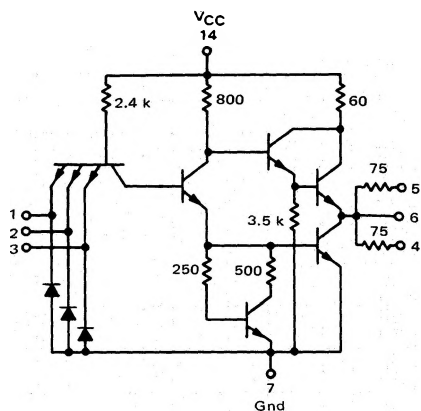


**DUAL 3-INPUT 3-OUTPUT
"NAND" SERIES TERMINATED
LINE DRIVER**

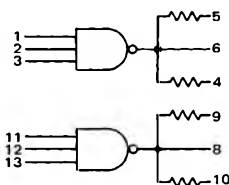
MC3100/MC3000 series

**MC3129F • MC3029F
MC3129L • MC3029L,P**

CIRCUIT SCHEMATIC
1/2 OF CIRCUIT SHOWN



This device is a dual 3-input/3-output series-terminated NAND line driver that minimizes switching transients on long lines by approximating line impedance. Two outputs are provided 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 = $\overline{1 \cdot 2 \cdot 3}$

Negative Logic: 4, 5, 6 = $\overline{1 + 2 + 3}$

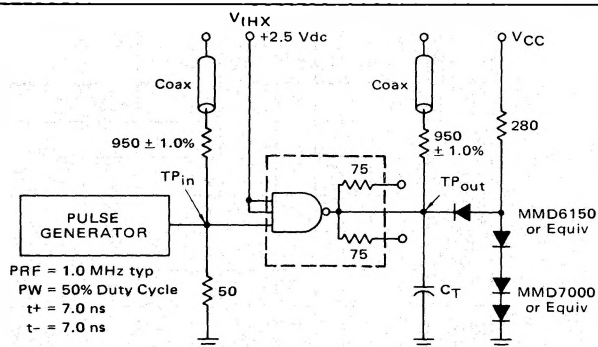
Input Loading Factor = 1

Output Loading Factor, Direct Output (Pins 6 and 8) =
8 Minus The Number of Resistor-Terminated Outputs
Being Used.

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

Total Power Dissipation = 44 mW typ/pkg
Propagation Delay Time = 6.0 ns typ

SWITCHING TIME TEST CIRCUIT AND WAVEFORMS



$C_T = 25$ pF = total parasitic capacitance, which includes probe, wiring, and load capacitances.

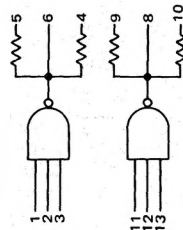
The coax delays from input to scope and output to scope must be matched. The scope must be terminated in 50-ohm impedance. The 950-ohm resistor and the scope termination impedance constitute a 20:1 attenuator probe. Coax shall be CT-070-50 or equivalent.

See General Information section for packaging.

MC3129, MC3029 (continued)

ELECTRICAL CHARACTERISTICS

Test procedures are shown for only one line driver. The other line driver is tested in the same manner. Further, test procedures are shown for only one input of the line driver under test. To complete testing sequence through remaining inputs.



| | | | Pin Under Test | | MC3129 Test Limits | | | | | | MC3029 Test Limits | | | | | | TEST CURRENT / VOLTAGE VALUES | | | | | | | | | | | | | | Gnd | | | | | | | |
|-----------------------------------|------------------|------|-----------------|-----------------|--------------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------------------|-----------------|-----------------|----------------|----------------|----------------|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|---|---|--|--|--|--|--|
| | | | | | -55°C | | | +25°C | | | +125°C | | | 0°C | | | +25°C | | | +75°C | | | TEST CURRENT / VOLTAGE APPLIED TO PINS LISTED BELOW: | | | | | | | | | | | | | | | |
| | | | | | Min | Max | Unit | Min | Max | Unit | Min | Max | Unit | Min | Max | Unit | Min | Max | Unit | Min | Max | Unit | TEST CURRENT / VOLTAGE APPLIED TO PINS LISTED BELOW: | | | | | | | | | | | | | | | |
| | | | | | mA | | | | | | | | | | | | Volts | | | | | | | | | | | | | | | | | | | | | |
| Characteristic | Symbol | | I _{OA} | I _{OB} | I _{OC} | I _{OA} | I _{OB} | I _{OC} | I _{OA} | I _{OB} | I _{OC} | I _{OA} | I _{OB} | I _{OC} | I _{OA} | I _{OB} | I _{OC} | V _{OH} | V _{OL} | V _H | V _L | V _H | V _L | V _{OH} | V _{OL} | V _{CC} | V _{CE} | V _{CC} | V _{CE} | V _{max} | V _{max} | | | | | | | |
| Input Forward Current | I _F | 1 | - | - | -2.0 | - | -2.0 | - | -2.0 | - | -2.0 | - | -2.0 | - | -2.0 | - | -2.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Leakage Current | I _R | 1 | - | 50 | - | 50 | - | 50 | - | 50 | - | 50 | - | 50 | - | 50 | - | 50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Breakdown Voltage | BV _{in} | 1 | - | - | 5.6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | |
| Clamp Voltage | V _D | 1 | - | - | - | -1.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | |
| Output Output Voltage | V _{OL1} | 6 | - | 0.4 | - | 0.4 | - | 0.4 | - | 0.4 | - | 0.4 | - | 0.4 | - | 0.4 | - | 0.4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| | V _{OL2} | 5 | - | 0.5 | - | 0.5 | - | 0.5 | - | 0.5 | - | 0.5 | - | 0.5 | - | 0.5 | - | 0.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| | V _{OH} | 6 | 2.4 | - | 2.4 | - | 2.4 | - | 2.4 | - | 2.4 | - | 2.4 | - | 2.4 | - | 2.4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Short-Circuit Current | I _{SC} | 6 | -40 | -100 | -40 | -100 | -40 | -100 | -40 | -100 | -40 | -100 | -40 | -100 | -40 | -100 | -40 | -100 | -40 | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Power Requirements (Total Device) | I _{max} | 14 | - | - | - | 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | |
| Power Supply Drain | I _{PDH} | 14 | - | 19 | - | 19 | - | 19 | - | 19 | - | 19 | - | 19 | - | 19 | - | 19 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| | I _{PDL} | 14 | - | 9.6 | - | 9.6 | - | 9.6 | - | 9.6 | - | 9.6 | - | 9.6 | - | 9.6 | - | 9.6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| Switching Parameters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Turn-On Delay | t _{on} | 1, 6 | - | - | - | 10 | - | - | - | 10 | - | - | - | - | 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |
| Turn-Off Delay | t _{off} | 1, 6 | - | - | - | 10 | - | - | - | 10 | - | - | - | - | 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | |

*Since this is an inverting gate, power drain is minimized by grounding the inputs to gate not under test.