

## DM74AS04 Hex Inverter

### General Description

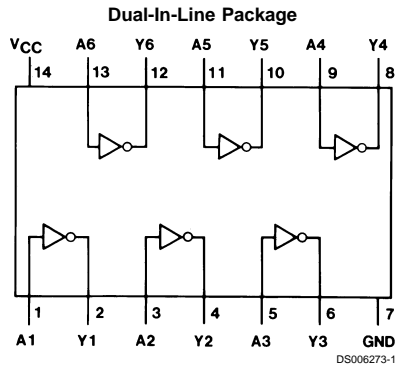
This device contains six independent gates, each of which performs the logic INVERT function.

### Features

- Switching specifications at 50 pF
- Switching specifications guaranteed over full temperature and  $V_{CC}$  range

- Advanced oxide-isolated, ion-implanted Schottky TTL process
- Functionally and pin for pin compatible with Schottky and low power Schottky TTL counterpart
- Improved AC performance over Schottky and low power Schottky counterparts

### Connection Diagram



Order Number DM74AS04M, N, SJ  
See Package Number M14A, M14D or N14A

### Function Table

$$Y = \bar{A}$$

Input A	Output Y
L	H
H	L

H = High Logic Level  
L = Low Logic Level

**Absolute Maximum Ratings** (Note 1)

Supply Voltage	7V
Input Voltage	7V
Operating Free Air Temperature Range	0°C to +70°C

Storage Temperature Range -65°C to +150°C

Typical $\theta_{JA}$	
N Package	84.5°C/W
M Package	115.0°C/W

**Recommended Operating Conditions**

Symbol	Parameter	Min	Nom	Max	Units
$V_{CC}$	Supply Voltage	4.5	5	5.5	V
$V_{IH}$	High Level Input Voltage	2			V
$V_{IL}$	Low Level Input Voltage			0.8	V
$I_{OH}$	High Level Output Current			-2	mA
$I_{OL}$	Low Level Output Current			20	mA
$T_A$	Free Air Operating Temperature	0		70	°C

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

**Electrical Characteristics**

over recommended operating free air temperature range. All typical values are measured at  $V_{CC} = 5V$ ,  $T_A = 25^\circ C$ .

Symbol	Parameter	Conditions	Min	Typ	Max	Units	
$V_{IK}$	Input Clamp Voltage	$V_{CC} = 4.5V$ , $I_I = -18\text{ mA}$			-1.2	V	
$V_{OH}$	High Level Output Voltage	$I_{OH} = -2\text{ mA}$ $V_{CC} = 4.5V\text{ to }5.5V$	$V_{CC} - 2$			V	
$V_{OL}$	Low Level Output Voltage	$V_{CC} = 4.5V$ $I_{OL} = 20\text{ mA}$		0.35	0.5	V	
$I_I$	Input Current @ Max Input Voltage	$V_{CC} = 5.5V$ , $V_{IH} = 7V$			0.1	mA	
$I_{IH}$	High Level Input Current	$V_{CC} = 5.5V$ , $V_{IH} = 2.7V$			20	$\mu A$	
$I_{IL}$	Low Level Input Current	$V_{CC} = 5.5V$ , $V_{IL} = 0.4V$			-0.5	mA	
$I_O$	Output Drive Current	$V_{CC} = 5.5V$ , $V_O = 2.25V$	-30		-112	mA	
$I_{CC}$	Supply Current	$V_{CC} = 5.5V$	Outputs High		3	4.8	mA
			Outputs Low		14	26.3	mA

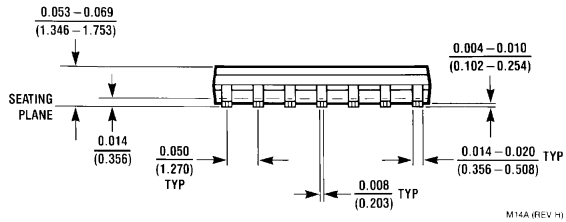
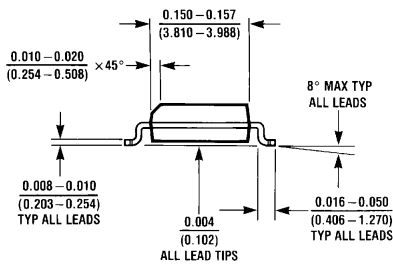
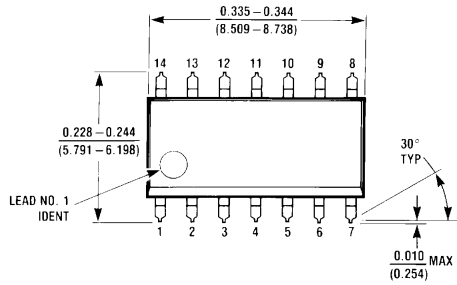
**Switching Characteristics**

over recommended operating free air temperature range (Note 2)

Symbol	Parameter	Conditions	Min	Max	Units
$t_{PLH}$	Propagation Delay Time Low to High Level Output	$V_{CC} = 4.5V\text{ to }5.5V$ $R_L = 500\Omega$	1	5	ns
$t_{PHL}$	Propagation Delay Time High to Low Level Output	$C_L = 50\text{ pF}$	1	4	ns

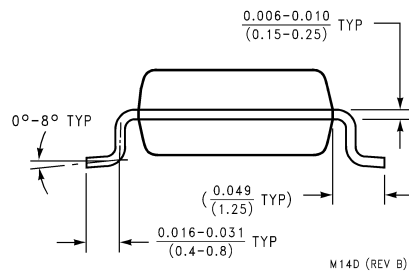
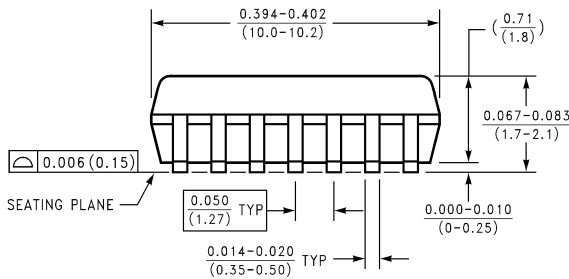
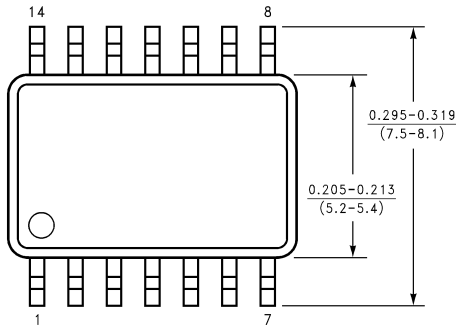
**Note 2:** See Section 5 for test waveforms and output load.

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



M14A (REV H)

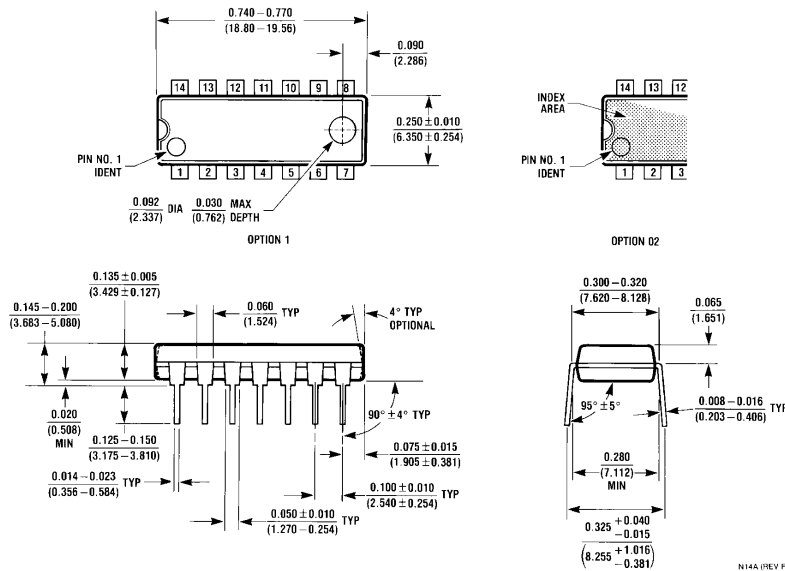
**S.O. Package (M)**  
**Order Number DM74AS04M**  
**Package Number M14A**



M14D (REV B)

**14-Lead (0.300\"/>
**Order Number DM74AS04J**  
**Package Number M14D****

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



**Molded Dual-In-Line Package (N)**  
**Order Number DM74AS04N**  
**Package Number N14A**

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**Fairchild Semiconductor Corporation Americas**  
 Customer Response Center  
 Tel: 1-888-522-5372

**Fairchild Semiconductor Europe**  
 Fax: +49 (0) 1 80-530 85 86  
 Email: europe.support@nsc.com  
 Deutsch Tel: +49 (0) 8 141-35-0  
 English Tel: +44 (0) 1 793-85-68-56  
 Italy Tel: +39 (0) 2 57 5631

**Fairchild Semiconductor Hong Kong Ltd.**  
 13th Floor, Straight Block,  
 Ocean Centre, 5 Canton Rd.  
 Tsimshatsui, Kowloon  
 Hong Kong  
 Tel: +862 2737-7200  
 Fax: +852 2314-0061

**National Semiconductor Japan Ltd.**  
 Tel: 81-3-5620-6175  
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