

74F27 Triple 3-Input NOR Gate

General Description

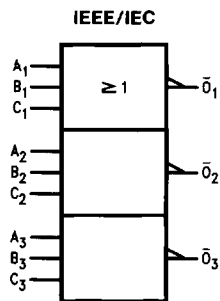
This device contains three independent gates, each of which performs the logic NOR function.

Ordering Code: See Section 11

| Commercial | Package Number | Package Description |
|------------------|----------------|---|
| 74F27PC | N14A | 14-Lead (0.300" Wide) Molded Dual-In-Line |
| 74F27SC (Note 1) | M14A | 14-Lead (0.150" Wide) Molded Small Outline, JEDEC |
| 74F27SJ (Note 1) | M14D | 14-Lead (0.300" Wide) Molded Small Outline, EIAJ |

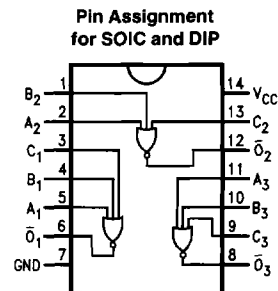
Note 1: Devices also available in 13" reel. Use suffix = SCX and SJX.

Logic Symbol



TL/F/9539-3

Connection Diagram



TL/F/9539-2

Unit Loading/Fan Out: See Section 2 for U.L. Definitions

| Pin Names | Description | 74F | |
|-----------------|--------------|------------------|---|
| | | U.L. HIGH/LOW | Input I_{IH}/I_{IL} Output I_{OH}/I_{OL} |
| A_n, B_n, C_n | Data Inputs | 1.0/1.0 | $20 \mu\text{A} / -0.6 \text{ mA}$ |
| O_n | Data Outputs | 50/33.3 | $-1 \text{ mA} / 20 \text{ mA}$ |

Function Table

| Inputs | | | Output |
|--------|-------|-------|-------------|
| A_n | B_n | C_n | \bar{O}_n |
| L | L | L | H |
| X | X | H | L |
| X | H | X | L |
| H | X | X | L |

H = HIGH Voltage Level
L = LOW Voltage Level
X = Immaterial

Absolute Maximum Ratings (Note 1)

| | |
|---|--------------------------------------|
| Storage Temperature | -65°C to +150°C |
| Ambient Temperature under Bias | -55°C to +125°C |
| Junction Temperature under Bias | -55°C to +175°C |
| Plastic | -55°C to +150°C |
| V _{CC} Pin Potential to Ground Pin | -0.5V to +7.0V |
| Input Voltage (Note 2) | -0.5V to +7.0V |
| Input Current (Note 2) | -30 mA to +5.0 mA |
| Voltage Applied to Output in HIGH State (with V _{CC} = 0V) | |
| Standard Output | -0.5V to V _{CC} |
| TRI-STATE® Output | -0.5V to +5.5V |
| Current Applied to Output in LOW State (Max) | twice the rated I _{OL} (mA) |

Note 1: Absolute maximum ratings are values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Note 2: Either voltage limit or current limit is sufficient to protect inputs.

Recommended Operating Conditions

| | |
|------------------------------|----------------|
| Free Air Ambient Temperature | 0°C to +70°C |
| Commercial | |
| Supply Voltage | +4.5V to +5.5V |
| Commercial | |

DC Electrical Characteristics

| Symbol | Parameter | 74F | | | Units | V _{CC} | Conditions |
|------------------|-----------------------------------|-------------------------|------|------|-------|-----------------|--|
| | | Min | Typ | Max | | | |
| V _{IH} | Input HIGH Voltage | 2.0 | | | V | | Recognized as a HIGH Signal |
| V _{IL} | Input LOW Voltage | | | 0.8 | V | | Recognized as a LOW Signal |
| V _{CD} | Input Clamp Diode Voltage | | | -1.2 | V | Min | I _{IN} = -18 mA |
| V _{OH} | Output HIGH Voltage | 74F 10% V _{CC} | 2.5 | | V | Min | I _{OH} = -1 mA I _{OH} = -1 mA |
| | | 74F 5% V _{CC} | 2.7 | | | | |
| V _{OL} | Output LOW Voltage | 74F 10% V _{CC} | | 0.5 | V | Min | I _{OL} = 20 mA |
| I _{IH} | Input HIGH Current | 74F | | 5.0 | μA | Max | V _{IN} = 2.7V |
| I _{BVI} | Input HIGH Current Breakdown Test | 74F | | 7.0 | μA | Max | V _{IN} = 7.0V |
| I _{CEX} | Output HIGH Leakage Current | 74F | | 50 | μA | Max | V _{OUT} = V _{CC} |
| V _{ID} | Input Leakage Test | 74F | 4.75 | | V | 0.0 | I _{ID} = 1.9 μA All Other Pins Grounded |
| I _{OD} | Output Leakage Circuit Current | 74F | | 3.75 | μA | 0.0 | V _{IOD} = 150 mV All Other Pins Grounded |
| I _{IL} | Input LOW Current | | | -0.6 | mA | Max | V _{IN} = 0.5V |
| I _{OS} | Output Short-Circuit Current | | -60 | -150 | mA | Max | V _{OUT} = 0V |
| I _{CCH} | Power Supply Current | | 4.0 | 5.5 | mA | Max | V _O = HIGH |
| I _{CCL} | Power Supply Current | | 8.7 | 12.0 | mA | Max | V _O = LOW |

AC Electrical Characteristics: See Section 2 for Waveforms and Load Configurations

| Symbol | Parameter | 74F | | | 74F | | Units | Fig. No. |
|------------------|-------------------|---|-----|-----|--|-----|-------|----------|
| | | T _A = +25°C V _{CC} = +5.0V C _L = 50 pF | | | T _A , V _{CC} = Com C _L = 50 pF | | | |
| | | Min | Typ | Max | Min | Max | | |
| t _{PLH} | Propagation Delay | 2.0 | 3.8 | 6.0 | 1.5 | 6.5 | ns | 2-3 |
| t _{PHL} | | 1.0 | 2.6 | 4.0 | 1.0 | 4.5 | | |