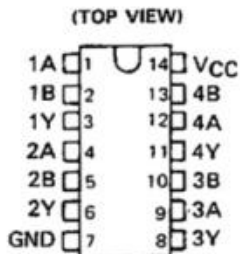


The XD74LS32 and XL74LS32 are characterized for operation over the full military range of -55°C to 125°C. The XD74LS32 and XL74LS32 are characterized for operation from 0°C to 70°C.

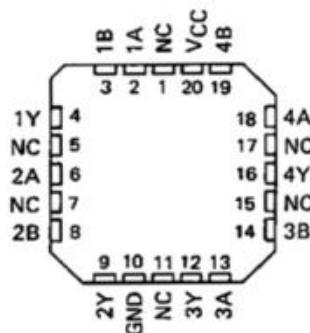
XD74LS32 . . . J OR W PACKAGE
 XL74LS32 . . . J OR W PACKAGE

FUNCTION TABLE (each gate)

| INPUTS | | OUTPUT |
|--------|---|--------|
| A | B | Y |
| H | X | H |
| X | H | H |
| L | L | L |

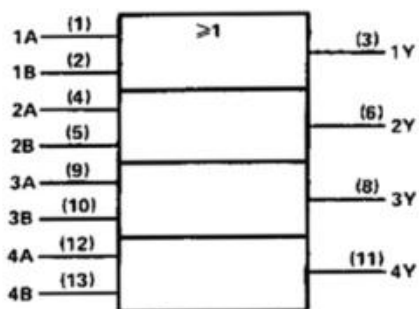


XD74LS32, XL74LS32 . . . FK PACKAGE
 (TOP VIEW)

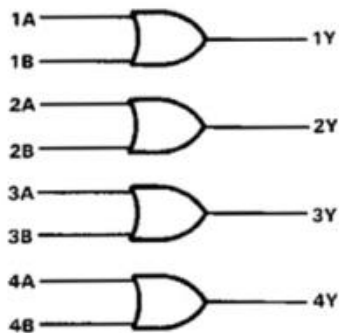


NC - No internal connection

logic symbol†



logic diagram

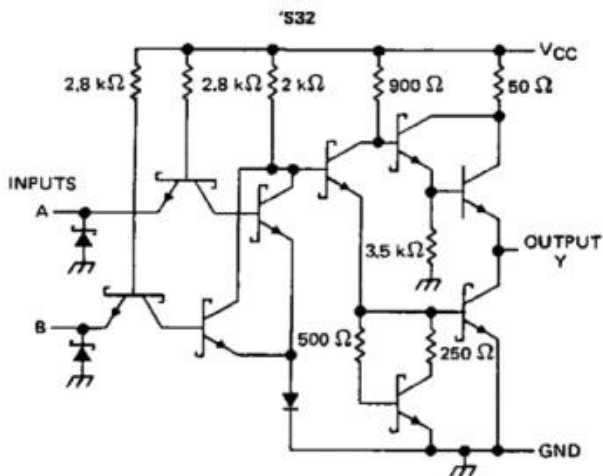
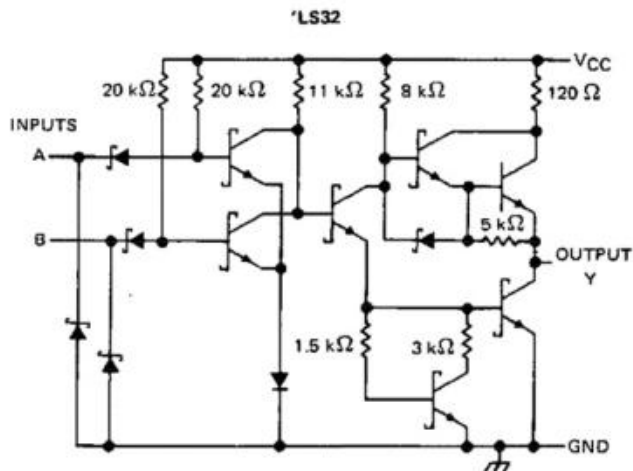
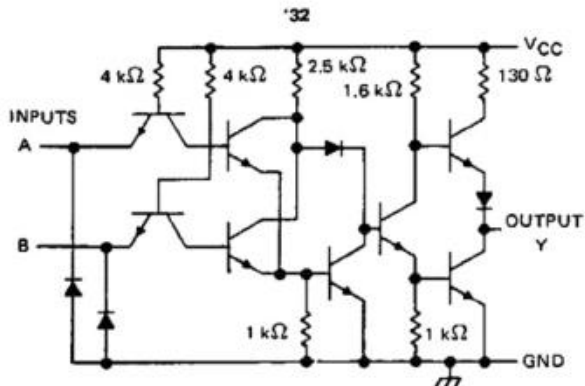


positive logic

$$Y = A + B \text{ or } Y = \overline{\overline{A} \cdot \overline{B}}$$

XD74LS32 DIP14 / XL74LS32 SOP14

schematics (each gate)



Resistor values shown are nominal.

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

| | |
|--|----------------|
| Supply voltage, V_{CC} (see Note 1) | 7 V |
| Input voltage: '32, 'S32 | 5.5 V |
| 'LS32 | 7 V |
| Operating free-air temperature: XD74 ' | -55°C to 125°C |
| XL74 ' | 0°C to 70°C |
| Storage temperature range | -65°C to 150°C |

NOTE 1: Voltage values are with respect to network ground terminal.

XD74LS32 DIP14 / XL74LS32 SOP14

recommended operating conditions

| | XD74LS32 | | | XL74LS32 | | | UNIT |
|---|----------|-----|------|----------|-----|------|------|
| | MIN | NOM | MAX | MIN | NOM | MAX | |
| V _{CC} Supply voltage | 4.5 | 5 | 5.5 | 4.75 | 5 | 5.25 | V |
| V _{IH} High-level input voltage | 2 | | | 2 | | | V |
| V _{IL} Low-level input voltage | | | 0.8 | | | 0.8 | V |
| I _{OH} High-level output current | | | -0.8 | | | -0.8 | mA |
| I _{OL} Low-level output current | | | 16 | | | 16 | mA |
| T _A Operating free-air temperature | -55 | | 125 | 0 | | 70 | °C |

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

| PARAMETER | TEST CONDITIONS † | XD74LS32 | | | XL74LS32 | | | UNIT |
|-------------------|---|----------|-------|------|----------|-------|------|------|
| | | MIN | TYP ‡ | MAX | MIN | TYP ‡ | MAX | |
| V _{IK} | V _{CC} = MIN, I _I = -12 mA | | | -1.5 | | | -1.5 | V |
| V _{OH} | V _{CC} = MIN, V _{IH} = 2 V, I _{OH} = -0.8 mA | 2.4 | 3.4 | | 2.4 | 3.4 | | V |
| V _{OL} | V _{CC} = MIN, V _{IL} = 0.8 V, I _{OL} = 16 mA | | 0.2 | 0.4 | | 0.2 | 0.4 | V |
| I _I | V _{CC} = MAX, V _I = 5.5 V | | | 1 | | | 1 | mA |
| I _{IH} | V _{CC} = MAX, V _I = 2.4 V | | | 40 | | | 40 | μA |
| I _{IL} | V _{CC} = MAX, V _I = 0.4 V | | | -1.6 | | | -1.6 | mA |
| I _{OS} § | V _{CC} = MAX | -20 | | -55 | -18 | | -55 | mA |
| I _{CCH} | V _{CC} = MAX, See Note 2 | | 15 | 22 | | 15 | 22 | mA |
| I _{CCL} | V _{CC} = MAX, V _I = 0 V | | 23 | 38 | | 23 | 38 | mA |

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

‡ All typical values are at V_{CC} = 5 V, T_A = 25°C.

§ Not more than one output should be shorted at a time.

NOTE 2: One input at 4.5 V, all others at GND.

switching characteristics, V_{CC} = 5 V, T_A = 25°C (see note 3)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | | MIN | TYP | MAX | UNIT |
|------------------|--------------|-------------|-------------------------|------------------------|-----|-----|-----|------|
| t _{PLH} | A or B | Y | R _L = 400 Ω, | C _L = 15 pF | | 10 | 15 | ns |
| t _{PHL} | | | | | | 14 | 22 | ns |

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

XD74LS32 DIP14 / XL74LS32 SOP14

recommended operating conditions

| | XD74LS32 | | | XL74LS32 | | | UNIT | | |
|--------------------------------------|----------|-----|-----|----------|-----|------|------|----|----|
| | MIN | NOM | MAX | MIN | NOM | MAX | | | |
| V_{CC} Supply voltage | 4.5 | 5 | 5.5 | 4.75 | 5 | 5.25 | V | | |
| V_{IH} High-level input voltage | 2 | | | 2 | | | V | | |
| V_{IL} Low-level input voltage | 0.7 | | | 0.8 | | | V | | |
| I_{OH} High-level output current | -0.4 | | | -0.4 | | | mA | | |
| I_{OL} Low-level output current | 4 | | | 8 | | | mA | | |
| T_A Operating free-air temperature | -55 | | | 125 | | | 0 | 70 | °C |

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

| PARAMETER | TEST CONDITIONS † | XD74LS32 | | | XL74LS32 | | | UNIT | |
|------------|---|----------|-------|------|----------|-------|------|------|----|
| | | MIN | TYP ‡ | MAX | MIN | TYP ‡ | MAX | | |
| V_{IK} | $V_{CC} = \text{MIN}$, $I_I = -18 \text{ mA}$ | -1.5 | | | -1.5 | | | V | |
| V_{OH} | $V_{CC} = \text{MIN}$, $V_{IH} = 2 \text{ V}$, $I_{OH} = -0.4 \text{ mA}$ | 2.5 | 3.4 | | 2.7 | 3.4 | | V | |
| V_{OL} | $V_{CC} = \text{MIN}$, $V_{IL} = \text{MAX}$, $I_{OL} = 4 \text{ mA}$ | 0.25 | | | 0.25 | | | V | |
| | $V_{CC} = \text{MIN}$, $V_{IL} = \text{MAX}$, $I_{OL} = 8 \text{ mA}$ | | | | 0.35 | | | | |
| I_I | $V_{CC} = \text{MAX}$, $V_I = 7 \text{ V}$ | 0.1 | | | 0.1 | | | mA | |
| I_{IH} | $V_{CC} = \text{MAX}$, $V_I = 2.7 \text{ V}$ | 20 | | | 20 | | | µA | |
| I_{IL} | $V_{CC} = \text{MAX}$, $V_I = 0.4 \text{ V}$ | -0.4 | | | -0.4 | | | mA | |
| $I_{OS} §$ | $V_{CC} = \text{MAX}$ | -20 | | -100 | -20 | | -100 | mA | |
| I_{CCH} | $V_{CC} = \text{MAX}$, See Note 2 | 3.1 | | | 3.1 | | | 6.2 | mA |
| I_{CCL} | $V_{CC} = \text{MAX}$, $V_I = 0 \text{ V}$ | 4.9 | | | 4.9 | | | 9.8 | mA |

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

‡ All typical values are at $V_{CC} = 5 \text{ V}$, $T_A = 25^\circ\text{C}$.

§ Not more than one output should be shorted at a time and the duration of the short-circuit should not exceed one second.

NOTE 2: One input at 4.5 V, all others at GND.

switching characteristics, $V_{CC} = 5 \text{ V}$, $T_A = 25^\circ\text{C}$ (see note 3)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-----------|--------------|-------------|---|-----|-----|-----|------|
| t_{PLH} | A or B | Y | $R_L = 2 \text{ k}\Omega$, $C_L = 15 \text{ pF}$ | 14 | | 22 | ns |
| t_{PHL} | | | | 14 | | 22 | ns |

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

XD74LS32 DIP14 / XL74LS32 SOP14

recommended operating conditions

| | XD74LS32 | | | XL74LS32 | | | UNIT |
|---|----------|-----|-----|----------|-----|------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX | |
| V _{CC} Supply voltage | 4.5 | 5 | 5.5 | 4.75 | 5 | 5.25 | V |
| V _{IH} High-level input voltage | 2 | | | 2 | | | V |
| V _{IL} Low-level input voltage | | | | 0.8 | | | V |
| I _{OH} High-level output current | | | | -1 | | | mA |
| I _{OL} Low-level output current | | | | 20 | | | mA |
| T _A Operating free-air temperature | -55 | | | 0 | | | 70 °C |

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

| PARAMETER | TEST CONDITIONS † | XD74LS32 | | | XL74LS32 | | | UNIT |
|-------------------|---|----------|-------|------|----------|-------|------|-------|
| | | MIN | TYP ‡ | MAX | MIN | TYP ‡ | MAX | |
| V _{IK} | V _{CC} = MIN, I _I = -18 mA | -1.2 | | | -1.2 | | | V |
| V _{OH} | V _{CC} = MIN, V _{IH} = 2 V, I _{OH} = -1 mA | 2.5 | 3.4 | | 2.7 | 3.4 | V | |
| V _{OL} | V _{CC} = MIN, V _{IL} = 0.8 V, I _{OL} = 20 mA | 0.5 | | | 0.5 | | | V |
| I _I | V _{CC} = MAX, V _I = 5.5 V | 1 | | | 1 | | | mA |
| I _{IH} | V _{CC} = MAX, V _I = 2.7 V | 50 | | | 50 | | | µA |
| I _{IL} | V _{CC} = MAX, V _I = 0.5 V | -2 | | | -2 | | | mA |
| I _{OS} § | V _{CC} = MAX | -40 | | -100 | -40 | | -100 | mA |
| I _{CCH} | V _{CC} = MAX, See Note 2 | 18 | | | 18 | | | 32 mA |
| I _{CCL} | V _{CC} = MAX, V _I = 0 V | 38 | | | 38 | | | 68 mA |

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

‡ All typical values are at V_{CC} = 5 V, T_A = 25°C.

§ Not more than one output should be shorted at a time and the duration of the short-circuit should not exceed one second.

NOTE 2: One input at 4.5 V, all others at GND.

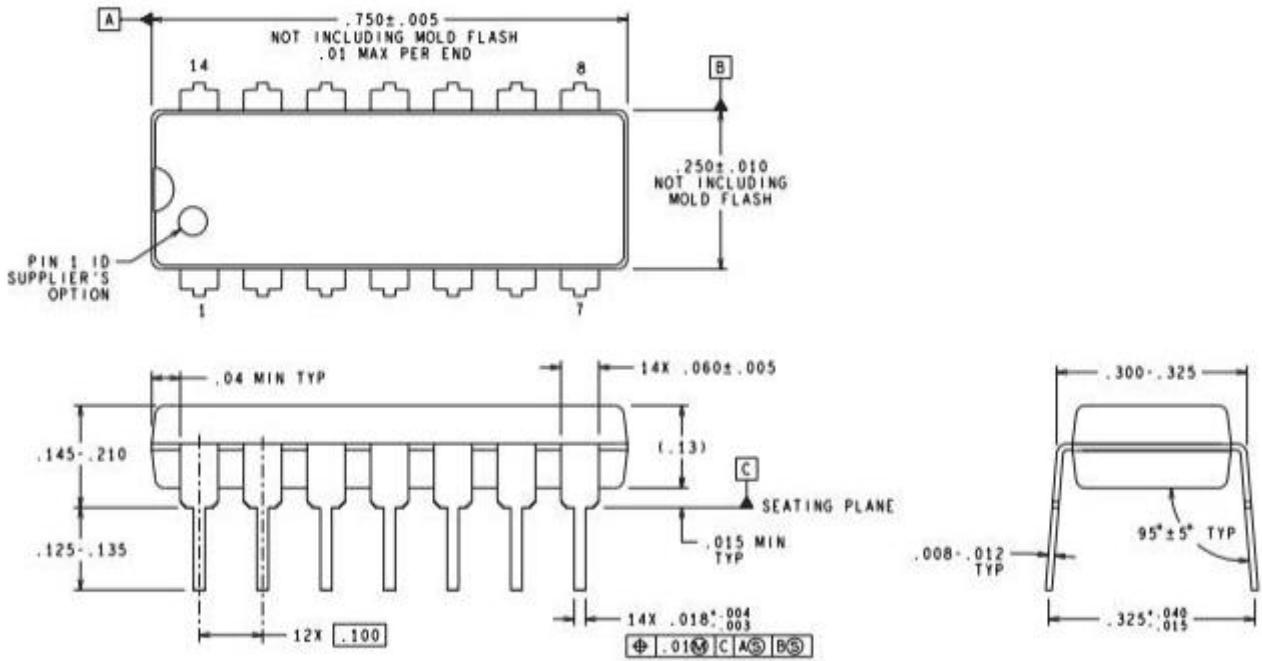
switching characteristics, V_{CC} = 5 V, T_A = 25°C (see note 3)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | TEST CONDITIONS | | MIN | TYP | MAX | UNIT | |
|------------------|--------------|-------------|-------------------------|------------------------|-----|-----|-----|------|----|
| t _{PLH} | A or B | Y | R _L = 280 Ω, | C _L = 15 pF | | | 4 | 7 | ns |
| t _{PHL} | | | | | 4 | 7 | ns | | |
| t _{PLH} | A or B | Y | R _L = 280 Ω, | C _L = 50 pF | | | 5 | | ns |
| t _{PHL} | | | | | 5 | | ns | | |

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

XD74LS32 DIP14 / XL74LS32 SOP14

DIP14



DIMENSIONS ARE IN INCHES
DIMENSIONS IN () FOR REFERENCE ONLY

