

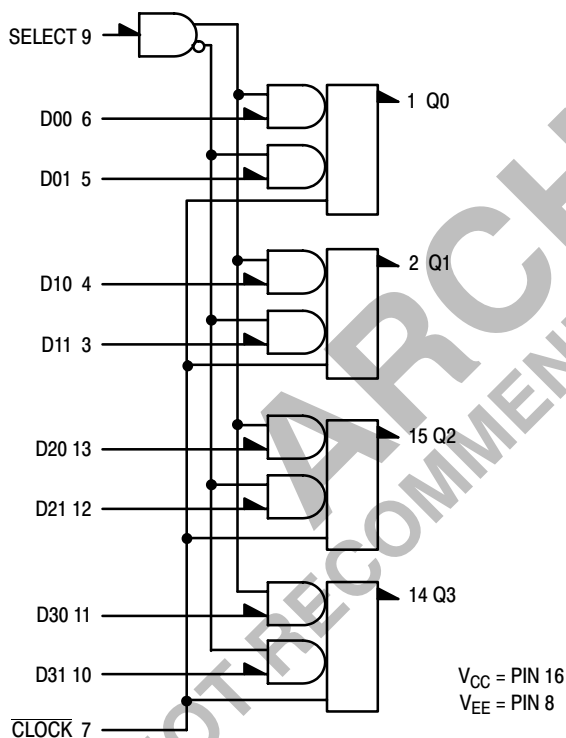
MC10173

Quad 2-Input Multiplexer/Latch

The MC10173 is a quad two channel multiplexer with latch. It incorporates common clock and common data select inputs. The select input determines which data input is enabled. A high (H) level enables data inputs D00, D10, D20, and D30 and a low (L) level enables data inputs D01, D11, D21, D31. Any change on the data input will be reflected at the outputs while the clock is low. The outputs are latched on the positive transition of the clock. While the clock is in the high state, a change in the information present at the data inputs will not affect the output information.

- $P_D = 275 \text{ mW typ/pkg (No Load)}$
- $t_{pd} = 2.5 \text{ ns typ}$
- $t_r, t_f = 2.0 \text{ ns typ (20\%–80\%)}$

LOGIC DIAGRAM



TRUTH TABLE

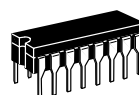
SELECT	CLOCK	$Q0_{n+1}$
H	L	D00
L	L	D01
X	H	$Q0_n$



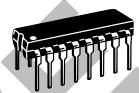
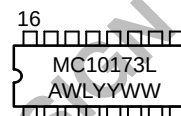
ON Semiconductor

<http://onsemi.com>

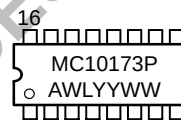
MARKING DIAGRAMS



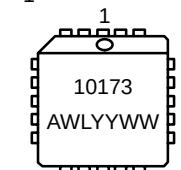
CDIP-16
L SUFFIX
CASE 620



PDIP-16
P SUFFIX
CASE 648

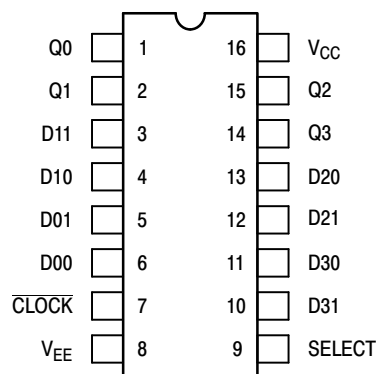


PLCC-20
FN SUFFIX
CASE 775



A = Assembly Location
WL = Wafer Lot
YY = Year
WW = Work Week

DIP PIN ASSIGNMENT



Pin assignment is for Dual-in-Line Package.
For PLCC pin assignment, see the Pin Conversion Tables on page 18 of the ON Semiconductor MECL Data Book (DL122/D).

ORDERING INFORMATION

Device	Package	Shipping
MC10173L	CDIP-16	25 Units / Rail
MC10173P	PDIP-16	25 Units / Rail
MC10173FN	PLCC-20	46 Units / Rail

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		73			66		73	mAdc
Input Current	I _{inH}	5		470			295		295	μAdc
		6		470			295		295	
		7		400			250		250	
		9		400			250		250	
	I _{inL}	All	0.5		0.5			0.3		μAdc
Output Voltage Logic 1	V _{OH}	1 2	−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 _{OL}	1 2	−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 _{OHA}	1 2	−1.080 −1.080		−0.980 −0.980			−0.910 −0.910		Vdc
Threshold Voltage Logic 0	V _{OLA}	1 2		−1.655 −1.655			−1.630 −1.630		−1.595 −1.595	Vdc
Switching Times (50Ω Load)										ns
Propagation Delay	Data Input	t ₆₊₁₊	1	0.8	3.7	1.0	2.5	3.5	1.1	5.3
		t _{6−1−}	1	0.8	3.7	1.0	2.5	3.5	1.1	5.3
		t ₅₊₁₊	1	0.8	3.7	1.0	2.5	3.5	1.1	5.3
		t _{5−1−}	1	0.8	3.7	1.0	2.5	3.5	1.1	5.3
	Clock Input	t _{7−1+}	1	1.6	7.2	1.6	4.5	6.8	1.4	6.8
		t _{7−1−}	1	1.6	7.2	1.6	4.5	6.8	1.4	6.8
	Select Input	t ₉₊₁₊	1	1.1	6.2	1.3	3.5	5.7	1.2	6.7
		t _{9+1−}	1	1.1	6.2	1.3	3.5	5.7	1.2	6.7
		t _{9−1+}	1	1.1	6.2	1.3	3.5	5.7	1.2	6.7
		t _{9−1−}	1	1.1	6.2	1.3	3.5	5.7	1.2	6.7
	Setup Time	Data Input	t _{setup}	1	2.0		2.0	1.5		2.0
		Select Input	t _{setup}	1	3.0		3.0	2.5		3.0
Hold Time	Data Input	t _{hold}	1	2.5		2.5	0.0		2.5	
	Select Input	t _{hold}	1	1.5		1.5	−0.5		1.5	
Rise Time	(20 to 80%)	t ₊	1	1.2	4.0	1.5	2.0	3.5	1.4	4.0
Fall Time	(20 to 80%)	t _−	1	1.2	4.0	1.5	2.0	3.5	1.4	4.0

* V_{ILmin} applied to each input pin, one at a time.

MC10173

ELECTRICAL CHARACTERISTICS (continued)

@ Test Temperature			TEST VOLTAGE VALUES (Volts)					(V _{CC}) Gnd	
			V _{IHmax}	V _{ILmin}	V _{IHAmin}	V _{ILAmax}	V _{EE}		
			−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 _{IHAmin}	V _{ILAmax}	V _{EE}		
Power Supply Drain Current	I _E	8					8	16	
Input Current		5	5				8	16	
		6	6				8	16	
		7	7				8	16	
		9	9				8	16	
	I _{inL}	All		*			8	16	
Output Voltage Logic 1	V _{OH}	1	6, 9	7			8	16	
		2	5	7			8	16	
Output Voltage Logic 0	V _{OL}	1	9	7			8	16	
		2		7			8	16	
Threshold Voltage Logic 1	V _{OHA}	1	9	7	6		8	16	
		2		7	5		8	16	
Threshold Voltage Logic 0	V _{OLA}	1	9	7		6	8	16	
		2		7		5	8	16	
Switching Times (50Ω Load)			+1.11V	+0.31V	Pulse In	Pulse Out	−3.2 V	+2.0 V	
Propagation Delay	Data Input	t ₆₊₁₊	1	9	7	6	1	8	16
		t _{6−1−}	1	9	7	6	1	8	16
		t ₅₊₁₊	1		7	5	1	8	16
		t _{5−1−}	1		7	5	1	8	16
	Clock Input	t _{7−1+}	1			5, 7	1	8	16
		t _{7−1−}	1			5, 7	1	8	16
	Select Input	t ₉₊₁₊	1	6	7	9	1	8	16
		t _{9+1−}	1	5	7	9	1	8	16
		t _{9−1+}	1	5	7	9	1	8	16
		t _{9−1−}	1	6	7	9	1	8	16
Setup Time	Data Input	t _{setup}	1			5, 7	1	8	16
	Select Input	t _{setup}	1	6		7, 9	1	8	16
Hold Time	Data Input	t _{hold}	1			5, 7	1	8	16
	Select Input	t _{hold}	1	6		7, 9	1	8	16
Rise Time	(20 to 80%)	t ₊	1	5		7	1	8	16
Fall Time	(20 to 80%)	t _−	1			7	1	8	16

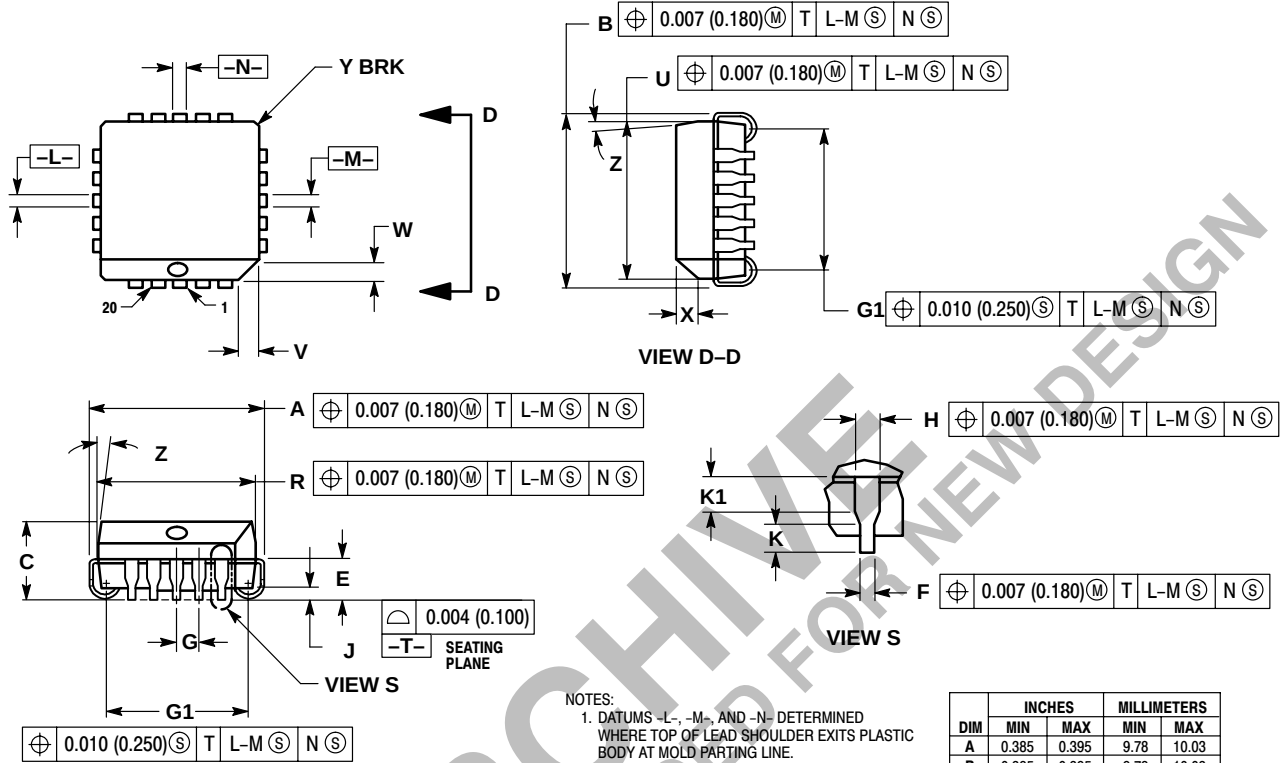
* V_{ILmin} applied to each input pin, one at a time.

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.

MC10173

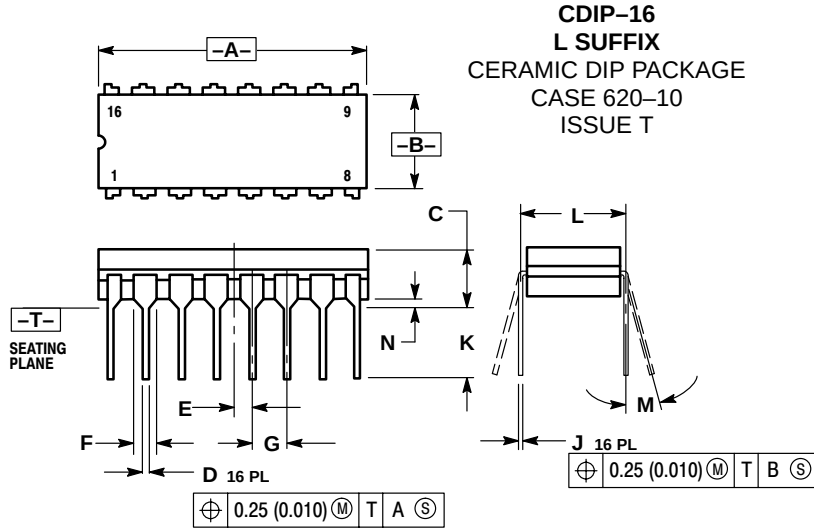
PACKAGE DIMENSIONS

PLCC-20
FN SUFFIX
PLASTIC PLCC PACKAGE
CASE 775-02
ISSUE C



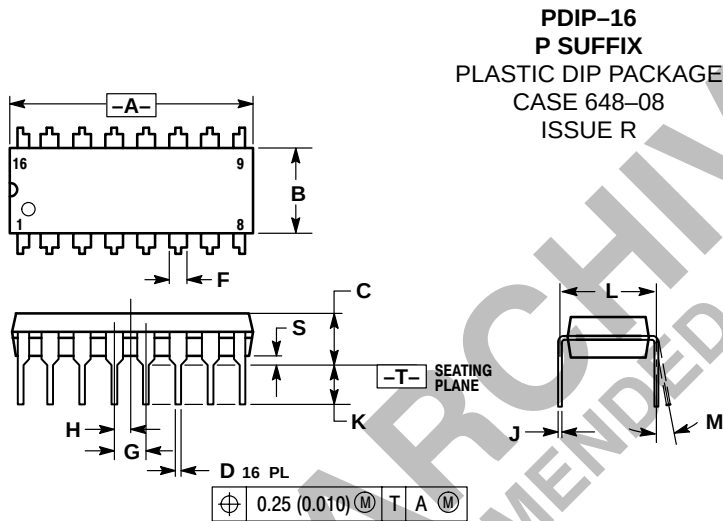
MC10173

PACKAGE DIMENSIONS



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
 4. DIMENSION F MAY NARROW TO 0.76 (0.030) WHERE THE LEAD ENTERS THE CERAMIC BODY.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.750	0.785	19.05	19.93
B	0.240	0.295	6.10	7.49
C	---	0.200	---	5.08
D	0.015	0.020	0.39	0.50
E	0.050 BSC		1.27 BSC	
F	0.055	0.065	1.40	1.65
G	0.100 BSC		2.54 BSC	
H	0.008	0.015	0.21	0.38
J	0.125	0.170	3.18	4.31
K	0.300 BSC		7.62 BSC	
L	0°	15°	0°	15°
M	0.020	0.040	0.51	1.01
N				



- 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

Notes

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Notes

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