

T1850/T1850C Features

The Toshiba T1850 and T1850C are among the lightest and most advanced portable computers available. Utilizing advanced technology and high speed components, the T1800 Family offers excellent display legibility, battery operation, and IBM PC/AT compatibility.

The T1850 and T1850C units consists of the following features:

- ❑ 80386SX-25 with a 32-bit microprocessor, operating at 12.5 or 25 MHz.
- ❑ 4 MB of Standard Random Memory. Optional 2, 4, or 8 MB expansion cards can be installed, thus expanding RAM Memory to a maximum of 12 MB.
- ❑ An optional 80387SX-25 Numeric Data Processor (NDP) can be installed in the built-in socket located on the bottom of the computer.
- ❑ The T1850 uses a high resolution Liquid Crystal Display (LCD), and the T1850C uses a Super Twisted Nematic (STN) color display which displays up to 512 colors.

The T1800 Family internal display controllers support Video Graphics Adapter (VGA) functions on the internal/external display devices.
- ❑ The 3.5 inch internal Floppy Disk Drive (FDD) supports both 1.44 MB Double-sided, High-density, Double-track (2HD) Floppy Disks and 720 KB Double-sided, Double-density, Double-track (2DD) Floppy Disks.
- ❑ The integrated 2.5 inch 80 MB and 120 MB Hard Disk Drives (HDDs) provide non-volatile storage for software and data.
- ❑ The 82/84-key keyboards have full-sized keys, a numeric key pad overlay, cursor and page control. The keyboards support software that uses the industry-standard 101/102 key keyboard.
- ❑ The universal auto-sensing AC Adapter supplies power to operate the computers and recharge their batteries. The adapter can operate from a range of 100 to 240 volts. Optional power cords support various international AC power configurations.
- ❑ The PS/2 mouse connector can be connected to the T1800 Family's standard 9-pin, RS232-C serial port.
- ❑ A selectable Centronics-compatible parallel port connects the T1800 Family to optional parallel devices.
- ❑ The Toshiba AutoResume feature stores data configurations in the backup RAM when the power is turned off.
- ❑ The Real Time Clock (RTC) IC chip and battery continuously update the date and time. The RTC battery keeps the system configuration even when the T1850/T1850C is off.

System Unit Block Diagram

Figure 1 is a block diagram of the T1800 Family system unit.

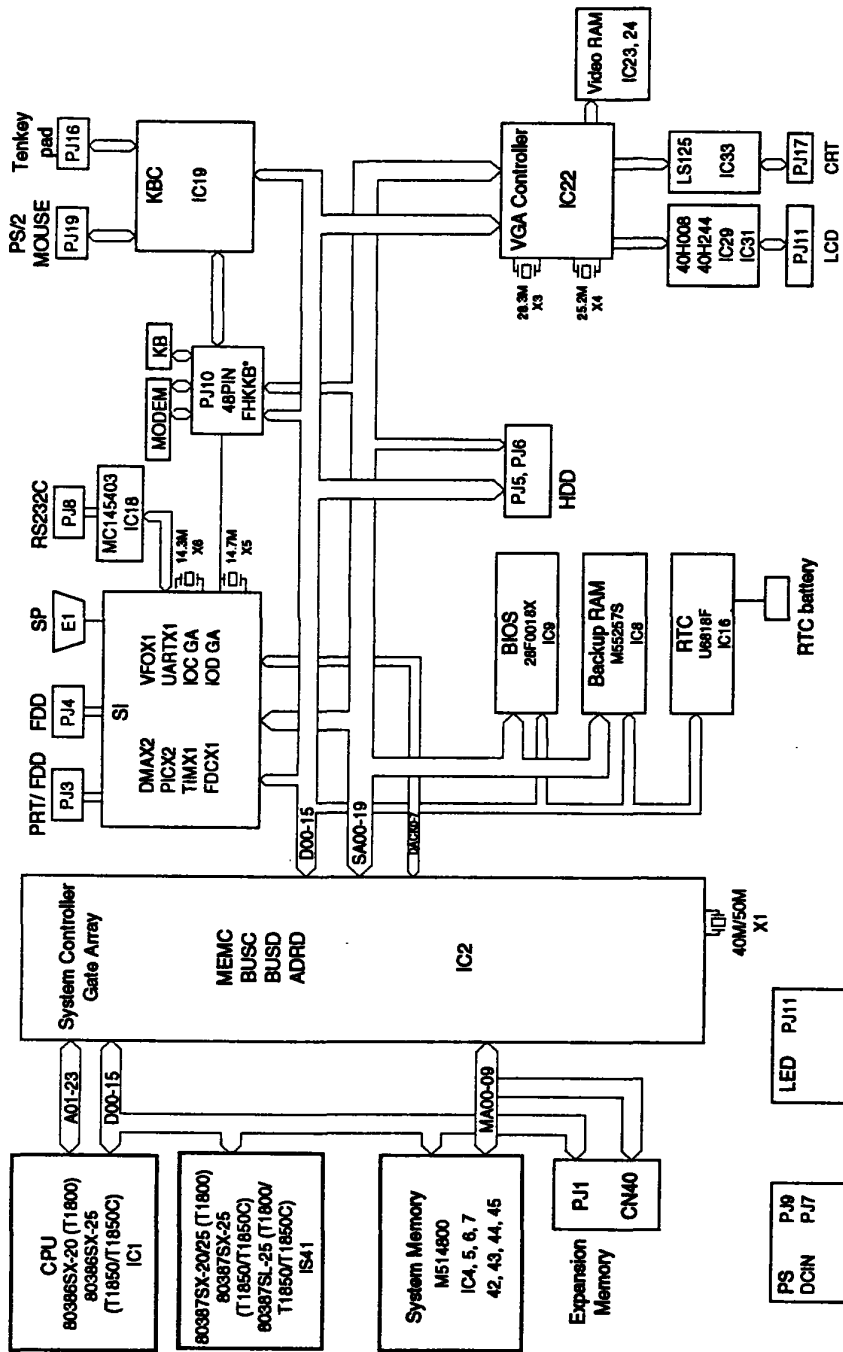


Figure 1 Block Diagram

The T1850/T1850C system board diagrammed in Figure 1 is composed of the following major components:

Memory

Standard RAM: 4 MB
BIOS ROM: 128 KB (96 KB are used)
This ROM contains the Initial Reliability Test (IRT), the Basic Input/Output System (BIOS), and video BIOS.
Backup RAM: 32 KB
Video RAM: 256 KB

Optional memory cards expand memory to a maximum of 12 MB.

The Super Integration (SI) T9901 chip contains the following components:

- Two Direct Memory Access Controllers (DMACs): 82C37A
- Two Programmable Interrupt Controllers (PICs): 82C59A
- One Programmable Interval Timer (PIT): 82C54
- One Serial Input/Output controller (SIO): TC8570
- One Floppy Disk Controller (FDC): TC8568
- One Input/Output Controller
- One Input/Output Driver

System Controller Gate Array

The gate array has the following circuits:

- Memory controller
- Bus controller
- Bus driver
- Address decoder

Oscillators (OSC):

- 50.0 MHz OSC (X1)
- 14.7456 MHz OSC (X5) used for the COM
- 14.31818 MHz OSC (X2) used for the KBC
- 24 MHz OSC (X6) used for the FDC and VFO
- 32.768 OSC (X3), and 25.175 Mhz OSC (X4) used for the video

One Keyboard Controller (KBC): M37452M4

One Real Time Clock (RTC): MC146818AF

VGA Controller

The VGA controller includes a Digital Analog Controller (DAC).

2.5-inch Hard Disk Drives

The T1850/T1850C's 80MB and 120MB (formatted) Hard Disk Drives (HDDs) are random-access, nonvolatile storage devices. They have a non-removable 2.5-inch magnetic disk and mini-winchester type magnetic heads.

The HDD is shown in Figure 2, and specifications are described in Table 1.

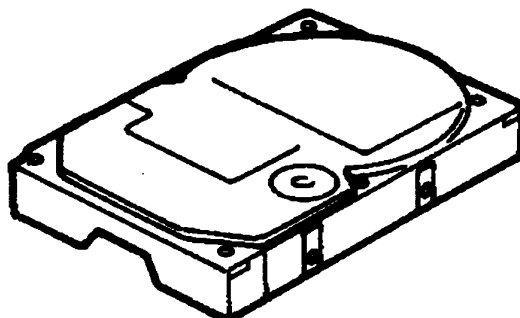


Figure 2 2.5-inch HDD

Table 1 T1850/T1850C 2.5-inch HDD specifications

ITEM	80 MB	120 MB
	CP-2084	MK2124FC
Storage Capacity (MB) -- Formatted	85.4	130.1
Number of Disks	2	2
Data Heads	4	4
Data Surfaces	4	4
Track per Surface	1,097	1,155
Sectors per Track	38 (+1)	55 (+1)
Bytes per Sector	512	512
Access Time (ms)		
Track to Track	5	5
Average	19	17
Maximum	40	36
Rotation Speed (rpm)	3,486	3,200
Data Transfer Rate (bps) -- To/From Media	1.5 M	6.5 M
Interleave	1:1	1:1
Recording Method	2-7 RLL; 1-7 RLL	1-7 RLL

T1850/T1850C Liquid Crystal Displays

The T1850/T1850C Sidelit Liquid Crystal Displays (LCDs) contain an LCD module, a Fluorescent Lamp (FL), and an FL inverter board.

LCD Modules

The T1850/T1850C sidelit LCDs support 640x480 pixels with Video Graphics Array (VGA). The T1850 has 64 levels of gray at a resolution of 320x200. The T1850C is a Super Twisted Nematic (STN) color LCD and displays up to 512 colors.

Both LCDs receive vertical and horizontal synchronizing signals, 8-bit data signals (a 4-bit upper data signal and a 4-bit lower data signal), and shift clock for data transmission from the VGA Controller. All signals are CMOS-level compatible.

The LCDs are shown in Figure 3, and the specifications are described in Table 2.

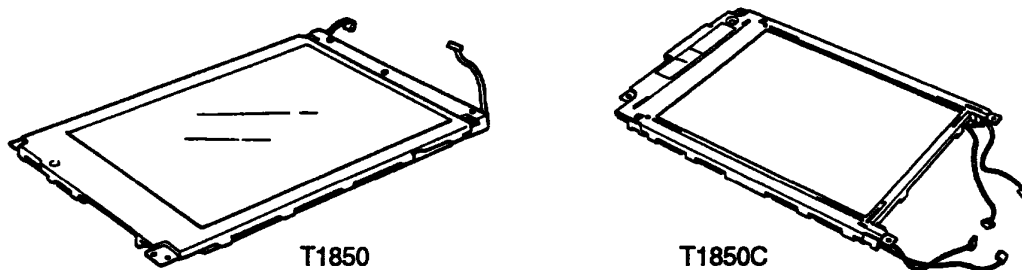


Figure 3 T1850 and T1850C Sidelit LCDs

Table 2 T1850/T1850C Sidelit LCD specifications

ITEM		Specifications	
		T1850	T1850C
Resolution	(dots)	640 x 480	640 x 480
Dot Dimension	(mm)	0.27(W) x 0.27(H)	0.28(W) x 0.28(H)
Dot Pitch	(mm)	0.30(W) x 0.30(H)	0.30(W) x 0.30(H)
Display Area	(mm)	196.0(W) x 147.6(H)	196.0(W) x 148.0(H)
Contrast		17:1	10:1
FL Current	(mA)	3.5 (Fix)	5.0
FL Frequency	(KHz)	30.5	47

FL Inverter Boards

The T1850/T1850C Fluorescent Lamp (FL) Inverter Boards supply high frequency current needed to illuminate the LCDs' fluorescent lamps.

The FL inverter boards are shown in Figure 4, and the specifications are described in Table 3.



Figure 4 T1850 and T1850C FL Inverter boards

Table 3 T1850/T1850C FL inverter specifications

ITEM		Specifications	
		T1850	T1850C
Input	Voltage (V)	5 (DC)	9.6 (DC)
	Power (W)	1.7	7
Output	Voltage (V)	715 (rms)	1,100 (rms)
	Current (mA)	3.5 (rms)	5.0 (rms)
	Frequency (KHz)	30.5 KHz	47 KHz