CHAPTER 1
INTRODUCTION

1.1 Overview

The OPTI-82C895 is a new single-chip solution that offers the cost-effective system integration for 486 and P24T systems. Besides the standard features, the OPTI-82C895 also supports VESA standards and power management features for most of advanced CPUs on the market. With the use of OPTI-82C602 TTL ASIC buffer, the TTL components required on the main board are further reduced.

1.2 System Features

- Supports INTEL 486SX, DX, DX2, DX4,P24T, S-SERIAL.
  AMD DX, DX2, DXL.
  CYRIX M6, M7, DX2.
- Supports H/W GREEN/WAKE UP switch.
- Supports 4 system states for power saving : STANDBY / SUSPEND / ON.
- Supports L1/L2 write back/write through cache feature.
- Supports 2 MASTER / 3 SLAVE 32-bit VESA Bus.
- Supports 64KB/ 128KB/ 256KB cache size.
- Supports 30 pin/ 72pin SIM MODULES.
- Supports SMI/ SMM/ PMU/ APM power controllers.

1.3 System Specifications

Processor :	INTEL 486DX/SX/DX2/DX4/P24T 486CPU CYRIX M6/M7/DX2 486CPU AMD DX/DX2/DXL 486CPU
CPU Clock :	25/33/40/50 MHz CPU
Memory :	up to 64MB
Memory Configuration :	2M/4M/5M/8M/16M/17MB/20M/32M/64M
SRAM Configuration :	64K/128K/256K
BIOS Subsystem :	AWARD BIOS
Additional BIOS feature :	Set program resides in ROM
I/O Subsystem NO. slot :	Six 16-bit ISA Bus & Three 32-bit Local Bus
Dimension :	9.8" × 8.8" , 2/3 baby AT size

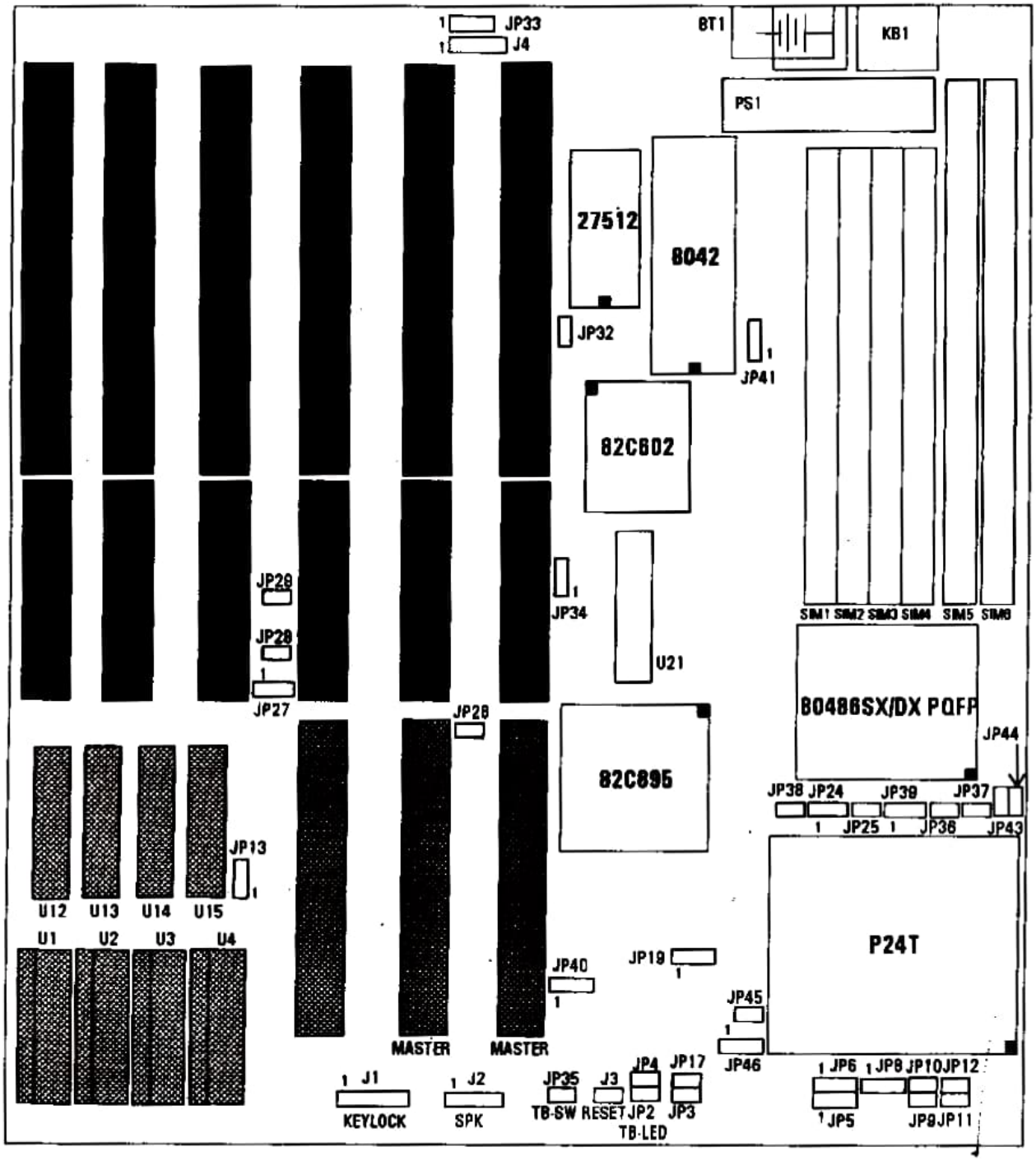
Additional features

Miscellaneous connectors :	Reset Buttom, Internal Battery, Turbo SW, Flash LED(Turbo LED) for power green
Board design :	4-layer implementation for low noise operation

1.4 System Performance

SOFTWARE / CPU TYPE	LANDMARK V2.0	POWER METER V1.7 MIPS	NORTON V7.0 CPU SPEED
INTEL DX-33MHz	110.94MHz	14.8MIPS	71.6
AMD DX-40MHz	133.74MHz	17.9MIPS	86.4
CYRIX M7 DX-40MHz	131.86MHz	15.9MIPS	67.9
INTEL DX2-50MHz	167.17MHz	21.7MIPS	108.0
CYRIX M7 DX2-50MHz	164.83MHz	19.8MIPS	84.8
INTEL DX-50MHz	167.18MHz	22.4MIPS	108.0
INTEL DX2-66MHz	221.91MHz	28.4MIPS	143.3

1.5 EXP4044 Board Layout



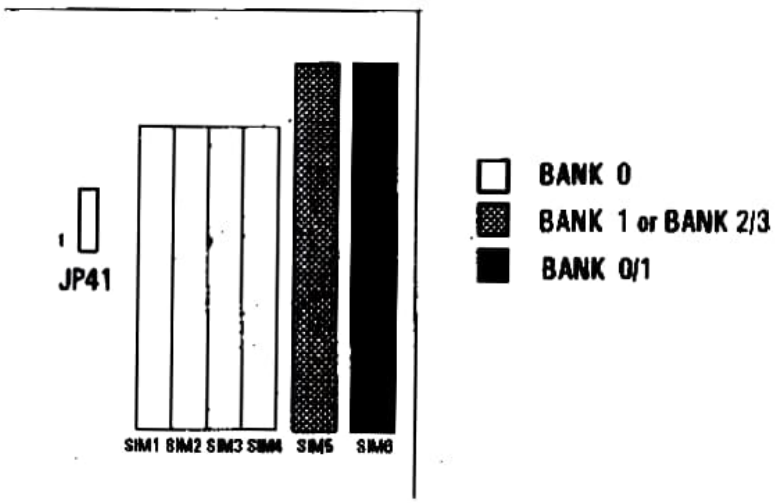
CHAPTER 2
INSTALLATION

Before the system is ready to operate, the hardware must be set up for various functions of the system. To set up the EXP4044 main board is a simple task. The user only has to set a few jumpers, connectors and sockets.

2.1 DRAM INSTALLATION

The EXP4044 main board can support expanded memory from 2MB to 64MB. Either 256K, 1MB, 2MB, 4MB, 8MB,16MB or 32MB SIMM DRAM can be used on the EXP4044 motherboard.

■ The board layout below shows the locations of the DRAM memory banks :



The motherboard consists of four memory banks, BANK 0, BANK 0/1, BANK 1 or BANK 2/3 . For DRAM installation, completely fill up BANK 0 or BANK 0/1 first, then fill up BANK 1 or BANK 2/3.

DRAM CONFIGURATION SELECT

JP41 	TABLE 1 *
JP41 	TABLE 2

* Default Setting

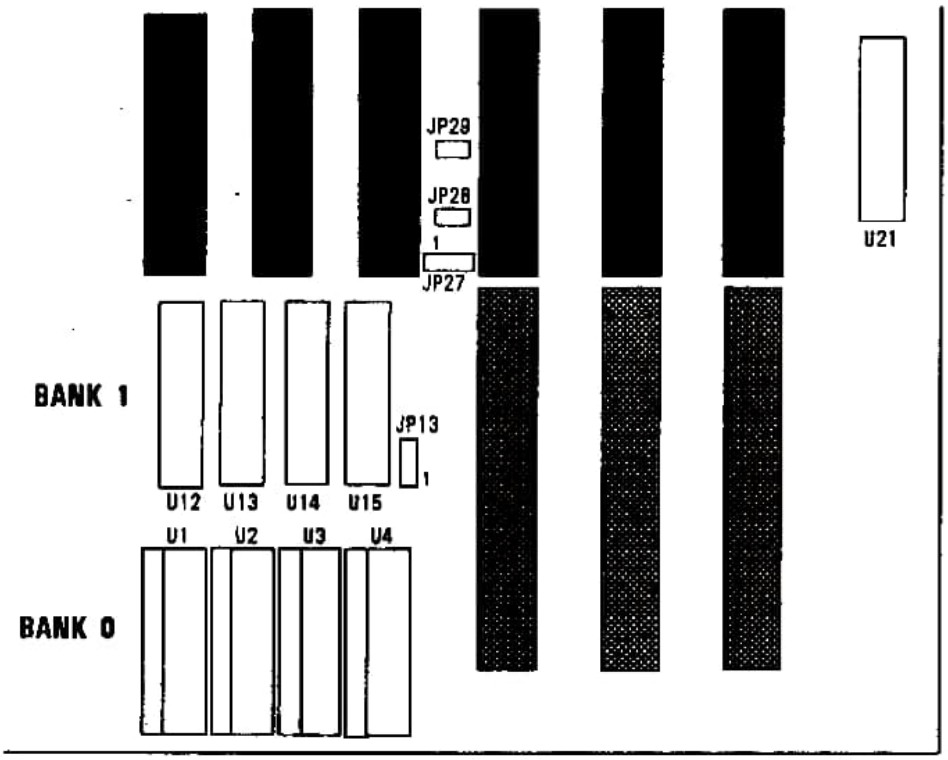
■ TABLE 1

BANK 0 SIM1-SIM4	BANK 0/1 SIM5	BANK 1 SIM6	TOTAL MEMORY
256KB×9	NONE	256KB×36	2MB
NONE	256KB×36	256KB×36	2MB
1MB×9	NONE	NONE	4MB
NONE	1MB×36	NONE	4MB
256KB×9	NONE	1MB×36	5MB
NONE	256K×36	1MB×36	5MB
1MB×9	NONE	1MB×36	8MB
NONE	1MB×36	1MB×36	8MB
4MB×9	NONE	NONE	16MB
NONE	4MB×36	NONE	16MB
256KB×9	NONE	4MB×36	17MB
NONE	256K×36	4MB×36	17MB
1MB×9	NONE	4MB×36	20MB
NONE	1MB×36	4MB×36	20MB
4MB×9	NONE	4MB×36	32MB
NONE	4MB×36	4MB×36	32MB
16MB×9	NONE	NONE	64MB
DOUBLE SIZE			
NONE	2M	NONE	2M
NONE	8M	NONE	8M
NONE	32M	NONE	32M

TABLE 2

BANK 0 SIM1-SIM4	BANK 0/1 SIM8	BANK 2/3 SIM5	TOTAL MEMORY
1M×9	NONE	NONE	4MB
4M×9	NONE	NONE	16MB
16M×9	NONE	NONE	64MB
DOUBLE SIZE			
NONE	2MB	NONE	2MB
NONE	2MB	2MB	4MB
NONE	8MB	NONE	8MB
NONE	2MB	8MB	10MB
NONE	8MB	8MB	16MB
NONE	32MB	NONE	32MB
NONE	32MB	32MB	64MB

2.2 SRAM INSTALLATION

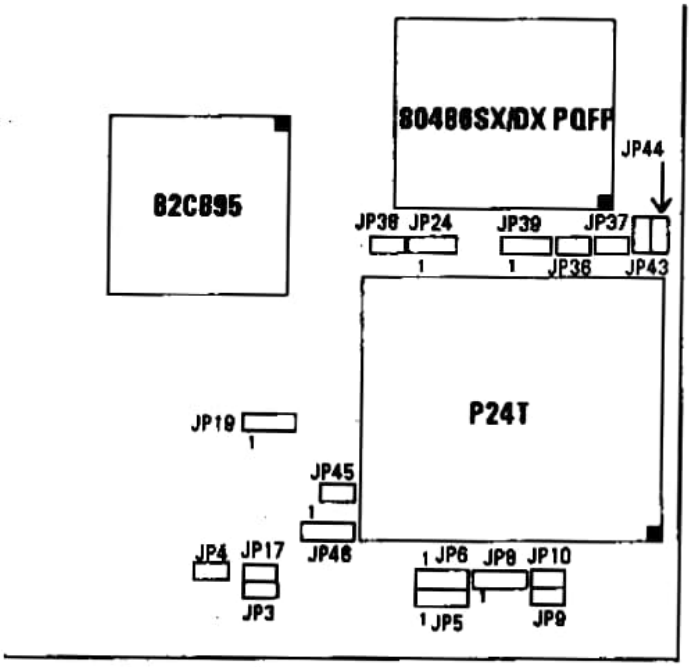


CACHE CONFIGURATION SIZE

64K		128K		256K *	
TAG RAM	DATA RAM	TAG RAM	DATA RAM	TAG RAM	DATA RAM
U21 8K×8	U1-U4, U12-U15 8K×8	U21 8K×8	U1-U4 32K×8	U21	U1-U4, U12-U15 32K×8
JP27 1	JP13 1 JP29 JP28	JP27 1	JP13 1 JP29 JP28	JP27 32K×8 1 OR 16K×8 1	JP13 1 JP29 JP28

* Default Setting

2.3 CPU INSTALLATION



CPU TYPE

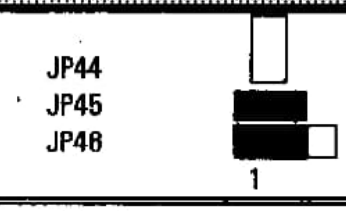
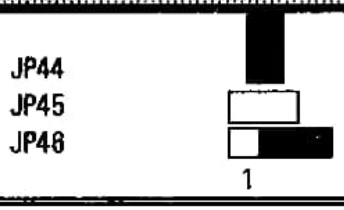
	486SX	486DX * AMD DX, DX2	P24C (DX4)	P24T	CYRIX M6	CYRIX M7
JP5						
JP6						
JP8						
JP19						
JP24						
JP39						
JP43						

FREQUENCY SETTING

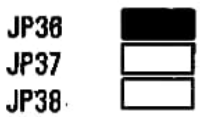
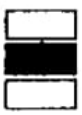
	DX25/DX2-50MHz	DX-33/DX2-66MHz *	DX-40MHz	DX-50MHz
JP3				
JP4				
JP17				

* Default Setting

CPU POWER VOLTAGE

3.3V FOR DX4	5V FOR OTHER CPU *
	

INTEL P24C (DX4) CPU CLOCK

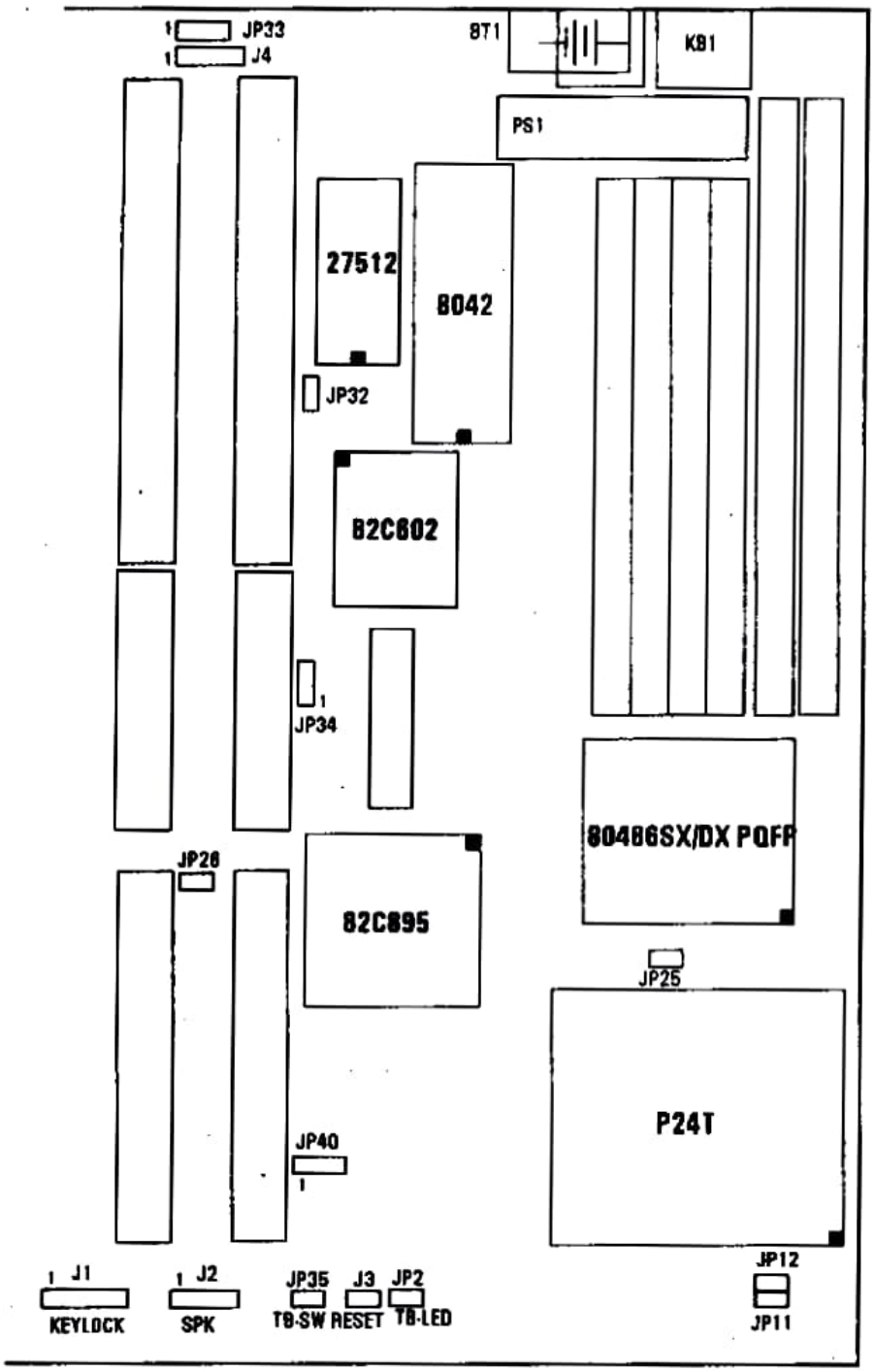
DX4 CPU CLOCK 3×	DX4 CPU CLOCK 2.5×	DX4 CPU CLOCK 2×
		

POWER MANAGEMENT

SMM (SMI) MODE	NON SMM MODE *
	

* Default Setting

2.4 OTHER JUMPER INSTALLATION



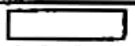
OTHER JUMPER DESCRIPTION

JUMPER	DESCRIPTION	
JP11 JP12 JP25	DISABLED PQFP CPU *	ENABLED PQFP CPU
JP32	COLOR *	MONO
JP33	1 NORMAL *	1 CLEAR CMOS
JP34	1 L2 WRITE BACK	1 L2 WRITE THROUGH *
JP40	1 CPU CLK <= 33MHz *	1 CPU CLK > 33MHz

CONNECTOR DESCRIPTION

CONNECTOR	PIN OUT	SIGNAL NAME
J1 : KEY LOCK	1	LED POWER
	2	NOT USED
	3	GROUND
	4	KEYBOARD INHIBITOR
	5	GROUND
J2 : SPK	1	DATA OUT
	2	NOT USED
	3	GROUND
	4	+5V DC
J3 : RESET	1	GROUND
	2	RESET IN
JP2 : TB-LED	1	+ANODE
	2	-CATHODE
JP35 : TB-SW	1	GROUND
	2	SELECT PIN
	TURBO SPEED *	NORMAL SPEED
KB1: KEYBOARD CONNECTOR	1	KEYBOARD CLOCK
	2	KEYBOARD DATA
	3	SPACE
	4	GROUND
	5	+5V

* Default Setting

PS 1 : POWER CONNECTOR	1	POWER GOOD
	2	+5V DC
	3	+12V DC
	4	-12V DC
	5,6,7,8	GROUND
	9	-5V DC
	10,11,12	+5V DC
JP26	HARDWARE POWER SAVING CONNECTOR (When you press this button once, it will get into sleep mode, when you press this button again, it will be waked-up.)	
J4	 1 2 3 4 2-3 : N.C., 1-4 : EXT. BATTERY	