



SSI

DM54/DM7400, 04, 10, 20, 30, S133 NAND Gates/Inverters

DM 54/7400

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

| Parameter | Conditions | DM54/74 | | DM54/74 | | DM54/74 | | DM54/74 | | DM54/74 | | DM54/74 | | Units |
|-----------------|--|----------------------|--------|---------------------------|-----|---------------------------|-----|--------------------------------|--------|---------------------------------|-----|---------|-----|-------|
| | | 00, 04 10, 20, 30 | | H00, H04 H10, H20, H30 | | L00, L04 L10, L20, L30 | | LS00, LS04 LS10, LS20, LS30 | | S00, S04, S10 S20, S30, S133 | | | | |
| | | Min | Typ(1) | Max | Min | Typ(1) | Max | Min | Typ(1) | Max | Min | Typ(1) | Max | |
| V _{IH} | High Level Input Voltage | 2 | | | | | | | | | | | | V |
| V _{IL} | Low Level Input Voltage | | 0.8 | | | | | | | | | | | V |
| V _I | Input Clamp Voltage | | 0.8 | | | | | | | | | | | V |
| | | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | | V |
| I _{OH} | High Level Output Current | | | | | | | | | | | | | μA |
| V _{OH} | High Level Output Voltage | 2.4 | 3.4 | 2.4 | 3.5 | 2.4 | 3.3 | 2.4 | 3.3 | 2.5 | 3.4 | 2.5 | 3.4 | V |
| I _{OL} | Low Level Output Current | 2.4 | 3.4 | 2.4 | 3.5 | 2.4 | 3.2 | 2.4 | 3.2 | 2.7 | 3.4 | 2.7 | 3.4 | V |
| V _{OL} | Low Level Output Voltage | | | | | | | | | | | | | V |
| I _I | Input Current at Maximum Input Voltage | | | | | | | | | | | | | mA |
| I _{IH} | High Level Input Current | | | | | | | | | | | | | mA |
| I _{IL} | Low Level Input Current | | | | | | | | | | | | | μA |
| I _{OS} | Short Circuit Output Current | | | | | | | | | | | | | mA |
| I _{CC} | Supply Current | | | | | | | | | | | | | mA |

See Table

Note 1: All typical values are at VCC = 5 V, TA = 25°C.

Note 2: Not more than one output should be shorted at a time, and for DM54H/DM74H, DM54LS/DM74LS and DM54S/DM74S, duration of short circuit should not exceed one second.

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

| Device | Conditions | Propagation Delay Time, Low-To-High Output | | | Propagation Delay Time, High-To-Low Output | | |
|------------|---|---|-----|-----|--|-----|-----|
| | | Min | Typ | Max | Min | Typ | Max |
| 00, 10 | $C_L = 15\text{ pF}$, $R_L = 400\ \Omega$ | | 11 | 22 | | 7 | 15 |
| 04, 20 | | | 12 | 22 | | 8 | 15 |
| 30 | | | 13 | 22 | | 8 | 15 |
| H00 | $C_L = 25\text{ pF}$, $R_L = 280\ \Omega$ | | 5.9 | 10 | | 6.2 | 10 |
| H04 | | | 6 | 10 | | 6.5 | 10 |
| H10 | | | 5.9 | 10 | | 6.3 | 10 |
| H20 | | | 6 | 10 | | 7 | 10 |
| H30 | | | 6.8 | 10 | | 8.9 | 12 |
| L00, L04 | | $C_L = 50\text{ pF}$, $R_L = 4\text{ k}\Omega$ | | 35 | 60 | | 31 |
| L10, L20 | | | | | | | |
| L30 | | | 35 | 60 | | 70 | 100 |
| LS00, LS04 | $C_L = 15\text{ pF}$, $R_L = 2\text{ k}\Omega$ | | 3 | 10 | | 3 | 10 |
| LS10, LS20 | | | 4 | 15 | | 4 | 15 |
| LS30 | | | 4 | 12 | | 4 | 15 |
| S00, S04 | $C_L = 50\text{ pF}$, $R_L = 2\text{ k}\Omega$ | | 5 | 18 | | 5 | 20 |
| S10, S20 | | | 2 | 3 | | 2 | 3 |
| S30, S133 | | | 2 | 4.5 | | 2 | 5 |
| | $C_L = 50\text{ pF}$, $R_L = 280\ \Omega$ | | 2 | 7 | | 2 | 8 |
| | | | 2 | 4 | | 2 | 4.5 |
| | | | 2 | 5.5 | | 3 | 6.5 |
| | $C_L = 50\text{ pF}$, $R_L = 280\ \Omega$ | | 2 | 8 | | 3 | 10 |

Supply Currents

| Device | ICCH (mA) Total With Outputs High | | ICCL (mA) Total With Outputs Low | |
|--------|-----------------------------------|------|----------------------------------|------|
| | Typ | Max | Typ | Max |
| 00 | 4 | 8 | 12 | 22 |
| 04 | 6 | 12 | 18 | 33 |
| 10 | 3 | 6 | 9 | 16.5 |
| 20 | 2 | 4 | 6 | 11 |
| 30 | 1 | 2 | 3 | 6 |
| H00 | 10 | 16.8 | 26 | 40 |
| H04 | 16 | 26 | 40 | 58 |
| H10 | 7.5 | 12.6 | 19.5 | 30 |
| H20 | 5 | 8.4 | 13 | 20 |
| H30 | 2.5 | 4.2 | 6.5 | 10 |
| L00 | 0.44 | 0.8 | 1.16 | 2.04 |
| L04 | 0.60 | 1.2 | 1.74 | 3.06 |
| L10 | 0.33 | 0.6 | 0.87 | 1.53 |
| L20 | 0.22 | 0.4 | 0.58 | 1.02 |
| L30 | 0.11 | 0.2 | 0.29 | 0.51 |
| LS00 | 0.8 | 1.6 | 2.4 | 4.4 |
| LS04 | 1.2 | 2.4 | 3.6 | 6.6 |
| LS10 | 0.6 | 1.2 | 1.8 | 3.3 |
| LS20 | 0.4 | 0.8 | 1.2 | 2.2 |
| LS30 | 0.35 | 0.5 | 0.6 | 1.1 |
| S00 | 10 | 16 | 20 | 36 |
| S04 | 15 | 24 | 30 | 54 |
| S10 | 7.5 | 12 | 15 | 27 |
| S20 | 5 | 8 | 10 | 18 |
| S30 | 3 | 5 | 5.5 | 10 |
| S133 | 3 | 5 | 5.5 | 10 |