

MN4556B / MN4556BS

Dual Binary to 1-of-4 Decoders

Description

The MN4556B/S have dual decoder/demultiplexers. When enable input $\bar{E} = L$, one output of 4 ($\bar{O}_0$, $\bar{O}_1$, $\bar{O}_2$ and $\bar{O}_3$) is selected by two binary inputs (A_0 and A_1).

When enable input $E = H$, selection is inhibited and all outputs become "H".

Four-bit binary is decoded to hexadecimal by bit expansion, and also converted to many kind of codes.

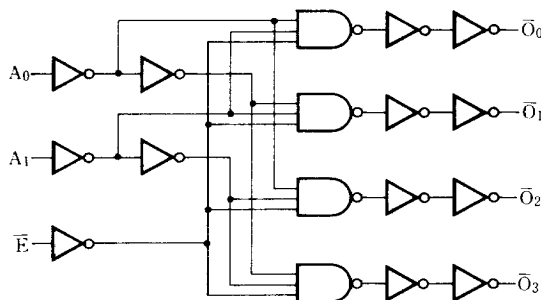
The MN4556B/S are equivalent to MOTOROLA MC14556B and RCA CD4556B.

Truth Table

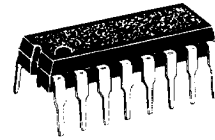
Input			Output			
$\bar{E}$	A_0	A_1	$\bar{O}_0$	$\bar{O}_1$	$\bar{O}_2$	$\bar{O}_3$
L	L	L	L	H	H	H
L	H	L	H	L	H	H
L	L	H	H	H	L	H
L	H	H	H	H	H	L
H	X	X	H	H	H	H

Note) X : don't care

Logic Diagram (1/2)



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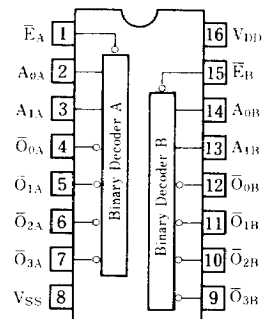
16-Pin • Plastic DIL Package

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16-Pin • Panafiat Package (SO-16D)

Pin Configuration



Maximum Ratings (Ta=25°C)

Item	Symbol	Ratings	Unit
Supply Voltage	V_{DD}	$-0.5 \sim +18$	V
Input Voltage	V_i	$-0.5 \sim V_{DD} + 0.5^*$	V
Output Voltage	V_o	$-0.5 \sim V_{DD} + 0.5^*$	V
Peak Input · Output Current	$\pm I_i$	max. 10	mA
Power Dissipation (per package)	P_D	max. 400	mW
		Decrease up to 200mW rating at 8mW/°C	
Power Dissipation (per output terminal)	P_D	max. 100	mW
Operating Ambient Temperature	T_{opr}	$-40 \sim +85$	°C
Storage Temperature	T_{stg}	$-65 \sim +150$	°C

* $V_{DD} + 0.5V$ should be under 18V

DC Characteristics $V_{SS}=0V$

Item	V_{DD} (V)	Sym- bol	Conditions	Ta=-40°C		Ta=25°C		Ta=85°C		Unit
				min.	max.	min.	max.	min.	max.	
Quiescent Power Supply Current	5	I_{DD}	$V_i = V_{SS}$ or V_{DD}	—	20	—	20	—	150	μA
	10			—	40	—	40	—	300	
	15			—	80	—	80	—	600	
Output Voltage Low Level	5	V_{OL}	$V_i = V_{SS}$ or V_{DD} $I_{OL} < 1\mu A$	—	0.05	—	0.05	—	0.05	V
	10			—	0.05	—	0.05	—	0.05	
	15			—	0.05	—	0.05	—	0.05	
Output Voltage High Level	5	V_{OH}	$V_i = V_{SS}$ or V_{DD} $I_{OH} < 1\mu A$	4.95	—	4.95	—	4.95	—	V
	10			9.95	—	9.95	—	9.95	—	
	15			14.95	—	14.95	—	14.95	—	
Input Voltage Low Level	5	V_{IL}	$ I_{OL} < 1\mu A$ $V_o = 0.5V$ or $4.5V$ $V_o = 1V$ or $9V$ $V_o = 1.5V$ or $13.5V$	—	1.5	—	1.5	—	1.5	V
	10			—	3	—	3	—	3	
	15			—	4	—	4	—	4	
Input Voltage High Level	5	V_{IH}	$ I_{OL} < 1\mu A$ $V_o = 0.5V$ or $4.5V$ $V_o = 1V$ or $9V$ $V_o = 1.5V$ or $13.5V$	3.5	—	3.5	—	3.5	—	V
	10			7	—	7	—	7	—	
	15			11	—	11	—	11	—	
Output Current Low Level	5	I_{OL}	$V_o = 0.4V, V_i = 0$ or $5V$	0.52	—	0.44	—	0.36	—	mA
	10		$V_o = 0.5V, V_i = 0$ or $10V$	1.3	—	1.1	—	0.9	—	
	15		$V_o = 1.5V, V_i = 0$ or $15V$	3.6	—	3	—	2.4	—	
Output Current High Level	5	$-I_{OH}$	$V_o = 4.6V, V_i = 0$ or $5V$	0.52	—	0.44	—	0.36	—	mA
	10		$V_o = 9.5V, V_i = 0$ or $10V$	1.3	—	1.1	—	0.9	—	
	15		$V_o = 13.5V, V_i = 0$ or $15V$	3.6	—	3	—	2.4	—	
Output Current High Level	5	$-I_{OH}$	$V_o = 2.5V, V_i = 0$ or $5V$	1.7	—	1.4	—	1.1	—	mA
Input Leakage Current	15	$\pm I_i$	$V_i = 0$ or $15V$	—	0.3	—	0.3	—	1	μA

■ Switching Characteristics (Ta=25°C. Vss=0V, Cl=50pF)

Item	V _{OH} (V)	Symbol	min.	typ.	max.	Unit
Output Rise Time	5	t _{TLH}	—	60	180	ns
	10		—	30	90	
	15		—	20	60	
Output Fall Time	5	t _{THL}	—	60	180	ns
	10		—	30	90	
	15		—	20	60	
Propagation Delay Time An→On (H→L)	5	t _{PHL}	—	130	390	ns
	10		—	50	150	
	15		—	35	105	
Propagation Delay Time An→On (L→H)	5	t _{PLH}	—	105	315	ns
	10		—	40	120	
	15		—	30	90	
Propagation Delay Time En→On (H→L)	5	t _{PHL}	—	120	360	ns
	10		—	45	135	
	15		—	30	90	
Propagation Delay Time En→On (L→H)	5	t _{PLH}	—	105	315	ns
	10		—	40	120	
	15		—	30	90	
Input Capacitance		C _I	—	—	7.5	pF

● Dynamic Signal Waveforms

