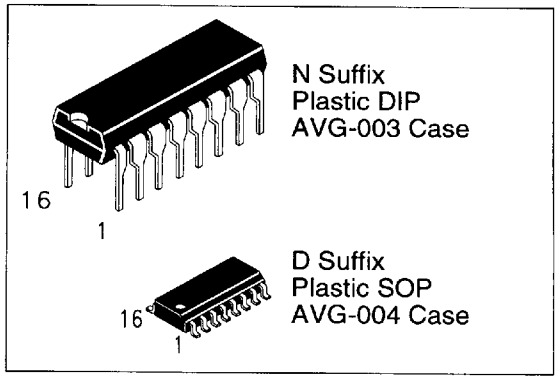
353

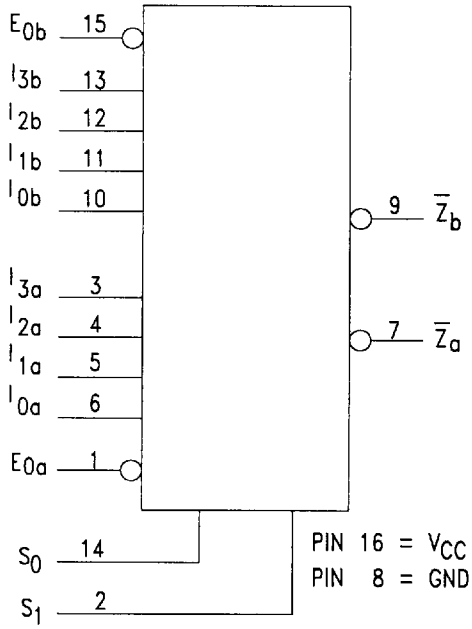
DV74LS353
DV74ALS353

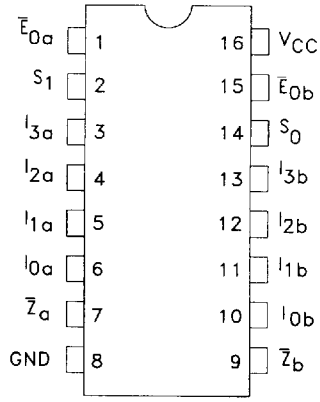
Dual 4-1 Data Selector/ Multiplexer with 3-State Outputs



This device can select two bits of data from four sources using common select inputs. The outputs may be individually switched to a high impedance state with a HIGH on the respective Output Enable inputs, allowing the outputs to interface directly with bus oriented systems.

- **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**





Select Inputs		Data Inputs				Output Enable	Output
S0	S1	I0	I1	I2	I3		$\overline{Z}$
X	X	X	X	X	X	H	Z
L	L	L	X	X	X	L	H
L	L	H	X	X	X	L	L
H	L	X	L	X	X	L	H
H	L	X	H	X	X	L	L
L	H	X	X	L	X	L	H
L	H	X	X	H	X	L	L
H	H	X	X	X	L	L	H
H	H	X	X	X	H	L	L

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

ABSOLUTE MAXIMUM RATINGS

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

Symbol	Parameter	LS353	ALS353	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	LS353		ALS353		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_{OL}	Low Level Output Current		24		24	mA
T_A	Ambient Temperature Range	–10 to +70		–10 to +70		°C

DC ELECTRICAL CHARACTERISTICS over full operating conditions

Symbol	Parameter	Conditions	LS353			ALS353			Unit
			Min	Typ	Max	Min	Typ	Max	
V_{IK}	Input Clamp Voltage	V_{CC} = min, I_{IN} = –18 mA		–0.65	–1.5			–1.5	V
V_{OH}	High Level Output Voltage	V_{CC}=min, I_{OH}= –0.4mA	V_{CC}-2			Vcc-2			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	–20		–130	–30		–112	mA

SWITCHING CHARACTERISTICS

Symbol	Parameter	LS353 C_L=15pF R_L= 2KΩ		ALS353 CL= 50 pF R_L= 500Ω		Unit
		Min	Max	Min	Max	
t_{PLH}	Propagation Delay, Data to Output		25	4	18	ns
t_{PHL}			20	3	13	
t_{PLH}	Propagation Delay, Select to Output		45	5	24	ns
t_{PHL}			32	5	21	
t_{PZH}	Output Enable Time		23	3	13	ns
t_{PZL}			23	2	16	
t_{PHZ}	Output Disable Time (For LS353 CL=5pF)		41	2	10	ns
t_{PLZ}			27	2	14	

SWITCHING WAVEFORMS