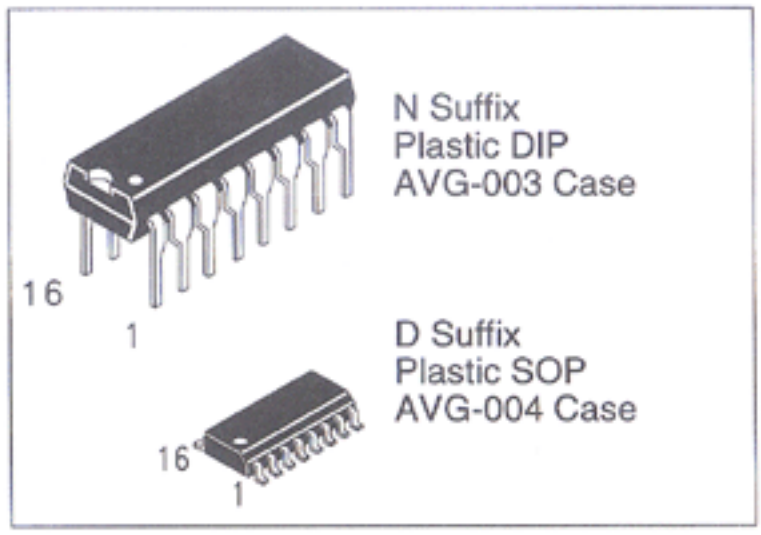
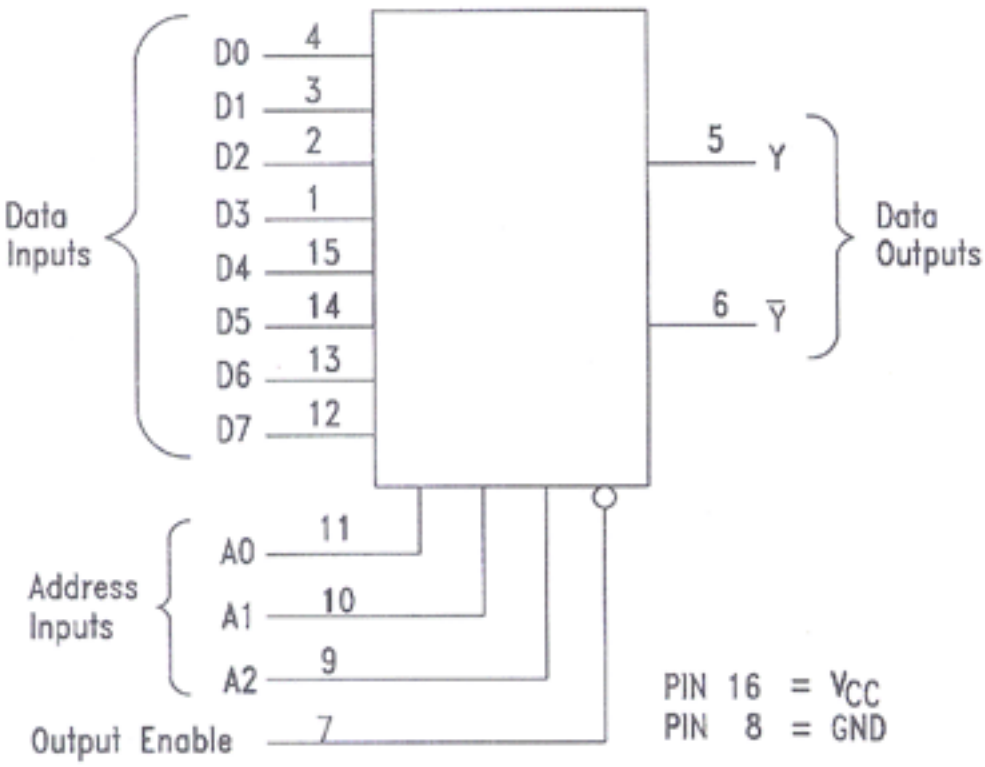
DV74LS251
DV74ALS251

8-1 Data Selector/Multiplexer with 3-State Outputs

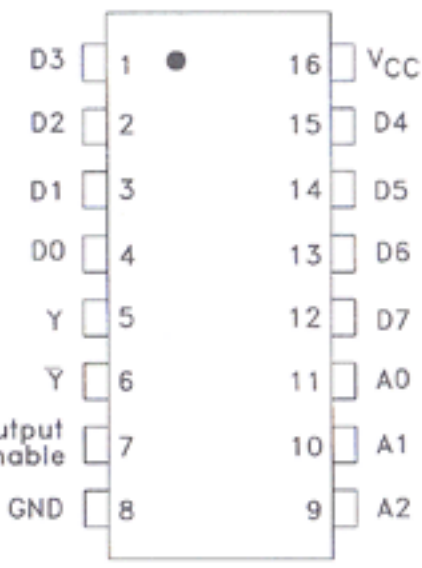


The LS/ALS251 is a high speed 8-input multiplexer. It provides the ability to select one bit of data from up to 8 sources. Both assertion and negation outputs are provided. The outputs can be driven into a high impedence state.

- **AVG's LS operates over extended Vcc from 4.5 to 5.5 V**
- **AVG's LS and ALS both have guaranteed DC and AC specification over full temperature and Vcc range**
- **Switching specifications for ALS at 50 pF**
- **AVG's ALS has the lowest speed power product (4pJ per gate typical) of all logic series**



PIN ASSIGNMENT



ABSOLUTE MAXIMUM RATINGS

Maximum ratings are those values beyond which damage to the device may occur.

Symbol	Parameter	LS251	ALS251	Unit
V_{CC}	Supply Voltage	7.0	7.0	V
V_{IN}	Input Voltage	7.0	7.0	V
T_{STG}	Storage Temperature Range	–65 to+150	–65 to + 150	°C
V_{OZ}	Output Voltage - High Impedance	5.5	5.5	V

GUARANTEED OPERATING CONDITIONS

Symbol	Parameter	LS251		ALS251		Unit
		Min	Max	Min	Max	
V_{CC}	Supply Voltage	4.5	5.5	4.5	5.5	V
V_{IH}	High Level Input Voltage	2.0		2.0		V
V_{IL}	Low Level Input Voltage		0.8		0.8	V
I_{OH}	High Level Output Current		–2.6		–2.6	mA
I_{OL}	Low Level Output Current		24		24	mA
T_A	Ambient Temperature Range	–10 to +70		–10 to +70		°C

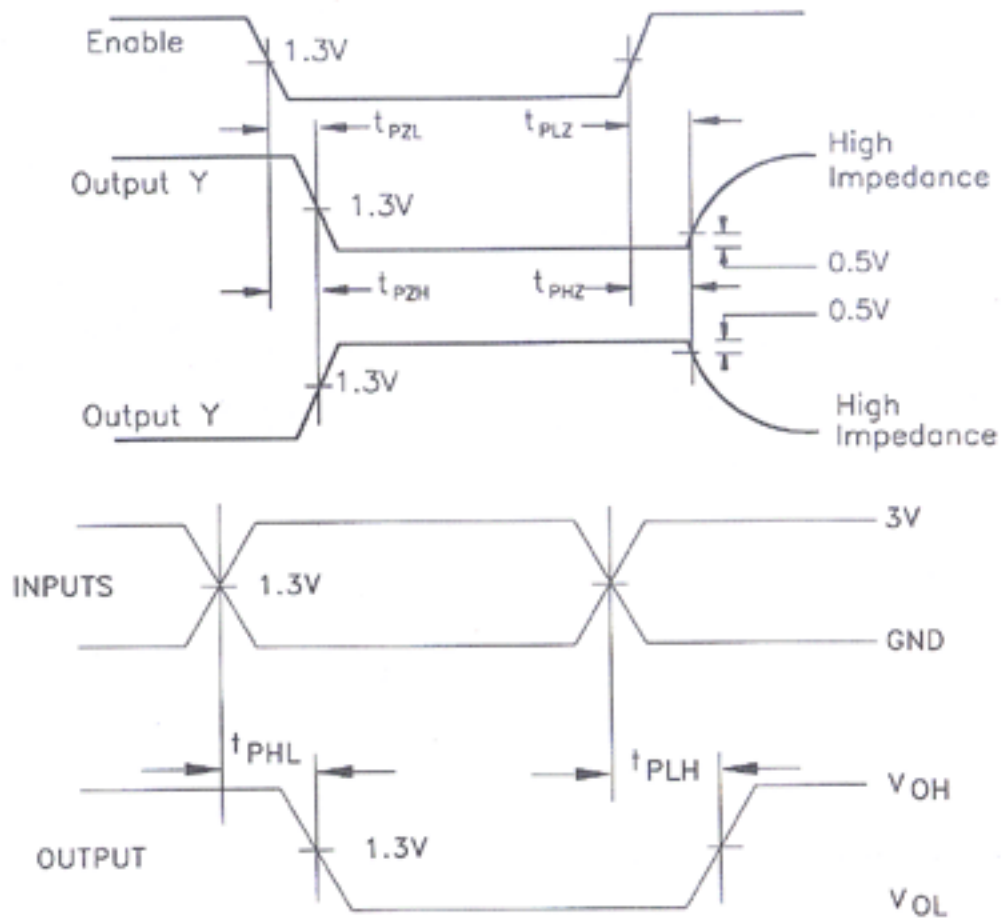
DC ELECTRICAL CHARACTERISTICS over ambient temperature range

Symbol	Parameter	Conditions	LS251			ALS251			Unit
			Min	Typ	Max	Min	Typ	Max	
V_{IK}	Input Clamp Voltage	V_{CC} = min, I_{IN} = –18 mA			–1.5			–1.5	V
V_{OH}	High Level Output Voltage	V_{CC}=min, I_{OH}= –0.4mA				2.5			V
		V_{CC}=min, I_{OH}=-2.6mA	2.4	3.1		2.4	3.2		
V_{OL}	Low Level Output Voltage	V_{CC}=min; I_{OL} =12mA		0.25	0.4		0.25	0.4	V
		V_{CC}=min; I_{OL} =24mA		0.35	0.5		0.35	0.5	V
I_{OZH}	Output Off Current HIGH	V_{CC}=max, V_{IN}=2.7V			20			20	µA
I_{OZL}	Output Off Current LOW	V_{CC}=max, V_{IN}=0.4V			–20			–20	µA
I_{IH}	High Level Input Current	V_{CC}=max, V_{IN}=2.7V			20			20	µA
	High Level Input Current	V_{CC}=max, V_{IN}= 7.0V			0.1			0.1	mA
I_{IL}	Low Level Input Current	V_{CC}=max, V_{IN}=0.4V			–0.4			–0.1	mA
I_O	Short Circuit Current	V_{CC}=max, V_O=2.25 V	–30		–130	–30		–112	mA
I_{CC}	Supply Current	V_{CC}=max, $V_{\overline{E}}$=0V			10		7	10	mA
		V_{CC}=max, $V_{\overline{E}}$=4.5V			12		9.4	14	

SWITCHING CHARACTERISTICS over full operating conditions

Symbol	Parameter	LS251 C_L=15pF R_L= 2.0kΩ		ALS251 C_L= 50 pF R_1=R_2= 500Ω		Unit
		Min	Max	Min	Max	
t_{PLH}	Propagation Delay, Select to $\overline{Y}$ Output		33	5	18	ns
t_{PHL}			33	8	24	
t_{PLH}	Propagation Delay, Select to Y Output		45	8	24	ns
t_{PHL}			45	7	23	
t_{PLH}	Propagation Delay, Data to $\overline{Y}$ Output		15	2	10	ns
t_{PHL}			15	3	15	
t_{PLH}	Propagation Delay, Data to Y Output		28	3	15	ns
t_{PHL}			28	3	15	
t_{PZH}	Propagation Delay, Output Enable time to $\overline{Y}$ Output		27	3	15	ns
t_{PZL}			40	3	15	
t_{PZH}	Propagation Delay, Output Enable time to Y Output		45	3	15	ns
t_{PZL}			40	3	15	
t_{PHZ}	Propagation Delay, Output Disable time to $\overline{Y}$ Output		55	2	10	ns
t_{PLZ}			25	1	10	
t_{PHZ}	Propagation Delay, Output Disable time to Y Output		45	2	10	ns
t_{PLZ}			25	1	10	

SWITCHING WAVEFORMS



TRUTH TABLE

Output Enable	Address Inputs			Data Inputs								Data Outputs	
	A2	A1	A0	D0	D1	D2	D3	D4	D5	D6	D7	$\overline{Y}$	Y
H	X	X	X	X	X	X	X	X	X	X	X	Z	Z
L	L	L	L	L	X	X	X	X	X	X	X	H	L
L	L	L	L	H	X	X	X	X	X	X	X	L	H
L	L	L	H	X	L	X	X	X	X	X	X	H	L
L	L	L	H	X	H	X	X	X	X	X	X	L	H
L	L	H	L	X	X	L	X	X	X	X	X	H	L
L	L	H	L	X	X	H	X	X	X	X	X	L	H
L	L	H	H	X	X	X	L	X	X	X	X	H	L
L	L	H	H	X	X	X	H	X	X	X	X	L	H
L	H	L	L	X	X	X	X	L	X	X	X	H	L
L	H	L	L	X	X	X	X	H	X	X	X	L	H
L	H	L	H	X	X	X	X	X	L	X	X	H	L
L	H	L	H	X	X	X	X	X	H	X	X	L	H
L	H	H	L	X	X	X	X	X	X	L	X	H	L
L	H	H	L	X	X	X	X	X	X	H	X	L	H
L	H	H	H	X	X	X	X	X	X	X	L	H	L
L	H	H	H	X	X	X	X	X	X	X	H	L	H

H=High Logic Level L=Low Level Logic X=Don't Care Z=High Impedence State