

CIRCUIT SCHEMATIC 1/2 OF CIRCUIT SHOWN Vcc 14 2.4 k 2.4 k 800 2 ş 60 75 -0 5 3.5 k 6 23 0 75 • 4 250 \$ 500 \$ Gnd

MC3100/MC3000 series

This device is a dual 3-input/3-output series-terminated AND line driver that minimizes switching transients on long lines by approximating line impedance. Two outputs are pro-vided through 75-ohm resistors for use when driving 93 to 120-ohm lines. These outputs should be paralleled when driving 50 to 93 ohm lines. In addition, an output is provided directly at the gate output node for driving adjacent gates.



Positive Logic: 4, 5; 6, = 1 • 2 • 3 Negative Logic: 4, 5, 6, = 1 + 2 + 3

Input Loading Factor = 1

Output Loading Factor, Direct Output (Pins 6 & 8) = 8 minus the number of resistor-terminated outputs being used.

Output Loading Factor, Resistors (Pins 4, 5, 9, & 10) = 1

Total Power Dissipation = 56 mW typ/pkg Propagation Delay Time = 9.0 ns typ

SWITCHING TIME TEST CIRCUIT AND WAVEFORMS



The coax delays from input to scope and output to scope must be matched. The scope must be terminated in 50-ohm impedance. The 950-ohm resistor and the scope termination impedance constitute a 20:1 attenuator probe. Coax shall be CT-070-50 or equivalent.

See General Information section for packaging.

ELECTRICAL CHARACTERISTICS

in the same manner. Further, test proce-dures are shown for only one input of the dures here being tested. To complete test-ing, sequence through remaining inputs. Test procedures are shown for only one line driver. The other line driver is tested



2122

| - | | | | - | | | | | | | - | T | - | | | r | | | | | | | |
|-----------------------------|----------|------------------|--------|--------|--------|--------|--------|--------|----------|------------------|--------------------------|-----------------|-------------------|---------------|--------------------------|-------------|------|--------------------------|---|------------------------|--------------------------|--|----------------|
| | | | | | , | | | | | Gnd | L | 2, 3, 7 | 2,3,7 | 2 | L | - | 1 | 6,7 | 7 | 2 ° | 1, 2, 3, 7 11, 12, 13 | 2 | 4 |
| TEST CURRENT/VOLTAGE VALUES | mA Volts | V _{IHX} | | 2.5 | | 4 | 2.5 | | | V _{IHX} | | | | | | d. • | | | i. | | • | 2,3 | 2,3 |
| | | V _{CCH} | 5.5 | 5.5 | 5.5 | 5.25 | 5.25 | 5.25 | | V _{ccH} | 14 | 14 | 14 | | | | | 14 | | 14 | 14 | | , |
| | | VccL | 4.5 | 4.5 | 4.5 | 4.75 | 4.75 | 4.75 | | Vccl | | | | 14 | 14 | 14 | 14 | | | | - | | |
| | | Vcc | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | | Vcc | 1 | | | | | • | | ' | .1 | • | - | 14 | 14 |
| | | Vmax | | 7.0 | | • | 7.0 | , | | Vmax | | , | | • | | • | • | • | 14 | • | 1 | | ' |
| | | VRH | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | V _{RH} | 2,3* | | | | 2, 3* | 2,3* | 2,3* | 1, 2, 3* | 1, 2, 3, 11, 12, 13 | 1, 2, 3, 11, 12, 13 | , | * | • |
| | | <pre></pre> | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | ED BELOW | Vr Vr | | - | | | | , | | | | • | - | - | 1 |
| | | ۲, | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | NS LIST | | - | | | | | | • | • | 1 | 1 | - | 1 | • |
| | | H"> | 2.0 | 1.8 | 3 1.8 | 2.0 | 1.8 | 1.8 | D TO PI | <" | Ľ | ļ. | | | · · | 1 | - | • | | • | | ' | ' |
| | | >" | | 0 I.I | 0.8 | 1.1 | 0 1.1 | 0.5 | APPLIE | V. | Ļ. | <u> '</u> | · | · | - | - | | • | | - | - | | |
| | | | - | - 0. | - | - | - 0. | - | LTAGE | -L L | +- | ŀ. | - | - | | <u> </u> | - | - | | | - | | |
| | | HC I | 0.1 | 0.1 1 | 0.1 | 0.1 | 0.1 1 | 0.1 | NT / VO | CHC | | 1. | 1. | 1. | | - | 4 | | | | | | , |
| | | HB lo | - 1.0 | . 1 . | .1 - | - 1.0 | - | 1.1 | CURRE | 8 H | <u> </u> | 1. | 1. | 1. | | | | | | , | | , | |
| | | HA I | 8. | 8 | 8. | - 8. | 8 | .8 | TEST | HA IC | - | 1. | | 1. | - | - | 9 | | | | | | |
| | | 01 0 | 2.0 -1 | 2.0 -1 | 2.0 -1 | 2.0 -1 | 2.0 -1 | - 0 -1 | | DIC 10 | - | 1. | - . | 1. | . 4 | 4 | | | | | - | | , |
| | | OLB I | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | | OLB I | - | 1. | 1. | 1. | S | 2 | | | | | | out 6 | 9 |
| | | OLA | 16 | 16 | 16 | 16 | 16 | 16 | | OLA | - | - . | 1. | 1. | 9 | 9 | | | , | | - | ulse F | 1 |
| | @ Test | ature | 55°C | 25°C | 25°C | 0°C | 25°C | 75°C | Π | - I | nAdc | Adc | Vdc | Vdc | Vdc | Vdc | Vdc | nAdc | nAdc | nAdc | nAdc | a su | ns |
| | | Temper | - | 28 | | | 28 + | + | | Max | -2.0 | 50 4 | 1 | 1. | 0.4 | 0.5 | | -100 г | • | 13.2 n | 26.4 n | , | , |
| | | | MC31 | | | MC30 | | | its | Win +/5 | | | | 1. | , | | 2.5 | -40 | | | | | 1 |
| | | | | | | | | | Test Lim | Max | -2.0 | 20 | | -1.5 | 0.4 | 0.5 | | -100 | 18 | 13.2 | 26.4 | 15 | 12 |
| | | | | | | | | | MC3028 | Min +2 | 1 | | 5.5 | | | | 2.5 | -40 | | | • | • | , |
| | | | | | | | | | | Max | -2.0 | 50 | | | 0.4 | 0.5 | | -100 | • | 13.2 | 26.4 | | • |
| | | | | | | | | 1 | | Min | · | | ! <u> </u> | ŀ | | | 2.5 | -40 | 1 | • . | • | • | • |
| | | | | | | | | | 0000 | Wax | -2.0 | 20 | 1, " | · | 0.4 | 0.5 | • | -100 | · | 13.5 | 26.4 | | |
| | | | | | | | | | Limits | × Wi | - | - | - | 2 | | | 53 | 0 -40 | | - | + | | ' |
| | | | | | | | | | 8 Test | n Ma | -2. | 20 | - 9 | 17 | 0.6 | 0. | 4 | -10 | 18 | 13. | 26. | 15 | 12 |
| | | | | | | | | | MC312 | . Wi | 0 | | 2. | | 4 | - 5 | ~ | -4 | | - 2 | 4 | | |
| | | | | | | | | Nin Mi | -2- | - | - | - | .0 | .0 | 4 | 40 -10 | | - 13 | - 26 | | | | |
| | | | | | | | | | Pin | Under Test A | 1 | - | - | 1 | 9 | 2 | 6 | 8 | 14 | 14 | 14 | I, 6 | 1,6 |
| | | | | | | | | | | Symbol | 1 _{F 2} | IR | BVin | VD | Vol.1 | Vol. 2 | NOH | Isc | Imax | IPDH | IppL | t pd- | t pd+ |
| | | | | | | | | | | Characteristic | Input Forward Current | Leakage Current | Breakdown Voltage | Clamp Voltage | Output Output Voltage | - 1, - 2 | | Short-Circuit Current | Power Requirements (Total Device) Maximum Power Supply Current | Power Supply Drain | | Switching Parameters Turn-On Delay | Turn-Off Delay |

since this is a non-inverting gate, power drain is minimized by tying the inputs to gates not under test to $V_{\rm RH}$.