NEC

µPD78082x 8-BIT MICROCONTROLLERS WITH CAN, LCD, AND MOTOR CONTROLLERS

The µPD78082x devices are high-speed 8-bit microcontrollers with a CAN controller, as well as an LCD controller capable of controlling and directly driving up to 112 LCD segments. The CAN controller, together with their high level of integration (using NEC's 0.35-micron CMOS process technology), makes the devices a cost-effective solution for many automotive electronics and industrial control applications.

The µPD78082x devices have low EMI emissions, 256 bytes of EEPROM, and a host of on-chip peripherals. A flash version is also available, as is an extensive tool chain containing a software simulator, C compiler, relocatable assembler, screen debugger, and in-circuit emulator.

BLOCK DIAGRAM
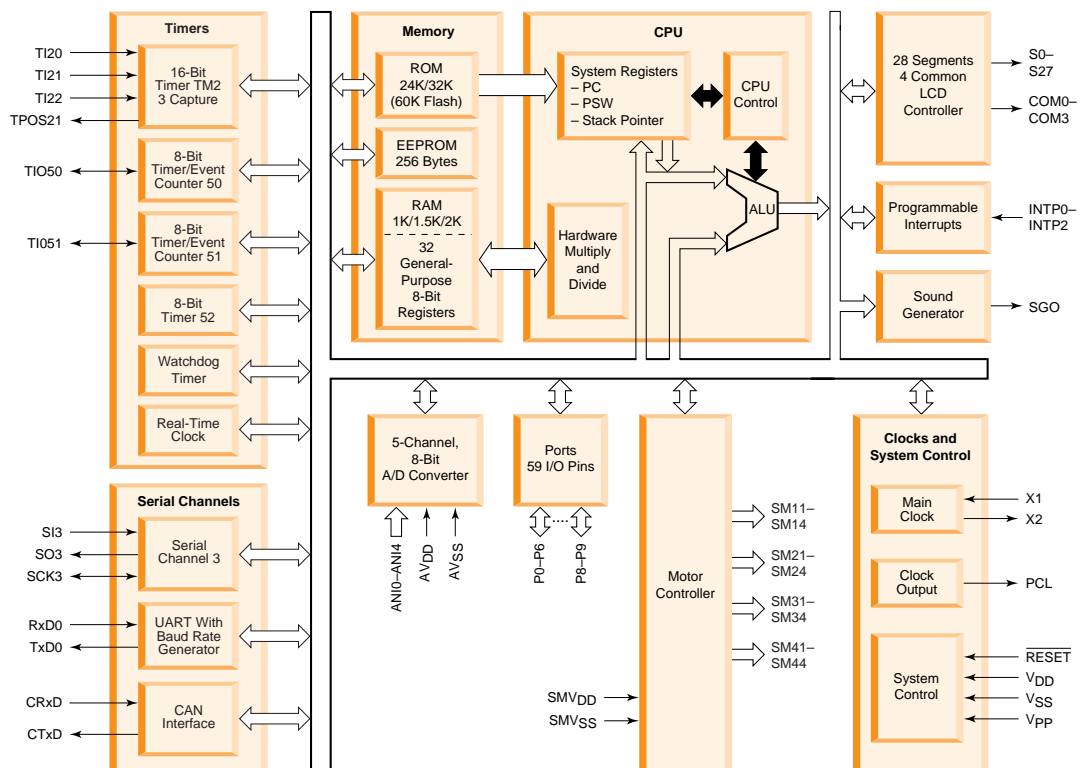
98YL-0208B (10/98)

SPECIFICATIONS

- Clock frequency: 4 to 8 MHz
- 250 ns instruction execution time (min.)
- 4.0- to 5.5-volt operation
- EMI emissions: 10–15 dB lower than most equivalent microcontrollers
- Operating temperature: –40 to +85ºC

- Power consumption
  - Normal operation: 38 mW
  - Halt mode: 4.8 mW
  - Stop mode: 0.004 mW
- 0.35-micron CMOS process technology
- 80-pin QFP (14 x 14 x 2.70 mm)
- Highly reliable grade A devices available

- Architecture
  - 8-bit CPU
  - Instruction set that operates on bit, byte, or word operands
  - Four register banks: eight 8-bit registers per bank
- Memory
  - 64KB linear address space
  - Up to 32K internal ROM
  - 60K flash version available
  - 256 bytes EEPROM
  - Internal RAM
    - ° 1K – 2K
    - ° Fully static operation
- Interrupts
  - One non-maskable interrupt
  - Three external maskable interrupts
  - 20 internal maskable interrupts
  - Automatic release of Halt and Stop modes
- Low EMI emissions

- Peripherals
  - LCD controller (28 segments x 4 common)
  - 59 general-purpose ports
  - One 16-bit timer
  - Two 8-bit timer/event counters
  - One 8-bit timer
  - One watchdog/interval timer
  - Serial channels
    - ° One synchronous channel
    - ° One UART with baud rate generator
  - CAN 2.0 B interface
    - ° 500K baud at 8 MHz
    - ° Two transmit channels
    - ° 16 message identifiers
    - ° 288 bytes of RAM
  - Five-channel 8-bit A/D converter: 18 µs conversion time
  - Sound generator
  - Stepper motor controller

HALT AND STOP MODES FOR µPD78082x (TYPICAL POWER AT 8 MHz)

Voltage	Normal Mode: Chip 100% ON	Halt Mode: CPU Clock OFF	Stop Mode: Main Clock OFF
	Main and Subsystem Clocks ON	Main and Subsystem Clocks ON	No 32-kHz Subsystem Clock
5 V	38 mW	4.8 mW	0.004 mW

ORDERING INFORMATION

Part Number	Internal ROM	EEPROM
µPD780823GC	24K mask ROM	256 bytes
µPD780824GC	32K mask ROM	256 bytes
µPD78F0828GC	60K flash	256 bytes

K0 FAMILY WITH CAN INTERFACE

Peripherals	µPD780949	µPD780828	µPD780818
ROM max.	60K	32K	32K
RAM max.	2K	2K	2K
Flash version	60K	60K	60K
Timers	6	6	6
Serial channels (with CAN)	4	3	3
8-bit A/D channels	8	5	12
General-purpose pins	78	59	46
LCD controller	40 x 4	28 x 4	–
Subsystem clock	Yes (RC)	–	Yes (RC)
Motor controller	–	Yes	–

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For literature, call **1-800-366-9782** 7 a.m. to 6 p.m. Pacific time
or fax your request to **1-800-729-9288**
or visit our Web site at **www.nec.com**