

MN4512B / MN4512BS

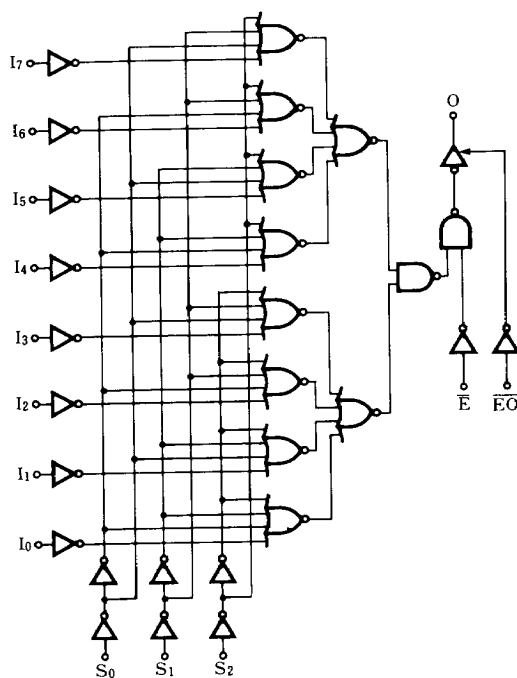
8-Input Multiplexers

Description

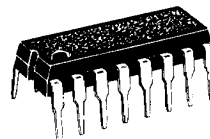
The MN4512B/S are 8-channel data selectors which select data inputs ($I_0 \sim I_7$) by select inputs (S_0, S_1, S_2). A High on the output enable forces the output high impedance (tristate), independent of any other conditions.

A High on the inhibit input ($\bar{E}$) and a Low on the enable output ($\bar{EO}$) inhibits the data select, and the output ($\bar{O}$) becomes Low. The MN4513B/S are equivalent MOTOROLA MC14512B and RCA CD4512B.

Logic Diagram



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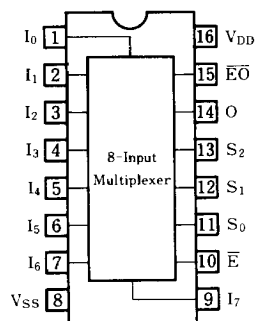
16-Pin • Plastic DIL Package

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16-Pin • Panafiat Package (SO-16D)

Pin Configuration



Pin Explanation

- S_0, S_1, S_2 : Select input
- $\bar{EO}$: Output enable input
- $\bar{E}$: Inhibit input
- $I_0 \sim I_7$: Multiplexer input
- O : Multiplexer output

■ Truth Table

Input													Output
$\overline{EO}$	$\overline{E}$	S_2	S_1	S_0	I_0	I_1	I_2	I_3	I_4	I_5	I_6	I_7	O
L	H	×	×	×	×	×	×	×	×	×	×	×	L
L	L	L	L	L	L	×	×	×	×	×	×	×	L
L	L	L	L	L	H	×	×	×	×	×	×	×	H
L	L	L	L	H	×	L	×	×	×	×	×	×	L
L	L	L	L	H	×	H	×	×	×	×	×	×	H
L	L	L	H	L	×	×	L	×	×	×	×	×	L
L	L	L	H	L	×	×	H	×	×	×	×	×	H
L	L	L	H	H	×	×	×	L	×	×	×	×	L
L	L	L	H	H	×	×	×	H	×	×	×	×	H
L	L	L	H	H	×	×	×	×	L	×	×	×	L
L	L	L	H	H	×	×	×	×	H	×	×	×	H
L	L	H	L	L	×	×	×	×	L	×	×	×	L
L	L	H	L	L	×	×	×	×	H	×	×	×	H
L	L	H	L	H	×	×	×	×	×	L	×	×	L
L	L	H	L	H	×	×	×	×	×	H	×	×	H
L	L	H	H	L	×	×	×	×	×	×	L	×	L
L	L	H	H	L	×	×	×	×	×	×	H	×	H
L	L	H	H	H	×	×	×	×	×	×	×	L	L
L	L	H	H	H	×	×	×	×	×	×	×	H	H
H	×	×	×	×	×	×	×	×	×	×	×	×	Z

Note) X : don't care
Z : high impedance (OFF Mode)

■ Maximum Ratings ($T_a=25^\circ\text{C}$)

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)	$T_a = -40 \sim +60^\circ\text{C}$	P_D	max. 400	mW
	$T_a = +60 \sim +85^\circ\text{C}$		Decrease up to 200mW rating at $8\text{mW}/^\circ\text{C}$	
Power Dissipation (per output terminal)		P_D	max. 100	mW
Operating Ambient Temperature		T_{opr}	$-40 \sim +85$	$^\circ\text{C}$
Storage Temperature		T_{stg}	$-65 \sim +150$	$^\circ\text{C}$

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

■ DC Characteristics ($V_{SS}=0V$)

Item	V_{DD} (V)	Sym- bol	Conditions	$T_a=-40^{\circ}C$		$T_a=25^{\circ}C$		$T_a=85^{\circ}C$		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_O < 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_O < 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_O < 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_O < 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 $5V$ $V_O=0.5V$, $V_I=0$ or $10V$ $V_O=1.5V$, $V_I=0$ or $15V$	0.52	—	0.44	—	0.36	—	mA
	10			1.3	—	1.1	—	0.9	—	
	15			3.6	—	3	—	2.4	—	
Output Current High Level	5	$-I_{OH}$	$V_O=4.6V$, $V_I=0$ or $5V$ $V_O=9.5V$, $V_I=0$ or $10V$ $V_O=13.5V$, $V_I=0$ or $15V$	0.52	—	0.44	—	0.36	—	mA
	10			1.3	—	1.1	—	0.9	—	
	15			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
3-State Output Pin	Leakage Current High Level	15	I_{OZH} $V_O=V_{DD}$	—	1.6	—	1.6	—	12	μA
	Leakage Current Low Level	15	$-I_{OZL}$ $V_O=V_{SS}$	—	1.6	—	1.6	—	12	

■ Switching Characteristics ($T_a=25^{\circ}C$, $V_{SS}=0V$, $C_L=50pF$)

Item	V_{DD} (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 $I_n \rightarrow O$ (L $\rightarrow$ H)	5	t_{PLH}	—	100	300	ns
	10		—	40	120	
	15		—	30	90	
Propagation Delay Time $I_n \rightarrow O$ (H $\rightarrow$ L)	5	t_{PHL}	—	100	300	ns
	10		—	40	120	
	15		—	30	90	

■ Switching Characteristics ($T_a = 25^\circ\text{C}$, $V_{SS} = 0\text{V}$, $C_L = 50\text{pF}$) (continued)

Item	V_{DD} (V)	Symbol	min.	typ.	max.	Unit
Propagation Delay Time $S_n \rightarrow O$ (L $\rightarrow$ H)	5	t_{PLH}	—	150	450	ns
	10		—	60	180	
	15		—	40	120	
Propagation Delay Time $S_n \rightarrow O$ (H $\rightarrow$ L)	5	t_{PHL}	—	140	420	ns
	10		—	55	165	
	15		—	40	120	
Propagation Delay Time $\bar{E} \rightarrow O$ (L $\rightarrow$ H)	5	t_{PLH}	—	55	165	ns
	10		—	25	75	
	15		—	20	60	
Propagation Delay Time $\bar{E} \rightarrow O$ (H $\rightarrow$ L)	5	t_{PHL}	—	60	180	ns
	10		—	25	75	
	15		—	20	60	
High Level Output Disable Time $\bar{EO} \rightarrow O$ (H)	5	t_{PHZ}	—	35	105	ns
	10		—	20	60	
	15		—	15	45	
Low Level Output Disable Time $\bar{EO} \rightarrow O$ (L)	5	t_{PLZ}	—	35	105	ns
	10		—	15	45	
	15		—	10	30	
High Level Output Enable Time $\bar{EO} \rightarrow O$ (H)	5	t_{PZH}	—	35	105	ns
	10		—	15	45	
	15		—	10	30	
Low Level Output Enable Time $\bar{EO} \rightarrow O$ (L)	5	t_{PZL}	—	35	105	ns
	10		—	20	60	
	15		—	15	45	
Input Capacitance		C_I	—	—	7.5	pF