

256-bit TTL bipolar PROM (32 x 8)

82S23/S23A/S23B
82S123/123A/123B

APPLICATIONS

- Prototyping/volume production
- Sequential controllers
- Format conversion
- Hardwired algorithms
- Random logic
- Code conversion

FEATURES

- Address access time: 50ns max
- Input loading: -150µA max
- On-chip address decoding
- One chip enable input
- Output options:
- 82S23: Open collector
- 82S123: 3-State
- No separate fusing pins
- Unprogrammed outputs are Low level
- Fully TTL compatible

DESCRIPTION

The 82S23 and 82S123 are field-programmable, which means that custom patterns are immediately available by following the Philips Generic I fusing procedure. The 82S23 and 82S123 devices are supplied with all outputs at a logical Low. Outputs are programmed to a logic High level at any specified address by fusing a Ni-Cr link matrix.

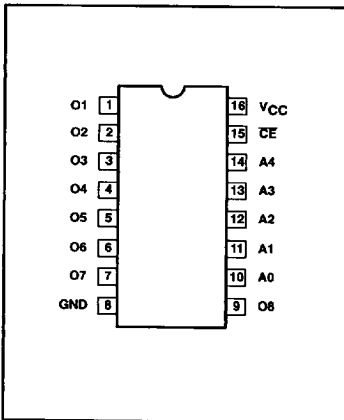
These devices include on-chip decoding and 1 chip enable input for memory expansion. They feature either Open collector or 3-State outputs for optimization of word expansion in bused organizations

ORDERING INFORMATION

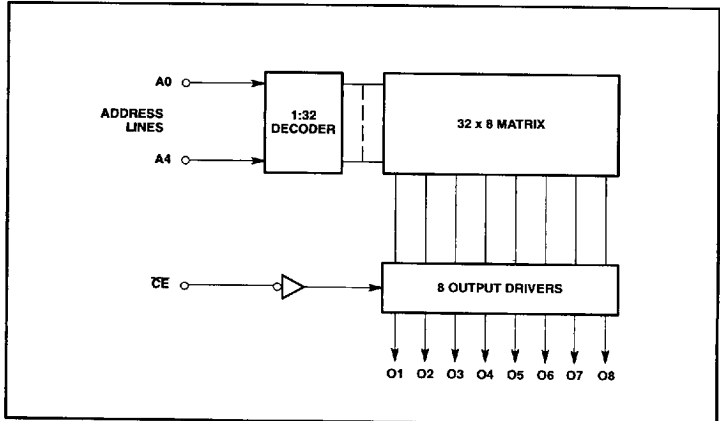
| DESCRIPTION | ORDER CODE | PACKAGE DESIGNATOR* |
|-------------------------------------|-------------|---------------------|
| 16-Pin Ceramic DIP (300mil-wide) | 82S23/BEA | GDIP1-T16 |
| | 82S123/BEA | GDIP1-T16 |
| | 82S23A/BEA | GDIP1-T16 |
| | 82S123A/BEA | GDIP1-T16 |
| | 82S23B/BEA | GDIP1-T16 |
| 16-Pin Ceramic Flat Pack | 82S23/BFA | GDFF2-F16 |
| | 82S123/BFA | GDFF2-F16 |
| | 82S23A/BFA | GDFF2-F16 |
| | 82S123A/BFA | GDFF2-F16 |
| | 82S23B/BFA | GDFF2-F16 |

* MIL-STD 1835 or Appendix A of 1995 Military Data Handbook

PIN CONFIGURATION



BLOCK DIAGRAM



7110826 0085837 T10

256-bit TTL bipolar PROM (32 x 8)

82S23/S23A/S23B
82S123/123A/123B

ABSOLUTE MAXIMUM RATINGS

| SYMBOL | PARAMETER | RATING | UNIT |
|------------------|-----------------------------------|-------------|-----------------|
| V _{CC} | Supply voltage | +7 | V _{DC} |
| V _I | Input voltage | +5.5 | V _{DC} |
| V _O | Output voltage High (82S23) | +5.5 | V _{DC} |
| V _O | Output voltage Off-State (82S123) | +5.5 | V _{DC} |
| T _A | Operating temperature range | -55 to +125 | °C |
| T _{STG} | Storage temperature range | -65 to +150 | °C |

DC ELECTRICAL CHARACTERISTICS

-55°C ≤ T_A ≤ +125°C, 4.5V ≤ V_{CC} ≤ 5.5V

| SYMBOL | PARAMETER | TEST CONDITIONS ^{1, 2} | LIMITS | | | UNIT |
|-----------------------------------|-------------------------------------|--|--------|------------------|------|------|
| | | | MIN | TYP ⁵ | MAX | |
| Input voltage | | | | | | |
| V _{IL} | Low | V _{CC} = 4.5V, I _I = -18mA | 2.0 | | 0.8 | V |
| V _{IH} | High | | | | | |
| V _{IK} | Clamp | | | | | -1.2 |
| Output voltage | | | | | | |
| V _{OL} | Low | CE = Low I _O = 16mA I _O = -2mA, V _{CC} = 4.5V | 2.4 | | 0.5 | V |
| V _{OH} | High | | | | | |
| Input current | | | | | | |
| I _{IL} | Low | V _{CC} = 5.5V V _I = 0.45V V _I = 2.7V V _I = 5.5V | | | -150 | μA |
| I _{IH1} | High | | | | 25 | μA |
| I _{IH2} | High | | | | 40 | μA |
| Output current¹ | | | | | | |
| I _{OLK} | Leakage (82S23) | V _{CC} = 5.5V CE = High, V _O = 5.5V CE = High, V _O = 5.5V CE = High, V _O = 0.4V V _{CC} = 5.5V, CE = Low, V _O = 0V, High stored | | | 40 | μA |
| I _{OZ} | Hi-Z state (82S123) | | | | 40 | μA |
| I _{OS} | Short circuit (82S123) ³ | | | | -40 | μA |
| | | | | | -100 | mA |
| Supply current | | | | | | |
| I _{CC} | | V _{CC} = 5.5V, CE = High | | | 110 | mA |
| Capacitance⁶ | | | | | | |
| C _{IN} | Input | CE = High, V _{CC} = 5.0V V _I = 2.0V V _O = 2.0V | | 5 | 10 | pF |
| C _{OUT} | Output | | | 8 | 13 | pF |

AC ELECTRICAL CHARACTERISTICS

-55°C ≤ T_A ≤ +125°C, 4.5V ≤ V_{CC} ≤ 5.5V

| SYMBOL | PARAMETER | TO | FROM | LIMITS - 82S23/123 | | | UNIT |
|-----------------|--------------------------|--------|--------------|--------------------|------------------|-----|------|
| | | | | MIN | TYP ⁵ | MAX | |
| t _{AA} | Access time ⁴ | Output | Address | | 20 | 50 | ns |
| t _{CE} | Access time ⁴ | Output | Chip Enable | | | 30 | ns |
| t _{CD} | Disable time | Output | Chip Disable | | | 30 | ns |

256-bit TTL bipolar PROM (32 x 8)

82S23/S23A/S23B
82S123/123A/123B

AC ELECTRICAL CHARACTERISTICS

-55°C ≤ T_A ≤ +125°C, 4.5V ≤ V_{CC} ≤ 5.5V

| SYMBOL | PARAMETER | TO | FROM | LIMITS - 82S23A/123A | | | UNIT |
|-----------------|--------------------------|--------|--------------|----------------------|------------------|-----|------|
| | | | | MIN | TYP ⁵ | MAX | |
| t _{AA} | Access time ⁴ | Output | Address | | 20 | 35 | ns |
| t _{CE} | Access time ⁴ | Output | Chip Enable | | | 22 | ns |
| t _{CD} | Disable time | Output | Chip Disable | | | 22 | ns |

AC ELECTRICAL CHARACTERISTICS

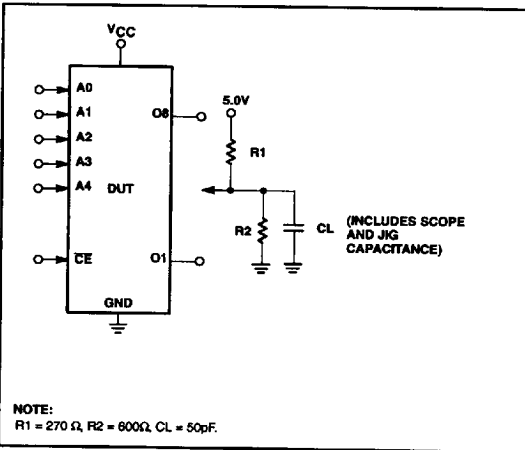
-55°C ≤ T_A ≤ +125°C, 4.5V ≤ V_{CC} ≤ 5.5V

| SYMBOL | PARAMETER | TO | FROM | LIMITS - 82S23B/123B | | | UNIT |
|-----------------|--------------------------|--------|--------------|----------------------|------------------|-----|------|
| | | | | MIN | TYP ⁵ | MAX | |
| t _{AA} | Access time ⁴ | Output | Address | | 20 | 30 | ns |
| t _{CE} | Access time ⁴ | Output | Chip Enable | | | 18 | ns |
| t _{CD} | Disable time | Output | Chip Disable | | | 18 | ns |

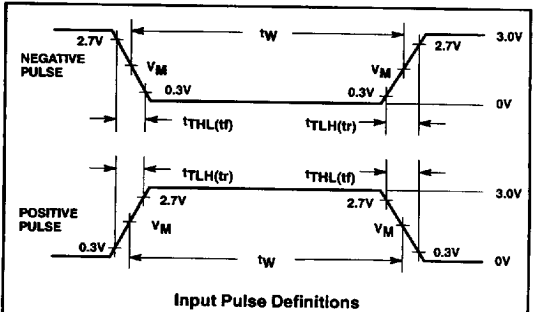
NOTES:

1. Positive current is defined as into the terminal referenced.
2. All voltages with respect to network ground.
3. Duration of short circuit should not exceed 1 second.
4. Tested at an address cycle time of 1μs.
5. Typical values are at V_{CC} = 5V, T_A = +25°C.
6. Guaranteed, but not tested.

TEST LOAD CIRCUITS



VOLTAGE WAVEFORMS

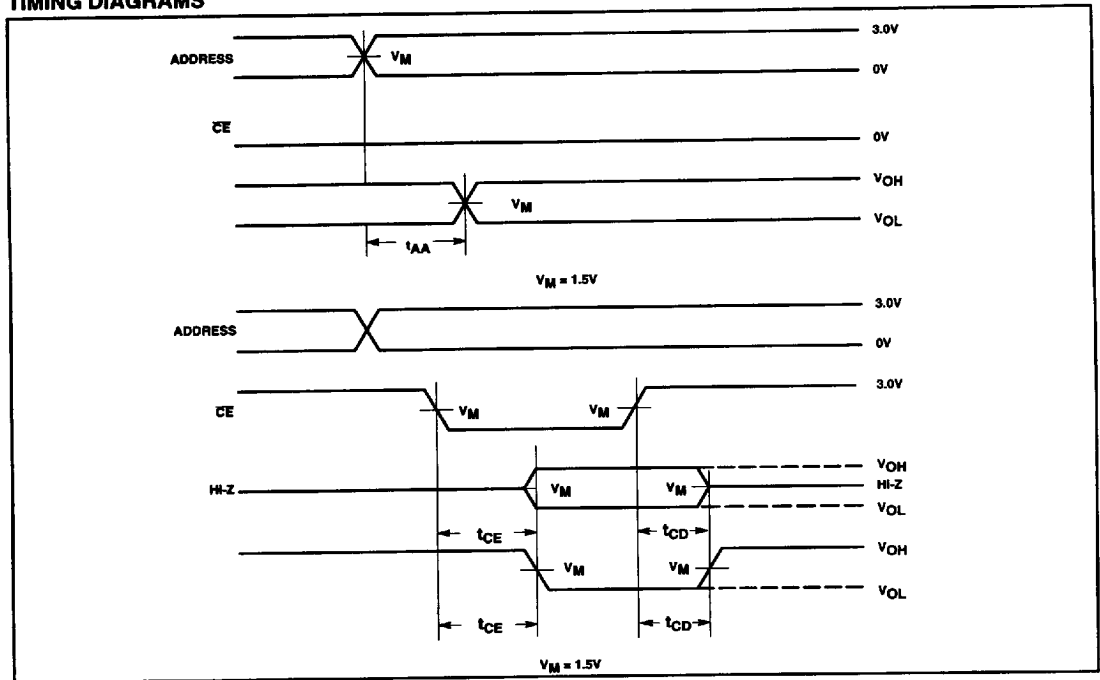


| INPUT PULSE CHARACTERISTICS | | | | |
|-----------------------------|-----------|-------------|------------------|------------------|
| V _M | Rep. Rate | Pulse Width | t _{TLH} | t _{THL} |
| 1.5V | 1MHz | 500ns | ≤5ns | ≤5ns |

256-bit TTL bipolar PROM (32 x 8)

82S23/S23A/S23B
82S123/123A/123B

TIMING DIAGRAMS



7110826 0085840 505

August 24, 1990

1054