National Semiconductor

DM70L98/DM80L98 TRI-STATE® Hex Buffers

General Description

These devices provide six, two-input buffers in each package. One of the two inputs to each buffer is used as a control line to gate the output into the high-impedance state, while the other input passes the data through the buffer. On this device, four buffers are enabled from a common line, and the other two buffers from a separate common line. The outputs are placed in the TRI-STATE condition by applying a high logic level to the control pins. With the low power versions of these circuits, it is possible to connect over 100 like devices to a common bus line and still have adequate drive capability.

Features

- Typical power dissipation 15 mW
- Typical propagation delay 31 ns
- Pin equivalent to DM54368 (98)

Absolute Maximum Ratings (Note 1)

Supply Voltage	8V
Input Voltage	5.5V
Storage Temperature Range	−65°C to 150°C

Note 1: The "Absolute Maximum Ratings" are those values beyond which the safety of the device can not be guaranteed. The device should not be operated at these limits. The parametric values defined in the "Electrical Characteristics" table are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

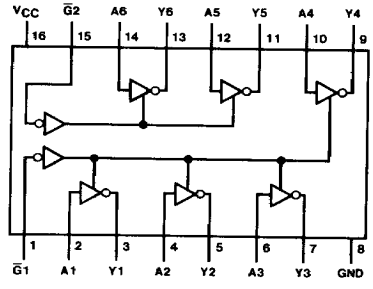
Function Table (Each Driver)

Inputs		Output
$\overline{G}$	A	Y
H	X	Hi-Z
L	H	L
L	L	H

L = Low Logic Level
H = High Logic Level
Hi-Z = High Impedance (Off) State

Connection Diagram

Dual-In-Line Package



TL/F/6645-1

DM70L98 (J) **DM80L98 (N)**

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Recommended Operating Conditions

Sym	Parameter	DM70L98			DM80L98			Units
		Min	Nom	Max	Min	Nom	Max	
V_{CC}	Supply Voltage	4.5	5	5.5	4.75	5	5.25	V
V_{IH}	High Level Input Voltage	2			2			V
V_{IL}	Low Level Input Voltage			0.7			0.7	V
I_{OH}	High Level Output Current			−1			−1	mA
I_{OL}	Low Level Output Current			2			3.6	mA
T_A	Free Air Operating Temperature	−55		125	0		70	°C

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

Sym	Parameter	Conditions		Min	Typ (Note 1)	Max	Units
V_{OH}	High Level Output Voltage	V_{CC} = Min, I_{OH} = Max V_{IL} = Max, V_{IH} = Min		2.4			V
V_{OL}	Low Level Output Voltage	V_{CC} = Min I_{OL} = Max V_{IL} = Max V_{IH} = Min	DM70			0.3	V
			DM80			0.4	
I_I	Input Current@Max Input Voltage	V_{CC} = Max, V_I = 5.5V				1	mA
I_{IH}	High Level Input Current	V_{CC} = Max, V_I = 2.4V				10	μA
I_{IL}	Low Level Input Current	V_{CC} = Max V_I = 0.3V	A (Note 3)			−10	mA
			A (Note 4)			−0.18	
			$\overline{G}$			−0.18	
I_{OZH}	Off-State Output Current with High Level Output Voltage Applied	V_{CC} = Max, V_O = 2.4 V_{IH} = Min, V_{IL} = Max				10	μA
I_{OZL}	Off-State Output Current with Low Level Output Voltage Applied	V_{CC} = Max, V_O = 0.3 V_{IH} = Min, V_{IL} = Max				−10	μA
I_{OS}	Short Circuit Output Current	V_{CC} = Max (Note 2)	DM70	−3		−15	mA
			DM80	−3		−15	
I_{CC}	Supply Current	V_{CC} = Max			3	4.5	mA

Note 1: All typicals are at V_{CC} = 5V, T_A = 25°C.
Note 2: Not more than one output should be shorted at a time.
Note 3: Both $\overline{G}$ inputs at 2V.
Note 4: Both $\overline{G}$ inputs at 0.4V.

Switching Characteristics at $V_{CC} = 5V$ and $T_A = 25°C$ (See Section 1 for Test Waveforms and Output Load)

Parameter	$R_L = 4\ k\Omega$						Units
	$C_L = 5$ pF			$C_L = 50$ pF			
	Min	Typ	Max	Min	Typ	Max	
t_{PLH} Propagation Delay Time Low to High Level Output					26	48	ns
t_{PHL} Propagation Delay Time High to Low Level Output					35	53	ns
t_{PZH} Output Enable Time to High Level Output					42	90	ns
t_{PZL} Output Enable Time to Low Level Output					42	75	ns
t_{PHZ} Output Disable Time from High Level Output		25	43				ns
t_{PLZ} Output Disable Time from Low Level Output		34	63				ns