

**Z8340 Low Power  
Z80® L SIO  
Serial Input/Output**



**AC and DC Characteristics**

March 1985

**ABSOLUTE MAXIMUM RATINGS**

Voltages on all pins with respect to GND . . . . . -0.3V to +7.0V  
 Operating Ambient Temperature . . . . . See Ordering Information  
 Storage Temperature . . . . . -65°C to +150°C

Stresses greater than those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only; operation of the device at any condition above those indicated in the operational sections of these specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

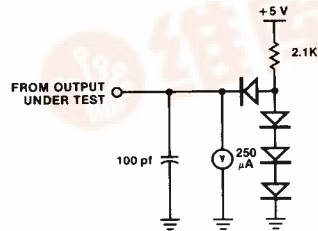
**STANDARD TEST CONDITIONS**

The DC characteristics listed below apply for the following standard test conditions, unless otherwise noted. All voltages are referenced to GND (0V). Positive current flows into the referenced pin.

Available operating temperature range is:

- S = 0°C to +70°C, +4.75V ≤ V<sub>CC</sub> ≤ +5.25V

The Ordering Information section lists package temperature ranges and product numbers. Package drawings are in the Package Information section. Refer to the Literature List for additional documentation.



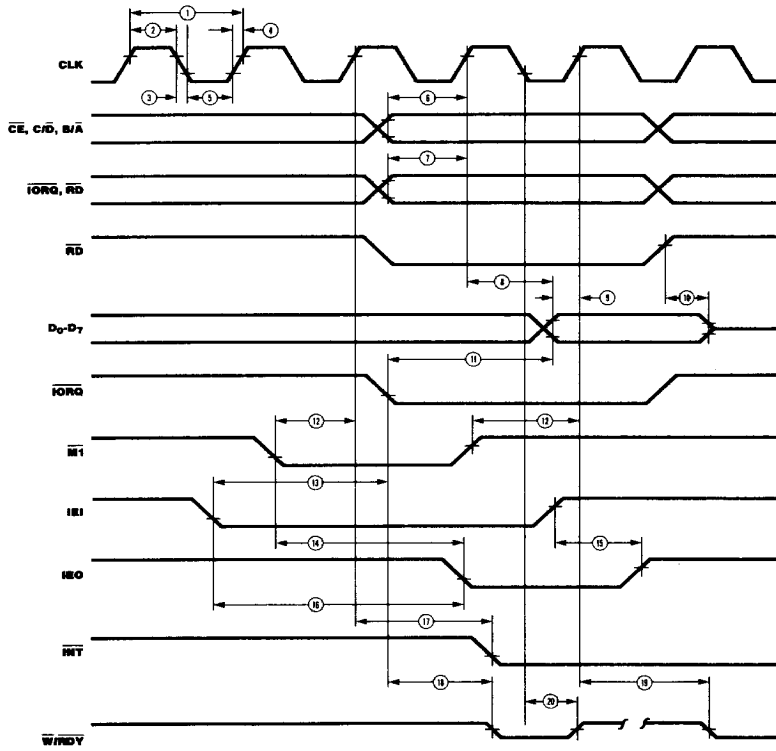
**DC CHARACTERISTICS**

Symbol	Parameter	Min	Max	Typical	Unit	Condition
V <sub>ILC</sub>	Clock Input Low Voltage	-0.3	+0.45		V	
V <sub>IHC</sub>	Clock Input High Voltage	V <sub>CC</sub> - 0.6	V <sub>CC</sub> + 0.3		V	
V <sub>IL</sub>	Input Low Voltage	-0.3	+0.8		V	
V <sub>IH</sub>	Input High Voltage	+2.0	V <sub>CC</sub>		V	
V <sub>OL</sub>	Output Low Voltage		+0.4		V	I <sub>OL</sub> = 2.0 mA
V <sub>OH</sub>	Output High Voltage	+2.4			V	I <sub>OH</sub> = -250 μA
I <sub>LI</sub>	Input Leakage Current		±10		μA	V <sub>IN</sub> = 0 to V <sub>CC</sub>
I <sub>LO</sub>	3-State Output Leakage Current in Float		±10		μA	V <sub>OUT</sub> = 0.4 to V <sub>CC</sub>
I <sub>L(SY)</sub>	SYNC Pin Leakage Current		+10/-40		μA	V <sub>IN</sub> = 0 to V <sub>CC</sub>
I <sub>CC</sub>	Power Supply Current		30	20	mA	

Over specified temperature and voltage range.



## AC CHARACTERISTICS

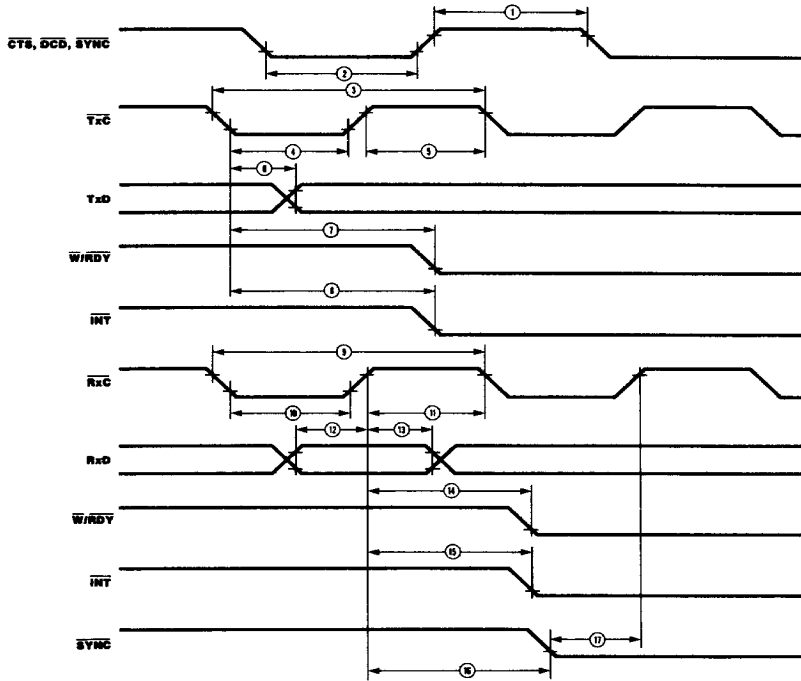


## AC CHARACTERISTICS (Continued)

Number	Symbol	Parameter	Z8340-1† (1.0 MHz)		Z8340-3† (2.5 MHz)	
			Min	Max	Min	Max
1	T <sub>c</sub> C	Clock Cycle Time	1000	4000	400	4000
2	T <sub>w</sub> Ch	Clock Width (High)	470	2000	170	2000
3	T <sub>f</sub> C	Clock Fall Time		30		30
4	T <sub>r</sub> C	Clock Rise Time		30		30
5	T <sub>w</sub> Cl	Clock Width (Low)	470	2000	170	2000
6	T <sub>s</sub> AD(C)	$\overline{CE}$ , C/ $\overline{D}$ , B/ $\overline{A}$ to Clock ↑ Setup Time	410		160	
7	T <sub>s</sub> CS(C)	$\overline{IORQ}$ , $\overline{RD}$ to Clock ↑ Setup time	610		240	
8	T <sub>d</sub> C(DO)	Clock ↑ to Data Out Delay		610		240
9	T <sub>s</sub> DI(C)	Data In to Clock ↑ Setup (Write or $\overline{M1}$ Cycle)	140		50	
10	T <sub>d</sub> RD(DOz)	$\overline{RD}$ ↑ to Data Out Float Delay		590		230
11	T <sub>d</sub> IO(DOI)	$\overline{IORQ}$ ↓ to Data Out Delay (INTACK Cycle)		860		340
12	T <sub>s</sub> M1(C)	$\overline{M1}$ to Clock ↑ Setup Time	540		210	
13	T <sub>s</sub> IE(I/O)	IEI to $\overline{IORQ}$ ↓ Setup Time (INTACK Cycle)	510		200	
14	T <sub>d</sub> M1(IEO)	$\overline{M1}$ ↓ to IEO ↓ Delay (interrupt before $\overline{M1}$ )		760		300
15	T <sub>d</sub> IEI(IEOr)	IEI ↑ to IEO ↑ Delay (after ED decode)		380		150
16	T <sub>d</sub> IEI(IEOf)	IEI ↓ to IEO ↓ Delay		380		150
17	T <sub>d</sub> C(INT)	Clock ↑ to $\overline{INT}$ ↓ Delay		510		200
18	T <sub>d</sub> IO(W/RWf)	$\overline{IORQ}$ ↓ or $\overline{CE}$ ↓ to $\overline{W/RDY}$ ↓ Delay (Wait Mode)		760		300
19	T <sub>d</sub> C(W/RR)	Clock ↑ to $\overline{W/RDY}$ ↓ Delay (Ready Mode)		310		120
20	T <sub>d</sub> C(W/RWz)	Clock ↓ to $\overline{W/RDY}$ Float Delay (Wait Mode)		390		150
21	Th	Any unspecified Hold when Setup is specified	0		0	

† Units are nanoseconds unless otherwise specified;  
timings are preliminary and subject to change.

## AC CHARACTERISTICS (Continued)



Number	Symbol	Parameter	Z8340-1† (1.0 MHz)		Z8340-3† (2.5 MHz)		Notes
			Min	Max	Min	Max	
1	TwPh	Pulse Width (High)	500		200		
2	TwPl	Pulse Width (Low)	500		200		
3	TcTx̄C	Tx̄C Cycle Time	1000	∞	400	∞	
4	TwTx̄Cl	Tx̄C Width (Low)	460	∞	180	∞	
5	TwTx̄Ch	Tx̄C Width (High)	460	∞	180	∞	
6	TdTx̄C(Tx̄D)	Tx̄C ↓ to Tx̄D Delay (x1 Mode)		1000		400	
7	TdTx̄C(W/RRf)	Tx̄C ↓ to W/RDY ↓ Delay (Ready Mode)	5	9	5	9	Clk Periods*
8	TdTx̄C(INT)	Tx̄C ↓ to INT ↓ Delay	5	9	5	9	Clk Periods*
9	TcRx̄C	Rx̄C Cycle Time	1000	∞	400	∞	
10	TwRx̄Cl	Rx̄C Width (Low)	460	∞	180	∞	
11	TwRx̄Ch	Rx̄C Width (High)	460	∞	180	∞	
12	TsRx̄D(RxC)	RxD to Rx̄C ↑ Setup Time (x1 Mode)	0		0		
13	ThRx̄D(RxC)	Rx̄C ↑ to RxD Hold Time (x1 Mode)	360		140		
14	TdRx̄C(W/RRf)	Rx̄C ↑ to W/RDY ↓ Delay (Ready Mode)	10	13	10	13	Clk Periods*
15	TdRx̄C(INT)	Rx̄C ↑ to INT ↓ Delay	10	13	10	13	Clk Periods*
16	TdRx̄C(SYNC)	Rx̄C ↑ to SYNC ↓ Delay (Output Modes)	4	7	4	7	Clk Periods*
17	TsSYNC(RxC)	SYNC ↓ to Rx̄C ↑ Setup (External Sync Modes)	100		100		

In all modes, the System clock rate must be at least five times the maximum data rate.  
RESET must be active a minimum of one complete Clock Cycle.

\* System Clock  
† Units are nanoseconds unless otherwise specified; timings are preliminary and subject to change.

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## ORDERING INFORMATION

**Z80L SIO, 1.0 MHz**  
**40-pin DIP**  
Z8340-1 PS

**Z80L SIO, 2.5 MHz**  
**40-pin DIP**  
Z8340-3 PS

### Codes

First letter is for package; second letter is for temperature.

C = Ceramic DIP  
P = Plastic DIP  
L = Ceramic LCC  
V = Plastic PCC

R = Protopack  
T = Low Profile Protopack  
DIP = Dual-In-Line Package  
LCC = Leadless Chip Carrier  
PCC = Plastic Chip Carrier (Leaded)

### TEMPERATURE

S = 0°C to +70°C  
E = -40°C to +85°C  
M\* = -55°C to +125°C

### FLOW

B = 883 Class B

†Available soon.

\*For Military Orders, contact your local Zilog Sales Office for Military Electrical Specifications.