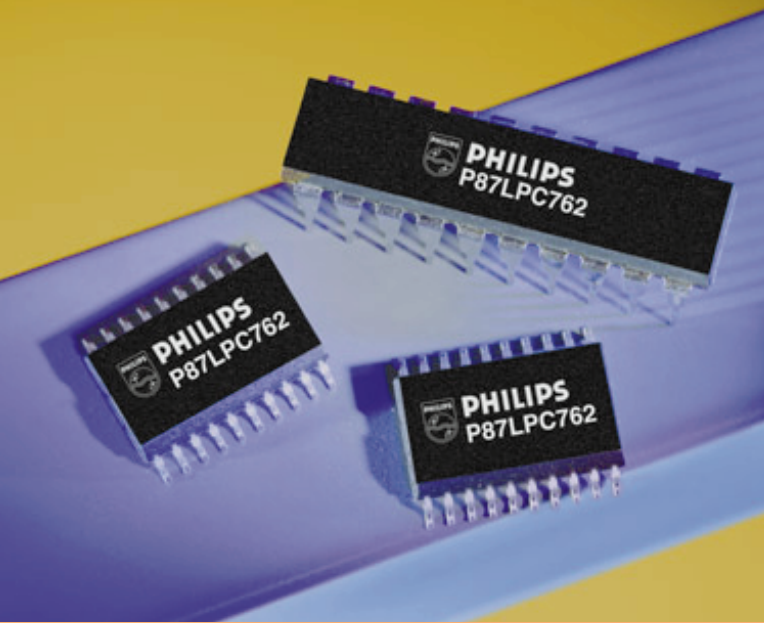




Low Power, Low System Cost 80C51-Based Microcontroller

P87LPC762



The P87LPC762 is available in 20-pin SOIC and DIP packages

Key Features

- Fast execution (2x over existing 80C51 devices)
 - 2.7V to 6.0V operating range
 - 20 MHz above 4.5V, 10 MHz below 4.5V
- User-configurable oscillator (provides flexibility in user design)
 - Crystal/resonator with several speed ranges
 - On-chip (no external components) RC oscillator
- Low Power
 - 4.1 milliAmps (3.3V @ 10 MHz typical)
 - Idle mode 1.5 milliAmps (3.3V @ 10 MHz typical)
 - Power-down: 0.5 microAmps (3.5V typical)
- 20 mA per pin with a maximum limit per port and device.

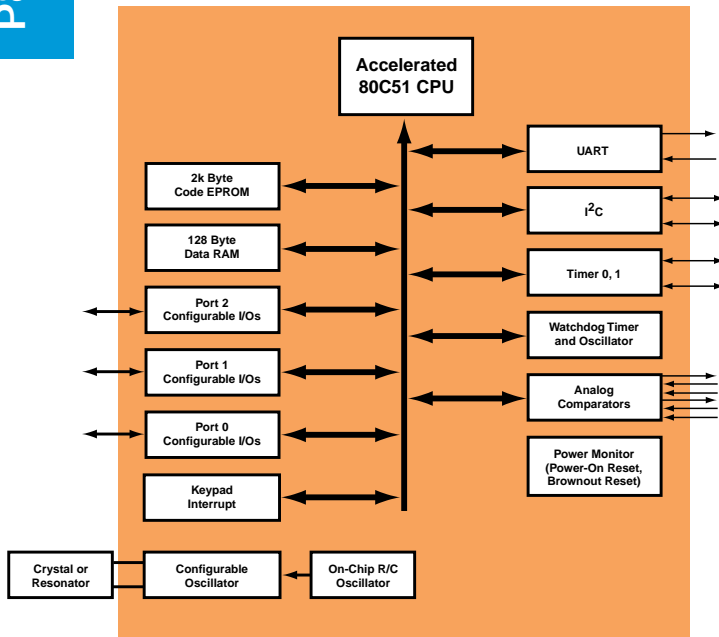
The Philips P87LPC762 is a member of the 51LPC family of 80C51-based microcontrollers which provide low system cost and low power consumption. The P87LPC762 has 2K bytes of program memory. With embedded features such as brownout detection, analog functions and an innovative on-chip RC oscillator, 51LPC microcontrollers reduce the need for external components. These features combined with an improved C51 architecture create more options in designing highly integrated low-cost, low-power applications.

The P87LPC762 is available in both 20-pin SOIC and DIP packages. It has 2K bytes of OTP program memory and 128 bytes of SRAM, making it suitable for high-level programming languages. The MCU core is fully compatible with the industry-standard C51 core, but features a 2X speed mode, where the clock is divided by six instead of by 12. At 20 MHz, the 51LPC family devices provide a throughput identical to a conventional C51 running at 40 MHz, thus minimizing EMI and power consumption. The on-chip power on reset, oscillator, two comparators, and watchdog timer enable solutions with a minimum or no external components, which leads to great reduction in cost and space requirements.

There are five user-programmable modes to precisely tune the performance and power consumption needed to meet the intended application requirement. One of the modes uses the internal RC oscillator as the clock source up to 6 MHz. In this instance, two additional pins are available to be used as I/Os, leaving 18 total I/Os pins. For applications requiring higher performance, the 51LPC devices can run 60% of the instructions at speeds of up to 300 nanoseconds. For low-power budget designs, a typical power consumption of less than 16µA at 32KHz operation and a wide voltage range from 2.7 to 6V makes it ideal for battery-powered applications. In power-down mode, the typical current consumption is only 1 µA.

Ordering Information

Part Number	12NC	Description
P87LPC762BD	9352 640 03512	20MHz, commercial temp, SO package
P87LPC762BN	9352 640 04112	20MHz, commercial temp, PDIP package
LINK-51 SD	9352 635 58112	Evaluation kit with EMIT 3.0 Internet software
EB76x SD	9352 636 56112	Ceibo emulator for the 51LPC family
PDS76x SD	9352 636 54112	Philips emulator for the 51LPC family

P87LPC762 Block Diagram**Other P87LPC762 Features**

- An accelerated 80C51 CPU provides instruction cycle times of 300-600ns for all instructions when executing at 20 MHz (except multiply and divide). Execution at up to 20 MHz when $V_{DD} = 4.5V$ to 6.0V, 10 MHz when $V_{DD} = 2.7V$ to 4.5V.
- 2.7V to 6.0V operating range for digital functions.
- 2K bytes EPROM code memory.
- 128 byte RAM data memory.
- Two 16-bit counter/timers. Each timer may be configured to toggle a port output upon timer overflow.
- Two analog comparators.
- Full duplex UART.
- I²C communication port.
- Eight keypad interrupt inputs, plus two additional external interrupt inputs.
- Watchdog timer with separate on-chip oscillator, requiring no external components. The watchdog timeout time is selectable from eight values.
- Active low reset. On-chip power-on reset allows operation with no external reset components.
- Low-voltage reset. One of two preset low voltage levels may be selected to allow a graceful system shutdown when power fails. May optionally be configured as an interrupt.
- Oscillator fail detect. The watchdog timer has a separate fully on-chip oscillator, allowing it to perform an oscillator fail detect function.
- Configurable on-chip oscillator with frequency range and RC oscillator options (selected by user-programmed EPROM bits). The RC oscillator option allows operation with no external oscillator components.
- Programmable port output configuration options: quasi-bidirectional, open drain, push-pull, input-only.
- Selectable Schmitt trigger port inputs.
- Four interrupt priority levels.
- LED drive capability (20mA) on all port pins.
- Output slew-rate controlled to reduce EMI. Outputs have approximately 10-ns minimum ramp times.
- 15 I/O pins minimum. Up to 18 I/O pins when using on-chip oscillator and reset options.
- Only power and ground connections are required to operate the 87LPC762 when on-chip oscillator and reset options are selected.
- Serial EPROM programming allows simple in-circuit production coding. Two EPROM security bits prevent reading of sensitive application programs.
- Idle and power down reduced power modes. Improved wakeup from power down mode (a low interrupt input starts execution). Typical power down current is 1 μ A.
- 20-pin DIP and SO packages

For more information, contact your Philips Semiconductors distributor or www.semiconductors.philips.com

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