READ ONLY MEMORY

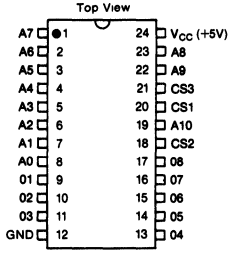
16,384 Bit Static Read Only Memory

FEATURES

- 2048 x 8 Organization — Ideal for Microprocessor Memory Systems
- Single +5 Volt Supply
- TTL Compatible — All Inputs and Outputs
- Static Operation — No Clocks Required
- 850ns Maximum Access Time: RO-3-9316A
- 450ns Maximum Access Time: RO-3-9316B
- 350ns Maximum Access Time: RO-3-9316C
- Three-State Outputs — Under the Control of Three Mask-Programable Chip Select Inputs to Simplify Memory Expansion
- Totally Automated Custom Programing
- Zener Protected Inputs
- Glass Passivation Protection
- Pin Compatible With 2716 16K EPROM

PIN CONFIGURATION

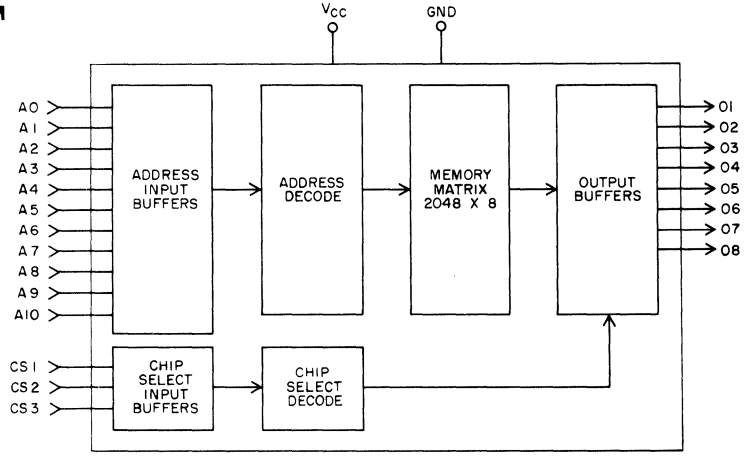
24 LEAD DUAL IN LINE



DESCRIPTION

The General Instrument RO-3-9316 is a 16,384 static Read Only Memory organized as 2048 8-bit words and is ideally suited for microprocessor memory applications. Fabricated in the General Instrument N-Channel Ion Implant process to enable operation from a single +5 Volt power supply, the RO-3-9316 offers the best combination of high performance, large bit storage and simple interfacing.

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS

Maximum Ratings*

V_{CC} and input voltages (with respect to GND) . . . . −0.3V to +8.0V
Storage Temperature . . . . . −65°C to +150°C

*Exceeding these ratings could cause permanent damage to the device. This is a stress rating only and functional operation of this device at these conditions is not implied—operating ranges are specified in Standard Conditions. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Data labeled "typical" is presented for design guidance only and is not guaranteed.

Standard Conditions (unless otherwise noted)

V_{CC} = +5 Volts ±5%
Operating Temperature (T_A) = 0°C to +70°C (HR: T_A = −55°C to +125°C)
Output Loading: One TTL load, $C_{L TOTAL}$ = 100pf

RO-3-9316A/B/C ■ RO-3-9316HR

Characteristic	Sym	Min	Typ**	Max	Units	Conditions
DC CHARACTERISTICS						
Address, Chip Select Inputs						
Logic "1"	V_{IH}	2	—	—	V	
Logic "0"	V_{IL}	—	—	0.8	V	
Leakage	I_{LI}	—	—	10	μA	
Data Outputs						
Logic "1"	V_{OH}	2.4	—	—	V	I_{OH} = −100μA
Logic "0"	V_{OL}	—	—	0.4	V	I_{OL} = 1.6mA
Leakage	I_{LO}	—	—	10	μA	
Power Supply Current						
RO-3-9316A	I_{CC}	—	50	85	mA	Outputs open
RO-3-9316B	I_{CC}	—	65	115	mA	Outputs open
RO-3-9316C	I_{CC}	—	—	125	mA	Outputs open
RO-3-9316A ■ RO-3-9316AHR						
AC CHARACTERISTICS						
Address, Chip Select Inputs						
Cycle Time	t_C	800	—	—	ns	
Capacitance	C_I	—	5	8	pf	F = 1MHz
	C_I	—	8	10	pf	F = 1MHz; RO-3-9316AHR only
Data Outputs						
Access Time	t_{ACC}	—	600	850	ns	
Chip Select Response Time	t_R	—	200	300	ns	
Capacitance	C_O	—	8	10	pf	F = 1MHz
RO-3-9316B ■ RO-3-9316BHR						
AC CHARACTERISTICS						
Address, Chip Select Inputs						
Cycle Time	t_C	400	—	—	ns	
Capacitance	C_I	—	5	8	pf	F = 1MHz
	C_I	—	8	10	pf	F = 1MHz; RO-3-9316BHR only
Data Outputs						
Access Time	t_{ACC}	—	350	450	ns	
Chip Select Response Time	t_R	—	100	200	ns	
Capacitance	C_O	—	8	10	pf	F = 1MHz
RO-3-9316C ■ RO-3-9316CHR						
AC CHARACTERISTICS						
Address, Chip Select Inputs						
Cycle Time	t_C	300	—	—	ns	
Capacitance	C_I	—	5	8	pf	F = 1MHz
	C_I	—	8	10	pf	F = 1MHz; RO-3-9316CHR only
Data Outputs						
Access Time	t_{ACC}	—	250	350	ns	
Chip Select Response Time	t_R	—	100	200	ns	
Capacitance	C_O	—	8	10	pf	F = 1MHz

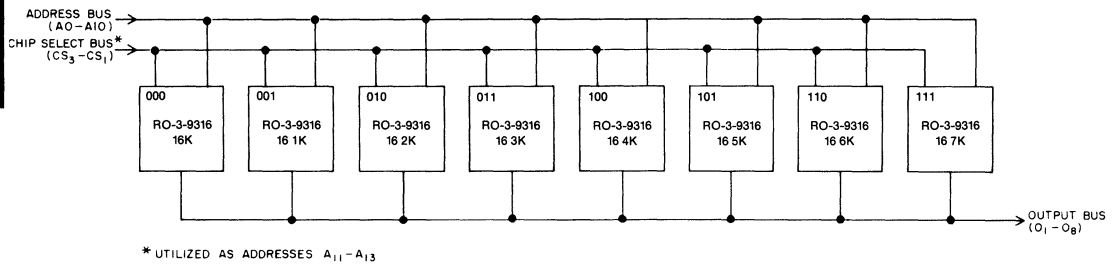
**Typical Values are at +25°C and nominal voltages

TYPICAL SYSTEM APPLICATION

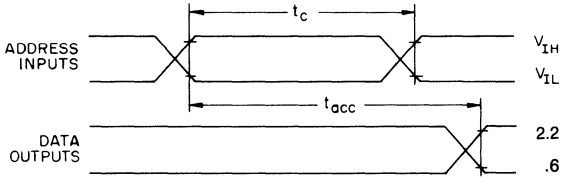
A complete system of 16K words of ROM (8 bits/word) is easily obtained without any external address decoding by making use of programable chip select features and by wiring the outputs of eight different RO-3-9316 as shown in the figure below.

CHIP SELECT TABLE

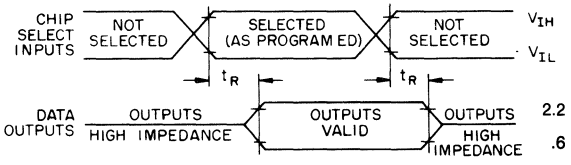
CS3	CS2	CS1	DEVICE SELECTED
0	0	0	16K0
0	0	1	16K1
0	1	0	16K2
0	1	1	16K3
1	0	0	16K4
1	0	1	16K5
1	1	0	16K6
1	1	1	16K7



TIMING DIAGRAMS



ACCESS TIME (ADDRESS TO OUTPUT—CHIP SELECTED)



CHIP SELECT RESPONSE TIME (ADDRESS INPUTS STABLE)

32,768 Bit Static Read Only Memory

FEATURES

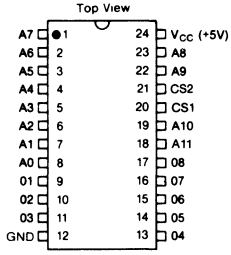
- 4096 x 8 Organization — Ideal for Microprocessor Memory Systems
- Single +5 Volt Supply
- TTL Compatible — All Inputs and Outputs
- Static Operation — No Clocks Required
- 850ns Maximum Access Time: RO-3-9332A
- 450ns Maximum Access Time: RO-3-9332B
- 350ns Maximum Access Time: RO-3-9332C
- Three-State Outputs — Under the Control of Two Mask-Programable Chip Select Inputs to Simplify Memory Expansion
- Totally Automated Custom Programing
- Zener Protected Inputs
- Glass Passivation Protection
- Pin Compatible With 2532 EPROM
- Extended Temperature Ranges

DESCRIPTION

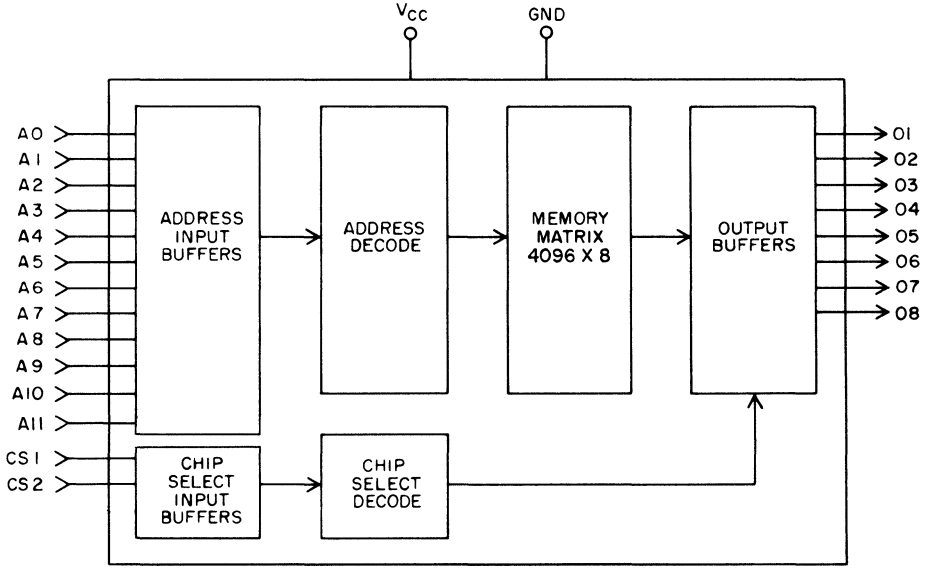
The General Instrument RO-3-9332 is a 32,768 static Read Only Memory organized as 4096 eight bit words and is ideally suited for microprocessor memory applications. Fabricated in the General Instrument N-Channel Ion Implant process to enable operation from a single +5 Volt power supply, the RO-3-9332 offers the best combination of high performance, large bit storage, and simple interfacing of any MOS Read-Only Memory available today.

PIN CONFIGURATION

24 LEAD DUAL IN LINE



BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS

Maximum Ratings*

V_{CC} and input voltages (with respect to GND) . . . . −0.3V to +8.0V
Storage Temperature . . . . . −65°C to +150°C

*Exceeding these ratings could cause permanent damage to the device. This is a stress rating only and functional operation of this device at these conditions is not implied—operating ranges are specified in Standard Conditions. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Data labeled "typical" is presented for design guidance only and is not guaranteed.

Standard Conditions (unless otherwise noted)

V_{CC} = +5 Volts ±10%
Operating Temperature (T_A) = 0°C to +70°C
(HR: T_A = −55°C to +125°C)
Output Loading: Two TTL Loads, $C_{L\ TOTAL}$ = 100pf

RO-3-9332A/B ■ RO-3-9332HR

Characteristic	Sym	Min	Typ**	Max	Units	Conditions
DC CHARACTERISTICS						
Address, Chip Select Inputs						
Logic "1"	V_{IH}	2	—	—	V	
Logic "0"	V_{IL}	—	—	0.8	V	
Leakage	I_{LI}	—	—	10	μA	
Data Outputs						
Logic "1"	V_{OH}	2.4	—	—	V	I_{OH} = −200μA
Logic "0"	V_{OL}	—	—	0.4	V	I_{OL} = 3.2mA
Leakage	I_{LO}	—	—	10	μA	
Power Supply Current						
RO-3-9332A	I_{CC}	—	—	80	mA	Outputs open
RO-3-9332BHR	I_{CC}	—	—	125	mA	Outputs open
RO-3-9332C	I_{CC}	—	—	140	mA	Outputs open

RO-3-9332A

AC CHARACTERISTICS						
Address, Chip Select Inputs						
Cycle Time	t_C	800	—	—	ns	
Capacitance	C_1	—	5	8	pf	F = 1MHz
Data Outputs						
Access Time	t_{ACC}	—	600	850	ns	V_{OH} = 2.20V*
Chip Select Response Time	T_R	—	200	300	ns	
Capacitance	C_O	—	8	10	pf	F = 1MHz

RO-3-9332B ■ RO-3-9332BHR

AC CHARACTERISTICS						
Address, Chip Select Inputs						
Cycle Time	t_C	450	—	—	ns	
Capacitance	C_1	—	5	8	pf	F = 1MHz
	C_1	—	8	10	pf	F = 1MHz; RO-3-9332BHR only
Data Outputs						
Access Time	t_{ACC}	—	350	450	ns	V_{OH} = 2.20V*
Chip Select Response Time	t_R	—	100	200	ns	
Capacitance	C_O	—	8	10	pf	F = 1MHz

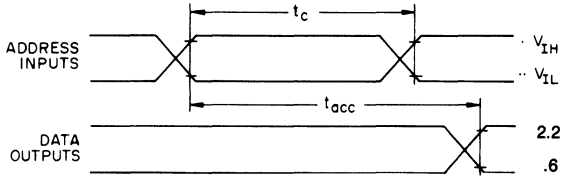
RO-3-9332C

AC CHARACTERISTICS						
Address, Chip Select Inputs						
Cycle Time	t_C	300	—	—	ns	
Capacitance	C_1	—	5	8	pf	F = 1MHz
Data Outputs						
Access Time	t_{ACC}	—	250	350	ns	
Chip Select Response Time	t_R	—	100	200	ns	
Capacitance	C_0	—	8	10	pf	F = 1MHz

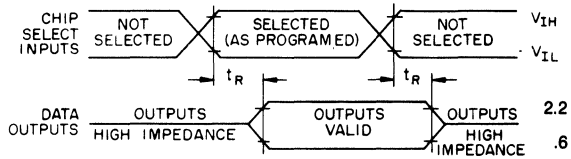
*See Timing Diagram

**Typical Values are at +25°C and nominal voltages

TIMING DIAGRAMS



ACCESS TIME (ADDRESS TO OUTPUT—CHIP SELECTED)



CHIP SELECT RESPONSE TIME (ADDRESS INPUTS STABLE)