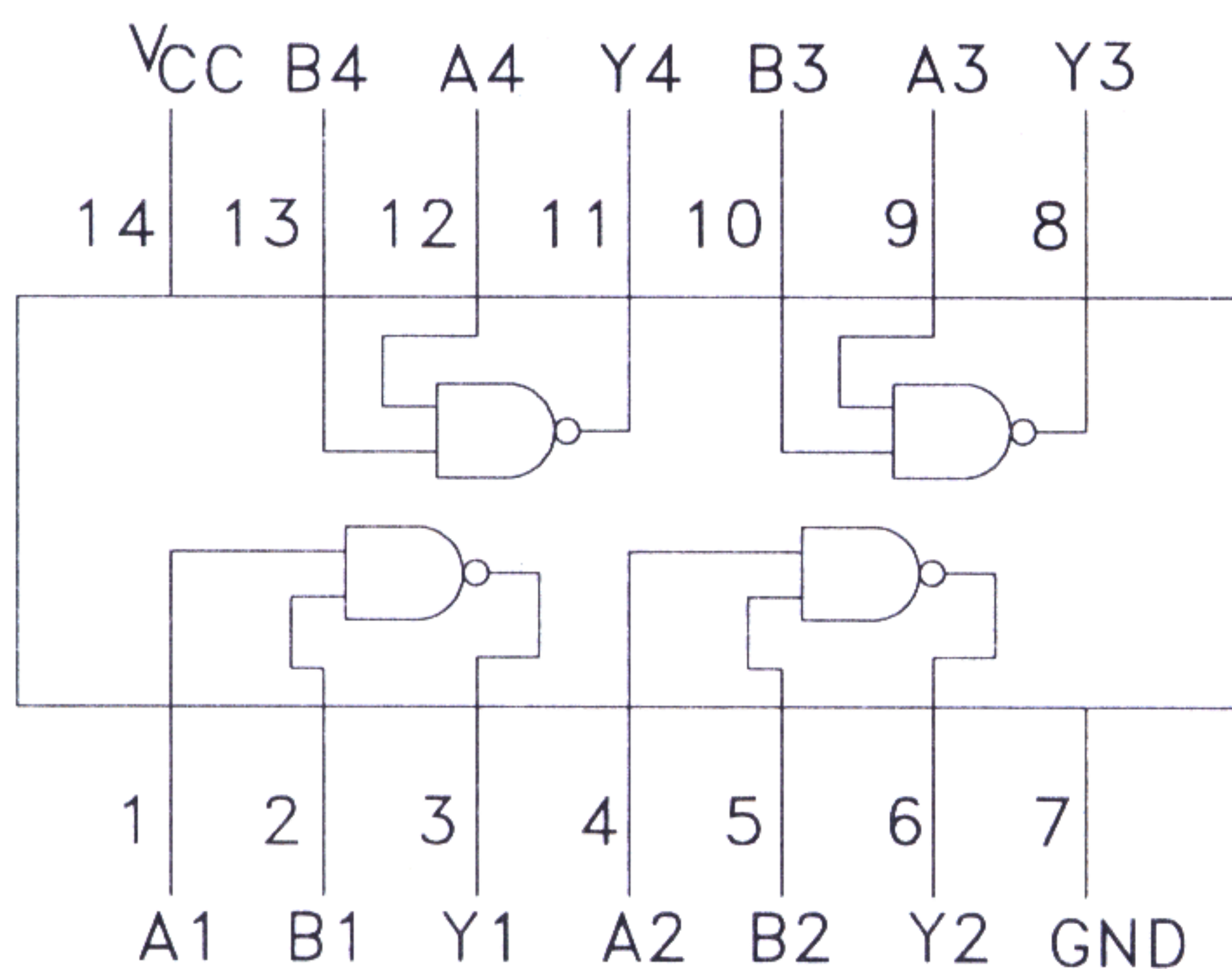
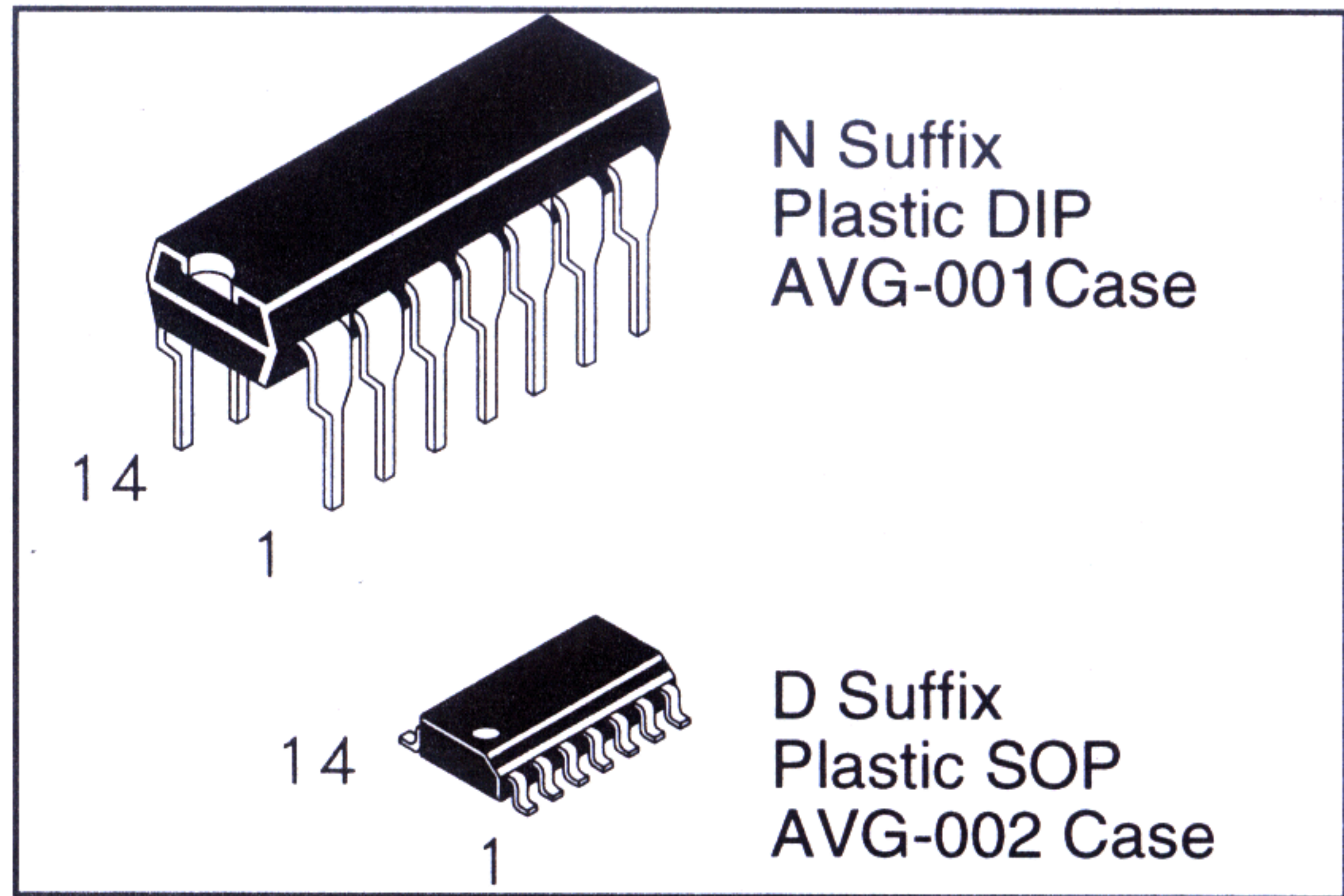


Quad 2-Input NAND Gate with Open-Collector Outputs

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

DV74LS03
DV74ALS03B



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

DC ELECTRICAL CHARACTERISTICS over full operating conditions

Symbol	Parameter	Conditions	LS03			ALS03B			Unit
			Min	Typ	Max	Min	Typ	Max	
V_{IK}	Input Clamp Voltage	$V_{CC} = \text{min}, I_{IN} = -18 \text{ mA}$			-1.5			-1.5	V
I_{OH}	High Level Output Current	$V_{CC} = \text{min}; V_{OH} = \text{max}$			100			100	μA
V_{OL}	Low Level Output Voltage	$V_{CC} = \text{min}; V_{CC} = \text{min}; I_{OL} = 4 \text{ mA}$		0.25	0.4		0.25	0.4	V
		$V_{CC} = \text{min}; I_{OL} = 8 \text{ mA}$		0.35	0.5		0.35	0.5	V
I_{IH}	High Level Input Current	$V_{CC} = \text{max}, V_{IN} = 2.7 \text{ V}$			20			20	μA
		$V_{CC} = \text{max}, V_{IN} = 7 \text{ V}$			0.1			0.1	mA
I_{IL}	Low Level Input Current	$V_{CC} = \text{max}, V_{IN} = 0.4 \text{ V}$			-0.4			-0.1	mA
I_{CC}	Supply Current Outputs High Outputs Low	$V_{CC} = \text{max}$			1.6		0.43	0.85	mA
					4.4		1.62	4.0	

SWITCHING CHARACTERISTICS over full operating conditions

Symbol	Parameter	From	To	LS03 $C_L = 15 \text{ pF}$ $R_L = 2 \text{ k}\Omega$		ALS03B $C_L = 50 \text{ pF}$ $R_L = 2 \text{ k}\Omega$		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

