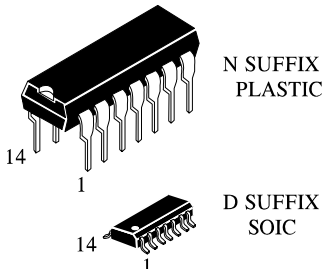


IN1489A

Quadruple Line Receivers

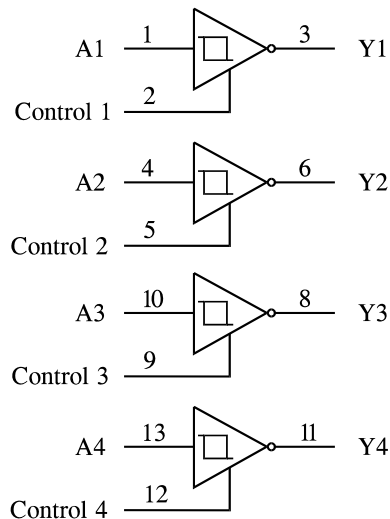
The IN1489A is a monolithic quadruple line receivers designed to satisfy the requirements of the standard interface between data terminal equipment and data communication equipments as defined by EIA standard RS-232C. A separate response control terminal is provided for each receiver. A resistor or a resistor and bias voltage can be connected between this terminal and ground to shift the input threshold voltage levels. An external capacitor can be connected from this terminal to ground to provide input noise filtering.

- Input Resistance ... 3 kΩ to 7kΩ
- Input Signal Range ... ±30 V
- Operates from Single 5 V Supply
- Built-IN Input Hysteresis (Double Thresholds)
- Response Control Provides: Input Tresold Shifting
Input Noise Filtering
- Satisfies Requirements of EIA RS-232C



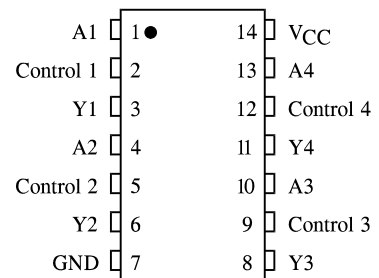
ORDERING INFORMATION
 IN1489AN Plastic
 IN1489AD SOIC
 T_A = -10° to 70° C for all packages

LOGIC DIAGRAM



PIN 14 = V_{CC}
 PIN 7 = GND

PIN ASSIGNMENT



FUNCTION TABLE

| Inputs | Output |
|--------|--------|
| A | Y |
| L | H |
| H | L |

MAXIMUM RATINGS*

| Symbol | Parameter | Value | Unit |
|------------------|---------------------------|-------------|------|
| V _{CC} | Supply Voltage | 6 | V |
| V _{IN} | Input Voltage | ±25 | V |
| I _O | Output Current | 10 | mA |
| T _{stg} | Storage Temperature Range | -65 to +150 | °C |

*Maximum Ratings are those values beyond which damage to the device may occur. Functional operation should be restricted to the Recommended Operating Conditions.

RECOMMENDED OPERATING CONDITIONS

| Symbol | Parameter | Min | Max | Unit |
|-----------------|---------------------------|-----|-----|------|
| V _{CC} | Supply Voltage | | 5.5 | V |
| V _{IH} | High Level Input Voltage | | 25 | V |
| V _{IL} | Low Level Input Voltage | -25 | | V |
| I _{OL} | Low Level Output Current | | 10 | mA |
| T _A | Ambient Temperature Range | -10 | +70 | °C |

DC ELECTRICAL CHARACTERISTICS over full operating conditions

| Symbol | Parameter | Test Conditions | Guaranteed Limit | | Unit |
|-----------------|---|--|------------------|------|------|
| | | | Min | Max | |
| V _{T+} | Positive-Going Tthreshold Input Voltage | | 1.75 | 2.25 | V |
| V _{T-} | Negative-Going Tthreshold Voltage | | 0.75 | 1.25 | V |
| V _{OH} | High-Level Output Voltage | V _I = 0.75 V, I _{OL} = -0.5 mA | 2.6 | | V |
| | | Input open, I _{OH} =-0.5 mA | 2.6 | | |
| V _{OL} | High-Level Output Voltage | V _I = 3 V, I _{OL} = 10 mA | | 0.45 | V |
| I _{IH} | High Level Input Current | V _I =25 V | 3.6 | 8.3 | mA |
| | | V _I =3 V | 0.43 | | |
| I _{IL} | Low Level Input Current | V _I =-25 V | -3.6 | -8.3 | mA |
| | | V _I =-3 V | -0.43 | | |
| I _{OS} | Short Circuit Output Current | | | -4.0 | mA |
| I _{CC} | Supply Current | V _I =5 V, Outputs open | | 26 | mA |

AC ELECTRICAL CHARACTERISTICS (T = 25°C, V_{CC} = 5.0 V, C_L = 15 pF, t_r=t_f=5 ns)

| Symbol | Parameter | Test Conditions | Min | Max | Unit |
|------------------|---|------------------------|-----|-----|------|
| t _{PLH} | Propagation Delay Time, Low-to-High Level Output (Figure 1) | R _L =3.9 kΩ | | 85 | ns |
| t _{PHL} | Propagation Delay Time, High-to-Low Level Output (Figure 1) | R _L =390 kΩ | | 50 | ns |
| t _{TLH} | Transition Time, Low-to-High Level Output (Figure 1) | R _L =3.9 kΩ | | 300 | ns |
| t _{THL} | Transition Time, High-to-Low Level Output (Figure 1) | R _L =390 kΩ | | 24 | ns |

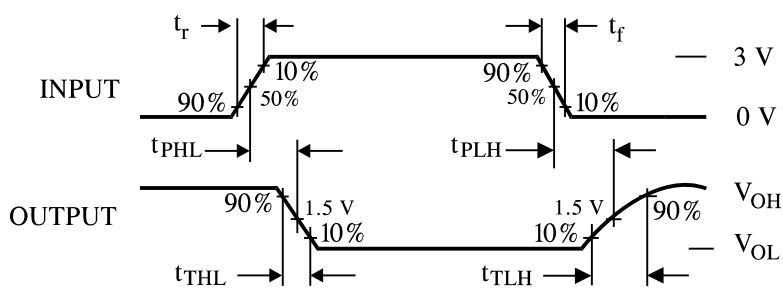
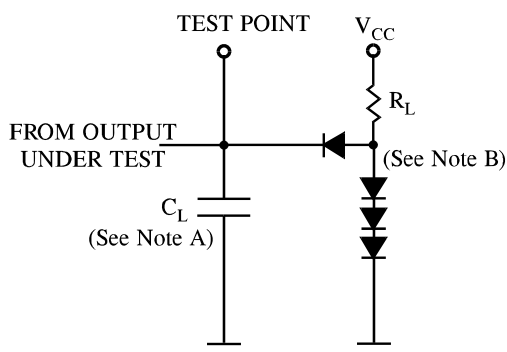


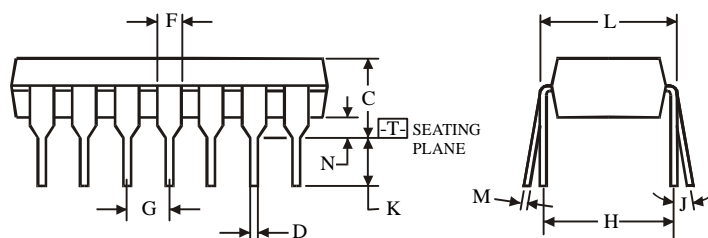
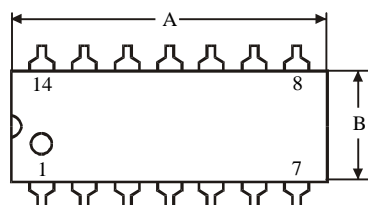
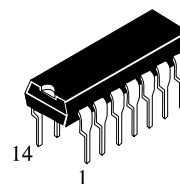
Figure 1. Switching Waveforms



NOTES A. C_L includes probe and jig capacitance.
 B. All diodes are 1N916 or 1N3064/

Figure 2. Test Circuit

**N SUFFIX PLASTIC DIP
(MS - 001AA)**



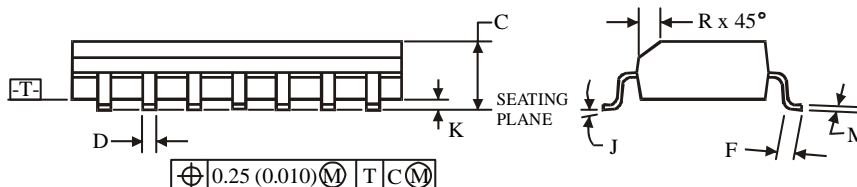
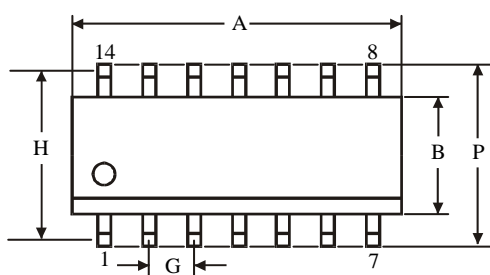
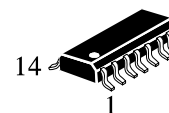
$\oplus 0.25 (0.010) \text{ (M) T}$

NOTES:

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

| Symbol | Dimension, mm | |
|--------|---------------|-------|
| | MIN | MAX |
| A | 18.67 | 19.69 |
| 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 | |

**D SUFFIX SOIC
(MS - 012AB)**



$\oplus 0.25 (0.010) \text{ (M) T C (M)}$

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.

| Symbol | Dimension, mm | |
|--------|---------------|------|
| | MIN | MAX |
| A | 8.55 | 8.75 |
| B | 3.8 | 4 |
| C | 1.35 | 1.75 |
| D | 0.33 | 0.51 |
| F | 0.4 | 1.27 |
| G | 1.27 | |
| H | 5.27 | |
| J | 0° | 8° |
| K | 0.1 | 0.25 |
| M | 0.19 | 0.25 |
| P | 5.8 | 6.2 |
| R | 0.25 | 0.5 |