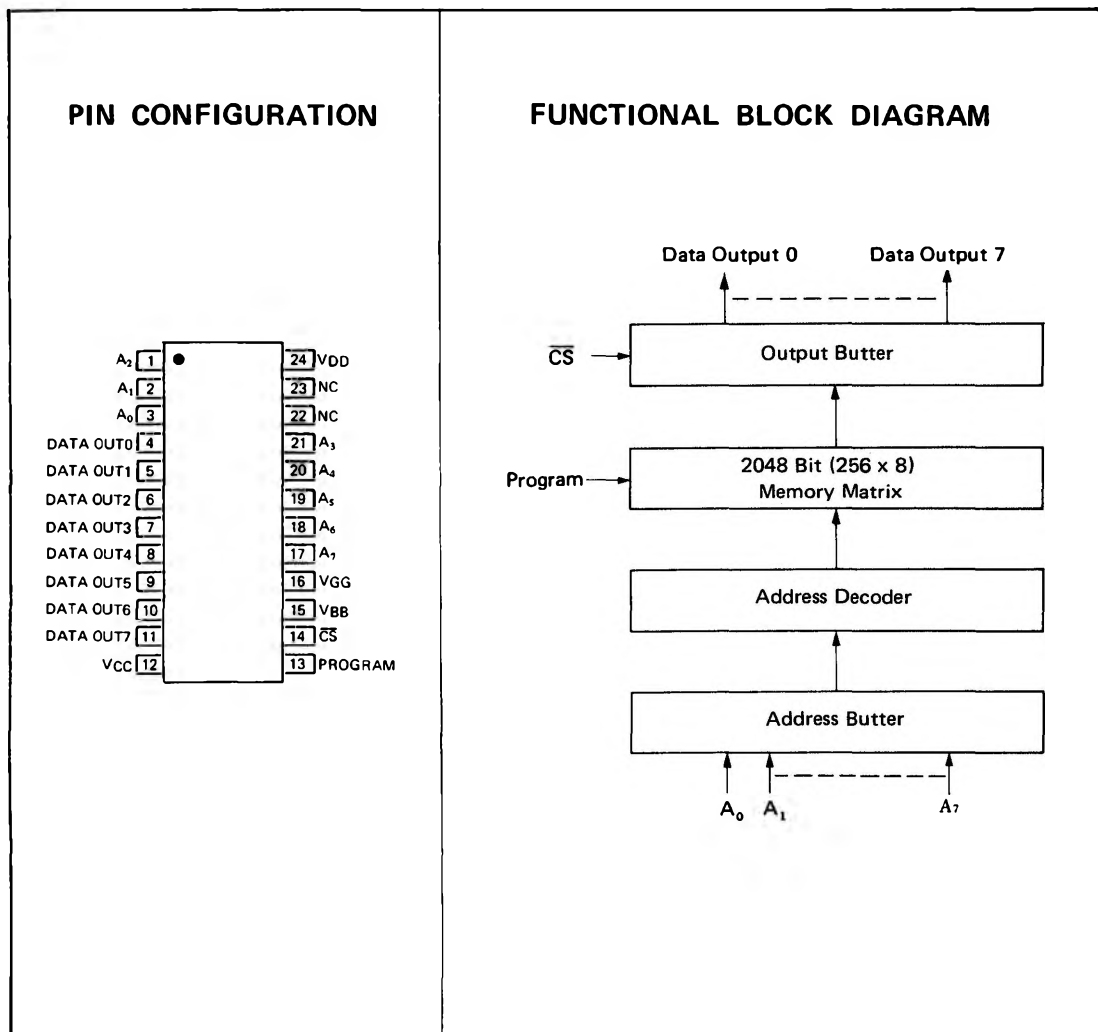


## MSM2750AS

2048-BIT UV ERASABLE ELECTRICALLY-PROGRAMMABLE  
READ-ONLY MEMORY

### GENERAL DESCRIPTION

MSM 2750 is a Programmable Read-Only Memory (PROM) of P-channel structure capable of electric write from outside and rewrite after erasion by ultraviolet rays.



### ABSOLUTE MAXIMUM RATINGS

| Parameter                |         | Symbol           | Rating     | Unit |
|--------------------------|---------|------------------|------------|------|
| Input and Supply Voltage | Read    |                  | +0.5 ~ -20 | V    |
|                          | Program |                  | +0.5 ~ -48 | V    |
| Power Dissipation        |         | P <sub>D</sub>   | 2 Max.     | W    |
| Storage Temperature      |         | T <sub>stg</sub> | -55 ~ +125 | °C   |

## READ OPERATION

### RECOMMENDED OPERATING CONDITIONS

| Parameter             | Symbol    | Conditions    | Range         | Unit |
|-----------------------|-----------|---------------|---------------|------|
| Supply Voltage        | $V_{CC}$  |               | $5 \pm 0.25$  | V    |
|                       | $V_{DD}$  |               | $-9 \pm 0.45$ | V    |
|                       | $V_{GG}$  |               | $-9 \pm 0.45$ | V    |
| Operating Temperature | $T_{opr}$ |               | $0 \sim +70$  | °C   |
| Load Number           | N         | TTL Gate Load | 1             |      |

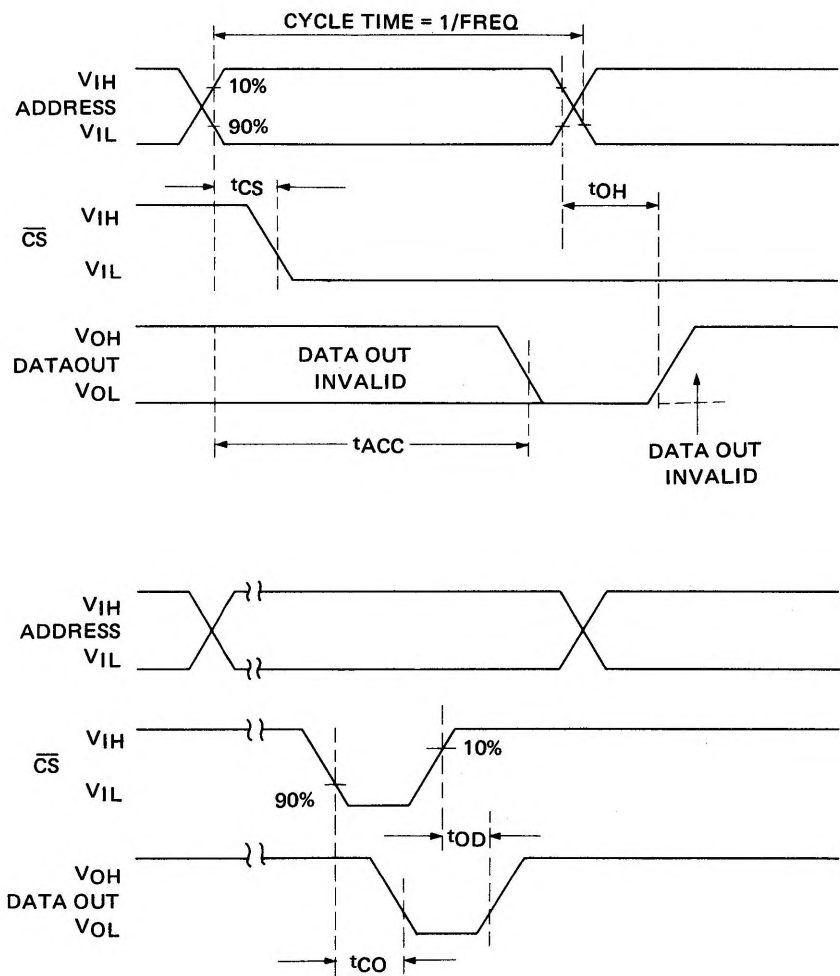
### STATIC ELECTRICAL CHARACTERISTICS

| Parameter              | Symbol   | Conditions                                      | Min.           | Typ. | Max.             | Unit    |
|------------------------|----------|-------------------------------------------------|----------------|------|------------------|---------|
| Input "H" Voltage      | $V_{IH}$ |                                                 | $V_{CC}$<br>-2 |      | $V_{CC}$<br>+0.3 | V       |
| Input "L" Voltage      | $V_{IL}$ |                                                 | -1.0           |      | $V_{CC}$<br>-4.2 | V       |
| Output "H" Voltage     | $V_{OH}$ | $I_{OH} = -100 \mu A$                           | 3.5            |      |                  | V       |
| Output "L" Voltage     | $V_{OL}$ | $I_{OL} = 1.6 \text{ mA}$                       |                |      | 0.45             | V       |
| Input Leakage Current  | $I_{IL}$ | $V_{IN} = 0V$                                   |                |      | 1                | $\mu A$ |
| Output Leakage Current | $I_{LO}$ | $V_{OUT} = 0V$<br>$\overline{CS} = V_{CC} - 2V$ |                |      | 5                | $\mu A$ |
| Gate Supply Current    | $I_{GG}$ |                                                 |                |      | 1                | $\mu A$ |
| Supply Current         | $I_{DD}$ | $\overline{CS} = 0V$<br>DATAOUT OPEN            |                | 30   | 45               | mA      |
| Output Clamp Current   | $I_{CF}$ | $V_{OUT} = -1.0V$                               |                |      | 13               | mA      |

### AC CHARACTERISTICS

| Parameter            | Symbol    | Conditions                                                                                                                             | Min. | Typ. | Max.       | Unit |
|----------------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------|------|------|------------|------|
| Data Valid Time      | $t_{OH}$  | Input Pulse Amplitude<br>= $0 \sim 4V$<br><br>Rise and Fall Time of<br>Input Pulse $\leq 50 \text{ nS}$<br>Output Load<br>= 1 TTL Gate |      |      | 100        | nS   |
| Access Time          | $t_{ACC}$ |                                                                                                                                        |      |      | 1.0<br>1.2 | nS   |
| Chip Select Delay    | $t_{CS}$  |                                                                                                                                        |      |      | 100<br>300 | nS   |
| Output Delay from cs | $t_{CO}$  |                                                                                                                                        |      |      | 900        | nS   |
| Output Deselect      | $t_{OD}$  |                                                                                                                                        |      |      | 300        | nS   |

(Note) Numerals above and below the oblique line respectively show the values of each MSM2750-1A and MSM2750-2A.



## PROGRAMMING

### RECOMMENDED OPERATING CONDITIONS

| Parameter             | Symbol                  | Conditions | Range   | Unit |
|-----------------------|-------------------------|------------|---------|------|
| Supply Voltage        | $V_{BB}$                |            | 11 ~ 13 | V    |
|                       | $V_{CC}, \overline{CS}$ |            | 0       | V    |
| Operating Temperature | $T_{opr}$               |            | 20 ~ 30 | °C   |

STATIC ELECTRICAL CHARACTERISTICS

| Parameter                               | Symbol            | Conditions                                                           | Min. | Typ. | Max. | Unit |
|-----------------------------------------|-------------------|----------------------------------------------------------------------|------|------|------|------|
| Input "H" Voltage                       | V <sub>IHP</sub>  |                                                                      |      |      | 0.3  | V    |
| Data Input Pulse "L" Voltage            | V <sub>ILP1</sub> |                                                                      | -46  |      | -48  | V    |
| Address Input Pulse "L" Voltage         | V <sub>ILP2</sub> |                                                                      | -40  |      | -48  | V    |
| "L" V <sub>DD</sub> Input Pulse Voltage | V <sub>ILP3</sub> |                                                                      | -46  |      | -48  | V    |
| Program Input Pulse "L" Voltage         | V <sub>ILP4</sub> |                                                                      | -46  |      | -48  | V    |
| V <sub>GG</sub> Input Pulse "L" Voltage | V <sub>ILP5</sub> |                                                                      | -35  |      | -40  | V    |
| I <sub>DD</sub> Pulse Supply Current    | I <sub>DDP</sub>  | V <sub>DD</sub> = V <sub>prog</sub> = -48V<br>V <sub>GG</sub> = -35V |      | 200  |      | mA   |
| Address Data Input Leakage Current      | I <sub>ILP1</sub> | V <sub>IN</sub> = -48V                                               |      |      | 10   | mA   |
| Program V <sub>GG</sub> Leakage Current | I <sub>ILP2</sub> | V <sub>IN</sub> = -48V                                               |      |      | 10   | mA   |

AC CHARACTERISTICS

| Parameter                                       | Symbol           | Conditions                                          | Min. | Max. | Unit |
|-------------------------------------------------|------------------|-----------------------------------------------------|------|------|------|
| Duty Cycle (V <sub>DD</sub> , V <sub>GG</sub> ) |                  | Rise and Fall Time<br>of Input Pulse<br>Time ≤ 1 μS |      | 20   | %    |
| Program Pulse Width                             | t <sub>φPW</sub> |                                                     |      | 3    | mS   |
| Data Setup Time                                 | t <sub>DW</sub>  |                                                     | 25   |      | μS   |
| Data Hold Time                                  | t <sub>DH</sub>  |                                                     | 10   |      | μS   |
| V <sub>DD</sub> , V <sub>GG</sub> Setup Time    | t <sub>VW</sub>  |                                                     | 100  |      | μS   |
| V <sub>DD</sub> , V <sub>GG</sub> Hold Time     | t <sub>VD</sub>  |                                                     | 10   | 100  | μS   |
| Address Complement Setup Time                   | t <sub>ACW</sub> |                                                     | 25   |      | μS   |
| Address Complement Hold Time                    | t <sub>ACH</sub> |                                                     | 25   |      | μS   |
| Address True Setup                              | t <sub>ATW</sub> |                                                     | 10   |      | μS   |
| Address True Hold                               | t <sub>ATH</sub> |                                                     | 10   |      | μS   |

