CMOS Z8 ROMLESS MICROCONTROLLER Z86C94

T-49-19-06

GENERAL DESCRIPTION

The Z86C94 is a CMOS ROMless Z8 microcontroller integrated with a digital signal processor as a slave processor. With the DSP slave processor, a 16-bit x 16-bit multiplication and accumulation can be accomplished in one clock cycle. In addition, it is further enhanced with a hardwired 16-bit x 16-bit multiplier and 32-bit/16-bit divider, three 16-bit counter timers with capture and compare registers, a fast 8-bit A/D converter, an 8-bit DAC with 4x programmable gain stage, UART and a PWM output channel. It is fabricated using 1.2 micron CMOS technology and offered in a 80-pin Plastic Quad Flat Pack.

The Z86C94 provides up to 16 output address lines permitting an address space of up to 64K bytes of data and program memory each. Eight address outputs (AD7-AD0) are provided by a multiplexed, 8-bit, Address/Data bus. The remaining 8 bits can be provided by the software configuration of Port 0 to output address bits A8-A15.

There are 256 registers located on-chip organized as 236 general purpose registers, 16 control and status registers, and three I/O port registers. Register file can be divided into sixteen groups of 16 working registers each. Configuring the registers in this manner allows the use of short format instructions; in addition, any of the individual registers can be accessed directly.

FEATURES

- *Complete microcomputer, 24 I/O lines, and up to 64K bytes of addressable external space each for program and data memory.*
- *DSP slave processor capable of 16-bit x 16-bit multiplication and accumulation in one clock cycle.*
- *16-bit x 16-bit hardwired divider with 16-bit quotient and 16-bit remainder in 20 clock cycles.*
- *An 8-channel 8-bit A/D converter with sample and hold. The maximum single conversion time is 2 µs.*
- *An 8-bit D/A converter with 4x programmable gain stage.*
- *A pulse width modulator output at 40-80 KHz*
- *256-byte register file, including 236 general purpose registers, three I/O port registers and 16 status and control registers.*
- *Vectored, priority interrupts for I/O, counter/timers and UART.*
- *On-chip oscillator that accepts crystal or external clock drive*
- *Full-duplex UART*
- *Three 16-bit counter timers with capture and compare registers*
- *Register Pointer so that short, fast instructions can access any one of the sixteen working register groups.*
- *Single +5V power supply, all I/O pins TTL compatible*
- *1.2 micron CMOS technology*
- *Clock speed - 20 MHz*
- *Two low power standby modes, STOP and HALT*