Extended Temperature Range Supplement

2102/2102L 1024 x 1 Static RAM

MOS Memory Products

Description

The 2102 family consists of 1024-word by 1-bit static Random Access read/write Memories (RAM) that require a single 5 V supply, have fully TTL-compatible inputs and output, and require no clocking or refresh. Chip Select ($\overline{CS}$) permits a 3-state output allowing the outputs to be wired-OR.

The 2102 and 2102L are manufactured using the n-channel Isoplanar process and are available in a 16-pin dual in-line package or flatpak.

- **FAST ACCESS—250 ns**
- **SINGLE +5 V SUPPLY**
- **TTL-COMPATIBLE INPUTS AND OUTPUT**
- **TOTALLY STATIC—NO CLOCKS OR REFRESH**
- **3-STATE OUTPUT**
- **LOW POWER (2102L)**
- **FULLY EXPANDABLE**
- **FULLY DECODED**
- **16-PIN DUAL IN-LINE PACKAGE**
- **TWO TEMPERATURE RANGES**

Pin Names

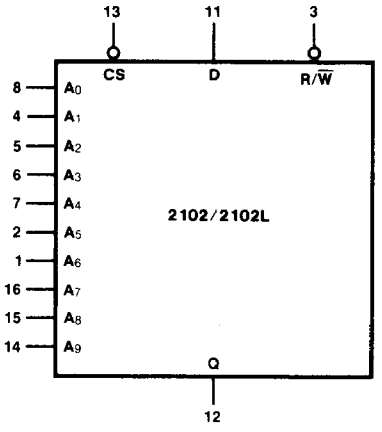
A_0-A_9	Address Inputs
D	Data Input
R/$\overline{W}$	Read/Write
$\overline{CS}$	Chip Select (active LOW)
Q	Data Output

Absolute Maximum Ratings

Any Pin with Respect to V_{SS}	−0.5 V to +7.0 V
Storage Temperature	−55°C to +150°C
Operating Temperature	DL: −55°C to +85°C DM: −55°C to +125°C

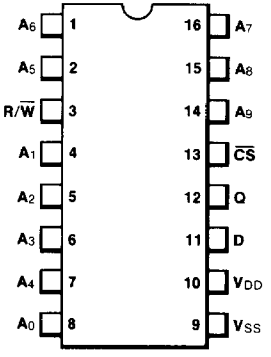
Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only, and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure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

Logic Symbol



V_{SS} = Pin 9
V_{DD} = Pin 10

Connection Diagram 16-Pin DIP



(Top View)

Package	Outline	Order Code
Ceramic DIP	6Z	D
Flatpak	II	F

Note
The Flatpak has the same Pin number to function correspondence as the DIP.

7

DC Requirements Over full operating temperature range unless otherwise specified

Symbol	Characteristic, Note		2102 DL/DM, 2102L DL/DM C Min	Max	Unit	Condition
V_{IH}	Input HIGH Voltage	H,F,1	2.0	V_{DD}	V	
		2	2.2	V_{DD}		
V_{IL}	Input LOW Voltage	H,F,1	−0.5	0.8	V	
		2	−0.5	0.65		
V_{DD}	Power Supply Voltage		4.5	5.5	V	

DC Characteristics V_{DD} = 5.0 V ± 10%, V_{SS} = 0 V, over full operating temperature range unless otherwise specified

Symbol	Characteristic	2102 DL/DM, 2102L DL/DM Min	Max	Unit	Condition
V_{OH}	Output HIGH Voltage	2.2		V	I_{OH} = −100 μA
V_{OL}	Output LOW Voltage		0.45	V	I_{OL} = 2.1 mA
I_{IN}	Input Leakage Current		10		V_{IN} = 5.5 V
I_{OH}	Output HIGH Leakage Current		10	μA	$V_{OUT} = V_{OH(Min)}$ $\overline{CS} = V_{IH(Min)}$
I_{OL}	Output LOW Leakage Current		−50	μA	$V_{OUT} = V_{OL(Max)}$ $\overline{CS} = V_{IH(Min)}$
I_{DD}	Power Supply Current 2102 2102L		60 30	mA	Inputs = 5.5 V D_{OUT} open, T_A = −55°C

AC Requirements Over full operating temperature range unless otherwise specified

Symbol	Characteristic	2102H 2102LH DL/DM Min	2102F 2102LF DL/DM Min	21021 2102L1 DL/DM Min	21022 2102L2 DL/DM Min	Unit	Condition
t_{CYC}	Read or Write Cycle Time	250	350	450	650	ns	V_{SS} = 0 V See DC Requirements for Conditions on V_{DD}
t_{AW}	Address to Write Time	20	20	20	200	ns	
t_{WP}	Write Pulse Width	170	170	200	350	ns	
t_{WR}	Write Recovery Time	0	0	0	50	ns	
t_{DS}	Data Set-up Time	170	170	200	350	ns	
t_{DH}	Data Hold Time	0	0	0	20	ns	
t_{CW}	Chip Select to Write Time	170	170	200	400	ns	
t_{WC}	Write to Chip Select Time	0	0	0	50	ns	

AC Characteristics Over full operating temperature range unless otherwise specified

Symbol	Characteristic	2102H 2102LH DL/DM		2102F 2102LF DL/DM		21021 2102L1 DL/DM		21022 2102L2 DL/DM		Unit	Condition
		Min	Max	Min	Max	Min	Max	Min	Max		
t_A	Read Access Time		250		350		450		650	ns	V_{SS} = 0 V See DC Requirements for Conditions on V_{DD}
t_{CO}	Chip Select to Output Time		130		170		200		400	ns	
t_{OH1}	Data Valid after Address	40		50		50		50		ns	
t_{OH2}	Previous Data Valid after Chip Deselect	0		0		0		0		ns	
C_{IN}	Input Capacitance		5		5		5		5	pF	V_{IN} = 0 V, V_{SS} = 0 V f = 1 MHz, T_A = 25°C
C_{OUT}	Output Capacitance		10		10		10		10	pF	

For block diagram, functional description and timing diagrams refer to standard 2102 data sheet, Section 3.

7