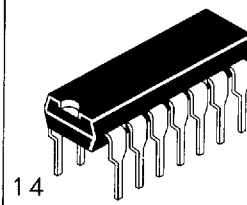


Dual 2-Wide 2-Input/ 3-Input AND-OR-Invert Gate

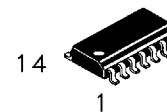
This device performs the logic $Y1 = \overline{(A1B1C1)} + (D1E1F1)$ and $Y2 = (A2B2) + (C2D2)$

- AVG's LS operates over extended V_{CC} from 4.5 to 5.5 V
- AVG's LS and ALS both have guaranteed DC and AC specification over full temperature and V_{CC} 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

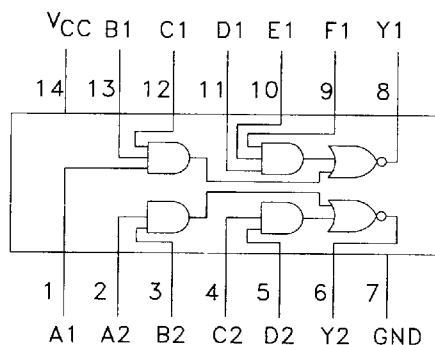
DV74LS51 DV74ALS51



N Suffix
Plastic DIP
AVG-001 Case



D Suffix
Plastic SOP
AVG-002 Case



TRUTH TABLES

Inputs				Output
A2	B2	C2	D2	Y2
H	H	X	X	L
X	X	H	H	L
All other combinations				H

Inputs						Output
A1	B1	C1	D1	E1	F1	Y1
H	H	H	X	X	X	L
X	X	X	H	H	H	L
All other combinations						H

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

ABSOLUTE MAXIMUM RATINGS

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

Symbol	Parameter	LS51	ALS51	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	LS51		ALS51		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		-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	LS51			ALS51			Unit
			Min	Typ	Max	Min	Typ	Max	
V_{IK}	Input Clamp Voltage	$V_{CC} = \min, I_{IN} = -18 \text{ mA}$			-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	$V_{CC} = \min; I_{OL} = 4 \text{ mA}$ $V_{CC} = \min; I_{OL} = 8 \text{ mA}$		0.25 0.35	0.4 0.5		0.25 0.35	0.4 0.5	V
I_{IH}	High Level Input Current	$V_{CC} = \max, V_{IN} = 2.7 \text{ V}$ $V_{CC} = \max, V_{IN} = 7 \text{ V}$			20 0.1			20 0.1	μA mA
I_{IL}	Low Level Input Current	$V_{CC} = \max, V_{IN} = 0.4 \text{ V}$			-0.4			-0.1	mA
I_O	Short Circuit Current	$V_{CC} = \max, V_O = 2.25 \text{ V}$	-20		-110	-30		-112	mA
I_{CC}	Supply Current Outputs High Outputs Low	$V_{CC} = \max$			1.6 2.8			1.2 1.5	mA mA

SWITCHING CHARACTERISTICS over full operating conditions

Symbol	Parameter	LS51 $C_L = 15 \text{ pF}$		ALS51 $C_L = 50 \text{ pF}$ $R_L = 500 \Omega$		Unit
		Min	Max	Min	Max	
t_{PLH}	Turn-Off Delay, Input to Output		20		14	ns
t_{PHL}	Turn-On Delay, Input to Output		20		12	

SWITCHING WAVEFORMS