MICOR

Introduction

The MC0077S20PUFis a low-power CMOS 32-bit microcontroller based on the Arm M0 core architecture, operation with wide range supply voltage from 1.8V ~ 5.5V.

MC0077S20PUF is built with compact, high energy efficient MCU processor operate at base frequency 16MHz, support up to 25MHz with external clock source. Integrated with 20KB Flash program memory, 4KB (4 bank x 512 byte) NVM (EEPROM), 4KB SRAM, three (3) 32 bits timers/counter, WDT, SysTick counter, 7 channels PWM, 16 channels 12-bit ADC (analog to digital converter), 28 bi-direction GPIOs, 2 UART, SPI, I2C, IrDA and SWD/J-link interface. Peripherals can flexible configuration through difference GPIO pin.

Features Overview

- CPU
  - 32 bit M0 embedded core
  - base frequency at 16MHz (support up to 25MHz)
  - single cycle multiplier
  - AHB bus
  - APB bus
  - DMA AHB master
- MEMORY
  - 4K bytes SRAM
  - 20K bytes Flash
  - 2K bytes NVM (EEPROM) organize in 512 bytes x 4banks
  - ICP programming
  - Sector Endurance: 100,000 cycles
  - 10 years Data Retention
- CLOCK
  - Internal 16MHz RC oscillator
  - Internal 32KHz RC oscillator
  - External 8MHz-25MHz Crystal oscillator
  - External 32.768KHz RTC Crystal oscillator
  - External high frequency input (mux with GPIO, up to 25MHz)
- INTERRUPT
  - NVIC
  - 16 peripheral function interrupt sources
  - 4 level interrupt priorities (low, high, rising edge, falling edge)
- TIMER/COUNTER
  - Three (3) 32 bits incremental Timer / Counter
  - Configurable as one-stop mode or continuous mode
  - Configurable as wrapping mode or free-run mode
  - Configurable for interrupt generation
  - Configurable for input capture
  - 24 bits system tick timer
- WATCHDOG
  - 32 bits incremental counter
  - Configurable as one-stop mode or continuous mode
  - Configurable as wrapping mode or free-run mode
  - Configurable as normal Timer usage
- GPIO
  - 28 general purpose Input or Output (GPIO)
  - bi-directional
  - Pins individual pull high or pull down configurable
  - Hardware bit set, clear or toggle feature make software easy and faster
  - Capable serve as interrupt request
  - Open drain output configurable
  - drive current configurable
  - 6.4mA @3.3V driver capability

- PWM
  - 7 channels
  - PWM with dead-zone control
  - Versatile operation configurable
  - Channel pair capable operation in complemental mode
  - configurable independent output
- COMMUNICATION
  - UART 1, support IrDA function
  - UART 2
  - SPI
  - I2C
- ADC (Analog to Digital Converter)
  - 12 bits 1MSPS conversion
  - Maximum 16 channels
  - Internal VREF
  - Programmable VREF
  - External VREF support on ADC channel
- SECURITY (built with PUF and HW encryption engine)
  - PUF
    - NeoPUF (Physical Unclonable Function)
    - 1024 bits
  - DES / TDES / proprietary PUF algorithm
    - SFR option selectable 1. DES, 2. TDES, 3. PUF algorithm
    - SFR selectable 1. PUF provide pass key, 2. User provide pass key
    - Maximum 192 bits user pass key register
    - Enable / disable through SFR
- MISC SUPPORT
  - GPIO Peripherals functional mapping
  - Built in POR (Power On Reset)
  - Built in brown out reset (BOR) register configurable
  - Low voltage detection (LVD) register configurable
  - Software control reset
  - Watchdog timer reset
  - SWD/JTAG/J-link interface
- POWER MODE
  - active mode
  - Idle mode
  - sleep mode
- OPERATION ENVIRONMENT
  - 1.8V ~ 5.5V
  - -40C℃ ~ +85℃
- PACKAGE
  - 1 CPU Box 42x22x57mm
  - 30 Cpu Masterbox 229x129x58
- WARNING
  - Open the package and handle the MPU only with suitable clothing and instruments and in environments without static elittricity. Improper use and failure to comply with these warnings could damage the MPU.

RoHS compliant

CE

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