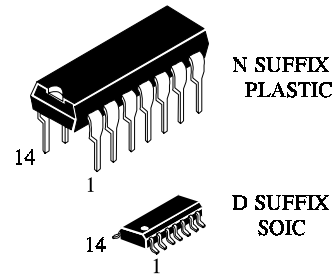


IN74ALS27A

TRIPLE 3-INPUT POSITIVE-NOR GATE

This device contains three independent 3-input positive-NOR gates. They perform the Boolean functions $Y=A+B+C$ or $\overline{Y}=A+B+C$ in positive logic.

The IN74ALS27A is characterized for operation from 0°C to 70°C



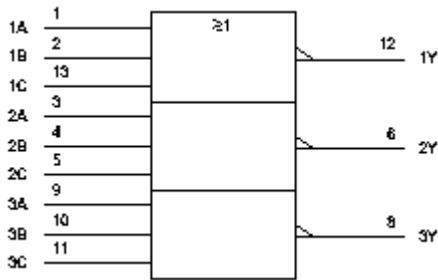
ORDERING INFORMATION

IN74LS27N Plastic

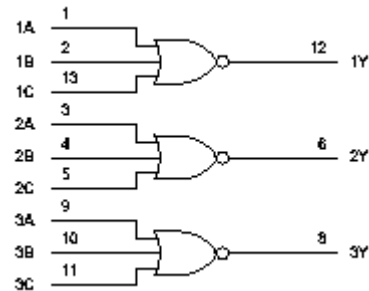
IN74ALS27D SOIC

$T_A = 0^\circ$ to 70° C for all packages

Logic Symbol



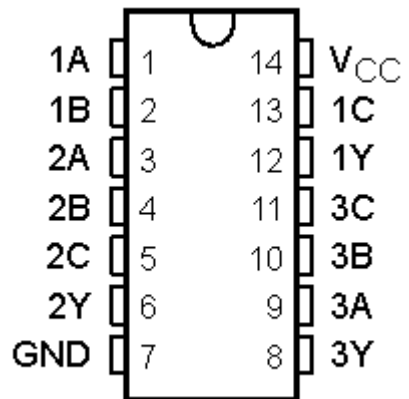
Logic Diagram (Positive Logic)



FUNCTION TABLE

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

PIN ASSIGNMENT



ABSOLUTE MAXIMUM RATINGS OVER OPERATING FREE-AIR TEMPERATURE RANGE

| | |
|---|----------------|
| Supply voltage, V_{CC} | 7 V |
| Input voltage, V_I | 7 V |
| Operating free-air temperature range, T_A | 0°C to 70°C |
| Storage temperature range | -65°C to 150°C |

RECOMMENDED OPERATING CONDITIONS

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

ELECTRICAL CHARACTERISTICS OVER RECOMMENDED OPERATING FREE-AIR TEMPERATURE RANGE

| Parameter | Test Conditions | | MIN | TYP** | MAX | UNI |
|-----------|-----------------------|-----------------|------------|-------|------|-----|
| V_{IK} | $V_{CC}=4.5V$ | $I_I=-18mA$ | | | -1.5 | V |
| V_{OH} | $V_{CC}=4.5V$ to 5.5V | $I_{OH}=-0.4mA$ | $V_{CC}-2$ | | | V |
| V_{OL} | $V_{CC}=4.5V$ | $I_{OL}=4mA$ | | 0.25 | 0.4 | V |
| | | $I_{OL}=8mA$ | | 0.35 | 0.5 | V |
| I_I | $V_{CC}=5.5V$ | $V_I=7V$ | | | 0.1 | mA |
| I_{IH} | $V_{CC}=5.5V$ | $V_I=2.7V$ | | | 20 | μA |
| I_{IL} | $V_{CC}=5.5V$ | $V_I=0.4V$ | | | -0.1 | mA |
| I_O^* | $V_{CC}=5.5V$ | $V_O=2.25V$ | -30 | | -112 | mA |
| I_{CCH} | $V_{CC}=5.5V$ | $V_I=0$ | | 0.97 | 1.8 | mA |
| I_{CCL} | $V_{CC}=5.5V$ | $V_I=4.5V$ | | 2 | 4 | mA |

*The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I_{OS}

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

SWITCHING CHARACTERISTICS

| Parameter | From (input) | To (output) | $V_{CC}=4.5V$ to 5.5V, $C_L=50pF$, $R_L=500\text{ Ohm}$, $T_A=MIN$ to MAX* | | UNIT |
|-----------|--------------|-------------|--|-----|------|
| | | | MIN | MAX | |
| t_{PHL} | A, B or C | Y | 3 | 15 | ns |
| t_{PLH} | | | 1 | 9 | ns |

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