National Semiconductor

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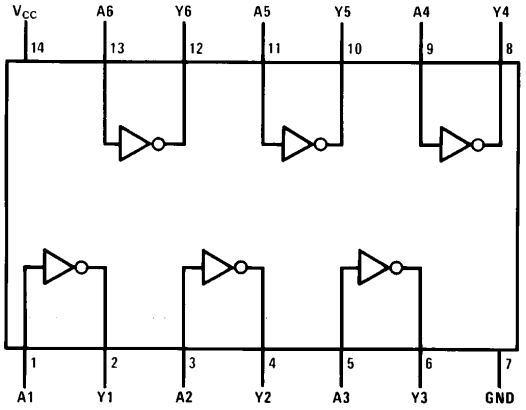
DM54L04 Hex Inverting Gate

General Description

This device contains six independent gates each of which performs the logic INVERT function.

Connection Diagram

Dual-In-Line Package



TL/F/6616–1

Order Number DM54L04J or DM54L04W
See NS Package Number J14A or W14B

Function Table

$$Y = \overline{A}$$

Input	Output
A	Y
L	H
H	L

H = High Logic Level

L = Low Logic Level

RRD-B30M105/Printed in U. S. A.

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.*

Recommended Operating Conditions

Symbol	Parameter	DM54L04			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
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} = Min, I_{OH} = Max V_{IL} = Max	2.4	3.3		V
V_{OL}	Low Level Output Voltage	V_{CC} = Min I_{OL} = Max V_{IH} = Min		0.15	0.3	V
I_I	Input Current @ Max Input Voltage	V_{CC} = Max, V_I = 5.5V			0.1	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			−0.18	mA
I_{OS}	Short Circuit Output Current	V_{CC} = Max (Note 2)	−3		−15	mA
I_{CCH}	Supply Current with Outputs High	V_{CC} = Max		0.6	1.2	mA
I_{CCL}	Supply Current with Outputs Low	V_{CC} = Max		1.7	3.06	mA

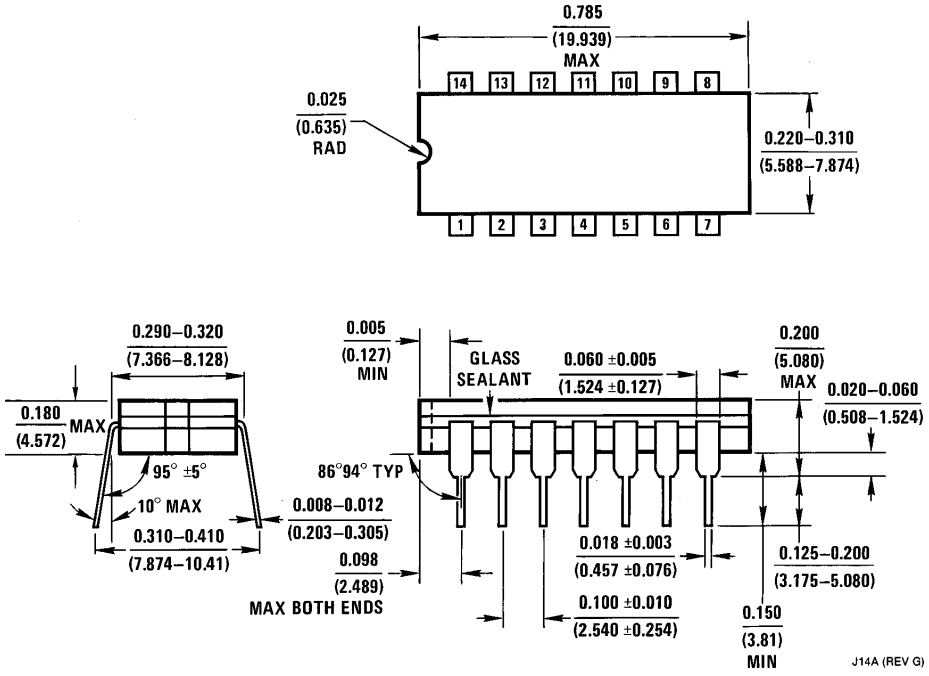
Switching Characteristics at V_{CC} = 5V and T_A = 25°C (See Section 1 for Test Waveforms and Output Load)

Symbol	Parameter	Conditions	Min	Max	Units
t_{PLH}	Propagation Delay Time Low to High Level Output	R_L = 4 kΩ, C_L = 50 pF		60	ns
t_{PHL}	Propagation Delay Time High to Low Level Output			60	ns

Note 1: All typicals are at V_{CC} = 5V, T_A = 25°C.

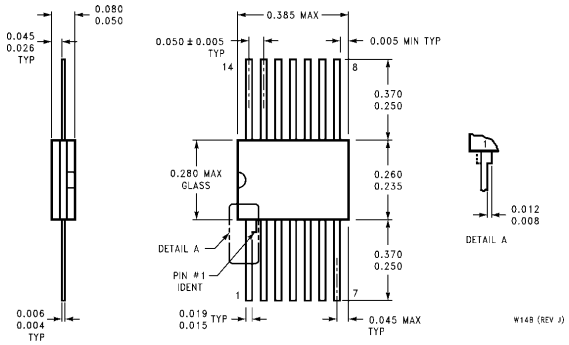
Note 2: Not more than one output should be shorted at a time.

Physical Dimensions inches (millimeters)



14-Lead Ceramic Dual-In-Line Package (J)
Order Number DM54L04J
NS Package Number J14A

Physical Dimensions inches (millimeters) (Continued)



14-Lead Ceramic Flat Package (W)
Order Number DM54L04W
NS Package Number W14B

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