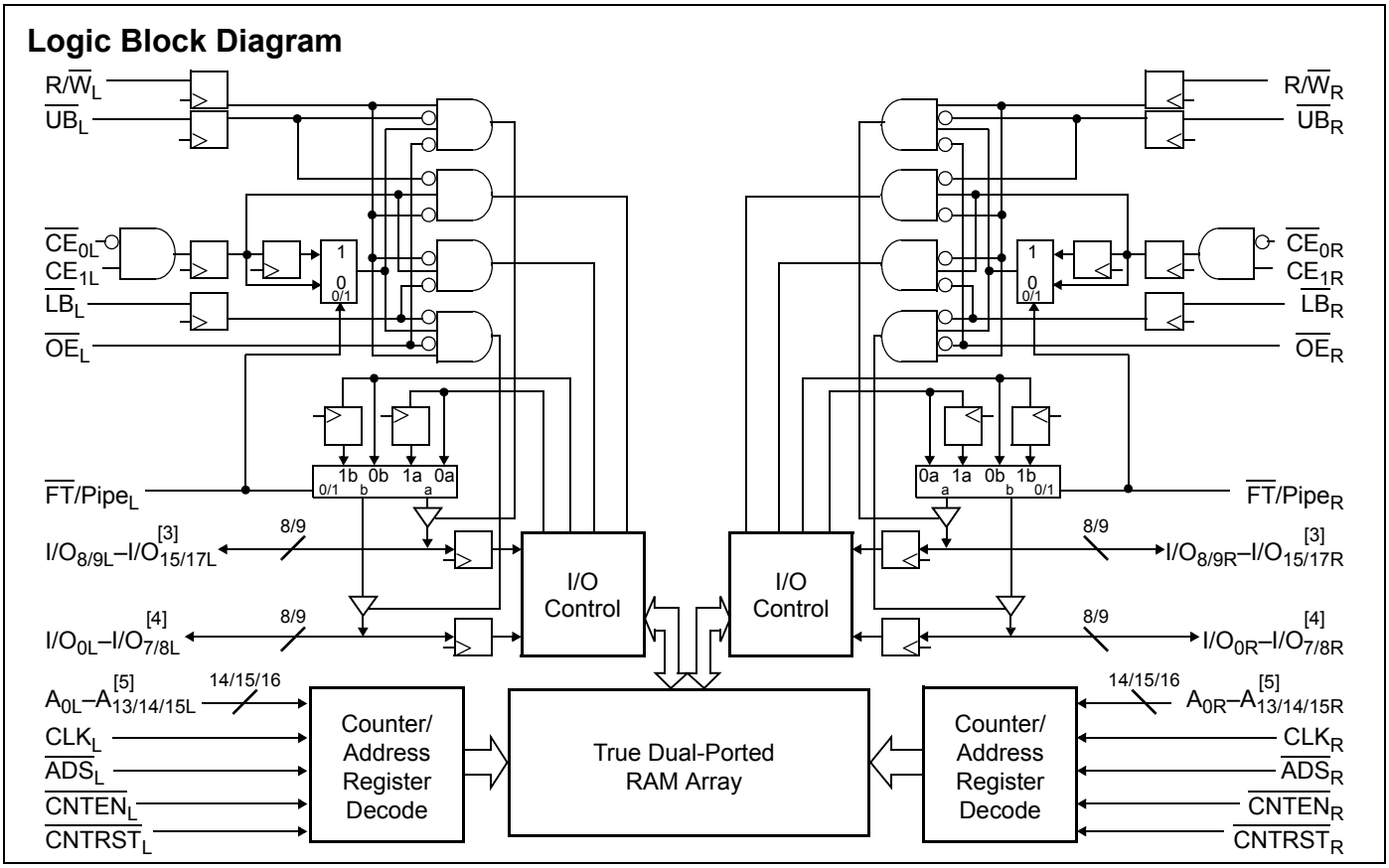
CY7C09269V/79V/89V
CY7C09369V/79V/89V

3.3V 16K/32K/64K x 16/18 Synchronous Dual-Port Static RAM

Features

- True dual-ported memory cells that allow simultaneous access of the same memory location
- Six flow through/pipelined devices:
  - 16K x 16/18 organization (CY7C09269V/369V)
  - 32K x 16/18 organization (CY7C09279V/379V)
  - 64K x 16/18 organization (CY7C09289V/389V)
- Three modes:
  - Flow through
  - Pipelined
  - Burst
- Pipelined output mode on both ports allows fast 100 MHz operation
- 0.35 micron CMOS for optimum speed and power
- High speed clock to data access: 6.5[1, 2], 7.5[2], 9, 12 ns (max)
- 3.3V low operating power:
  - Active = 115 mA (typical)
  - Standby = 10 μA (typical)
- Fully synchronous interface for easier operation
- Burst counters increment addresses internally:
  - Shorten cycle times
  - Minimize bus noise
  - Supported in flow through and pipelined modes
- Dual chip enables easy depth expansion
- Upper and lower byte controls for bus matching
- Automatic power down
- Commercial and industrial temperature ranges
- Pb-Free 100-pin TQFP package available

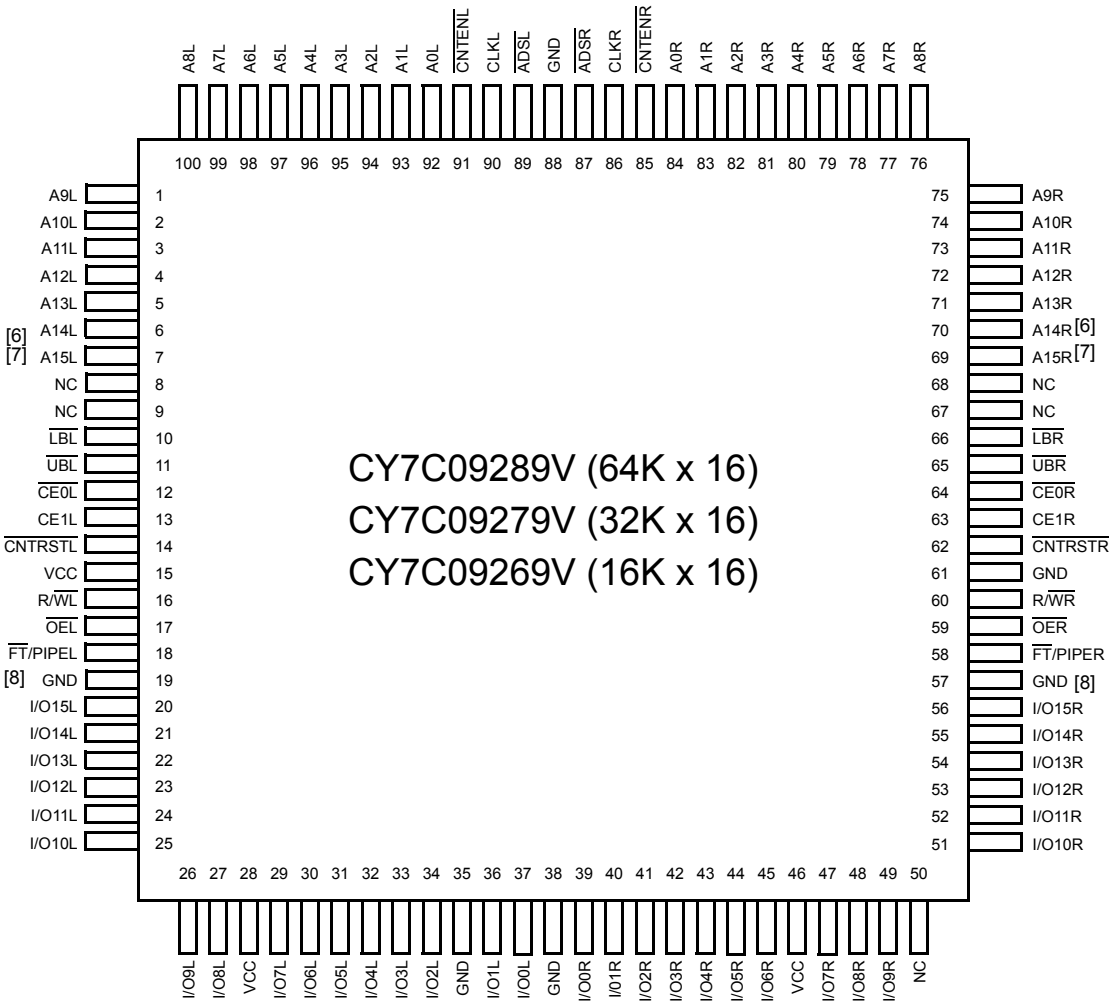
Logic Block Diagram



Notes
1. Call for availability.
2. See page 6 for Load Conditions.
3. I/O_8–I/O_{15} for x16 devices; I/O_9–I/O_{17} for x18 devices.
4. I/O_0–I/O_7 for x16 devices. I/O_0–I/O_8 for x18 devices.
5. A_0–A_{13} for 16K; A_0–A_{14} for 32K; A_0–A_{15} for 64K devices.

Pinouts

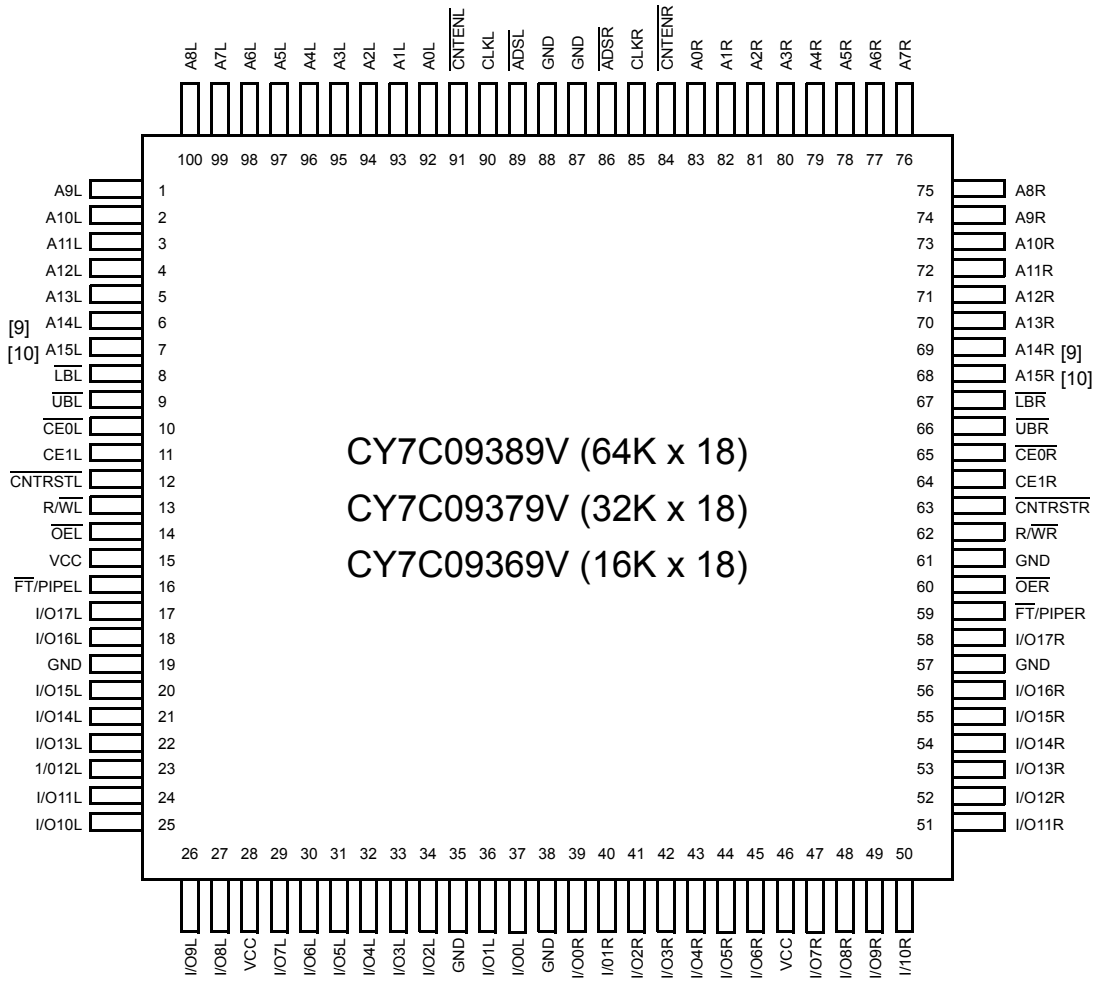
Figure 1. 100-Pin TQFP (Top View)



Notes
6. This pin is NC for CY7C09269V.
7. This pin is NC for CY7C09269V and CY7C09279V.
8. For CY7C09269V and CY7C09279V, pin #18 connected to V_{CC} is pin compatible to an IDT 5V x16 pipelined device; connecting pin #18 and #58 to GND is pin compatible to an IDT 5V x16 flow through device.

Pinouts (continued)

Figure 2. 100-Pin TQFP (Top View)



Selection Guide

Specifications	CY7C09269V/79V/89V CY7C09369V/79V/89V -6[1, 2]	CY7C09269V/79V/89V CY7C09369V/79V/89V -7[2]	CY7C09269V/79V/89V CY7C09369V/79V/89V -9	CY7C09269V/79V/89V CY7C09369V/79V/89V -12
f_{MAX2} (MHz) (Pipelined)	100	83	67	50
Max. Access Time (ns) (Clock to Data, Pipelined)	6.5	7.5	9	12
Typical Operating Current I_{CC} (mA)	175	155	135	115
Typical Standby Current for I_{SB1} (mA) (Both Ports TTL Level)	25	25	20	20
Typical Standby Current for I_{SB3} (µA) (Both Ports CMOS Level)	10	10	10	10

Notes
9. This pin is NC for CY7C09369V.
10. This pin is NC for CY7C09369V and CY7C09379V.

Pin Definitions

Left Port	Right Port	Description
A_{0L}–A_{15L}	A_{0R}–A_{15R}	**Address Inputs** (A_0–A_{14} for 32K, A_0–A_{13} for 16K devices).
$\overline{ADS}_L$	$\overline{ADS}_R$	**Address Strobe Input.** Used as an address qualifier. This signal must be asserted LOW to access the part using an externally supplied address. Asserting this signal LOW also loads the burst counter with the address present on the address pins.
$\overline{CE}_{0L}$, CE_{1L}	$\overline{CE}_{0R}$,CE_{1R}	**Chip Enable Input.** To select either the left or right port, both $\overline{CE}_0$ AND CE_1 must be asserted to their active states ($\overline{CE}_0 \le V_{IL}$ and $CE_1 \ge V_{IH}$).
CLK_L	CLK_R	**Clock Signal.** This input can be free running or strobed. Maximum clock input rate is f_{MAX}.
$\overline{CNTEN}_L$	$\overline{CNTEN}_R$	**Counter Enable Input.** Asserting this signal LOW increments the burst address counter of its respective port on each rising edge of CLK. CNTEN is disabled if ADS or CNTRST are asserted LOW.
$\overline{CNTRST}_L$	$\overline{CNTRST}_R$	**Counter Reset Input.** Asserting this signal LOW resets the burst address counter of its respective port to zero. CNTRST is not disabled by asserting ADS or CNTEN.
I/O_{0L}–I/O_{17L}	I/O_{0R}–I/O_{17R}	**Data Bus Input/Output** (I/O_0–I/O_{15} for x16 devices).
$\overline{LB}_L$	$\overline{LB}_R$	**Lower Byte Select Input**. Asserting this signal LOW enables read and write operations to the lower byte. (I/O_0–I/O_8 for x18, I/O_0–I/O_7 for x16) of the memory array. For read operations both the $\overline{LB}$ and $\overline{OE}$ signals must be asserted to drive output data on the lower byte of the data pins.
$\overline{UB}_L$	$\overline{UB}_R$	**Upper Byte Select Input.** Same function as $\overline{LB}$, but to the upper byte ($I/O_{8/9L}$–$I/O_{15/17L}$).
$\overline{OE}_L$	$\overline{OE}_R$	**Output Enable Input.** This signal must be asserted LOW to enable the I/O data pins during read operations.
$R/\overline{W}_L$	$R/\overline{W}_R$	**Read/Write Enable Input**. This signal is asserted LOW to write to the dual port memory array. For read operations, assert this pin HIGH.
$FT/\overline{PIPE}_L$	$FT/\overline{PIPE}_R$	**Flow Through/Pipelined Select Input.** For flow through mode operation, assert this pin LOW. For pipelined mode operation, assert this pin HIGH.
GND		**Ground Input**.
NC		**No Connect**.
V_{CC}		**Power Input**.

Functional Description

The CY7C09269V/79V/89V and CY7C09369V/79V/89V are high speed 3.3V synchronous CMOS 16K, 32K, and 64K x 16/18 dual-port static RAMs. Two ports are provided, permitting independent, simultaneous access for reads and writes to any location in memory[11]. Registers on control, address, and data lines allow for minimal setup and hold times. In pipelined output mode, data is registered for decreased cycle time. Clock to data valid t_{CD2} = 6.5 ns[1, 2] (pipelined). Flow through mode can also be used to bypass the pipelined output register to eliminate access latency. In flow through mode, data is available t_{CD1} = 18 ns after the address is clocked into the device. Pipelined output or flow through mode is selected through the $\overline{FT}$/Pipe pin.

Each port contains a burst counter on the input address register. The internal write pulse width is independent of the LOW to HIGH transition of the clock signal. The internal write pulse is self timed to allow the shortest possible cycle times.

A HIGH on $\overline{CE}_0$ or LOW on CE_1 for one clock cycle powers down the internal circuitry to reduce the static power consumption. The use of multiple Chip Enables enables easier banking of multiple chips for depth expansion configurations. In the pipelined mode, one cycle is required with $\overline{CE}_0$ LOW and CE_1 HIGH to reactivate the outputs.

Counter enable inputs are provided to stall the operation of the address input and use the internal address generated by the internal counter for fast interleaved memory applications. A port's burst counter is loaded with the port's Address Strobe ($\overline{ADS}$). When the port's Count Enable ($\overline{CNTEN}$) is asserted, the address counter increments on each LOW to HIGH transition of that port's clock signal. This reads/writes one word from or into each successive address location, until $\overline{CNTEN}$ is deasserted. The counter can address the entire memory array and loop back to the start. Counter Reset ($\overline{CNTRST}$) is used to reset the burst counter.

All parts are available in 100-pin Thin Quad Plastic Flatpack (TQFP) packages.

Note
11. When writing simultaneously to the same location, the final value cannot be guaranteed.

Maximum Ratings [12]

Exceeding maximum ratings may impair the useful life of the device. These user guidelines are not tested.

Storage Temperature ..... –65°C to +150°C

Ambient Temperature with Power Applied..... –55°C to +125°C

Supply Voltage to Ground Potential ..... –0.5V to +4.6V

DC Voltage Applied to Outputs in High Z State ..... –0.5V to V_{CC}+0.5V

DC Input Voltage ..... –0.5V to V_{CC}+0.5V

Output Current into Outputs (LOW)..... 20 mA

Static Discharge Voltage..... > 1100V (per MIL-STD-883, Method 3015)

Latch up Current..... > 200 mA

Operating Range

Range	Ambient Temperature	V_{CC}
Commercial	0°C to +70°C	3.3V ± 300 mV
Industrial	–40°C to +85°C	3.3V ± 300 mV

Electrical Characteristics

Over the Operating Range

Parameter	Description		CY7C09269V/79V/89V CY7C09369V/79V/89V												Unit
			-6[1, 2]			-7[2]			-9			-12			
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V_{OH}	Output HIGH Voltage (V_{CC} = Min. I_{OH} = –4.0 mA)		2.4			2.4			2.4			2.4			V
V_{OL}	Output LOW Voltage (V_{CC} = Min. I_{OH} = +4.0 mA)				0.4			0.4			0.4			0.4	V
V_{IH}	Input HIGH Voltage		2.0			2.0			2.0			2.0			V
V_{IL}	Input LOW Voltage				0.8			0.8			0.8			0.8	V
I_{OZ}	Output Leakage Current		–10		10	–10		10	–10		10	–10		10	µA
I_{CC}	Operating Current (V_{CC} = Max, I_{OUT} = 0 mA) Outputs Disabled	Com'l.		175	320		155	275		135	230		115	180	mA
		Indust.					275	390		185	300				mA
I_{SB1}	Standby Current (Both Ports TTL Level)[13] $\overline{CE}_L$ & $\overline{CE}_R \geq V_{IH}$, f = f_{MAX}	Com'l.		25	95		25	85		20	75		20	70	mA
		Indust.					85	120		35	85				mA
I_{SB2}	Standby Current (One Port TTL Level)[13] $\overline{CE}_L$ | $\overline{CE}_R \geq V_{IH}$, f = f_{MAX}	Com'l.		115	175		105	165		95	155		85	140	mA
		Indust.					165	210		105	165				mA
I_{SB3}	Standby Current (Both Ports CMOS Level)[13] $\overline{CE}_L$ & $\overline{CE}_R \geq V_{CC}$ – 0.2V, f = 0	Com'l.		10	250		10	250		10	250		10	250	µA
		Indust.					10	250		10	250				µA
I_{SB4}	Standby Current (One Port CMOS Level)[13] $\overline{CE}_L$ | $\overline{CE}_R \geq V_{IH}$, f = f_{MAX}	Com'l.		105	135		95	125		85	115		75	100	mA
		Indust.					125	170		95	125				mA

Capacitance

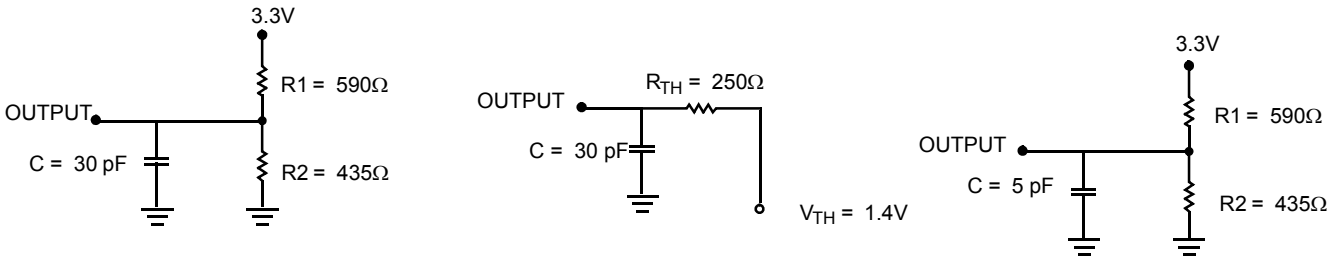
Tested initially and after any design or process changes that may affect these parameters.

Parameter	Description	Test Conditions	Max	Unit
C_{IN}	Input Capacitance	T_A = 25°C, f = 1 MHz, V_{CC} = 3.3V	10	pF
C_{OUT}	Output Capacitance		10	pF

Notes

12. The voltage on any input or I/O pin can not exceed the power pin during power up.
13. $\overline{CE}_L$ and $\overline{CE}_R$ are internal signals. To select either the left or right port, both $\overline{CE}_0$ and CE_1 must be asserted to their active states ($\overline{CE}_0 \leq V_{IL}$ and $CE_1 \geq V_{IH}$).

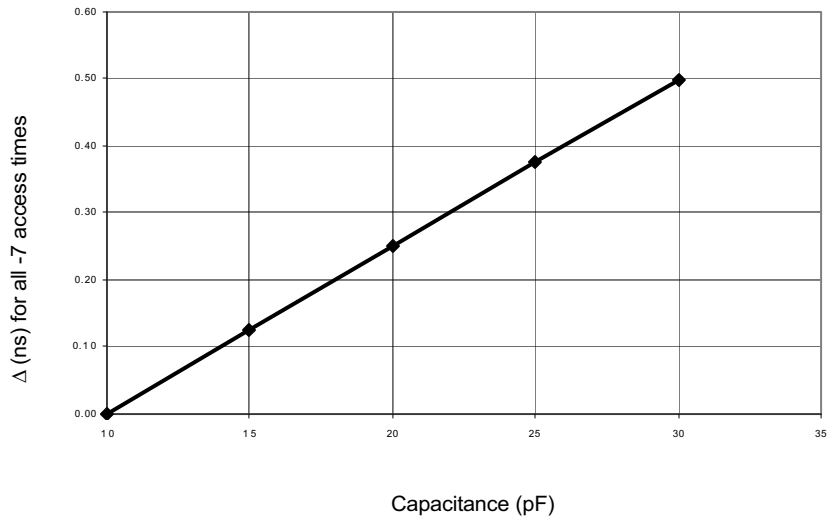
Figure 3. AC Test Loads and Waveforms



(a) Normal Load (Load 1) **(b) Thévenin Equivalent (Load 1)** **(c) Three-State Delay (Load 2)**
(Used for t_{CKLZ}, t_{OLZ}, and t_{OHZ} including scope and jig)

Figure 4. AC Test Loads (Applicable to -6 and -7 only) [14]

(a) Load 1 (-6 and -7 only)



(b) Load Derating Curve

Note
14. Test Conditions: C = 10 pF.

Switching Characteristics

Over the Operating Range

Parameter	Description	CY7C09269V/79V/89V CY7C09369V/79V/89V								Unit
		-6 [1, 2]		-7[2]		-9		-12		
		Min	Max	Min	Max	Min	Max	Min	Max	
f_{MAX1}	f_{Max} Flow Through		53		45		40		33	MHz
f_{MAX2}	f_{Max} Pipelined		100		83		67		50	MHz
t_{CYC1}	Clock Cycle Time - Flow Through	19		22		25		30		ns
t_{CYC2}	Clock Cycle Time - Pipelined	10		12		15		20		ns
t_{CH1}	Clock HIGH Time - Flow Through	6.5		7.5		12		12		ns
t_{CL1}	Clock LOW Time - Flow Through	6.5		7.5		12		12		ns
t_{CH2}	Clock HIGH Time - Pipelined	4		5		6		8		ns
t_{CL2}	Clock LOW Time - Pipelined	4		5		6		8		ns
t_R	Clock Rise Time		3		3		3		3	ns
t_F	Clock Fall Time		3		3		3		3	ns
t_{SA}	Address Set-Up Time	3.5		4		4		4		ns
t_{HA}	Address Hold Time	0		0		1		1		ns
t_{SC}	Chip Enable Setup Time	3.5		4		4		4		ns
t_{HC}	Chip Enable Hold Time	0		0		1		1		ns
t_{SW}	R/$\overline{W}$ Set-Up Time	3.5		4		4		4		ns
t_{HW}	R/$\overline{W}$ Hold Time	0		0		1		1		ns
t_{SD}	Input Data Setup Time	3.5		4		4		4		ns
t_{HD}	Input Data Hold Time	0		0		1		1		ns
t_{SAD}	$\overline{ADS}$ Set-Up Time	3.5		4		4		4		ns
t_{HAD}	$\overline{ADS}$ Hold Time	0		0		1		1		ns
t_{SCN}	$\overline{CNTEN}$ Setup Time	3.5		4.5		5		5		ns
t_{HCN}	$\overline{CNTEN}$ Hold Time	0		0		1		1		ns
t_{SRST}	$\overline{CNTRST}$ Setup Time	3.5		4		4		4		ns
t_{HRST}	$\overline{CNTRST}$ Hold Time	0		0		1		1		ns
t_{OE}	Output Enable to Data Valid		8		9		10		12	ns
t_{OLZ}[15,16]	$\overline{OE}$ to Low Z	2		2		2		2		ns
t_{OHZ}[15,16]	$\overline{OE}$ to High Z	1	7	1	7	1	7	1	7	ns
t_{CD1}	Clock to Data Valid - Flow Through		15		18		20		25	ns
t_{CD2}	Clock to Data Valid - Pipelined		6.5		7.5		9		12	ns
t_{DC}	Data Output Hold After Clock HIGH	2		2		2		2		ns
t_{CKZ}[15,16]	Clock HIGH to Output High Z	2	9	2	9	2	9	2	9	ns
t_{CKZ}[15,16]	Clock HIGH to Output Low Z	2		2		2		2		ns
Port to Port Delays										
t_{CWDD}	Write Port Clock HIGH to Read Data Delay		30		35		40		40	ns
t_{CCS}	Clock to Clock Setup Time		9		10		15		15	ns

Notes
15. Test conditions used are Load 2.
16. This parameter is guaranteed by design, but it is not production tested.

Switching Waveforms

Figure 5. Read Cycle for Flow Through Output ($\overline{FT}$/PIPE = V_{IL}) [17, 18, 19, 20]

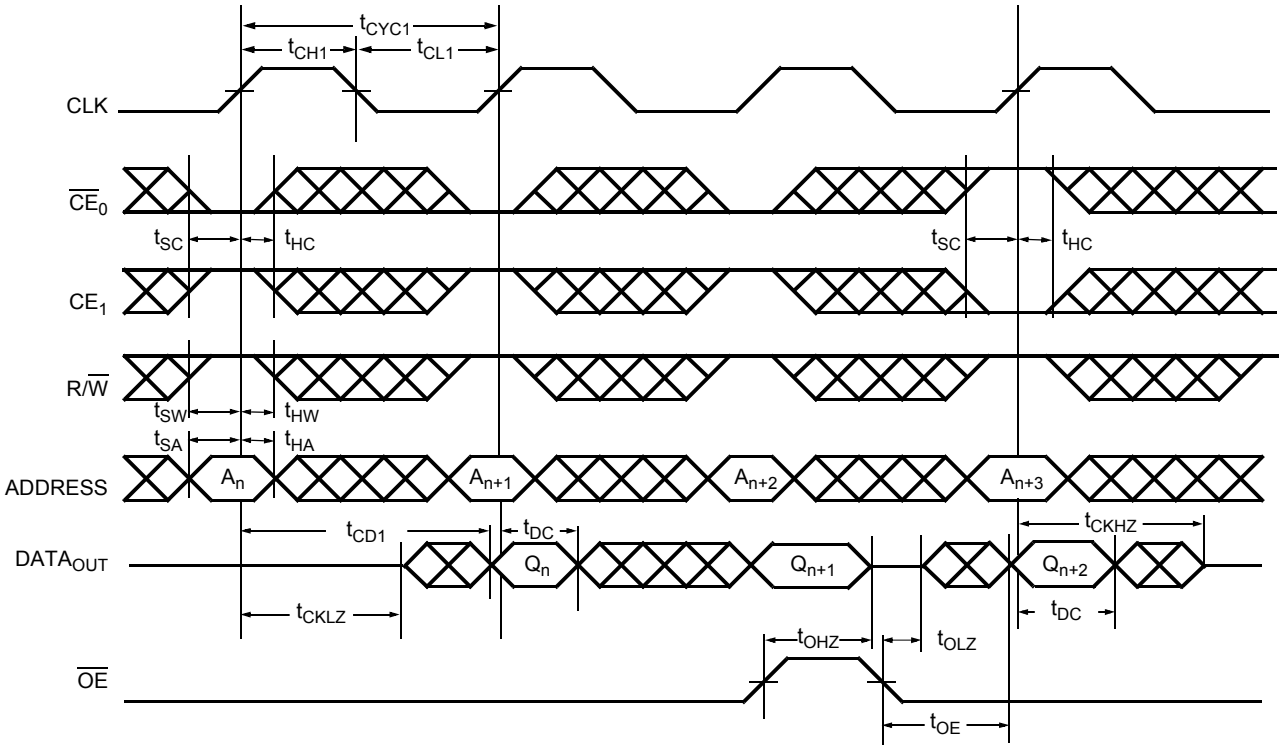
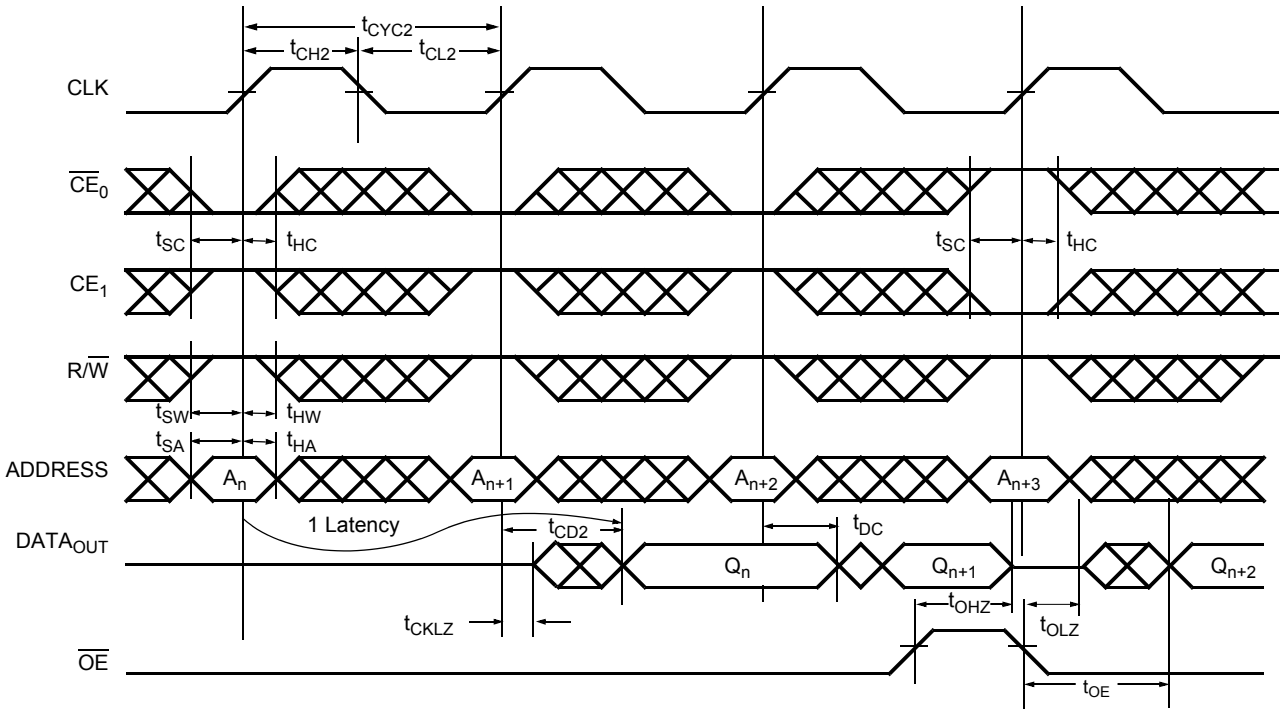


Figure 6. Read Cycle for Pipelined Operation ($\overline{FT}$/PIPE = V_{IH})[17, 18, 19, 20]



Notes

17. $\overline{OE}$ is asynchronously controlled; all other inputs are synchronous to the rising clock edge.
18. $\overline{ADS}$ = V_{IL}, CNTEN and $\overline{CNTRST}$ = V_{IH}.
19. The output is disabled (high impedance state) by $\overline{CE}_0$=V_{IH} or $\overline{CE}_1$ = V_{IL} following the next rising edge of the clock.
20. Addresses do not have to be accessed sequentially since $\overline{ADS}$ = V_{IL} constantly loads the address on the rising edge of the CLK. Numbers are for reference only.

Switching Waveforms (continued)

Figure 7. Bank Select Pipelined Read[21, 22]

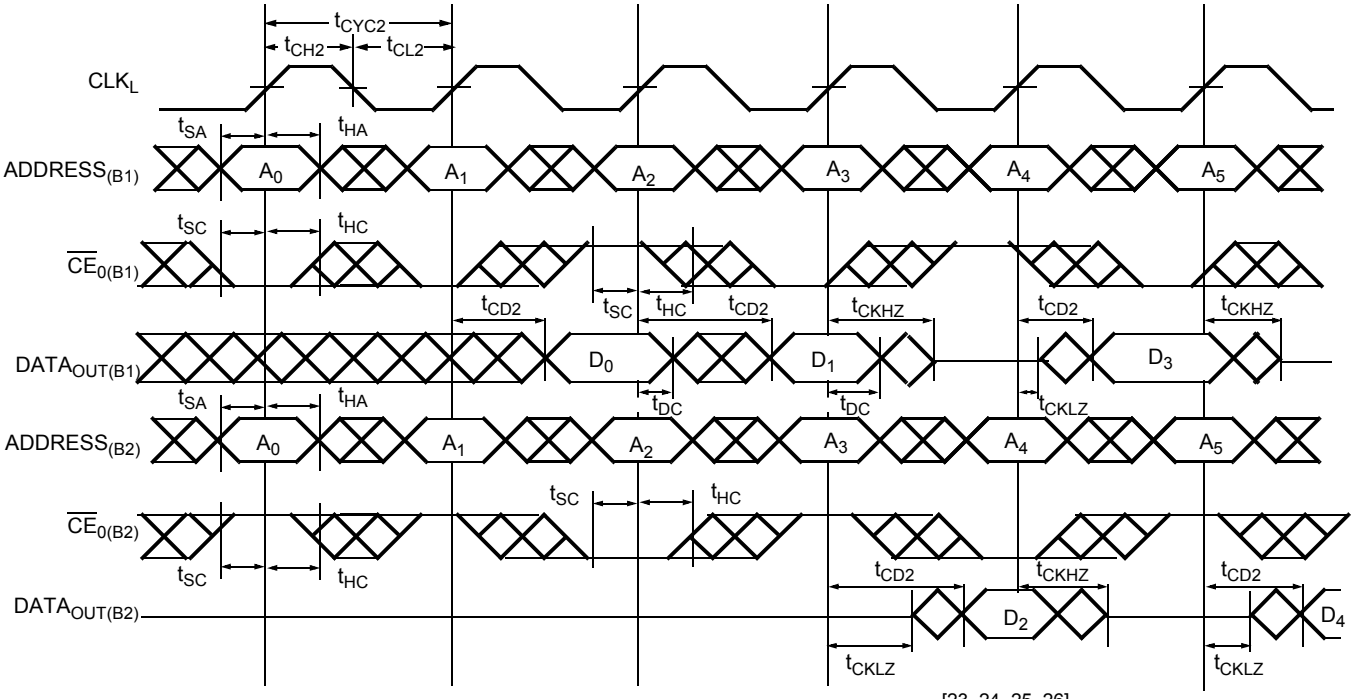
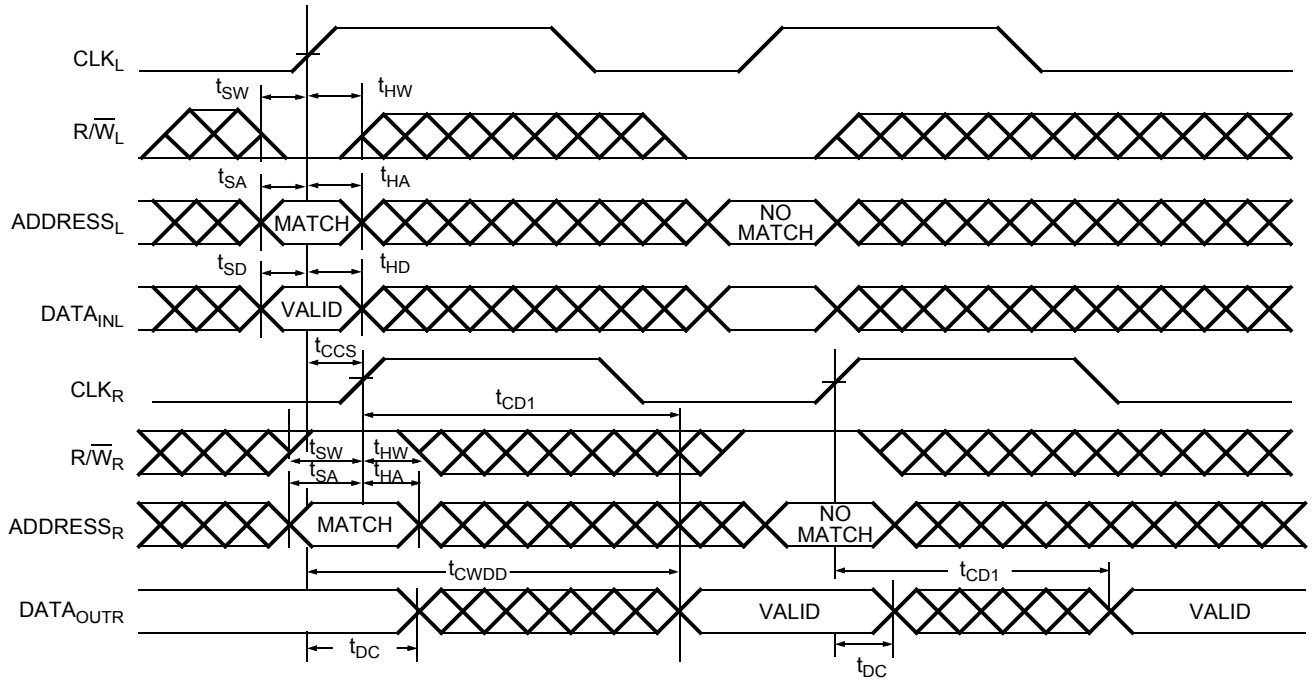


Figure 8. Left Port Write to Flow Through Right Port Read[23, 24, 25, 26]



Notes

21. In this depth expansion example, B1 represents Bank #1 and B2 is Bank #2; Each Bank consists of one Cypress dual-port device from this datasheet. $\overline{ADDRESS}_{(B1)} = \overline{ADDRESS}_{(B2)}$.
22. $\overline{UB}$, $\overline{LB}$, $\overline{OE}$ and $\overline{ADS} = V_{IL}$; $\overline{CE}_{1(B1)}$, $CE_{1(B2)}$, R/$\overline{W}$, $\overline{CNTEN}$, and $\overline{CNTRST} = V_{IH}$.
23. The same waveforms apply for a right port write to flow through left port read.
24. $\overline{CE}_0$, $\overline{UB}$, $\overline{LB}$, and $\overline{ADS} = V_{IL}$; CE_1, $\overline{CNTEN}$, and $\overline{CNTRST} = V_{IH}$.
25. $\overline{OE} = V_{IL}$ for the Right Port, which is being read from. $\overline{OE} = V_{IH}$ for the Left Port, which is being written to.
26. If $t_{CCS} \leq$ maximum specified, then data from right port READ is not valid until the maximum specified for t_{CWDD}. If t_{CCS}>maximum specified, then data is not valid until $t_{CCS} + t_{CD1}$. t_{CWDD} does not apply in this case.

Switching Waveforms (continued)

Figure 9. Pipelined Read-to-Write-to-Read ($\overline{OE}$ = V_{IL})[20, 27, 28, 29]

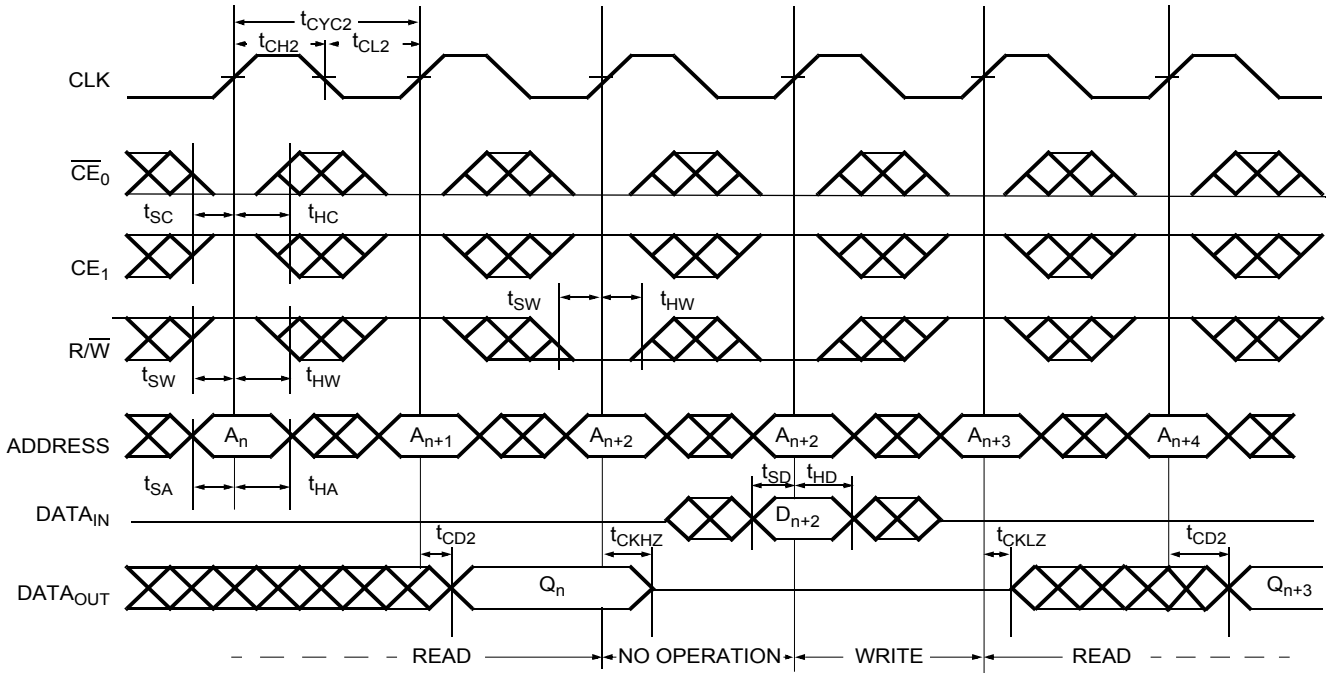
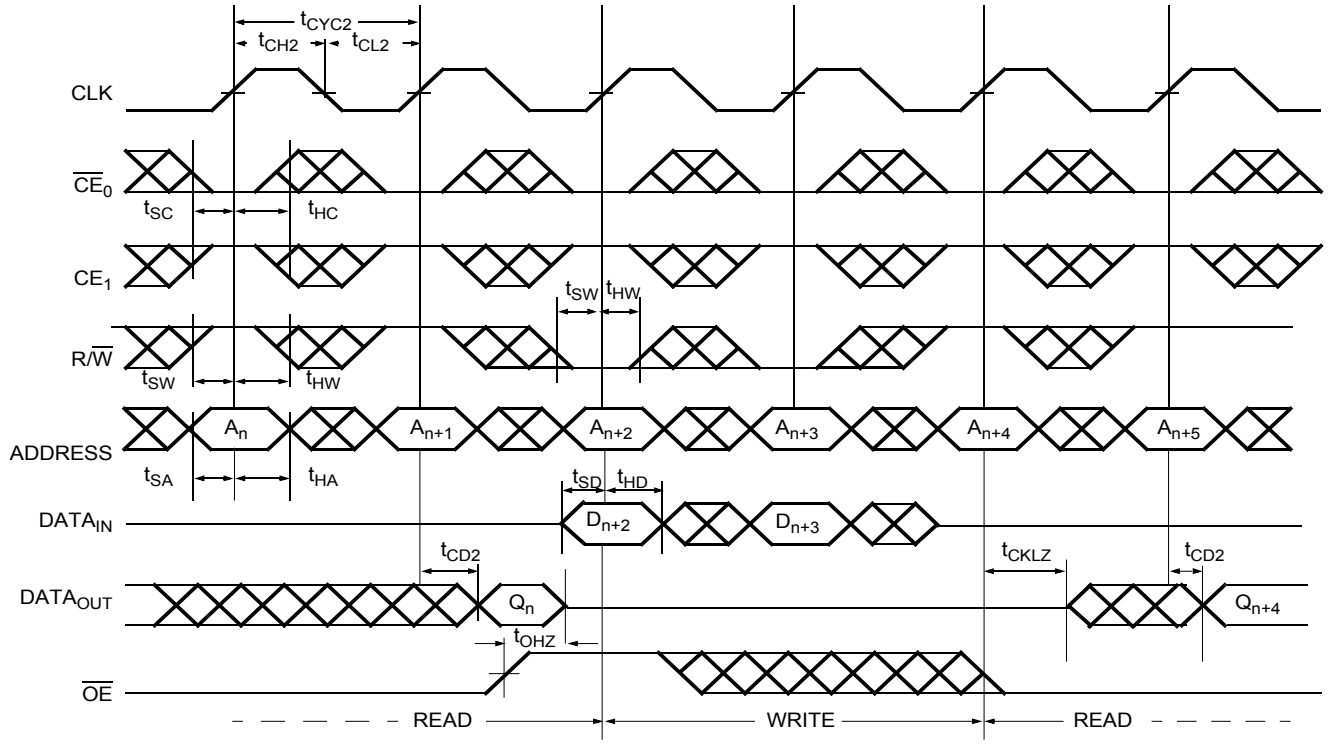


Figure 10. Pipelined Read-to-Write-to-Read ($\overline{OE}$ Controlled)[20, 27, 28, 29]



Notes
27. Output state (High, LOW, or high impedance) is determined by the previous cycle control signals.
28. $\overline{CE_0}$ and $\overline{ADS}$ = V_{IL}; CE_1, $\overline{CNTEN}$, and $\overline{CNTRST}$ = V_{IH}.
29. During “No Operation”, data in memory at the selected address may be corrupted and must be rewritten to ensure data integrity.

Switching Waveforms (continued)

Figure 11. Flow Through Read-to-Write-to-Read ($\overline{OE}$ = V_{IL})[18, 20, 28, 29]

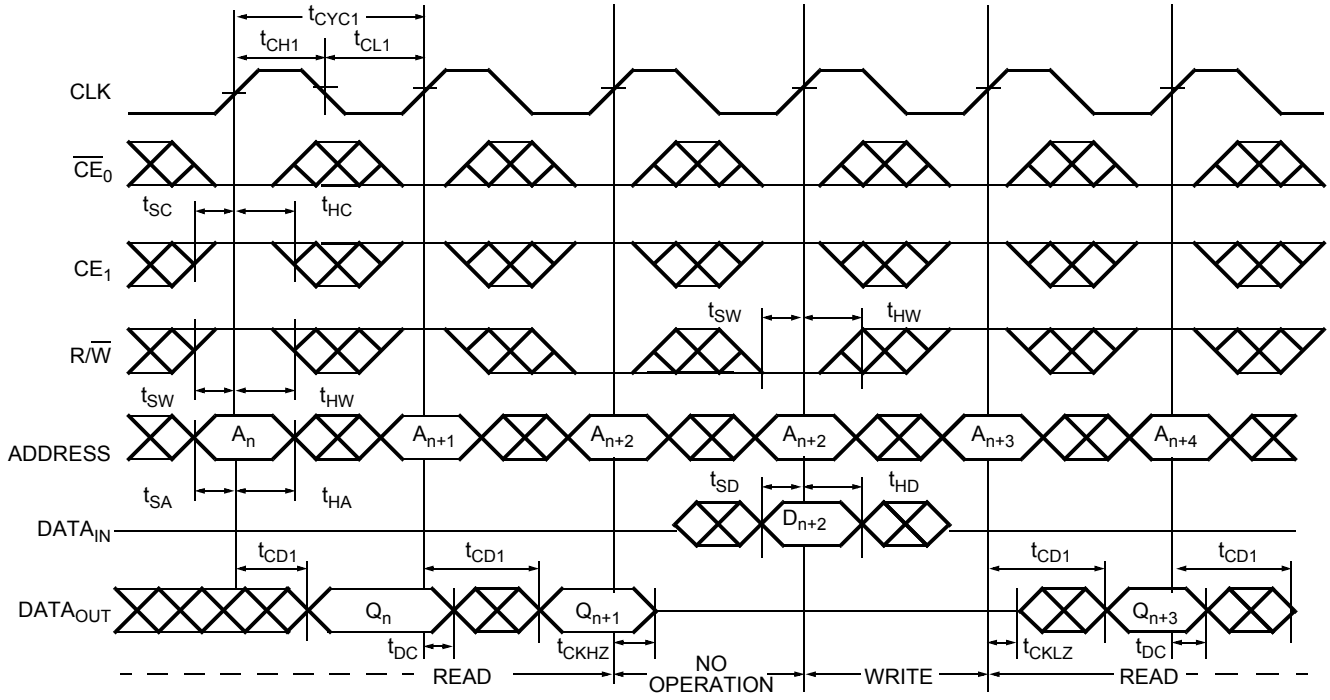
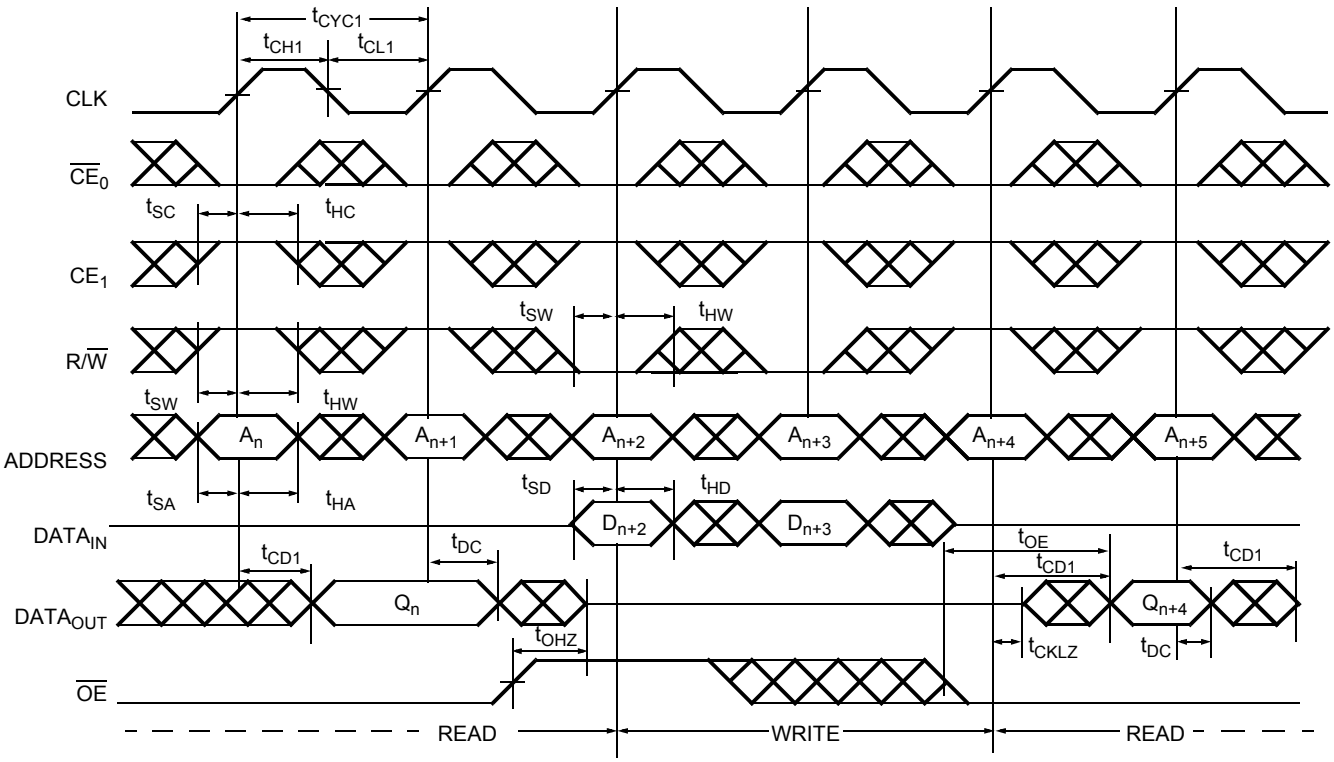


Figure 12. Flow Through Read-to-Write-to-Read ($\overline{OE}$ Controlled)[18, 20, 27, 28, 29]



Switching Waveforms (continued)

Figure 13. Pipelined Read with Address Counter Advance[30]

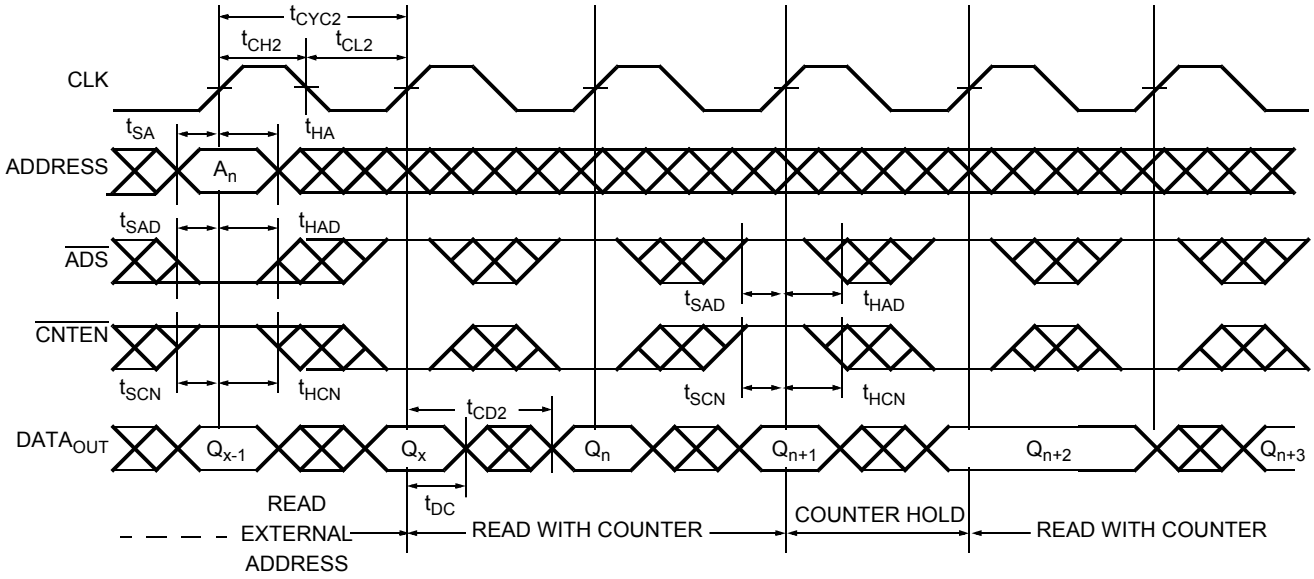
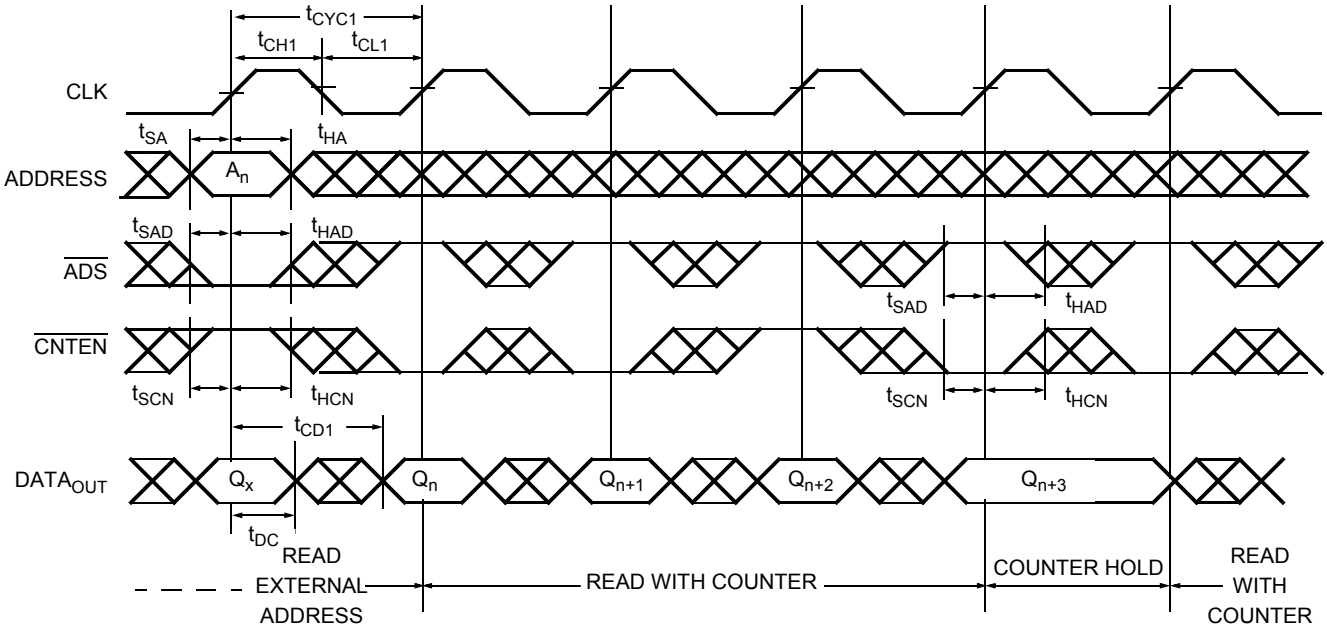


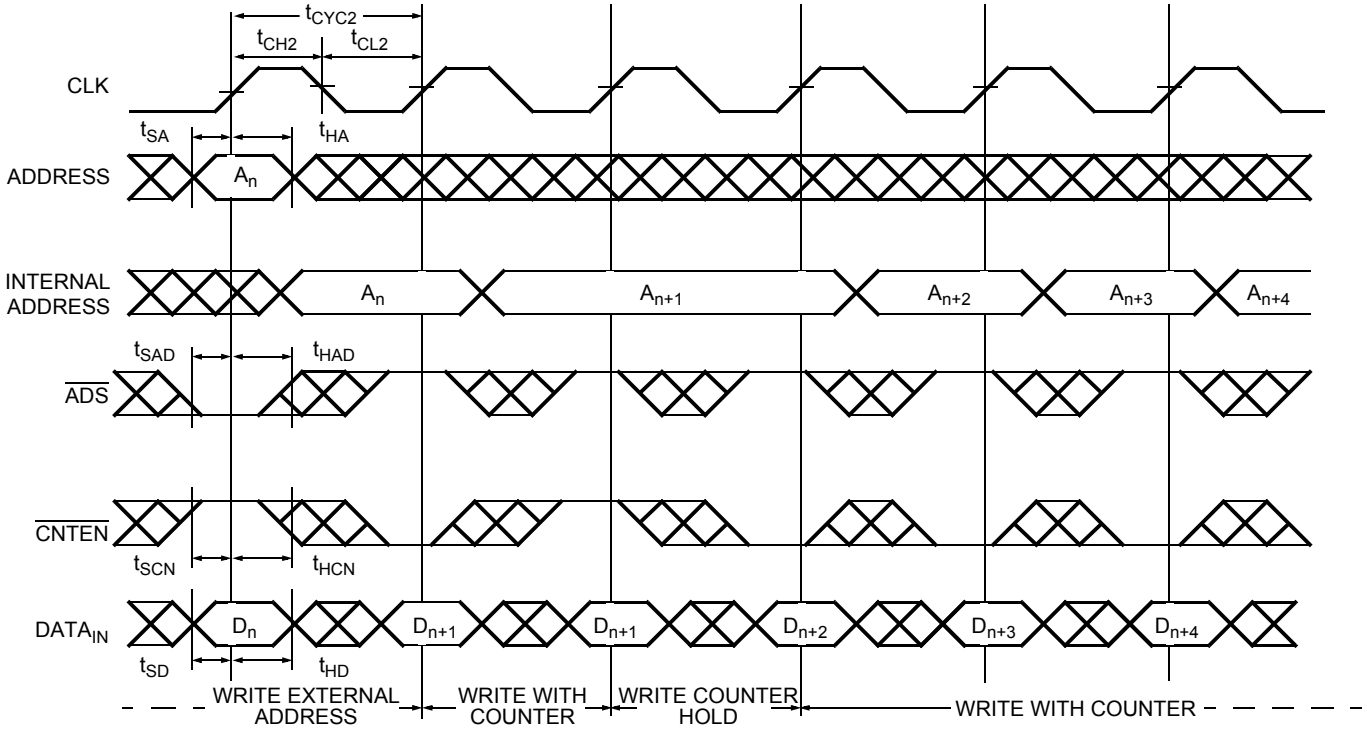
Figure 14. Flow Through Read with Address Counter Advance[30]



Note
30. $\overline{CE_0}$ and $\overline{OE}$ = V_{IL}; CE_1, R/$\overline{W}$ and $\overline{CNTRST}$ = V_{IH}.

Switching Waveforms (continued)

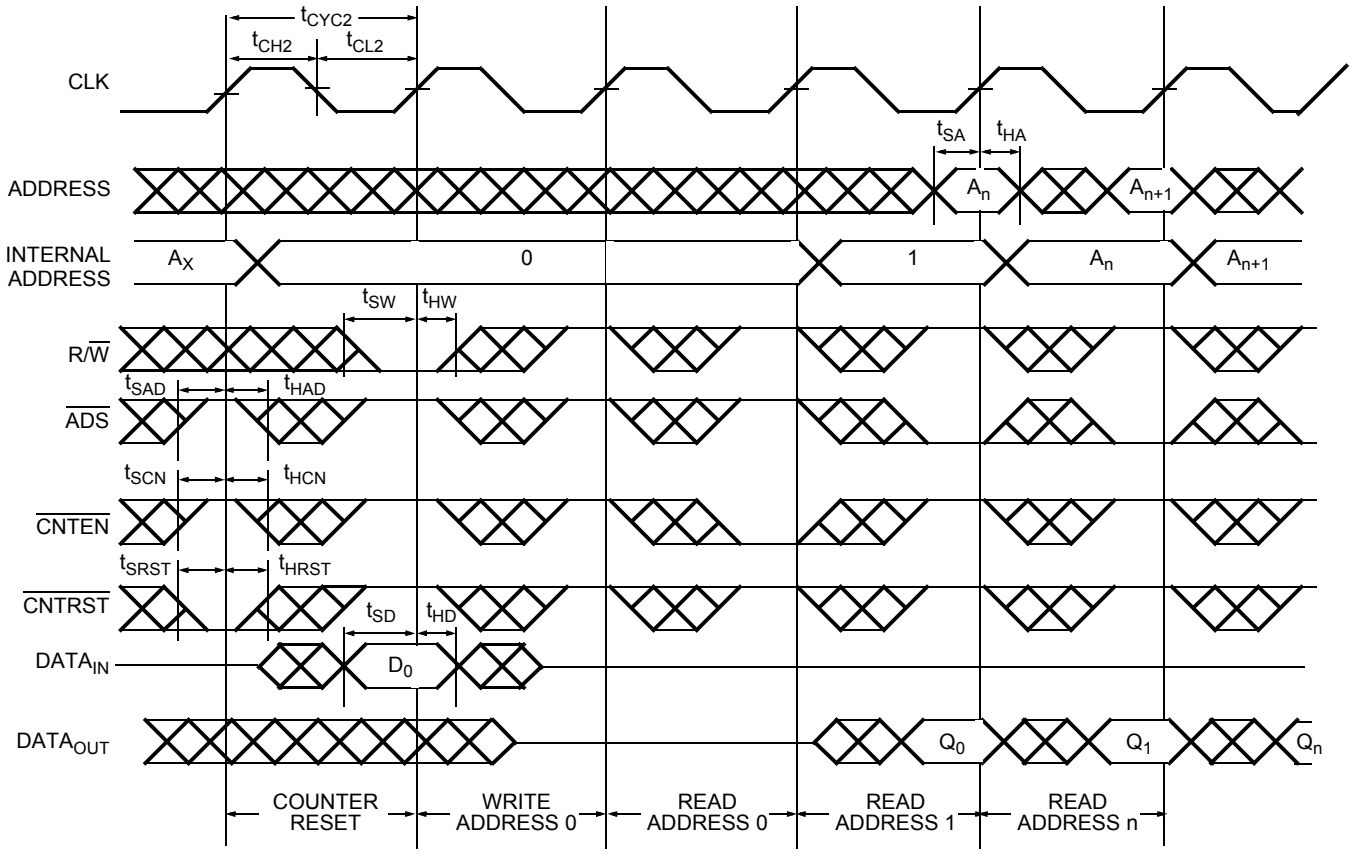
Figure 15. Write with Address Counter Advance (Flow Through or Pipelined Outputs)[31, 32]



Notes
31. $\overline{CE_0}$, $\overline{UB}$, $\overline{LB}$, and R/$\overline{W}$ = V_{IL}; CE_1 and $\overline{CNTRST}$ = V_{IH}.
32. The “Internal Address” is equal to the “External Address” when $\overline{ADS}$ = V_{IL} and equals the counter output when $\overline{ADS}$ = V_{IH}.

Switching Waveforms (continued)

Figure 16. Counter Reset (Pipelined Outputs)[20, 27, 33, 34]



Notes
33. $\overline{CE_0}$, $\overline{UB}$, and $\overline{LB}$ = V_{IL}; CE_1 = V_{IH}.
34. No dead cycle exists during counter reset. A READ or WRITE cycle may be coincidental with the counter reset.

Read/Write and Enable Operation[35, 36, 37]

Inputs					Outputs	Operation
$\overline{OE}$	CLK	$\overline{CE_0}$	CE_1	R/$\overline{W}$	I/O_0–I/O_{17}	
X	↑	H	X	X	High-Z	Deselected[38]
X	↑	X	L	X	High-Z	Deselected[38]
X	↑	L	H	L	D_{IN}	Write
L	↑	L	H	H	D_{OUT}	Read[35]
H	X	L	H	X	High-Z	Outputs Disabled

Address Counter Control Operation[35, 39, 40, 41]

Address	Previous Address	CLK	$\overline{ADS}$	$\overline{CNTEN}$	$\overline{CNTRST}$	I/O	Mode	Operation
X	X	↑	X	X	L	$D_{out(0)}$	Reset	Counter Reset to Address 0
A_n	X	↑	L	X	H	$D_{out(n)}$	Load	Address Load into Counter
X	A_n	↑	H	H	H	$D_{out(n)}$	Hold	External Address Blocked—Counter Disabled
X	A_n	↑	H	L	H	$D_{out(n+1)}$	Increment	Counter Enabled—Internal Address Generation
X	A_n	↑	H	L	H	$D_{out(n+1)}$	Increment	Counter Enabled—Internal Address Generation

Notes
35. "X" = "Don't Care", "H" = V_{IH}, "L" = V_{IL}.
36. $\overline{ADS}$, $\overline{CNTEN}$, $\overline{CNTRST}$ = "Don't Care".
37. $\overline{OE}$ is an asynchronous input signal.
38. When $\overline{CE}$ changes state In the pipelined mode, deselection and read happen in the following clock cycle.
39. $\overline{CE_0}$ and $\overline{OE}$ = V_{IL}; CE_1 and R/$\overline{W}$ = V_{IH}.
40. Data shown for flow through mode; pipelined mode output is delayed by one cycle.
41. Counter operation is independent of $\overline{CE_0}$ and CE_1.

Ordering Information

16K x16 3.3V Synchronous Dual-Port SRAM

Speed (ns)	Ordering Code	Package Diagram	Package Type	Operating Range
7.5[2]	CY7C09269V-7AXC	51-85048	100-Pin Thin Quad Flat Pack (Pb-Free)	Commercial
9	CY7C09269V-9AXC	51-85048	100-Pin Thin Quad Flat Pack (Pb-Free)	Commercial
12	CY7C09269V-12AXC	51-85048	100-Pin Thin Quad Flat Pack (Pb-Free)	Commercial

32K x16 3.3V Synchronous Dual-Port SRAM

Speed (ns)	Ordering Code	Package Diagram	Package Type	Operating Range
7.5[2]	CY7C09279V-7AC	51-85048	100-Pin Thin Quad Flat Pack	Commercial
	CY7C09279V-7AXC		100-Pin Thin Quad Flat Pack (Pb-Free)	
12	CY7C09279V-12AXC	51-85048	100-Pin Thin Quad Flat Pack (Pb-Free)	Commercial

64K x16 3.3V Synchronous Dual-Port SRAM

Speed (ns)	Ordering Code	Package Diagram	Package Type	Operating Range
9	CY7C09289V-9AC	51-85048	100-Pin Thin Quad Flat Pack	Commercial
	CY7C09289V-9AXC		100-Pin Thin Quad Flat Pack (Pb-Free)	
	CY7C09289V-9AI	51-85048	100-Pin Thin Quad Flat Pack	Industrial
	CY7C09289V-9AXI		100-Pin Thin Quad Flat Pack (Pb-Free)	
12	CY7C09289V-12AXC	51-85048	100-Pin Thin Quad Flat Pack (Pb-Free)	Commercial

Ordering Information (Continued)

16K x18 3.3V Synchronous Dual-Port SRAM

Speed (ns)	Ordering Code	Package Diagram	Package Type	Operating Range
9	CY7C09369V-9AXC	51-85048	100-Pin Thin Quad Flat Pack (Pb-Free)	Commercial
12	CY7C09369V-12AXC	51-85048	100-Pin Thin Quad Flat Pack (Pb-Free)	Commercial

32K x18 3.3V Synchronous Dual-Port SRAM

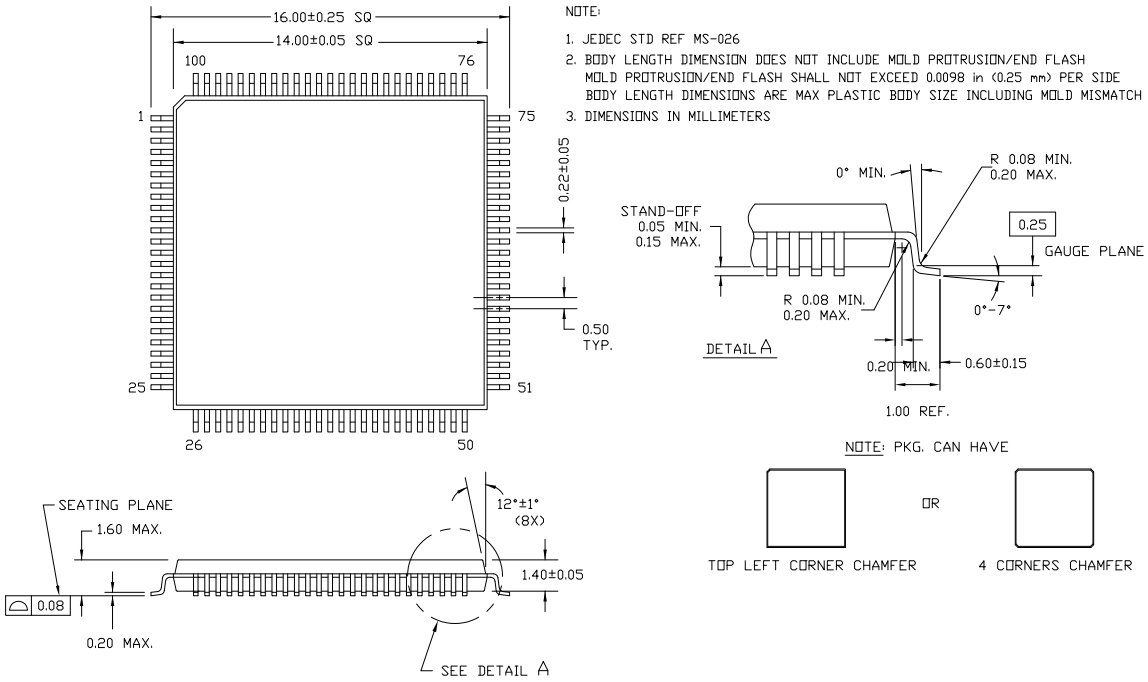
Speed (ns)	Ordering Code	Package Diagram	Package Type	Operating Range
12	CY7C09379V-12AXC	51-85048	100-Pin Thin Quad Flat Pack (Pb-Free)	Commercial

64K x18 3.3V Synchronous Dual-Port SRAM

Speed (ns)	Ordering Code	Package Diagram	Package Type	Operating Range
7.5[2]	CY7C09389V-7AXC	51-85048	100-Pin Thin Quad Flat Pack (Pb-Free)	Commercial
9	CY7C09389V-9AXC	51-85048	100-Pin Thin Quad Flat Pack (Pb-Free)	Commercial
	CY7C09389V-9AI	51-85048	100-Pin Thin Quad Flat Pack	Industrial
	CY7C09389V-9AXI		100-Pin Thin Quad Flat Pack (Pb-Free)	
12	CY7C09389V-12AXC	51-85048	100-Pin Thin Quad Flat Pack (Pb-Free)	Commercial

Package Diagrams

Figure 17. 100-Pin Thin Plastic Quad Flat Pack (TQFP), 51-85048



51-85048 *D

Document History Page

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Revision	**ECN**	**Submission Date**	**Orig. of Change**	**Description of Change**
**	110215	12/18/01	SZV	Change from Spec number: 38-00668 to 38-06056
*A	122306	12/27/02	RBI	Power up requirements added to Maximum Ratings Information
*B	344354	See ECN	PCX	Added Pb-Free Part Ordering Information
*C	2678221	03/25/2009	VKN/AESA	Added CY7C09379V-12AXCT part. Updated 51-85048 to *C.
*D	2896210	03/22/2010	RAME	Updated Ordering Information Updated Package Diagrams

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