**AVG** *Semiconductors*

Technical Data

Hex Schmitt-Trigger Inverter

| DV74LS14 |
| DV74ALS14 |

Each of the six circuits in the DV74LS14/ALS14 contain a logic gate/inverter which accepts standard TTL input signals and provides standard TTL output levels. Each circuit is capable of transforming slowly changing input signals into sharply defined, jitter-free output signals. Additionally, they have greater noise margin than conventional inverters.
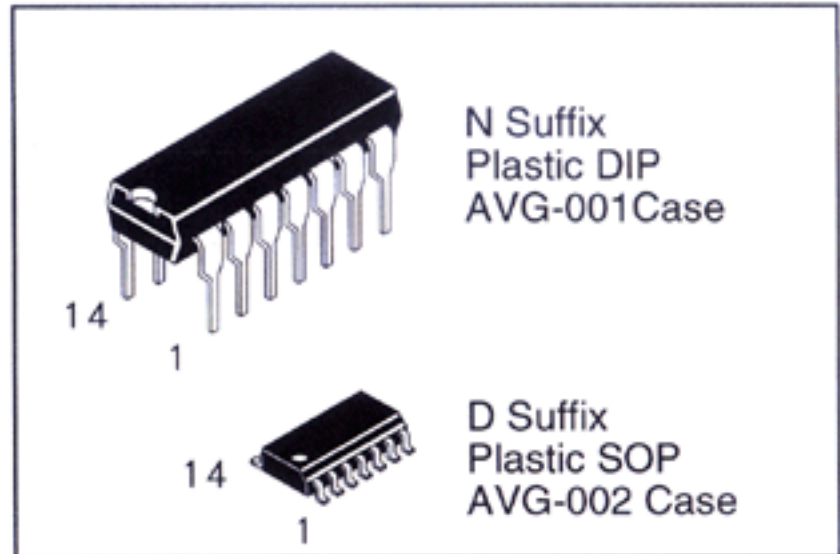
- AVG's LS operates over extended Vcc from 4.5 to 5.5 V
- AVG's LS and ALS both have guaranteed DC and AC specification over full temperature and Vcc range
- Switching specifications for ALS at 50 pF
- AVG's ALS has the lowest speed power product (4pJ per gate typical) of all logic series

N Suffix
Plastic DIP
AVG-001 Case

D Suffix
Plastic SOP
AVG-002 Case
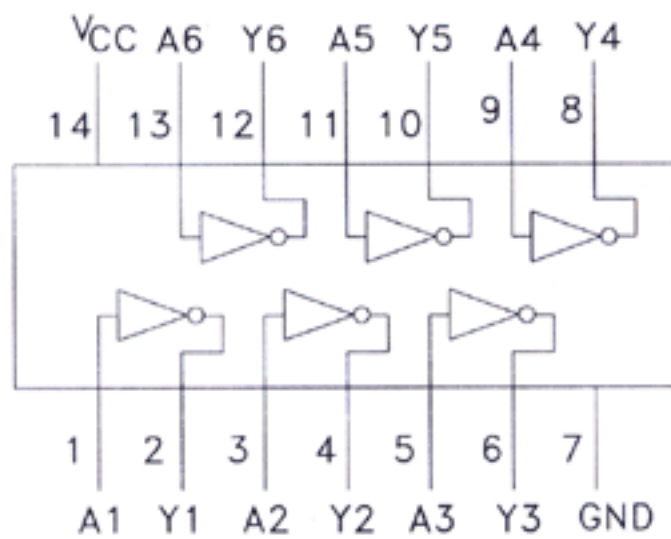
TRUTH TABLE
$Y = \overline{A}$

Inputs	Outputs
A	**Y**
L	H
H	L

H = High Logic Level
L = Low Logic Level

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

Symbol	Parameter	LS14	ALS14	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

GUARANTEED OPERATING CONDITIONS

Symbol	Parameter	LS14		ALS14		Unit
		Min	Max	Min	Max	
V_{CC}	Supply Voltage	4.5	5.5	4.5	5.5	V
V_{T+}	Positive Going Threshold Voltage	1.5	2.0	1.5	2.0	V
V_{T-}	Negative Going Threshold Voltage	0.6	1.1	0.6	1.1	V
V_H	Input Hysteresis	0.4	0.9	0.4	0.9	V
I_{OH}	High Level Output Current		−0.4		−0.4	mA
I_{OL}	Low Level Output Current		8.0		8.0	mA
T_A	Ambient Temperature Range	−10 to +70		−10 to +70		°C

DC ELECTRICAL CHARACTERISTICS over full operating conditions

Symbol	Parameter	Conditions	LS14			ALS14			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} = max	V_{CC}−2	3.5		V_{CC}−2			V
V_{OL}	Low Level Output Voltage	V_{CC}=min; I_{OL} =4 mA V_{CC}=min; I_{OL} =8 mA		0.25 0.35	0.4 0.5		0.25 0.35	0.4 0.5	V
I_{T+}	Input Current at Positive-Going Threshold Voltage	V_{CC}=5V, V_I=V_{T+}			20			20	µA
$I_{T−}$	Input Current at Negative-Going Threshold Voltage	V_{CC}=5V, V_I=$V_{T−}$			−100			−100	µA
I_{IH}	High Level Input Current	V_{CC}=max, V_{IN}= 2.7V V_{CC}=max, V_{IN}= 7V			20 0.1			20 0.1	µA mA
I_{IL}	Low Level Input Current	V_{CC}=max, V_{IN}=0.4V			−0.4			−0.1	mA
I_{OS}	Output Short Circuit Current	V_{CC}=max, V_{OUT} =2.25 V	−20		−110	−30		−112	mA
I_{CC}	Supply Current Outputs High Outputs Low	V_{CC}=max			16 21			12 12	mA

SWITCHING CHARACTERISTICS over full operating conditions

Symbol	Parameter	From	To	LS14 CL=15 pF		ALS14 CL=50pF RL = 500Ω		Unit
				Min	Max	Min	Max	
t_{PLH}	Propagation Delay Time, Low to High Level Output	Input	Output		22	2	12	ns
t_{PHL}	Propagation Delay Time, High to Low Level Output	Input	Output		22	2	10	ns

SWITCHING WAVEFORMS