# M37451M4DXXXSP/FP
# M37451M8DXXXSP/FP

## EXTENDED OPERATING TEMPERATURE VERSION of M37451M4-XXXSP/FP, M37451M8-XXXSP/FP

## DESCRIPTION

The M37451M4DXXXSP/FP is a single-chip microcomputer designed with CMOS sillicon gate technology. It is housed in a 64-pin shrink plastic molded DIP or an 80-pin plastic molded QFP (0.8mm-pitch).

In addition to its simple instruction sets, the ROM, RAM, and I/O addresses are placed on the same memory map to enable easy programming.

It is suited for office automation equipment and control devices. The low power consumption made by the use of a CMOS process makes it especially suitable for battery powered devices requiring low power consumption. It also has a unique feature that enables it to be used as a slave microcomputer.

Apart from the expansion in operating temperature range and consequent differences in electrical characteristics (Note), functions are the same as those of the M37451M4-XXXSP/FP.

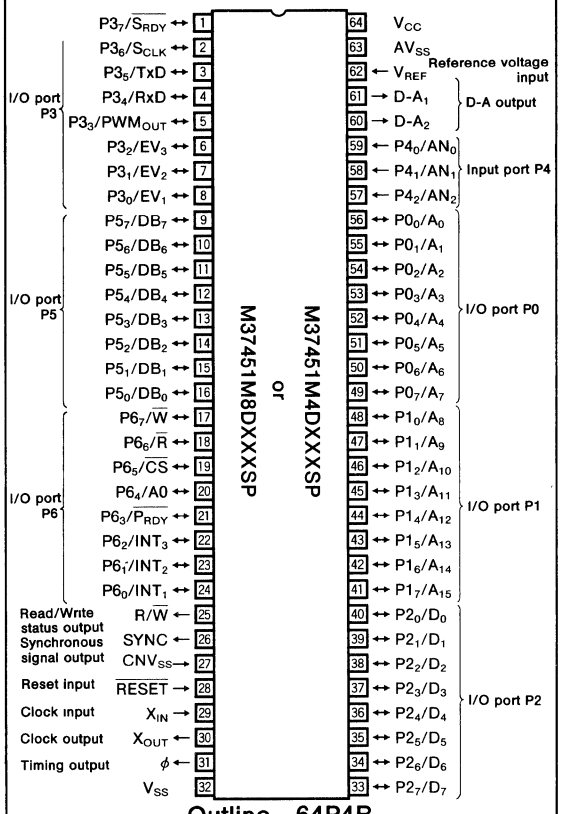
The differences between the M37451M4DXXXSP/FP and M37451M8DXXXSP/FP are as shown below.

| Type name | ROM size | RAM size |
|---|---|---|
| M37451M4DXXXSP/FP | 8192 bytes | 256 bytes |
| M37451M8DXXXSP/FP | 16384 bytes | 384 bytes |

The number of analog input pins for the 80-pin model (FP version) is different from the 64-pin model (SP version). In addition, the 80-pin model has special pins for $\overline{RD}$, $\overline{WR}$, $RESET_{OUT}$, $DAV_{REF}$, $ADV_{REF}$, $AV_{CC}$ and the 64-pin model has a special $V_{REF}$ pin.

Note : The maximum value of supply current is 20mA.
All other values are the same as that of M37451M4-XXXSP/FP.

## PIN CONFIGURATION (TOP VIEW)




Outline 64P4B

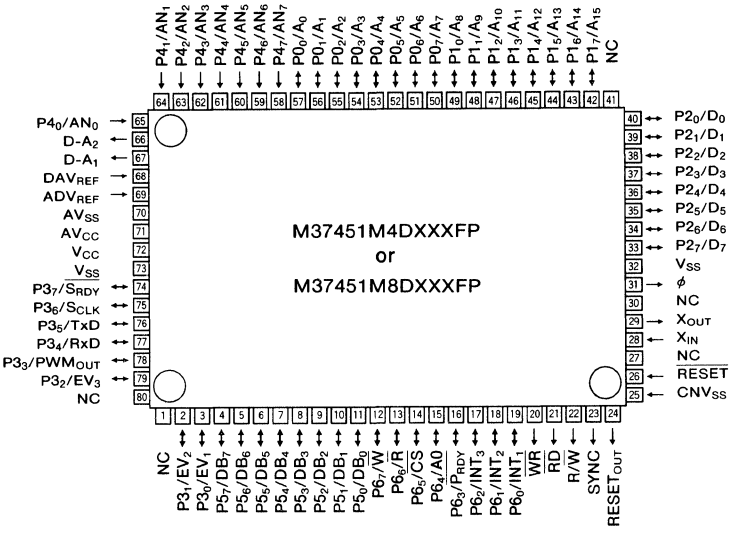
## FEATURES

- Number of basic instructions ..... 71
  69 MELPS 740 basic instructions+2 multiply/divide instructions
- Instruction execution time
  (minimum instructions at 12.5MHz frequency) ..... 0.64μs
- Single power supply ..... 5V±10%
- Power dissipation normal operation mode
  (at 12.5MHz frequency) ..... 40mW
- Subroutine nesting ..... 96 levels max.
- Interrupt ..... 15 events
- Master CPU interface ..... 1 byte
- 16-bit timer ..... 3
- 8-bit timer (Serial I/O use) ..... 1
- Serial I/O (UART or clock synchronous) ..... 1
- A-D converter (8-bit resolution) ..... 3 channels (DIP)
  8 channels (QFP)
- D-A converter (8-bit resolution) ..... 2 channels
- PWM output with 8-bit prescaler
  (Either resolution 8 bit or 16 bit is software selectable) ... 1
- Programmable I/O ports
  (Ports P0, P1, P2, P3, P5, P6) ..... 48
- Input port (Port P4) ..... 3(DIP), 8(QFP)
- Output ports (Ports D-$A_1$, D-$A_2$) ..... 2
- Operating temperature ..... −40 to 85℃

## APPLICATION

Industrial machinery

## PIN CONFIGURATION (TOP VIEW)




Outline 80P6N

NC : No connection



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