

HD14529B

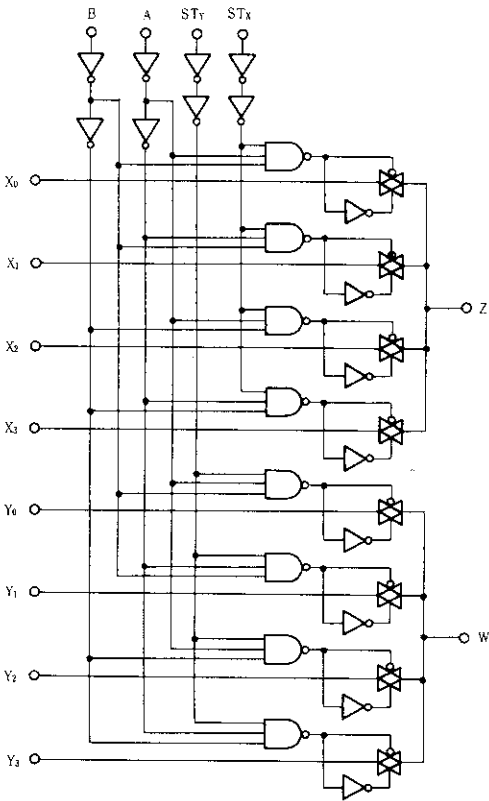
Dual 4-Channel Analog Data Selector

The HD14529B analog data selector is a dual 4-channel or single 8-channel device depending on the input coding. The device is suitable for digital as well as analog application, including various one-of-four and one-of-eight data selector functions. Since the device has bidirectional analog characteristics it can also be used as a dual binary to 1-of-4 or a binary to 1-of-8 decoder.

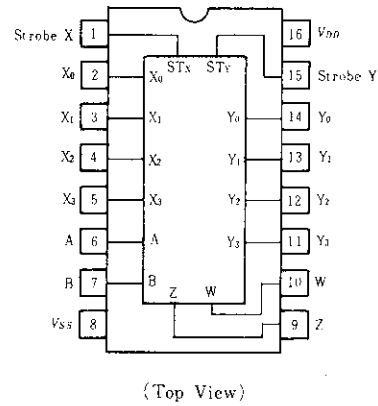
FEATURES

- Data Paths are Bidirectional
- Quiescent Current = 1nA/pkg typ. @5V
- 10MHz Operation (typ.)
- 3-state Outputs
- Linear "ON" Resistance
- "ON" Resistance 120Ω typ. @15V
- Low Noise = 12nV $\sqrt{\text{Cycle}}$, $f \geq 1\text{kHz}$ typ.
- Supply Voltage Range = 3 to 18V
- Capable of Driving One Low-power Schottky TTL Load Over the Rated Temperature Range

LOGIC DIAGRAM



PIN ARRANGEMENT



TRUTH TABLE

Strobe X	Strobe Y	B	A	Z	W	Mode
1	1	0	0	X ₀	Y ₀	Dual 4-Channel 2 Output
1	1	0	1	X ₁	Y ₁	
1	1	1	0	X ₂	Y ₂	
1	1	1	1	X ₃	Y ₃	
1	0	0	0	X ₀		Single 8-Channel 1 Output (Z and W tied together)
1	0	0	1	X ₁		
1	0	1	0	X ₂		
1	0	1	1	X ₃		
0	1	0	0	Y ₀		
0	1	0	1	Y ₁		
0	1	1	0	Y ₂		
0	1	1	1	Y ₃		
0	0	×	×	High Impedance		

× = Don't Care

ELECTRICAL CHARACTERISTICS

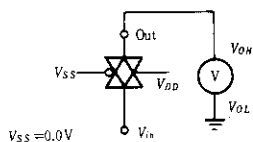
Characteristic		Symbol	Test Circuit	$V_{SS}(V)$ $V_{DD}(V)$		Test Conditions		-40°C		25°C			85°C		Unit
								min	max	min	typ	max	min	max	
Output Voltage		V_{OL}	1	0	5.0	$V_{in}=V_{DD}$ or 0	—	0.05	—	0	0.05	—	0.05	V	
					10		—	0.05	—	0	0.05	—	0.05		
					15		—	0.05	—	0	0.05	—	0.05		
		V_{OH}		0	5.0	$V_{in}=0$ 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	—		
Noise Immunity		V_{NL}	2	0	5.0	$I_{out}\leq 10\mu A$	1.5	—	1.5	2.25	—	1.4	—	V	
					10		3.0	—	3.0	4.50	—	2.9	—		
					15		4.0	—	4.5	6.75	—	4.4	—		
		V_{NH}		0	5.0	$I_{out}\geq 10\mu A$	1.4	—	1.5	2.25	—	1.5	—	V	
					10		2.9	—	3.0	4.50	—	3.0	—		
					15		4.4	—	4.5	6.75	—	4.5	—		
Input Current		I_{in}		0	15		—	± 0.3	—	± 0.00001	± 0.3	—	± 1.0	μA	
Input Capacitance	Control	C_{in}		0			—	—	—	5.0	7.5	—	—	pF	
	Switch Input						—	—	—	8.0	—	—	—		
	Switch Output						—	—	—	20	—	—	—		
	Feed Through						—	—	—	0.3	—	—	—		
Quiescent Current		I_{DD}	3		5.0	Zero Signal, per Package	—	5.0	—	0.001	5.0	—	70	μA	
					10		—	5.0	—	0.002	5.0	—	70		
					15		—	10	—	0.003	10	—	140		
ON Resistance		R_{ON}	4	-5.0	5.0	$V_C=V_{DD},$ $R_L=10k\Omega$	$V_{in}=+5.0V$	—	410	—	200	480	—	560	Ω
							$V_{in}=-5.0V$	—	410	—	200	480	—	560	
							$V_{in}=\pm 0.25V$	—	410	—	190	480	—	560	
				-7.5	7.5	$V_C=V_{DD},$ $R_L=10k\Omega$	$V_{in}=+7.5V$	—	250	—	160	270	—	350	
							$V_{in}=-7.5V$	—	250	—	160	270	—	350	
							$V_{in}=\pm 0.25V$	—	250	—	120	270	—	350	
				0	10	$V_C=V_{DD},$ $R_L=10k\Omega$	$V_{in}=+10V$	—	410	—	180	480	—	560	
							$V_{in}=+0.25V$	—	410	—	180	480	—	560	
							$V_{in}=+5.6V$	—	410	—	220	480	—	560	
				0	15	$V_C=V_{DD},$ $R_L=10k\Omega$	$V_{in}=+15V$	—	250	—	180	270	—	350	
							$V_{in}=+0.25V$	—	250	—	180	270	—	350	
							$V_{in}=+9.3V$	—	250	—	215	270	—	350	
Δ ON Resistance Between Any Two Channels		ΔR_{ON}		-5.0	5.0	$V_{in}=\pm 5.0V$	—	—	—	15	—	—	—	Ω	
				-7.5	7.5	$V_{in}=\pm 7.5V$	—	—	—	10	—	—	—		

SWITCHING CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

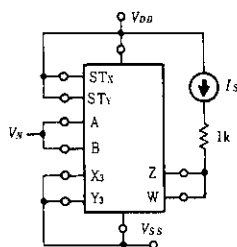
Characteristic		Symbol	Test Circuit	V_{SS} (V)	V_{DD} (V)	Test Conditions	typ	max	Unit	
Propagation Delay Time	V_{in} to V_{out}	$t_{PLH},$	5	0	5.0	$C_L=50\text{pF}, R_L=1.0\text{k}\Omega$	20	60	ns	
					10		10	30		
					15		8.0	25		
	Control to Output	t_{PHL}	6	0	5.0	$V_{in}=V_{DD}$ or $V_{SS},$	200	600		
					10	$V_{in}\leq 10\text{V}, C_L=50\text{pF},$	80	240		
					15	$R_L=1.0\text{k}\Omega$	50	180		
Crosstalk (Control to Output)			7	0	5.0	$C_L=50\text{pF}, R_L=1.0\text{k}\Omega,$	5.0	—	mV	
					10	$R_{out}=10\text{k}\Omega$	5.0	—		
					15	5.0	—			
Maximum Control Input Pulse Frequency			8	0	5.0	$C_L=50\text{pF}, R_L=1.0\text{k}\Omega$	5.0	—	MHz	
					10		10	—		
					15		12	—		
Noise Voltage			9	0	5.0	$f=100\text{Hz}$	24	—	nV/ $\sqrt{\text{Hz}}$	
					10		25	—		
					15		30	—		
					5.0	$f=100\text{kHz}$	12	—		
					10		12	—		
					15		15	—		
Sine Wave (Distortion)				−5.0	5.0	$V_{in}=1.77\text{V}, R_L=10\text{k}\Omega, f=1.0\text{kHz}$	0.36	—	%	
Input/Output Leakage Current				−5.0	5.0	$V_{in}=+5.0\text{V}, V_{out}=−5.0\text{V}$	± 0.001	± 125	nA	
				−5.0	5.0	$V_{in}=−5.0\text{V}, V_{out}=+5.0\text{V}$	± 0.001	± 125		
				−7.5	7.5	$V_{in}=+7.5\text{V}, V_{out}=−7.5\text{V}$	± 0.0015	± 250		
				−7.5	7.5	$V_{in}=−7.5\text{V}, V_{out}=+7.5\text{V}$	± 0.0015	± 250		
Insertion Loss				−5.0	5.0	$V_{in}=1.77\text{V},$	$R_L=1.0\text{k}\Omega$	2.0	—	dB
						$f=1\text{MHz},$	$R_L=10\text{k}\Omega$	0.8	—	
						$I_{loss}=20\log_{10}\frac{V_{out}}{V_{in}}$	$R_L=100\text{k}\Omega$	0.25	—	
							$R_L=1.0\text{M}\Omega$	0.01	—	
Bandwidth		BW		−5.0	5.0	$V_{in}=1.77\text{V}$	$R_L=1.0\text{k}\Omega$	35	—	MHz
							$R_L=10\text{k}\Omega$	28	—	
							$R_L=100\text{k}\Omega$	27	—	
							$R_L=1.0\text{M}\Omega$	26	—	
Feedthrough and Crosstalk				−5.0	5.0	$20\log_{10}\frac{V_{out}}{V_{in}}=−50\text{dB}$	$R_L=1.0\text{k}\Omega$	850	—	kHz
							$R_L=10\text{k}\Omega$	100	—	
							$R_L=100\text{k}\Omega$	12	—	
							$R_L=1.0\text{M}\Omega$	1.5	—	

■ DC CHARACTERISTIC TEST CIRCUIT

1.

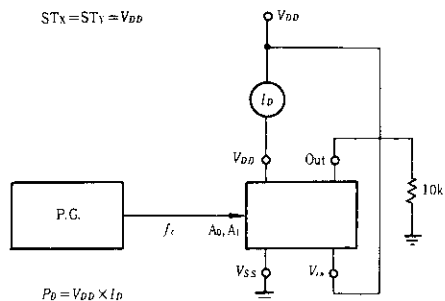

$$V_{SS} = 0,0 \text{ V}$$

2.

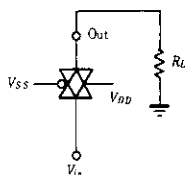

$$V_{NL} = V_N \text{ (when } I_S \rightarrow 10 \mu\text{A)}$$
$$V_{NH} = V_{DD} - V_N \text{ (when } I_S = 10 \mu\text{A)}$$

Pins 2, 3, 4, 12, 13 and 14 are left open.

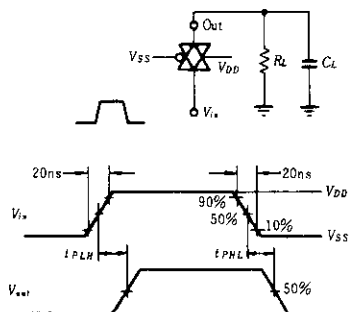
3.

$$ST_X = ST_Y = V_{DD}$$

$$P_{\theta} = V_{\theta\theta} \times I_P$$

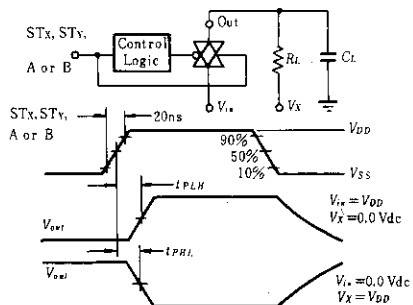
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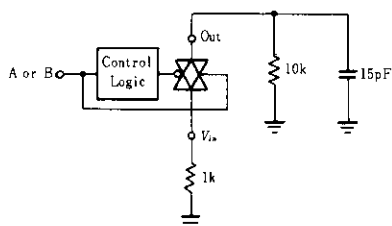
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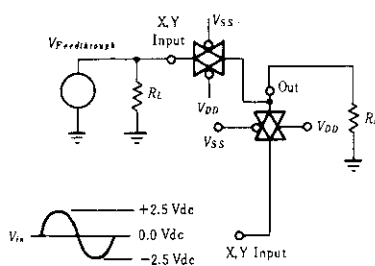
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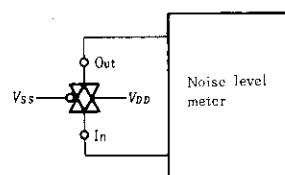
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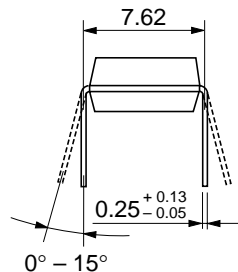
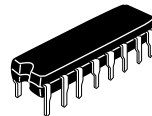
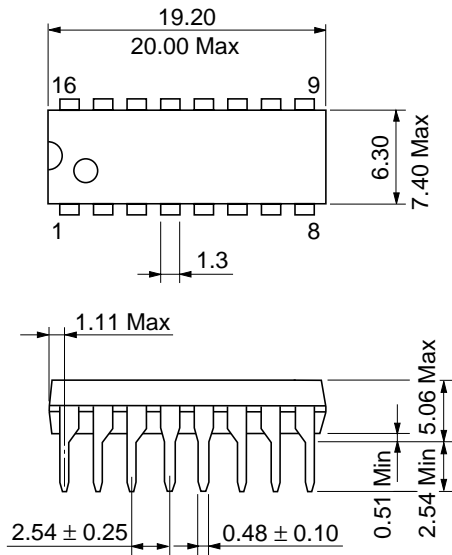
8.



9.



Unit: mm



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

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