

QUAD RS-422, RS-423 CMOS Differential Line Receiver

GENERAL DESCRIPTION

The HT26LS32 is a CMOS quad differential line receiver designed to meet the standard RS-422, RS-423 requirements. The HT26LS32 has an input sensitivity of 200mv over the common mode input voltage range of $\pm 7V$. To improve noise margin and output stability for slow changing input signal, special hysteresis is built in the HT26LS32 circuit. The HT26LS32 is a high speed line receiver designed to operate with MFM / RLL controllers and hard disk drives as well as RS-422, and RS-423 differential applications. HT26LS32 provides TTL compatible outputs to interface with standard 74LS and CMOS design environments. HT26LS32 is suitable for low power 5V operation.

FEATURES

- Pin-to-Pin Compatible with National AM26LS32
- Low Power CMOS Design
- Three-State Outputs with Enable Pin
- Meets the EIA RS-422 Requirements
- Low Propagation Delays
- High Speed

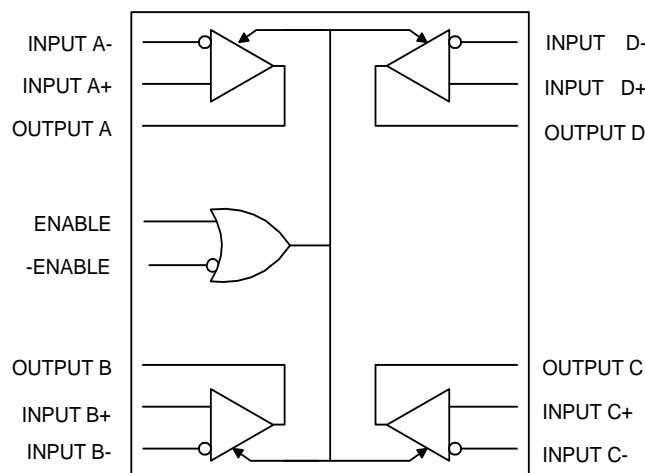
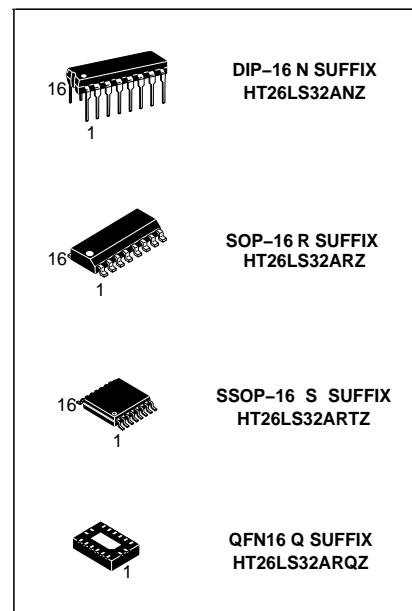
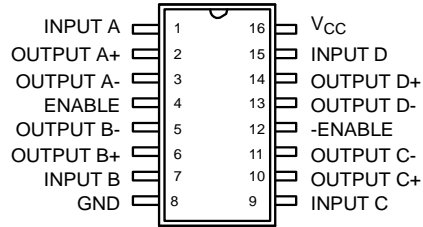


Figure 1. Block Diagram

PIN CONFIGURATION

SOPP16/TSSOP16/DIP16
PIN DESCRIPTION

| Pin # | Symbol | Type | Description |
|-------|-----------------|------|---|
| 1 | INPUT A- | I | Receiver A differential inverting input pin. |
| 2 | INPUT A+ | I | Receiver A differential non-inverting input pin. |
| 3 | OUTPUT A | O | Receiver A output pin. |
| 4 | ENABLE | I | Gate control (active high). This pin is one of the two control pins which enables or disables all four receivers. |
| 5 | OUTPUT B | O | Receiver B output pin. |
| 6 | INPUT B+ | I | Receiver B differential non-inverting input pin. |
| 7 | INPUT B- | I | Receiver B differential inverting input pin. |
| 8 | GND | O | Signal and power ground. |
| 9 | INPUT C- | I | Receiver C differential inverting input pin. |
| 10 | INPUT C+ | I | Receiver C differential non-inverting input pin. |
| 11 | OUTPUT C | O | Receiver C output pin. |
| 12 | -ENABLE | I | Gate control (active low). See ENABLE description |
| 13 | OUTPUT D | O | Receiver D output pin. |
| 14 | INPUT D+ | I | Receiver D differential non-inverting input pin. |
| 15 | INPUT D- | I | Receiver D differential inverting input pin. |
| 16 | V _{CC} | I | Power supply pin. |

AC ELECTRICAL CHARACTERISTICS

Test Conditions: $T_A = -40^{\circ}\text{C} - +85^{\circ}\text{C}$, $V_{CC} = 5.0\text{V} \pm 10\%$ unless otherwise specified.

| Symbol | Parameter | Min. | Typ. | Max. | Unit | Conditions |
|--------|------------------------------------|------|------|------|------|-----------------------|
| T_1 | Propagation Delay, Input to Output | | 8 | 10 | ns | $S1=V_{CC}$ |
| T_2 | Propagation Delay, Input to Output | | 18 | 20 | ns | $S1=GND$ |
| T_3 | Output Enable Time | | 18 | 20 | ns | $V_{DIF}=2.5\text{V}$ |
| T_4 | Output Disable Time | | 18 | 20 | ns | $V_{DIF}=2.5\text{V}$ |

DC ELECTRICAL CHARACTERISTICS

Test Conditions: $T_A = -40^{\circ}\text{C} - +85^{\circ}\text{C}$, $V_{CC} = 5.0\text{V} \pm 10\%$ unless otherwise specified.

| Symbol | Parameter | Min. | Typ. | Max. | Unit | Conditions |
|----------|----------------------------|------|-----------|-----------|---------------|------------------------------------|
| V_{IH} | Enable High Level | 2.0 | | | V | |
| V_{IL} | Enable Low Level | | | 0.8 | V | |
| V_{OH} | Output High Level | 3.8 | 4.2 | | V | $I_{OH} = -6\text{mA}$ |
| V_{OL} | Output Low Level | | | 0.4 | V | $I_{OH} = 6\text{mA}$ |
| V_{ID} | Differential Input Level | -0.2 | | 0.2 | V | $-7\text{V} < V_{CM} < +7\text{V}$ |
| V_H | Input Hysteresis | | 50 | | mV | |
| I_{IN} | Input Current | | | ± 1.0 | μA | |
| I_{CC} | Operating Current | | 12 | | mA | $V_{DIF}=+1\text{V}$ |
| I_{OZ} | Three-State Output Leakage | | ± 1.0 | ± 5.0 | μA | $V_{OUT}=V_{CC}$ or GND |
| I_{EN} | Enable Input Current | | ± 1.0 | | μA | $V_{IN}=V_{CC}$ or GND |
| V_R | Input Resistance | 5 | | 15 | K Ω | $-7\text{V} < V_{CM} < +7\text{V}$ |

Specifications are subject to change without notice

ABSOLUTE MAXIMUM RATINGS

Supply Range 7V
 Voltage at Any Pin GND-0.3V to $V_{CC} + 0.3\text{V}$
 Operating Temperature -40°C to $+85^{\circ}\text{C}$

Storage Temperature -60°C to $+160^{\circ}\text{C}$
 Package Dissipation 500mW

| Enable | -Enable | Input | Differential Non-Inverting Output | Differential Inverting Output |
|--------|---------|-------|-----------------------------------|-------------------------------|
| L | H | Z | X | X |
| H | L | L | L | H |
| H | L | H | H | L |

Notes

X = Don't care

Z = Three-State (high impedance)

Table 1. Functional Table

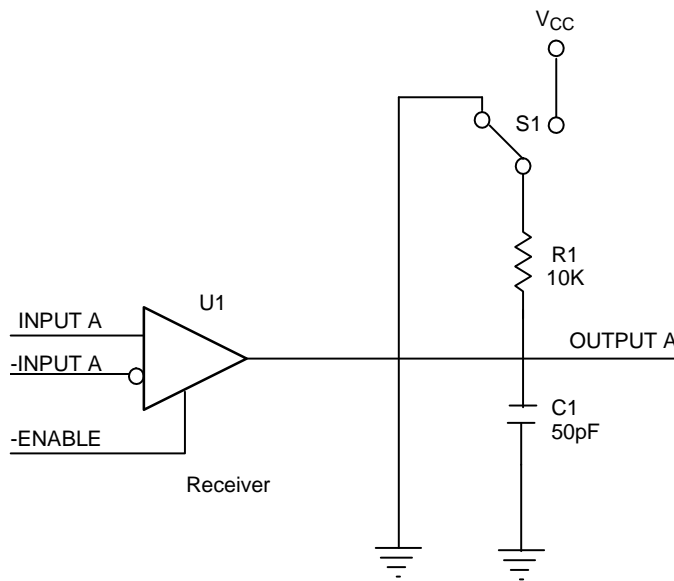


Figure 2. Test Condition

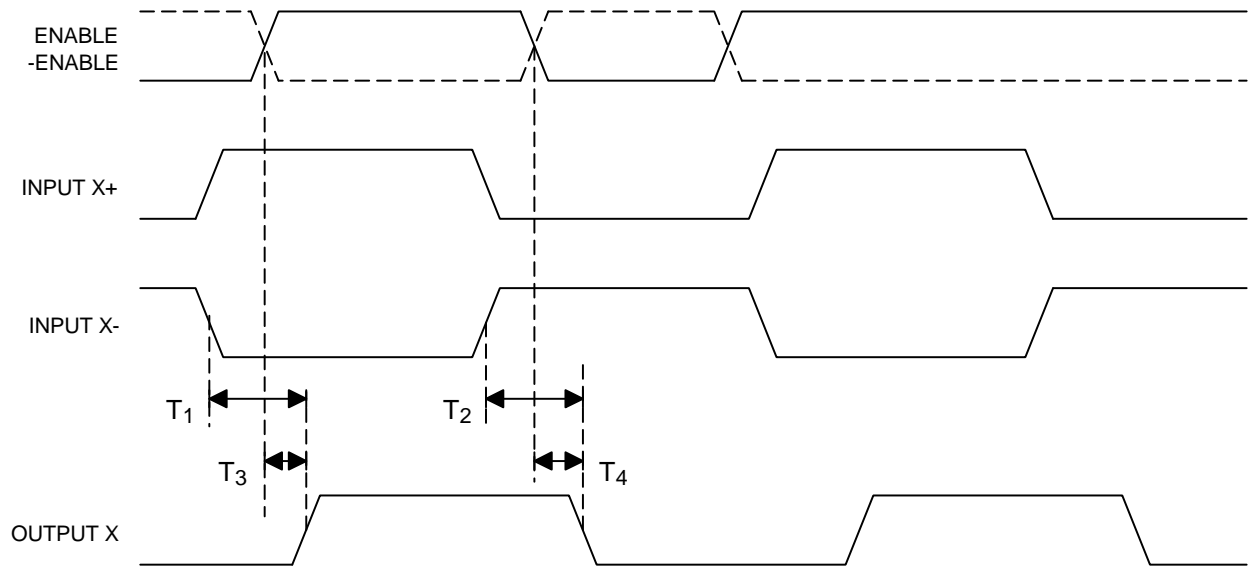
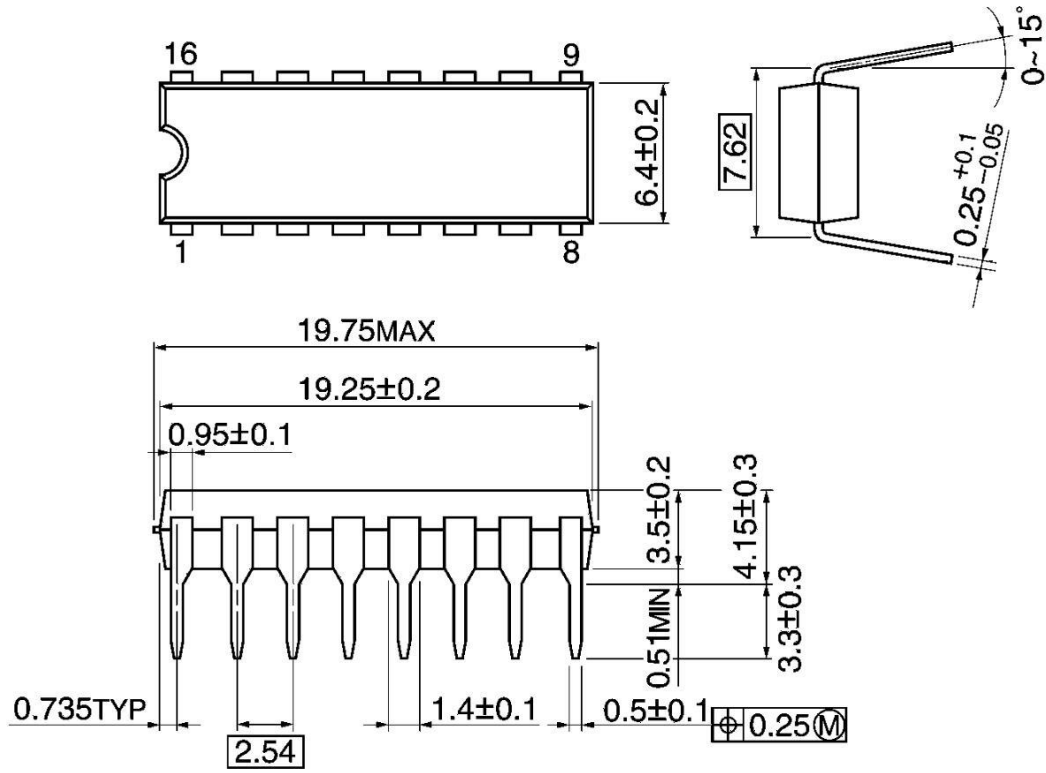


Figure 3. Differential Line Receiver Timing

Package Dimensions

DIP16-P-300-2.54A

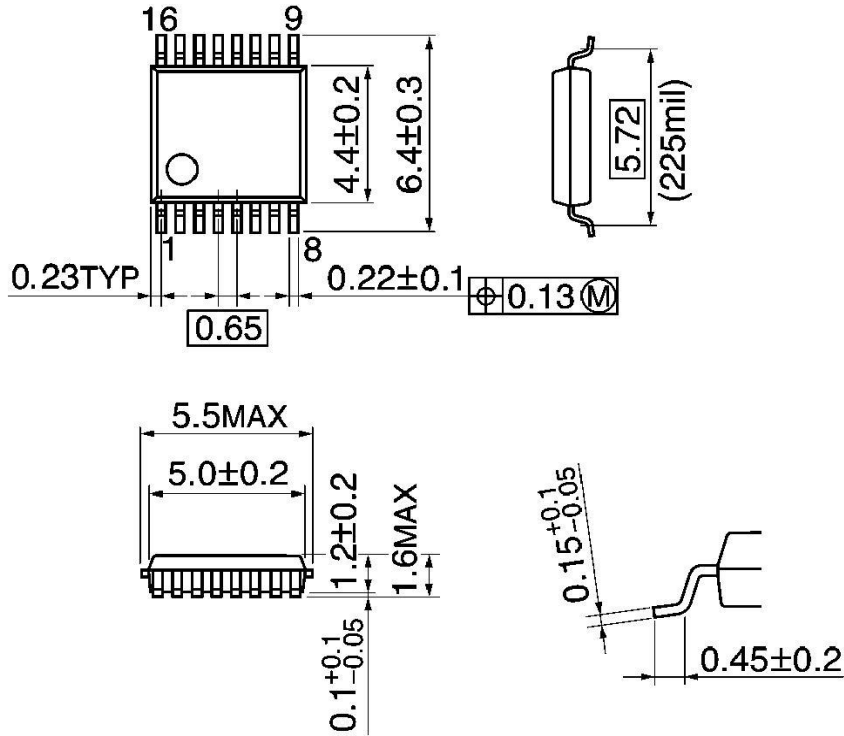
Unit: mm



Weight: 1.11 g (Typ.)

TSSOP16-P-225-0.65B

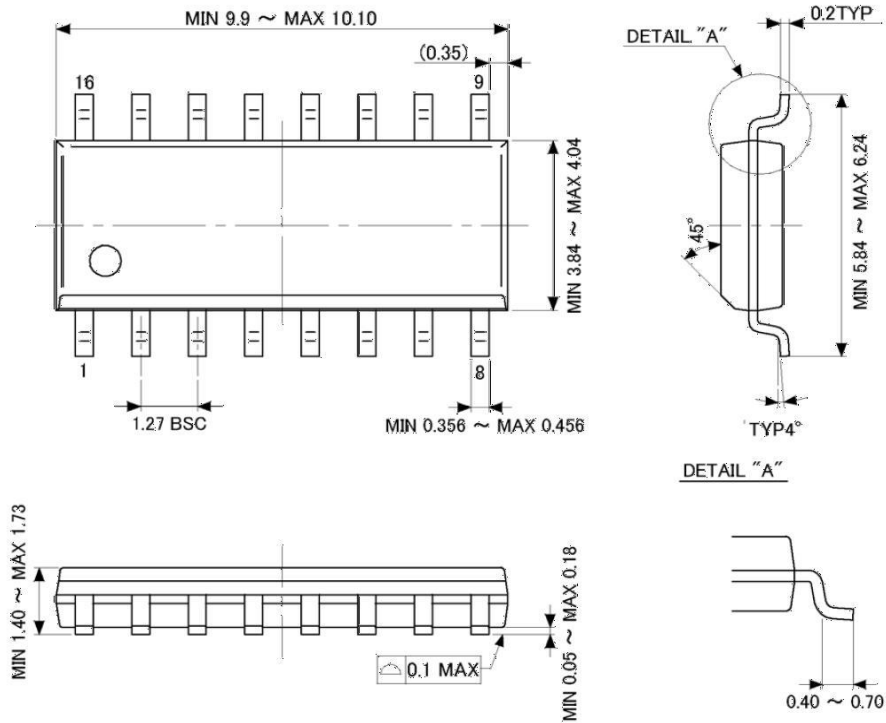
Unit: mm



Weight: 0.07 g (Typ.)

P-SOP16-0410-1.27-002

Unit: mm



Weight: 0.15 g (Typ.)