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.

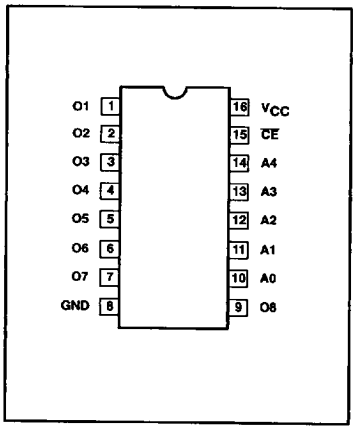
These devices include on-chip decoding and 1 chip enable input for memory expansion. They feature either Open collector or 3-State outputs for optimization of word expansion in bused organizations

ORDERING INFORMATION

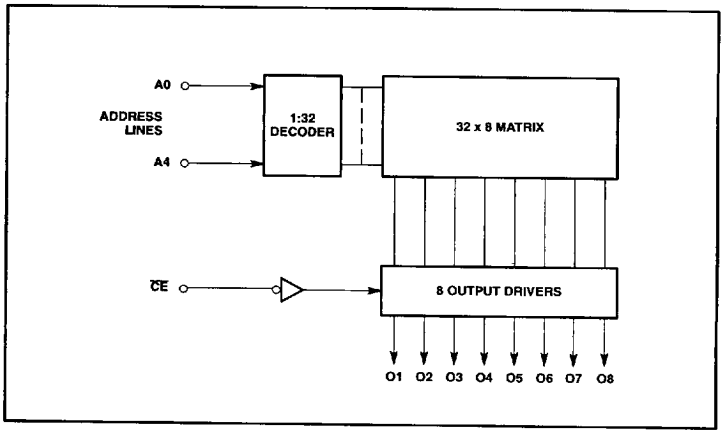
DESCRIPTION	ORDER CODE	PACKAGE DESIGNATOR*
16-Pin Ceramic DIP (300mil-wide)	82S23/BEA	GDIP1-T16
	82S123/BEA	GDIP1-T16
	82S23A/BEA	GDIP1-T16
	82S123A/BEA	GDIP1-T16
	82S23B/BEA	GDIP1-T16
	82S123B/BEA	GDIP1-T16
16-Pin Ceramic Flat Pack	82S23/BFA	GDFP2-F16
	82S123/BFA	GDFP2-F16
	82S23A/BFA	GDFP2-F16
	82S123A/BFA	GDFP2-F16
	82S23B/BFA	GDFP2-F16
	82S123B/BFA	GDFP2-F16

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

PIN CONFIGURATION



BLOCK DIAGRAM



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

$-55°C \leq T_A \leq +125°C$, $4.5V \leq V_{CC} \leq 5.5V$

SYMBOL	PARAMETER	TEST CONDITIONS[1, 2]	LIMITS			UNIT
			MIN	TYP[5]	MAX	
Input voltage						
V_{IL}	Low				0.8	V
V_{IH}	High		2.0			V
V_{IK}	Clamp	V_{CC} = 4.5V, I_I = -18mA			-1.2	V
Output voltage						
		$\overline{CE}$ = Low				
V_{OL}	Low	I_O = 16mA			0.5	V
V_{OH}	High	I_O = -2mA, V_{CC} = 4.5V	2.4			V
Input current						
		V_{CC} = 5.5V				
I_{IL}	Low	V_I = 0.45V			-150	µA
I_{IH1}	High	V_I = 2.7V			25	µA
I_{IH2}	High	V_I = 5.5V			40	µA
Output current[1]						
		V_{CC} = 5.5V				
I_{OLK}	Leakage (82S23)	$\overline{CE}$ = High, V_O = 5.5V			40	µA
I_{OZ}	Hi-Z state (82S123)	$\overline{CE}$ = High, V_O = 5.5V			40	µA
		$\overline{CE}$ = High, V_O = 0.4V			-40	µA
I_{OS}	Short circuit (82S123)[3]	V_{CC} = 5.5V, $\overline{CE}$ = Low, V_O = 0V, High stored	-20		-100	mA
Supply current						
I_{CC}		V_{CC} = 5.5V, $\overline{CE}$ = High			110	mA
Capacitance[6]						
		$\overline{CE}$ = High, V_{CC} = 5.0V				
C_{IN}	Input	V_I = 2.0V		5	10	pF
C_{OUT}	Output	V_O = 2.0V		8	13	pF

AC ELECTRICAL CHARACTERISTICS

$-55°C \leq T_A \leq +125°C$, $4.5V \leq V_{CC} \leq 5.5V$

SYMBOL	PARAMETER	TO	FROM	LIMITS – 82S23/123			UNIT
				MIN	TYP5	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

AC ELECTRICAL CHARACTERISTICS

$-55^{\circ}C \leq T_A \leq +125^{\circ}C$, $4.5V \leq V_{CC} \leq 5.5V$

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

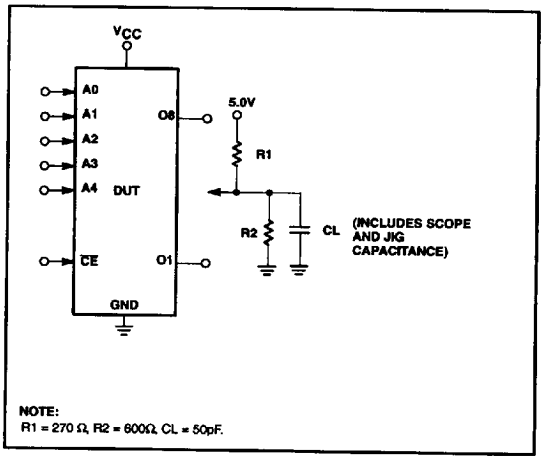
AC ELECTRICAL CHARACTERISTICS

$-55^{\circ}C \leq T_A \leq +125^{\circ}C$, $4.5V \leq V_{CC} \leq 5.5V$

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

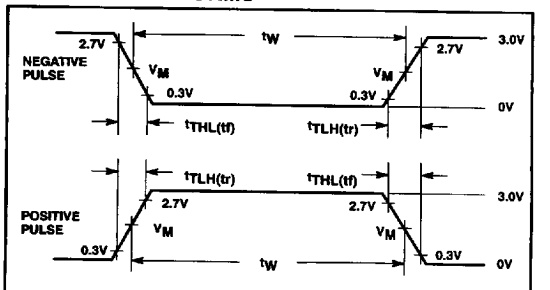
NOTES:
1. Positive current is defined as into the terminal referenced.
2. All voltages with respect to network ground.
3. Duration of short circuit should not exceed 1 second.
4. Tested at an address cycle time of 1µs.
5. Typical values are at $V_{CC} = 5V$, $T_A = +25^{\circ}C$.
6. Guaranteed, but not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

TEST LOAD CIRCUITS



NOTE:
R1 = 270 Ω, R2 = 600Ω, CL = 50pF.

VOLTAGE WAVEFORMS



Input Pulse Definitions

INPUT PULSE CHARACTERISTICS				
V_M	Rep. Rate	Pulse Width	t_{TLH}	t_{THL}
1.5V	1MHz	500ns	≤5ns	≤5ns

TIMING DIAGRAMS