



DM7560/DM8560 up/down decade counter

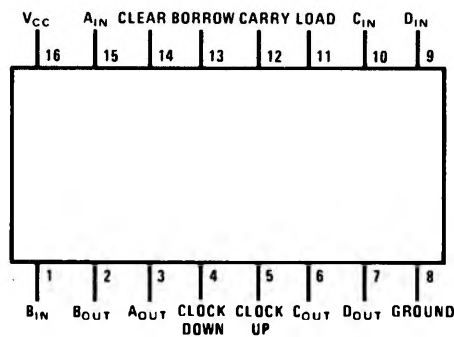
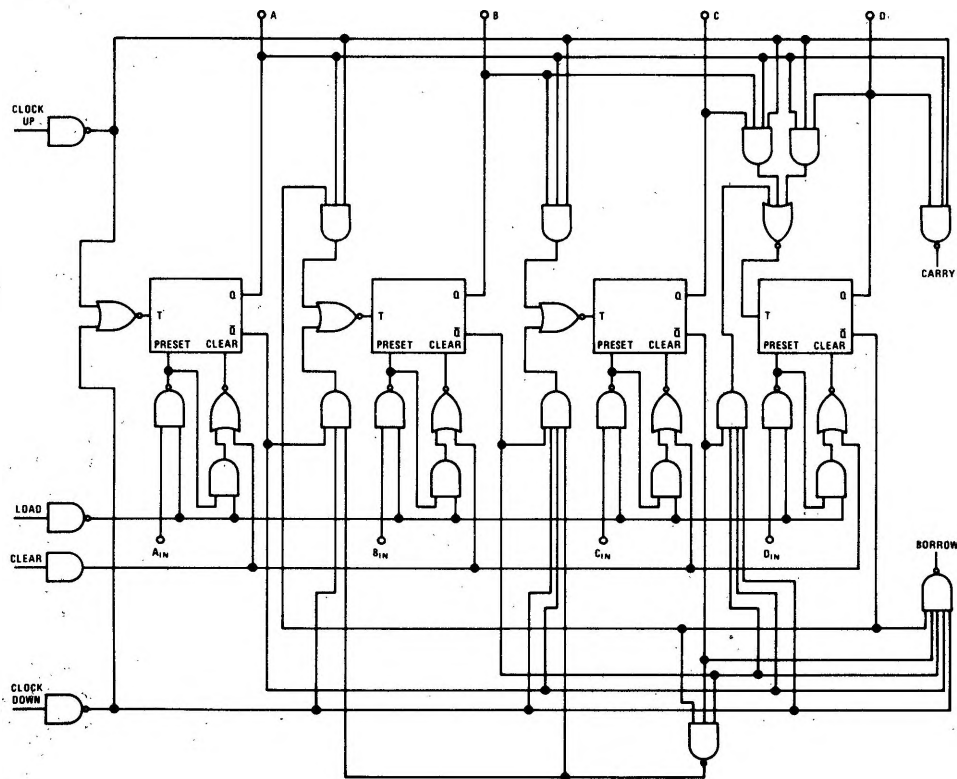
general description

The DM7560/DM8560 is a TTL, Series 54/74 compatible, up-down decade counter which is capable of being preset to any number from 0 through 9. A load input controls the asynchronous entry of these numbers, and sets all outputs to appropriate state.

Counting is performed through two clock lines—

one controlling the count in the up direction, and the other in the down direction. Two outputs, Borrow and Carry, are connected to the clock inputs of subsequent counters to provide for counting to numbers greater than 9. The counter is synchronous by itself, and "semi-synchronous" (two gate delays between stages) when cascaded.

logic and connection diagrams



absolute maximum ratings

V_{CC}		7.0V
Input Voltage		5.5V
Operating Temperature Range	DM7560	-55°C to +125°C
	DM8560	0°C to +70°C
Storage Temperature Range		-65°C to +150°C
Fanout		10
Lead Temperature (Soldering, 10 sec)		300°C

electrical characteristics (Note 1)

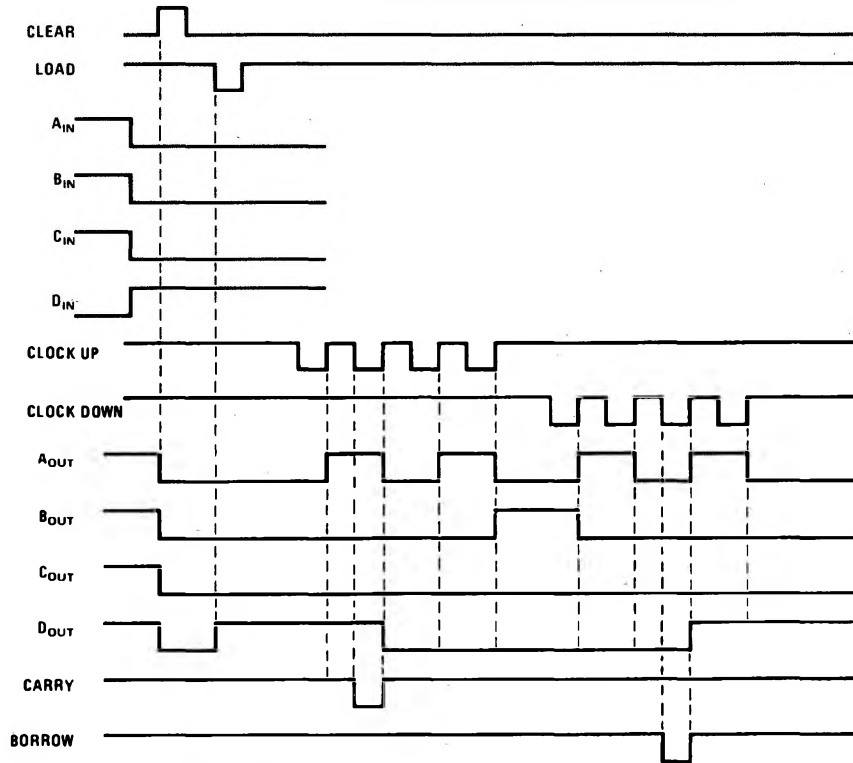
PARAMETER		CONDITIONS	MIN	TYP	MAX	UNITS
Logical "1" Input Voltage	DM7560	$V_{CC} = 4.5V$	2.0			V
	DM8560	$V_{CC} = 4.75V$				
Logical "0" Input Voltage	DM7560	$V_{CC} = 4.5V$			0.8	V
	DM8560	$V_{CC} = 4.75V$				
Logical "1" Output Voltage	DM7560	$V_{CC} = 4.5V$	2.4			V
	DM8560	$V_{CC} = 4.75V$				
Logical "0" Output Voltage	DM7560	$V_{CC} = 4.5V$			0.4	V
	DM8560	$V_{CC} = 4.75V$				
Logical "1" Input Current (All Inputs)	DM7560	$V_{CC} = 5.5V$			40	μA
	DM8560	$V_{CC} = 5.25V$				
Logical "1" Input Current (All Inputs)	DM7560	$V_{CC} = 5.5V$			1	mA
	DM8560	$V_{CC} = 5.25V$				
Logical "0" Input Current	DM7560	$V_{CC} = 5.5V$			1.6	mA
	DM8560	$V_{CC} = 5.25V$				
Output Short Circuit Current (Note 2)	DM7560	$V_{CC} = 5.5V$	20 18		55	mA
	DM8560	$V_{CC} = 5.25V$				
Supply Current	DM7560	$V_{CC} = 5.5V$		50		mA
	DM8560	$V_{CC} = 5.25V$				
Propagation Delay to a Logical "1", t_{pd1}		$V_{CC} = 5.0V$				ns
		$T_A = 25^\circ C$				
Propagation Delay to a Logical "0", t_{pd0}		$V_{CC} = 5.0V$				ns
		$T_A = 25^\circ C$				
Maximum Clock Frequency		$V_{CC} = 5.0V$		30		MHz
		$T_A = 25^\circ C$				

Note 1: Specifications apply across -55°C to +125°C temperature range for the DM7560 and 0°C to 70°C for the DM8560 unless otherwise specified. Typicals are given for $V_{CC} = 5V$ and $T_A = 25^\circ C$ only.

Note 2: Only 1 output may be shorted at a time.

logic waveforms

[Example shown for (1) clearing, (2) asynchronously setting to eight count, (3) counting "up" to two, and (4) counting "down" to eight.]



- NOTES:
1. LOAD AND CLEAR INPUTS SHOULD NEVER BE ENABLED TOGETHER.
 2. A, B, C AND D INPUTS ARE FREE TO CHANGE AFTER LOAD INPUT IS DISABLED.
 3. WHEN COUNTING "UP", THE "DOWN" CLOCK MUST BE IN THE LOGICAL 1 STATE, AND CONVERSELY.

cascading counters

