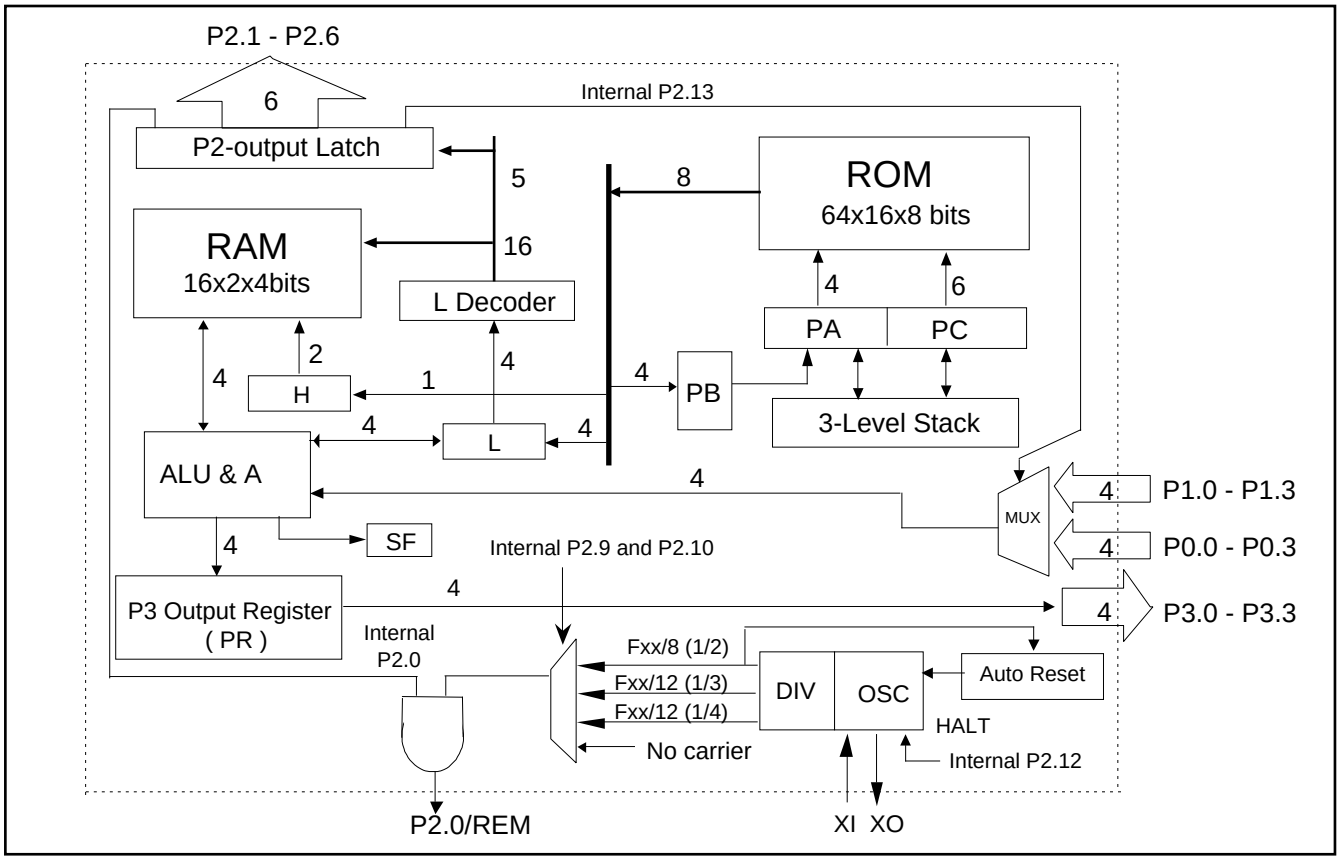
DESCRIPTION

KS51840, a 4-bit single-chip CMOS microcontroller, consists of the reliable SMCS-51 CPU core with on-chip ROM and RAM. Eight input pins and 11 output pins provide the flexibility for various I/O requirements. Auto reset circuit generates reset pulse every certain period, and every halt mode termination time. The KS51840 microcontroller has been designed for use in small system control applications that require a low-power, cost-sensitive design solution. In addition, the KS51840 has been optimized for remote control transmitter.

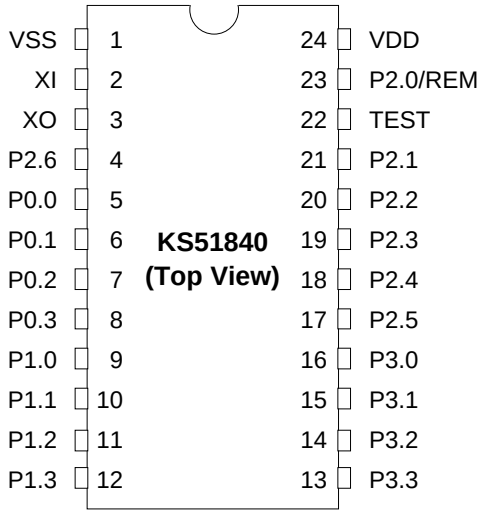
FEATURES

- ROM Size ..... 1,024 bytes
- RAM Size ..... 32 nibbles
- Instruction Set ..... 39 instructions
- Instruction Cycle Time ..... 13.2 µsec at Fxx=455 kHz
- Input Ports ..... Two 4-bit ports(24 pins)/One 4-bit port, one 2-bit ports(20 pins)
- Output Ports ..... One 4-bitport,Seven1-bitports(24pins)/One 4-bit port, Five1-bit ports(20pins)
- Built-in Oscillator ..... Crystal/Ceramic resonator
- Built-in Power-on reset and auto reset circuit for generating reset pulse every 131072/Fxx(288ms at Fxx=455kHz)
- Four Transmission Frequencies ..... Fxx/12 (1/4 duty), Fxx/12 (1/3 duty), Fxx/8 (1/2 duty), and no-carrier frequency
- Supply Voltage ..... 1.8V–3.6V(Fosc:250kHz–3.9MHz),2.2V–3.6V(Fosc:4MHz–6MHz)
- Power Consumption ..... Halt mode: 1 µA (maximum)
  Normal mode: 0.5 mA (typical)
- Operating temperature ..... -20°C to 85°C
- Package Type ..... 24 SOP, 20 DIP, 20 SOP
- Oscillator Frequency divide select ..... Mask Option= Fosc or Fosc/8

BLOCK DIAGRAM



PIN CONFIGURATION (24 SOP)

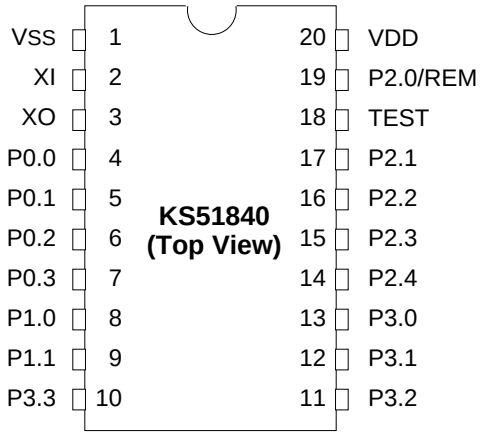


PIN DESCRIPTION FOR 24 PINS

Symbols	Pin No.	Type	Functions	I/O Circuit Type
P0.0 - P0.3	5, 6, 7, 8	Input	4-bit input port when P2.13 is low	A
P1.0 - P1.3	9,10,11,12	Input	4-bit input port when P2.13 is high	A
P2.0/REM	23	Output	1-bit individual output for remote carrier frequency (1)	B
P2.2 - P2.5	20,19,18, 17	Output	1-bit individual output port	C
P2.1, P2.6	21,4			D
P3.0 - P3.3	16,15,14,13	Output	4-bit parallel output port	C
TEST	22	Input	Input pin for test (Normally connected to VSS)	—
XI	2	Input	Oscillation clock input	—
XO	3	Output	Oscillation clock output	—
VDD	24	—	Power supply	—
VSS	1	—	Ground	—

NOTES:
1.The carrier can be selected by software as Fxx/12 (1/3 duty), Fxx/12 (1/4 duty), Fxx/8 (1/2 duty), or no-carrier frequency.
2.Package type can be selected as 24 SOP in the ordering sheet.

PIN CONFIGURATION (20 DIP, 20 SOP)



PIN DESCRIPTION FOR 20 PINS

Symbols	Pin No.	Type	Functions	I/O Circuit Type
P0.0 - P0.3	4, 5, 6, 7	Input	4-bit input port when P2.13 is low	A
P1.0 - P1.1	8, 9	Input	2-bit input port when P2.13 is high	A
P2.0/REM	19	Output	1-bit individual output for remote carrier frequency (1)	B
P2.2 - P2.4	16,15, 14	Output	1-bit individual output port	C
P2.1	17			D
P3.0 - P3.3	13,12,11,10	Output	4-bit parallel output port	C
TEST	18	Input	Input pin for test (Normally connected to VSS)	—
XI	2	Input	Oscillation clock input	—
XO	3	Output	Oscillation clock output	—
VDD	20	—	Power supply	—
VSS	1	—	Ground	—

NOTES:
1. The carrier can be selected by software as Fxx/12 (1/3 duty), Fxx/12 (1/4 duty), Fxx/8 (1/2 duty), or no-carrier frequency.
2. Package type can be selected as 20 DIP, or 20 SOP in the ordering sheet.