

VRS51L3074



Preliminary Technical Brief

Rev 1.1

FRAM Enhanced High Performance 8051 MCU

General Description

The VRS51L3074 is a FRAM enhanced, high performance, 8051-based microcontroller coupled with a fully integrated array of peripherals for addressing a broad range of embedded design applications.

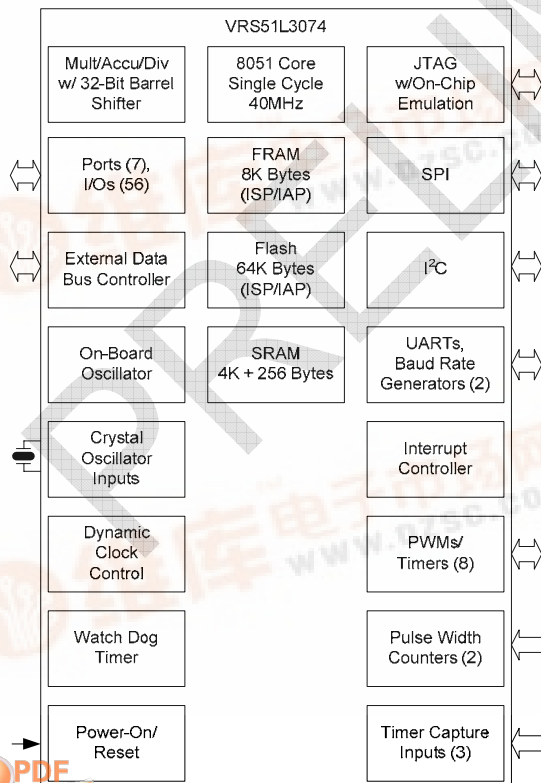
Based on a powerful 40-MIPS, single-cycle, 8051 microprocessor, the VRS51L3074's memory sub-system includes 8KB of FRAM (high endurance, nonvolatile RAM), 64KB of Flash and 4352 bytes of SRAM.

Support peripherals include a hardware based arithmetic unit capable of performing complex mathematical operations, a JTAG interface used for FRAM/Flash Programming and non-intrusive in-circuit debugging/emulation, a precision internal oscillator (2% accuracy) and a watchdog timer.

Communication and control of external devices is facilitated via an assortment of digital peripherals which include an enhanced fully configurable SPI bus, an I²C interface, dual UARTs with dedicated baud rate generators, 8 PWM controllers, 3 16-bit timers and 2 pulse width counter modules.

The VRS51L3074 is powered by a 3.3 volt supply, can function over the industrial temperature range, and is available in a QFP-64 package (see VRS51L3174 for PLCC44 and QFP-44 packages – pin-compatible with the industry standard 8051 microcontroller footprint).

Functional Diagram



Features

- 8051 High Performance Single Cycle Processor (Operation up to 40 MIPS)
- 8KB Nonvolatile FRAM (Ferroelectric Random Access Data Memory, In-System/In-Application Programmable)
- 64KB Flash (Program Memory, In-System/In-Application Programmable)
- 4K + 256 Bytes of SRAM (4K Bytes - Program Or Data Memory)
- JTAG Interface for FRAM/Flash Programming & Non-Intrusive Debugging/In-Circuit Emulation
- MULT/DIV/ACCU Unit including Barrel Shifter
- 56/40 General Purpose I/Os (64/44-Pin Versions)
- 2 Serial UARTs/2 Baud Rate Generators (16-bit)
- Enhanced SPI Interface (Fully Configurable Word Size)
- Fully configurable I²C Interface (Master/Slave)
- 16 External Interrupt pins/Interrupt on Port Pin Change
- 16-bit General Purpose Timer/Counters
- 3 Timer Capture Inputs
- 2 Pulse Width Counter Modules
- 8 PWM Controller Outputs with Individual Timers
- PWMs can be used as General Purpose Timers
- Precision Internal Oscillator
- Dynamic System Clock Frequency Adjustment
- Power Saving Features
- Power-On Reset/Brown-Out Detect
- Watchdog Timer

Applications

- Metering/Industrial Control
- Instrumentation
- Medical

Pin Configuration

