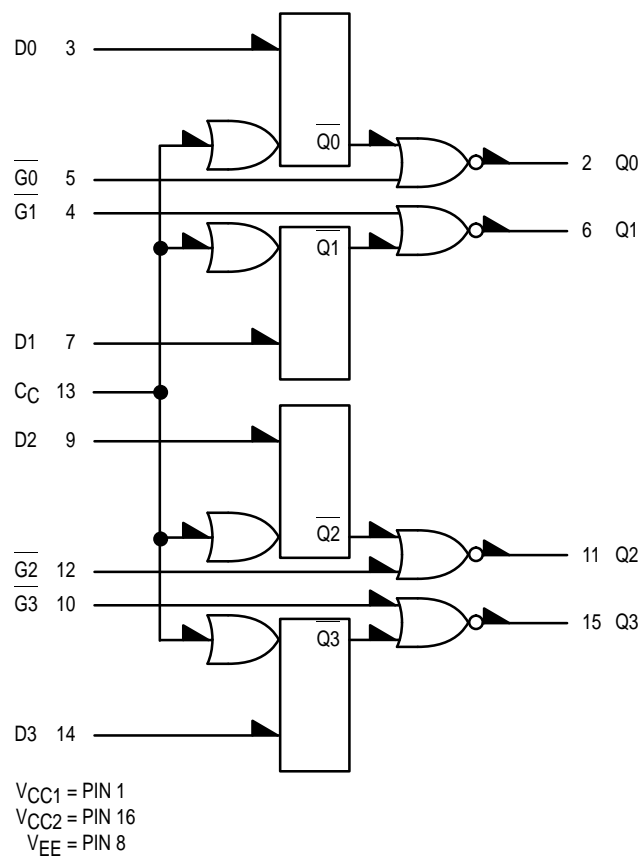


Quad Latch

The MC10168 is a Quad Latch with common clocking to all four latches. Separate output enabling gates are provided for each latch, allowing direct wiring to a bus. When the clock is high, outputs will follow the D inputs. Information is latched on the negative-transition of the clock.

$P_D = 310 \text{ mW typ/pkg (No Load)}$   
 $t_{pd} = G \text{ to } Q = 2 \text{ ns typ}$   
           $D \text{ to } Q = 3 \text{ ns typ}$   
           $C \text{ to } Q = 4 \text{ ns typ}$   
 $t_r, t_f = 2.0 \text{ ns typ (20\%–80\%)}$

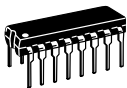
LOGIC DIAGRAM



TRUTH TABLE

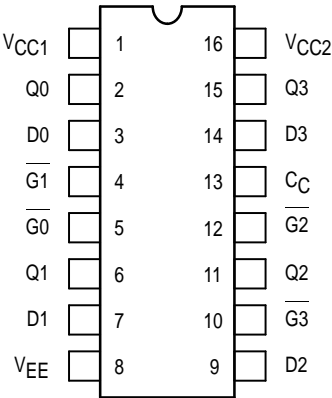
G	C	D	$Q_{n+1}$
H	X	X	L
L	L	X	$Q_n$
L	H	L	L
L	H	H	H

MC10168



P SUFFIX  
PLASTIC PACKAGE  
CASE 648-08

PIN ASSIGNMENT



## ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Pin Under Test	Test Limits							Unit	
			−30°C		+25°C			+85°C			
			Min	Max	Min	Typ	Max	Min	Max		
Power Supply Drain Current	I <sub>E</sub>	8		82		60	75		82	mAdc	
Input Current	I <sub>inH</sub>	3,7,9,14 4,5,10,12 13		390 425 460			245 265 290		245 265 290	μAdc	
	I <sub>inL</sub>	*	0.5		0.5			0.3		μAdc	
Output Voltage      Logic 1	V <sub>OH</sub>	2 6	−1.060 −1.060	−0.890 −0.890	−0.960 −0.960		−0.810 −0.810	−0.890 −0.890	−0.700 −0.700	Vdc	
Output Voltage      Logic 0	V <sub>OL</sub>	2 6	−1.890 −1.890	−1.675 −1.675	−1.850 −1.850		−1.650 −1.650	−1.825 −1.825	−1.615 −1.615	Vdc	
Threshold Voltage    Logic 1	V <sub>OHA</sub>	2 6	−1.080 −1.080		−0.980 −0.980			−0.910 −0.910		Vdc	
Threshold Voltage    Logic 0	V <sub>OLA</sub>	2 6		−1.655 −1.655			−1.630 −1.630		−1.595 −1.595	Vdc	
Switching Times (50Ω Load)										ns	
Propagation Delay	Data	t <sub>3+2+</sub>	2	1.0	5.6	1.0	3.0	5.4	1.1		5.9
	Gate	t <sub>5−2+</sub>	2	1.0	3.2	1.0	2.0	3.1	1.0		3.4
	Clock	t <sub>13+2+</sub>	2	1.0	5.8	1.0	4.0	5.6	1.2		6.2
Setup Time	t <sub>3+13+</sub>	2	2.5		2.5			2.5			
Hold Time	t <sub>13+3+</sub>	2	1.0		1.0			1.0			
Rise Time (20 to 80%)	t <sub>2+</sub>	2	1.0	3.6	1.1	2.0	3.5	1.1	3.8		
Fall Time (20 to 80%)	t <sub>2−</sub>	2	1.0	3.6	1.1	2.0	3.5	1.1	3.8		

\* Individually test each input applying  $V_{IH}$  or  $V_{IL}$  to input under test.

**ELECTRICAL CHARACTERISTICS** (continued)

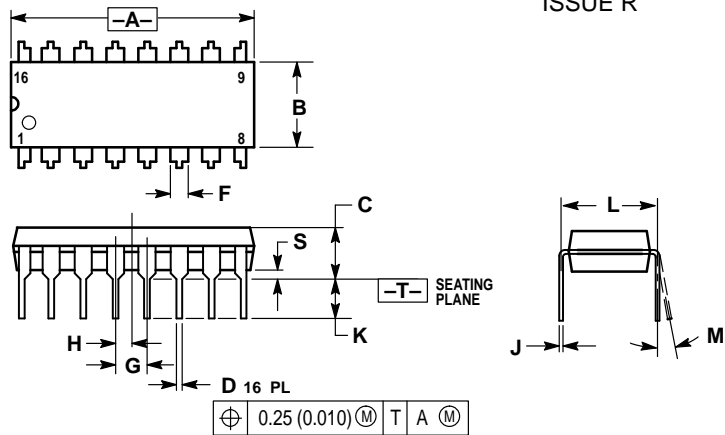
@ Test Temperature			TEST VOLTAGE VALUES (Volts)					(V <sub>CC</sub> ) Gnd
			V <sub>IHmax</sub>	V <sub>ILmin</sub>	V <sub>IHAmin</sub>	V <sub>ILAmax</sub>	V <sub>EE</sub>	
			−30°C	−0.890	−1.890	−1.205	−1.500	−5.2
			+25°C	−0.810	−1.850	−1.105	−1.475	−5.2
			+85°C	−0.700	−1.825	−1.035	−1.440	−5.2
Characteristic	Symbol	Pin Under Test	TEST VOLTAGE APPLIED TO PINS LISTED BELOW					(V <sub>CC</sub> ) Gnd
			V <sub>IHmax</sub>	V <sub>ILmin</sub>	V <sub>IHAmin</sub>	V <sub>ILAmax</sub>	V <sub>EE</sub>	
Power Supply Drain Current	I <sub>E</sub>	8					8	1, 16
Input Current	I <sub>inH</sub>	3, 7, 9, 14 4, 5, 10, 12 13	*				8 8 8	1, 16 1, 16 1, 16
	I <sub>inL</sub>	*		*			8	1, 16
Output Voltage Logic 1	V <sub>OH</sub>	2 6	3, 13 7, 13				8 8	1, 16 1, 16
Output Voltage Logic 0	V <sub>OL</sub>	2 6	3, 5 4, 7				8 8	1, 16 1, 16
Threshold Voltage Logic 1	V <sub>OHA</sub>	2 6	13 13		3 7		8 8	1, 16 1, 16
Threshold Voltage Logic 0	V <sub>OLA</sub>	2 6	13 13			3 7	8 8	1, 16 1, 16
Switching Times (50Ω Load)			+1.11V		Pulse In	Pulse Out	−3.2 V	+2.0 V
Propagation Delay	Data	t <sub>3+2+</sub>	2		3	2	8	1, 16
	Gate	t <sub>5−2+</sub>	2		5	2	8	1, 16
	Clock	t <sub>13+2+</sub>	2		13	2	8	1, 16
Setup Time		t <sub>3+13+</sub>	2				8	1, 16
Hold Time		t <sub>13+3+</sub>	2				8	1, 16
Rise Time (20 to 80%)		t <sub>2+</sub>	2		3	2	8	1, 16
Fall Time (20 to 80%)		t <sub>2−</sub>	2		3	2	8	1, 16

\* Individually test each input applying V<sub>IH</sub> or V<sub>IL</sub> to input under test.

Each MECL 10,000 series circuit has been designed to meet the dc specifications shown in the test table, after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse air flow greater than 500 linear fpm is maintained. Outputs are terminated through a 50-ohm resistor to −2.0 volts. Test procedures are shown for only one gate. The other gates are tested in the same manner.


OUTLINE DIMENSIONS

P SUFFIX  
PLASTIC DIP PACKAGE  
CASE 648-08  
ISSUE R



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
  4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.
  5. ROUNDED CORNERS OPTIONAL.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.740	0.770	18.80	19.55
B	0.250	0.270	6.35	6.85
C	0.145	0.175	3.69	4.44
D	0.015	0.021	0.39	0.53
F	0.040	0.70	1.02	1.77
G	0.100 BSC		2.54 BSC	
H	0.050 BSC		1.27 BSC	
J	0.008	0.015	0.21	0.38
K	0.110	0.130	2.80	3.30
L	0.295	0.305	7.50	7.74
M	0°	10°	0°	10°
S	0.020	0.040	0.51	1.01

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