

## DM74ALS1004 Hex Inverting Driver

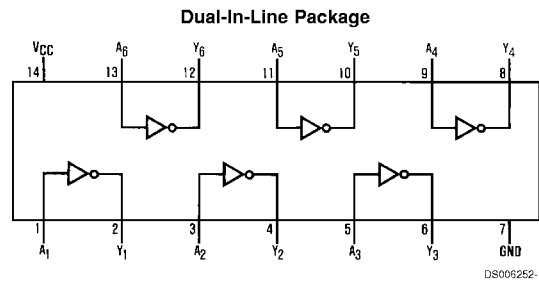
### General Description

These devices contain six independent drivers, each of which performs the logic inverter/complement function. The 'ALS1004 is a driver version of the 'ALS04A.

### 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 DM74ALS1004M or DM74ALS1004N  
See Package Number M14A or N14A

### Function Table

$$Y = \bar{A}$$

Input	Output
A	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 DM74ALS	0°C to +70°C

Storage Temperature Range	-65°C to +150°C
Typical $\theta_{JA}$	
N Package	76.0°C/W
M Package	106.5°C/W

## Recommended Operating Conditions

Symbol	Parameter	DM74ALS1004			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			0.8	V
$I_{OH}$	High Level Output Current			-15	mA
$I_{OL}$	Low Level Output Current			24	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	$V_{CC} = 4.5V$ , $I_I = -18$ mA			-1.5	V
$V_{OH}$	High Level Output Voltage	$I_{OH} = -0.4$ mA, $V_{CC} = 4.5V$ to $5.5V$	$V_{CC} - 2$			V
		$I_{OH} = \text{Max}$ , $V_{CC} = 4.5V$	2			
		$I_{OH} = -3$ mA, $V_{CC} = 4.5V$	2.4			
$V_{OL}$	Low Level Output Voltage	$V_{CC} = 4.5V$		0.25	0.4	V
		$I_{OL} = 12$ mA $I_{OL} = 24$ mA		0.35	0.5	V
$I_I$	Input Current at 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	$V_{CC} = 5.5V$ , $V_{IL} = 0.4V$			-0.1	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	0.84	3	mA
		Outputs Low		7	12	mA

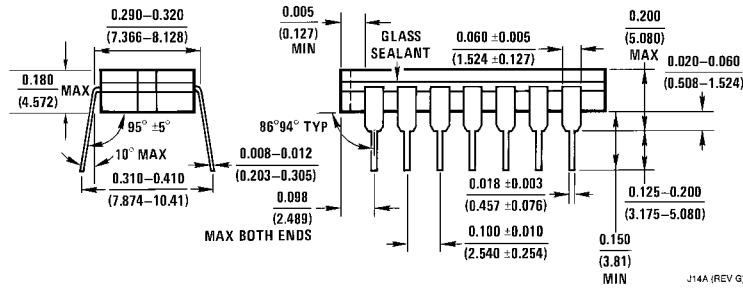
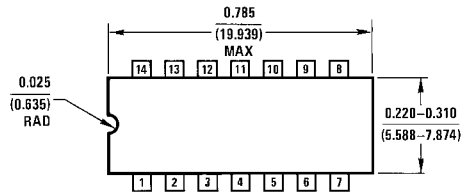
## Switching Characteristics

over recommended operating free air temperature range (Note 2)

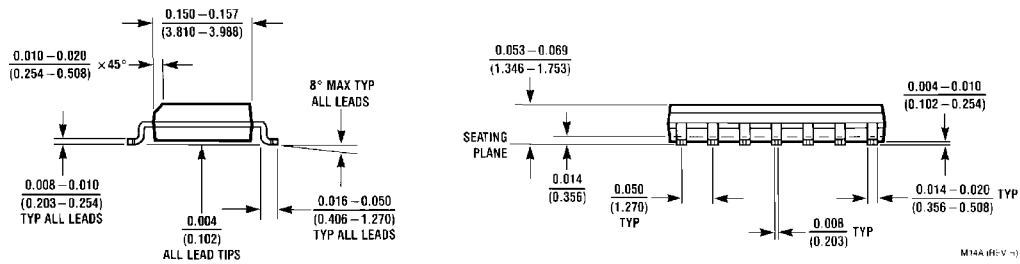
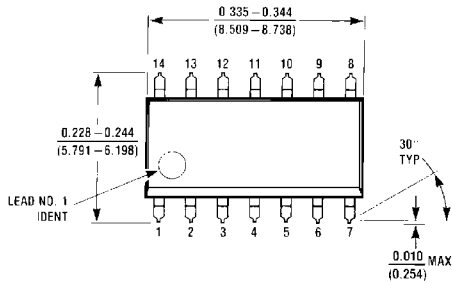
Symbol	Parameter	Conditions	DM74ALS1004		Units
			Min	Max	
$t_{PLH}$	Propagation Delay Time Low to High Level Output	$V_{CC} = 4.5V$ to $5.5V$ $R_L = 500\Omega$ , $C_L = 50$ pF	1	7	ns
$t_{PHL}$	Propagation Delay Time High to Low Level Output		1	6	ns

**Note 2:** See Section 1 for test waveforms and output load.

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

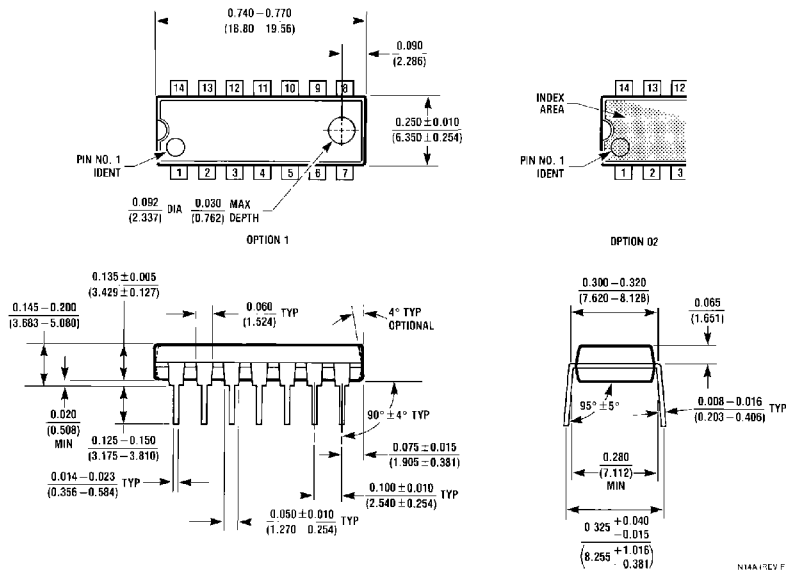


**Ceramic Dual-In-Line Package (J)**  
**Order Number DM54ALS1004J**  
**Package Number J14A**



**S.O. Package (M)**  
**Order Number DM74ALS1004M**  
**Package Number M14A**

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



**Molded Dual-In-Line Package (N)**  
**Order Number DM74ALS1004N**  
**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: +852 2737-7200  
 Fax: +852 2314-0061

**National Semiconductor Japan Ltd.**  
 Tel: 81-3-5620-6175  
 Fax: 81-3-5620-6179

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