IN80CL31N/IN80CL51N

CMOS LOW-VOLTAGE SINGLE-CHIP 8-BIT MICROCONTROLLER

The 80CL31/80CL51 is a high-performance microcontroller fabricated with high-density CMOS technology. The instruction set is based on that the 80C51.The 80CL51 is general purpose microcontroller especially suited for battery powered applications. The device has low power consumption and a wide range of supply voltage.
The 80CL51 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

— **Full static 80C51 CPU**

— 4k x 8 ROM (80CL51)

— ROMless (80CL31)

— 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

— Thirteen source, thirteen vector interrupt structure with two priority levels

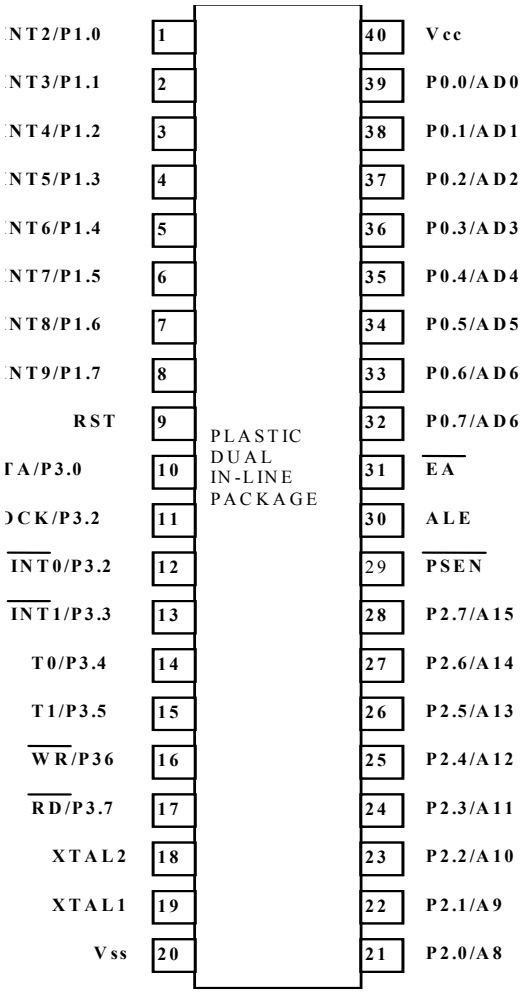
— Wake-up via external interrupts in Port1

— **Single supply voltage of 1.8V to 6.0V**

— **Frequency range of 0 to** 16 MHz

— Very low current consumption

PIN CONFIGURATIONS



CMOS single-chip 8-bit microcontroller 80CL31/80CL51

INTEGRAL

DC ELECTRICAL CHARACTERISTICS FOR INTEGRAL DEVICES

T=-10 °C to + 70°C; Vcc= 5V ± 10%

	Parameter Symbol	Test conditions	Limits	
			Min	Max
Vcc			1,8	6,0
Vcc1	RAM retention in power down mode, V		1,0	
	SUPPLY CURRENT OPERATING			
Icc1	OSC 1 option, mA	Vcc = 1,8 V Fclc = 32MHz	-	50
Icc2	OSC 1 option, mA	Vcc = 3,0 V Fclc = 3,58MHz	-	2,5
Icc3	OSC 1 option, mA	Vcc = 5,0 V Fclc = 16MHz		26
	IDLE MODE			
Icc1	OSC 1 option, mA	Vcc = 1,8 V Fclc = 32MHz	-	25
Icc2	OSC 1 option, mA	Vcc = 3,0 V Fclc = 3,58MHz	-	1,0
Icc3	OSC 1 option, mA	Vcc = 5,0 V Fclc = 16MHz		12
Ipd	Pover-down current, mkA	Vcc=1,8V; Tamb+25°C	-	10
	INPUTS:			
Vil	LOW level input voltage, V		Vss	0,3Vcc
Vih	HIGH level input voltage, V		0,2Vcc +0,9	Vcc
Iil	Input current logic 0, mA (Ports 1, 2 and 3)	Vi=0,4 V, Vcc=5V	-	100
		Vi=0,4 V, Vcc=2,5V		50
Itl	Input current logic 1, mA (Ports 1, 2 and 3)	Vi=2 V, Vcc=5V	-	1000
		Vi=2 V, Vcc=2,5V		500
±Ili	Input leakage current, mkA (Port 0, EA)	Vss≤Vi≤Vcc	-	10
	OUTPUTS:			
Iol	Output sink current LOW, mA	Vol = 0,4 V, Vcc=5V	1,6	
		Vol = 0,4 V, Vcc=2,5V	0,7	
Ioh	Output source current	Vol = Vcc-0,4 V, Vcc=5V	1,6	-
	HIGH, (Push-pull options only), mA	Vol = Vcc-0,4 V, Vcc=2,5V	0,7	
Rrst	RST pull-down resistor, kOm		10	200

AC ELECTRICAL CHARACTERISTICS FOR INTEGRAL DEVICES

T=-10 °C to + 70°C; Vcc= 5V ± 10%

Symbol	Parameter	Variable Oscillator		Unit
Fclc		Min	Max	
	Oscillator Frequency:			
	IN80CL31N - 12	0	12	MHz
	IN80CL31N - 16	0	16	MHz
	IN80CL51N - 12	0	12	MHz
	IN80CL51N - 16	0	16	MHz