



### Electrical Characteristics

over recommended operating free-air temperature range (unless otherwise noted)

Parameter	Conditions	DM54/74												Units
		H103			H106			H108						
		Min	Typ (1)	Max	Min	Typ (1)	Max	Min	Typ (1)	Max	Min	Typ (1)	Max	
$V_{IH}$	High Level Input Voltage	2			2			2						V
$V_{IL}$	Low Level Input Voltage			0.8						0.8				V
$V_I$	Input Clamp Voltage			-1.5						-1.5				V
$I_{OH}$	High Level Output Current			-500						-500				$\mu$ A
$V_{OH}$	High Level Output Voltage													V
$I_{OL}$	Low Level Output Current	2.4	3.4		2.4	3.4		2.4	3.4		2.4	3.4		V
$V_{OL}$	Low Level Output Voltage			20						20				mA
$I_I$	Input Current at Maximum Input Voltage		0.2	0.4		0.2	0.4		0.2	0.4		0.2	0.4	V
$I_{IH}$	High Level Input Current			1			1			1			1	mA
	Any J or K			50			50			50			50	
	Clear			100			100			100			100	$\mu$ A
	Preset			N/A			N/A			100			100	
	Clock	0		-1	0		-1	0		-1	0		-1	mA
$I_{IL}$	Low Level Input Current		-1	-2		-1	-2		-1	-2		-1	-2	
	Any J or K			-1			-1			-1			-1	
	Clear			-1			-1			-1			-1	
	Preset			N/A			N/A			-1			-1	mA
	Clock			-3	-4.8		-3	-4.8		-3	-4.8		-3	
$I_{OS}$	Short Circuit Output Current	-40		-100	-40		-100	-40		-100	-40		-100	mA
$I_{CC}$	Supply Current		40	76		40	76		40	76		40	76	mA
	$V_{CC} = \text{Max}$ (2)													
	$V_{CC} = \text{Max}$ (3)													

Note 1: All typical values are at  $V_{CC} = 5\text{ V}$ ,  $T_A = 25^\circ\text{C}$ .

Note 2: Not more than one output should be shorted at a time, and duration of short circuit should not exceed one second.

Note 3: With all outputs open,  $I_{CC}$  is measured with the Q and  $\bar{Q}$  outputs high in turn. At the time of measurement, the clock input is grounded.

**Switching Characteristics** at  $V_{CC} = 5\text{ V}$ ,  $T_A = 25^\circ\text{C}$ 

Parameter		From (Input)	To (Output)	Conditions	Min	Typ	Max	Units	
$f_{MAX}$	Maximum Clock Frequency			$C_L = 25\text{ pF}$ $R_L = 280\ \Omega$	40	50		MHz	
$t_{PLH}$	Propagation Delay Time, Low-to-High Level Output	Preset or Clear			Q or $\bar{Q}$		8	12	ns
$t_{PHL}$	Propagation Delay Time, High-to-Low Level Output	Preset or Clear	Clock High		$\bar{Q}$ or Q		15	20	ns
			Clock Low				23	35	
$t_{PLH}$	Propagation Delay Time, Low-to-High Level Output	Clock			Q or $\bar{Q}$		10	15	ns
$t_{PHL}$	Propagation Delay Time, High-to-Low Level Output						16	20	
$t_W$	Pulse Width	Clock High				10			ns
		Clock Low				15			
		Clear or Preset Low				16			
$t_{SETUP}$	Setup Time (4)	High Level Data				10 ↓			ns
		Low Level Data			13 ↓				
$t_{HOLD}$	Hold Time (4)				0 ↓			ns	

**Note 4:** ↓ The arrow indicates that the falling edge of the clock pulse is used for reference.