

## CMOS 16-Bit Microcontrollers TMP91FY27U

### 1. Outline and Features

TMP91FY27 is a high-speed 16-bit microcontroller designed for the control of various mid- to large-scale equipment.

TMP91FY27U comes in a 64-pin flat package. Listed below are the features.

- (1) High-speed 16-bit CPU (900/L1 CPU)
  - Instruction mnemonics are upward-compatible with TLCS-90/900
  - 16 Mbytes of linear address space
  - General-purpose registers and register banks
  - 16-bit multiplication and division instructions; bit transfer and arithmetic instructions
  - Micro DMA: 4 channels (1.0  $\mu$ s/2 bytes at 16 MHz)
- (2) Minimum instruction execution time: 148 ns (at 27 MHz)
- (3) Built-in RAM: 16 Kbytes  
Built-in ROM: 256-Kbyte Flash memory  
2-Kbyte mask ROM (used for booting)
- (4) External memory expansion
  - Expandable up to 16 Mbytes (shared program/data area)
  - Can simultaneously support 8-/16-bit width external data bus (Dynamic data bus sizing)
- (5) 8-bit timers: 6 channels
- (6) 16-bit timers: 1 channel
- (7) General-purpose serial interface: 2 channels
  - UART/Synchronous mode: 2 channels
  - IrDA Ver.1.0 (115.2 kbps) mode selectable: 1 channel
- (8) Serial bus interface: 1 channel
  - I<sup>2</sup>C bus mode/clock synchronous mode selectable

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- (9) 10-bit AD converter (sample hold circuit is inside): 4 channels
- (10) Watchdog timer
- (11) Timer for real-time clock (RTC)
- (12) Chip select/Wait controller: 4 blocks
- (13) Interrupts: 34 interrupts
  - 9 CPU interrupts: Software interrupt instruction and illegal instruction
  - 21 internal interrupts: 7 priority levels are selectable
  - 4 external interrupts: 7 priority levels are selectable  
(among 3 interrupts are selectable edge mode)
- (14) Input/output ports: 53 pins
- (15) Stand-by function
  - Three Halt modes: IDLE2 (programmable), IDLE1 and STOP
- (16) Clock controller
  - Clock gear function: Select a High-frequency clock  $f_c$  to  $f_c/16$
  - RTC ( $f_s = 32.768$  kHz)
- (17) Operating voltage
  - $V_{cc} = 2.85$  V to  $3.6$  V ( $f_c$  max =  $27$  MHz)
- (18) Package
  - P-LQFP64-1010-0.50D

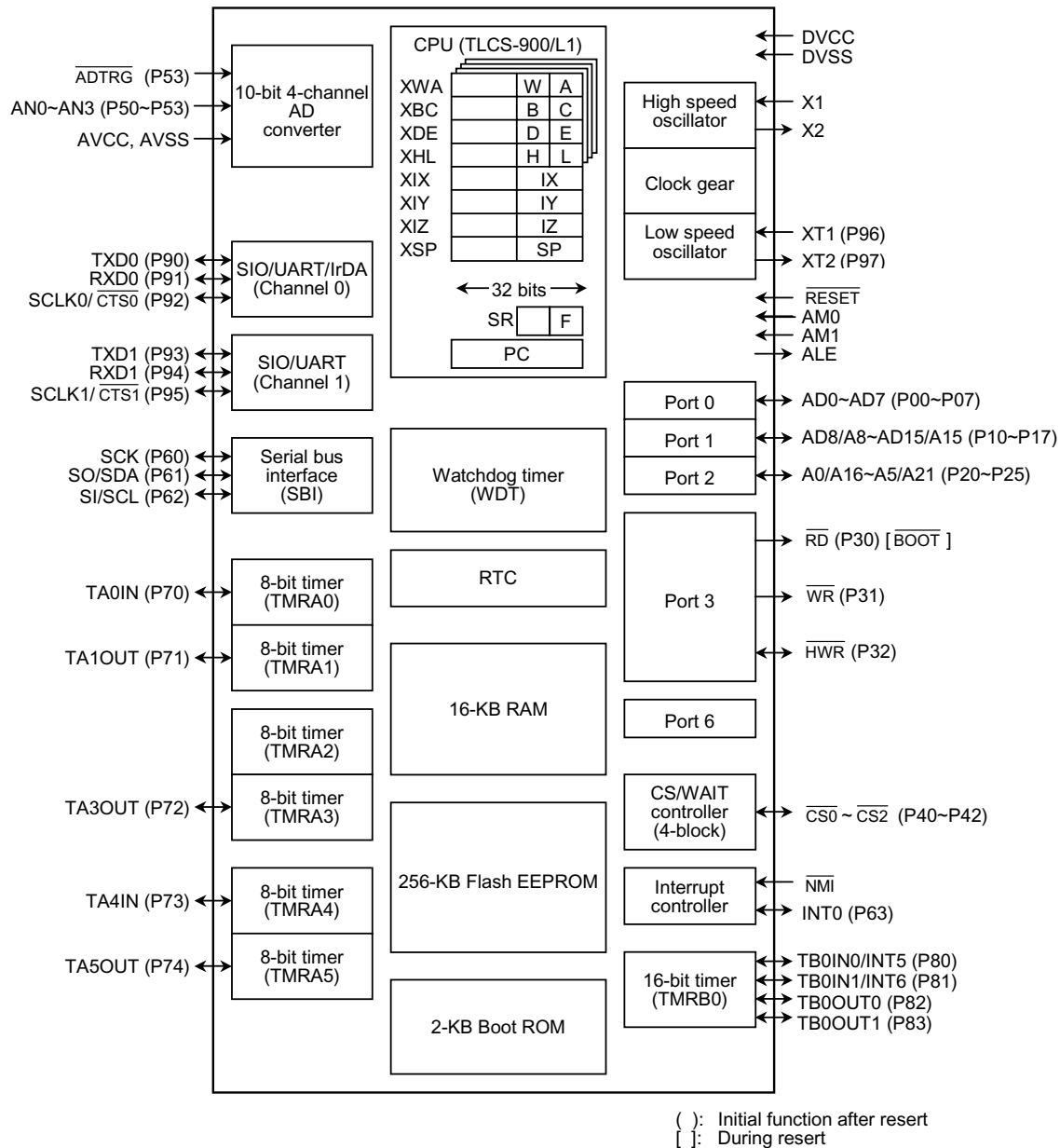


Figure 1.1 TMP91FY27 Block Diagram