signetics

2048-BIT BIPOLAR ROM (512x4 ROM)

82S230
82S231

JULY 1975

DIGITAL 8000 SERIES TTL/MEMORY

DESCRIPTION

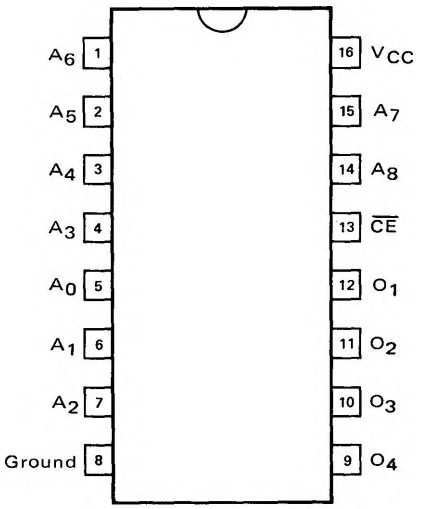
The 82S230 (Open Collector Outputs) and the 82S231 (Tri-State Outputs) are Bipolar 2048-Bit Read Only Memories, organized as 512 words by 4 bits per word.

The 82S230 and 82S231 are fully TTL compatible, and include on-chip decoding and one chip enable input for ease of memory expansion. They feature either Open Collector or Tri-State outputs for optimization of word expansion in bussed organizations.

Both 82S230 and 82S231 devices are available in the commercial and military temperature ranges. For the commercial temperature range (0°C to +75°C) specify N82S230/231, F. For the military temperature range (−55°C to +125°C) specify S82S230/231, F.

PIN CONFIGURATION

F PACKAGE*

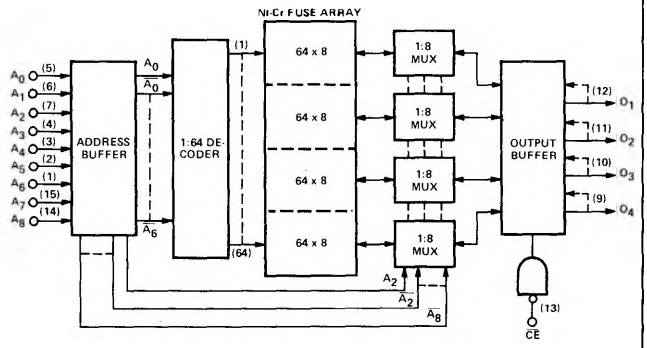


*F — Cerdip

FEATURES

- ORGANIZATION — 512 X 4
- ADDRESS ACCESS TIME:
  S82S230/231 — 70ns, MAXIMUM
  N82S230/231 — 50ns, MAXIMUM
- POWER DISSIPATION — 0.3mW/BIT TYPICAL
- INPUT LOADING:
  S82S230/231 — (−150μA) MAXIMUM
  N82S230/231 — (−100μA) MAXIMUM
- ONE CHIP ENABLE INPUT
- ON-CHIP ADDRESS DECODING
- OUTPUT OPTIONS:
  82S230 — OPEN COLLECTOR
  82S231 — TRI-STATE
- FULLY COMPATIBLE WITH 82S130 AND 82S131 SIGNETICS PROMS
- 16-PIN CERAMIC DIP

BLOCK DIAGRAM



APPLICATIONS

SEQUENTIAL CONTROLLERS
MICROPROGRAMMING
HARDWIRED ALGORITHMS
CONTROL STORE
RANDOM LOGIC
CODE CONVERSION

ABSOLUTE MAXIMUM RATINGS

PARAMETER		RATING	UNIT
V_{CC}	Power Supply Voltage	+7	Vdc
V_{IN}	Input Voltage	+5.5	Vdc
V_{OH}	High Level Output Voltage (82S230)	+5.5	Vdc
V_O	Off-State Output Voltage (82S231)	+5.5	Vdc
T_A	Operating Temperature Range		
	(N82S230/231)	0° to +75°	°C
	(S82S230/231)	−55° to +125°	°C
T_{stg}	Storage Temperature Range	−65° to +150°	°C

ELECTRICAL CHARACTERISTICS

S82S230/231 $-55°C \leq T_A \leq +125°C$, $4.5V \leq V_{CC} \leq 5.5V$
N82S230/231 $0°C \leq T_A \leq +75°C$, $4.75V \leq V_{CC} \leq 5.25V$

PARAMETER		TEST CONDITIONS[1]	S82S230/231			N82S230/231			UNIT
			MIN	TYP[2]	MAX	MIN	TYP[2]	MAX	
V_{OL}	"0" Output Voltage	I_{OUT} = 16mA			0.5			0.45	V
I_{OLK}	Output Leakage Current (82S130)	$\overline{CE}$ = "1", V_{OUT} = 5.5V			60			40	μA
$I_{O(OFF)}$	Hi-Z State Output Current (82S131)	$\overline{CE}$ = "1", V_{OUT} = 0.5V			−60			−40	μA
		$\overline{CE}$ = "1", V_{OUT} = 5.5V			60			40	μA
V_{OH}	High Level Output Voltage (82S131)	$\overline{CE}$ = "0", I_{OUT} = −2.4mA, "1" STORED	2.4			2.4			V
C_{IN}	Input Capacitance	V_{IN} = 2.0V, V_{CC} = 5.0V		5			5		pF
C_{OUT}	Output Capacitance	V_{OUT} = 2.0V, V_{CC} = 5.0V		8			8		pF
I_{IL}	"0" Input Current	V_{IN} = 0.45V			−150			−100	μA
I_{IH}	"1" Input Current	V_{IN} = 5.5V			50			40	μA
V_{IL}	"0" Level Input Voltage				.80			.85	V
V_{IH}	"1" Level Input Voltage		2.0			2.0			V
I_{CC}	V_{CC} Supply Current			120	140		120	135	mA
V_{IC}	Input Clamp Voltage	I_N = −18mA		−0.8	−1.2		−0.8	−1.2	V
I_{OS}	Output Short Circuit Current (82S231)	V_{OUT} = 0V	−15		−85	−20		−70	mA

SWITCHING CHARACTERISTICS

S82S230/231 $-55°C \leq T_A \leq +125°C$, $4.5 \leq V_{CC} \leq 5.5V$
N82S230/231 $0°C \leq T_A \leq +75°C$, $4.75 \leq V_{CC} \leq 5.25V$

PARAMETER		TEST CONDITIONS[1]	S82S230/231			N82S230/231			UNIT
			MIN	TYP[2]	MAX	MIN	TYP[2]	MAX	
	Propagation Delay								
T_{AA}	Address to Output	C_L = 30pF		40	70		40	50	ns
T_{CD}	Chip Disable to Output	R_1 = 270Ω		20	30		20	30	ns
T_{CE}	Chip Enable to Output	R_2 = 600Ω		20	30		20	30	ns

NOTES:
1. Positive current is defined as into the terminal referenced.
2. Typical values are at V_{CC} = 5.0V, T_A = +25°C.

AC TEST FIGURE AND WAVEFORM