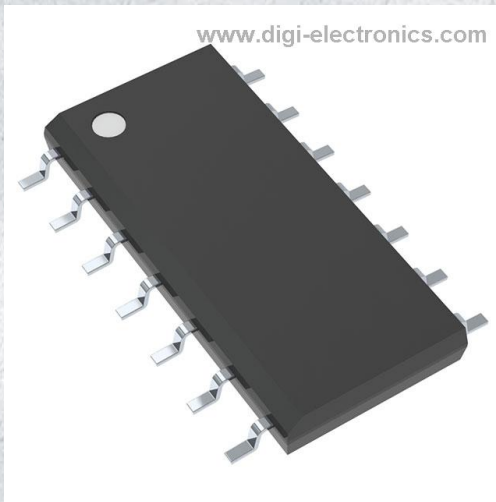


74LVQ04SC Datasheet



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	74LVQ04SC-DG
Manufacturer	onsemi
Manufacturer Product Number	74LVQ04SC
Description	IC INVERTER 6CH 1-INP 14SOIC
Detailed Description	Inverter IC 6 Channel 14-SOIC



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

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Purchase and inquiry

Manufacturer Product Number:

74LVQ04SC

Series:

74LVQ

Logic Type:

Inverter

Number of Inputs:

1

Voltage - Supply:

2V ~ 3.6V

Current - Output High, Low:

12mA, 12mA

Input Logic Level - High:

2V

Operating Temperature:

-40°C ~ 85°C

Supplier Device Package:

14-SOIC

Base Product Number:

74LVQ04

Manufacturer:

onsemi

Product Status:

Obsolete

Number of Circuits:

6

Features:

-

Current - Quiescent (Max):

2 μ A

Input Logic Level - Low:

0.8V

Max Propagation Delay @ V, Max CL:

9ns @ 3.3V, 50pF

Mounting Type:

Surface Mount

Package / Case:

14-SOIC (0.154", 3.90mm Width)

Environmental & Export classification

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

REACH Status:

REACH Unaffected

HTSUS:

8542.39.0001



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February 1992
Revised June 2001

74LVQ04 Low Voltage Hex Inverter

General Description

The LVQ04 contains six inverters.

Features

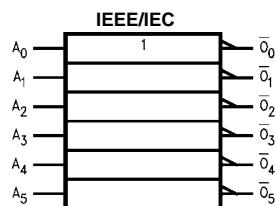
- Ideal for low power/low noise 3.3V applications
- Guaranteed simultaneous switching noise level and dynamic threshold performance
- Guaranteed pin-to-pin skew AC performance
- Guaranteed incident wave switching into 75Ω

Ordering Code:

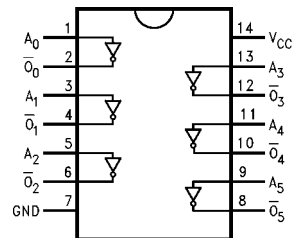
Ordering Number	Package Number	Package Description
74LVQ04SC	M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow
74LVQ04SJ	M14D	14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide

Devices also available in Tape and Reel. Specify by appending the suffix letter "X" to the ordering code.

Logic Symbol



Connection Diagram



Pin Descriptions

Pin Names	Description
A_n	Inputs
\overline{O}_n	Outputs

74LVQ04 Low Voltage Hex Inverter

74LVQ04

Absolute Maximum Ratings(Note 1)

Supply Voltage (V_{CC})	-0.5V to +7.0V
DC Input Diode Current (I_{IK})	
$V_I = -0.5V$	-20 mA
$V_I = V_{CC} + 0.5V$	+20 mA
DC Input Voltage (V_I)	-0.5V to $V_{CC} + 0.5V$
DC Output Diode Current (I_{OK})	
$V_O = -0.5V$	-20 mA
$V_O = V_{CC} + 0.5V$	+20 mA
DC Output Voltage (V_O)	-0.5V to $V_{CC} + 0.5V$
DC Output Source	
or Sink Current (I_O)	± 50 mA
DC V_{CC} or Ground Current	
(I_{CC} or I_{GND})	± 200 mA
Storage Temperature (T_{STG})	-65°C to +150°C
DC Latch-Up Source or	
Sink Current	± 100 mA

Recommended Operating Conditions (Note 2)

Supply Voltage (V_{CC})	2.0V to 3.6V
Input Voltage (V_I)	0V to V_{CC}
Output Voltage (V_O)	0V to V_{CC}
Operating Temperature (T_A)	-40°C to +85°C
Minimum Input Edge Rate ($\Delta V/\Delta t$)	
V_{IN} from 0.8V to 2.0V	
V_{CC} @ 3.0V	125 mV/ns

Note 1: 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 tables are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

Note 2: Unused inputs must be held HIGH or LOW. They may not float.

DC Electrical Characteristics

Symbol	Parameter	V_{CC} (V)	$T_A = +25^\circ\text{C}$		Units	Conditions
			Typ	Guaranteed Limits		
V_{IH}	Minimum High Level Input Voltage	3.0	1.5	2.0	V	$V_{OUT} = 0.1V$ or $V_{CC} - 0.1V$
V_{IL}	Maximum Low Level Input Voltage	3.0	1.5	0.8	V	$V_{OUT} = 0.1V$ or $V_{CC} - 0.1V$
V_{OH}	Minimum High Level Output Voltage	3.0	2.99	2.9	V	$I_{OUT} = -50 \mu\text{A}$
		3.0		2.58	2.48	V
V_{OL}	Maximum Low Level Output Voltage	3.0	0.002	0.1	V	$I_{OUT} = 50 \mu\text{A}$
		3.0		0.36	0.44	V
I_{IN}	Maximum Input Leakage Current	3.6		± 0.1	μA	$V_I = V_{CC}$, GND
I_{OLD}	Minimum Dynamic (Note 4)	3.6			mA	$V_{OLD} = 0.8V$ Max (Note 5)
I_{OHD}	Output Current	3.6			mA	$V_{OHD} = 2.0V$ Min (Note 5)
I_{CC}	Maximum Quiescent Supply Current	3.6		2.0	μA	$V_{IN} = V_{CC}$ or GND
V_{OLP}	Quiet Output Maximum Dynamic V_{OL}	3.3	0.8	1.1	V	(Note 6)(Note 7)
V_{OLV}	Quiet Output Minimum Dynamic V_{OL}	3.3	-0.8	-1.1	V	(Note 6)(Note 7)
V_{IHD}	Maximum High Level Dynamic Input Voltage	3.3	1.7	2.0	V	(Note 6)(Note 8)
V_{ILD}	Maximum Low Level Dynamic Input Voltage	3.3	1.6	0.8	V	(Note 6)(Note 8)

Note 3: All outputs loaded; thresholds on input associated with output under test.

Note 4: Maximum test duration 2.0 ms, one output loaded at a time.

Note 5: Incident wave switching on transmission lines with impedances as low as 75 Ω for commercial temperature range is guaranteed for 74LVQ.

Note 6: Worst case package.

Note 7: Max number of outputs defined as (n). Data inputs are driven 0V to 3.3V; one output at GND.

Note 8: Max number of Data Inputs (n) switching. (n - 1) inputs switching 0V to 3.3V. Input-under-test switching: 3.3V to threshold (V_{ILD}) 0V to threshold (V_{IHD}) f = 1 MHz.

AC Electrical Characteristics

Symbol	Parameter	V _{CC} (V)	T _A = +25°C			T _A = -40° C to +85°C		Units
			C _L = 50 pF			C _L = 50 pF		
			Min	Typ	Max	Min	Max	
t _{PLH}	Propagation Delay	2.7	1.5	5.4	12.7	1.0	14.0	ns
		3.3 ± 0.3	1.5	4.5	9.0	1.0	10.0	
t _{PHL}	Propagation Delay	2.7	1.5	5.4	12.0	1.0	12.0	ns
		3.3 ± 0.3	1.5	4.5	8.5	1.0	9.5	
t _{OSHL}	Output to Output Skew (Note 9)	2.7		1.0	1.5		1.5	ns
t _{OSLH}	Data to Output	3.3 ± 0.3		1.0	1.5		1.5	

Note 9: Skew is defined as the absolute value of the difference between the actual propagation delay for any two separate outputs of the same device. The specification applies to any outputs switching in the same direction, either HIGH-to-LOW (t_{OSHL}) or LOW-to-HIGH (t_{OSLH}). Parameter guaranteed by design.

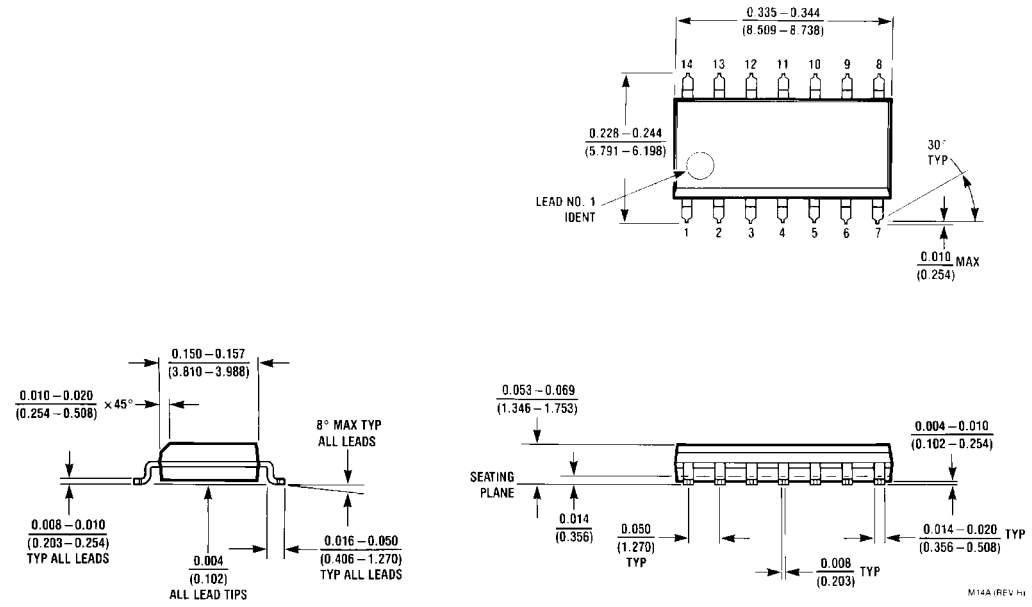
Capacitance

Symbol	Parameter	Typ	Units	Conditions
C _{IN}	Input Capacitance	4.5	pF	V _{CC} = Open
C _{PD} (Note 10)	Power Dissipation Capacitance	17	pF	V _{CC} = 3.3V

Note 10: C_{PD} is measured at 10 MHz.

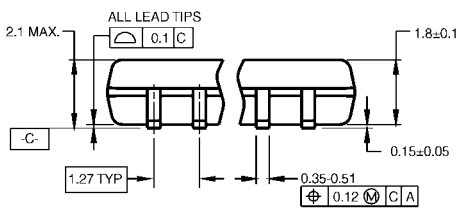
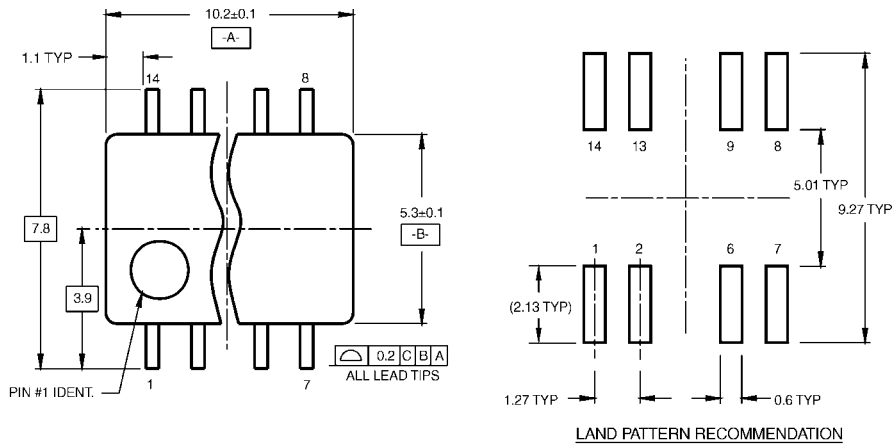
74LVQ04

Physical Dimensions inches (millimeters) unless otherwise noted



14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow Package Number M14A

Physical Dimensions inches (millimeters) unless otherwise noted (Continued)

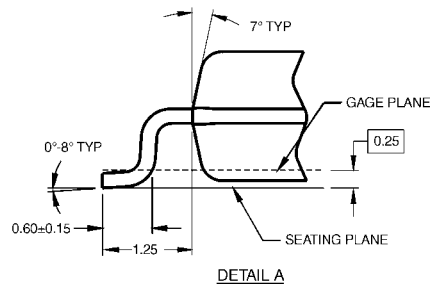
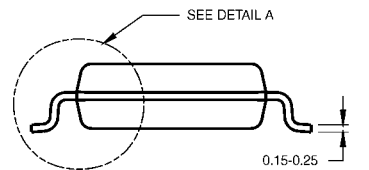


DIMENSIONS ARE IN MILLIMETERS

NOTES:

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- B. DIMENSIONS ARE IN MILLIMETERS.
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M14DRevB1



**14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
Package Number M14D**


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