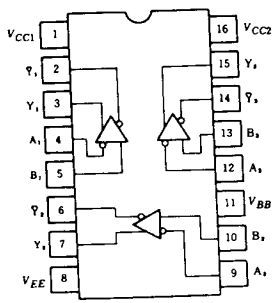
Triple Line Receivers

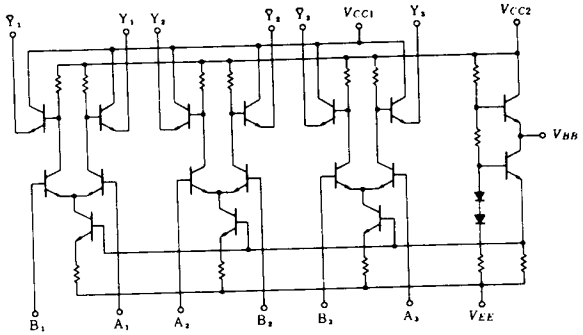
The HD10116 is designed for use in sensing differential signals over long lines. The bias supply (V_{BB}) is made available to make the device useful as a Schmitt trigger, or in other applications where a stable reference voltage is necessary. Active current source provides these receivers with excellent common mode noise rejection. If any amplifier in a package is not used, one input of that amplifier must be connected to V_{BB} to prevent upsetting the current source bias network.

■PIN ARRANGEMENT



(Top View)

■CIRCUIT SCHEMATIC



■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	—	17	21	mA
Input Current	I_{IH}**	$V_{IN}=-0.810V$	25°C	—	—	95	μA
	I_{CBO}**	$V_{IN}=-5.2V$	25°C	—	—	1.0	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	
Reference Voltage	V_{BB}		−30°C	−1.420	—	−1.280	V
			25°C	−1.350	—	−1.230	
			85°C	−1.295	—	−1.150	

* Bn input is connected to V_{BB} and V_{IL} min is supplied to An input.
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*** Other inputs are connected to V_{BB} and each one input of other receiver is connected to V_{BB}.

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

Item	Symbol	Test Condition		min	typ	max	Unit
Propagation Delay Time	t_{PLH}	R_L = 50Ω, Other inputs = V_{BB}	−30°C	1.0	—	3.1	ns
			25°C	1.0	2.0	2.9	
			85°C	1.1	—	3.3	
	t_{PHL}		−30°C	1.0	—	3.1	ns
			25°C	1.0	2.0	2.9	
			85°C	1.1	—	3.3	
Rise/Fall Time	t_{TLH}		−30°C	1.1	—	3.6	ns
			25°C	1.1	2.0	3.3	
			85°C	1.1	—	3.7	
	t_{THL}		−30°C	1.1	—	3.6	ns
			25°C	1.1	2.0	3.3	
			85°C	1.1	—	3.7	

Note) Please refer to test circuit and waveform of common item.