



SSI

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

Electrical Characteristics

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

Parameter	Conditions	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	Min	Typ (1)	Max	
V _{IH}	High Level Input Voltage	2			2			2			2			2			V
V _{IL}	Low Level Input Voltage			0.8			0.8			0.7			0.8			0.8	V
				0.8			0.8			0.7			0.8			0.8	V
V _I	Input Clamp Voltage						-1.5			N/A			N/A				V
							-1.5			N/A			N/A				V
										N/A			N/A				V
I _{OH}	High Level Output Current			-400			-500			-200			-400			-1000	μA
V _{OH}	High Level Output Voltage	2.4	3.4		2.4	3.5		2.4	3.3		2.5	3.4		2.5	3.4		V
		2.4	3.4		2.4	3.5		2.4	3.2		2.7	3.4		2.7	3.4		V
I _{OL}	Low Level Output Current			16			20			2			4			20	mA
				16			20			3.6			8			20	mA
V _{OL}	Low Level Output Voltage			0.2			0.2			0.15			0.25			0.5	V
				0.2			0.2			0.2			0.35			0.5	V
										0.4			0.4				V
I _I	Input Current at Maximum Input Voltage			1			1			0.1			0.1			1	mA
													0.1				mA
I _{IH}	High Level Input Current			40			50			10			20			50	μA
																	μA
I _{IL}	Low Level Input Current						-1.6			-0.18			-0.4			-2	mA
													-0.36				mA
																	mA
I _{OS}	Short Circuit Output Current			-20			-55			-40			-100			-100	mA
				-18			-55			-40			-100			-100	mA
I _{CC}	Supply Current																mA

See Table

See Table

Note 1: All typical values are at V_{CC} = 5 V, T_A = 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.



SS

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

Device	Conditions	tpLH (ns)			tpHL (ns)		
		Min	Typ	Max	Min	Typ	Max
00, 10	$C_L = 15 pF$, $R_L = 400 \Omega$		11	22		7	15
04, 20			12	22		8	15
30			13	22		8	15
H00	$C_L = 25 pF$, $R_L = 280 \Omega$		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 L10, L20	$C_L = 50 pF$, $R_L = 4 k\Omega$		35	60		31	60
L30			35	60		70	100
LS00, LS04 LS10, LS20		3	5	10	3	5	10
LS30	$C_L = 15 pF$, $R_L = 2 k\Omega$	4	8	15	4	8	15
	$C_L = 15 pF$, $R_L = 2 k\Omega$	4	7	12	4	7	15
	$C_L = 50 pF$, $R_L = 2 k\Omega$	5	9	18	5	11	20
	$C_L = 15 pF$, $R_L = 280 \Omega$	2	3	4.5	2	3	5
S00, S04 S10, S20	$C_L = 50 pF$, $R_L = 280 \Omega$	2	4.5	7	2	5	8
S30, S133	$C_L = 15 pF$, $R_L = 280 \Omega$	2	4	6	2	4.5	7
	$C_L = 50 pF$, $R_L = 280 \Omega$	2	5.5	8	3	6.5	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