

DM74ALS157/DM74ALS158

Quad 1 of 2 Line Data Selector/Multiplexer

General Description

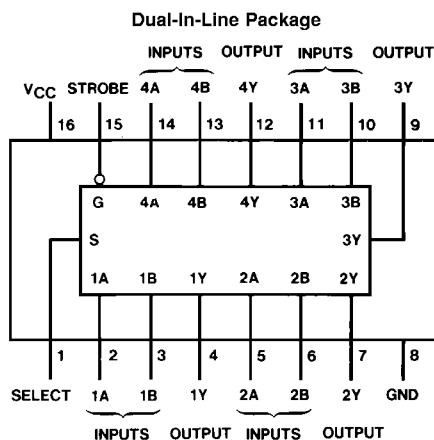
These data selectors/multiplexers contain inverters and drivers to supply full on-chip data selection to the four output gates. A separate strobe input is provided. A 4-bit word is selected from one of two sources and is routed to the four outputs. The ALS157 presents true data whereas the ALS158 presents 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
Input Voltage7V
7V

Operating Free Air Temperature Range

DM74ALS
Storage Temperature Range0°C to +70°C
–65°C to +150°C**Recommended Operating Conditions**

Symbol	Parameter	DM74ALS157,158			Units
		Min	Nom	Max	
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			–0.4	mA
I_{OL}	Low Level Output Current			8	mA
T_A	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 $V_{CC} = 5V$, $T_A = 25^\circ C$.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{IK}	Input Clamp Voltage	$V_{CC} = 4.5V$, $I_I = -18\text{ mA}$			–1.2	V
V_{OH}	High Level Output Voltage	$I_{OH} = -0.4\text{ mA}$, $V_{CC} = 4.5V$ to $5.5V$	$V_{CC} - 2$			V
V_{OL}	Low Level Output Voltage	$V_{CC} = 4.5V$ $I_{OL} = 4\text{ mA}$		0.25	0.4	V
				0.35	0.5	V
I_I	Input Current @ Max Input Voltage	$V_{CC} = 5.5V$, $V_{IH} = 7V$			0.1	mA
I_{IH}	High Level Input Current	$V_{CC} = 5.5V$, $V_{IH} = 2.7V$			20	μA
I_{IL}	Low Level Input Current	$V_{CC} = 5.5V$, $V_{IL} = 0.4V$			–0.1	mA
I_O	Output Drive Current	$V_{CC} = 5.5V$ $V_O = 2.25V$	–30		–112	mA
I_{CC}	Supply Current	$V_{CC} = 5.5V$ All Inputs = $4.5V$	ALS157	6	11	mA
			ALS158	5	10	mA

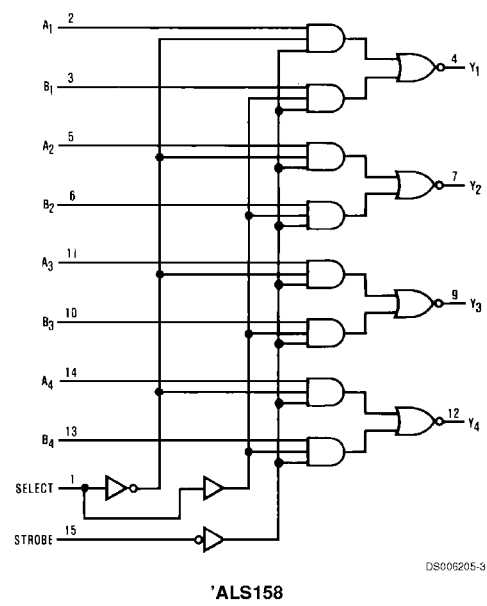
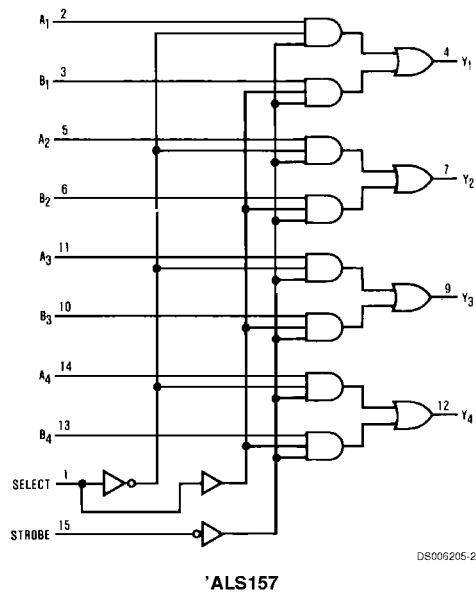
Switching Characteristics

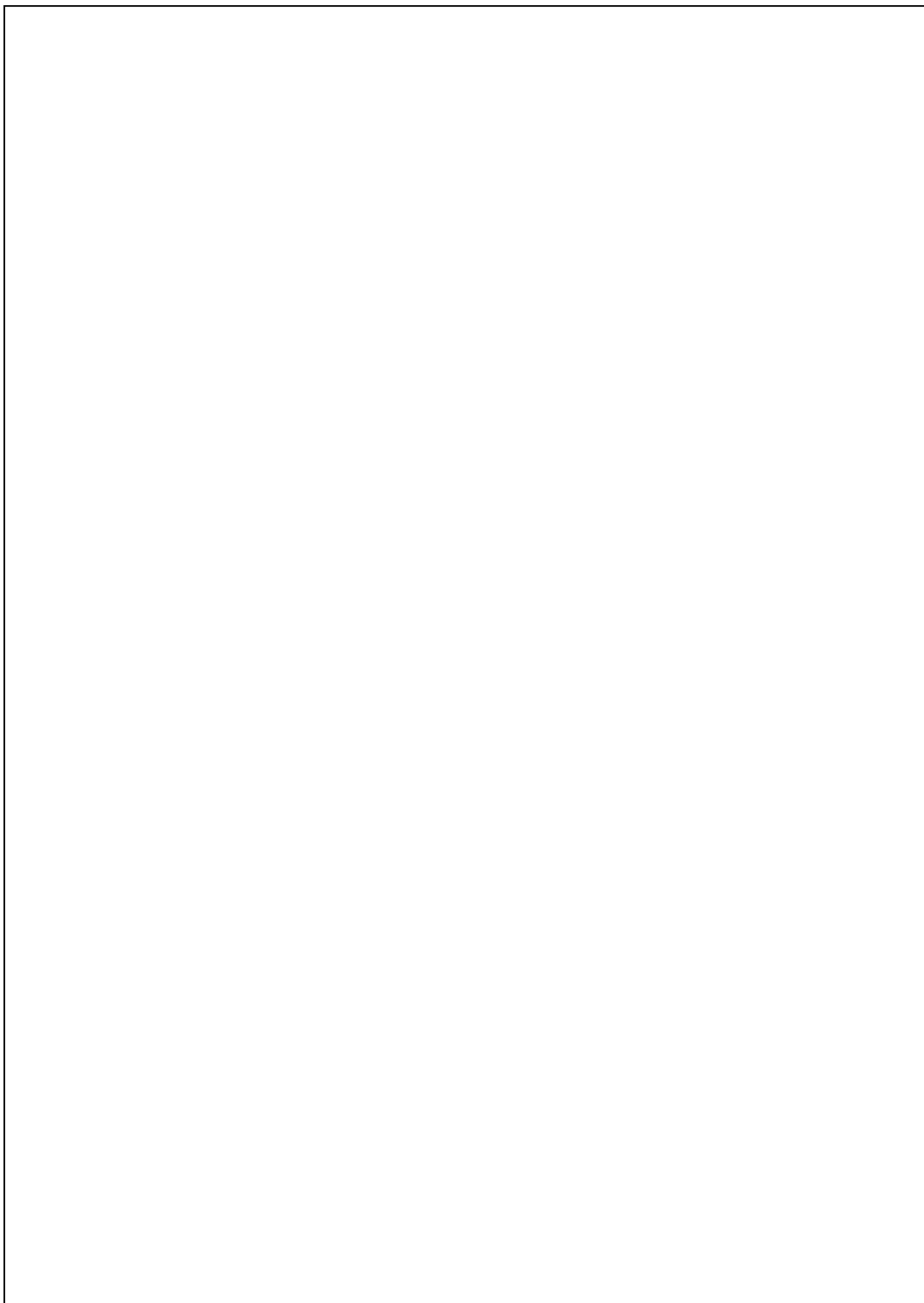
over recommended operating free air temperature range. (Note 2)

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

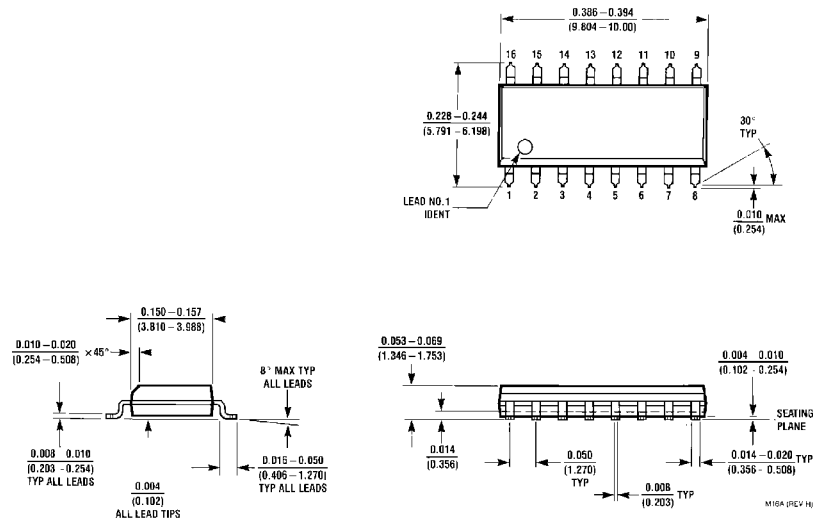
Note 2: See Section 1 for test waveforms and output load.

Logic Diagrams

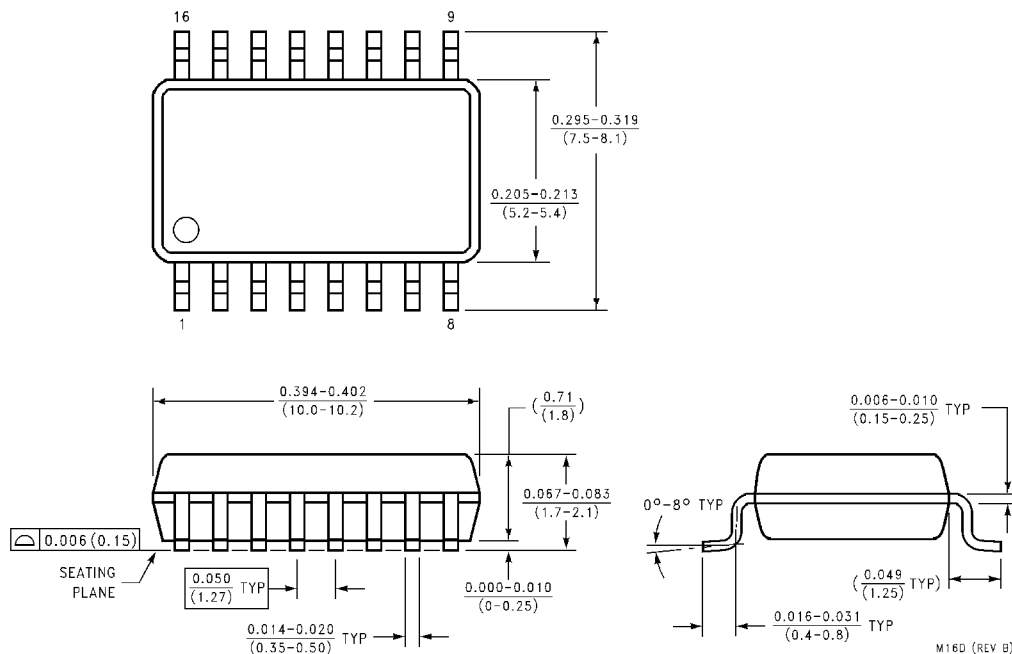




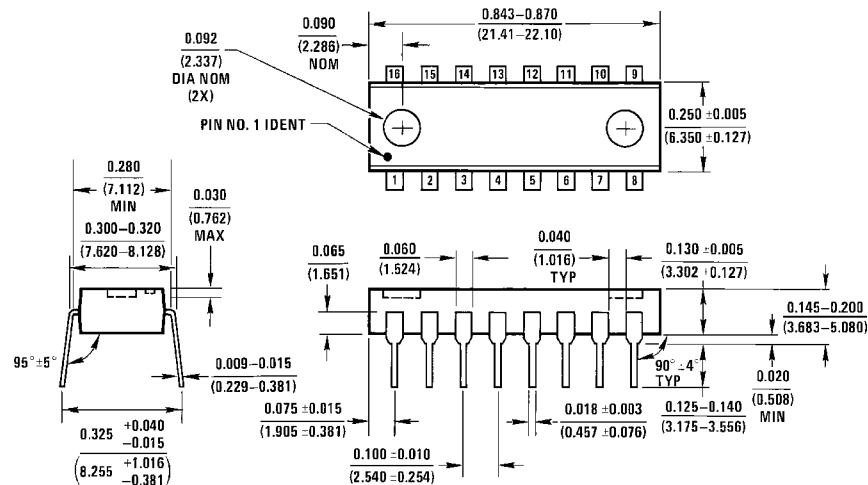
Physical Dimensions inches (millimeters) unless otherwise noted



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 B)

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

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