

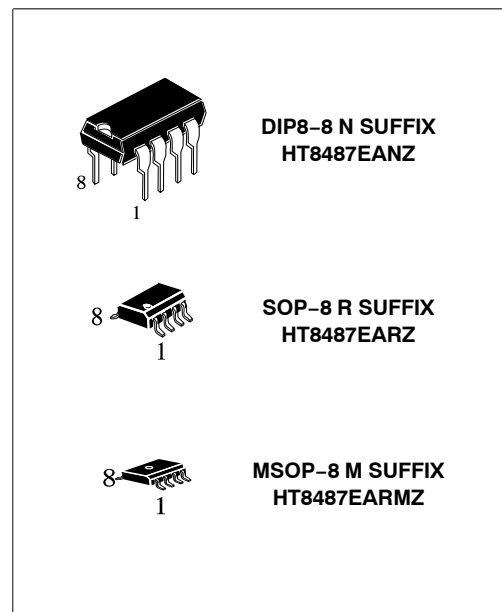
CMOS – Low-Power, Slew-Rate-Limited RS-485/RS-422 Transceivers

GENERAL DESCRIPTION

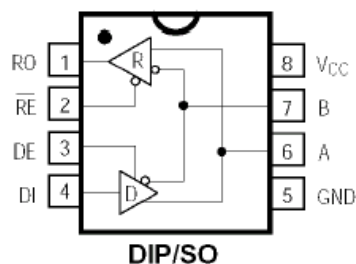
The HT8487 is low-power transceivers for RS-485 and RS-422 communication. IC contains one driver and one receiver. The driver slew rates of the HT8487 is not limited, allowing them to transmit up to 2.5Mbps. These transceivers have A supply current of 120µA at no or full load loaded with disabled drivers. All parts operate from a single 5V supply. Drivers are short-circuit current limited and are protected against excessive power dissipation by thermal shutdown circuitry that places the driver outputs into a high-impedance state. The receiver input has a fail-safe feature that guarantees a logic-high output if the input is open circuit. The HT8487 is designed for half-duplex applications.

FEATURES

- Extended ESD Protection for RS-485/RS-422 I/OPins ±15kV Using Human Body Model
- Low Quiescent Current: 120µA
- -7V to +12V Common-Mode Input Voltage Range
- Three-State Outputs
- 30ns Propagation Delays, 5ns Skew
- Full-Duplex and Half-Duplex Versions Available
- Operate from a Single 5V Supply
- Allows up to 32 Transceivers on the Bus
- Data rate: 2,5Mbps
- Current-Limiting and Thermal Shutdown for Driver Overload Protection



Pinning



ABSOLUTE MAXIMUM RATINGS

Supply Voltage (V_{CC}) 12V
 Control Input Voltage -0.5V to ($V_{CC} + 0.5V$)
 Driver Input Voltage (DI) -0.5V to ($V_{CC} + 0.5V$)
 Driver Output Voltage (A, B) -8V to +12.5V
 Receiver Input Voltage (A, B) -8V to +12.5V
 Receiver Output Voltage (RO) -0.5V to ($V_{CC} + 0.5V$)

Continuous Power Dissipation
 8-Pin Plastic DIP (derate 9.09mW/°C) 727mW
 8-Pin SO (derate 5.88mW/°C) 471mW
 Operating Temperature Ranges -40°C to +85°C
 Storage Temperature Range -65°C to +160°C
 Lead Temperature (soldering, 10sec) +300°C

DC ELECTRICAL CHARACTERISTICS

($V_{CC} = 5V \pm 5\%$, $T_A = T_{MIN}$ to T_{MAX} , unless otherwise noted.) (Notes 1, 2)

| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNITS |
|---|--------|-----------------------------|-----------|-----|------|-------|
| Differential Driver Output (no load) | VOD1 | | | | 5 | V |
| Differential Driver Output (with load) | VOD2 | R = 50Ω (RS-422) | 2 | | | V |
| | | R = 27Ω (RS-485), Figure 4 | 1.5 | | 5 | |
| Change in Magnitude of Driver Differential Output Voltage for Complementary Output States | ΔVOD | R = 27Ω or 50Ω, Figure 4 | | | 0.2 | V |
| Driver Common-Mode Output Voltage | VOC | R = 27Ω or 50Ω, Figure 4 | | | 3 | V |
| Change in Magnitude of Driver Common-Mode Output Voltage for Complementary Output States | ΔVOC | R = 27Ω or 50Ω, Figure 4 | | | 0.2 | V |
| Input High Voltage | VIH | DE, DI, RE | 2.0 | | | V |
| Input Low Voltage | VIL | DE, DI, RE | | | 0.8 | V |
| Input Current | IIN1 | DE, DI, RE | | | ±2 | μA |
| Input Current (A, B) | IIN2 | DE = 0V; | VIN = 12V | | 1.0 | mA |
| | | VCC = 0V or 5.25V, | VIN = -7V | | -0.8 | |
| Receiver Differential Threshold Voltage | VTH | -7V ≤ V _{CM} ≤ 12V | -0.2 | | 0.2 | V |
| Receiver Input Hysteresis | ΔVTH | V _{CM} = 0V | | 70 | | mV |
| Receiver Output High Voltage | VOH | IO = -4mA, VID = 200mV | 3.5 | | | V |
| Receiver Output Low Voltage | VOL | IO = 4mA, VID = -200mV | | | 0.4 | V |
| Three-State (high impedance) Output Current at Receiver | IOZR | 0.4V ≤ VO ≤ 2.4V | | | ±1 | μA |
| Receiver Input Resistance | RIN | -7V ≤ V _{CM} ≤ 12V | | | | kΩ |

DC ELECTRICAL CHARACTERISTICS (continued)

($V_{CC} = 5V \pm 5\%$, $T_A = T_{MIN}$ to T_{MAX} , unless otherwise noted.) (Notes 1, 2)

| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNITS |
|---------------------------------|--------|----------------------------|-----|-----|-----|-------|
| No-Load Supply Current (Note 3) | ICC | DE = V _{CC} | | 500 | 900 | |
| | | RE = 0V or V _{CC} | | 300 | 500 | μA |
| | | DE = 0V | | | | |
| Driver Short-Circuit Current, | | | | | | |
| | IOSD1 | -7V ≤ VO ≤ 12V (Note 4) | 35 | | 250 | mA |
| VO = High | | | | | | |
| Driver Short-Circuit Current, | | | | | | |
| | IOSD2 | -7V ≤ VO ≤ 12V (Note 4) | 35 | | 250 | mA |
| VO = Low | | | | | | |
| Receiver Short-Circuit Current | IOSR | 0V ≤ VO ≤ V _{CC} | 7 | | 95 | mA |

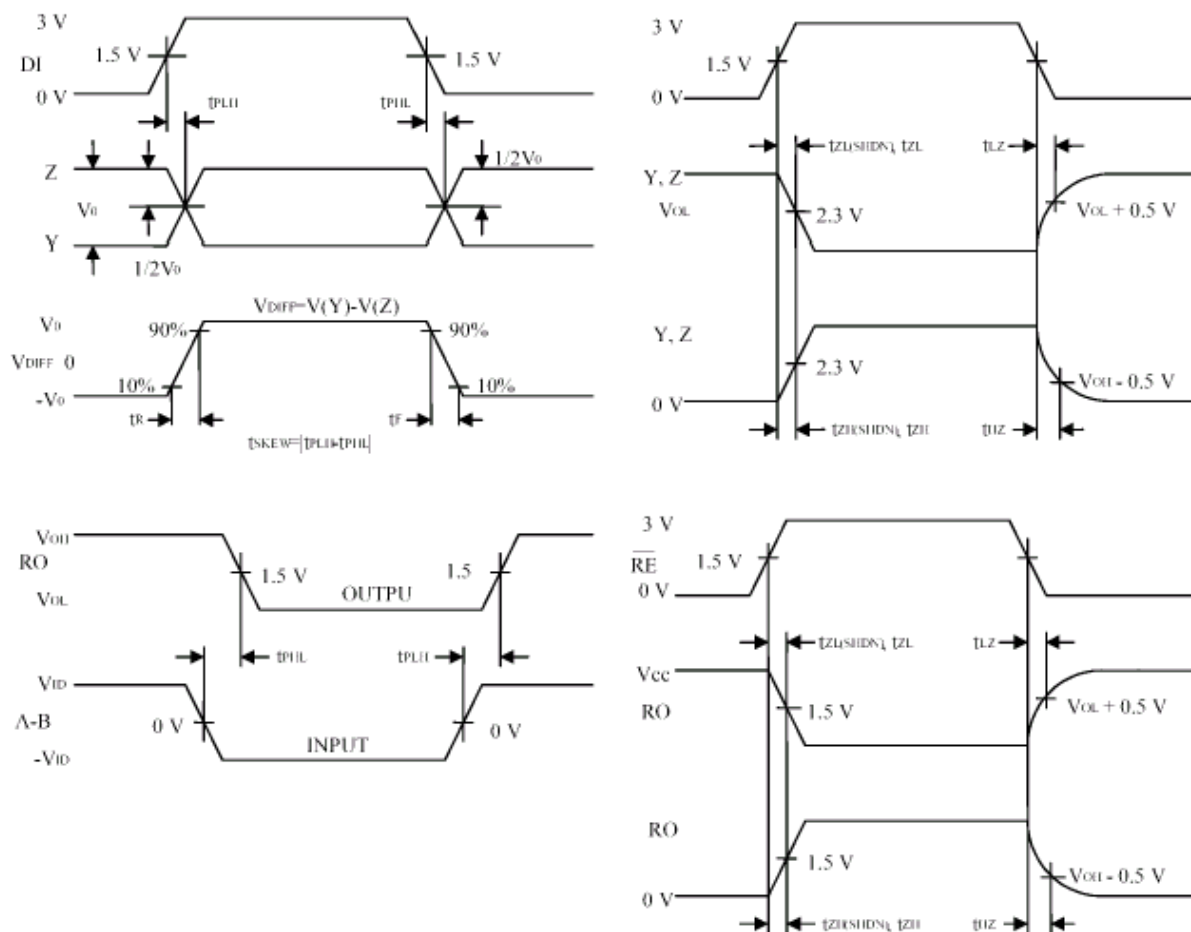
SWITCHING CHARACTERISTICS(V_{CC} = 5V ±5%, T_A = T_{MIN} to T_{MAX}, unless otherwise noted.) (Notes 1, 2)

| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNITS |
|---------------------------------|--------|--------------------------------|-----|-----|-----|-------|
| Driver Input to Output | tPLH | RDIFF = 54Ω | 10 | 30 | 60 | ns |
| | tPHL | CL1 = CL2 = 100pF | 10 | 30 | 60 | |
| Driver Output Skew to Output | tSKEW | RDIFF = 54Ω, CL1 = CL2 = 100pF | | 5 | 10 | ns |
| Driver Enable to Output High | tZH | CL = 100pF, S2 closed | | 40 | 70 | ns |
| Driver Enable to Output Low | tZL | CL = 100pF, S1 closed | | 40 | 70 | ns |
| Driver Disable Time from Low | tLZ | CL = 15pF, S1 closed | | 40 | 70 | ns |
| Driver Disable Time from High | tHZ | CL = 15pF, S2 closed | | 40 | 70 | ns |
| tPLH - tPHL Differential | tSKD | RDIFF = 54Ω | | 13 | | ns |
| Receiver Skew | | CL1 = CL2 = 100pF | | | | |
| Receiver Enable to Output Low | tZL | CRL = 15pF, S1 closed | | 20 | 50 | ns |
| Receiver Enable to Output High | tZH | CRL = 15pF, S2 closed | | 20 | 50 | ns |
| Receiver Disable Time from Low | tLZ | CRL = 15pF, S1 closed | | 20 | 50 | ns |
| Receiver Disable Time from High | tHZ | CRL = 15pF, S2 closed | | 20 | 50 | ns |
| Maximum Data Rate | fMAX | | 2.5 | | | Mbps |

Notes:

1. All currents into device pins are positive; all currents out of device pins are negative. All voltages are referenced to device ground unless otherwise specified.
2. All typical specifications are given for V_{CC} = 5V and T_A = +25°C
3. Supply current specification is valid for loaded transmitters when DE = 0V
4. Applies to peak current. See *Typical Operating Characteristics*.

Operation timing diagrams

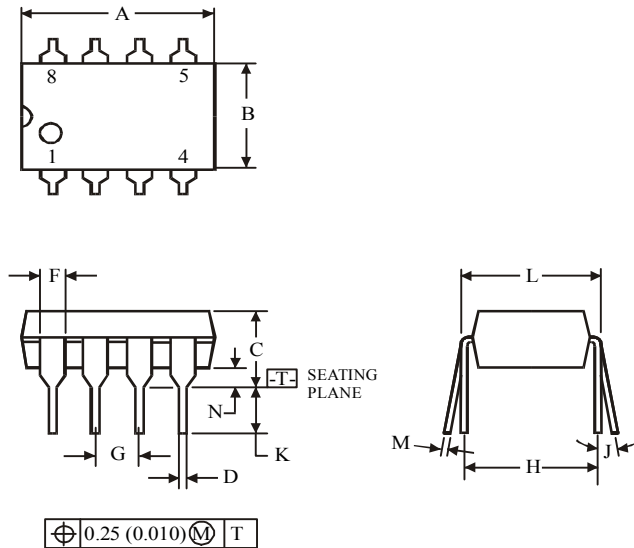
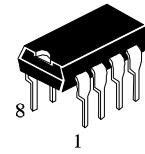


| Transmission | | | | | Receipt | | | |
|--------------|----|----|-----------|---|---------|----|-------|---------|
| Inputs | | | Outputs X | | Inputs | | | Outputs |
| RE | DE | DI | Z | Y | RE | DE | A-B | RO |
| X | 1 | 1 | 0 | 1 | 0 | 0 | +0.2V | 1 |
| X | 1 | 0 | 1 | 0 | 0 | 0 | -0.2V | 0 |
| 0 | 0 | X | Z | Z | 0 | 0 | open | 1 |
| 1 | 0 | X | Z | Z | 1 | 0 | X | Z |

X-don't care

Z-high resistance

(DIP8)

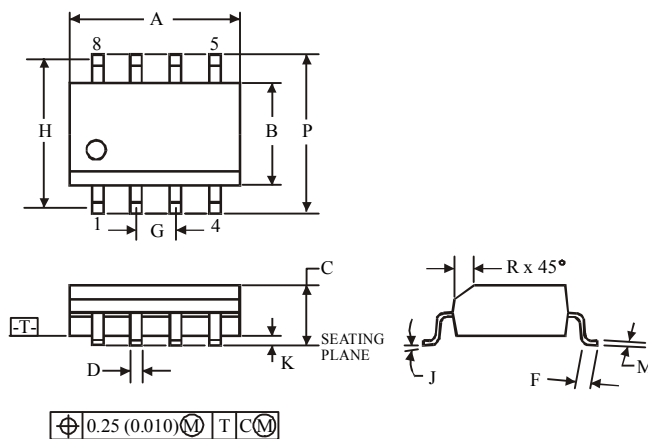
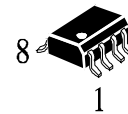


| Symbol | Dimension, mm | |
|--------|---------------|-------|
| | MIN | MAX |
| A | 8.51 | 10.16 |
| B | 6.1 | 7.11 |
| C | | 5.33 |
| D | 0.36 | 0.56 |
| F | 1.14 | 1.78 |
| G | 2.54 | |
| H | 7.62 | |
| J | 0° | 10° |
| K | 2.92 | 3.81 |
| L | 7.62 | 8.26 |
| M | 0.2 | 0.36 |
| N | 0.38 | |

NOTES:

- Dimensions "A", "B" do not include mold flash or protrusions.
Maximum mold flash or protrusions 0.25 mm (0.010) per side.

(SOP8)



| Symbol | Dimension, mm | |
|--------|---------------|------|
| | MIN | MAX |
| A | 4.8 | 5 |
| B | 3.8 | 4 |
| C | 1.35 | 1.75 |
| D | 0.33 | 0.51 |
| F | 0.4 | 1.27 |
| G | 1.27 | |
| H | 5.72 | |
| J | 0° | 8° |
| K | 0.1 | 0.25 |
| M | 0.19 | 0.25 |
| P | 5.8 | 6.2 |
| R | 0.25 | 0.5 |

NOTES:

- Dimensions A and B do not include mold flash or protrusion.
- Maximum mold flash or protrusion 0.15 mm (0.006) per side for A; for B - 0.25 mm (0.010) per side.

单击下面可查看定价，库存，交付和生命周期等信息

[>>UDF\(优迪半导体\)](#)