NEC
NEC Electronics Inc.

µPD75328/P328
4-Bit, Single-Chip Microcomputers
with LCD Controller/Driver
and A/D Converter

T-49-19-44
T-49-19-59

Description

The µPD75328 and µPD75P328 are high-performance, single-chip CMOS microcomputers that contain a CPU, ROM, RAM, I/O ports, an interval timer, a timer/event counter, a watch timer, an LCD controller, an A/D converter, vectored interrupts, a subsystem clock, and a serial interface. The instruction set allows the user to manipulate RAM data and I/O ports in 1-, 4- and 8-bit units.
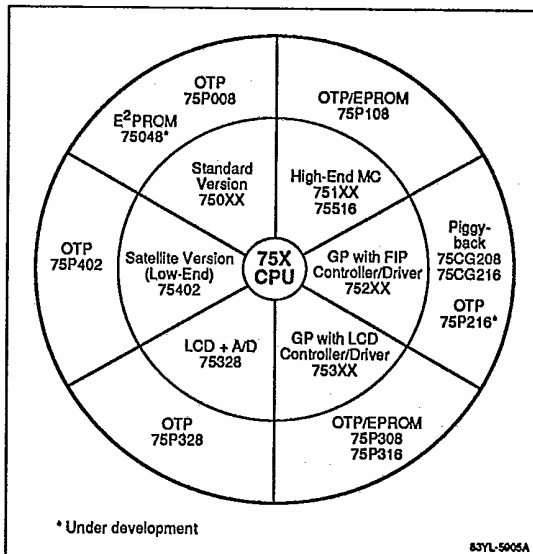
Features

□ 103 instructions
 — Bit-manipulation instructions
 — 4-bit and 8-bit transfer instructions
 — 1-byte relative branch instructions
 — GETI instruction that converts one 2-byte instruction or two 1-byte instructions into one 1-byte instruction
□ Variable instruction execution time for power saving
 — 0.95, 1.91, 15.3 µs at 4.19 MHz
 — 122 µs at 32.768 kHz
□ Program ROM: 8064 bytes
□ Data memory (RAM)
 — Allows operation on 1-, 4-, and 8-bits
 — Contains 512 × 4 bits
□ Bit-sequential buffer
 — 16-bit, bit-manipulation memory
□ Eight 4-bit registers
□ Accumulators
 — 1-bit accumulator (CY)
 — 4-bit accumulator (A)
 — 8-bit accumulator (XA)
□ 24 I/O lines
 — 12 outputs can drive a LED directly (sink 15 mA rms)
 — Eight N-channel open drain; withstands 10 V
□ 12 input-only lines
□ One external event input
□ Timers
 — One 8-bit basic interval timer
 — One 8-bit timer/event counter
 — One 14-bit watch timer
□ A/D converter
 — 6-channel
 — 8-bits
□ LCD controller
 — Four common lines
 — 20 segment lines
 — Modes of operation: static; multiplexed 1/2 bias; triplexed 1/2 or 1/3 bias; quadraplexed 1/3 bias

□ 8-bit serial interface
 — SBI mode
 — 2- or 3-wire mode
  Data transfer can be MSB or LSB first
  Full duplex mode
  Receive-only mode
□ Vectored interrupts
 — Three external interrupts
 — Three internal interrupts
 — Nine inputs which generate one interrupt request
□ Standby modes
 — HALT mode: stops CPU only
 — STOP mode: stops total chip
□ Mask options (not available on 75P328)
 — Pull-up resistors for ports 4 and 5
 — LCD resistor ladder
□ Operates with oscillator or ceramic resonator
□ CMOS technology at 5 V and 4.19 MHz
 — Normal operation: 2.5 mA typical
 — HALT mode: 0.5 mA typical
 — STOP mode: 0.1 µA typical
□ Programmable versions
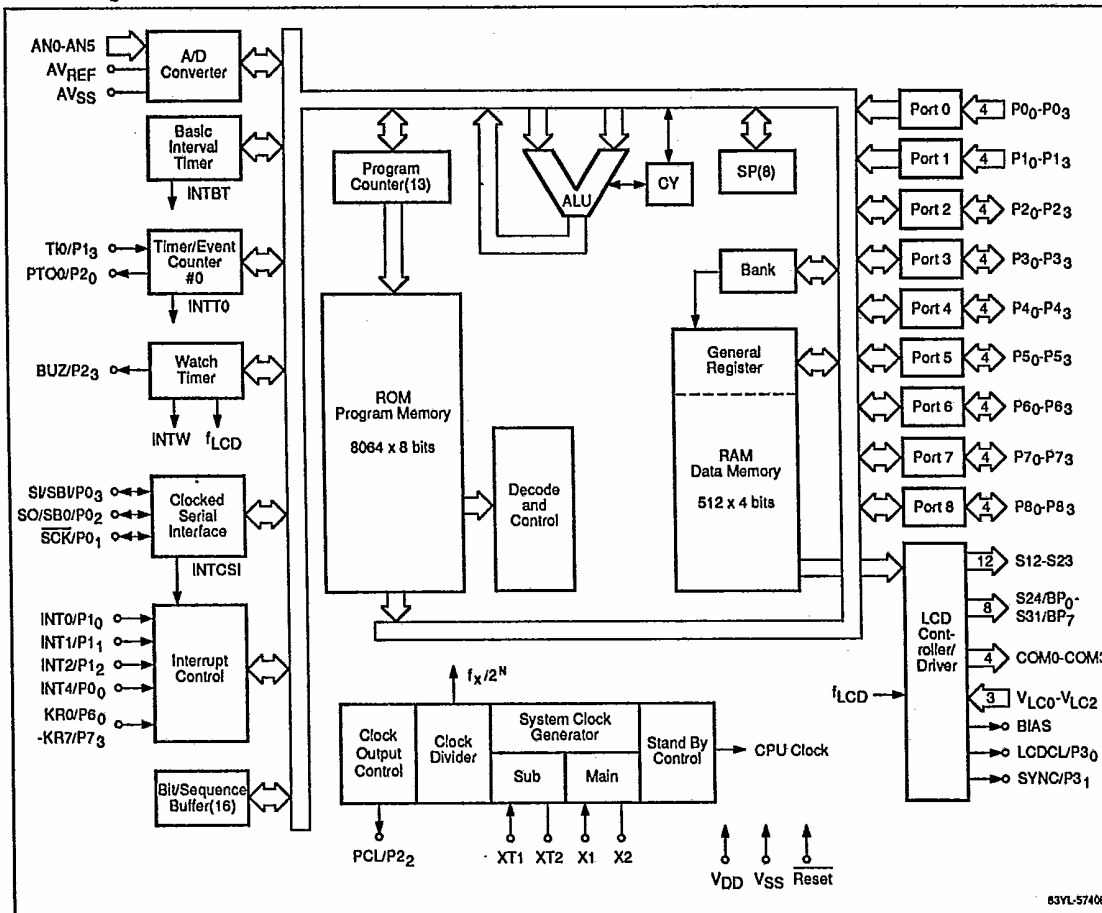 — OTP: µPD75P328

75X Family Architecture

* Under development

83YL-5905A

μPD75328/P328

Ordering Information

Part Number	Package	ROM
μPD75328GC-xxx-3B9	80-pin plastic miniflat	Mask ROM
μPD75P328GC	80-pin plastic miniflat	OTP

Block Diagram

83YL-5740B