

# SN54ALS843, SN54AS843, SN54ALS844, SN54AS844 SN74ALS843, SN74AS843, SN74ALS844, SN74AS844 9-BIT BUS INTERFACE D-TYPE LATCHES WITH 3-STATE OUTPUTS

D2910, DECEMBER 1983 — REVISED MAY 1986

- 3-State Buffer-Type Outputs Drive Bus-Lines Directly
- Bus-Structured Pinout
- Provide Extra Bus Driving Latches Necessary for Wider Address/Data Paths or Buses with Parity
- Buffered Control Inputs to Reduce DC Loading
- Power-Up High Impedance
- Package Options Include Plastic "Small Outline" Packages, Both Plastic and Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

## description

These 9-bit latches feature three-state outputs designed specifically for driving highly capacitive or relatively low-impedance loads. They are particularly suitable for implementing buffer registers, I/O ports, bidirectional bus drivers, and working registers.

The nine latches are transparent D-type. The 'ALS843 and 'AS843 have noninverting data (D) inputs. The 'ALS844 and 'AS844 have inverting D inputs.

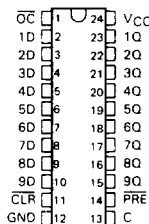
A buffered output control ( $\overline{OC}$ ) input can be used to place the nine outputs in either a normal logic state (high or low levels) or a high-impedance state. In the high-impedance state, the outputs neither load nor drive the bus lines significantly. The high-impedance state and increased drive provide the capability to drive the bus lines in a bus-organized system without need for interface or pull-up components.

The output control ( $\overline{OC}$ ) does not affect the internal operation of the flip-flops. Old data can be retained or new data can be entered while the outputs are off.

The -1 versions of the SN74ALS843 and SN74ALS844 parts are identical to the standard versions except that the recommended maximum  $I_{OL}$  is increased to 48 milliamperes. There are no -1 versions of the SN54ALS843 and SN54ALS844.

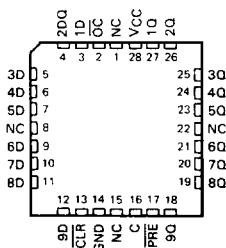
SN54ALS843, SN54AS843 ... JT PACKAGE  
SN74ALS843, SN74AS843 ... DW OR NT PACKAGE

(TOP VIEW)



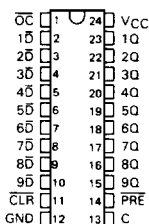
SN54ALS843, SN54AS843 ... FK PACKAGE  
SN74ALS843, SN74AS843 ... FN PACKAGE

(TOP VIEW)



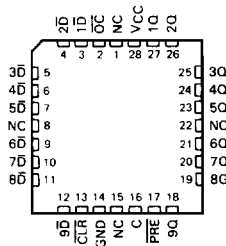
SN54ALS844, SN54AS844 ... JT PACKAGE  
SN74ALS844, SN74AS844 ... DW OR NT PACKAGE

(TOP VIEW)



SN54ALS844, SN54AS844 ... FK PACKAGE  
SN74ALS844, SN74AS844 ... FN PACKAGE

(TOP VIEW)



NC — No internal connection

PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

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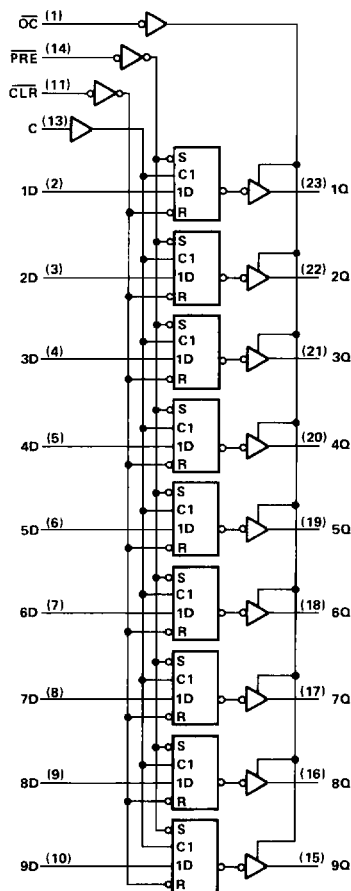
# **SN54ALS843, SN54AS843, SN54ALS844, SN54AS844** **SN74ALS843, SN74AS843, SN74ALS844, SN74AS844** **9-BIT BUS INTERFACE D-TYPE LATCHES WITH 3-STATE OUTPUTS**

The SN54ALS843, SN54AS843, SN54ALS844, and SN54AS844 are characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74ALS843, SN74AS843, SN74ALS844, and SN74AS844 are characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

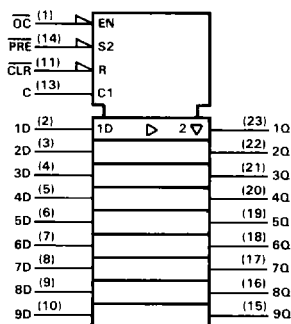
'ALS843, 'AS843 FUNCTION TABLE

| INPUTS |     |    |   |   |  | OUTPUT |
|--------|-----|----|---|---|--|--------|
| PRE    | CLR | OC | C | D |  | Q      |
| L      | X   | L  | X | X |  | H      |
| H      | L   | L  | X | X |  | L      |
| H      | H   | L  | H | L |  | L      |
| H      | H   | L  | H | H |  | H      |
| H      | H   | L  | L | X |  | $Q_0$  |
| X      | X   | H  | X | X |  | Z      |

'ALS843, 'AS843 logic diagram (positive logic)



'ALS843, 'AS843 logic symbol†



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

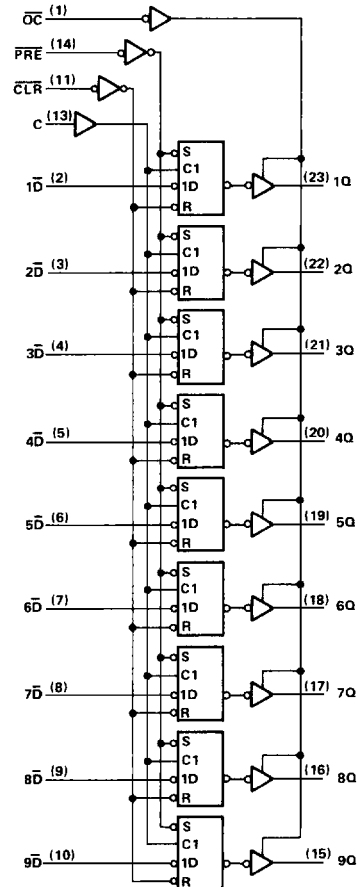
Pin numbers shown are for DW, JT, and NT packages.

**SN54ALS843, SN54AS843, SN54ALS844, SN54AS844  
SN74ALS843, SN74AS843, SN74ALS844, SN74AS844  
9-BIT BUS INTERFACE D-TYPE LATCHES WITH 3-STATE OUTPUTS**

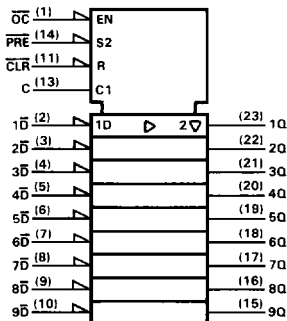
**'ALS844, 'AS844 FUNCTION TABLE**

| INPUTS |     |    |   |           | OUTPUT |
|--------|-----|----|---|-----------|--------|
| PRE    | CLR | OC | C | $\bar{D}$ | Q      |
| L      | X   | L  | X | X         | H      |
| H      | L   | L  | X | X         | L      |
| H      | H   | L  | H | L         | H      |
| H      | H   | L  | H | H         | L      |
| H      | H   | L  | L | X         | $Q_0$  |
| X      | X   | H  | X | X         | Z      |

**'ALS844, 'AS844 logic diagram (positive logic)**



**'ALS844, 'AS844 logic symbol†**



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

Pin numbers shown are for DW, JT, and NT packages.

**absolute maximum ratings over operating free-air temperature range (unless otherwise noted)**

|                                                         |                  |
|---------------------------------------------------------|------------------|
| Supply voltage, $V_{CC}$                                | 7 V              |
| Input voltage                                           | 7 V              |
| Voltage applied to a disabled 3-state output            | 5.5 V            |
| Operating free-air temperature range: SN54ALS', SN54AS' | -55 °C to 125 °C |
| SN74ALS', SN74AS'                                       | 0 °C to 70 °C    |
| Storage temperature range                               | -65 °C to 150 °C |

**SN54ALS843, SN54ALS844**  
**SN74ALS843, SN74ALS844**  
**9-BIT BUS INTERFACE D-TYPE LATCHES WITH 3-STATE OUTPUTS**

**recommended operating conditions**

|                 |                                   | SN54ALS843<br>SN54ALS844 |     |     | SN74ALS843<br>SN74ALS844 |       |     | UNIT |
|-----------------|-----------------------------------|--------------------------|-----|-----|--------------------------|-------|-----|------|
|                 |                                   | MIN                      | NOM | MAX | MIN                      | NOM   | MAX |      |
| V <sub>CC</sub> | Supply voltage                    | 4.5                      | 5   | 5.5 | 4.5                      | 5     | 5.5 | V    |
| V <sub>IH</sub> | High-level input voltage          | 2                        |     |     | 2                        |       |     | V    |
| V <sub>IL</sub> | Low-level input voltage           |                          | 0.7 |     |                          | 0.8   |     | V    |
| I <sub>OH</sub> | High-level output current         |                          | – 1 |     |                          | – 2.6 |     | mA   |
| I <sub>OL</sub> | Low-level output current          |                          | 12  |     |                          | 24    |     | mA   |
|                 |                                   |                          |     |     |                          | 48†   |     |      |
| t <sub>w</sub>  | Pulse duration                    | CLR or PRE low           |     | 40  | 35                       |       |     | ns   |
|                 |                                   | C high                   |     | 25  | 20                       |       |     |      |
| t <sub>su</sub> | Setup time, data before enable C↓ | 16                       |     |     | 10                       |       |     | ns   |
| t <sub>h</sub>  | Hold time, data after enable C↓   | 7                        |     |     | 5                        |       |     | ns   |
| T <sub>A</sub>  | Operating free-air temperature    | – 55                     |     | 125 | 0                        |       | 70  | °C   |

†The 48-mA limit applies only to the -1 versions and only if V<sub>CC</sub> is maintained between 4.75 V and 5.25 V.

**electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)**

| PARAMETER        |         | TEST CONDITIONS                                                 |                  | SN54ALS843<br>SN54ALS844 |      |       | SN74ALS843<br>SN74ALS844 |      |     | UNIT |
|------------------|---------|-----------------------------------------------------------------|------------------|--------------------------|------|-------|--------------------------|------|-----|------|
|                  |         |                                                                 |                  | MIN                      | TYP† | MAX   | MIN                      | TYP† | MAX |      |
| V <sub>IK</sub>  |         | V <sub>CC</sub> = 4.5 V, I <sub>I</sub> = –18 mA                |                  | –1.2                     |      |       | –1.2                     |      |     | V    |
| V <sub>OH</sub>  |         | V <sub>CC</sub> = 4.5 V to 5.5 V, I <sub>OH</sub> = –0.4 mA     |                  | V <sub>CC</sub> – 2      |      |       | V <sub>CC</sub> – 2      |      |     | V    |
|                  |         | V <sub>CC</sub> = 4.5 V, I <sub>OH</sub> = –1 mA                |                  | 2.4 3.3                  |      |       |                          |      |     |      |
|                  |         | V <sub>CC</sub> = 4.5 V, I <sub>OH</sub> = –2.6 mA              |                  |                          |      |       | 2.4 3.2                  |      |     |      |
| V <sub>OL</sub>  |         | V <sub>CC</sub> = 4.5 V, I <sub>OL</sub> = 12 mA                |                  | 0.25 0.4                 |      |       | 0.25 0.4                 |      |     | V    |
|                  |         | V <sub>CC</sub> = 4.5 V, I <sub>OL</sub> = 24 mA                |                  |                          |      |       | 0.35 0.5                 |      |     |      |
|                  |         | V <sub>CC</sub> = 4.75 V, I <sub>OL</sub> = 48 mA (–1 versions) |                  |                          |      |       | 0.35 0.5                 |      |     |      |
| I <sub>OZH</sub> |         | V <sub>CC</sub> = 5.5 V, V <sub>O</sub> = 2.7 V                 |                  | 20                       |      |       | 20                       |      |     | μA   |
| I <sub>OZL</sub> |         | V <sub>CC</sub> = 5.5 V, V <sub>O</sub> = 0.4 V                 |                  | –20                      |      |       | –20                      |      |     | μA   |
| I <sub>I</sub>   |         | V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 7 V                   |                  | 0.1                      |      |       | 0.1                      |      |     | mA   |
| I <sub>IH</sub>  |         | V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 2.7 V                 |                  | 20                       |      |       | 20                       |      |     | μA   |
| I <sub>IL</sub>  |         | V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 0.4 V                 |                  | –0.1                     |      |       | –0.1                     |      |     | mA   |
| I <sub>O</sub> ‡ |         | V <sub>CC</sub> = 5.5 V, V <sub>O</sub> = 2.25 V                |                  | –30 –112                 |      |       | –30 –112                 |      |     | mA   |
| I <sub>CC</sub>  | ‘ALS843 | V <sub>CC</sub> = 5.5 V                                         | Outputs high     | 21 36                    |      | 21 36 |                          |      |     | mA   |
|                  |         |                                                                 | Outputs low      | 41 67                    |      | 41 67 |                          |      |     |      |
|                  |         |                                                                 | Outputs disabled | 25 42                    |      | 25 42 |                          |      |     |      |
|                  | ‘ALS844 |                                                                 | Outputs high     | 21 36                    |      | 21 36 |                          |      |     |      |
|                  |         |                                                                 | Outputs low      | 41 72                    |      | 41 72 |                          |      |     |      |
|                  |         |                                                                 | Outputs disabled | 28 48                    |      | 28 48 |                          |      |     |      |

‡All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C.

§The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I<sub>OS</sub>.

**SN54ALS843, SN54ALS844**  
**SN74ALS843, SN74ALS844**

**9-BIT BUS INTERFACE D-TYPE LATCHES WITH 3-STATE OUTPUTS**

**'ALS843 switching characteristics (see Note 1)**

| PARAMETER        | FROM<br>(INPUT) | TO<br>(OUTPUT) | V <sub>CC</sub> = 5 V,<br>C <sub>L</sub> = 50 pF,<br>R <sub>1</sub> = 500 Ω,<br>R <sub>2</sub> = 500 Ω,<br>T <sub>A</sub> = 25°C |     |     | V <sub>CC</sub> = 4.5 V to 5.5 V,<br>C <sub>L</sub> = 50 pF,<br>R <sub>1</sub> = 500 Ω,<br>R <sub>2</sub> = 500 Ω,<br>T <sub>A</sub> = MIN to MAX |     |            | UNIT |     |
|------------------|-----------------|----------------|----------------------------------------------------------------------------------------------------------------------------------|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------|-----|------------|------|-----|
|                  |                 |                | 'ALS843                                                                                                                          |     |     | SN54ALS843                                                                                                                                        |     | SN74ALS843 |      |     |
|                  |                 |                | MIN                                                                                                                              | TYP | MAX | MIN                                                                                                                                               | MAX | MIN        |      | MAX |
| t <sub>PLH</sub> | D               | Q              |                                                                                                                                  | 7   | 11  | 2                                                                                                                                                 | 15  | 2          | 13   | ns  |
| t <sub>PHL</sub> |                 |                |                                                                                                                                  | 11  | 15  | 4                                                                                                                                                 | 20  | 4          | 18   |     |
| t <sub>PLH</sub> | C               | Q              |                                                                                                                                  | 12  | 18  | 5                                                                                                                                                 | 25  | 5          | 21   | ns  |
| t <sub>PHL</sub> |                 |                |                                                                                                                                  | 16  | 23  | 8                                                                                                                                                 | 30  | 8          | 26   |     |
| t <sub>PLH</sub> | PRE             | Q              |                                                                                                                                  | 13  | 19  | 5                                                                                                                                                 | 25  | 5          | 22   | ns  |
| t <sub>PHL</sub> |                 |                |                                                                                                                                  | 19  | 26  | 4                                                                                                                                                 | 35  | 6          | 30   |     |
| t <sub>PLH</sub> | CLR             | Q              |                                                                                                                                  | 19  | 26  | 4                                                                                                                                                 | 35  | 6          | 30   | ns  |
| t <sub>PHL</sub> |                 |                |                                                                                                                                  | 14  | 21  | 6                                                                                                                                                 | 27  | 6          | 23   |     |
| t <sub>PZH</sub> | OC              | Q              |                                                                                                                                  | 7   | 10  | 2                                                                                                                                                 | 14  | 2          | 12   | ns  |
| t <sub>PZL</sub> |                 |                |                                                                                                                                  | 9   | 12  | 4                                                                                                                                                 | 16  | 4          | 14   |     |
| t <sub>PHZ</sub> | OC              | Q              |                                                                                                                                  | 6   | 9   | 2                                                                                                                                                 | 12  | 2          | 10   | ns  |
| t <sub>PLZ</sub> |                 |                |                                                                                                                                  | 7   | 10  | 2                                                                                                                                                 | 14  | 2          | 12   |     |

**'ALS844 switching characteristics (see Note 1)**

| PARAMETER        | FROM<br>(INPUT)  | TO<br>(OUTPUT) | V <sub>CC</sub> = 5 V,<br>C <sub>L</sub> = 50 pF,<br>R <sub>1</sub> = 500 Ω,<br>R <sub>2</sub> = 500 Ω,<br>T <sub>A</sub> = 25°C |     |     | V <sub>CC</sub> = 4.5 V to 5.5 V,<br>C <sub>L</sub> = 50 pF,<br>R <sub>1</sub> = 500 Ω,<br>R <sub>2</sub> = 500 Ω,<br>T <sub>A</sub> = MIN to MAX |     |            | UNIT |     |
|------------------|------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------|-----|------------|------|-----|
|                  |                  |                | 'ALS844                                                                                                                          |     |     | SN54ALS844                                                                                                                                        |     | SN74ALS844 |      |     |
|                  |                  |                | MIN                                                                                                                              | TYP | MAX | MIN                                                                                                                                               | MAX | MIN        |      | MAX |
| t <sub>PLH</sub> | $\overline{D}$   | Q              |                                                                                                                                  | 11  | 16  | 4                                                                                                                                                 | 22  | 4          | 20   | ns  |
| t <sub>PHL</sub> |                  |                |                                                                                                                                  | 9   | 13  | 3                                                                                                                                                 | 17  | 3          | 15   |     |
| t <sub>PLH</sub> | C                | Q              |                                                                                                                                  | 17  | 24  | 8                                                                                                                                                 | 32  | 8          | 29   | ns  |
| t <sub>PHL</sub> |                  |                |                                                                                                                                  | 14  | 19  | 6                                                                                                                                                 | 26  | 6          | 22   |     |
| t <sub>PLH</sub> | PRE              | Q              |                                                                                                                                  | 13  | 19  | 5                                                                                                                                                 | 25  | 5          | 22   | ns  |
| t <sub>PHL</sub> |                  |                |                                                                                                                                  | 19  | 26  | 4                                                                                                                                                 | 35  | 6          | 30   |     |
| t <sub>PLH</sub> | $\overline{CLR}$ | Q              |                                                                                                                                  | 19  | 26  | 4                                                                                                                                                 | 35  | 6          | 30   | ns  |
| t <sub>PHL</sub> |                  |                |                                                                                                                                  | 16  | 23  | 8                                                                                                                                                 | 29  | 8          | 25   |     |
| t <sub>PZH</sub> | $\overline{OC}$  | Q              |                                                                                                                                  | 10  | 15  | 2                                                                                                                                                 | 19  | 4          | 17   | ns  |
| t <sub>PZL</sub> |                  |                |                                                                                                                                  | 12  | 18  | 3                                                                                                                                                 | 22  | 5          | 20   |     |
| t <sub>PHZ</sub> | $\overline{OC}$  | Q              |                                                                                                                                  | 7   | 10  | 1                                                                                                                                                 | 12  | 1          | 11   | ns  |
| t <sub>PLZ</sub> |                  |                |                                                                                                                                  | 5   | 9   | 1                                                                                                                                                 | 14  | 1          | 12   |     |

NOTE 1: Load circuit and voltage waveforms are shown in Section 1.

2

ALS and AS Circuits

**SN54AS843, SN54AS844**  
**SN74AS843, SN74AS844**  
**9-BIT BUS INTERFACE D-TYPE LATCHES WITH 3-STATE OUTPUTS**

**recommended operating conditions**

|                 |                                   |                | SN54AS843<br>SN54AS844 |     |      | SN74AS843<br>SN74AS844 |     |      | UNIT |
|-----------------|-----------------------------------|----------------|------------------------|-----|------|------------------------|-----|------|------|
|                 |                                   |                | MIN                    | NOM | MAX  | MIN                    | NOM | MAX  |      |
| V <sub>CC</sub> | Supply voltage                    |                | 4.5                    | 5   | 5.5  | 4.5                    | 5   | 5.5  | V    |
| V <sub>IH</sub> | High-level input voltage          |                | 2                      |     |      | 2                      |     |      | V    |
| V <sub>IL</sub> | Low-level input voltage           |                |                        |     | 0.8  |                        |     | 0.8  | V    |
| I <sub>OH</sub> | High-level output current         |                |                        |     | − 24 |                        |     | − 24 | mA   |
| I <sub>OL</sub> | Low-level output current          |                |                        |     | 32   |                        |     | 48   | mA   |
| t <sub>w</sub>  | Pulse duration, enable C high     | CLR or PRE low | 5                      |     |      | 4                      |     |      | ns   |
|                 |                                   | C high         | 5                      |     |      | 4                      |     |      |      |
| t <sub>su</sub> | Setup time, data before enable C↑ |                | 3.5                    |     |      | 2.5                    |     |      | ns   |
| t <sub>h</sub>  | Hold time, data after enable C↓   |                | 3.5                    |     |      | 2.5                    |     |      | ns   |
| t <sub>r</sub>  | Recovery time                     | PRE            | 17                     |     |      | 15                     |     |      | ns   |
|                 |                                   | CLR            | 16                     |     |      | 14                     |     |      |      |
| T <sub>A</sub>  | Operating free-air temperature    |                | − 55                   |     | 125  | 0                      |     | 70   | °C   |

**electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)**

| PARAMETER                   |        | TEST CONDITIONS          |                          | SN54AS843<br>SN54AS844 |                  |         | SN74AS843<br>SN74AS844 |                  |     | UNIT |
|-----------------------------|--------|--------------------------|--------------------------|------------------------|------------------|---------|------------------------|------------------|-----|------|
|                             |        |                          |                          | MIN                    | TYP <sup>†</sup> | MAX     | MIN                    | TYP <sup>†</sup> | MAX |      |
| V <sub>IK</sub>             |        | V <sub>CC</sub> = 4.5 V, | I <sub>I</sub> = -18 mA  | -1.2                   |                  |         | -1.2                   |                  |     | V    |
| V <sub>OH</sub>             |        | V <sub>CC</sub> = 4.5 V, | I <sub>OH</sub> = -2 mA  | V <sub>CC</sub> - 2    |                  |         | V <sub>CC</sub> - 2    |                  |     | V    |
|                             |        | V <sub>CC</sub> = 4.5 V, | I <sub>OH</sub> = -15 mA | 2.4 3.2                |                  | 2.4 3.2 |                        |                  |     |      |
|                             |        | V <sub>CC</sub> = 4.5 V, | I <sub>OH</sub> = -24 mA | 2                      |                  | 2       |                        |                  |     |      |
| V <sub>OL</sub>             |        | V <sub>CC</sub> = 4.5 V, | I <sub>OL</sub> = 32 mA  | 0.25 0.5               |                  |         |                        |                  |     | V    |
|                             |        | V <sub>CC</sub> = 4.5 V, | I <sub>OL</sub> = 48 mA  |                        |                  |         | 0.35 0.5               |                  |     |      |
| I <sub>OZH</sub>            |        | V <sub>CC</sub> = 5.5 V, | V <sub>O</sub> = 2.7 V   | 50                     |                  |         | 50                     |                  |     | μA   |
| I <sub>OZL</sub>            |        | V <sub>CC</sub> = 5.5 V, | V <sub>O</sub> = 0.4 V   | -50                    |                  |         | -50                    |                  |     | μA   |
| I <sub>I</sub>              |        | V <sub>CC</sub> = 5.5 V, | V <sub>I</sub> = 7 V     | 0.1                    |                  |         | 0.1                    |                  |     | mA   |
| I <sub>IH</sub>             |        | V <sub>CC</sub> = 5.5 V, | V <sub>I</sub> = 2.7 V   | 20                     |                  |         | 20                     |                  |     | μA   |
| I <sub>IL</sub>             |        | V <sub>CC</sub> = 5.5 V, | V <sub>I</sub> = 0.4 V   | -0.5                   |                  |         | -0.5                   |                  |     | mA   |
| I <sub>O</sub> <sup>‡</sup> |        | V <sub>CC</sub> = 5.5 V, | V <sub>O</sub> = 2.25 V  | -30                    | -112             |         | -30                    | -112             |     | mA   |
| I <sub>CC</sub>             | 'AS843 | V <sub>CC</sub> = 5.5 V, | Outputs high             | 37                     | 62               |         | 37                     | 62               |     | mA   |
|                             |        |                          | Outputs low              | 56                     | 92               |         | 56                     | 92               |     |      |
|                             |        |                          | Outputs disabled         | 56                     | 92               |         | 56                     | 92               |     |      |
|                             | 'AS844 |                          | Outputs high             | 39                     | 64               |         | 39                     | 64               |     |      |
|                             |        |                          | Outputs low              | 58                     | 95               |         | 58                     | 95               |     |      |
|                             |        |                          | Outputs disabled         | 58                     | 95               |         | 58                     | 95               |     |      |

<sup>†</sup>All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C.

<sup>†</sup>The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I<sub>OS</sub>.

**SN54AS843, SN54AS844**  
**SN74AS843, SN74AS844**

**9-BIT BUS INTERFACE D-TYPE LATCHES WITH 3-STATE OUTPUTS**

**AS843 switching characteristics (see Note 1)**

| PARAMETER | FROM<br>(INPUT) | TO<br>(OUTPUT) | VCC = 4.5 V to 5.5 V,<br>CL = 50 pF,<br>R1 = 500 Ω,<br>R2 = 500 Ω,<br>TA = MIN to MAX |      |           |      | UNIT |
|-----------|-----------------|----------------|---------------------------------------------------------------------------------------|------|-----------|------|------|
|           |                 |                | SN54AS843                                                                             |      | SN74AS843 |      |      |
|           |                 |                | MIN                                                                                   | MAX  | MIN       | MAX  |      |
| tPLH      | D               | Q              | 1                                                                                     | 8.5  | 1         | 6.5  | ns   |
| tPHL      |                 |                | 1                                                                                     | 10   | 1         | 9    |      |
| tPLH      | C               | O              | 2                                                                                     | 13   | 2         | 12   | ns   |
| tPHL      |                 |                | 2                                                                                     | 13   | 2         | 12   |      |
| tPLH      | PRE             | Q              | 2                                                                                     | 12   | 2         | 10   | ns   |
| tPHL      | CLR             | Q              | 2                                                                                     | 14   | 2         | 13   | ns   |
| tPZH      | OC              | Q              | 2                                                                                     | 13.5 | 2         | 10.5 | ns   |
| tPZL      |                 |                | 2                                                                                     | 15   | 2         | 13.5 |      |
| tPHZ      | OC              | Q              | 1                                                                                     | 10   | 1         | 8    | ns   |
| tPLZ      |                 |                | 1                                                                                     | 10   | 1         | 8    |      |

**AS844 switching characteristics (see Note 1)**

| PARAMETER        | FROM<br>(INPUT) | TO<br>(OUTPUT) | V <sub>CC</sub> = 4.5 V to 5.5 V,<br>C <sub>L</sub> = 50 pF,<br>R <sub>1</sub> = 500 Ω,<br>R <sub>2</sub> = 500 Ω,<br>T <sub>A</sub> = MIN to MAX |      |           |      | UNIT |
|------------------|-----------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------|------|------|
|                  |                 |                | SN54AS844                                                                                                                                         |      | SN74AS844 |      |      |
|                  |                 |                | MIN                                                                                                                                               | MAX  | MIN       | MAX  |      |
| t <sub>PLH</sub> | D               | Q              | 1                                                                                                                                                 | 11   | 1         | 8.5  | ns   |
| t <sub>PHL</sub> |                 |                | 1                                                                                                                                                 | 11   | 1         | 10   |      |
| t <sub>PLH</sub> | C               | O              | 2                                                                                                                                                 | 14   | 2         | 12.5 | ns   |
| t <sub>PHL</sub> |                 |                | 2                                                                                                                                                 | 14   | 2         | 13   |      |
| t <sub>PLH</sub> | PRE             | Q              | 2                                                                                                                                                 | 12   | 2         | 10   | ns   |
| t <sub>PHL</sub> | CLR             | Q              | 2                                                                                                                                                 | 14.5 | 2         | 13.5 | ns   |
| t <sub>PZH</sub> | OC              | Q              | 2                                                                                                                                                 | 14.5 | 2         | 12   | ns   |
| t <sub>PZL</sub> |                 |                | 2                                                                                                                                                 | 15   | 2         | 13.5 |      |
| t <sub>PHZ</sub> | OC              | Q              | 1                                                                                                                                                 | 10   | 1         | 8    | ns   |
| t <sub>PLZ</sub> |                 |                | 1                                                                                                                                                 | 10   | 1         | 8    |      |

NOTE 1: Load circuit and voltage waveforms are shown in Section 1.

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ALS and AS Circuits

## 2

### ALS and AS Circuits