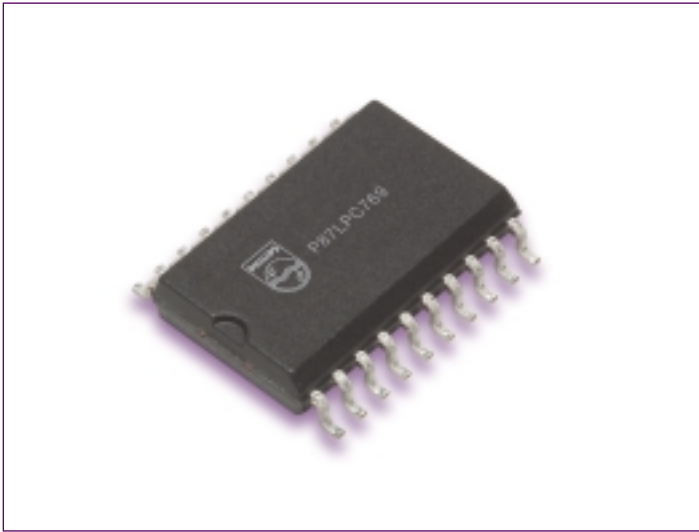


# P87LPC769

## Low-power, low-system cost 80C51 MCU with dual DAC (and ADC)

As a member of the 51LPC microcontroller family, the 87LPC769 offers dual 8-bit Digital-to-Analog Converters (DACs) or one DAC and a 4-channel, 8-bit Analog-to-Digital Converter (ADC).



### Features

- An accelerated 80C51 CPU provides instruction cycle times of 600–1200 ns for all instructions. Execution at up to 20 MHz when  $V_{DD} = 4.5$  to 5.5 V
- One-channel DAC
- Four-channel multiplexed 8-bit A/D converter (or one channel DAC). Conversion time of 9.5 microseconds at  $f_{osc} = 20$  MHz
- 4 K bytes OTP memory
- 128 bytes RAM data memory
- 32-byte customer code EPROM allows serialization of devices, storage of setup parameters, etc.
- Two 16-bit counter/timers. Each timer may be configured to toggle a port output upon timer overflow
- Two analog comparators
- Full-duplex UART
- I<sup>2</sup>C communication port

Semiconductors

The 51LPC device provides 4 K of OTP code memory and 128 bytes of data SRAM, making it suitable for high-level programming. The code memory is In-System Programmable (ISP) through a serial interface. Other embedded features that reduce the need for external components are brownout detection, power-on reset and an on-chip RC oscillator that is very stable over temperature and voltage.

The MCU core is fully compatible with the industry-standard C51 core, but features a 2X speed mode, where the CPU clock is divided by 6 instead of 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 87LPC769 is manufactured in Philips Semiconductors' low-power CMOS technology and is well suited for use in battery-powered applications. At 32 kHz, the device consumes only 16  $\mu$ A and the operating voltage ranges from 4.5 to 5.5 V. A fixed-frequency oscillator running at 6 MHz can be used to clock the device in applications that do not require the high accuracy of a crystal. Regardless of the clock source used, the user can reduce operating frequency down to as much as 1/512 of the source frequency, allowing the user to optimize performance and power consumption on-the-fly. Use of the on-chip power-on reset and oscillator makes up to 18 I/O pins available to the user, leaving only two non-I/O pins for connection to power and ground. Because the P87LPC769 combines an embedded ADC and DAC, it is especially useful in applications that include speed and temperature control.

The device comes with extensive serial communication capabilities. On-chip UART provides serial communications for RS-232 and RS-485. The I<sup>2</sup>C interface provides interface to other I<sup>2</sup>C units such as serial EEPROMs, other MCUs and a variety of peripheral devices. These communications interfaced in combination with the analog capabilities makes the 87LPC769 ideal for a variety of sensor applications.

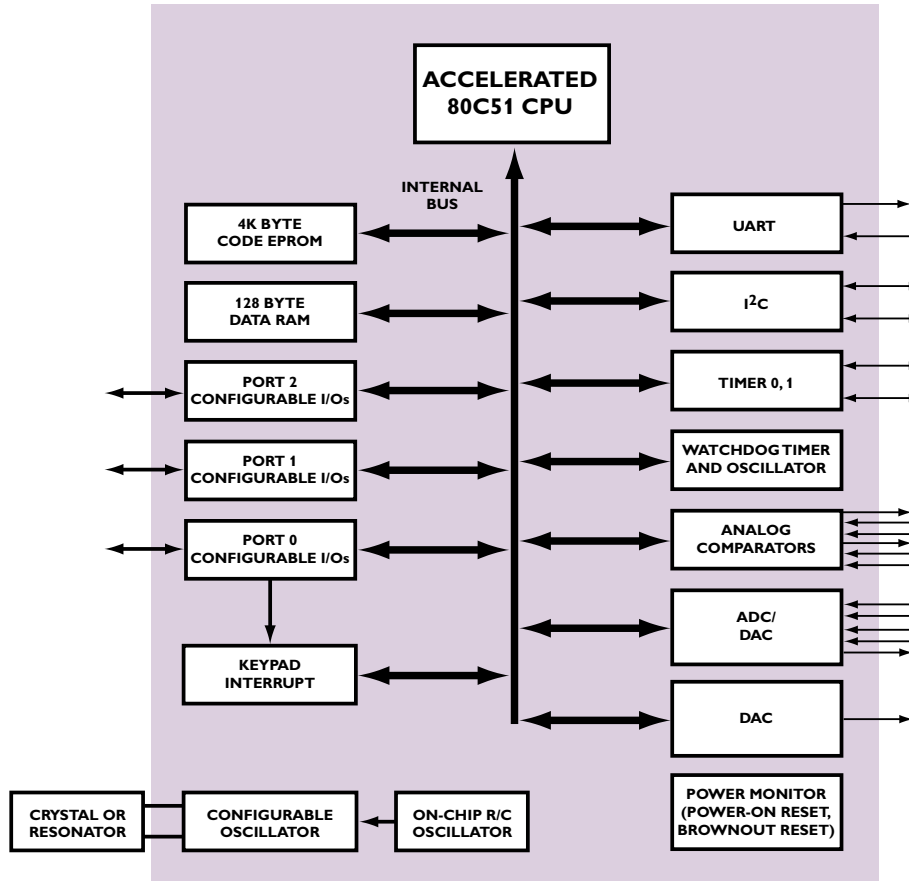
### Ordering information

Part Number	Temperature (C)	Package Description	Operating Frequency
P87LPC769HD	-40 to +125°	SO20	20 MHz @ 4.5 to 5.5 V

# PHILIPS

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P87LPC769 block diagram



Purchase of Philips I<sup>2</sup>C components conveys a license under the Philips' patent to use the components in the I<sup>2</sup>C system provided the system conforms to the I<sup>2</sup>C specification defined by Philips.

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