



## DM7200/DM8200 four bit comparator

### general description

The DM7200/DM8200 is a monolithic TTL (Transistor-Transistor Logic) circuit which is used to compare the numerical values of two four-bit binary numbers. Outputs indicate (1) whether number A is greater than number B, (2) whether number B is greater than number A, or (3) whether the two numbers are equal. A strobe input overrides all other inputs and places the outputs in a definite state. The design chosen provides maximum speed with minimum circuit complexity. Numerical comparisons of words longer than four bits may be made by using additional DM7200/DM8200's only.

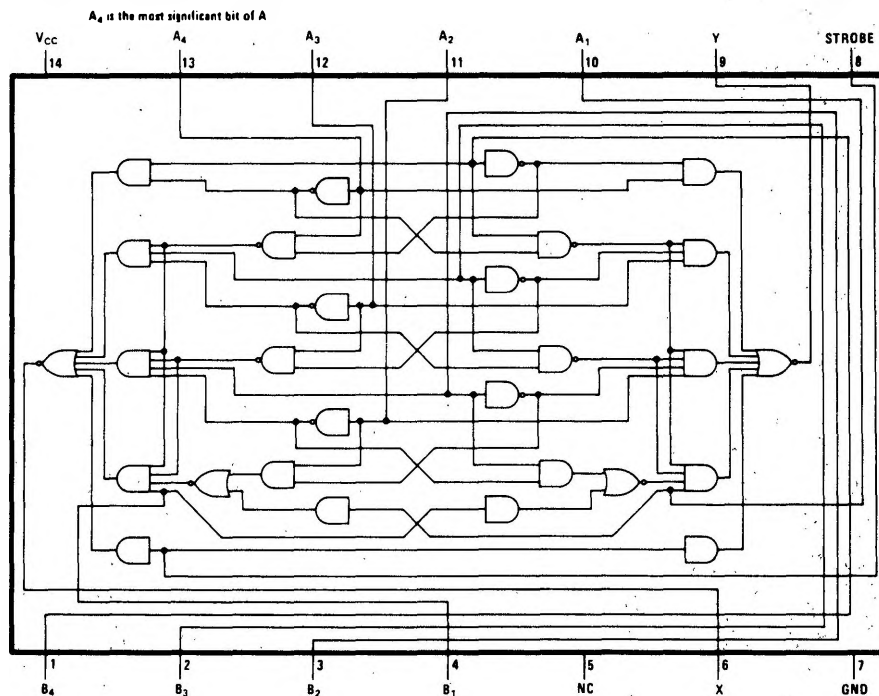
#### Features Include:

- Series 54/74 Compatible
- Typical Noise Immunity 1V
- Guaranteed Noise Immunity 400 mV
- Typical Propagation Delay 20 ns
- Typical Power Dissipation 175 mW

The DM7200/DM8200 has applications in:

- Digital stepping-motor control applications
- Convergence applications
- Summing junction for digital servo systems

### logic and connection diagram



### logic table

Input					Output							
Number	A <sub>4</sub>	A <sub>3</sub>	A <sub>2</sub>	A <sub>1</sub>	Number	B <sub>4</sub>	B <sub>3</sub>	B <sub>2</sub>	B <sub>1</sub>	Strobe	X	Y
A	>	B	0	1	0	1	0					
A	<	B	0	0	1	0	1					
A	=	B	0	1	1	1	1					
A	≠	B	1	0	0	0	0					

**absolute maximum ratings**

Supply Voltage		7V
Input Voltage		5.5V
Operating Temperature Range	DM7200	-55°C to +125°C
	DM8200	0°C to +70°C
Storage Temperature Range		-65°C to +150°C
Lead Temperature (Soldering, 10 sec.)		300°C

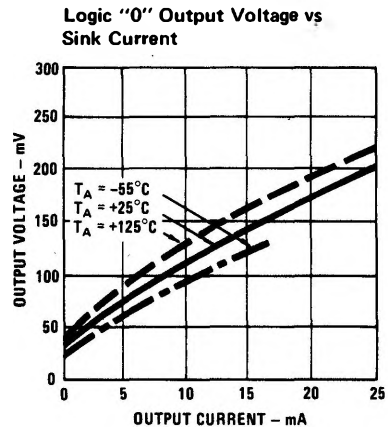
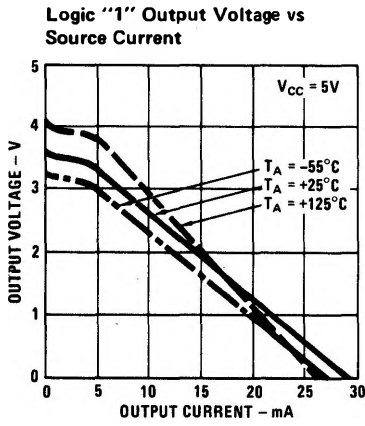
**electrical characteristics** (Note 1)

PARAMETER		CONDITIONS	MIN	TYP	MAX	UNITS
Logical "1" Input Voltage	DM7200	$V_{CC} = 4.5V$	2.0			V
	DM8200	$V_{CC} = 4.75V$				
Logical "0" Input Voltage	DM7200	$V_{CC} = 4.5V$			.8	V
	DM8200	$V_{CC} = 4.75V$				
Logical "1" Output Voltage	DM7200	$V_{CC} = 4.5V$	2.4			V
	DM8200	$V_{CC} = 4.75V$				
Logical "0" Output Voltage	DM7200	$V_{CC} = 4.5V$			.4	V
	DM8200	$V_{CC} = 4.75V$				
Logical "1" Input Current	DM7200	$V_{CC} = 5.5V$			80	$\mu A$
	DM8200	$V_{CC} = 5.25V$				
Logical "0" Input Current	DM7200	$V_{CC} = 5.5V$			-3.2	mA
	DM8200	$V_{CC} = 5.25V$				
Logical "1" Input Current	DM7200	$V_{CC} = 5.5V$			1	mA
	DM8200	$V_{CC} = 5.25V$				
Output Short Circuit Current (Note 2)	DM7200	$V_{CC} = 5.5V$	-20		-55	mA
	DM8200	$V_{CC} = 5.25V$	-18		-55	
Supply Current	DM7200	$V_{CC} = 5.5V$		35	53	mA
	DM8200	$V_{CC} = 5.25V$				
Propagation Delay to a Logical "1" from Any Data Input to Output $t_{pd 1}$		$V_{CC} = 5.0V$ $T_A = 25^\circ C$		24	40	ns
Propagation Delay to a Logical "0" from Any Data Input to Output $t_{pd 0}$		$V_{CC} = 5.0V$ $T_A = 25^\circ C$		17	30	ns
Propagation Delay to a Logical "1" from Strobe Input to Output $t_{pd 1}$		$V_{CC} = 5.0V$ $T_A = 25^\circ C$		15	27	ns
Propagation Delay to a Logical "0" from Strobe Input to Output $t_{pd 0}$		$V_{CC} = 5.0V$ $T_A = 25^\circ C$		8	18	ns
Time Prior to Removal of Strobe that Data Inputs Must Be Stabilized; $t_{SET UP}$		$V_{CC} = 5.0V$ $T_A = 25^\circ C$		0	10	ns
Time After Activation of Strobe that Data Inputs Must be Held; $t_{HOLD}$		$V_{CC} = 5.0V$ $T_A = 25^\circ C$		-10	0	ns

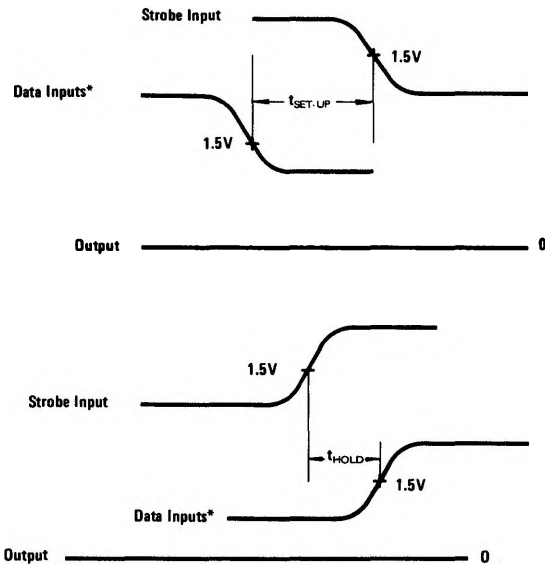
**Note 1:** Unless otherwise specified, limits shown apply from -55°C to +125°C for the DM7200 and 0°C to +70°C for the DM8200. Typical values apply to supply voltages of 5.0V.

**Note 2:** Only one output should be shorted at a time.

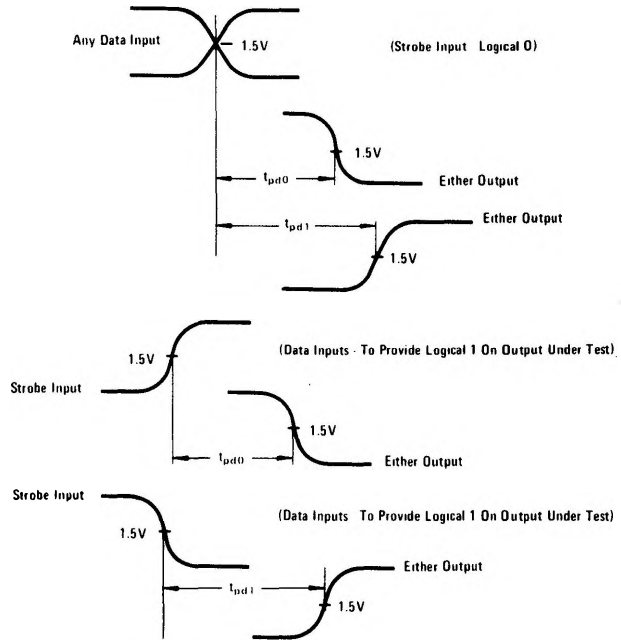
typical output characteristics



data input waveforms



switching time waveforms



\*The Data Input waveforms shown may not necessarily represent the actual direction of the transition for a particular Data Input pin. The transitions shown indicate also what an Output would do if it weren't for the Strobe input. In all cases the worst case input-to-output path is specified regardless of the transitions shown.

ac test circuit

