TOSHIBA

TMP91CP27U

16-bit Low Cost General Purpose Microcontroller in 64-pin Package

- **16-bit single chip microcomputer TLCS-900/L1 Series**
  - 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
- **Instruction execution time:**
  - 148 ns at 27 MHz
- **External memory expansion**
  - Expandable up to 16 Mbytes
  - Can simultaneously support 8/16-bit width external data bus
  - Dynamic data bus sizing
- **34 interrupt sources**
  - 9 CPU interrupts: Software interrupt instructions
  - 21 internal interrupts: 7 priority levels selectable
  - 4 external interrupts: 7 priority levels selectable
- **Input/Output ports: 53 pins max.**
- **16-bit Timer/Counter: 1ch**
- **8-bit Timer/Counter: 6ch**
- **Watchdog timer**
- **General purpose serial interface: 2ch**
  - UART/Synchronous mode: 2ch
  - IrDA Ver. 1.0 (115.2 kbps) mode selectable: 1ch
- **Serial bus interface: 1ch**
  - I²C bus mode/clock synchronous select mode
- **10-bit AD converter (built in sample-hold circuit)**
  - Analog input: 4ch
- **Timer for real-time clock (RTC)**
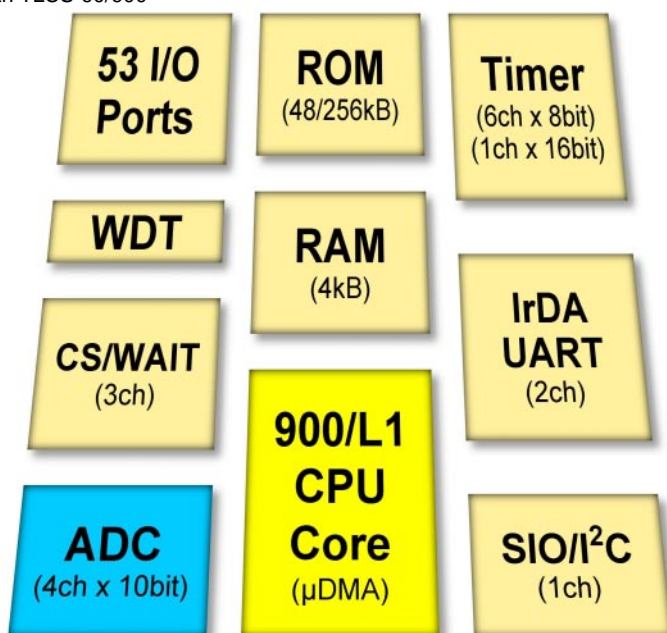- **Chip Select/Wait controller: 4ch**
- **Three standby modes**
- **Dual clock controller**
  - Clock gear function: Max. clock speed (fc) to fc/16
  - Slow mode (fs = 32.768 kHz)
- **Operating voltage :**
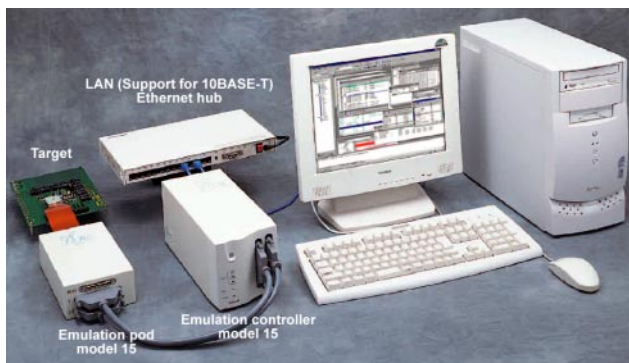 - 1.8 V to 3.6 V at 10 MHz
  - 2.7 V to 3.6 V at 27 MHz

Block diagram components: 53 I/O Ports; ROM (48/256kB); Timer (6ch x 8bit) (1ch x 16bit); WDT; RAM (4kB); IrDA UART (2ch); CS/WAIT (3ch); 900/L1 CPU Core (µDMA); ADC (4ch x 10bit); SIO/I²C (1ch)

P-LQFP64-1010-0.50D

Product	ROM	RAM	Package	Flash MCU
TMP91CP27U	48kB x 8-bit	4kB x 8-bit	P-LQFP64-1010-0.50D	TMP91FY27U

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TOSHIBA Microcontroller (vertical sidebar text)

Development Tool support:

Language Tools	C Compiler & Assembler Set	SW96WN0-ZCC
	Debugger & Simulator	SW96NN0-ZCC
Development Tools	Controller	BM1040R0A
	Emulation POD	BM91CW12AF0A-M15
	Package converter	PN120065
	QFP adapter	PN210031
	OTP/MCU mount adapter	PN210033
	Pin protector	PN210032

Sample System Configuration

LAN (Support for 10BASE-T) Ethernet hub
Target
Emulation pod model 15
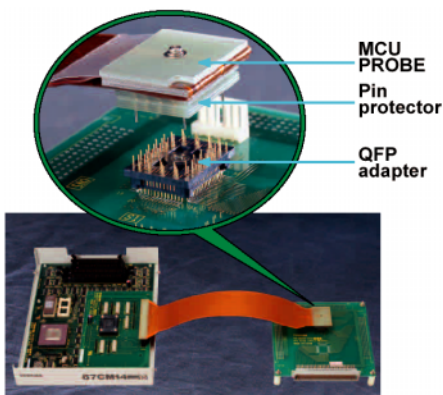Emulation controller model 15

Test Tools
The test tools include the debugger, the Real-Time emulation controller and the emulation POD. The debugger functions as a user interface, offering a unified debugging environment.

Language Tools
Software tools which generate object files such as Intel Hex files from source files written in C, C-like or assembly language:
- Build manager with user-friendly GUI
- ANSI C-compiler
- A wide variety of options for improving the efficiency of code and using RAM efficiently is provided.

Accessories :

MCU PROBE
Pin protector
QFP adapter

MCU probe
Connects a target system designed for a QFP MCU to an emulation pod. The probe matches the dimensions of the QFP and incorporates a QFP adapter and a pin protector.

QFP Adapter
Adapter for a QFP microcontroller. Used when connecting the emulation pod to the target system. Solder the QFP adapter to the target system PC board.

Pin protector
The pin protector serves as a protective layer between the MCU PROBE and the QFP adapter to prevent the MCU PROBE's joint from losing its spring. The pin protector is an expendable supply because the electrical contacts degrade gradually as it is attached and detached. The maximum attach-detach cycles should be limited to 100 times.