

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-going transition of the clock.

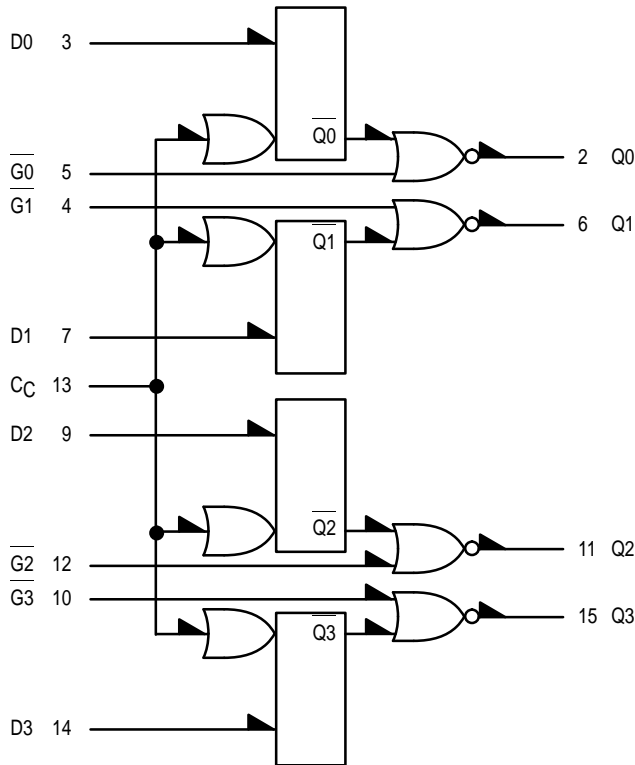
$P_D = 310$ mW typ/pkg (No Load)
 $t_{pd} = \overline{G}$ to Q = 2 ns typ
 D to Q = 3 ns typ
 C to Q = 4 ns typ
 $t_r, t_f = 2.0$ ns typ (20%–80%)

MC10168



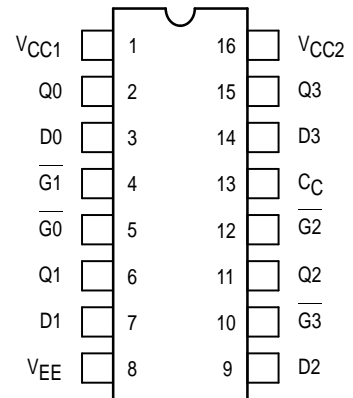
P SUFFIX
PLASTIC PACKAGE
CASE 648-08

LOGIC DIAGRAM



$V_{CC1} = \text{PIN } 1$
 $V_{CC2} = \text{PIN } 16$
 $V_{EE} = \text{PIN } 8$

PIN ASSIGNMENT



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



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_E	8		82		60	75		82	mA _{dc}	
Input Current	I_{inH}	3,7,9,14 4,5,10,12 13		390 425 460			245 265 290		245 265 290	μA _{dc}	
	I_{inL}	*	0.5		0.5			0.3		μA _{dc}	
Output Voltage	Logic 1	V_{OH}	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	V _{dc}
Output Voltage	Logic 0	V_{OL}	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	V _{dc}
Threshold Voltage	Logic 1	V_{OHA}	2 6	-1.080 -1.080		-0.980 -0.980			-0.910 -0.910		V _{dc}
Threshold Voltage	Logic 0	V_{OLA}	2 6		-1.655 -1.655			-1.630 -1.630		-1.595 -1.595	V _{dc}
Switching Times (50Ω Load)										ns	
Propagation Delay	Data	t_{3+2+}	2	1.0	5.6	1.0	3.0	5.4	1.1	5.9	
	Gate	t_{5-2+}	2	1.0	3.2	1.0	2.0	3.1	1.0	3.4	
	Clock	t_{13+2+}	2	1.0	5.8	1.0	4.0	5.6	1.2	6.2	
Setup Time		t_{3+13+}	2	2.5		2.5			2.5		
Hold Time		t_{13+3+}	2	1.0		1.0			1.0		
Rise Time (20 to 80%)		t_{2+}	2	1.0	3.6	1.1	2.0	3.5	1.1	3.8	
Fall Time (20 to 80%)		t_{2-}	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)

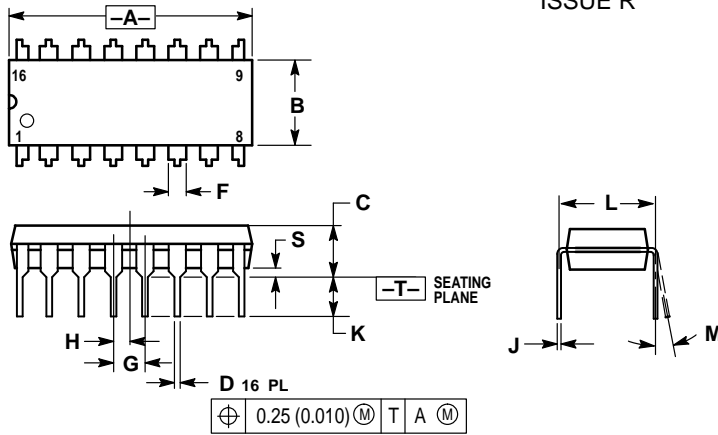
			TEST VOLTAGE VALUES (Volts)					V_{CC} Gnd	
			V_{IHmax}	V_{ILmin}	V_{IHmin}	V_{ILmax}	V_{EE}		
@ Test Temperature									
-30°C			-0.890	-1.890	-1.205	-1.500	-5.2		
+25°C			-0.810	-1.850	-1.105	-1.475	-5.2		
+85°C			-0.700	-1.825	-1.035	-1.440	-5.2		
Characteristic	Symbol	Pin Under Test	TEST VOLTAGE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

* Individually test each input applying V_{IH} or V_{IL} 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°	
S	0.020	0.040	0.51	1.01

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