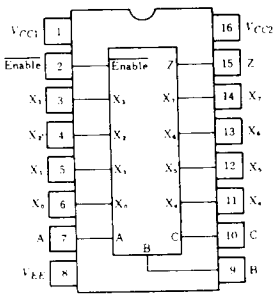
8 Line Multiplexer

The HD10164 can be used whenever data multiplexing or parallel to serial conversion is desirable. Full parallel gating permits equal delays through any data path. The output of the HD10164 incorporates a buffer gate with eight data inputs and an enable. A high level on the enable forces the output low. The HD10164 can be connected directly to a data bus, due to its open emitter output and output enable.

■PIN ARRANGEMENT



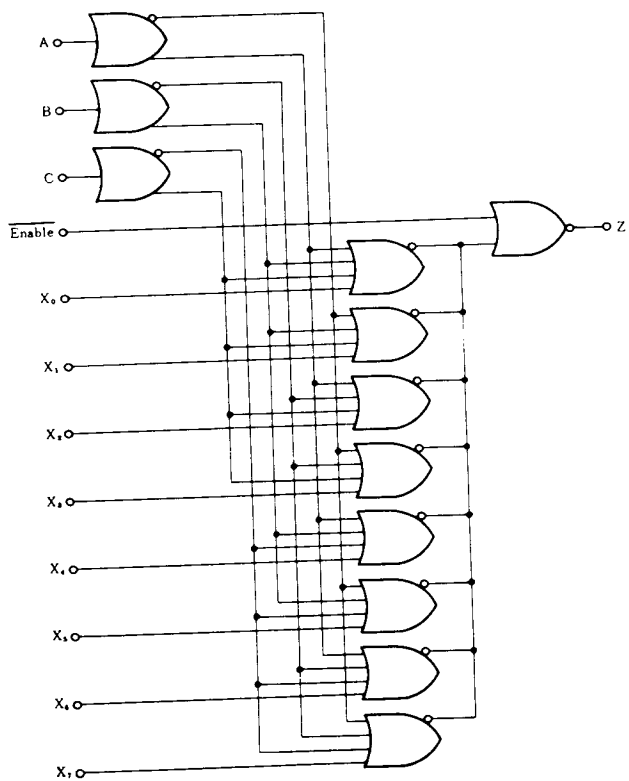
(Top View)

■FUNCTION TABLE

Enable	Address Inputs			Z
	C	B	A	
L	L	L	L	X_0
L	L	L	H	X_1
L	L	H	L	X_2
L	L	H	H	X_3
L	H	L	L	X_4
L	H	L	H	X_5
L	H	H	L	X_6
L	H	H	H	X_7
H	×	×	×	L

× : Don't Care

■BLOCK DIAGRAM



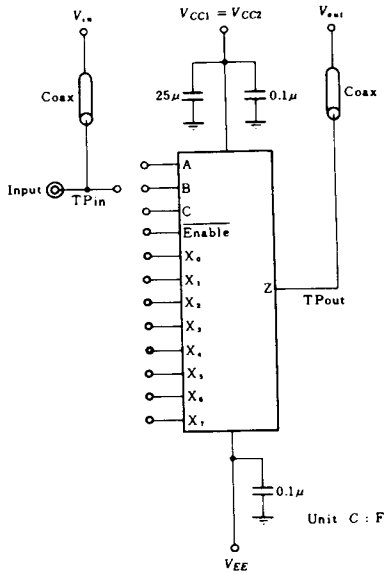
■ DC CHARACTERISTICS (V_{EE} = −5.2V, Ta = −30 ~ +85℃)

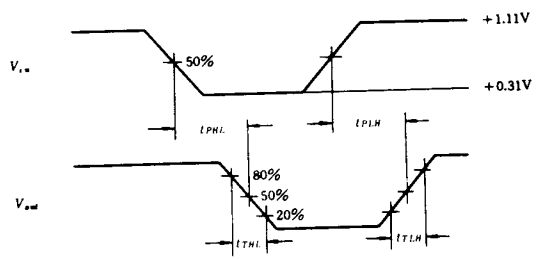
Item	Symbol	Test Condition		min	typ	max	Unit
Supply Current	I_{EE}		25℃	—	60	75	mA
Input Current	I_{IH}	V_{IH} = −0.810V	25℃	—	—	265	μA
	I_{IL}	V_{IL} = −1.850V	25℃	0.5	—	—	μA
Output Voltage	V_{OH}	V_{IH} = −0.890V or V_{IL} = −1.890V	−30℃	−1.060	—	−0.890	V
		V_{IH} = −0.810V or V_{IL} = −1.850V	25℃	−0.960	—	−0.810	
		V_{IH} = −0.700V or V_{IL} = −1.825V	85℃	−0.890	—	−0.700	
	V_{OL}	V_{IL} = −1.890V or V_{IH} = −0.890V	−30℃	−1.890	—	−1.675	V
		V_{IL} = −1.850V or V_{IH} = −0.810V	25℃	−1.850	—	−1.650	
		V_{IL} = −1.825V or V_{IH} = −0.700V	85℃	−1.825	—	−1.615	
Output Threshold Voltage	V_{OHA}	V_{IHA} = −1.205V or V_{ILA} = −1.500V	−30℃	−1.080	—	—	V
		V_{IHA} = −1.105V or V_{ILA} = −1.475V	25℃	−0.980	—	—	
		V_{IHA} = −1.035V or V_{ILA} = −1.440V	85℃	−0.910	—	—	
	V_{OLA}	V_{ILA} = −1.500V or V_{IHA} = −1.205V	−30℃	—	—	−1.655	V
		V_{ILA} = −1.475V or V_{IHA} = −1.105V	25℃	—	—	−1.630	
		V_{ILA} = −1.440V or V_{IHA} = −1.035V	85℃	—	—	−1.595	

■ AC CHARACTERISTICS (V_{EE} = −3.2V, V_{CC} = +2.0V, Ta = −30 ~ +85℃)

Item	Symbol	Input	Output	Test Condition		min	typ	max	Unit
Propagation Delay Time	t_{PLH}	data	Z	R_L = 50Ω	−30℃	1.5	—	4.7	ns
					25℃	1.5	3.0	4.5	
					85℃	1.6	—	4.8	
	t_{PHL}				−30℃	1.5	—	4.7	ns
					25℃	1.5	3.0	4.5	
					85℃	1.6	—	4.8	
	t_{PLH}	address	Z		−30℃	1.9	—	6.3	ns
					25℃	2.0	4.0	6.0	
					85℃	2.2	—	6.5	
	t_{PHL}				−30℃	1.9	—	6.3	ns
					25℃	2.0	4.0	6.0	
					85℃	2.2	—	6.5	
	t_{PLH}	$\overline{\text{Enable}}$	Z		−30℃	0.9	—	3.3	ns
					25℃	1.0	2.0	2.9	
					85℃	1.0	—	3.1	
	t_{PHL}				−30℃	0.9	—	3.3	ns
					25℃	1.0	2.0	2.9	
					85℃	1.0	—	3.1	
Rise/Fall Time	t_{TLH}		Z		−30℃	0.9	—	3.3	ns
					25℃	1.1	2.0	3.3	
					85℃	1.2	—	3.6	
	t_{THL}				−30℃	0.9	—	3.3	ns
					25℃	1.1	2.0	3.3	
					85℃	1.2	—	3.6	

■ SWITCHING TIME TEST CIRCUIT





Notes)
1. 50Ω termination to ground located in each scope channel input. All input and output cables to the scope are equal lengths of 50Ω coaxial cable.
2. Wire length should be <6.35mm (1/4 inch) from TPin to input pin and TPout to output pin.
3. Unused outputs connected in a 50Ω resistor to ground.