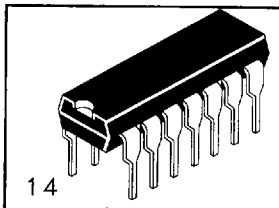
DV74LS03
DV74ALS03B

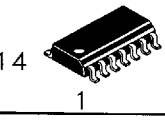
Quad 2-Input NAND Gate with Open-Collector Outputs

This device contains four independent 2-input NAND buffers, each of which performs the logic NAND function in positive logic. The open-collector outputs require pull-up resistors to perform correctly.

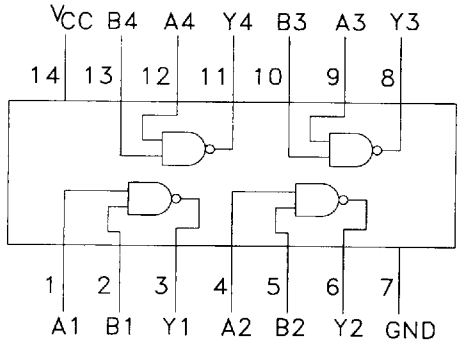
- **AVG's LS operates over extended Vcc from 4.5 to 5.5 V**
- **AVG's LS and ALS both have guaranteed DC and AC specification over full temperature and Vcc range**
- **Switching specifications for ALS at 50 pF**
- **AVG's ALS has the lowest speed power product (4pJ per gate typical) of all logic series**



N Suffix
Plastic DIP
AVG-001Case



D Suffix
Plastic SOP
AVG-002 Case



TRUTH TABLE

$Y = \overline{AB}$

Inputs		Outputs
A	**B**	**Y**
H	H	L
L	X	H
X	L	H

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

ABSOLUTE MAXIMUM RATINGS

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

Symbol	Parameter	LS03	ALS03B	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	LS03		ALS03B		Unit
		Min	Max	Min	Max	
V_{CC}	Supply Voltage	4.5	5.5	4.5	5.5	V
V_{OH}	High Level Output Voltage		5.5		5.5	
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		8.0		8.0	mA
T_A	Ambient Temperature Range	–10 to +70		–10 to + 70		°C

03

DC ELECTRICAL CHARACTERISTICS over full operating conditions

Symbol	Parameter	Conditions	LS03			ALS03B			Unit
			Min	Typ	Max	Min	Typ	Max	
V_{IK}	Input Clamp Voltage	V_{CC} = min, I_{IN} = –18 mA			–1.5			–1.5	V
I_{OH}	High Level Output Current	V_{CC}=min; V_{OH} =max			100			100	µA
V_{OL}	Low Level Output Voltage	V_{CC}=min; 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 V
I_{IH}	High Level Input Current	V_{CC}=max, V_{IN}= 2.7V			20			20	µA
		V_{CC}=max, V_{IN}= 7V			0.1			0.1	mA
I_{IL}	Low Level Input Current	V_{CC}=max, V_{IN}=0.4V			–0.4			–0.1	mA
I_{CC}	Supply Current Outputs High Outputs Low	V_{CC}=max			 1.6 4.4		 0.43 1.62	 0.85 4.0	mA

SWITCHING CHARACTERISTICS over full operating conditions

Symbol	Parameter	From	To	LS03 C_L=15 pF RL=2 kΩ		ALS03B C_L=50pF RL = 2 kΩ		Unit
				Min	Max	Min	Max	
t_{PLH}	Propagation Delay Time, Low to High Level Output	Input	Output		32	20	50	ns
t_{PHL}	Propagation Delay Time, High to Low Level Output	Input	Output		28	3	13	ns

SWITCHING WAVEFORMS