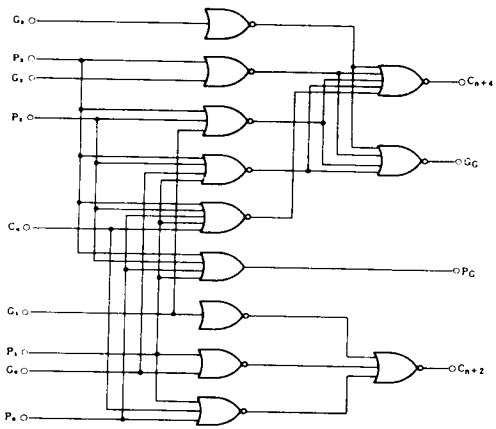
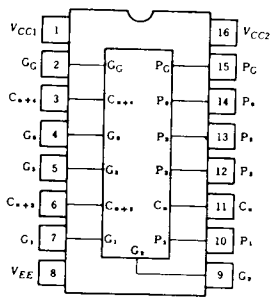
Look-Ahead Carry Block

The HD10179 is a high speed, low power, standard ECL complex function that is designed to perform the look-ahead carry function. This device can be used with the HD10181 4-unit ALU directly, or with the HD10180 dual arithmetic unit in any computer, instrumentation or digital communication application requiring high speed arithmetic operation on long words.

■ BLOCK DIAGRAM



■ PIN ARRANGEMENT



(Top View)

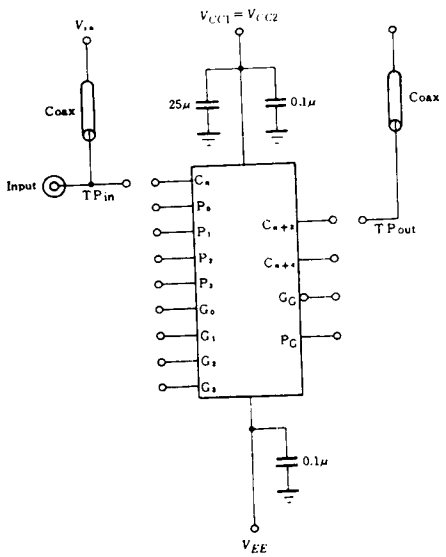
■ DC CHARACTERISTICS ($V_{EE} = -5.2V$, $Ta = -30 \sim +85°C$)

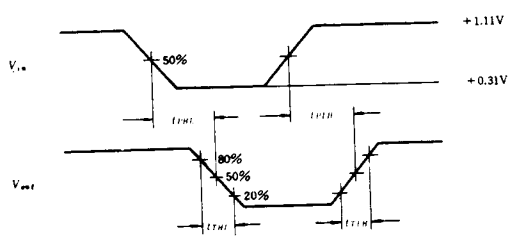
Item	Symbol	Test Condition			min	typ	max	Unit
Supply Current	I_{EE}			25°C	—	58	72	mA
Input Current	I_{IH}	$V_{IH} = -0.810V$	G_0, G_1, Cn	25°C	—	—	270	μA
			G_2, G_3		—	—	225	
			P_1, P_3		—	—	440	
			P_2		—	—	395	
			P_0		—	—	355	
	I_{IL}	$V_{IL} = -1.850V$		25°C	0.5	—	—	μA
Output Voltage	V_{OH}	$V_{IH} = -0.890V$ or $V_{IL} = -1.890V$		−30°C	−1.060	—	−0.890	V
		$V_{IH} = -0.810V$ or $V_{IL} = -1.850V$		25°C	−0.960	—	−0.810	
		$V_{IH} = -0.700V$ or $V_{IL} = -1.825V$		85°C	−0.890	—	−0.700	
	V_{OL}	$V_{IL} = -1.890V$ or $V_{IH} = -0.890V$		−30°C	−1.890	—	−1.675	V
		$V_{IL} = -1.850V$ or $V_{IH} = -0.810V$		25°C	−1.850	—	−1.650	
		$V_{IL} = -1.825V$ or $V_{IH} = -0.700V$		85°C	−1.825	—	−1.615	
Output Threshold Voltage	V_{OHA}	$V_{IHA} = -1.205V$ or $V_{ILA} = -1.500V$		−30°C	−1.080	—	—	V
		$V_{IHA} = -1.105V$ or $V_{ILA} = -1.475V$		25°C	−0.980	—	—	
		$V_{IHA} = -1.035V$ or $V_{ILA} = -1.440V$		85°C	−0.910	—	—	
	V_{OLA}	$V_{ILA} = -1.500V$ or $V_{IHA} = -1.205V$		−30°C	—	—	−1.655	V
		$V_{ILA} = -1.475V$ or $V_{IHA} = -1.105V$		25°C	—	—	−1.630	
		$V_{ILA} = -1.440V$ or $V_{IHA} = -1.035V$		85°C	—	—	−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}	G_3	C_{n-4}	R_L = 50Ω	1.0	—	5.5	ns
	t_{PHL}				1.0	—	5.5	
	t_{PLH}	Cn	C_{n+2}		1.0	—	5.5	
	t_{PHL}				1.0	—	5.5	
	t_{PLH}	G_3	G_G		1.0	—	5.5	
	t_{PHL}				1.0	—	5.5	
	t_{PLH}	P_1	C_{n+2}		1.0	—	5.5	
	t_{PHL}				1.0	—	5.5	
	t_{PLH}	P_1	P_G		1.0	—	3.5	
	t_{PHL}				1.0	—	3.5	
Rise Time	t_{TLH}	Cn	C_{n+2}		1.1	—	3.5	ns
Fall Time	t_{THL}				1.1	—	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.