

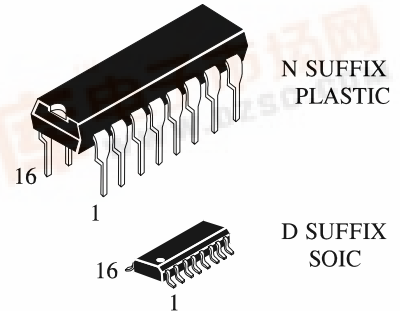
ILX232

Interface transceiver of RS-232 standard with one supply voltage

IC ILX232 is purposed for application in high-performance information processing systems and control devices of wide application.

Input voltage levels are compatible with standard CMOS levels.

- Output voltage levels are compatible with input levels of C-MOS, N-MOS and TTL integrated circuits.
- Supply voltage range from 2.0 to 6.0 V.
- Low input current: 1.0 mA; 0.1 mA at T = 25 °C.
- Output current 24 mA.
- Latching current not less than 450 mA at T = 25°C
- Tolerable value of static potential not less than 2000V



Truth table

| Inputs | Outputs |
|-----------------------------------|-------------------------------------|
| R _{IN} , T _{IN} | R _{OVT} , T _{OVT} |
| H | L |
| L | H |

Note -
H – voltage high level;
L – low voltage level

IC marking in package

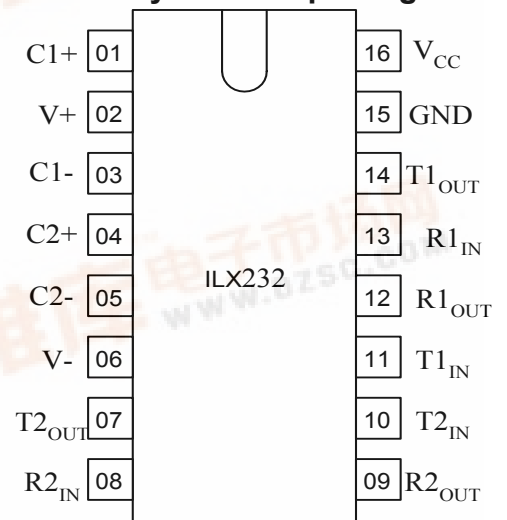
ILX232N Plastic DIP

ILX232D SOIC

T_A= from -40 to 85 °C

For all packages

Pin symbols in package



ILX232

Table of pin description

| Pin No. | Symbol | Pin name |
|---------|-------------------|--|
| 01 | C1+ | Output of external capacitance of positive voltage multiplier unit |
| 02 | V+ | Output of positive voltage of multiplier unit |
| 03 | C1- | Output of external capacitance of positive voltage multiplier unit |
| 04 | C2+ | Output of external capacitance of negative voltage multiplier unit |
| 05 | C2- | Output of external capacitance of negative voltage multiplier unit |
| 06 | V- | Output of negative voltage of multiplier unit |
| 07 | T2 _{OUT} | Output of transmitter data (levels RS – 232) |
| 08 | R2 _{IN} | Input of receiver data (levels RS – 232) |
| 09 | R2 _{OUT} | Output of receiver data (levels TTL/KMOS) |
| 10 | T2 _{IN} | Input of transmitter data (levels TTL/KMOS) |
| 11 | T1 _{IN} | Input of transmitter data (levels TTL/KMOS) |
| 12 | R1 _{OUT} | Output of receiver data (levels TTL/KMOS) |
| 13 | R1 _{IN} | Input of receiver data (levels RS – 232) |
| 14 | T1 _{OUT} | Output of transmitter data (levels RS – 232) |
| 15 | GND | Common output |
| 16 | V _{CC} | Supply output of voltage source |

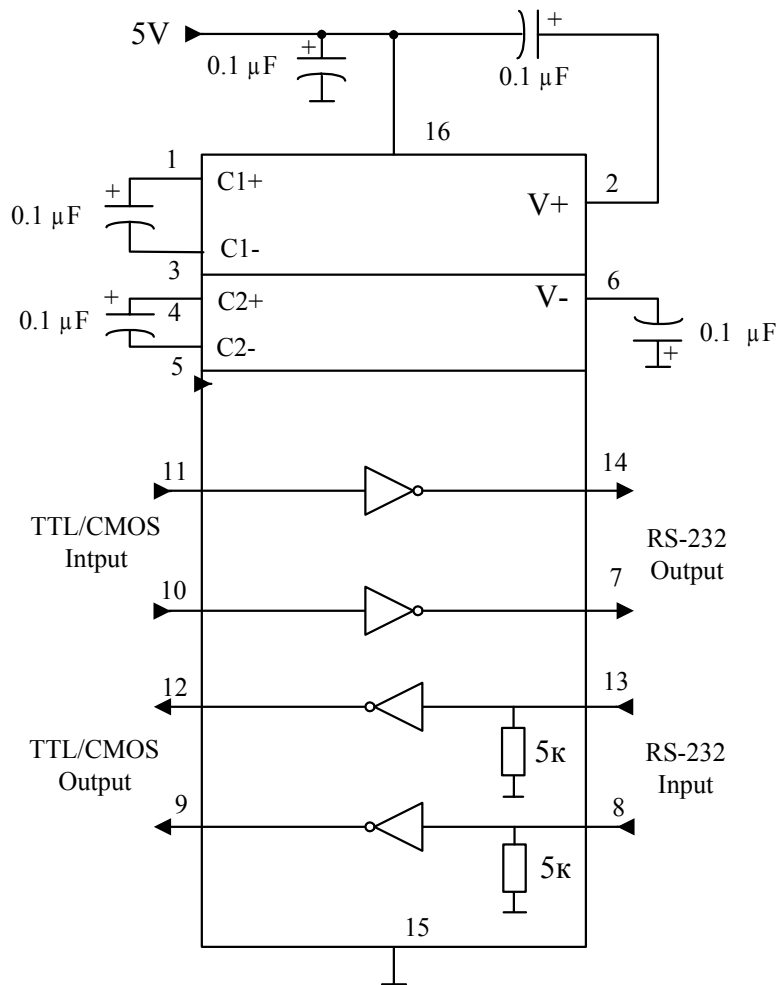
Maximum conditions

| Symbol | Parameter | Rate | | Unit |
|------------------|---|----------------------|--------------|------|
| | | min | max | |
| V _{CC} | Supply voltage | -0.3 | 6.0 | V |
| V+ | Transmitter high output voltage | V _{CC} -0.3 | 14 | |
| V- | Transmitter low output voltage | -0.3 | -14 | |
| V _{TIN} | Transmitter input voltage | -0.3 | V+ +0.3 | |
| V _{RIN} | Receiver input voltage | -30 | 30 | |
| P _D | Dissipated power DIP – package SO - package | - | 842 762 | |
| I _{SC} | Output current of transmitter short circuit | - | Continuously | mA |
| T _a | Ambient temperature | -60 | 150 | °C |

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Absolute maximum conditions

| Symbol | Parameter | Rate | | Unit |
|-----------|--|------|----------|-------------|
| | | min | max | |
| V_{CC} | Supply voltage | 4.5 | 5.5 | V |
| V_{+} | Transmitter output high voltage | 5.0 | - | |
| V_{-} | Transmitter output low voltage | -5.0 | - | |
| V_{TIN} | Transmitter input voltage | 0 | V_{CC} | |
| V_{RIN} | Receiver input voltage | -30 | 30 | |
| I_{SC} | Transmitter short circuit output current | - | ± 60 | mA |
| T_a | Ambient temperature | -40 | 85 | $^{\circ}C$ |



Static parameters

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| Symbol | Parameter | Test conditions | Rate | | | | Unit |
|--|-----------------------------------|--|------|-----------|--------------------|-----------|-------|
| | | | 25°C | | от -40 °C до 85 °C | | |
| | | | min | max | min | max | |
| I_{CC} | Consumption current static | $V_{CC} = 5.5 \text{ V}$ $V_{IL} = 0 \text{ V}$ | - | 10.0 | - | 14.0* | mA |
| Receiver electrical parameters | | | | | | | |
| V_h | Hysteresis voltage | $V_{CC} = 5.0 \text{ V}$ | 0.2 | 0.9 | 0.2 | 1.0 | V |
| V_{On} | On (operation) voltage | $V_O \leq 0.1 \text{ V}$ $I_{OL} \leq 20 \text{ mA}$ | - | 2.4 | - | 2.3 | |
| V_{off} | Off (dropout) voltage | $V_O \geq V_{CC} - 0.1 \text{ V}$ $I_{OH} \leq -20 \text{ mA}$ | 0.8 | - | 0.9 | - | |
| V_{OL} | Output low voltage | $I_{OL} = 3.2 \text{ mA}$ $V_{CC} = 4.5 \text{ V}$ $V_{IH} = 2.4 \text{ V}$ | - | 0.3 | - | 0.4 | |
| V_{OH} | Output high voltage | $I_{OH} = -1.0 \text{ mA}$ $V_{CC} = 4.5 \text{ V}$ $V_{IL} = 0.8 \text{ V}$ | 3.6 | - | 3.5 | - | |
| R_I | Input resistance | $V_{CC} = 5.0 \text{ V}$ | 3.0 | 7.0 | 3.0 | 7.0 | kOhm |
| Transmitter electrical parameters | | | | | | | |
| V_{OL} | Output low voltage | $V_{CC} = 4.5 \text{ V}$ $V_{IH} = 2.0 \text{ V}$ $R_L = 3.0 \text{ kOhm}$ | - | -5.2 | - | -5.0 | V |
| V_{OH} | Output high voltage | $V_{CC} = 4.5 \text{ V}$ $V_{IL} = 0.8 \text{ V}$ $R_L = 3.0 \text{ kOhm}$ | 5.2 | - | 5.0 | - | |
| I_{IL} | Input low current | $V_{CC} = 5.5 \text{ V}$ $V_{IL} = 0 \text{ V}$ | - | -1.0 | - | -10.0 | mA |
| I_{IH} | Input high current | $V_{CC} = 5.5 \text{ V}$ $V_{IH} = V_{CC}$ | | 1.0 | | 10.0 | |
| SR | Speed of output front change | $V_{CC} = 5.0 \text{ V}$ $C_L = 50 - 1000 \text{ pF}$ $R_L = 3.0 - 7.0 \text{ kOhm}$ | 3.0 | 30 | 2.7 | 27 | V/mks |
| R_O | Output resistance | $V_{CC} = V_+ = V_- = 0 \text{ V}$ $V_O = \pm 2 \text{ V}$ | 350 | - | 300 | - | Ohm |
| I_{SC} | Short circuit output current | $V_{CC} = 5.5 \text{ V}$ $V_O = 0 \text{ V}$ $V_I = V_{CC}$ $V_I = 0 \text{ V}$ | | -50 50 | | -60 60 | mA |
| ST | Speed of information transmission | $V_{CC} = 4.5 \text{ V}$ $C_L = 1000 \text{ pF}$ $R_L = 3.0 \text{ kOhm}$ $t_w = 7 \text{ mks}$ (for extreme $-t_w = 8 \text{ mks}$) | 140 | - | 120 | - | |

Dynamic parameters

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| Symbol | Parameter | Test conditions | Rate | | | | Unit |
|------------------------------|---|---|-------|------|----------------------|------|------|
| | | | 25 °C | | from -40 °C to 85 °C | | |
| | | | min | max | min | max | |
| t_{PHLR} (t_{PLHR}) | Signal propagation delay time when switching on (off) | $V_{CC} = 4.5\text{ V}$ $C_L = 150\text{ pF}$ $V_{IL} = 0\text{ V}$ $V_{IH} = 3.0\text{ V}$ $t_{LH} = t_{HL} \leq 10\text{ ns}$ | - | 9.7 | - | 10 | mks |
| t_{PHLT} (t_{PLHT}) | Signal propagation delay time when switching on (off) | $V_{CC} = 4.5\text{ V}$ $C_L = 2500\text{ pF}$ $V_{IL} = 0\text{ V}$ $V_{IH} = 3.0\text{ V}$ $R_L = 3\text{ kOhm}$ $t_{LH} = t_{HL} \leq 10\text{ ns}$ | | 5.0* | | 6.0* | |

Capacitance

| Symbol | Parameter | V_{CC} , V | Rate | Unit |
|----------|---------------------|-----------------|------|------|
| C_{IN} | Input capacitance | 5.0 | 9.0 | pF |
| C_{PD} | Dynamic capacitance | | 90 | |

Timing diagram when measuring IC dynamic parameters

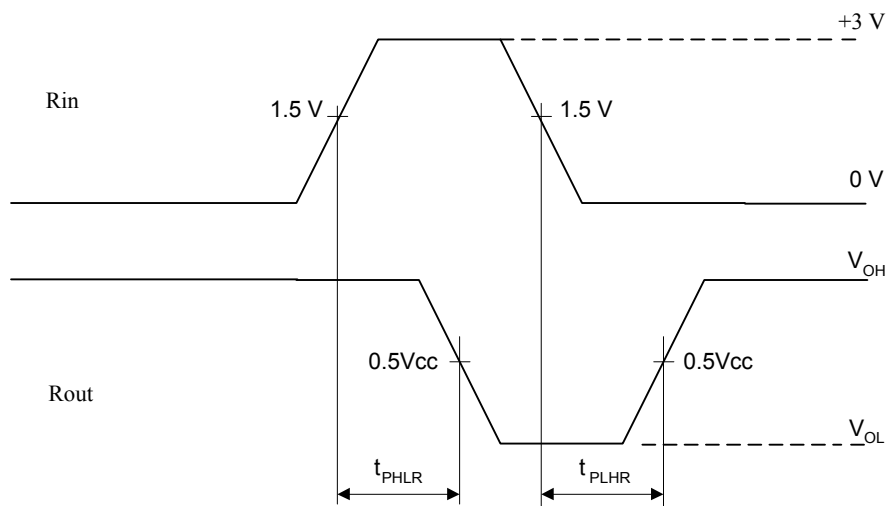


Figure 3

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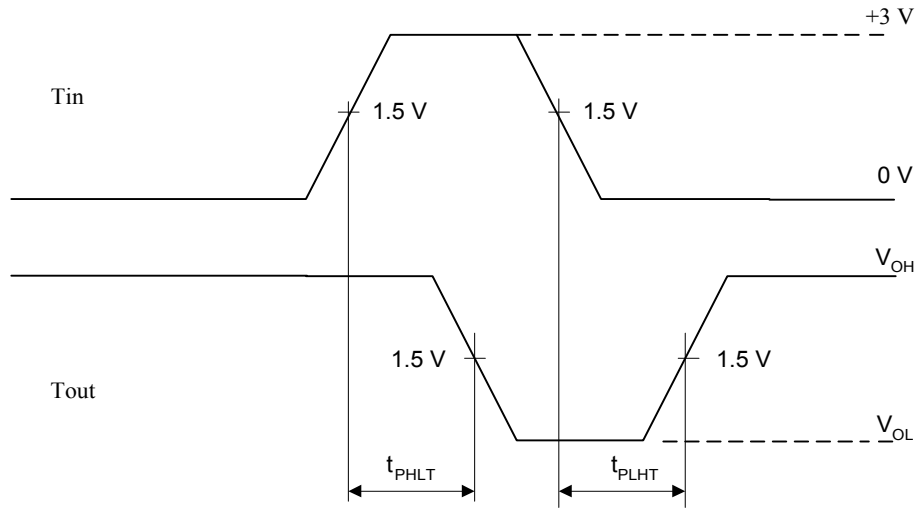


Figure 4

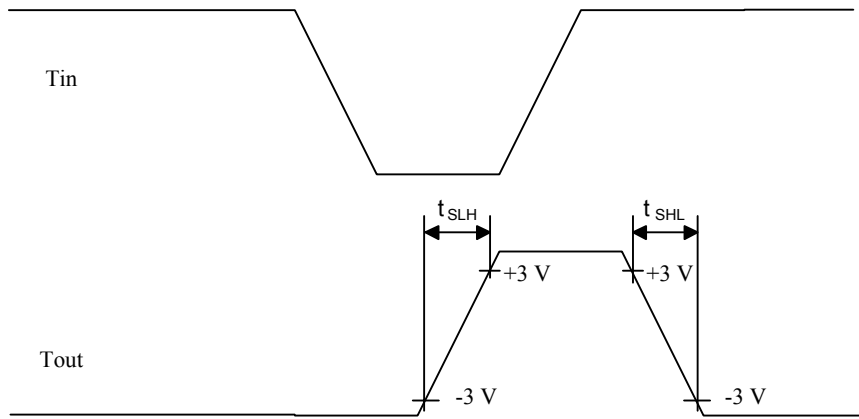


Figure 5

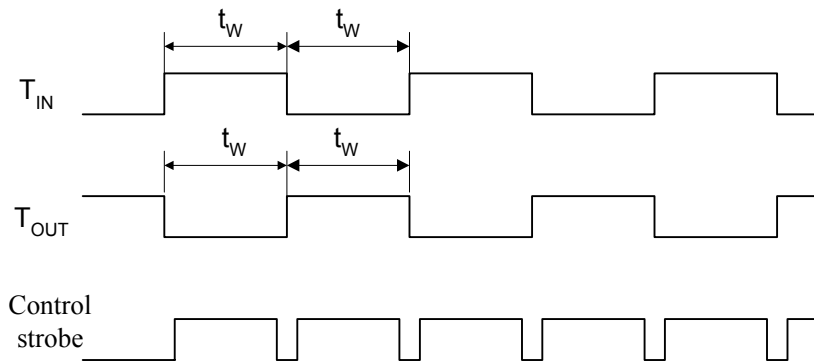
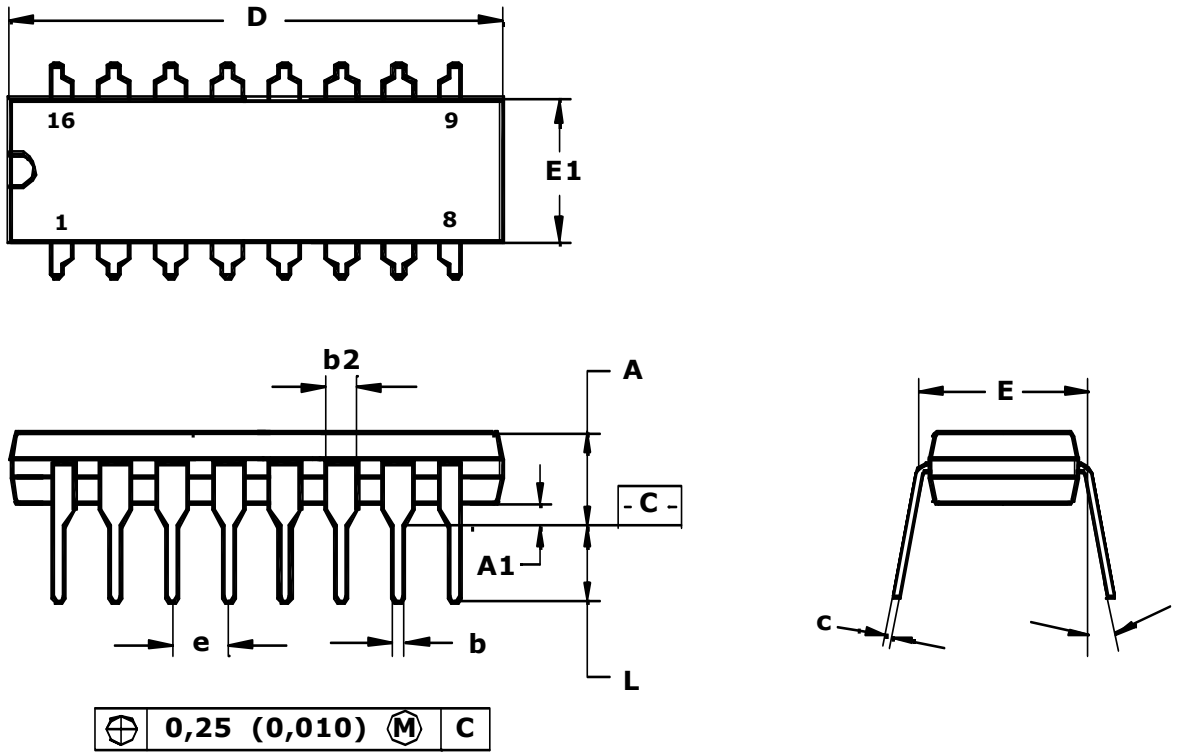


Figure 6

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Package overall dimensions

N SUFFIX PLASTIK DIP (MS-001BB)



Note:

Dimensions D, E1 do not include fin size which shall not exceed 0,25 (0,010) per side.

| | D | E1 | A | b | b2 | e | α | L | E | c | A1 |
|-------------|-------|-------|-------|-------|-------|------|----------|-------|-------|-------|-------|
| Millimeters | | | | | | | | | | | |
| min | 9,02 | 6,07 | — | 0,36 | 1,14 | 2,54 | 0° | 2,93 | 7,62 | 0,20 | 0,38 |
| max | 10,16 | 7,11 | 5,33 | 0,56 | 1,78 | | 15° | 3,81 | 8,26 | 0,36 | — |
| Inches | | | | | | | | | | | |
| min | 0,355 | 0,240 | — | 0,014 | 0,045 | 0,1 | 0° | 0,115 | 0,300 | 0,008 | 0,015 |
| max | 0,400 | 0,280 | 0,210 | 0,022 | 0,070 | | 15° | 0,150 | 0,325 | 0,014 | — |