Quad 2-Input Multiplexer (Inverting)

The MC10159 is a quad two channel multiplexer with enable. It incorporates common enable and common data select inputs. The select input determines which data inputs are enabled. A high (H) level enables data inputs D00, D10, D20, and D30. A low (L) level enables data inputs D01, D11, D21, and D31. Any change on the data inputs will be reflected at the outputs while the enable is low. Input levels are inverted at the output.

- $P_D=218 \text{ mW typ/pkg (No Load)}$
- t_{pd} =2.5 ns typ (Data to Q)
- 3.2 ns typ (Select to Q)
- t_r , $t_f=2.5$ ns typ (20%–80%)

LOGIC DIAGRAM V_{CC} = PIN 16 SELECT 9 V_{EE} = PIN 8 D01 5 D00 6 D11 3 D10 4 **ENABLE 7** D21 12 D20 13 D31 10 D30 11 **DIP PIN ASSIGNMENT** Q0 V_{CC} Q1 15 Q2 D11 14 Q3 D10 13 D20 D01 D21 12 6 D30 D00 11 ENABLE 10 D31

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).

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SELECT



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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

TRUTH TABLE

Enable	Select	D0	D1	Q
L	L	Х	L	Н
L	L	Х	Н	L
L	Н	L	Х	Н
L	Н	Н	Х	L
Н	Х	Х	Х	L

ORDERING INFORMATION

Device	Package	Shipping	
MC10159L	CDIP-16	25 Units / Rail	
MC10159P	PDIP-16	25 Units / Rail	
MC10159FN	PLCC-20	46 Units / Rail	

 V_{EE}

ELECTRICAL CHARACTERISTICS

						7	Test Limits	;			
			Pin Under	-30	D°C		+25°C		+85	5°C	
Characteristic		Symbol	Test	Min	Max	Min	Тур	Max	Min	Max	Unit
Power Supply Dra	in Current	Ι _Ε	8		58		42	53		58	mAdc
Input Current		I _{inH}	9 5		360 400			225 250		225 250	μAdc
		l _{inL}	5	0.5		0.5			0.3		μAdc
Output Voltage	Logic 1	V _{OH}	1	-1.060	-0.890	-0.960		-0.810	-0.890	-0.700	Vdc
Output Voltage	Logic 0	V _{OL}	1	-1.890	-1.675	-1.850		-1.650	-1.825	-1.615	Vdc
Threshold Voltage	e Logic 1	V _{OHA}	1	-1.080		-0.980			-0.910		Vdc
Threshold Voltage	Logic 0	V_{OLA}	1		-1.655			-1.630		-1.595	Vdc
Switching Times	(50Ω Load)									C	ns
•	Data Input Select Input nable Input	t ₅₊₁₋ t ₉₊₁₋ t ₇₊₁₋	1 1 1	1.1 1.5 1.4	3.8 5.3 5.3	1.2 1.5 1.5	2.5 3.2 2.5	3.3 5.0 5.0	1.1 1.5 1.4	3.8 5.3 5.3	
Rise Time ((20 to 80%)	t ₁₊	1	1.0	3.7	1.1	2.5	3.5	1.0	3.7	
Fall Time ((20 to 80%)	t ₁₋	1	1.0	3.7	1.1	2.5	3.5	1.0	3.7	

ELECTRICAL CHARACTERISTICS (continued)

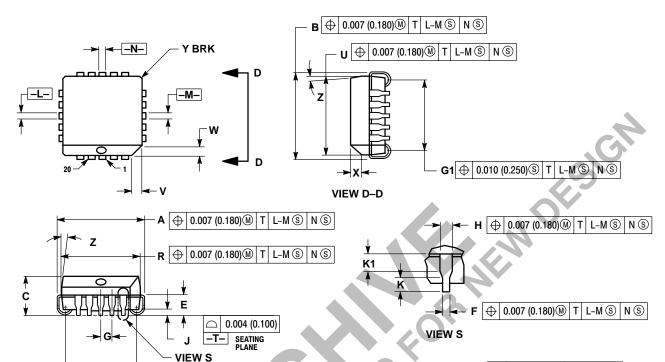
		TEST VOLTAGE VALUES (Volts)							
@ Test Temperature			V _{IHmax}	V _{ILmin}	V _{IHAmin}	V _{ILAmax}	V _{EE}		
	-30°C			-0.890	-1.890	-1.205	-1.500	-5.2	
			+25°C	-0.810	-1.850	-1.105	-1.475	-5.2	
			+85°C	-0.700	-1.825	-1.035	-1.440	-5.2	
			Pin	TEST V	OLTAGE AP	PLIED TO P	INS LISTED I	BELOW	
Characteris	tic	Symbol	Under Test	V _{IHmax}	V _{ILmin}	V _{IHAmin}	V _{ILAmax}	V _{EE}	(V _{CC}) Gnd
Power Supply Drain Cu	ırrent	Ē	8					8	16
Input Current	,	l _{inH}	9 6	9 5				8 8	16 16
		l _{inL}	5		5			8	16
Output Voltage	Logic 1	V _{OH}) 1					8	16
Output Voltage	Logic 0	V_{OL}	1	5				8	16
Threshold Voltage	Logic 1	V_{OHA}	1	9			6	8	16
Threshold Voltage	Logic 0	V_{OLA}	1	9		6		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 ₅₊₁₋	1			5	1	8	16
	Select Input Enable Input	t ₉₊₁₋ t ₇₊₁₋	1 1	6 3, 12		9 7	1	8	16
Rise Time	(20 to 80%)	t ₁₊	1	9		5	1	8	16
Fall Time	(20 to 80%)	t ₁₋	1	9		5	1	8	16

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.

PACKAGE DIMENSIONS

PLCC-20 **FN SUFFIX**

PLASTIC PLCC PACKAGE CASE 775-02 ISSUE C



NOTES:

G1 ⊕ 0.010 (0.250)③ T L-M ⑤ N ⑤

OF VICE NOT PRESCO

- OTES:

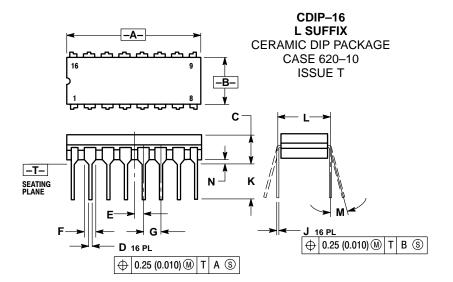
 1. DATUMS -L-, -M-, AND -N- DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.

 2. DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM -T-, SEATING PLANE.

 3. DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.

 4. DIMENSIONING AND TOLERANCING PER ANSI V14 5M 1982
- Y14.5M, 1982. CONTROLLING DIMENSION: INCH.
- THE PACKAGE TOP MAY BE SMALLER THAN THE PACKAGE BOTTOM BY UP TO 0.012 (0.300). DIMENSIONS R AND U ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY EXCLUSIVE OF MOLD FLASH, TIE BAR BURRS, GATE BURRS AND INTERLEAD FLASH, BUT INCLUDING ANY MISMATCH BETWEEN THE TOP AND BOTTOM OF THE PLASTIC BODY.
- DIMENSION H DOES NOT INCLUDE DAMBAR PROTRUSION OR INTRUSION. THE DAMBAR PROTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO BE GREATER THAN 0.037 (0.940). THE DAMBAR INTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO BE SMALLER THAN 0.025 (0.635).

	INC	HES	MILLIM	ETERS
DIM	MIN	MAX	MIN	MAX
Α	0.385	0.395	9.78	10.03
В	0.385	0.395	9.78	10.03
С	0.165	0.180	4.20	4.57
E	0.090	0.110	2.29	2.79
F	0.013	0.019	0.33	0.48
G	0.050	BSC	1.27	BSC
Н	0.026	0.032	0.66	0.81
J	0.020		0.51	
K	0.025		0.64	
R	0.350	0.356	8.89	9.04
U	0.350	0.356	8.89	9.04
٧	0.042	0.048	1.07	1.21
W	0.042	0.048	1.07	1.21
X	0.042	0.056	1.07	1.42
Y		0.020		0.50
Z	2°	10°	2 °	10 °
G1	0.310	0.330	7.88	8.38
K1	0.040		1.02	



NOTES:

- ANIES.

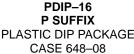
 DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.

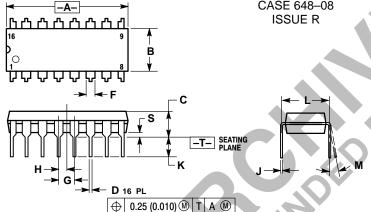
 CONTROLLING DIMENSION: INCH.

 DIMENSION L TO CENTER OF LEAD WHEN

- FORMED PARALLEL.
 DIMENSION F MAY NARROW TO 0.76 (0.030) WHERE THE LEAD ENTERS THE CERAMIC

	INC	HES	MILLIN	IETERS	
DIM	MIN MAX		MIN	MAX	
Α	0.750	0.785	19.05	19.93	
В	0.240	0.295	6.10	7.49	
С		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		
Н	0.008	0.015	0.21	0.38	
K	0.125	0.170	3.18	4.31	
L	0.300	BSC	7.62 BSC		
M	0 °	15°	0 °	15°	
N	0.020	0.040	0.51	1.01	





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

	INC	HES	MILLIN	IETERS	
DIM	MIN	MAX	MIN	MAX	
Α	0.740	0.770	18.80	19.55	
В	0.250	0.270	6.35	6.85	
С	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		
Н	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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