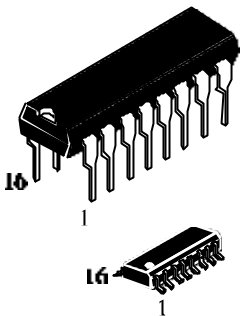


3-TO-8 DECODER/DEMULTIPLEXER

By pinning SL74LV138 are compatible with SL74HC138 and SL74HCT138 series. Input voltage levels are compatible with standard CMOS ones.

- Output voltage levels are compatible with input levels of CMOS, NMOS and TTL ICs
- Supply voltage range is from 1.2 to 5.5 V
- Low input current: 1.0 μA ; 0.1 μA at $\dot{O} = 25^\circ\text{N}$
- Output current 6 mA
- Latch current is not less than 150 mA at $\dot{O} = 125^\circ\text{N}$
- ESD acceptable values: than 2000 V as per HBM, and not less than 200 V as per MM

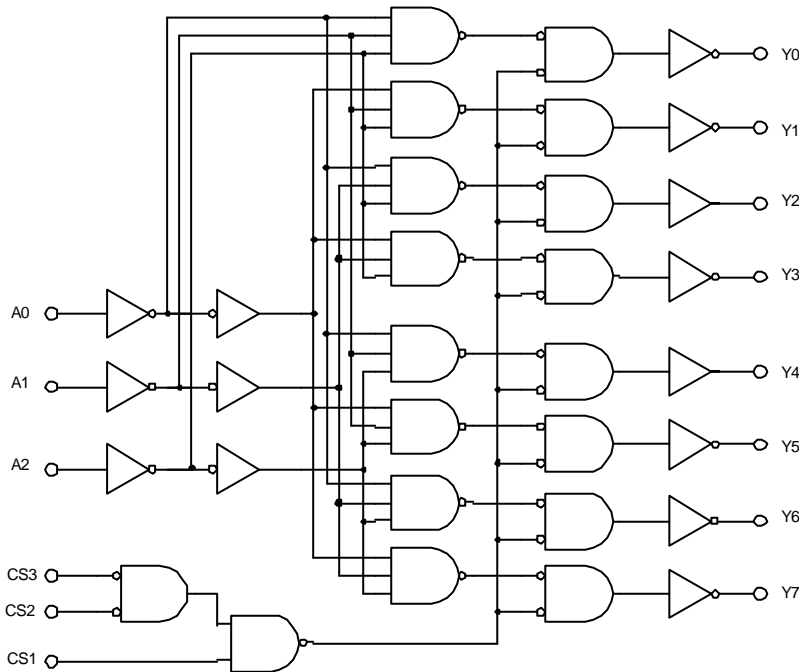


V SUFFIX PLASTIC

D SUFFIX SOIC

ORDERING INFORMATION
 SL74LV138N Plastic DIP
 SL74LV138D SOIC
 $T_A = -40^\circ$ to 125° C
 for all packages

BLOCK DIAGRAM



PIN ASSIGNMENT

A0	1	16	V _{CC}
A1	2	15	Q0
A2	3	14	Q1
CS2	4	13	Q2
CS3	5	12	Q3
CS1	6	11	Q4
Y7	7	10	Q5
GND	8	9	Q6

FUNCTION TABLE

INPUTS						OUTPUTS							
CS1	CS2	CS3	A2	A1	A0	Q0	Q1	Q2	Q3	Q4	Q5	Q6	Q7
X	X	H	X	X	X	H	H	H	H	H	H	H	H
X	H	X	X	X	X	H	H	H	H	H	H	H	H
L	X	X	X	X	X	H	H	H	H	H	H	H	H
H	L	L	L	L	L	L	H	H	H	H	H	H	H
H	L	L	L	L	H	H	L	H	H	H	H	H	H
H	L	L	L	H	H	H	H	L	H	H	H	H	H
H	L	L	H	L	L	H	H	H	H	L	H	H	H
H	L	L	H	L	H	H	H	H	H	H	L	H	H
H	L	L	H	H	L	H	H	H	H	H	H	L	H
H	L	L	H	H	H	H	H	H	H	H	H	H	L

SL74LV138

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Rating	Unit	Conditions
V _{cc}	Supply voltage	-0.5 to +7.0	V	
I _{ik}	Input diode current	±20	mA	V _i <-0.5 V or V _i >V _{cc} +0.5 V
I _{ok}	Output diode current	±50	mA	V _o <-0.5 V or V _i >V _{cc} +0.5 V
I _o	Output current standard output	±25	mA	-0.5 V<V _o <V _{cc} +0.5 V
I _{cc}	DC V _{cc} , standard output	±50	mA	
I _{GND}	GND current	±50	mA	
T _{stg}	Storage temperature range	-65 to +150	°C	
P _D	Power dissipation per package: DIP SO	750 500	mW	

Notes:

Power dissipation value decreases for:
DIP - 12 mW/°C in the range from 70 to 125°C
SO - 8 mW/°C in the range from 70 to 125°C

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit	Conditions
V _{cc}	Supply voltage	1.2	5.5	V	
V _i	Input voltage	0	V _{cc}	V	
V _o	Output voltage	0	V _{cc}	V	
T	Ambient temperature range	-40	+125	°C	
t _r , t _f	Input rise and fall times		500 200 100 50	ns/V	V _{cc} = 1.0 ÷ 2.0 V V _{cc} = 2.0 ÷ 2.7 V V _{cc} = 2.7 ÷ 3.6 V V _{cc} = 3.6 ÷ 5.5 V



DC CHARACTERISTICS

Sym bol	Parameter	Conditions			Limits						Unit
		V _{cc} (V)	V _I		-40 to +25°C		+85 °C		+125 °C		
					Min	Max	Min	Max	Min	Max	
V _{IH}	HIGH level input voltage	1.2 2.0 2.7 to 3.6 4.5 to 5.5			0.9 1.4 2.0 0.7 V _{cc}	- - - -	0.9 1.4 2.0 0.7 V _{cc}	- - - -	0.9 1.4 2.0 0.7 V _{cc}	- - - -	V
V _{IL}	LOW level output voltage	1.2 2.0 2.7 to 3.6 4.5 to 5.5			- - - -	0.3 0.6 0.8 0.3 V _{cc}	- - - -	0.3 0.6 0.8 0.3 V _{cc}	- - - -	0.3 0.6 0.8 0.3 V _{cc}	V
V _{OH}	HIGH level output voltage	1.2 2.0 2.7 3.6 5.5	V _{IH} or V _{IL}	I _O = -100 μA	1.05 1.85 2.55 3.45 5.35	- - - -	1.0 1.8 2.5 3.4 5.3	- - - -	1.0 1.8 2.5 3.4 5.3	- - - -	V
V _{OH}	HIGH level output voltage; standard outputs	3.0 4.5	V _{IH} or V _{IL}	I _O = -6 mA I _O = -12 mA	2.48 3.70	- -	2.40 3.60	- -	2.20 3.50	- -	V
V _{OL}	LOW level output voltage	1.2 2.0 2.7 3.6 5.5	V _{IH} or V _{IL}	I _O = 100 μA	- - - - -	0.15 0.15 0.15 0.15 0.15	- - - - -	0.2 0.2 0.2 0.2 0.2	- - - - -	0.2 0.2 0.2 0.2 0.2	V
V _{OL}	LOW level output voltage; standard outputs	3.0 4.5	V _{IH} or V _{IL}	I _O = 6 mA I _O = 12 mA	- -	0.33 0.40	- -	0.40 0.55	- -	0.50 0.65	V
I _I	Input leakage current	5.5	V _{IH} or GND		-	±1.0		±1.0	-	±1.0	μA
I _{cc}	Supply current	5.5	V _{IH} or GND	I _O = 0		8.0		8.0		160	μA
I _{cc}	Additional supply current per input	2.7 to 3.6	V _I = V _{cc} - 0.6V		-	0.2		0.5	-	0.85	mA

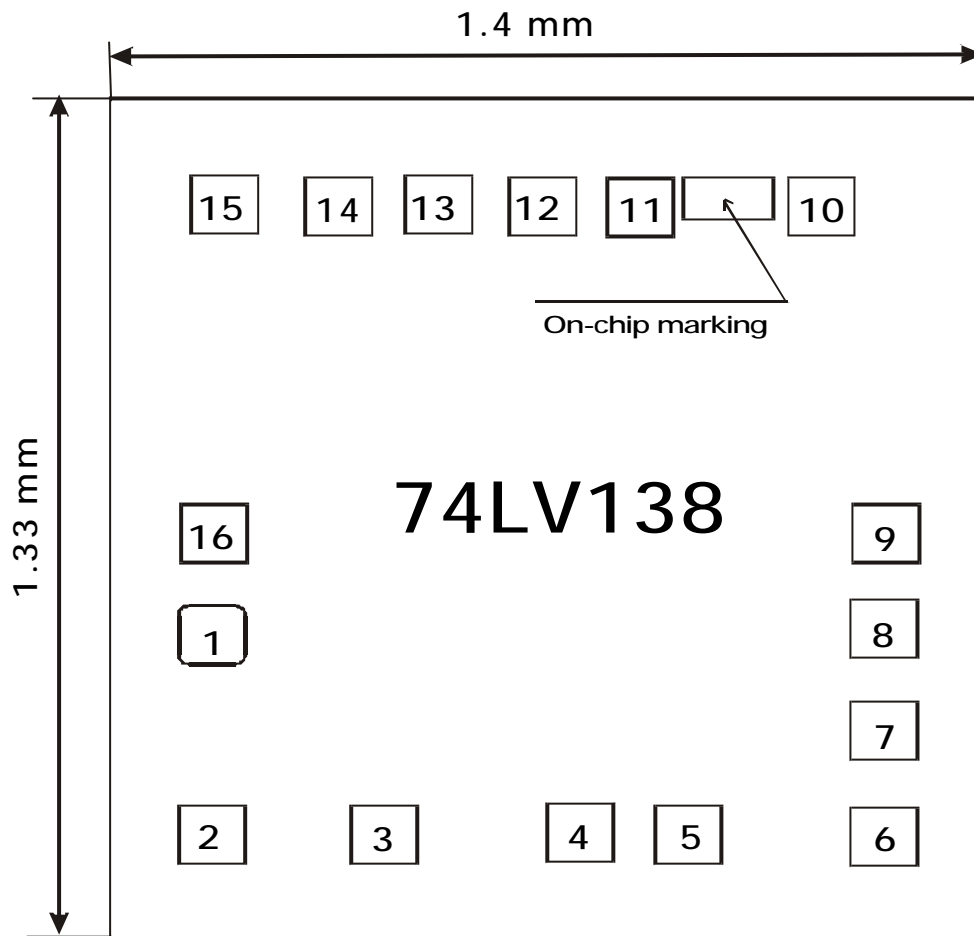
SL74LV138

AC CHARACTERISTICS (C_L=50 pF, R_L=1 KΩ, t_{LH} = t_{HL} = 2.5 ns)

Sym bol	Parameter	Conditions		Limits						Unit
		Vcc		-40 to +25° C		+85° C		+125° C		
				Min	Max	Min	Max	Min	Max	
t _{PHL} , t _{PLH} from An to Yn	Propagation delay	1.2	V _I = Vcc or GND	-	150	-	150	-	150	ns
		2.0		-	33	-	36	-	44	
		2.7		-	23	-	26	-	33	
		3.0		-	19	-	21	-	26	
		4.5		-	14	-	16	-	20	
t _{PHL} , t _{PLH} from CS to Yn	Propagation delay	1.2	V _I = Vcc or GND	-	170	-	170	-	170	ns
		2.0		-	35	-	39	-	49	
		2.7		-	26	-	29	-	36	
		3.0		-	21	-	23	-	29	
		4.5		-	17	-	19	-	24	
C _I	Input capacitance	5.0	0 = +25° C		7.0				-	ns
C _{PD}	Power dissipation capacitance per package		0 = +25° C V _I = Vcc or GND		134				-	ns



Drawing of the chip



Pads allocation Table

Pad number	coordinates (counted from lower left corner), mm		Pad size, mm
	X	Y	
01	0.1415	0.6270	0.100 x 0.100
02	0.1415	0.3880	0.100 x 0.100
03	1.1375	0.1515	0.100 x 0.100
04	0.4535	0.1190	0.100 x 0.100
05	0.6245	0.1190	0.100 x 0.100
06	0.7800	0.1190	0.100 x 0.100
07	0.9520	0.1180	0.100 x 0.100
08	1.2685	0.1185	0.100 x 0.100
09	1.2480	0.2960	0.100 x 0.100
10	1.2650	0.5160	0.100 x 0.100
11	1.2650	0.8430	0.100 x 0.100
12	1.2425	1.0820	0.100 x 0.100
13	1.2465	1.3165	0.100 x 0.100
14	0.9520	1.3120	0.100 x 0.100
15	0.7800	1.3110	0.100 x 0.100
16	0.6245	1.3110	0.100 x 0.100