FAIRCHILD

A Schlumberger Company

# μA9643 Dual TTL To MOS/CCD Driver

Interface Products

## Description

The μA9643 is a Dual Positive-Logic "AND" TTL-to-MOS Driver. The μA9643 is a functional replacement of the SN75322 with one important exception: the two external pnp transistors are no longer needed for operation. The μA9643 is also a functional replacement for the 75363 with the important exception that the $V_{CC3}$ supply is not needed. The pin connections normally used for the external pnp transistors are purposely not internally connected to the μA9643.

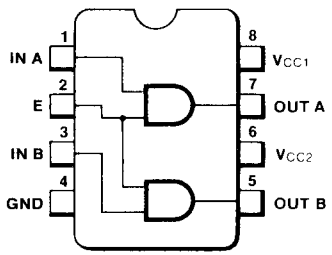
- **SATISFIES CCD MEMORY AND DELAY LINE REQUIREMENTS**
- **DUAL POSITIVE-LOGIC TTL-TO-MOS DRIVER**
- **OPERATES FROM STANDARD BIPOLAR AND MOS SUPPLY VOLTAGES**
- **HIGH-SPEED SWITCHING**
- **TTL AND DTL COMPATIBLE INPUTS**
- **SEPARATE DRIVER ADDRESS INPUTS WITH COMMON STROBE**
- **$V_{OH}$ AND $V_{OL}$ COMPATIBLE WITH POPULAR MOS RAMs**
- **DOES NOT REQUIRE EXTERNAL pnp TRANSISTORS OR $V_{CC3}$**
- **$V_{OH}$ MINIMUM IS $V_{CC2}$ − 0.5 V**

## Absolute Maximum Ratings

Over operating ambient temperature range unless otherwise noted

| | |
|---|---|
| Supply Voltage Range of $V_{CC1}$ (Note 1) | −0.5 V to 7 V |
| Supply Voltage Range of $V_{CC2}$ | −0.5 V to 15 V |
| Input Voltage | 5.5 V |
| Inter-Input Voltage (Note 2) | 5.5 V |
| Continuous Total Dissipation at $T_A$ = 25°C | 1000 mW |
| Operating Temperature Range | 0°C to 70°C |
| Storage Temperature Range | −65°C to 150°C |
| Pin Temperature Molded DIP (Soldering, 10 s) | 260°C |

## Connection Diagram 8-Pin DIP




(Top View)

## Order Information

| Type | Package | Code | Part No. |
|---|---|---|---|
| μA9643 | Molded DIP | 9T | μA9643TC |

**Notes**

1. Voltage values are with respect to network ground terminal unless otherwise noted.
2. This rating applies between any two inputs of any one of the gates.

**Recommended Operating Conditions**

| Characteristic | Min | Typ | Max | Unit |
|---|---|---|---|---|
| Supply Voltage, $V_{CC1}$ | 4.75 | 5.0 | 5.25 | V |
| Supply Voltage, $V_{CC2}$ | 4.75 | 12 | 15 | V |
| Operating Temperature, $T_A$ | 0 | | 70 | °C |

**Electrical Characteristics** Over recommended ranges of $V_{CC1}$, $V_{CC2}$ and operating ambient temperature unless otherwise noted.

| Symbol | Characteristic | Condition | | Min | Typ(3) | Max | Unit |
|---|---|---|---|---|---|---|---|
| $V_{IH}$ | Input HIGH Voltage | | | 2.0 | | | V |
| $V_{IL}$ | Input LOW Voltage | | | | | 0.8 | V |
| $V_{OH}$ | Output HIGH Voltage | $I_{OH}$ = −400 μA | | $V_{CC2}$ − 0.5 | $V_{CC2}$ − 0.2 | | V |
| $V_{OL}$ | Output LOW Voltage | $I_{OL}$ = 10 mA | | | 0.4 | 0.5 | V |
| | | $I_{OL}$ = 1.0 mA | | | 0.2 | 0.3 | V |
| $I_{IN}$ | Input Current at Maximum Input Voltage | $V_{CC1}$ = 5.25 V, $V_{CC2}$ = 11.4 V<br>$V_{IN}$ = 5.25 V | | | | 0.1 | mA |
| $I_{IH}$ | Input HIGH Current | $V_{IN}$ = 2.4 V | A Inputs | | | 40 | μA |
| | | | E Inputs | | | 80 | |
| $I_{IL}$ | Input LOW Current | $V_{IN}$ = 0.4 V | A Inputs | | | 0.5 | mA |
| | | | E Inputs | | | − 1.0 | |
| $I_{CC1(L)}$ | Supply Current from $V_{CC1}$ All Outputs LOW | $V_{CC1}$ = 5.25 V<br>$V_{CC2}$ = 12.6 V | No Load | | 15 | 19 | mA |
| $I_{CC2(L)}$ | Supply Current from $V_{CC2}$ All Outputs LOW | $V_{CC2}$ = 12.6 V | $V_{CC1}$ = 5.25 V | | 5.5 | 9.5 | mA |
| $I_{CC1(H)}$ | Supply Current from $V_{CC1}$ All Outputs HIGH | $V_{CC1}$ = 5.5 V<br>$V_{CC2}$ = 13.2 V | No Load | | 9.0 | 13 | mA |
| $I_{CC2(H)}$ | Supply Current from $V_{CC2}$ All Outputs HIGH | $V_{CC2}$ = 12.6 V | $V_{CC1}$ = 5.25 V | | 5.5 | 9.5 | mA |

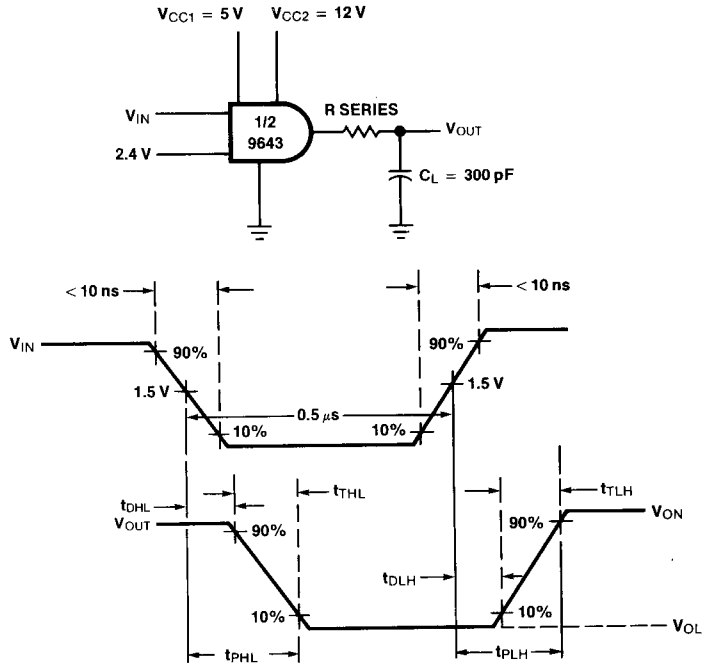
**AC Characteristics** $V_{CC1}$ = 5.0 V, $V_{CC2}$ = 12 V, $T_A$ = 25°C

| Symbol | Characteristic | Condition | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $t_{DLH}$ | Delay Time | $C_L$ = 300 pF | | 5.0 | 9.0 | 17 | ns |
| $t_{DHL}$ | Delay Time | | | 5.0 | 9.0 | 17 | ns |
| $t_{TLH}$ | Rise Time | $R_{SERIES}$ = 0 | $C_L$ = 300 pF | 6.0 | 11 | 17 | ns |
| $t_{THL}$ | Fall Time | | | 6.0 | 11 | 17 | ns |
| $t_{TLH}$ | Rise Time | $R_{SERIES}$ = 10 Ω | | 8.0 | 14 | 20 | ns |
| $t_{THL}$ | Fall Time | | | 8.0 | 14 | 20 | ns |
| $t_{PLH_A}$ − $t_{PLH_B}$<br>$t_{PHL_A}$ − $t_{PHL_B}$ | Skew between outputs A and B | | | | 0.5 | | ns |

**Note**

3. All typical values are at $V_{CC1}$ = 5.0 V, $V_{CC2}$ = 12 V, and $T_A$ = 25°C unless otherwise noted.

## AC Test Circuit and Waveforms




**The pulse generator has the following characteristics:**
**PRR = 1 MHz, $Z_{OUT}$ = 50 Ω**

**$C_L$ includes probe and jig capacitance.**