

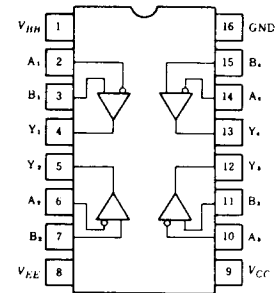
HD10125

Quadruple ECL to TTL Translators

The HD10125 is a quad translator for interfacing data and control signals between the ECL section and saturated logic sections of digital systems. The HD10125 incorporates differential inputs and Schottky TTL "totem pole" outputs. Differential inputs allow for use as an inverting/noninverting translator or as a differential line receiver.

The V_{BB} reference voltage is available on pin 1 for use in single-ended input biasing. The outputs go to a low logic level whenever the inputs are left floating. Power supply requirements are ground, +5V and -5.2V. The HD10125 has a fanout of 10 TTL loads. The DC levels are ECL 10K in and Schottky TTL or standard TTL out. The device has an input common mode noise rejection of $\pm 1.0V$.

PIN ARRANGEMENT



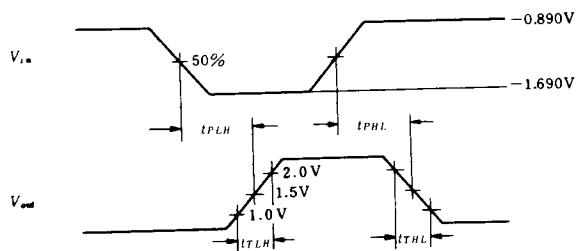
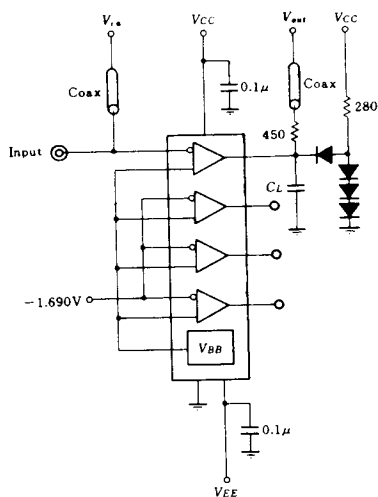
(Top View)

DC CHARACTERISTICS ($V_{EE} = -5.2V$, $V_{CC} = +5.0V$, $T_a = -30 \sim +85^\circ C$)

Item	Symbol	Test Condition		min	typ	max	Unit
Supply Current	I_{EE}		25°C	—	—	40	mA
	I_{CCN}	$V_{IH} = -0.810V$	25°C	—	—	52	mA
	I_{CCL}	$V_{IL} = -1.850V$	25°C	—	—	39	mA
Input Current	I_{IH}	$V_{IH} = -0.810V$	25°C	—	—	115	μA
	I_{CBO}	$V_{IN} = -5.2V$	25°C	—	—	1.0	μA
Output Voltage	V_{OH}	$V_{IL} = -1.890V, I_{OH} = -2mA$	-30°C	2.5	—	—	V
		$V_{IL} = -1.850V, I_{OH} = -2mA$	25°C	2.5	—	—	
		$V_{IL} = -1.825V, I_{OH} = -2mA$	85°C	2.5	—	—	
	V_{OL}	$V_{IH} = -0.890V, I_{OL} = 20mA$	-30°C	—	—	0.5	V
		$V_{IH} = -0.810V, I_{OL} = 20mA$	25°C	—	—	0.5	
		$V_{IH} = -0.700V, I_{OL} = 20mA$	85°C	—	—	0.5	
Output Threshold Voltage	V_{OHA}	$V_{ILA} = -1.500V, I_{OH} = -2mA$	-30°C	2.5	—	—	V
		$V_{ILA} = -1.475V, I_{OH} = -2mA$	25°C	2.5	—	—	
		$V_{ILA} = -1.440V, I_{OH} = -2mA$	85°C	2.5	—	—	
	V_{OLA}	$V_{IHA} = -1.205V, I_{OL} = 20mA$	-30°C	—	—	0.5	V
		$V_{IHA} = -1.105V, I_{OL} = 20mA$	25°C	—	—	0.5	
		$V_{IHA} = -1.035V, I_{OL} = 20mA$	85°C	—	—	0.5	
Indeterminate Input Protection Test	V_{OLSI}	$V_{IN} = V_{EE}, I_{OL} = 20mA$	-30°C	—	—	0.5	V
			25°C	—	—	0.5	
			85°C	—	—	0.5	
	V_{OLSI2}	$I_{OL} = 20mA$	-30°C	—	—	0.5	V
			25°C	—	—	0.5	
			85°C	—	—	0.5	
Output Short-circuit Current	I_{OS}	A input = -1.850V, B input = V_{BB}	25°C	40	—	100	mA
Reference Voltage	V_{BB}	A input = -1.890V, B input = V_{BB}	-30°C	-1.420	—	-1.280	V
		A input = -1.850V, B input = V_{BB}	25°C	-1.350	—	-1.230	
		A input = -1.825V, B input = V_{BB}	85°C	-1.295	—	-1.150	
Common Mode Rejection Test	V_{OH}	A input = -0.890V or -2.890V, B input = +0.110V or -1.890V, $I_{OH} = -2mA$	-30°C	2.5	—	—	V
		A input = -0.850V or -2.850V, B input = +0.190V or -1.810V, $I_{OH} = -2mA$	25°C	2.5	—	—	
		A input = -0.825V or -2.825V, B input = +0.300V or -1.700V, $I_{OH} = -2mA$	85°C	2.5	—	—	
	V_{OL}	A input = +0.110V or -1.890V, B input = -0.890V or -2.890V, $I_{OL} = 20mA$	-30°C	—	—	0.5	V
		A input = +0.190V or -1.810V, B input = -0.850V or -2.850V, $I_{OL} = 20mA$	25°C	—	—	0.5	
		A input = +0.300V or -1.700V, B input = -0.825V or -2.825V, $I_{OL} = 20mA$	85°C	—	—	0.5	

■ AC CHARACTERISTICS ($V_{EE} = -5.2\text{V}$, $V_{CC} = +5.0\text{V}$, $T_a = -30 \sim +85^\circ\text{C}$)

TAC CHARACTERISTICS (V _{EE} = -5.2V, V _{CC} = 10.0V, I _B = 0)							
Item	Symbol	Test Condition	min	typ	max	Unit	
Propagation Delay Time	t _{PLH}	R _L = 280Ω, C _L = 25pF	-30°C	1.0	—	6.0	ns
			25°C	1.0	4.5	6.0	
			85°C	1.0	—	6.0	
	t _{PHL}		-30°C	1.0	—	6.0	ns
			25°C	1.0	4.5	6.0	
			85°C	1.0	—	6.0	
Rise/Fall Time	t _{TLH}		-30°C	—	—	3.3	ns
			25°C	—	—	3.3	
			85°C	—	—	3.3	
	t _{THL}	-30°C	—	—	3.3	ns	
		25°C	—	—	3.3		
		85°C	—	—	3.3		

■ 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 TPin to output pin.
 3. $C_L = 25\text{pF}$, including test fixture.
 4. For single-ended input testing, one input from each gate must be tied to V_{BB} (pin 1).