HD14512B

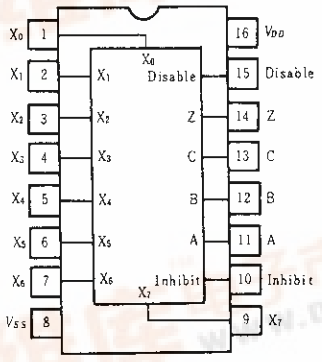
8- channel Data Selector

The HD14512B 8-channel data selector finds primary application in signal multiplexing functions. It may also be used for data routing, digital signal switching, signal gating, and number sequence generation.

■ FEATURES

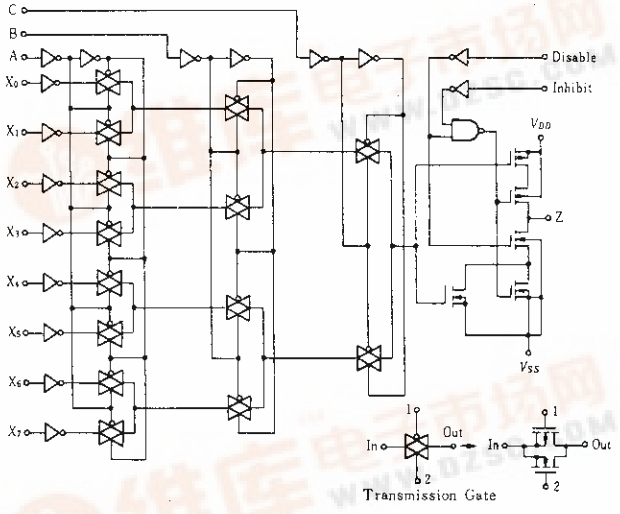
- Quiescent Current = 5nA/pkg typ. @5V
- 3-state Output
- Supply Voltage Range = 3 to 18V
- Capable of Driving One Low-power Schottky TTL Load Over the Rated Temperature Range

■ PIN ARRANGEMENT



(Top View)

■ LOGIC DIAGRAM

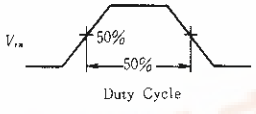


■ TRUTH TABLE

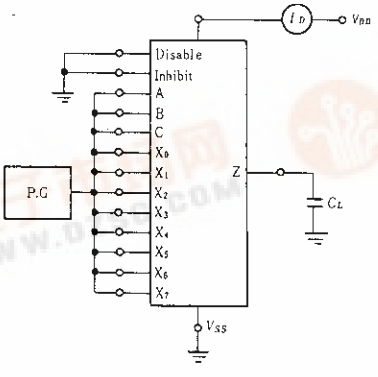
C	B	A	Inhibit	Disable	Z
0	0	0	0	0	X_0
0	0	1	0	0	X_1
0	1	0	0	0	X_2
0	1	1	0	0	X_3
1	0	0	0	0	X_4
1	0	1	0	0	X_5
1	1	0	0	0	X_6
1	1	1	0	0	X_7
×	×	×	1	0	0
×	×	×	×	1	High Impedance

x=Don't Care

■ POWER DISSIPATION TEST CIRCUIT AND WAVEFORM



Duty Cycle



■ ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	V_{DD}(V)	Test Conditions	−40°C min	−40°C max	25°C min	25°C typ	25°C max	85°C min	85°C max	Unit
Output Voltage	V_{OL}	5.0	$V_{in}=V_{DD}$ or 0	—	0.05	—	0	0.05	—	0.05	V
		10		—	0.05	—	0	0.05	—	0.05	
		15		—	0.05	—	0	0.05	—	0.05	
	V_{OH}	5.0	$V_{in}=0$ or V_{DD}	4.95	—	4.95	5.0	—	4.95	—	V
		10		9.95	—	9.95	10	—	9.95	—	
		15		14.95	—	14.95	15	—	14.95	—	
Input Voltage	V_{IL}	5.0	$V_{out}=4.5$ or 0.5V	—	1.5	—	2.25	1.5	—	1.5	V
		10	$V_{out}=9.0$ or 1.0V	—	3.0	—	4.50	3.0	—	3.0	
		15	$V_{out}=13.5$ or 1.5V	—	4.0	—	6.75	4.0	—	4.0	
	V_{IH}	5.0	$V_{out}=0.5$ or 4.5V	3.5	—	3.5	2.75	—	3.5	—	V
		10	$V_{out}=1.0$ or 9.0V	7.0	—	7.0	5.50	—	7.0	—	
		15	$V_{out}=1.5$ or 13.5V	11.0	—	11.0	8.25	—	11.0	—	
Output Drive Current	I_{OH}	5.0	$V_{OH}=2.5$V	−0.23	—	−0.20	−1.7	—	−0.16	—	mA
		10	$V_{OH}=9.5$V	−0.23	—	−0.20	−0.9	—	−0.16	—	
		15	$V_{OH}=13.5$V	−0.69	—	−0.60	−3.5	—	−0.48	—	
	I_{OL}	5.0	$V_{OL}=0.4$V	0.23	—	0.20	0.78	—	0.16	—	mA
		10	$V_{OL}=0.5$V	0.60	—	0.50	2.0	—	0.40	—	
		15	$V_{OL}=1.5$V	1.8	—	1.5	7.8	—	1.2	—	
Input Current	I_{in}	15		—	±0.3	—	±0.00001	±0.3	—	±1.0	μA
Input Capacitance	C_{in}		$V_{in}=0$	—	—	—	5.0	7.5	—	—	pF
Quiescent Current	I_{DD}	5.0	Zero Signal, per Package	—	20	—	0.005	20	—	150	μA
		10		—	40	—	0.010	40	—	300	
		15		—	80	—	0.015	80	—	600	
Total Supply Current*	I_T	5.0	Dynamic+I_{DD}, per Gate $C_L=50$pF, $f=1$kHz	—	—	—	0.8	—	—	—	μA
		10		—	—	—	1.6	—	—	—	
		15		—	—	—	2.4	—	—	—	
Three-State Output Leakage Current	I_{TL}	15		—	±1.0	—	±0.00001	±1.0	—	±7.5	μA

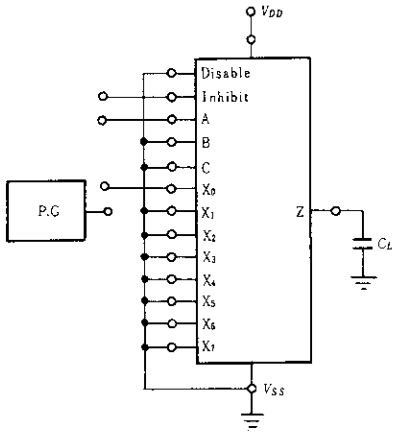
* To calculate total supply current at frequency other than 1kHz.
@$V_{DD}=5.0$V $I_T=(0.8\mu A/kHz)f+I_{DD}$, @$V_{DD}=10$V $I_T=(1.6\mu A/kHz)f+I_{DD}$, @$V_{DD}=15$V $I_T=(2.4\mu A/kHz)f+I_{DD}$

■SWITCHING CHARACTERISTICS (C_L=50pF, Ta=25℃)

Characteristic	Symbol	V_{DD}(V)	typ	max	Unit
Output Rise Time	t_r	5.0	225	400	ns
		10	110	200	
		15	80	160	
Output Fall Time	t_f	5.0	130	250	ns
		10	75	150	
		15	50	100	
Propagation Delay Time	t_{PLH}	5.0	225	750	ns
		10	75	200	
		15	57	150	
	t_{PHL}	5.0	225	750	ns
		10	75	200	
		15	57	150	
Output Enable Time/Output Disable Time	t_{HZ}, t_{LZ}, t_{ZH}, t_{ZL}	5.0	50	150	ns
		10	25	100	
		15	19	75	

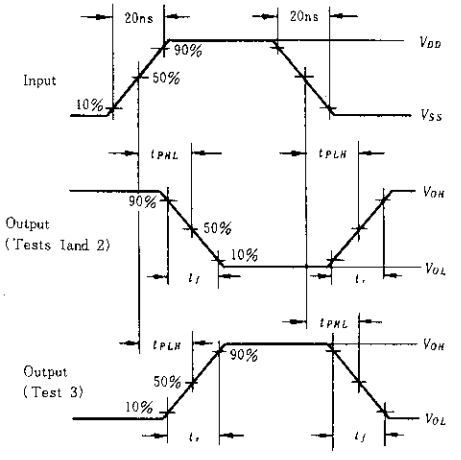
■AC TEST CIRCUITS

● t_r, t_f, t_{PLH}, t_{PHL}

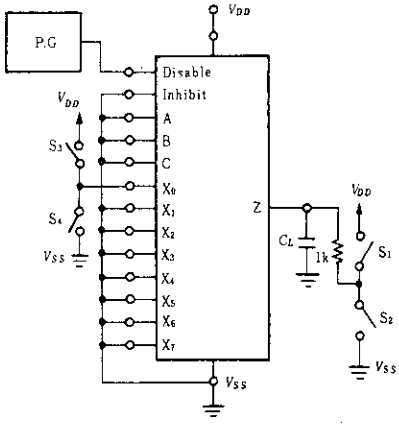


● Input Conditions

Test	Inhibit	A	X_0
1	P.G.	GND	V_{DD}
2	GND	P.G.	V_{DD}
3	GND	GND	P.G.

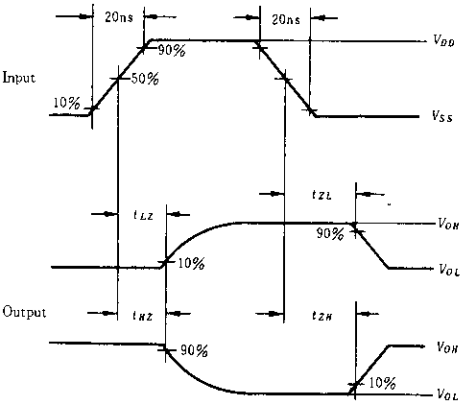


● t_{HZ}, t_{LZ}, t_{ZH}, t_{ZL}

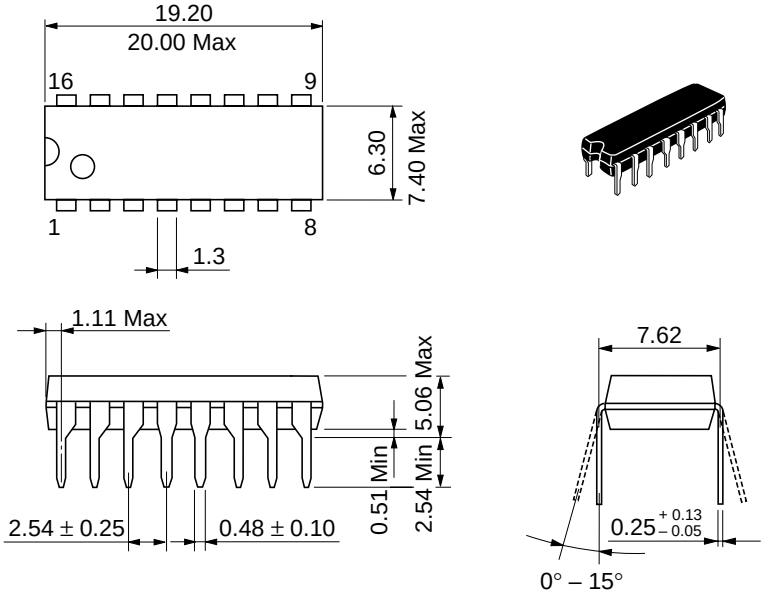


● Switch Positions

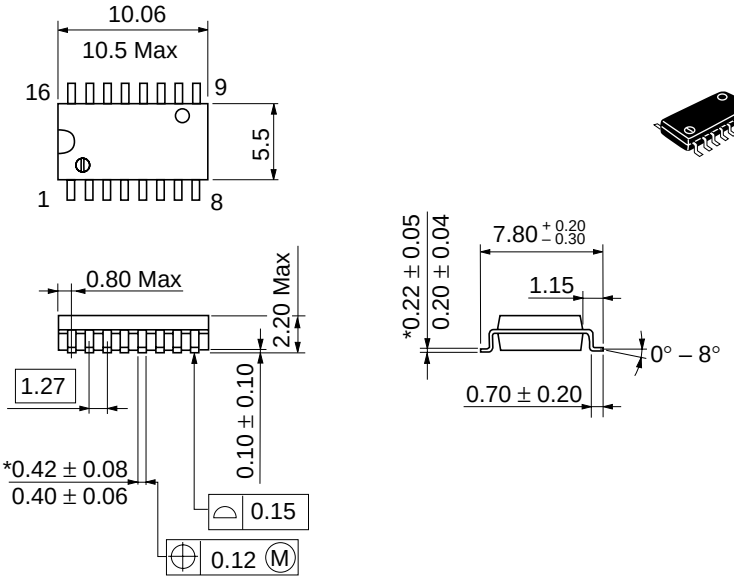
Test	S_1	S_2	S_3	S_4
t_{HZ}	Open	Closed	Closed	Open
t_{LZ}	Closed	Open	Open	Closed
t_{ZL}	Closed	Open	Open	Closed
t_{ZH}	Open	Closed	Closed	Open



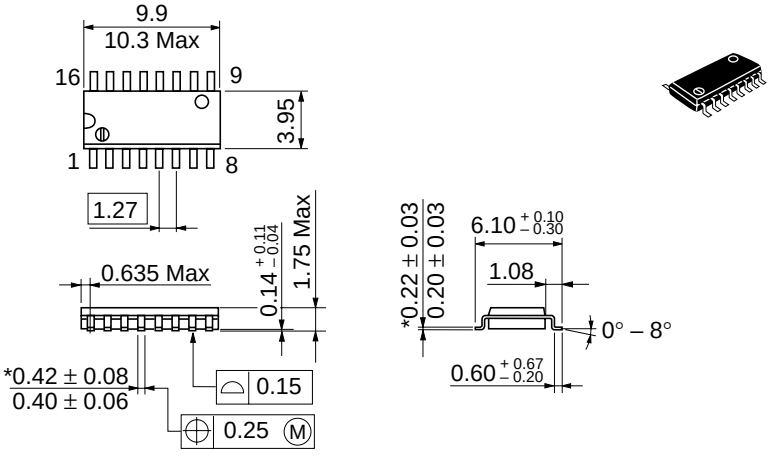
Unit: mm


19.20
20.00 Max
16
9
6.30
7.40 Max
1
8
1.3
1.11 Max
5.06 Max
0.51 Min
2.54 Min
2.54 ± 0.25
0.48 ± 0.10
7.62
0.25 + 0.13 − 0.05
0° – 15°

Unit: mm


10.06
10.5 Max
16
9
1
8
5.5
0.80 Max
2.20 Max
1.27
*0.42 ± 0.08
0.40 ± 0.06
0.10 ± 0.10
0.15
0.12 M
*0.22 ± 0.05
0.20 ± 0.04
7.80 +0.20 −0.30
1.15
0° – 8°
0.70 ± 0.20

Unit: mm


9.9
10.3 Max
16
9
1
8
3.95
1.27
0.635 Max
0.14 +0.11 −0.04
1.75 Max
*0.42 ± 0.08
0.40 ± 0.06
0.15
0.25 M
*0.22 ± 0.03
0.20 ± 0.03
6.10 +0.10 −0.30
1.08
0° – 8°
0.60 +0.67 −0.20

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