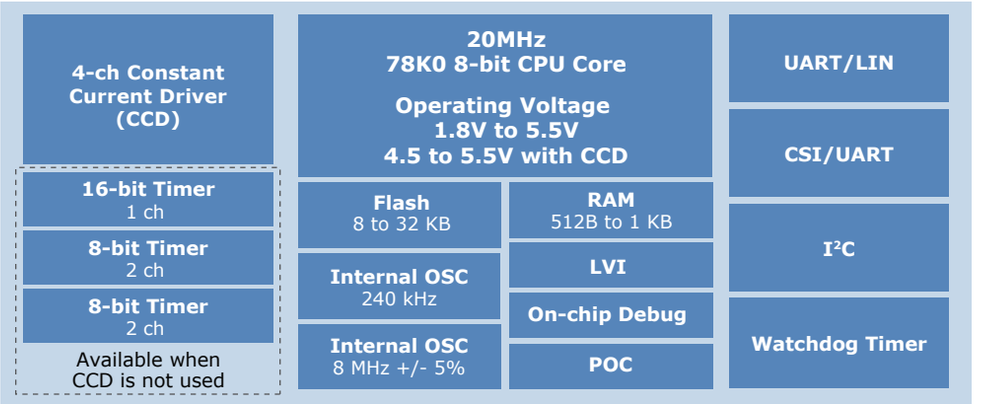
µPD78F8024/25

Key Features

- Flash microcontroller
  - High-performance 8-bit 78K0 flash microcontroller
  - Up to 32 KB flash memory and 1 KB SRAM
  - Internal 8MHz oscillator
  - 4-ch 8-bit pulse-width modulation (PWM) timers
  - 4-ch 10-bit A/D converter
  - 3-ch serial interfaces (UART, UART/CSI, I²C)
  - Watchdog timer
  - 16-bit capture/compare timer
- Constant high-current driver
  - 4-ch buck or boost hysteretic current regulators
  - Up to 1MHz switching frequency
  - 350mA – 1.5A drive per channel with external field-effect transistors (FETs)
  - 9-38V supply voltage
  - Soft start (for reduced EMI)
  - Thermal shutdown
  - Automatic lockout upon detection of voltage underages

Key Benefits

- Saves space by integrating MCU and constant current driver in one chip
- Enables efficient lighting system by supporting switch-based circuits (boost or buck)
- Reduces cost with the use of a small inductor (using up to 1 MHz switching frequency)
- Enhances system flexibility by enabling:
  - Dimming control
  - Color management
  - Thermal management
  - Communication
- Supports different kinds of LEDs from 350 mA to 1.5A with external MOSFETs



www.am.necel.com

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Target Applications

- High-power LED lighting
  - General illumination
  - Display backlighting
  - Architectural and entertainment lighting
  - Emergency vehicle lighting
  - Gaming machine lighting
- Industrial control
  - Stepping motor and solenoid drivers
  - Switching-mode power supply

Development Tools

- EV-K0-HCD evaluation board
  - 4-ch LED driver (up to 700 mA per channel)
  - On-board Luxon Rebel LEDs
  - On-board light and temperature sensors
  - RS-232 and RS485/DMX512 interface
  - LED light engine interfaces
  - Flash programming via USB interface
- Software development tools
  - Applilet-EZ reference code generator
  - Integrated development environment
- Hardware tools
  - Full-function IECUBE emulator
  - On-board USB debugger

Ordering Information

Part Number	Flash Memory	RAM Memory	Pin Count	Availability
µPD78F8024	8 KB	512 byte	64	Mass Production
µPD78F8025	32 KB	1 K	64	Samples

For the latest list of new development tools and device availability and pricing, contact your NEC Electronics America sales representative.

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