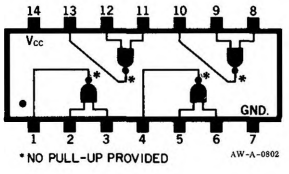
SIGNETICS DCL INTEGRATED CIRCUITS

8881 QUAD 2-INPUT NAND GATE

A F PACKAGE



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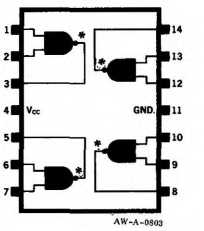
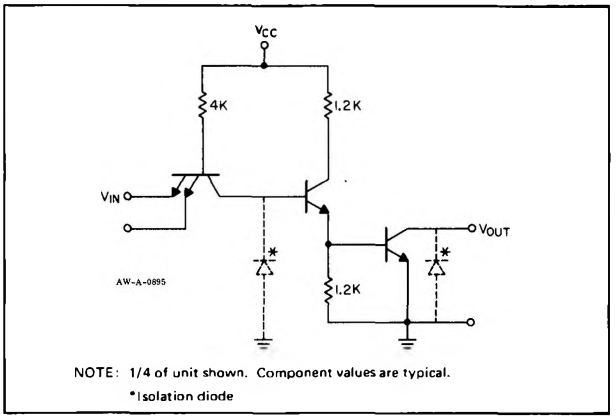


The 8881 is a Quad 2-Input NAND Gate with bare output collectors. Absence of an output pull-up structure allows the user complete freedom in the use of the 8881 in collector-logic (wired-AND) and similar applications. Proper pull-up resistor selection will allow as many as 50 outputs to be tied together.

Collector-logic, using the 8881, can provide increased system flexibility and lower system cost due to reduced can count.

Section 4 of this handbook provides detailed usage rules and collector-logic information for this element.

BASIC CIRCUIT SCHEMATIC



NOTE: 1/4 of unit shown. Component values are typical.
*Isolation diode

ELECTRICAL CHARACTERISTICS (NOTES: 1, 2, 3, 4, 5, 6)

ACCEPTANCE TEST SUB-GROUP	CHARACTERISTIC	LIMITS				TEST CONDITIONS						
		MIN.	TYP.	MAX.	UNITS	TEMP. S8881	TEMP. N8881	V_{cc}	DRIVEN INPUT	OTHER INPUTS	OUTPUTS	NOTES
A-4	"1" OUTPUT LEAKAGE CURRENT			25	µA	+125°C	+75°C	5.0V	0.6V			8
A-5	"0" OUTPUT VOLTAGE			0.4	V	-55°C	0°C	4.75V	2.0V	2.0V	17mA	9
A-3				0.4	V	+25°C	+25°C	5.0V	2.0V	2.0V	17mA	9
A-4				0.4	V	+125°C	+75°C	4.75V	2.0V	2.0V	17mA	9
C-1	"0" INPUT CURRENT	-0.1		-1.6	mA	-55°C	0°C	5.25V	0.4V	5.25V		
A-3		-0.1		-1.6	mA	+25°C	+25°C	5.25V	0.4V	5.25V		
C-1		-0.1		-1.6	mA	+125°C	+75°C	5.25V	0.4V	5.25V		
A-4	"1" INPUT CURRENT			25	µA	+125°C	+75°C	5.0V	4.5V	0V		
A-6	TURN-ON DELAY			20	ns	+25°C	+25°C	5.0V			D.C.F.O. = 20	10, 14
A-6	TURN-OFF DELAY			30	ns	+25°C	+25°C	5.0V			D.C.F.O. = 20	10, 14
C-2	OUTPUT FALL TIME			50	ns	-55°C	0°C	4.75V			A.C.F.O. = 6	11, 14
C-2	INPUT CAPACITANCE			3.0	pf	+25°C	+25°C	5.0V	2.0V			7
A-2	POWER CONSUMPTION OUTPUT "0"			31	mW	+25°C	+25°C	5.25V				
	(Per Gate) OUTPUT "1"			8.9	mW	+25°C	+25°C	5.25V	0V			
C-1	INPUT LATCH VOLTAGE RATING	6.0			V	+25°C	+25°C	5.0V	10mA	0V		12

NOTES:

1. All voltage and capacitance measurements are referenced to the ground terminal. Terminals not specifically referenced are left electrically open.
2. All measurements are taken with ground pin tied to zero volts.
3. Positive current flow is defined as into the terminal referenced.
4. Positive NAND Logic definition: "UP" Level = "1", "DOWN" Level = "0".
5. Precautionary measures should be taken to ensure current limiting in accordance with Absolute Maximum Ratings should the isolation diodes become forward biased.
6. Measurements apply to each gate element independently.
7. Capacitance as measured on Boonton Electronic Corporation Model 75A-S8 Capacitance Bridge or equivalent. f = 1MHz, V_{ac} = 25mV_{rms}. All pins not specifically referenced are tied to guard for capacitance tests. Output pins are left open.
8. Connect an external 1K ±1% resistor from V_{cc} to the output terminal for this test.
9. Output sink current is supplied through a resistor V_{cc}.
10. One DC fan-out is defined as 0.8mA.
11. One AC fan-out is defined as 50pf.
12. This test guarantees operation free of input latch-up over the specified operating supply voltage range.
13. Manufacturer reserves the right to make design and process changes and improvements.
14. Detailed test conditions for AC testing are in Section 3.