

9311

93L11

## 1-OF-16 DECODER/DEMULTIPLEXER

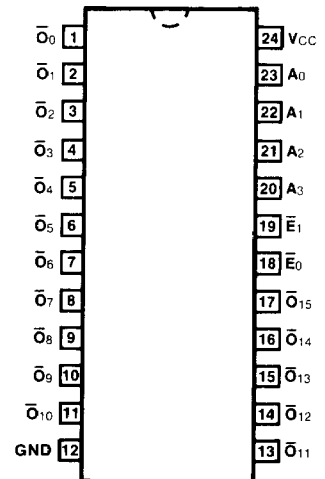
**DESCRIPTION** — The '11 is a multipurpose decoder designed to accept four inputs and provide 16 mutually exclusive outputs. The 9311 is a faster replacement for the 74154.

- **MUTUALLY EXCLUSIVE OUTPUTS**
- **HIGH CAPACITIVE DRIVE CAPABILITY**
- **DEMULTIPLEXING CAPABILITY**
- **TYPICAL POWER DISSIPATION OF 175 mW FOR '11, 58 mW FOR 'L11**
- **2-INPUT ENABLE GATE**

**ORDERING CODE:** See Section 9

| PKGS            | PIN OUT | COMMERCIAL GRADE                                               | MILITARY GRADE                                                     | PKG TYPE |
|-----------------|---------|----------------------------------------------------------------|--------------------------------------------------------------------|----------|
|                 |         | V <sub>CC</sub> = +5.0 V ±5%,<br>T <sub>A</sub> = 0°C to +70°C | V <sub>CC</sub> = +5.0 V ±10%,<br>T <sub>A</sub> = -55°C to +125°C |          |
| Plastic DIP (P) | A       | 9311PC, 93L11PC                                                |                                                                    | 9N       |
| Ceramic DIP (D) | A       | 9311DC, 93L11DC                                                | 9311DM, 93L11DM                                                    | 6N       |
| Flatpak (F)     | A       | 9311FC, 93L11FC                                                | 9311FM, 93L11FM                                                    | 4M       |

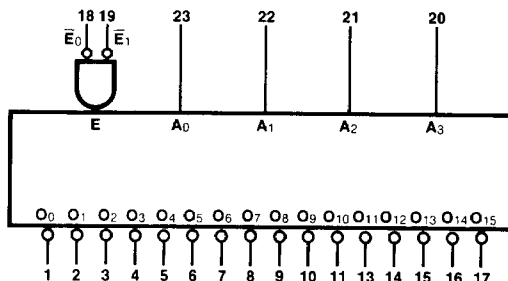
**CONNECTION DIAGRAM**  
**PINOUT A**



**INPUT LOADING/FAN-OUT:** See Section 3 for U.L. definitions

| PIN NAMES                       | DESCRIPTION                    | 93XX (U.L.)<br>HIGH/LOW | 93L (U.L.)<br>HIGH/LOW |
|---------------------------------|--------------------------------|-------------------------|------------------------|
| A <sub>0</sub> — A <sub>3</sub> | Address Inputs                 | 1.0/1.0                 | 0.5/0.25               |
| $\bar{E}_0, \bar{E}_1$          | AND Enable Inputs (Active LOW) | 1.0/1.0                 | 0.5/0.25               |
| $\bar{O}_0$ — $\bar{O}_{15}$    | Decoder Outputs (Active LOW)   | 20/10                   | 10/5.0<br>(3.0)        |

**LOGIC SYMBOL**



V<sub>CC</sub> = Pin 24  
GND = Pin 12



**DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE** (unless otherwise specified)

| SYMBOL          | PARAMETER                       |    | 93XX |     | 93L  |     | UNITS | CONDITIONS                                    |
|-----------------|---------------------------------|----|------|-----|------|-----|-------|-----------------------------------------------|
|                 |                                 |    | Min  | Max | Min  | Max |       |                                               |
| I <sub>OS</sub> | Output Short<br>Circuit Current | XM | -20  | -55 | -2.5 | -25 | mA    | V <sub>CC</sub> = Max, V <sub>OUT</sub> = 0 V |
|                 |                                 | XC | -20  | -57 | -2.5 | -25 |       |                                               |
| I <sub>CC</sub> | Power Supply Current            | XM | 49   |     | 16.5 |     | mA    | V <sub>CC</sub> = Max                         |
|                 |                                 | XC | 56   |     | 16.5 |     |       |                                               |

**AC CHARACTERISTICS:** V<sub>CC</sub> = +5.0 V, T<sub>A</sub> = +25°C (See Section 3 for waveforms and load configurations)

| SYMBOL                               | PARAMETER                                             | 93XX                                             |     | 93L                    |     | UNITS | CONDITIONS      |
|--------------------------------------|-------------------------------------------------------|--------------------------------------------------|-----|------------------------|-----|-------|-----------------|
|                                      |                                                       | C <sub>L</sub> = 15 pF<br>R <sub>L</sub> = 400 Ω |     | C <sub>L</sub> = 15 pF |     |       |                 |
|                                      |                                                       | Min                                              | Max | Min                    | Max |       |                 |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay<br>A <sub>n</sub> to O <sub>n</sub> | 31<br>28                                         |     | 75<br>85               |     | ns    | Figs. 3-1, 3-20 |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay<br>E <sub>n</sub> to O <sub>n</sub> | 23<br>24                                         |     | 60<br>65               |     | ns    | Figs. 3-1, 3-5  |