

# HD100114

## Quint. Differential Line Receivers

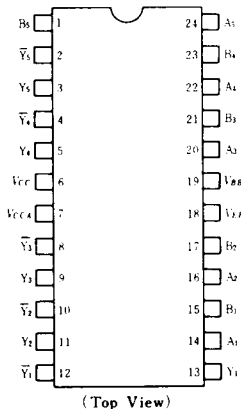
The HD100114 is a Quint. Differential Amp. with emitter-follower outputs. An internal reference supply ( $V_{BB}$ ) is available for single ended reception. Active current sources provide common mode rejection of 1.5V in either the positive or

negative direction.

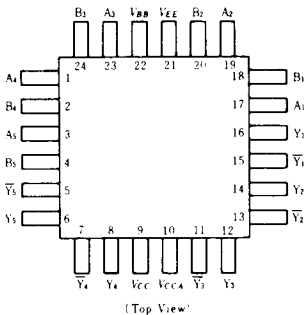
A defined output state exists if both inputs are at the same potential between and including  $-V_{EE}$  and  $V_{CC}$ . The defined state is logic high on outputs  $\bar{Y}_n$ .

### PIN ARRANGEMENT

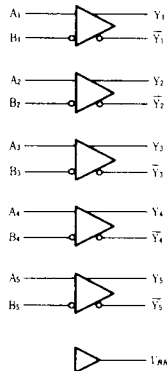
● HD100114



● HD100114F



### LOGIC DIAGRAM



### TRUTH TABLE

| Input                              |          | Output |             |
|------------------------------------|----------|--------|-------------|
| $A_n$                              | $B_n$    | $Y_n$  | $\bar{Y}_n$ |
| H                                  | $V_{BB}$ | H      | L           |
| L                                  | $V_{BB}$ | L      | H           |
| $V_{BB}$                           | H        | L      | H           |
| $V_{BB}$                           | L        | H      | L           |
| $A_n - B_n \geq 0.15 \text{ V}$    |          | H      | L           |
| $A_n - B_n \leq 0.0 \text{ V}$     |          | L      | H           |
| $0.0 < A_n - B_n < 0.15 \text{ V}$ |          | *      | *           |
| Open                               | Open     | L      | H           |
| $V_{CC}$                           | $V_{CC}$ | L      | H           |
| $V_{EE}$                           | $V_{EE}$ | L      | H           |

H = High level  
L = Low level

$V_{BB}$  = Base bias voltage  
\* = Undefined

■DC CHARACTERISTICS (  $V_{EE} = -4.2$  to  $-4.8\text{V}$ ,  $V_{CC} = V_{CCA} = \text{GND}$ ,  $T_a = 0$  to  $+85^\circ\text{C}$  )

| Item                       | Symbol     | Test Condition                                                              | min   | typ   | max   | Unit          |
|----------------------------|------------|-----------------------------------------------------------------------------|-------|-------|-------|---------------|
| Supply Current             | $I_{EE}$   | $A_n = V_{BB}$ , $B_n = V_{IL \text{ min}}$                                 | 51    | 73    | 106   | mA            |
| Input Current              | $I_{IH}$   | $V_{IN} = V_{IH \text{ max}}$ , $A_n = V_{BB}$ , $B_n = V_{IL \text{ min}}$ | —     | 20    | 50    | $\mu\text{A}$ |
| Leakage Current            | $I_{CBO}$  | $V_{IN} = V_{EE}$ , $A_n = V_{BB}$ , $B_n = V_{IL \text{ min}}$             | -10.0 | —     | —     | $\mu\text{A}$ |
| Common Mode Voltage        | $V_{CM}$   | Permissible $V_{CM}$ with respect to $V_{CC}$                               | -2.30 | —     | -0.55 | V             |
| Reference Voltage          | $V_{BB}$   | Tie A1, A2, A3, A4, A5 to $V_{BB}$                                          | -1380 | -1320 | -1260 | mV            |
| Input Voltage Differential | $V_{DIFF}$ |                                                                             | 150   | —     | —     | mV            |

■AC CHARACTERISTICS (  $V_{EE} = -2.2$  to  $-2.8\text{V}$ ,  $V_{CC} = V_{CCA} = 2.0\text{V}$  )

●HD100114

| Item                   | Symbol                 | Test Condition                   | 0°C  |      | 25°C |      |      | 85°C |      | Unit |
|------------------------|------------------------|----------------------------------|------|------|------|------|------|------|------|------|
|                        |                        |                                  | min  | max  | min  | typ  | max  | min  | max  |      |
| Propagation Delay Time | $t_{PLH}$<br>$t_{PHL}$ | See test circuit<br>and waveform | 0.65 | 1.95 | 0.65 | 1.20 | 2.00 | 0.65 | 2.00 | ns   |
| Transition Time        | $t_{TLH}$<br>$t_{THL}$ |                                  | 0.35 | 1.10 | 0.35 | 0.70 | 1.10 | 0.35 | 1.05 | ns   |

●HD100114F

| Item                   | Symbol                 | Test Condition                   | 0°C  |      | 25°C |      |      | 85°C |      | Unit |
|------------------------|------------------------|----------------------------------|------|------|------|------|------|------|------|------|
|                        |                        |                                  | min  | max  | min  | typ  | max  | min  | max  |      |
| Propagation Delay Time | $t_{PLH}$<br>$t_{PHL}$ | See test circuit<br>and waveform | 0.65 | 1.75 | 0.65 | 1.20 | 1.80 | 0.65 | 1.80 | ns   |
| Transition Time        | $t_{TLH}$<br>$t_{THL}$ |                                  | 0.45 | 1.10 | 0.45 | 0.90 | 1.10 | 0.40 | 1.05 | ns   |

Notes) The circuits in a test socket or mounted on a printed circuit board and transverse air flow greater than 2.5m/s (500 linear fpm) is maintained.