

# HD14519B

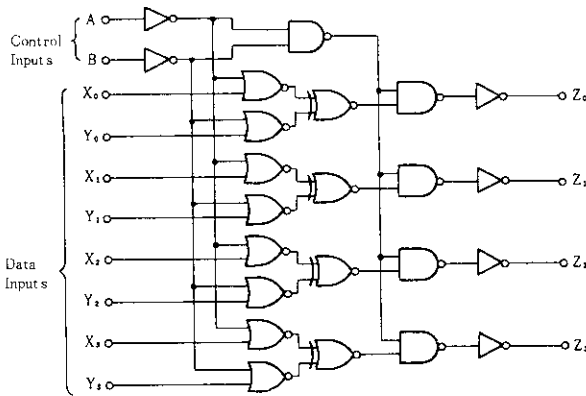
## 4-bit AND/OR Selector or Quadruple 2-Channel Data Selector or Quadruple Exclusive-NOR Gate

The HD14519B finds primary use where low power dissipation and/or high noise immunity is desired. This device exemplifies the design versatility of CMOS logic structure. This part provides three functions in one package; a 4-bit AND/OR Selector, a Quad 2-channel Data Selector, or a Quad Exclusive NOR Gate.

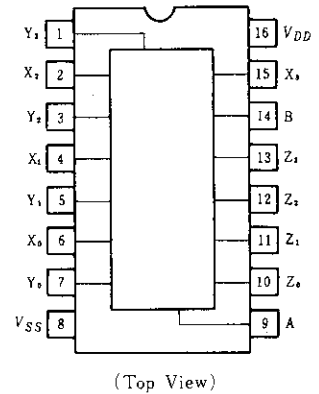
### FEATURES

- Quiescent Current = 5nA/pkg typ. @5V
- Noise Immunity = 45% of  $V_{DD}$  typ.
- Supply Voltage Range = 3 to 18V
- Capable of Driving One Low-power Schottky TTL Load Over the Rated Temperature Range
- Pin-for-Pin Compatible with HD14519B.

### LOGIC DIAGRAM



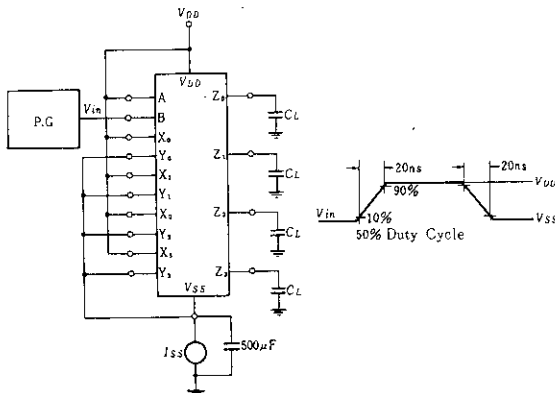
### PIN ARRANGEMENT



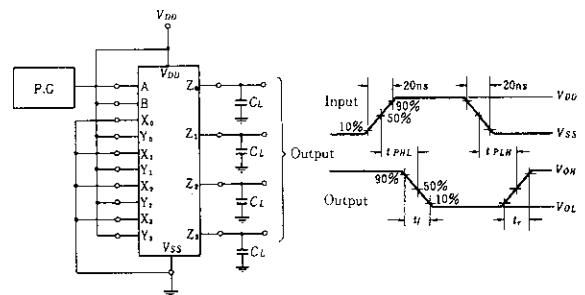
### TRUTH TABLE

Control Inputs		Outputs
A	B	$Z_n$
0	0	0
0	1	$Y_n$
1	0	$X_n$
1	1	$X_n \oplus Y_n$

### POWER DISSIPATION TEST CIRCUIT AND WAVEFORM



### SWITCHING TIME TEST CIRCUIT



## ELECTRICAL CHARACTERISTICS

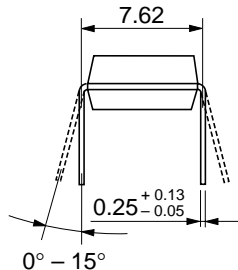
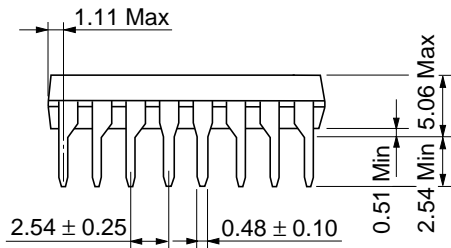
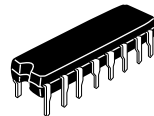
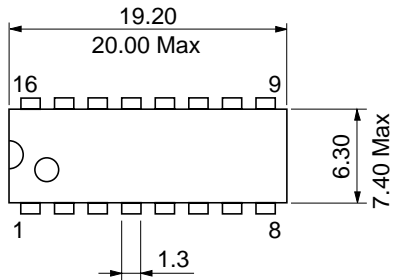
Characteristic	Symbol	$V_{DD}(V)$	Test Conditions	-40°C		25°C			85°C		Unit
				min	max	min	typ	max	min	max	
Output Voltage	$V_{OL}$	5.0	$V_{in} = V_{DD}$ or 0	-	0.05	-	0	0.05	-	0.05	V
		10		-	0.05	-	0	0.05	-	0.05	
		15		-	0.05	-	0	0.05	-	0.05	
	$V_{OH}$	5.0	$V_{in} = 0$ or $V_{DD}$	4.95	-	4.95	5.0	-	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	$V_{OH} = 2.5V$	-1.0	-	-0.8	-1.7	-	-0.6	-	mA
		5.0	$V_{OH} = 4.6V$	-0.2	-	-0.16	-0.36	-	-0.12	-	
		10	$V_{OH} = 9.5V$	-0.5	-	-0.4	-0.9	-	-0.3	-	
		15	$V_{OH} = 13.5V$	-1.4	-	-1.2	-3.5	-	-1.0	-	
	$I_{OL}$	5.0	$V_{OL} = 0.4V$	0.52	-	0.44	0.88	-	0.36	-	mA
		10	$V_{OL} = 0.5V$	1.3	-	1.1	2.25	-	0.9	-	
15		$V_{OL} = 1.5V$	3.6	-	3.0	8.8	-	2.4	-		
Input Current	$I_{in}$	15		-	$\pm 0.3$	-	$\pm 0.0001$	$\pm 0.3$	-	$\pm 1.0$	$\mu A$
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	$\mu A$
		10		-	40	-	0.010	40	-	300	
		15		-	80	-	0.015	80	-	600	
Total Supply Current*	$I_T$	5.0	Dynamic + $I_{DD}$	-	-	-	1.2	-	-	-	$\mu A$
		10	$C_L = 50pF$ , $f = 1 kHz$	-	-	-	2.4	-	-	-	
		15	per Gate	-	-	-	3.6	-	-	-	
Three-State Output Leakage Current	$I_{TL}$	15		-	$\pm 1.0$	-	$\pm 0.0001$	$\pm 1.0$	-	$\pm 7.5$	$\mu A$

\* To calculate total supply current at frequency other than 1kHz.

@  $V_{DD} = 5.0V$   $I_T = (1.2\mu A/kHz)f + I_{DD}$  @  $V_{DD} = 10V$   $I_T = (2.4\mu A/kHz)f + I_{DD}$  @  $V_{DD} = 15V$   $I_T = (3.6\mu A/kHz)f + I_{DD}$

## SWITCHING CHARACTERISTICS ( $C_L = 50pF$ , $T_a = 25^\circ C$ )

Characteristic	Symbol	$V_{DD}(V)$	min	typ	max	Unit
Output Rise Time	$t_r$	5.0	-	180	400	ns
		10	-	90	200	
		15	-	65	160	
Output Fall Time	$t_f$	5.0	-	100	200	ns
		10	-	50	100	
		15	-	37	80	
Propagation Delay Time	$t_{PLH}$	5.0	-	250	500	ns
		10	-	115	225	
		15	-	90	165	
	$t_{PHL}$	5.0	-	250	500	ns
		10	-	115	225	
		15	-	90	165	



Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.07 g

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