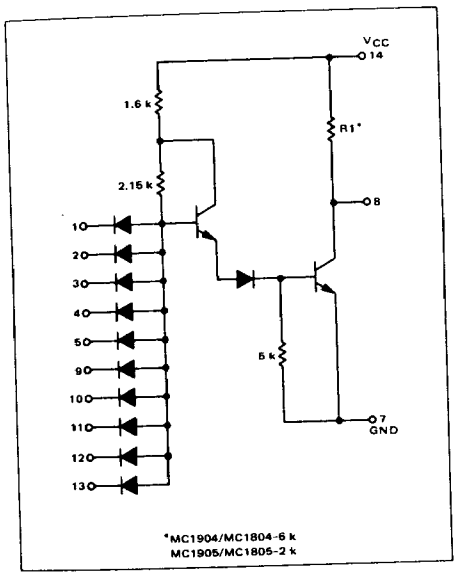
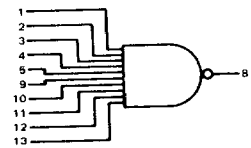
MC1904F · MC1804F,P
MC1905F · MC1805F,P



*MC1904/MC1804-6 k
MC1905/MC1805-2 k

This device is a 10-input NAND gate. It is useful when processing a large number of variables, such as in encoders or decoders.



Positive Logic: $B = \overline{1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 9 \cdot 10 \cdot 11 \cdot 12 \cdot 13}$
Negative Logic: $B = \overline{1+2+3+4+5+9+10+11+12+13}$

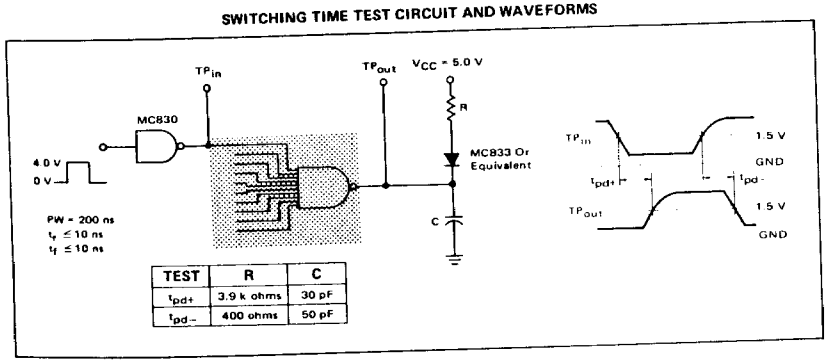
Input Loading Factor = 1

Output Loading Factor:
MC1904/MC1804 = 8
MC1905/MC1805 = 7

Total Power Dissipation:
MC1904/MC1804 = 11 mW typ/pkg
MC1905/MC1805 = 16.5 mW typ/pkg

Propagation Delay Time:
MC1904/MC1804 = 30 ns typ
MC1905/MC1805 = 25 ns typ

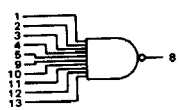
SWITCHING TIME TEST CIRCUIT AND WAVEFORMS



TEST	R	C
t_{pd+}	3.9 k ohms	30 pF
t_{pd-}	400 ohms	50 pF

ELECTRICAL CHARACTERISTICS

Test procedures are shown for only one input of the gate. To complete testing, sequence through remaining inputs in the same manner.



@ Test Temperature		TEST CURRENT / VOLTAGE VALUES														
		mA				Volts										
		I_{OL}		I_{OH}		V_{IL}	V_{IH}	V_F	V_R	V_{CEX}	V_{CC}	V_{CCL}	V_{CCH}	V_{max}		
		MC1904	MC1905	MC1904	MC1905											
MC1904, MC1905	−55°C	11.4	10.4	-0.12	-0.5	1.40	2.10	0	4.00	-	-	4.50	5.50	-		
	+25°C	12.0	11.0	-0.12	-0.5	1.10	2.00	0	4.00	4.50	5.00	4.50	5.50	8.00		
	+125°C	10.8	9.8	-0.12	-0.5	0.80	2.00	0	4.00	-	-	4.50	5.50	-		
		MC1804	MC1805	MC1804	MC1805											
MC1804, MC1805	0°C	12.0	11.0	-0.12	-0.5	1.20	2.00	0.45	4.00	-	-	5.00	5.00	-		
	+25°C	12.0	11.0	-0.12	-0.5	1.10	1.90	0.45	4.00	5.00	5.00	5.00	5.00	8.00		
	+75°C	11.4	10.4	-0.12	-0.5	0.95	1.80	0.50	4.00	-	-	5.00	5.00	-		

Characteristic	Symbol	Pin Under Test	MC1904, MC1905 Test Limits −55°C Min	−55°C Max	+25°C Min	+25°C Max	+125°C Min	+125°C Max	Unit	MC1804, MC1805 Test Limits 0°C Min	0°C Max	+25°C Min	+25°C Max	+75°C Min	+75°C Max	Unit	TEST CURRENT / VOLTAGE APPLIED TO PINS LISTED BELOW: I_{OL}	I_{OH}	V_{IL}	V_{IH}	V_F	V_R	V_{CEX}	V_{CC}	V_{CCL}	V_{CCH}	V_{max}	Gnd
Output Voltage	V_{OL}	8	-	0.40	-	0.40	-	0.45	Vdc	-	0.45	-	0.45	-	0.50	Vdc	8	-	-	1,2,3,4, 5,9,10, 11,12,13	-	-	-	-	14	-	-	7
	V_{OH}	8	2.50	-	2.60	-	2.50	-	Vdc	2.60	-	2.60	-	2.50	-	Vdc	-	8	1		-	-	-	-	14	-	-	7
Short-Circuit Current MC1904/MC1804	I_{SC}	8	-	-1.34	-	-1.34	-	-1.30	mAdc	-	-1.30	-	-1.30	-	-1.25	mAdc	-	-	-	-	-	-	-	-	-	14	-	1,8,7
MC1905/MC1805		8	-	-4.00	-	-4.00	-	-3.90	mAdc	-	-3.90	-	-3.90	-	-3.75	mAdc	-	-	-	-	-	-	-	-	-	14	-	1,8,7
Reverse Current	I_R	1	-	2.0	-	2.0	-	5.0	μAdc	-	5.0	-	5.0	-	10	μAdc	-	-	-	-	-	1	-	-	-	14	-	2,3,4,5,7,9, 10,11,12,13
Output Leakage Current	I_{CEX}	8	-	-	-	50	-	-	μAdc	-	-	-	100	-	-	μAdc	-	-	-	-	-	-	8,14	-	-	-	-	1,7
Forward Current	I_F	1	-	-1.60	-	-1.60	-	-1.50	mAdc	-	-1.40	-	-1.40	-	-1.33	mAdc	-	-	-	-	1	2,3,4,5,9, 10,11,12,13	-	-	-	14	-	7
Power Drain Current (Total Device) MC1904/MC1804	I_{PDH}	14	-	-	-	3.3	-	-	mAdc	-	-	-	4.0	-	-	mAdc	-	-	-	-	-	-	-	-	14	-	-	-	7
MC1905/MC1805	I_{PDH}	14	-	-	-	5.4	-	-	↓	-	-	-	6.6	-	-	↓	-	-	-	-	-	-	-	-	14	-	-	-	7
All Types	I_{max}	14	-	-	-	2.8	-	-	↓	-	-	-	4.0	-	-	↓	-	-	-	-	-	-	-	-	-	-	-	14	1,7
Switching Times																	Pulse In	Pulse Out										
MC1904/MC1804	t_{pd+}	1,8	-	-	25	80	-	-	ns	-	-	25	80	-	-	ns	1	8	-	-	-	-	-	14	-	-	-	7
	t_{pd-}	1,8	-	-	10	35	-	-	↓	-	-	10	35	-	-	↓	↓	↓	-	-	-	-	-	↓	-	-	-	↓
MC1905/MC1805	t_{pd+}	1,8	-	-	15	60	-	-		-	-	15	60	-	-				-	-	-	-	-		-	-	-	
	t_{pd-}	1,8	-	-	10	35	-	-		-	-	10	35	-	-				-	-	-	-	-		-	-	-	

Pins not listed are left open.

PRODUCT DOCUMENTATION

The three documents listed in the following table are required for a complete description of the DSP56301 and are necessary to design properly with the part. Documentation is available from one of the following locations (see back cover for detailed information):

- A local Motorola distributor
- A Motorola semiconductor sales office
- A Motorola Literature Distribution Center
- The World Wide Web (WWW)

See the **Additional Support** section of the *DSP56300 Family Manual* for detailed information on the multiple support options available to you.

Table 1 DSP56301 Documentation

Name	Description	Order Number
DSP56300 Family Manual	Detailed description of the DSP56300 family processor core and instruction set	DSP56300FM/AD
DSP56301 User's Manual	Detailed functional description of the DSP56301 memory configuration, operation, and register programming	DSP56301UM/AD
DSP56301 Technical Data	DSP56301 features list and physical, electrical, timing, and package specifications	DSP56301/D