

## CMOS 8-bit Single Chip Microcomputer

Piggyback/  
evaluator type

### Description

The CXP81900M is a CMOS 8-bit single chip micro-computer of piggyback/evaluator combined type, which is developed for evaluating the function of the CXP81952M/81960M.

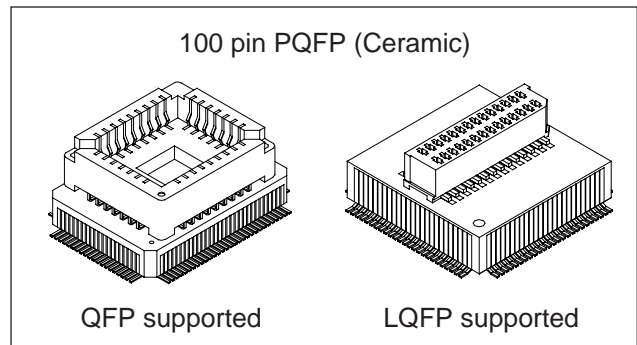
### Features

- A wide instruction set (213 instructions) which cover various types of data.
  - 16-bit operation/multiplication and division/boolean bit operation instructions
- Minimum instruction cycle
  - 250ns at 16MHz operation (4.5 to 5.5V)
  - 333ns at 12MHz operation (2.7 to 5.5V)
  - 122 $\mu$ s at 32kHz operation
- Applicable EPROM
  - LCC type 27C256, LCC type 27C512  
(Maximum 60Kbytes are available.)
- Incorporated RAM capacity
  - 2048 bytes
- Peripheral functions
  - A/D converter
    - 8-bit, 12-channel, successive approximation method  
(Conversion time of 20 $\mu$ s/16MHz)
  - Serial interface
    - Incorporated buffer RAM  
(Auto transfer for 1 to 32 bytes), 1 channel
    - Incorporated 8-bit and 8-stage FIFO  
(Auto transfer for 1 to 8 bytes), 1 channel
  - Timer
    - 8-bit timer, 8-bit timer/counter
    - 19-bit time base timer
    - 32kHz timer/counter
  - High precision timing pattern generator
    - PPG 19-pin, 32-stage programmable
    - RTG 5 pins, 2 channels
  - PWM/DA gate output
    - PWM output 12 bits, 2 channels  
(Repetitive frequency 62.5kHz/16MHz)
    - DA gate pulse output 13 bits, 4channels
  - FRC capture unit
    - Incorporated 26-bit and 8-stage FIFO
  - PWM output
    - 14 bits, 1 channel
  - Remote control receiving circuit
    - 8-bit pulse measurement counter with on-chip 6-stage FIFO
  - General purpose prescaler
    - 7 bits (PG5 input frequency division, FRC capture possible.)
  - HSYNC counter
    - 12-bit event counter (SYNC1 input count)
- Interruption
  - 20 factors, 15 vectors, multi-interruption possible
- Standby mode
  - SLEEP/STOP
- Package
  - 100-pin ceramic PQFP

Note) Mask option depends on the type of the CXP81900M. Refer to the Products List for details.

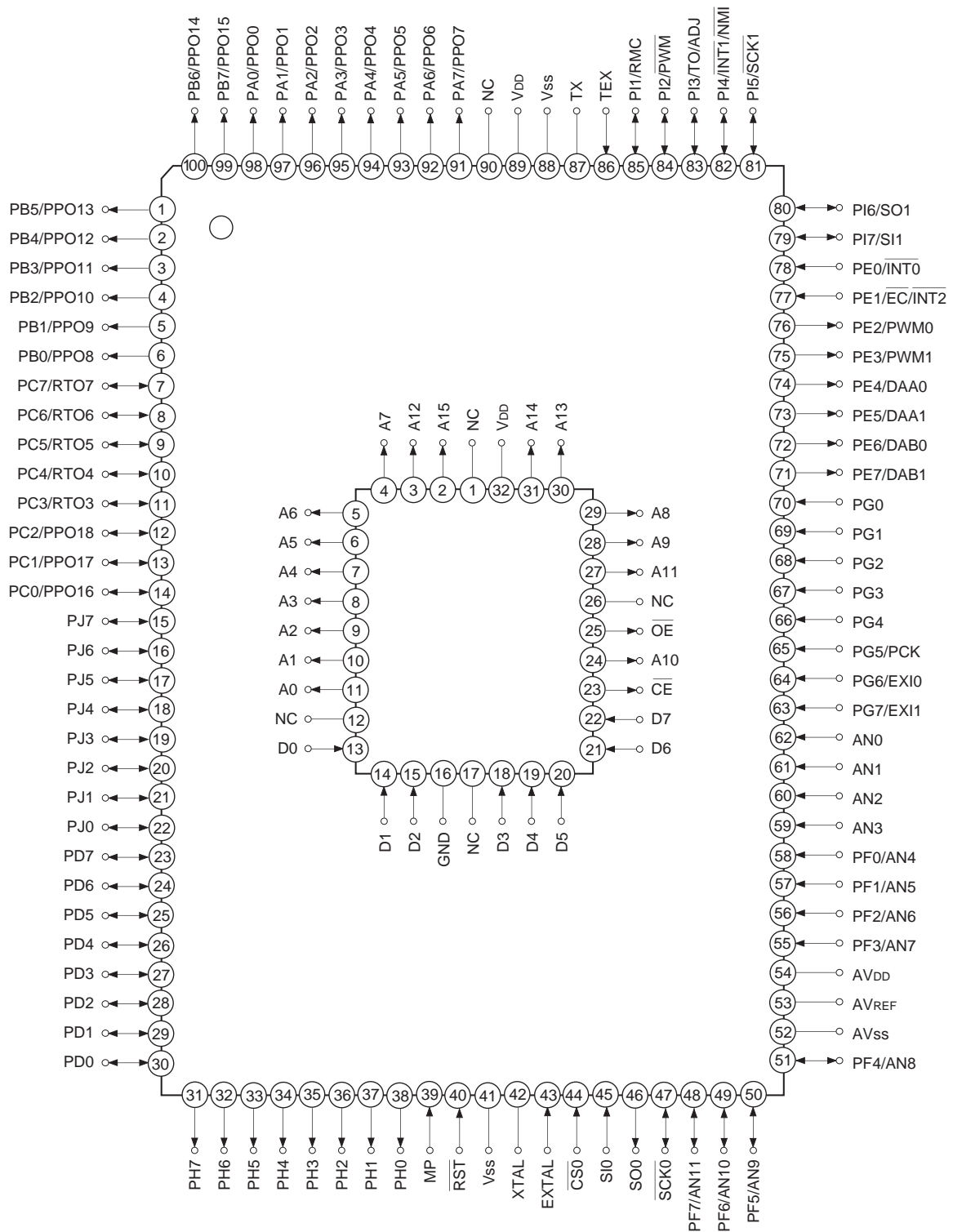
### Structure

Silicon gate CMOS IC



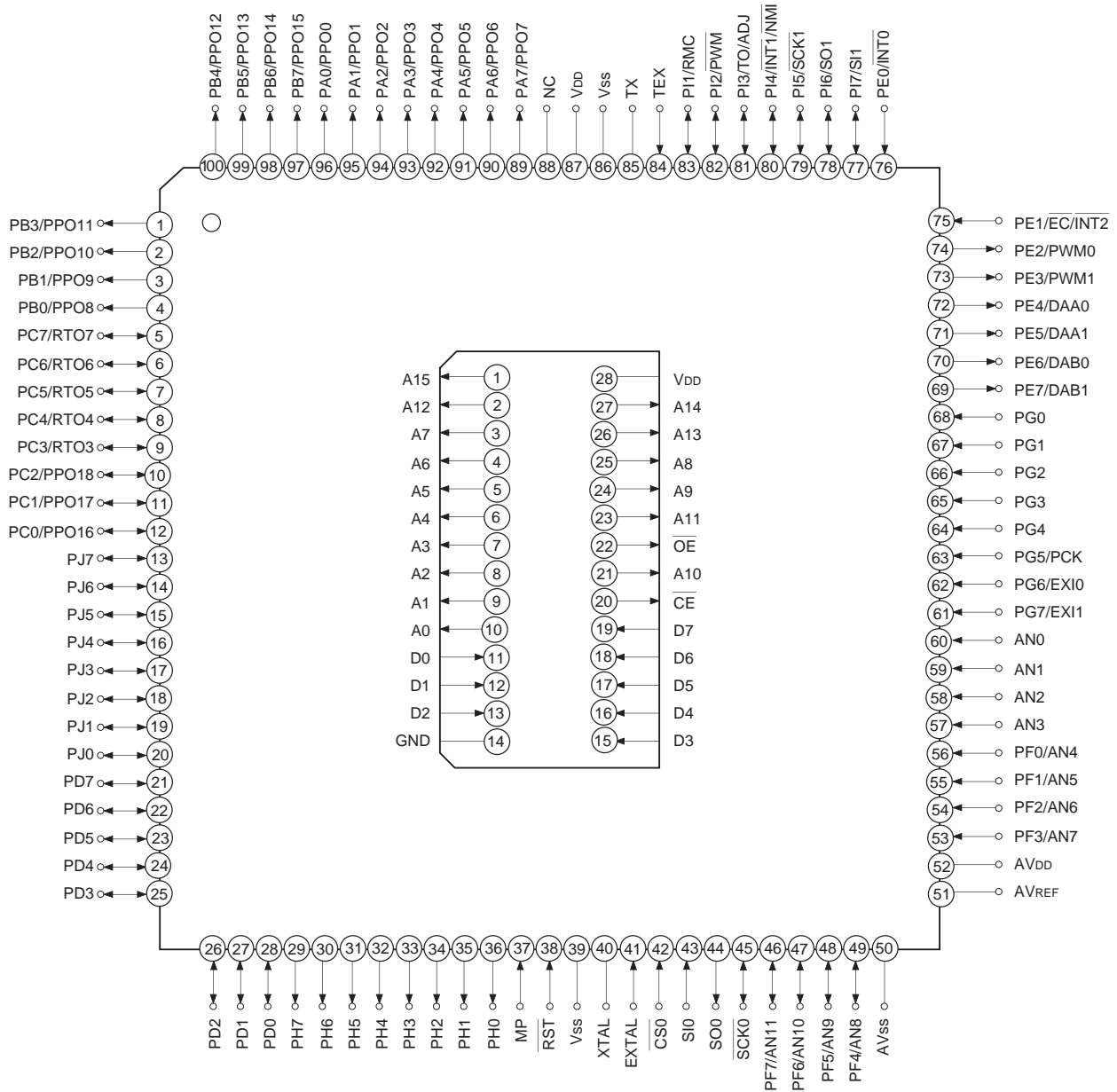
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Pin Assignment in Piggyback Mode (QFP package)



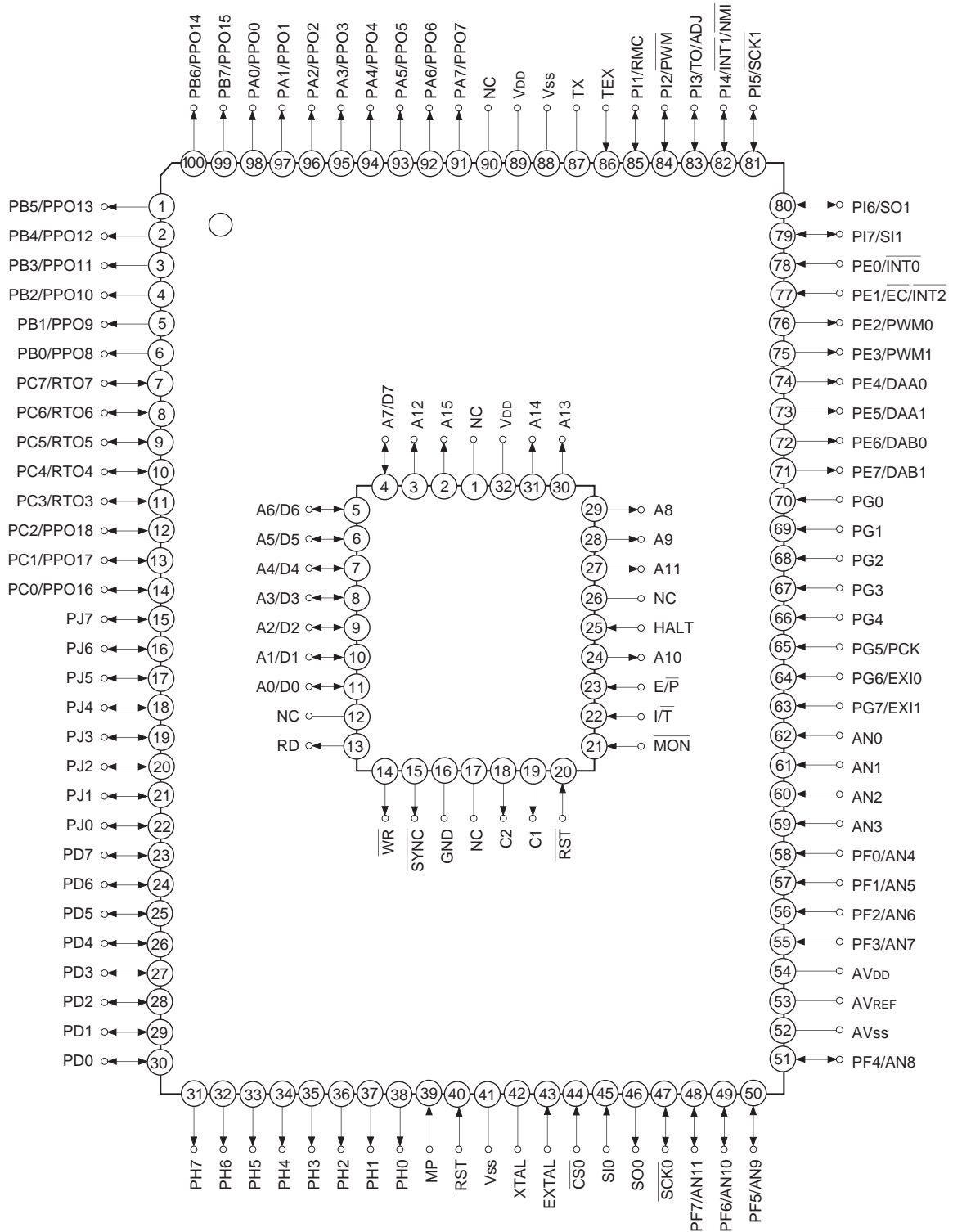
- Note)**
1. NC (Pin 90) is always connected to V<sub>DD</sub>.
  2. V<sub>SS</sub> (Pins 41 and 88) are both connected to GND.
  3. MP (Pin 39) is always connected to GND.

Pin Assignment in Piggyback Mode (LQFP package)



- Note)**
1. NC (Pin 88) is always connected to V<sub>DD</sub>.
  2. V<sub>ss</sub> (Pins 39 and 86) are both connected to GND.
  3. MP (Pin 37) is always connected to GND.

Pin Assignment in Evaluator Mode (QFP package)



- Note)**
1. NC (Pin 90) is always connected to VDD.
  2. Vss (Pins 41 and 88) are both connected to GND.
  3. MP (Pin 39) is always connected to GND.

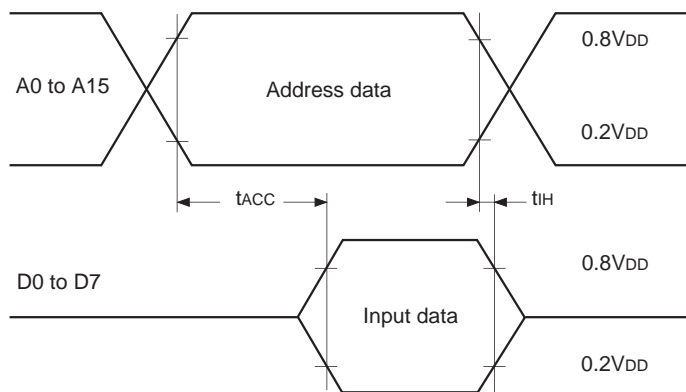


**EPROM Read Timing** ( $T_a = -20$  to  $+75^\circ\text{C}$ ,  $V_{DD} = 2.7$  to  $5.5\text{V}$ ,  $V_{SS} = 0\text{V}$ )

Item	Symbol	Pin	Min.	Max.	Unit
Address → data input delay time	$t_{ACC}$	A0 to A15 D0 to D7		100*1	ns
				75*2	
Address → data hold time	$t_{IH}$	A0 to A15 D0 to D7	0		ns

\*1 At 12MHz operation ( $V_{DD} = 4.5$  to  $5.5\text{V}$ )

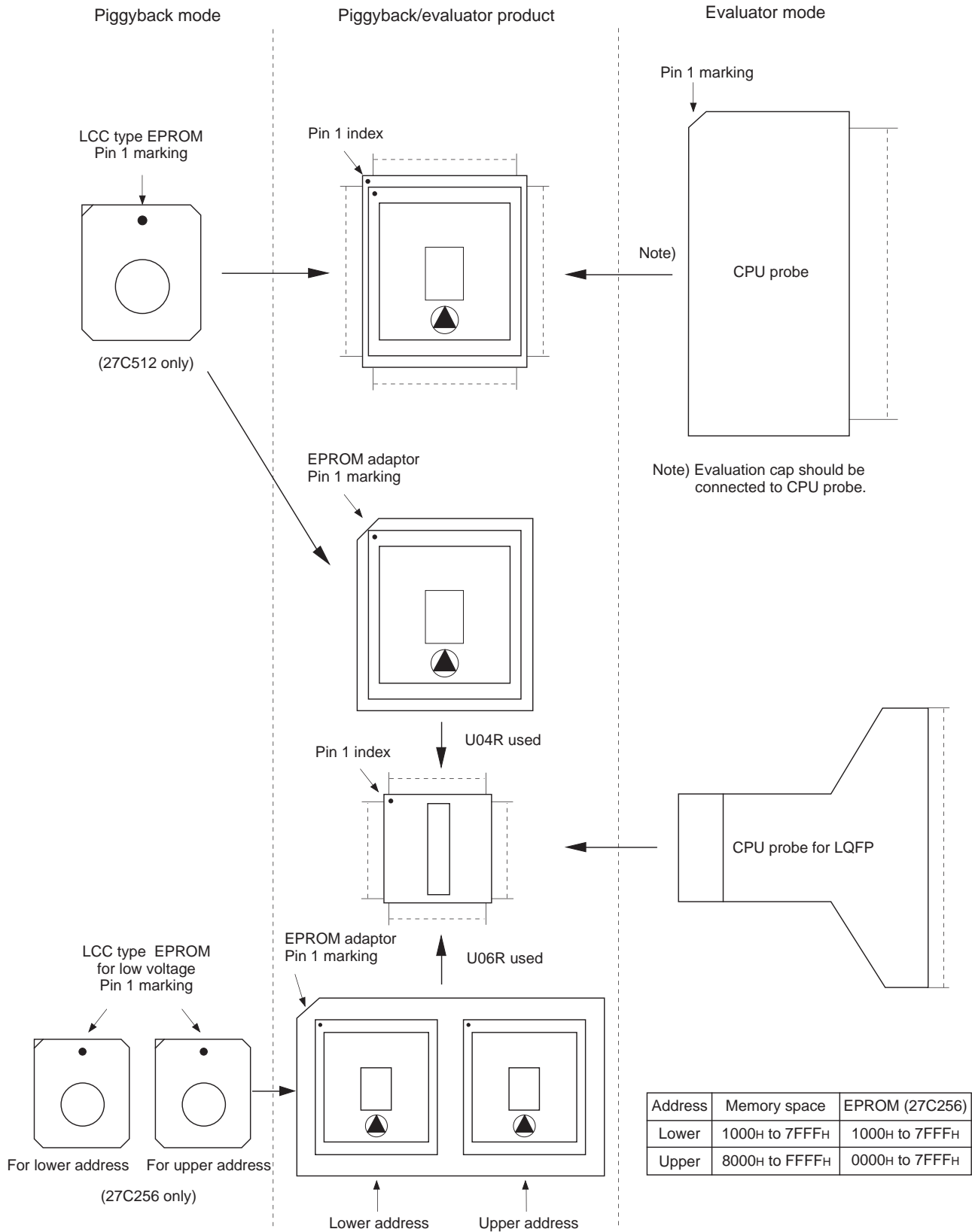
\*2 At 12MHz operation ( $V_{DD} = 2.7$  to  $5.5\text{V}$ ), At 16MHz operation ( $V_{DD} = 4.5$  to  $5.5\text{V}$ )



**Products List**

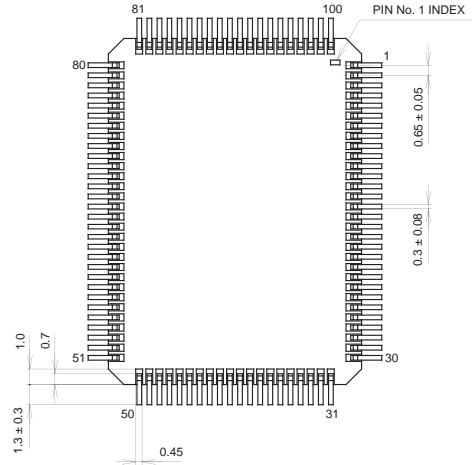
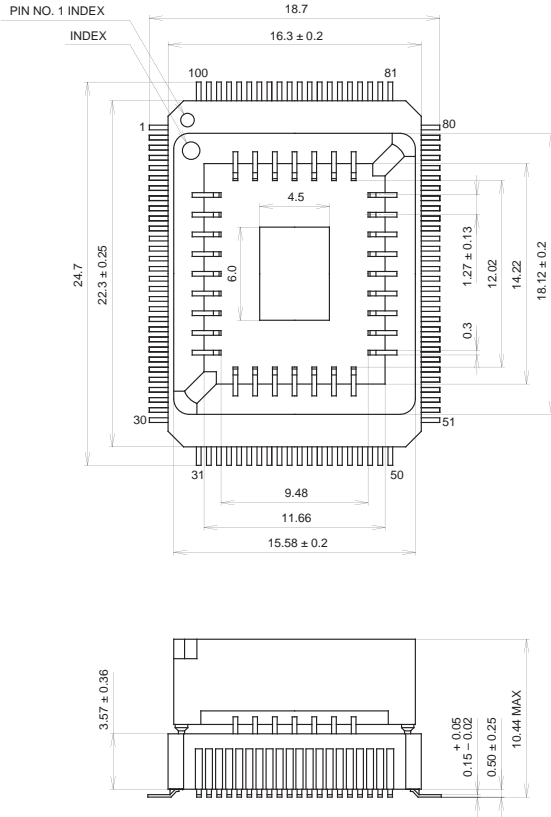
Option item	Products			
	Mask product		Piggyback/evaluator product	
	CXP81952M	CXP81960M	CXP81900M-U04Q CXP81900M-U04R	CXP81900M-U06R
Package	100-pin plastic QFP/LQFP		100-pin ceramic PQFP	
ROM capacity	52Kbytes	60Kbytes	EPROM 60Kbytes	
			27C512 × 1	27C256 × 2
Pull-up resistor for reset pin	Existent/Non-existent		Existent	
Supply voltage	2.7 to 5.5V		2.7 to 5.5V	2.7 to 5.5V

Piggyback mode/evaluator mode can be switched as shown below.



Package Outline Unit: mm

100PIN PQFP (CERAMIC)

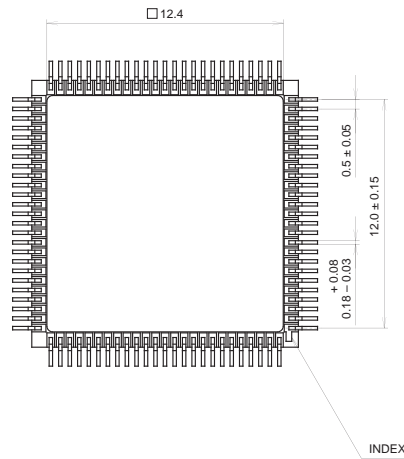
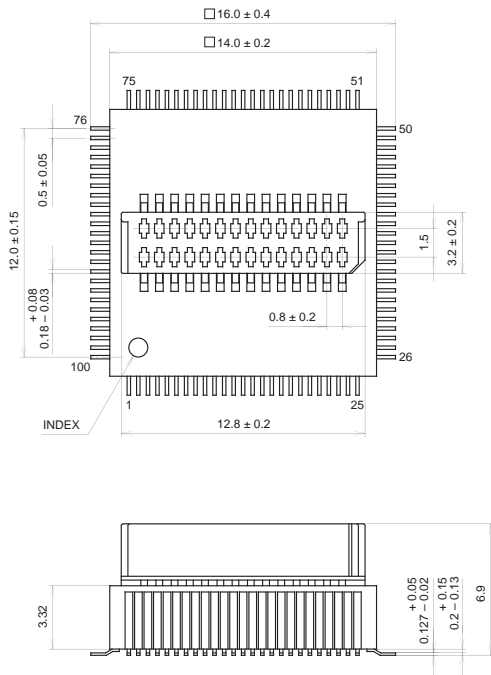


PACKAGE STRUCTURE

SONY CODE	PQFP-100C-L01
EIAJ CODE	AQFP100-C-0000-A
JEDEC CODE	—

PACKAGE MATERIAL	CERAMIC
LEAD TREATMENT	GOLD PLATING
LEAD MATERIAL	42 ALLOY
PACKAGE WEIGHT	5.7g

100PIN PQFP (CERAMIC)



PACKAGE STRUCTURE

SONY CODE	PQFP-100C-L02
EIAJ CODE	AQFP100-C-1414-A
JEDEC CODE	—

PACKAGE MATERIAL	CERAMIC
LEAD TREATMENT	GOLD PLATING
LEAD MATERIAL	42 ALLOY
PACKAGE WEIGHT	2.2g