

September 1986 Revised June 2001

# DM74150 Data Selectors/Multiplexers

## **General Description**

These data selectors/multiplexers contain full on-chip decoding to select the desired data source. The DM74150 selects one-of-sixteen data sources. The DM74150 has a strobe input which must be at a LOW logic level to enable these devices. A HIGH level at the strobe forces the W output HIGH and the Y output (as applicable) LOW.

The DM74150 features an inverted (W) output only.

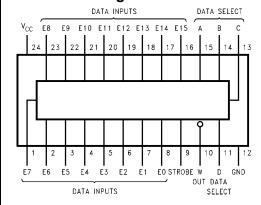
#### **Features**

- 150 selects one-of-sixteen data lines
- Performs parallel-to-serial conversion
- Permits multiplexing from N lines to one line
- Also for use as Boolean function generator
- Typical average propagation delay time, data input to W output: 11 ns
- Typical power dissipation: 200 mW

## **Ordering Code:**

Order Number	Package Number	Package Description
DM74150N	N24A	24-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-011, 0.600" Wide

## **Connection Diagram**



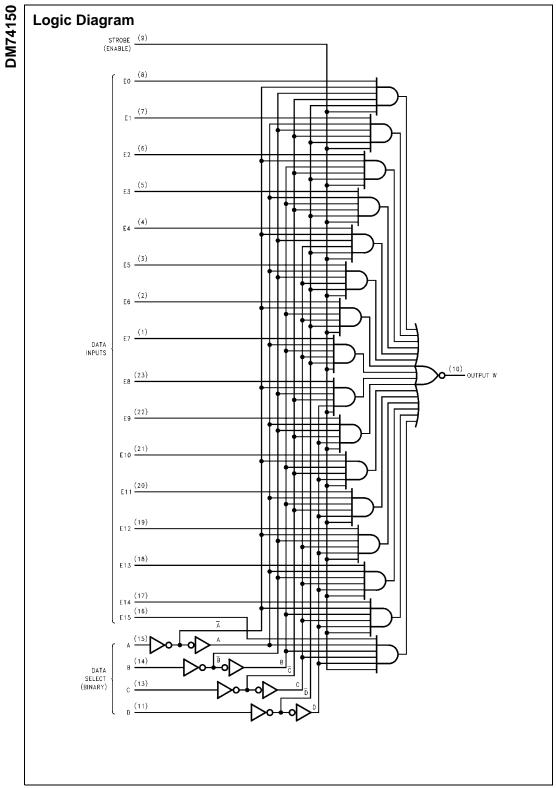
#### **Function Table**

Inputs					Outputs
	Select			Strobe	W
D	С	В	Α	S	
Х	Х	Х	Х	Н	Н
L	L	L	L	L	E0
L	L	L	Н	L	E1
L	L	Н	L	L	E2
L	L	Н	Н	L	E3
L	Н	L	L	L	E4
L	Н	L	Н	L	E5
L	Н	Н	L	L	E6
L	Н	Н	Н	L	E7
Н	L	L	L	L	E8
Н	L	L	Н	L	E9
Н	L	Н	L	L	E10
Н	L	Н	Н	L	E11
Н	Н	L	L	L	E12
Н	Н	L	Н	L	E13
Н	Н	Н	L	L	E14
Н	Н	Н	Н	L	E15

H = HIGH Level L = LOW Level

 $X = \underline{\text{Do}}$ n't  $\underline{\text{Care}}$ 

 $\overline{E0}$ ,  $\overline{E1}$  ...  $\overline{E15}$  = the complement of the level of the respective E input



## **Absolute Maximum Ratings**(Note 1)

Supply Voltage 7V Input Voltage 5.5V Operating Free Air Temperature Range  $0^{\circ}\text{C to } +70^{\circ}\text{C}$  Storage Temperature Range  $-65^{\circ}\text{C to } +150^{\circ}\text{C}$ 

Note 1: The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

# **Recommended Operating Conditions**

Symbol	Parameter	Min	Nom	Max	Units
V <sub>CC</sub>	Supply Voltage	4.75	5	5.25	V
V <sub>IH</sub>	HIGH Level Input Voltage	2			V
V <sub>IL</sub>	LOW Level Input Voltage			0.8	V
Гон	HIGH Level Output Current			-0.8	mA
I <sub>OL</sub>	LOW Level Output Current			16	mA
T <sub>A</sub>	Free Air Operating Temperature	0		70	°C

### **Electrical Characteristics**

over recommended operating free air temperature range (unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ (Note 2)	Max	Units
VI	Input Clamp Voltage	$V_{CC} = Min, I_I = -12 \text{ mA}$			-1.5	V
V <sub>OH</sub>	HIGH Level Output Voltage	$V_{CC} = Min, I_{OH} = Max$ $V_{IL} = Max, V_{IH} = Min$	2.4			V
V <sub>OL</sub>	LOW Level Output Voltage	$V_{CC} = Min, I_{OL} = Max$ $V_{IH} = Min, V_{IL} = Max$			0.4	V
I <sub>I</sub>	Input Current @ Max Input Voltage	$V_{CC} = Max, V_I = 5.5V$			1	mA
I <sub>IH</sub>	HIGH Level Input Current	$V_{CC} = Max, V_I = 2.4V$			40	μΑ
I <sub>IL</sub>	LOW Level Input Current	$V_{CC} = Max, V_I = 0.4V$			-1.6	mA
Ios	Short Circuit Output Current	V <sub>CC</sub> = Max (Note 3)	-18		-55	mA
I <sub>CC</sub>	Supply Current	V <sub>CC</sub> = Max (Note 4)		40	68	mA

**Note 2:** All typicals are at  $V_{CC} = 5V$ ,  $T_A = 25^{\circ}C$ .

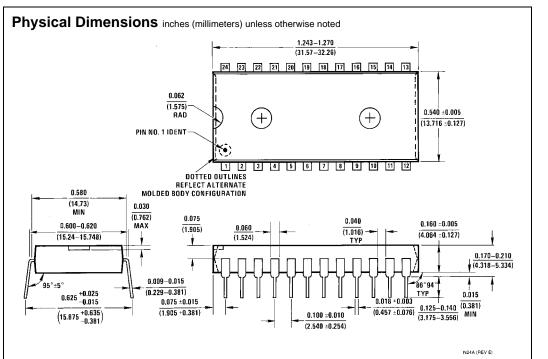
Note 3: Not more than one output should be shorted at a time.

Note 4:  $I_{CC}$  is measured with the strobe and data select inputs at 4.5V, all other inputs and outputs OPEN.

## **Switching Characteristics**

at  $V_{CC} = 5V$  and  $T_A = 25^{\circ}C$ 

Symbol	Parameter	From (Input)	$R_L = 400\Omega$ , $C_L = 15 pF$		Units
- Cyllibol		To (Output)	Min	Max	]
t <sub>PLH</sub>	Propagation Delay Time	Select to W		35	ns
	LOW-to-HIGH Level Output			33	115
t <sub>PHL</sub>	Propagation Delay Time	Select to W		33	ns
	HIGH-to-LOW Level Output			33	
t <sub>PLH</sub>	Propagation Delay Time	Strobe to W		24	ns
	LOW-to-HIGH Level Output			2-7	.10
t <sub>PHL</sub>	Propagation Delay Time	Strobe to W		30	ns
	HIGH-to-LOW Level Output			00	
t <sub>PLH</sub>	Propagation Delay Time	E0-E15 to W	E0-E15 to W	20	ns
	LOW-to-HIGH Level Output			20	
t <sub>PHL</sub>	Propagation Delay Time	E0-E15 to W		14	ns
	HIGH-to-LOW Level Output				



24-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-011, 0.600" Wide Package Number N24A

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