



### Electrical Characteristics

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

Parameter	Conditions	DM54/74						DM54/74			Units
		23		50, 53		H50		Min	Typ (1)	Max	
		Min	Typ (1)	Max	Min	Max	Min				
V <sub>IH</sub>	High Level Input Voltage	2					2				V
V <sub>IL</sub>	Low Level Input Voltage			0.8					0.8		V
V <sub>I</sub>	Input Clamp Voltage									-1.5	V
I <sub>OH</sub>	High Level Output Current										
V <sub>OH</sub>	High Level Output Voltage										
I <sub>OL</sub>	Low Level Output Current										
V <sub>OL</sub>	Low Level Output Voltage										
I <sub>I</sub>	Input Current at Maximum Input Voltage										
I <sub>IH</sub>	High Level Input Current										
I <sub>IL</sub>	Low Level Input Current										
I <sub>OS</sub>	Short Circuit Output Current										
I <sub>CC</sub>	Supply Current										

Note 1: All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C.

Note 2: The input voltage is V<sub>IH</sub> = 2 V or V<sub>IL</sub> = 0.8 V, as appropriate.

Note 3: Not more than one output should be shorted at a time, and for the DM54H/DM74H, duration of short circuit should not exceed one second.

See Table

**Electrical Characteristics** using expander inputs,  $V_{CC} = \text{Min}$ ,  $T_A = \text{Min}$  (unless otherwise noted) (4), (5)

Device	$I_{\bar{X}}$ (mA) Expander Current			$V_{BE(O)}$ (V) Base-Emitter Voltage of Output Transistor O			VOH (V) High Level Output Voltage			VOL (V) Low Level Output Voltage		
	Conditions	Min	Typ (1)	Max	Conditions	Min	Typ (1)	Max	Conditions	Min	Typ (1)	Max
		$V_{\bar{X}\bar{X}} = 0.4\text{ V}$ $I_{OL} = 16\text{ mA}$					$I_{\bar{X}} = 150\text{ }\mu\text{A}$ $I_{\bar{X}} = -150\text{ }\mu\text{A}$ $I_{OH} = -400\text{ }\mu\text{A}$					$I_{\bar{X}} + I_{\bar{X}} = 300\text{ }\mu\text{A}$ $R_{\bar{X}\bar{X}} = 138\text{ }\Omega$ $I_{OL} = 16\text{ mA}$
DM5423												
DM5450												
DM5453												
DM7423												
DM7450												
DM7453												
DM54H50												
DM74H50												

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

Note 4: The 23, 50, and 53 are designed for use with up to four 60 expanders.

Note 5: The H50 is designed for use with a H62 expander.

**Supply Currents**

Device	ICCH (mA) Total With Outputs High		ICCL (mA) Total With Outputs Low	
	Typ	Max	Typ	Max
23	8	16	10	19
50	4	8	7.4	14
53	4	8	5.1	9.5
H50	8.2	12.8	15.2	24

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

Device	Conditions	tPLH (ns) Propagation Delay Time, Low-To-High Level Output			tPHL (ns) Propagation Delay Time, High-To-Low Level Output		
		Min	Typ	Max	Min	Typ	Max
23, 50, 53	$C_L = 15\text{ pF}$ , $R_L = 400\text{ }\Omega$ Expander Pins Open		13	22		8	15
50	$C_L = 15\text{ pF}$ , $R_L = 400\text{ }\Omega$ From Input of 60 Expander		15	30		10	20
H50	$C_L = 25\text{ pF}$ , $R_L = 280\text{ }\Omega$ Expander Pins Open		6.8	11		6.2	11
H50	$C_L = 25\text{ pF}$ , $R_L = 280\text{ }\Omega$ $C = 15\text{ pF}$ , (GND to $\bar{X}$ of H60)		11			7.4	