



1024 x 1 Static Random Access Memory

SY2102

MEMORY PRODUCTS

- Single +5 Volt Operation
- Directly TTL Compatible
- Standby Power Mode

- 3-State Outputs
- Low Power Dissipation

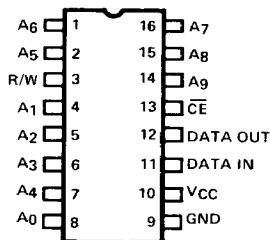
The 2102 family is a series of 1024 word by one bit static random access memory devices fabricated using Synertek's silicon gate technology. It uses fully DC stable (static) circuitry and therefore requires no clocks or refreshing to operate. The data is read out non-destructively and has the same polarity as the input data.

The 2102 family is designed for memory applications where high performance, low cost, large bit storage, and simple interfacing are important design objectives.

A low standby power version is also available. It has all the same operating characteristics of the 2102-1 with the added feature of 35mW maximum power dissipation in standby and 174mW in operations.

The family is directly TTL compatible in all respects: inputs, output, and a single +5 volt supply. A separate chip enable (\overline{CE}) lead allows easy selection of an individual package when outputs are OR-tied.

PIN CONFIGURATION



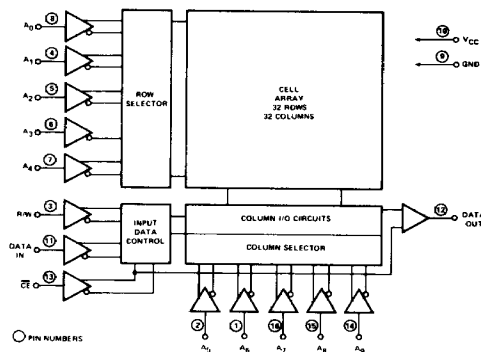
PIN NAMES

D _{IN}	Data Input	\overline{CE}	Chip Enable
A ₀ -A ₉	Address Inputs	D _{OUT}	Data Output
R/W	Read/Write Input	V _{CC}	Power (+5V)

ORDERING INFORMATION

Order Number	Package Type	Access Time	Standby	Temperature Range
✓SYP2102A-2	Plastic DIP	250nsec	No	0°C to 70°C
✓SYC2102A-2	Ceramic DIP	250nsec	No	0°C to 70°C
✓SYP2102A-4	Plastic DIP	450nsec	No	0°C to 70°C
✓SYC2102A-4	Ceramic DIP	450nsec	No	0°C to 70°C
✓SYP2102-1	Plastic DIP	500nsec	No	0°C to 70°C
✓SYC2102-1	Ceramic DIP	500nsec	No	0°C to 70°C
✓SYP2102-1L	Plastic DIP	500nsec	Yes	0°C to 70°C
✓SYC2102-1L	Ceramic DIP	500nsec	Yes	0°C to 70°C
✓SYP2102-6	Plastic DIP	650nsec	No	0°C to 70°C

BLOCK DIAGRAM



TRUTH TABLE

\overline{CE}	R/W	D _{IN}	D _{OUT}	MODE
H	X	X	HIGH Z	NOT SELECTED
L	L	L	L	WRITE "0"
L	L	H	H	WRITE "1"
L	H	X	D _{OUT}	READ



RAMs

ABSOLUTE MAXIMUM RATINGS

Ambient Temperature Under Bias	-10°C to 70°C
Storage Temperature	-65°C to +150°C
Voltage On Any Pin	
With Respect To Ground	-0.5V to +7V
Power Dissipation	1 Watt

COMMENT

Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or at any other condition above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

D.C. AND OPERATING CHARACTERISTICS

T_A = 0°C to 70°C, V_{CC} = 5V ±5% unless otherwise specified.

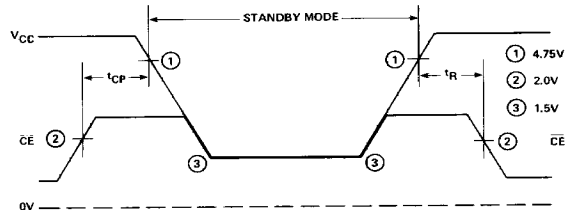
Symbol	Parameter	2102A-4 Limits			2102A-2 Limits			2102-1, 2102-1L 2102A-6 Limits			Unit	Test Conditions
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.		
I _{LI}	Input Load Current		1	10	1	10	1	10			μA	V _{IN} = 0 to 5.25V
I _{LOH}	Output Leakage Current		1	5		1	5		1	5	μA	CE = 2.0V, V _{OUT} = V _{OH}
I _{LOL}	Output Leakage Current		-1	-10		-1	-10		-1	-10	μA	CE = 2.0V, V _{OUT} = 0.4V
I _{CC}	Power Supply Current		33	55		45	65		33	55	mA	All Inputs = 5.25V, Data Out Open, T _A = 0°C
V _{IL}	Input Low Voltage	-0.5		0.8	-0.5		0.8	-0.5		0.65	V	
V _{IH}	Input High Voltage	2.0		V _{CC}	2.0		V _{CC}	2.2		V _{CC}	V	
V _{OL}	Output Low Voltage			0.4			0.4			0.4	V	I _{OL} = 2.1mA
V _{OH}	Output High Voltage		2.4		2.4			2.2			V	I _{OH} = 100μA

STANDBY CHARACTERISTICS – 2102-1L

T_A = 0°C to 70°C

Symbol	Parameter	Limits			Unit	Test Conditions
		Min.	Typ.	Max.		
V _{PD}	V _{CC} in Standby	1.5			V	
V _{CES(1)}	CE Bias in Standby	2.0			V	2.0V ≤ V _{PD} ≤ V _{CC} Max
		V _{PD}			V	1.5V ≤ V _{PD} < 2.0V
I _{PD1}	Standby Current		15	23	mA	All Inputs = V _{PD1} = 1.5V
I _{PD2}	Standby Current		20	30	mA	All Inputs = V _{PD2} = 2.0V
t _{CP}	Chip Deselect to Standby Time	0			ns	
t _R (2)	Standby Recovery Time	t _{RC}			ns	

STANDBY WAVEFORMS



NOTES:

1. Consider the test conditions as shown: if the standby voltage (V_{PD}) is between 5.25V (V_{CC} Max.) and 2.0V, then CE must be held at 2.0V Min. (V_{IH}). If the standby voltage is less than 2.0V but greater than 1.5V (V_{PD} Min.), then CE and standby voltage must be at least the same value or, if they are different, CE must be the more positive of the two.

2. t_R = t_{RC} (READ CYCLE TIME).

RAMs

PACKAGING DIAGRAM

