



DM7563/DM8563 up/down binary counter

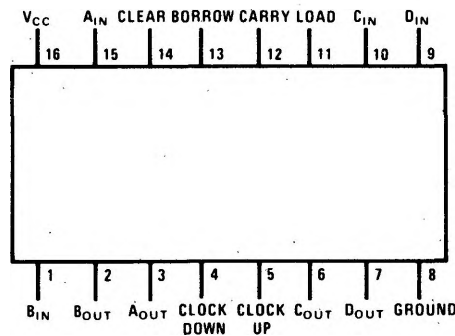
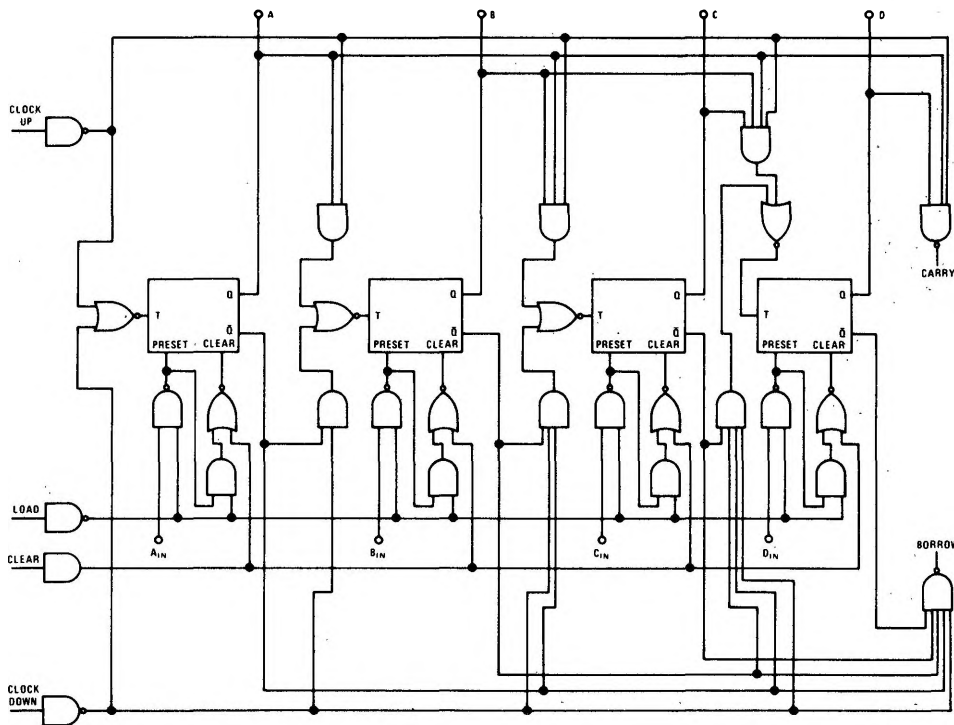
general description

The DM7563/DM8563 is a TTL, Series 54/74 compatible, up-down binary counter which is capable of being preset to any number from 0 through 15. 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 15. 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	DM7563	-55°C to +125°C
	DM8563	0°C to +70°C
Storage Temperature Range		-65°C to +150°C
Fanout		10
Lead Temperature (Soldering, 10 sec)		300°C

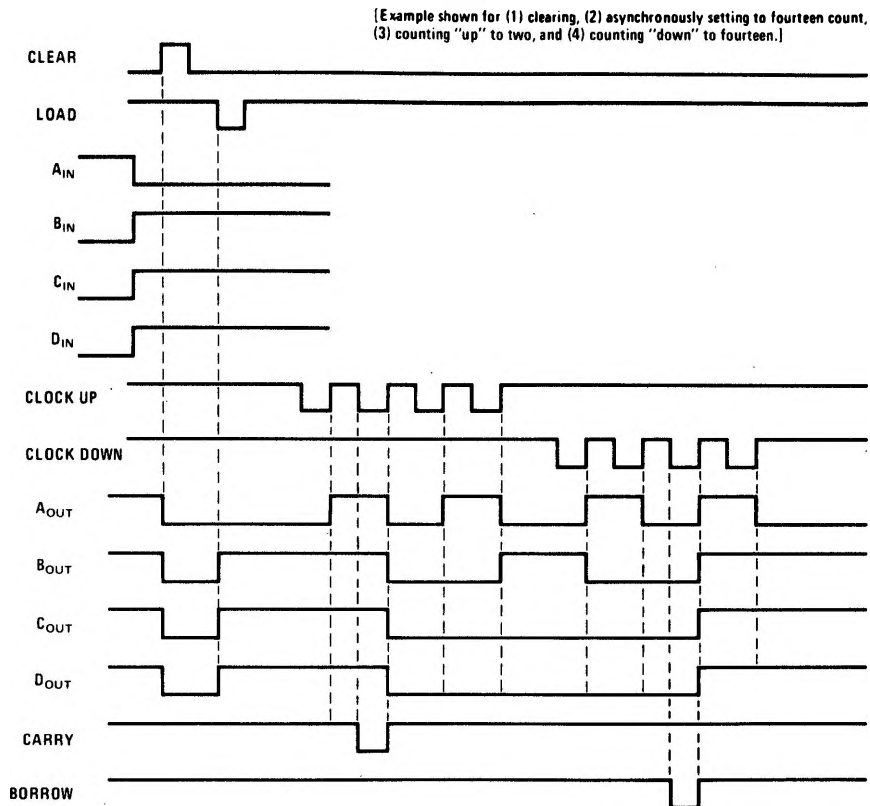
electrical characteristics (Note 1)

PARAMETER		CONDITIONS	MIN	TYP	MAX	UNITS
Logical "1" Input Voltage	DM7563	$V_{CC} = 4.5V$	2.0			V
	DM8563	$V_{CC} = 4.75V$				
Logical "0" Input Voltage	DM7563	$V_{CC} = 4.5V$			0.8	V
	DM8563	$V_{CC} = 4.75V$				
Logical "1" Output Voltage	DM7563	$V_{CC} = 4.5V$	2.4			V
	DM8563	$V_{CC} = 4.75V$				
Logical "0" Output Voltage	DM7563	$V_{CC} = 4.5V$			0.4	V
	DM8563	$V_{CC} = 4.75V$				
Logical "1" Input Current (All Inputs)	DM7563	$V_{CC} = 5.5V$			40	μA
	DM8563	$V_{CC} = 5.25V$				
Logical "1" Input Current (All Inputs)	DM7563	$V_{CC} = 5.5V$			1	mA
	DM8563	$V_{CC} = 5.25V$				
Logical "0" Input Current	DM7563	$V_{CC} = 5.5V$			1.6	mA
	DM8563	$V_{CC} = 5.25V$				
Output Short Circuit Current (Note 2)	DM7563	$V_{CC} = 5.5V$	20		55	mA
	DM8563	$V_{CC} = 5.25V$				
Supply Current	DM7563	$V_{CC} = 5.5V$		50		mA
	DM8563	$V_{CC} = 5.25V$				
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		$V_{CC} = 5.0V$				MHz
		$T_A = 25^\circ C$				
						ns
						ns

Note 1: Specifications apply across -55°C to +125°C temperature range for the DM7563 and 0°C to 70°C for the DM8563 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



- 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

