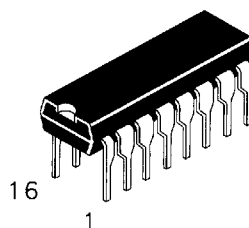


Dual 1-4 Decoder/ Demultiplexer

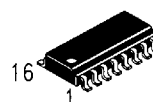
This device has two independent decoders, each accepting two inputs and providing four mutually exclusive active LOW outputs. Each decoder has an active LOW enable input which can be used as a data input for a 4-output demultiplexer.

- 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

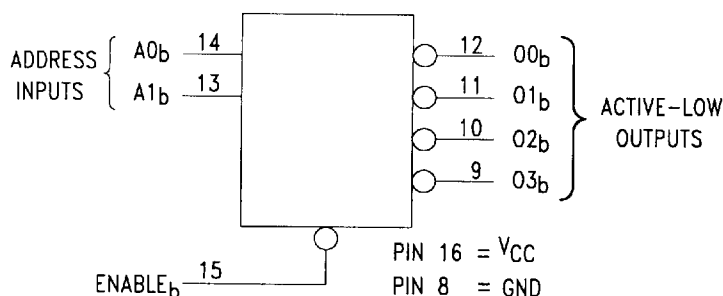
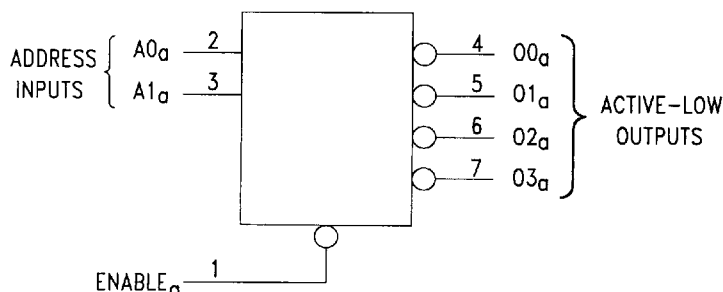
DV74LS139 DV74ALS139



N Suffix
Plastic DIP
AVG-003 Case



D Suffix
Plastic SOP
AVG-004 Case



PIN ASSIGNMENT

Enable _a	1	16	VCC
A0 _a	2	15	Enable _b
A1 _a	3	14	A0 _b
Y0 _a	4	13	A1 _b
Y1 _a	5	12	Y0 _b
Y2 _a	6	11	Y1 _b
Y3 _a	7	10	Y2 _b
GND	8	9	Y3 _b

TRUTH TABLE

Inputs			Outputs			
$\bar{E}$	A ₀	A ₁	$\bar{O}_0$	$\bar{O}_1$	$\bar{O}_2$	$\bar{O}_3$
H	X	X	H	H	H	H
L	L	L	L	H	H	H
L	H	L	H	L	H	H
L	L	H	H	H	L	H
L	H	H	H	H	H	L

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	LS139	ALS139	Unit
V _{CC}	Supply Voltage	7.0	7.0	V
V _{IN}	Input Voltage	-0.5 to +7.0	7.0	V
T _{STG}	Storage Temperature Range	-65 to +150	-65 to +150	°C

GUARANTEED OPERATING CONDITIONS

Symbol	Parameter	LS139		ALS139		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
I_{OH}	High Level Output Current		-0.4		-0.4	mA
T_A	Ambient Temperature Range	-10 to +70		-10 to +70		°C

DC ELECTRICAL CHARACTERISTICS over full operating conditions

Symbol	Parameter	Conditions	LS139			ALS139			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
V_{OH}	High Level Output Voltage	$V_{CC} = \text{min}, I_{OH} = \text{max}$	$V_{CC}-2$	3.5		$V_{CC}-2$			V
V_{OL}	Low Level Output Voltage	$V_{CC} = \text{min}; I_{OL} = 4 \text{ mA}$ $V_{CC} = \text{min}; I_{OL} = 8 \text{ mA}$		0.25 0.35	0.4 0.5		0.25 0.35	0.4 0.5	V
I_{IH}	High Level Input Current	$V_{CC} = \text{max}, V_{IN} = 2.7 \text{ V}$ $V_{CC} = \text{max}, V_{IN} = 7 \text{ V}$			20 0.1			20 0.1	μA mA
I_{IL}	Low Level Input Current	$V_{CC} = \text{max}, V_{IN} = 0.4 \text{ V}$			-0.4			-0.1	mA
I_O	Short Circuit Current	$V_{CC} = \text{max}, V_O = 2.25 \text{ V}$	-20		-110	-30		-112	mA
I_{CC}	Supply Current	$V_{CC} = \text{Max}$			11		8	13	mA

SWITCHING CHARACTERISTICS

Symbol	Parameter	LS139 $C_L = 15 \text{ pF}$		ALS139 $C_L = 50 \text{ pF}$ $R_L = 500 \Omega$		Unit
		Min	Max	Min	Max	
t_{PLH}	Propagation Delay, From Address to Output		29	3	14	ns
t_{PHL}			38	3	14	
t_{PLH}	Propagation Delay, From Enable to Output		24	3	14	ns
t_{PHL}			32	3	15	

SWITCHING WAVEFORMS

