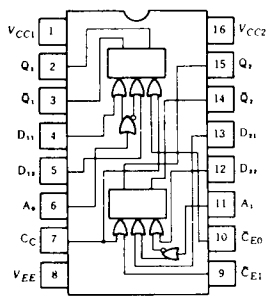
Dual Multiplexers with Latch

The HD10134 is a dual multiplexer with clocked D type latches. Each latch may be clocked separately by holding the common clock in the low state, and using the clock enable inputs for the clocking function. If the common clock is to be used to clock the latch, the clock enable($\overline{CE}$) inputs must be in the low state. In this mode, the enable inputs perform the function of controlling the common clock(C_C).

The data select inputs determine which data input is enabled. A high(H) level on the A0 input enables data input D12 and a low(L) level on the A0 input enables data input D11. A high(H) level on the A1 input enables data input D22 and a low(L) level on the A1 input enables data input D21. Any change on the data input will be reflected at the outputs while the clock is low. The outputs are latched on the positive transition of the clock. While the clock is in the high state, a change in the information present at the data inputs will not affect the output information.

■PIN ARRANGEMENT



(Top View)

■FUNCTION TABLE

C	A_0	D_{11}	D_{12}	Q_{n+1}
L	L	L	×	L
L	L	H	×	H
L	H	×	L	L
L	H	×	H	H
H	×	×	×	Q_n

Notes) × : Don't care.
$C = \overline{C}_E + C_C$

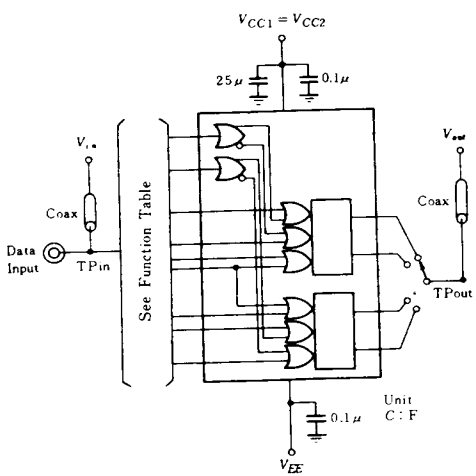
■DC CHARACTERISTICS ($V_{EE} = -5.2V$, $Ta = -30 \sim +85°C$)

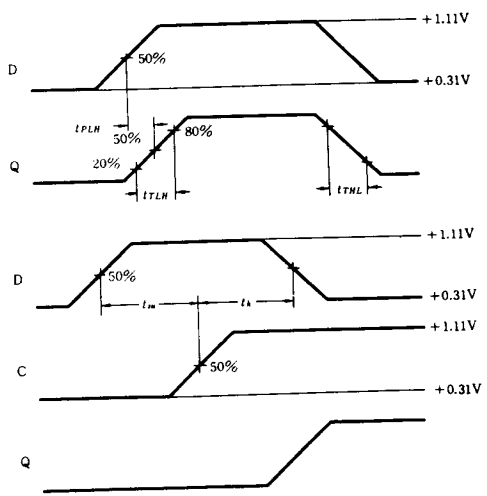
Item	Symbol	Test Condition			min	typ	max	Unit
Supply Current	I_{EE}			25℃	—	—	55	mA
Input Current	I_{IH}	$V_{IH} = -0.810V$	D, C_C	25℃	—	—	290	μA
			A, $\overline{C_E}$		—	—	265	
	I_{IL}	$V_{IL} = -1.850V$		25℃	0.5	—	—	μA
Output Voltage	V_{OH}	$V_{IH} = -0.890V$ or $V_{IL} = -1.890V$		−30℃	−1.060	—	−0.890	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 = 25°C)

Item	Symbol	Input	Output	Test Condition	min	typ	max	Unit
Propagation Delay Time	t_{PLH}	D	Q, $\overline{Q}$	R_L = 50Ω	1.0	—	3.3	ns
	t_{PHL}				1.0	—	3.3	ns
	t_{PLH}	Cc, $\overline{CE}$	Q, $\overline{Q}$		1.0	—	5.7	ns
	t_{PHL}				1.0	—	5.7	ns
	t_{PLH}	A	Q, $\overline{Q}$		1.0	—	4.6	ns
	t_{PHL}				1.0	—	4.6	ns
Setup Time	t_{su}	D	Q, $\overline{Q}$		—	—	2.5	ns
		A	Q, $\overline{Q}$		—	—	3.5	
Hold Time	t_h	D	Q, $\overline{Q}$		—	—	1.5	ns
		A	Q, $\overline{Q}$		—	—	1.0	
Rise/Fall Time	t_{TLH}		Q, $\overline{Q}$		1.5	—	3.5	ns
	t_{THL}				1.5	—	3.5	ns

■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 to a 50Ω resistor to ground.
4. t_{su} is the minimum time before the positive transition of the clock pulse that information must be present at the data.
5. t_h is the minimum time after the positive transition of the clock pulse that information must remain unchanged at the data.