

## 8-bit MCUs for Lighting

NEC ELECTRONICS AMERICA

NEC Electronics' 78K0/1x2 8-bit All Flash® MCUs are designed specifically for fluorescent, HID and LED lighting systems requiring low cost, high efficiency and intelligent control. The 78K0/1x2 devices consume very low power and integrate two unique 16-bit timers with high-speed pulse-width modulation (PWM) output, three channels of internal comparators and a one-channel internal operational amplifier with programmable gains. The lineup consists of 14 devices in 16-pin, 20-pin and 30-pin packages. Operating temperature ranges from -40 to +105 degree Celsius.

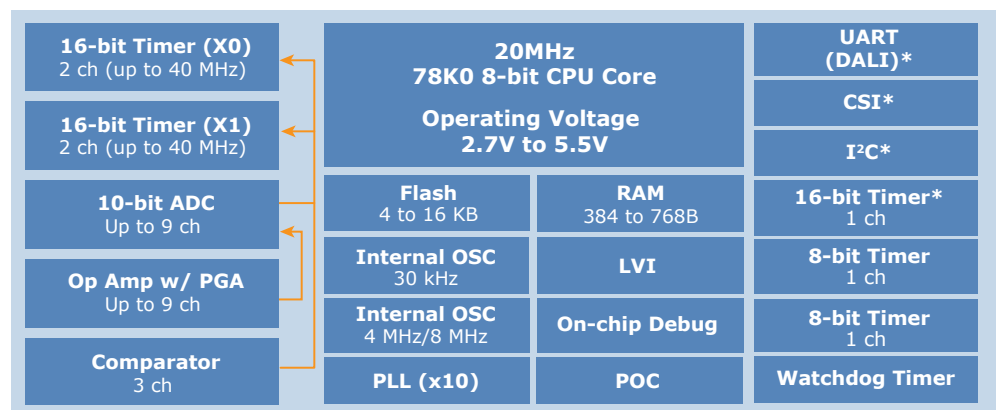
### 78K0/1x2 Microcontrollers

#### Key Features

- › Flash microcontroller
  - High-performance 8-bit 78K0 flash microcontroller running up to 20 MHz
  - Up to 16 KB flash memory and 768B SRAM
  - Internal 8 MHz oscillator
- › Enhanced peripherals for lighting application
  - Two 2-channel 16-bit PWM-capable timers running up to 40 MHz with dead-time control
  - 3-channel comparator
  - 1-channel operational amplifier with programmable gain amplifier
  - Up to 9 channels of 10-bit A/D conversion (ADC)
  - Interlocking between timers, comparators and ADC
- › Serial interface to support communication
  - UART (DALI-capable), I<sup>2</sup>C and SPI interface
- › Low power design with extended temperature range
  - Low power with 0.3 μA in stop mode and 260 μA run mode at 1 MHz
  - Extended operating temperature range from -40 to +105 degrees Celsius

#### Key Benefits

- › Single chip supporting both power factor correction (PFC) and driver for fluorescent and high intensity discharge (HID) lamps
  - One timer for PFC and another timer for half bridge for lamps
- › Single chip supporting both PFC and one channel of LEDs in a system sourcing from AC power
  - One timer for PFC and another timer for constant current circuit for LEDs
- › Single chip support three independent channels of LEDs in a system with dedicated DC power
  - Dedicate timers, 3 comparators and ADCs to drive 3 channels of constant current circuitry
- › Serial interface to support DALI, DMX and wireless communication
- › Small package and low pin-count save space



\* Available with some devices

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### Target Applications

- › Fluorescent white lights in office and industrial buildings
  - Single chip for PFC and lamp driver
  - Supports DALI and other communication protocols
- › Outdoor HID flood lights for large areas such as parking lots
  - Single chip for PFC and lamp driver
- › LED lighting for architectural and entertainment applications
- › Motor control

### Development Tools

- › K0/Ix2 ballast lighting evaluation board
  - Support for two fluorescent lamps
  - Up to 99% PFC
  - Dimming control in DALI, analog or IR
  - On-board USB debugging interface
- › K0/Ix2 LED lighting evaluation board
  - Support for 3-channel LEDs
  - Dimming controls in DALI, analog and DMX512
  - On-board USB debugging interface
- › Comprehensive software and hardware tools

### Ordering Information

Part Number	Flash Memory (KB)	RAM Memory (B)	Pin Count	Op Amp
μPD78F0740/1/2	4/8/16	384/512/768	16	N
μPD78F0750/1/2	4/8/16	384/512/768	16	Y
μPD78F0743/4	8/16	512/768	20	N
μPD78F0753/4	8/16	512/768	20	Y
μPD78F0745/6	8/16	512/768	30	N
μPD78F0755/6	8/16	512/768	30	Y

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

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Printed in U.S.A. on recycled paper using soy ink.

Document No. U19560EU2V0PB00

