

## DM74ALS157/DM74ALS158 Quad 1 of 2 Line Data Selector/Multiplexer

### General Description

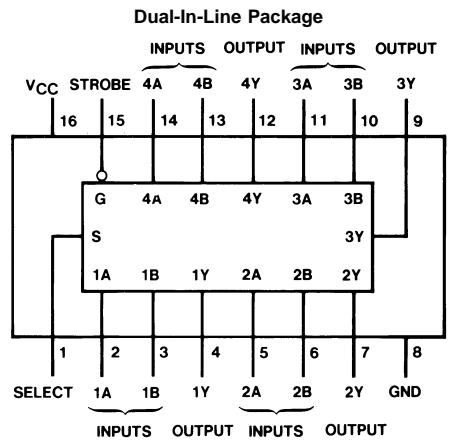
These data selectors/multiplexers contain inverters and drivers to supply full on-chip data selection to the four output gates. A separate strobe input is provided. A 4-bit word is selected from one of two sources and is routed to the four outputs. The ALS157 presents true data whereas the ALS158 presents inverted data to minimize propagation delay time.

### Features

- Switching specifications at 50 pF
- Switching specifications guaranteed over full temperature and  $V_{CC}$  range

- Advanced oxide-isolated, ion-implanted Schottky TTL process
- Functionally and pin for pin compatible with Schottky and low power Schottky TTL counterpart
- Improved AC performance over Schottky and low power Schottky counterparts
- Expand any data input point
- Multiplex dual data buses
- General four functions of two variables (one variable is common)
- Source programmable counters

### Connection Diagram



Order Number DM74ALS157M, SJ, N or DM74ALS158M, SJ, N  
See Package Number M16A, M16D or N16A

### Function Table

Inputs		Output Y			
Strobe	Select	A	B	ALS157	ALS158
H	X	X	X	L	H
L	L	L	X	L	H
L	L	H	X	H	L
L	H	X	L	L	H
L	H	X	H	H	L

H = High Level  
L = Low Level  
X = Don't Care

### Absolute Maximum Ratings (Note 1)

Supply Voltage 7V  
Input Voltage 7V

Operating Free Air Temperature Range

DM74ALS 0°C to +70°C  
Storage Temperature Range -65°C to +150°C

### Recommended Operating Conditions

Symbol	Parameter	DM74ALS157,158			Units
		Min	Nom	Max	
V <sub>CC</sub>	Supply Voltage	4.5	5	5.5	V
V <sub>IH</sub>	High Level Input Voltage	2			V
V <sub>IL</sub>	Low Level Input Voltage			0.8	V
I <sub>OH</sub>	High Level Output Current			-0.4	mA
I <sub>OL</sub>	Low Level Output Current			8	mA
T <sub>A</sub>	Free Air Operating Temperature	0		70	°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" table are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

### Electrical Characteristics

over recommended operating free air temperature range. All typical values are measured at V<sub>CC</sub> = 5V, T<sub>A</sub> = 25°C.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V <sub>IK</sub>	Input Clamp Voltage	V <sub>CC</sub> = 4.5V, I <sub>I</sub> = -18 mA			-1.2	V
V <sub>OH</sub>	High Level Output Voltage	I <sub>OH</sub> = -0.4 mA, V <sub>CC</sub> = 4.5V to 5.5V	V <sub>CC</sub> - 2			V
V <sub>OL</sub>	Low Level Output Voltage	V <sub>CC</sub> = 4.5V	I <sub>OL</sub> = 4 mA	0.25	0.4	V
			I <sub>OL</sub> = 8 mA	0.35	0.5	V
I <sub>I</sub>	Input Current @ Max Input Voltage	V <sub>CC</sub> = 5.5V, V <sub>IH</sub> = 7V			0.1	mA
I <sub>IH</sub>	High Level Input Current	V <sub>CC</sub> = 5.5V, V <sub>IH</sub> = 2.7V			20	µA
I <sub>IL</sub>	Low Level Input Current	V <sub>CC</sub> = 5.5V, V <sub>IL</sub> = 0.4V			-0.1	mA
I <sub>O</sub>	Output Drive Current	V <sub>CC</sub> = 5.5V, V <sub>O</sub> = 2.25V	-30		-112	mA
I <sub>CC</sub>	Supply Current	V <sub>CC</sub> = 5.5V	ALS157	6	11	mA
		All Inputs = 4.5V	ALS158	5	10	mA

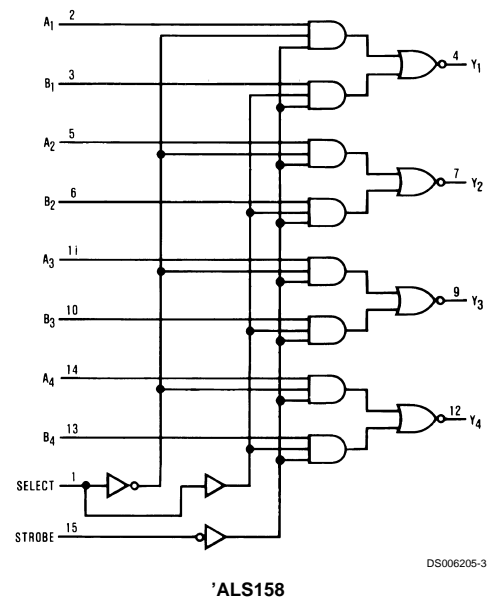
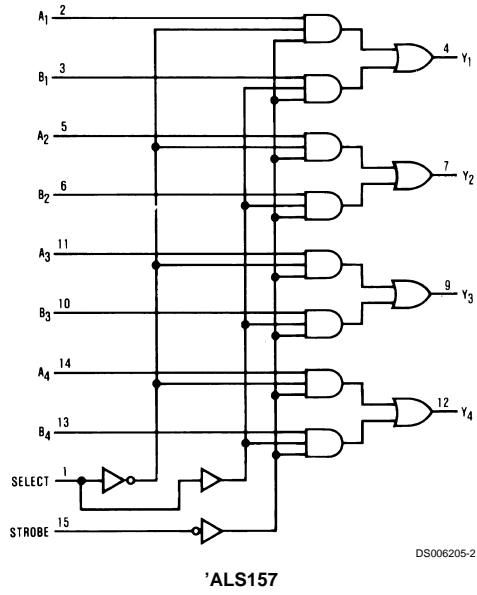
### Switching Characteristics

over recommended operating free air temperature range. (Note 2)

Symbol	Parameter	From (Input) To (Output)	Conditions	DM74ALS157		DM74ALS158		Units
				Min	Max	Min	Max	
t <sub>PLH</sub>	Propagation Delay Time Low to High Level Output	Data to Y	V <sub>CC</sub> = 4.5V to 5.5V C <sub>L</sub> = 50 pF R <sub>L</sub> = 500Ω	3	14	3	15	ns
t <sub>PHL</sub>	Propagation Delay Time High to Low Level Output			2	12	1	8	ns
t <sub>PLH</sub>	Propagation Delay Time Low to High Level Output	Strobe to Y		6	20	5	18	ns
t <sub>PHL</sub>	Propagation Delay Time High to Low Level Output			4	13	5	18	ns
t <sub>PLH</sub>	Propagation Delay Time Low to High Level Output	Select to Y		7	24	5	19	ns
t <sub>PHL</sub>	Propagation Delay Time High to Low Level Output			4	14	5	18	ns

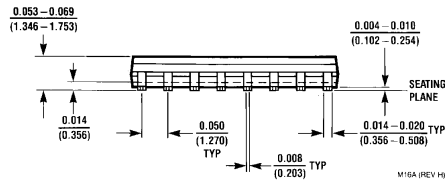
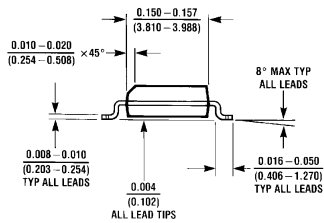
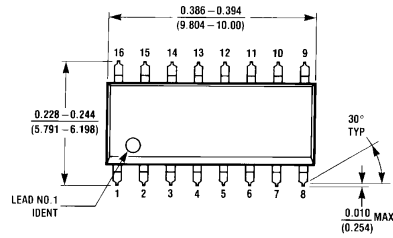
**Note 2:** See Section 1 for test waveforms and output load.

## Logic Diagrams

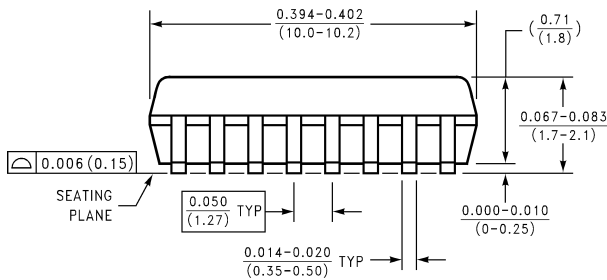
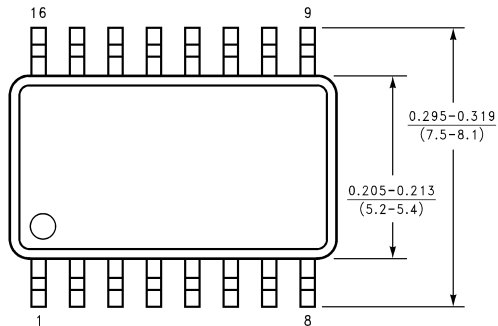




**Physical Dimensions** inches (millimeters) unless otherwise noted

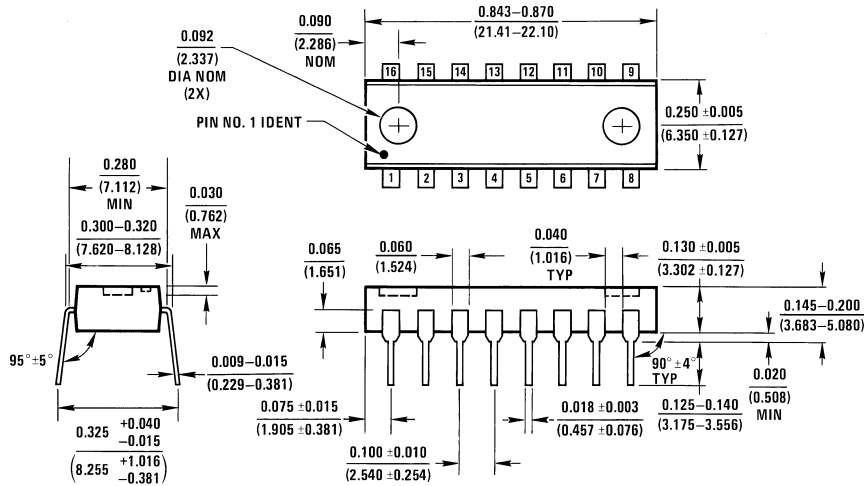


**S.O. Package (M)**  
**Order Number DM74ALS157M or DM74ALS158M**  
**Package Number M16A**



**16-Lead (0.300" Wide) Molded**  
**Small Outline Package, EIAJ**  
**Order Number DM74ALS157SJ or DM74ALS158SJ**  
**Package Number M16D**

**Physical Dimensions** inches (millimeters) unless otherwise noted (Continued)



N16A (REV E)

**Molded Dual-In-Line Package (N)**  
**Order Number DM74ALS157N or DM74ALS158N**  
**Package Number N16A**

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**Fairchild Semiconductor Corporation Americas**  
 Customer Response Center  
 Tel: 1-888-522-5372

**Fairchild Semiconductor Europe**  
 Fax: +49 (0) 1 80-530 85 86  
 Email: europe.support@nsc.com  
 Deutsch Tel: +49 (0) 8 141-35-0  
 English Tel: +44 (0) 1 793-85-68-56  
 Italy Tel: +39 (0) 2 57 5631

**Fairchild Semiconductor Hong Kong Ltd.**  
 13th Floor, Straight Block,  
 Ocean Centre, 5 Canton Rd.  
 Tsimshatsui, Kowloon  
 Hong Kong  
 Tel: +852 2737-7200  
 Fax: +852 2314-0061

**National Semiconductor Japan Ltd.**  
 Tel: 81-3-5620-6175  
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