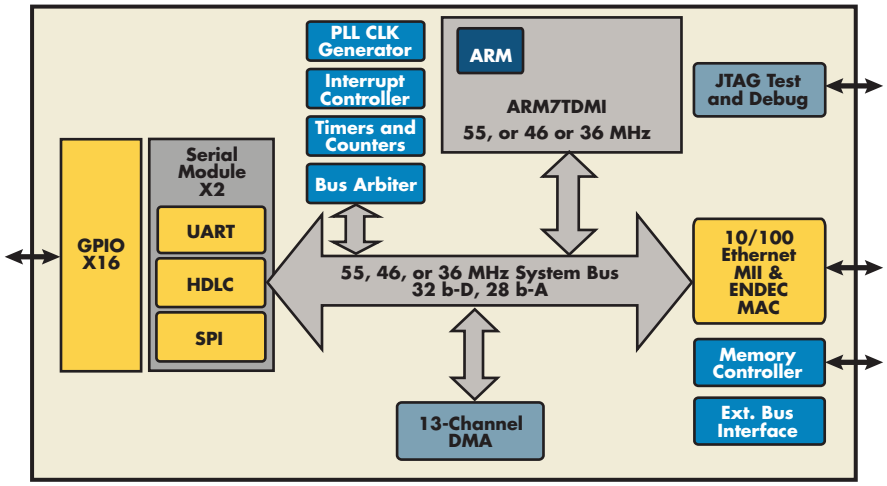
NS7520

177-Pin BGA; Lead-Free, RoHS Compliant

NetSilicon® NS7520

NET+ARM Processors



- 32-bit, 36, 46 or 55 MHz NET+ARM processor
- 0.18 micron CMOS process
- 10/100Base-T Ethernet
- Low-cost

Features/Benefits

- 32-bit high-performance ARM7TDMI RISC processor
- Integrated 10/100Base-T Ethernet MAC
- 2 kB Rx and 512B Tx buffers
- Patented 13-channel DMA controller
- Software compatibility across product line to ease future migration
- Includes complete royalty-free, production-ready, networking software
- Achieve dramatic time-to-market reductions with pre-integrated hardware/software
- Reduce product unit costs with complete SoC solution
- Save engineering resources – no networking development
- Reduce design risk with fully-integrated and tested solution

Overview

The NetSilicon® NS7520 is a very low-cost, easy-to-integrate network-attached processor. It is designed for connecting serial devices to IP networks. Part of our NET+ARM family of 32-bit processors, the NS7520 includes a 10/100Base-T Ethernet MAC and two independent serial ports (each independently programmable into UART, HDLC, or SPI mode).

The NS7520 includes an ARM7TDMI 32-bit RISC processor core with a rich complement of support peripherals, including a memory controller for glueless connection to various types of memory (including Flash, SDRAM, EEPROM, and others); programmable timers; 13-channel DMA controller; external bus expansion module; and 16 General Purpose I/O (GPIO) pins.

Like all of our processors, the NS7520 is supported by the royalty-free NET+Works® software development tool suite. The integrated NET+Works package contains either Green Hills® MULTI® or Microcross GNU X-Tools™, MAJIC™ debugger, Express Logic's ThreadX™ real time operating system, a TCP/IP stack, networking applications software, utilities, and numerous networking applications examples. Linux support for the NS9520 is also available.

Please contact us at 1-877-OEM-DIGI or 952-912-3444 for additional information or to discuss your specific application requirements.

Hardware Specifications

32-BIT ARM7TDMI RISC PROCESSOR

- 32-bit ARM and 16-bit Thumb instruction sets which can be mixed for performance/code density tradeoffs
- 15 general purpose 32-bit registers
- 32-bit program counter and status register
- 5 supervisor modes, one user mode
- 36, 46 or 55 MHz speed versions available
- Embedded ICE-RT real time debug unit
- Full support for 1149.1 JTAG boundary scan testing

INTEGRAL 10/100 ETHERNET MAC

- 10/100 Mbps MII PHY interface
- 10 Mbps ENDEC interface supports TP-PMD & fiber-PMD devices
- Full- or half-duplex
- Auto sensing
- 512 B Tx FIFO
- 2 kB Rx FIFO
- Intelligent receive-side buffer size selection
- External CAM filtering support
- Separate Tx and Rx DMA channels

13-CHANNEL (DMA) CONTROLLER

- 6 fly-by and memory-to-memory channels
- 2 channels support Ethernet module
- 4 channels support 2 serial modules
- 2 external DMA memory-to-memory channels
- 5 internal memory-to-memory channels
- DMA arbiter, with bandwidth allocation for each channel

SERIAL PORTS

- 2 fully independent HDLC/UART/SPI serial ports
- Internal or external clock support
- 32 B Tx and 32 B Rx FIFOs
- 2 dedicated DMA channels per module
- Internal programmable bit-rate generators
- Asynchronous mode bit rates: 75 bps to 230.4 kbps
- Synchronous mode bit rates: 1200 bps to 4 Mbps
- Odd, even, or no parity
- 5, 6, 7 or 8 bits
- 1 or 2 stop bits
- Receive-side character and buffer gap timers
- 4 receive-side data match detectors

BUS INTERFACE

- 32-bit data, 28-bit address bus
- 5 independent programmable chip selects
- Supports 8-, 16-, 32-bit peripherals
- Supports external address decoding and cycle termination
- Supports dynamic bus sizing
- Glueless support for Flash, SRAM, EDO DRAM, SDRAM, EEPROM
- Address multiplex support
- Internal refresh controller (CAS before RAS)
- Up to 16 MB SDRAM
- Burst-mode support
- 0-63 programmable wait states per chip select

TIMERS

- 2 independent 27-bit programmable timers
- Programmable watchdog timer (interrupt or reset on expiration)
- Programmable bus timer

GENERAL PURPOSE I/O

- 16 programmable GPIO pins

EXTERNAL INTERRUPTS

- 4 external level-sensitive interrupts

CLOCK GENERATOR

- Low-cost external crystal
- On-board Phase Locked Loop (PLL)
- Optional external oscillator

OPERATING VOLTAGE

- Core: 1.5V ± 0.1V
- I/O Ring: 3.3V ± 10%

OPERATING FREQUENCY

- 36 MHz: 0° C to 70° C
- 46 MHz: -40° C to +85° C
- 55 MHz: 0° C to 70° C
- 55 MHz: -40° C to +85° C

PACKAGE

- 177-pin Ball-Grid Array (BGA)
- 0.8 mm ball pitch
- 13 mm x 13 mm
- Lead-free; RoHS compliant

NET+Works Integrated Development Package

NET+ARM network attached processors are the core of the NET+Works family of solutions, which add intelligence and connectivity to electronic devices. We offer extensive networking software to support industrial automation, building automation, point-of-sale, office automation and other enterprise applications.

NETWORKING PROTOCOLS

- TCP/IP
- UDP
- PING
- PPP
- IGMP
- DHCP
- Telnet

TECHNICAL SUPPORT

- One year of software maintenance and technical support

DEVELOPMENT BOARD

- NET+ARM-based development board with Raven JTAG In Circuit Emulator (ICE)

NETWORKING SERVICES WITH APIs

- HTTP v1.1 Server
- POP3 and SMTP Email
- FTP Client and Server
- SNMP v1 MIBII and proxy agent
- DHCP Client and DNS Client

DEVELOPMENT TOOLS

- Green Hills® MULTI® IDE or Microcross GNU X-Tools™

RTOS

- ThreadX® picokernel

UTILITIES

- HTML-to-C compiler
- Flash download utility
- Automated build environment
- NVRAM device manager
- Boundary Scan Description Language (BSDL) support

BOARD SUPPORT PACKAGE

- 10/100Base-T Ethernet
- UART
- SPI
- HDLC
- DMA
- Flash
- USB host & device

MODEL.....PART NUMBERS

Model	Worldwide
36 MHz, 0° C to 70° C operation	NS7520B-1-C36
46 Mhz, -40° C to +85° C operation	NS7520B-1-I46
55 MHz, 0° C to 70° C operation	NS7520B-1-C55
55 MHz, -40° C to +85° C operation	NS7520B-1-I55

DIGI SERVICE AND SUPPORT

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