CMOS single-chip 8-bit EPROM microcontroller — 87C51/87C51-16

FEATURES

- 8031/8051/80C51 compatible
  - 4K × 8 EPROM
  - 128 × 8 RAM
  - Two 16-bit counter/timers
  - Full duplex serial channel
  - Boolean processor
- Memory addressing capability
  - 64K ROM and 64K RAM
- Power control modes:
  - Idle mode
  - Power-down mode
- CMOS and TTL compatible
- 87C51-16 part available at 16MHz

DESCRIPTION

The Philips Semiconductors 87C51 is a high-performance microcontroller fabricated with Philips high-density CMOS technology. The CMOS 87C51 is functionally compatible with the NMOS 8031/8051 and 80C51 microcontrollers. The Philips CMOS technology combines the high speed and density characteristics of HMOS with the low power attributes of CMOS. Philips epitaxial substrate minimizes latch-up sensitivity.

The 87C51 contains a 4K × 8 EPROM, a 128 × 9 RAM, 32 I/O lines, two 16-bit counter/ timers, a five-source, two priority level nested interrupt structure, a serial I/O port for either multiprocessor communications, I/O expansion or full duplex UART, and on-chip oscillator and clock circuits.

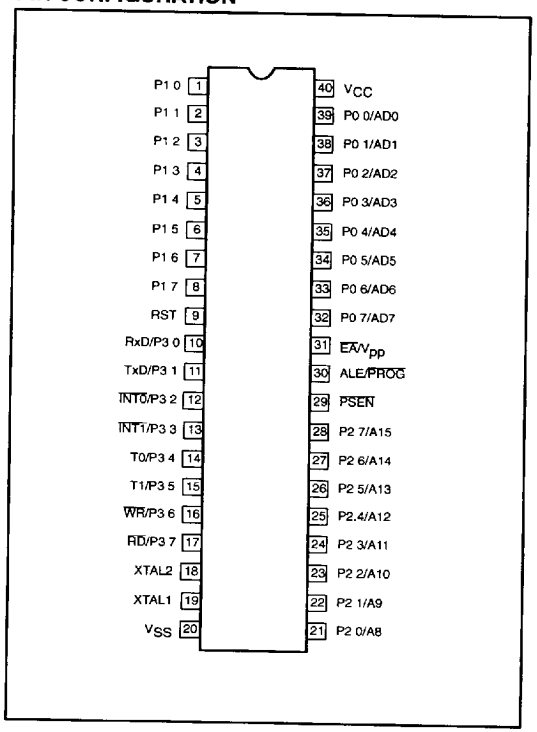
In addition, the 87C51 has two software selectable modes of power reduction—idle mode and power-down mode. The idle mode freezes the CPU while allowing the RAM, timers, serial port, and interrupt system to continue functioning. The power-down mode saves the RAM contents but freezes the oscillator, causing all other chip functions to be inoperative.

ORDERING INFORMATION

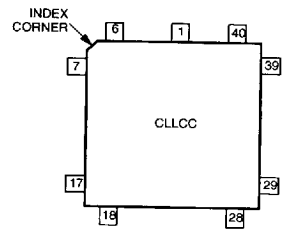
DESCRIPTION	ORDER CODE	PACKAGE DESIGNATOR*
40-pin Ceramic DIP	87C51/BQA 87C51-16/BQA	GDIP1-T40
44-pin Ceramic LLCC	87C51/BUA 87C51-16/BUA	CQCC1-N44
40-pin Ceramic DIP	87C51/BQA OT 87C51-16/BQA OT	GDIP1-T40
44-pin Ceramic LLCC	87C51/BUA OT 87C51-16/BUA OT	CQCC1-N44
44-pin J-Bend Quad Flat Pack	87C51/BMA 87C51-16/BMA	CQCC1-J44

* MIL-STD 1835 or Appendix A of 1995 Military Data Handbook

PIN CONFIGURATION

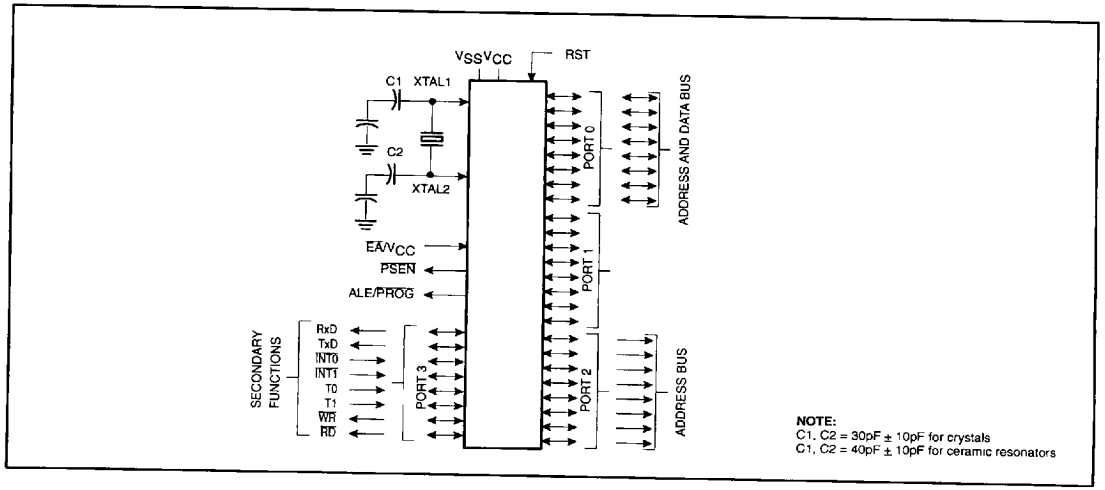


LCC LEAD CONFIGURATION



PIN	FUNCTION	PIN	FUNCTION
1	NC	23	NC
2	P1 0	24	P2 0/A8
3	P1 1	25	P2 1/A9
4	P1 2	26	P2 2/A10
5	P1 3	27	P2 3/A11
6	P1 4	28	P2 4/A12
7	P1 5	29	P2 5/A13
8	P1 6	30	P2 6/A14
9	P1 7	31	P2 7/A15
10	RST	32	PSEN
11	RxD/P3 0	33	ALE/PROG
12	NC	34	NC
13	TxD/P3 1	35	EA/Vpp
14	INT0/P3 2	36	P0 7/AD7
15	INT1/P3 4	37	P0 6/AD6
16	T0/P3 4	38	P0 5/AD5
17	T1/P3 5	39	P0 4/AD4
18	WR/P3 6	40	P0 3/AD3
19	RD/P3 7	41	P0 2/AD2
20	XTAL2	42	P0 1/AD1
21	XTAL1	43	P0 0/AD0
22	GND	44	VCC

LOGIC SYMBOL



ELECTRICAL PERFORMANCE CHARACTERISTICS AND TEST REQUIREMENTS

For Absolute Maximum Ratings, Recommended Operating Conditions, and Electrical Test Requirements, refer to the following documents: Military Drawing 5962-8768401 or 5962-8768402