# MN18801A

## ■ Features

- Addressing capability: Program area    64 KB
  (2MB when MMU is used)
  Data area    64 KB
  (2 MB when MMU is used)
- Interrupt: External interrupt    3
  Timer interrupt    3
  Serial interrupt 2(send/receive)
  A/D interrupt    1
  Abnormal run
  detect interrupt    1
  Extension interrupt
  - Timer    9
  - DMA    1
  - Strobe output    1
  - Handshake    1
  - Chattering prevention    1
  - Sync.serial interface    1
- Timer/counter: 16-bit programmable timer × 12
  - Timer function
  - Event count function
  - Baud rate generator
  - Clock function
  - Timer sync.output function
  - PWM function
  - Input capture function
  - Strobe output function
  - Watchdog function
- Serial inteface: 8-bit sync.type
  1 channel
  7-/8-bit start-stop sync.type
  1 channel
- Analog interface: 8-bit A/D converter
  4 channels
- Standby mode: STOP/HALT mode
- Handshake interface: For CENTRONIX printer
- Chattering preventive input
- DMA controller: Transfer between 1-channel
  RAM and I/O

- MMU incorporated for large-capacity memory interface
- Zero cross detect input: × 2
- I/O pins: Memory mapped I/O system
  16    for per-bit direction control I/O port
  24    for per-byte direction control I/O port
  13    for input port(various functions combined)
  6    for output port(various functions combined)
  21    for address bus
  8    for data bus
- Package: 100-QFP

## ■ Pin Configuration



(Top View)

⑱ 100-QFP
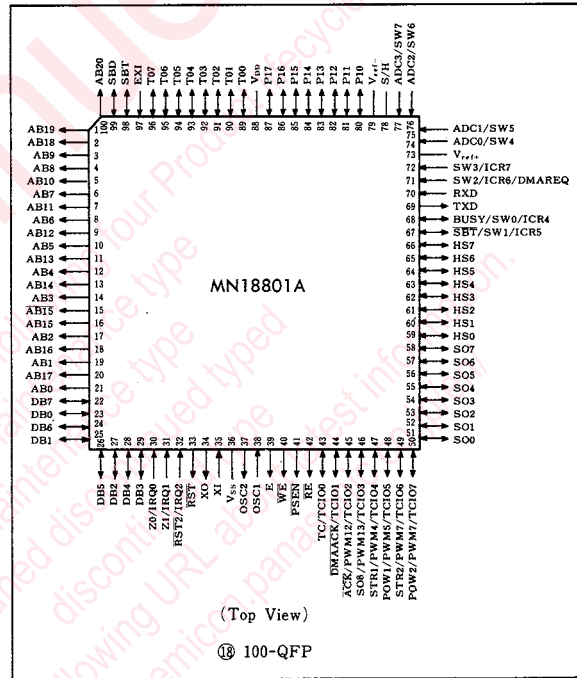
## ■ Pin Descriptions

| Symbol | Pin Name | I/O | Description |
|---|---|---|---|
| $V_{DD}$ | Power supply | —— | Connect to +5V. |
| $V_{SS}$ | Power supply | —— | Connect to 0 V(GND). |
| OSC1 | Oscillation input | I | High-speed system clock oscillation input pin |
| OSC2 | Oscillation output | O | High-speed system clock oscillation output pin |
| XI | Oscillation input | I | Low-speed system clock oscillation input pin. Input pin when oscillations stop. |
| XO | Oscillation output | O | Low-speed system clock oscillation output pin. Input pin when oscillations stop. |
| RST | Reset | I | Pin to reset the microcomputer |
| TXD (P00) | UART data send | O (I) | Pin to output start/stop sync. serial interface(UART) serial data. Also available as an input port. |
| RXD (P01) | UART data receive | I | Start/stop sync. serial interface(UART) serial data input pin. Also available as an input port. |
| SBT | Sync. serial clock I/O | I/O | Pin to input/output sync. serial interface clock. Also available as an input port. |
| SBD | Sync. serial data I/O | I/O (I) | Pin to input/output sync. serial interface data. Also available as an input port. |
| TC/TCIO0 | Combined | I/O | Timer/event counter I/O pin. Also available as DMA end output and input port. |
| DMAACK/ TCIO1 | Combined | I/O | Timer/event counter I/O pin. Also available as a DMA ACK output and input port. |
| ACK/PWM12 /TCIO2 | Combined | I/O | Timer/event counter I/O pin. Also available as an ACK input pin, PWM output pin, and as an input port. |
| SO8/PWM13/ TCIO3 | Combined | I/O | Timer/event conter I/O pin. Also available as a strobe data output or PWM output pin, and as an input port. |
| STR1/PWM4/ TCIO4 | Combined | I/O | Timer/event counter I/O pin. Also availble as a strobe data latch pulse output or PWM output pin, and as an input port. |
| POW1/PWM5/ TCIO5 | Combined | I/O | Timer/event counter I/O pin. Also available as a power control output or PWM output pin, and as an input port. |
| STR2/PWM6/ TCIO6 | Combined | I/O | Timer/event counter I/O pin. Also available as a strobe data latch pulse output or PWM output pin, and as an input port. |
| POW2/PWM7/ TCIO7 | Combined | I/O | Timer/event counter I/O pin. Also available as a power control output or PWM output pin, and as an input port. |
| IRQ0/Z0 IRQ1/Z1 | External interrupt input | I | External interrupt input pin. Also available as a zero cross input pin or input port. |

# 8-Bit 1-Chip Microcomputers

## ■ Pin Descriptions(Continued)

| Symbol | Pin | I/O | Description |
|---|---|---|---|
| IRQ2/$\overline{RST2}$ | External interruput input | I | External interruput input pin. Also available as an extension reset input pin or input port. |
| V$_{ref+}$ | Ref. power supply | —— | "+" side of the reference power supply for the AD/DA converter |
| V$_{ref-}$ | Ref. power supply | —— | "−" side of the reference power supply for the AD/DA converter |
| S/H | Sample/hold capacitor | —— | Sampling/holding capacitor connection pin for the AD converter |
| ADC0/SW4~ ADC3/SW7 | AD input | I | AD converted value input pins. Also available as chattering preventive input pins or pulse detect input pins. Also available as input ports. |
| E | E pulse output | O | Output pin for an enable pulse which indicates a validity time of the data bus, $\overline{RE}$, and $\overline{WE}$. |
| $\overline{WE}$ | Write enable | O | RAM write control signal output pin |
| $\overline{RE}$ | Read enable | O | RAM read control signal output pin |
| $\overline{PSEN}$ | Program select | O | ROM read control signal output pin |
| SO0~SO7 | Strobe output | O | Strobe data output pins. Also available as output ports. |
| HS0~HS7 | Handshake I/O | I/O | CENTRONIX interface data I/O pins for the printer. Also available as I/O ports. |
| BUSY/SW0/ ICR4 | Combined | I/O | CENTRONIX interface Busy signal input pin for the printer. Also available as a chattering preventive input, pulse detect input or input-capture input pin, and as an input port. |
| $\overline{STB}$/SW1/ ICR5 | Combined | I/O | CENTRONIX interface strobe signal output pin for the printer. Also available as a chattering preventive input or pulse detect input or input-capture input pin, and as an input port. |
| SW2/ICR6/ DMAREQ | Combined | I | DMA request signal input. Also available as a chattering preventive input, pulse detect input or input-capture input pin, and as an input port. |
| SW3/ICR7 | Combined | I | Chattering preventive input, pulse detect input or input capture input pin. Also available as an input port. |
| TO0~TO3 | Timer sync. output | O | Sync. output ports for the timer 11. Also available as general purpose output ports. |
| TO4~TO7 | Timer sync. output | O | Sync. output ports for the timer 12. Also available as general purpose output ports. |
| P10~P17 | I/O | I/O | General purpose I/O pins. Input/output is specified for each bit. |
| AB0~AB20 | Address bus | O | Address output pins for ROM, RAM, I/O |
| DB0~DB7 | Data bus | I/O | Data I/O pins for ROM, RAM, I/O |

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