

# IN80C31N/IN80C51N

## CMOS SINGLE-CHIP 8-BIT MICROCONTROLLER

The 80C31/80C51 is a high-performance microcontroller fabricated with high-density CMOS technology.

The 80C51 contains a 4k x 8 ROM , a 128 x 8 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 multi-processor communications, I/O expansion or full duplex UART, and on-chip oscillator and clock circuits.

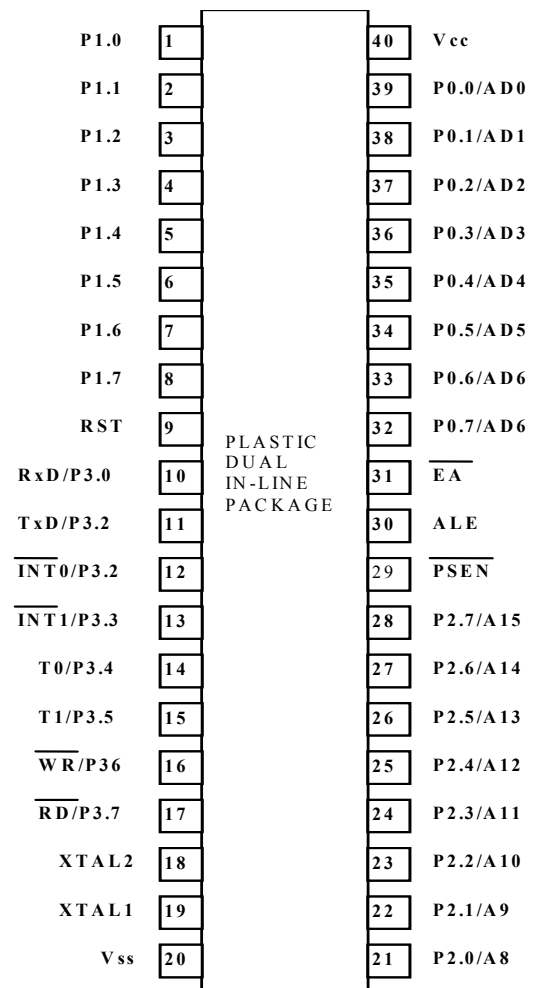
The device has two software selectable modes of power reduction — idle mode and power-down mode. The idle mode freezes the CPU while allowing the RAM, timers, serial port, and interrupt system to continue functioning. The power-down mode saves the RAM contents but freezes the oscillator, causing all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

### FEATURES

8031/8051 compatible (MCS-51 family)

- 4k x 8 ROM (80C51)
- ROMless (80C31)
- 128 x 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
- Two speed ranges at  $V_{CC}=5V$ 
  - 12 MHz
  - 16 MHz

### PIN CONFIGURATIONS



# IN80C31N/IN80C51N

## CMOS single-chip 8-bit microcontroller 80C31/80C51

### DC ELECTRICAL CHARACTERISTICS FOR INTEGRAL DEVICES

T=-10 °C to + 70°C; Vcc= 5V ± 10%

	Parameter Symbol	Test conditions	Limits	
			Min	Max
Vcc			4,5	5,5
Icc	Supply current operating, mA	Vcc = 5,5 V Fclc = 12MHz	-	18
Icc1	Idle mode current, mA	Vcc = 5,5 V Fclc = 12MHz	-	5,0
Ipd	Pover-down current, mkA	2V≤Vpd≤Vcc max	-	50
<b>INPUTS:</b>				
Vil	LOW level input voltage, V (exept EA)		-0,5	0.2Vcc-0,1
Vili	LOW level input voltage, V (for EA)		-0,5	0.2Vcc-0,3
Vih	HIGH level input voltage, V (exept XTAL1, RST)		0,2Vcc +0,9	Vcc+0,5
Vih1	HIGH level input voltage, V (for XTAL1, RST)		0,7Vcc	Vcc+0,5
-Iil	Input current logic 1, mkA (Ports 1, 2 and 3)	Vi=0,45 V	-	50
±Itl	Input current logic 1 to 0, mkA (Ports 1, 2 and 3)	Vi=2 V	-	500
±Ili	Input leacage current, mkA (Port 0, EA)	0,45V≤Vi≤Vcc	-	10
<b>OUTPUTS:</b>				
Vol	LOW level output voltage, V (Ports 1, 2 and 3)	Iol = 1,6 mA	-	0,45
Vol1	LOW level output voltage, V (Ports 0, ALE, PSEN)	Iol = 3,2 mA	-	0,45
Voh	HIGH level output voltage, V (Ports 1, 2 and 3)	-Ioh=60 mkA Vcc=5V±10%	2,4	-
Voh1	HIGH level output voltage, V (Ports 0, ALE, PSEN)	-Ioh=400 mkA Vcc=5V±10%	2,4	-
Rrst	RST pull-down resistor, kOm		20	120
Ci/0	I/O pin capasitance, pF	test frecuency=1MHz	-	10

### AC ELECTRICAL CHARACTERISTICS FOR INTEGRAL DEVICES

T=-10 °C to + 70°C; Vcc= 5V ± 10%

Symbol	Parameter	Variable Oscillator		Unit
		Min	Max	
Fclc				
Oscillator Frequency:				
	IN80C31N - 12	1,6	12	MHz
	IN80C31N - 16	1,6	16	MHz
	IN80C51N - 12	1,6	12	MHz
	IN80C51N - 16	1,6	16	MHz