



DM54L98 4-Bit Storage Register

General Description

This data selector/storage register is composed of four S-R master-slave flip-flops, four AND-OR INVERT gates, one buffer, and six inverter/drivers.

When the word select input is low, word 1 (A1, B1, C1, D1) is applied to the flip-flops. A high level input to word select will cause the selection of word 2 (A2, B2, C2, D2). The selected word is shifted to the output terminals on the negative-going edge of the clock pulse.

Typical clock frequency is 12 MHz.

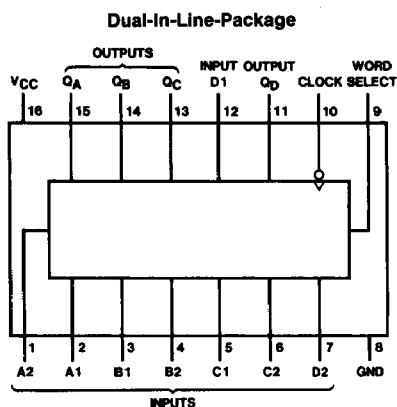
Absolute Maximum Ratings (Note)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage	8V
Input Voltage	5.5V
Operating Free Air Temperature Range	
DM54L	-55°C to +125°C
Storage Temperature Range	-65°C to +150°C

Note: The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot 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.

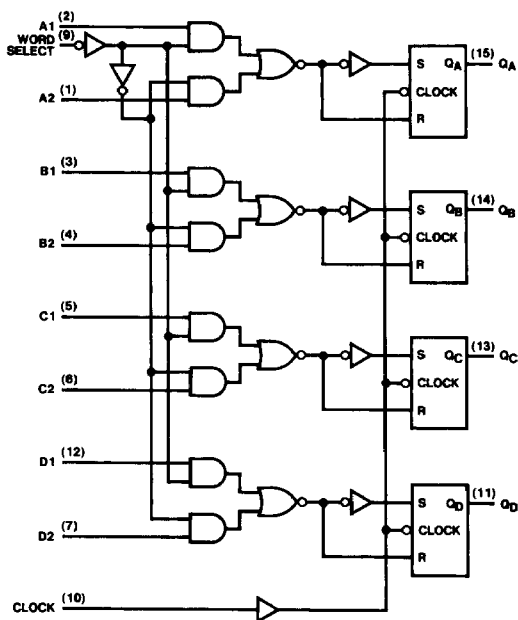
Connection Diagram



TL/F/6639-1

Order Number DM54L98J or DM54L98W
See NS Package Number J16A or W16A

Logic Diagram



TL/F/6639-2

Recommended Operating Conditions

Symbol	Parameter	DM54L98			Units
		Min	Nom	Max	
V_{CC}	Supply Voltage	4.5	5	5.5	V
V_{IH}	High Level Input Voltage	2			V
V_{IL}	Low Level Input Voltage			0.7	V
I_{OH}	High Level Output Current			-0.2	mA
I_{OL}	Low Level Output Current			2	mA
f_{CLK}	Clock Frequency (Note 4)	0		6	MHz
t_W	Clock Pulse Width (Note 4)	100	65		ns
t_{SU}	Setup Time (Note 4)	Data High	100		ns
		Data Low	120		
		Select High	150		
		Select Low	100		
T_A	Free Air Operating Temperature	-55		125	°C

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

Symbol	Parameter	Conditions	Min	Typ (Note 1)	Max	Units
V_{OH}	High Level Output Voltage	$V_{CC} = \text{Min}, I_{OH} = \text{Max}$ $V_{IL} = \text{Max}, V_{IH} = \text{Min}$	2.4			V
V_{OL}	Low Level Output Voltage	$V_{CC} = \text{Min}, I_{OL} = \text{Max}$ $V_{IL} = \text{Max}, V_{IH} = \text{Min}$		0.15	0.3	V
I_I	Input Current @ Max Input Voltage	$V_{CC} = \text{Max}, V_I = 5.5V$			0.1	mA
I_{IH}	High Level Input Current	$V_{CC} = \text{Max}, V_I = 2.4V$			10	μA
I_{IL}	Low Level Input Current	$V_{CC} = \text{Max}, V_I = 0.3V$			-0.18	mA
I_{OS}	Short Circuit Output Current	$V_{CC} = \text{Max}$ (Note 3)	-3		-15	mA
I_{CC}	Supply Current	$V_{CC} = \text{Max}$ (Note 2)		6	8	mA

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

Note 2: I_{CC} is measured with all outputs open and all inputs grounded.

Note 3: Not more than one output should be shorted at a time.

Note 4: $T_A = 25^\circ C$ and $V_{CC} = 5V$.

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

Symbol	Parameter	From (Input) To (Output)	$R_L = 4\text{ k}\Omega, C_L = 50\text{ pF}$		Units
			Min	Max	
f_{MAX}	Maximum Clock Frequency		6		MHz
t_{PLH}	Propagation Delay Time Low to High Level Output	Clock to Output		80	ns
t_{PHL}	Propagation Delay Time High to Low Level Output	Clock to Output		100	ns