FAIRCHILD
SEMICONDUCTOR®

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DM74ALS151
1 of 8 Line Data Selector/Multiplexer

Features

■ Advanced oxide-isolated, ion-implanted Schottky TTL process
■ Switching performance is guaranteed over full temperature and V_{CC} supply range
■ Pin and functional compatible with LS family counterpart
■ Improved output transient handling capability

General Description

This Data Selector/Multiplexer contains full on-chip decoding to select one-of-eight data sources as a result of a unique three-bit binary code at the Select inputs. Two complementary outputs provide both inverting and non-inverting buffer operation. A Strobe input is provided which, when at the high level, disables all data inputs and forces the Y output to the LOW state and the W output to the HIGH state. The Select input buffers incorporate internal overlap features to ensure that select input changes do not cause invalid output transients.

Ordering Information

Order Number	Package Number	Package Description
DM74ALS151M	M16A	16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow

Devices also available in Tape and Reel. Specify by appending the suffix letter "X" to the ordering number.

Connection Diagram
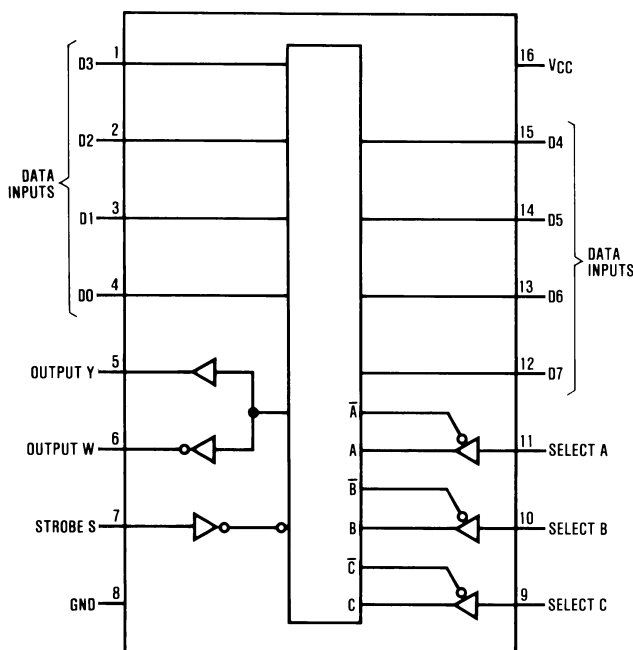
Function Table

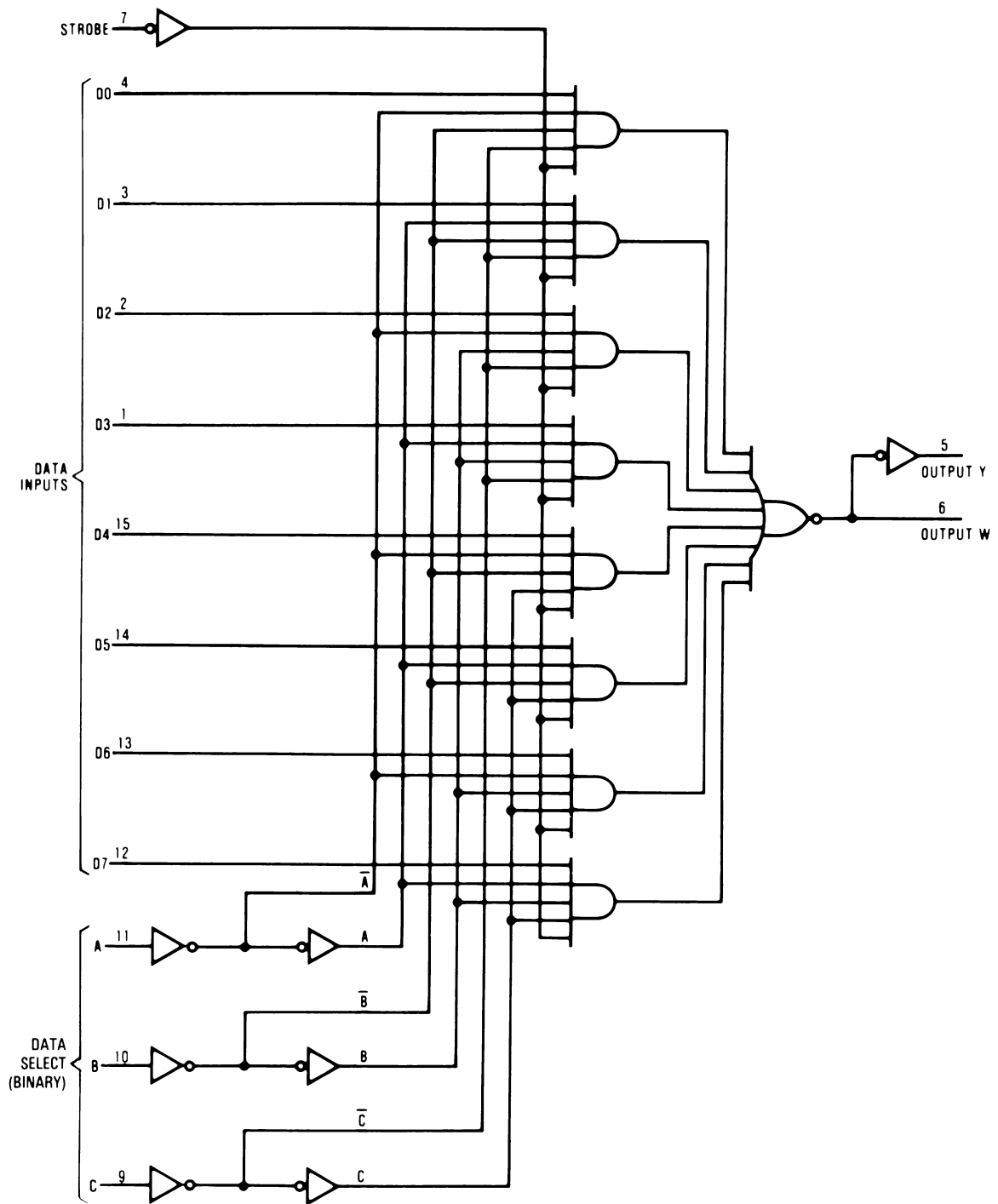| Inputs				Outputs	
Select			Strobe		
C	B	A	S	Y	W
X	X	X	H	L	H
L	L	L	L	D0	$\overline{D0}$
L	L	H	L	D1	$\overline{D1}$
L	H	L	L	D2	$\overline{D2}$
L	H	H	L	D3	$\overline{D3}$
H	L	L	L	D4	$\overline{D4}$
H	L	H	L	D5	$\overline{D5}$
H	H	L	L	D6	$\overline{D6}$
H	H	H	L	D7	$\overline{D7}$

H = HIGH Level
L = LOW Level
X = Don't Care
D0 thru D7 = the level of the respective D input

Logic Diagram

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Symbol	Parameter	Rating
V_{CC}	Supply Voltage	7V
V_I	Input Voltage	7V
T_A	Operating Free Air Temperature Range	0°C to +70°C
T_{STG}	Storage Temperature Range	−65°C to +150°C
θ_{JA}	Typical Thermal Resistance	107.0°C/W

Recommended Operating Conditions

The Recommended Operating Conditions table defines the conditions for actual device operation. Recommended operating conditions are specified to ensure optimal performance to the datasheet specifications. Fairchild does not recommend exceeding them or designing to absolute maximum ratings.

Symbol	Parameter	Min.	Nom.	Max.	Units
V_{CC}	Supply Voltage	4.5	5	5.5	V
V_{IH}	HIGH Level Input Voltage	2			V
V_{IL}	LOW Level Input Voltage			0.8	V
I_{OH}	HIGH Level Output Current			−2.6	mA
I_{OL}	LOW Level Output Current			24	mA
T_A	Free Air Operating Temperature	0		70	°C

Electrical Characteristics

Over recommended operating free-air temperature range. All typical values are measured at V_{CC} = 5V, T_A = 25°C.

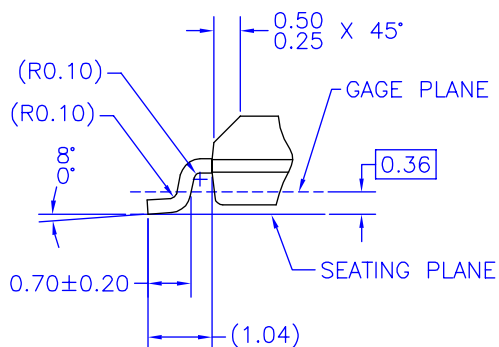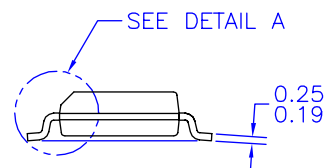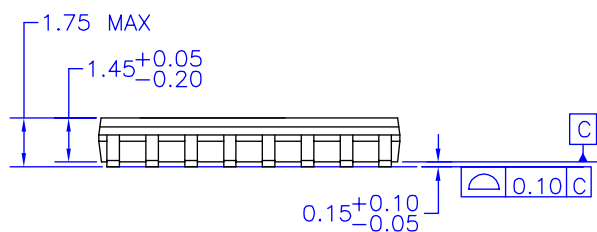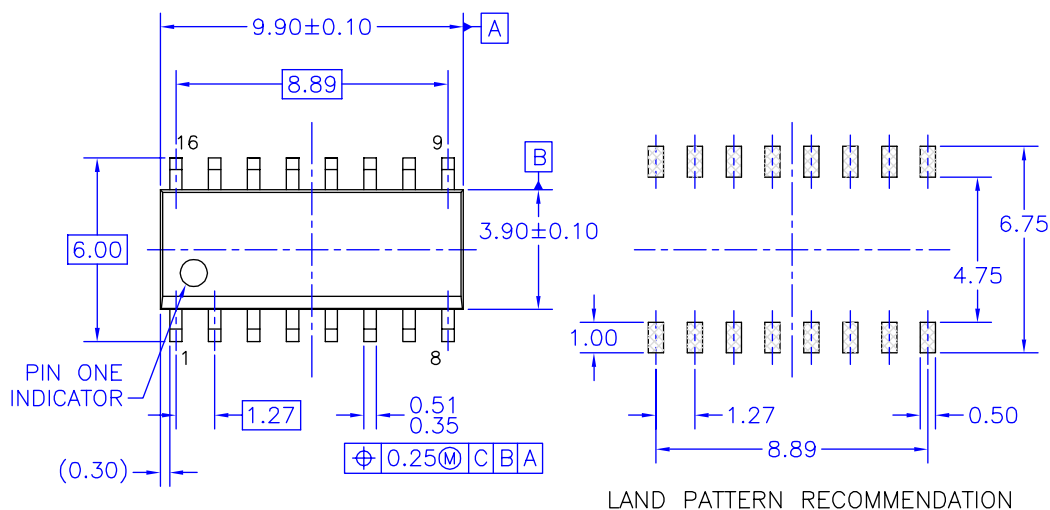| Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V_{IK}	Input Clamp Voltage	V_{CC} = 4.5V, I_{IN} = −18mA			−1.5	V
V_{OH}	HIGH Level Output Voltage	V_{CC} = 4.5V, I_{OH} = Max.	2.4	3.2		V
		I_{OH} = −400µA, V_{CC} = 4.5V to 5.5V	V_{CC} − 2			
V_{OL}	LOW Level Output Voltage	V_{CC} = 4.5V, I_{OL} = 24mA		0.35	0.5	V
I_I	Input Current at Maximum Input Voltage	V_{CC} = 5.5V, V_{IN} = 7V			0.1	mA
I_{IH}	HIGH Level Input Current	V_{CC} = 5.5V, V_{IN} = 2.7V			20	µA
I_{IL}	LOW Level Input Current	V_{CC} = 5.5V, V_{IN} = 0.4V			−0.1	mA
I_O	Output Drive Current	V_{CC} = 5.5V, V_{OUT} = 2.25V	−30		−112	mA
I_{CC}	Supply Current	V_{CC} = 5.5V, All Inputs = 4.5V		7.5	12	mA

Switching Characteristics

Over recommended operating free air temperature range.

Symbol	Parameter	Conditions	From	To	Min.	Max.	Units
t_{PLH}	Propagation Delay Time, LOW-to-HIGH Level Output	V_{CC} = 4.5V to 5.5V, C_L = 50pF, R_L = 500Ω	Select	Y	4	18	ns
t_{PHL}	Propagation Delay Time, HIGH-to-LOW Level Output		Select	Y	8	24	ns
t_{PLH}	Propagation Delay Time, LOW-to-HIGH Level Output		Select	W	7	24	ns
t_{PHL}	Propagation Delay Time, HIGH-to-LOW Level Output		Select	W	7	23	ns
t_{PLH}	Propagation Delay Time, LOW-to-HIGH Level Output		Data	Y	3	10	ns
t_{PHL}	Propagation Delay Time, HIGH-to-LOW Level Output		Data	Y	5	15	ns
t_{PLH}	Propagation Delay Time, LOW-to-HIGH Level Output		Data	W	3	15	ns
t_{PHL}	Propagation Delay Time, HIGH-to-LOW Level Output		Data	W	4	15	ns
t_{PLH}	Propagation Delay Time, LOW-to-HIGH Level Output		Strobe	Y	4	18	ns
t_{PHL}	Propagation Delay Time, HIGH-to-LOW Level Output		Strobe	Y	4	19	ns
t_{PLH}	Propagation Delay Time, LOW-to-HIGH Level Output		Strobe	W	5	19	ns
t_{PHL}	Propagation Delay Time, HIGH-to-LOW Level Output		Strobe	W	5	23	ns

Physical Dimensions
Dimensions are in millimeters unless otherwise noted.

9.90±0.10 A

8.89

16   9

B

3.90±0.10

6.00

1.00

6.75

4.75

PIN ONE
INDICATOR

1   8

0.51
0.35

(0.30)

1.27

⊕ 0.25 Ⓜ C B A

1.27

0.50

8.89

LAND PATTERN RECOMMENDATION

1.75 MAX

1.45 +0.05 −0.20

SEE DETAIL A

C

0.25
0.19

0.10 C

0.15 +0.10 −0.05

0.50
0.25 X 45°

(R0.10)
(R0.10)

GAGE PLANE

8°
0°

0.36

0.70±0.20

SEATING PLANE

(1.04)

DETAIL A
SCALE: 2:1

M16AREVK

NOTES: UNLESS OTHERWISE SPECIFIED

A) THIS PACKAGE CONFORMS TO JEDEC
    MS−012, VARIATION AC, ISSUE C,
    DATED MAY 1990.
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONS DO NOT INCLUDE MOLD
    FLASH OR BURRS.
D) STANDARD LEAD FINISH:
    200 MICROINCHES / 5.08 MICRONS MIN.
    LEAD/TIN (SOLDER) ON COPPER.

**Figure 1. 16-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow
Package Number M16A**

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