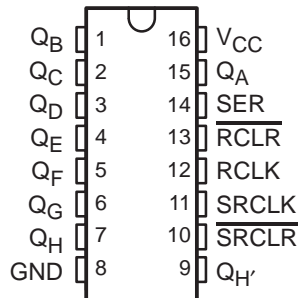


# SN54HC594, SN74HC594 8-BIT SHIFT REGISTERS WITH OUTPUT REGISTERS

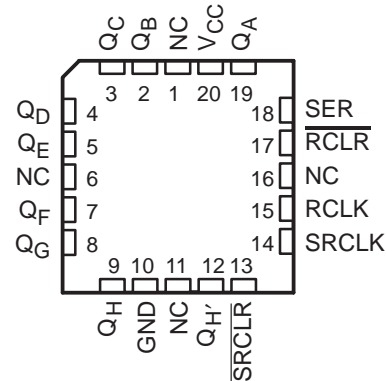
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- Wide Operating Voltage Range of 2 V to 6 V
- High-Current Outputs Can Drive Up To 15 LSTTL Loads
- Low Power Consumption, 80- $\mu$ A Max  $I_{CC}$
- Typical  $t_{pd} = 15$  ns
- $\pm 6$ -mA Output Drive at 5 V
- Low Input Current of 1  $\mu$ A Max
- 8-Bit Serial-In, Parallel-Out Shift Registers With Storage
- Independent Direct Overriding Clears on Shift and Storage Registers
- Independent Clocks for Both Shift and Storage Registers

SN54HC594 . . . J OR W PACKAGE  
SN74HC594 . . . D, DW, OR N PACKAGE  
(TOP VIEW)



SN54HC594 . . . FK PACKAGE  
(TOP VIEW)



NC – No internal connection

## description/ordering information

The 'HC594 devices contain an 8-bit serial-in, parallel-out shift register that feeds an 8-bit D-type storage register. Separate clocks and direct overriding clear ( $\overline{RCLR}$ ,  $\overline{SRCLR}$ ) inputs are provided on both the shift and storage registers. A serial ( $Q_{H'}$ ) output is provided for cascading purposes.

Both the shift register ( $\overline{SRCLK}$ ) and storage register ( $\overline{RCLK}$ ) clocks are positive edge triggered. If both clocks are connected together, the shift register always is one count pulse ahead of the storage register.

The parallel ( $Q_A$ – $Q_H$ ) outputs have high-current capability.  $Q_{H'}$  is a standard output.

## ORDERING INFORMATION

| TA             | PACKAGE†  |              | ORDERABLE PART NUMBER | TOP-SIDE MARKING |
|----------------|-----------|--------------|-----------------------|------------------|
| –40°C to 85°C  | PDIP – N  | Tube of 25   | SN74HC594N            | SN74HC594N       |
|                |           | Tube of 40   | SN74HC594D            | HC594            |
|                | SOIC – D  | Reel of 2500 | SN74HC594DR           |                  |
|                |           | Reel of 250  | SN74HC594DT           |                  |
|                | SOIC – DW | Tube of 40   | SN74HC594DW           | HC594            |
| Reel of 2000   |           | SN74HC594DWR |                       |                  |
| –55°C to 125°C | CDIP – J  | Tube of 25   | SNJ54HC594J           | SNJ54HC594J      |
|                | CFP – W   | Tube of 150  | SNJ54HC594W           | SNJ54HC594W      |
|                | LCCC – FK | Tube of 55   | SNJ54HC594FK          | SNJ54HC594FK     |

† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at [www.ti.com/sc/package](http://www.ti.com/sc/package).



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 **TEXAS  
INSTRUMENTS**

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**SN54HC594, SN74HC594**  
**8-BIT SHIFT REGISTERS**  
**WITH OUTPUT REGISTERS**

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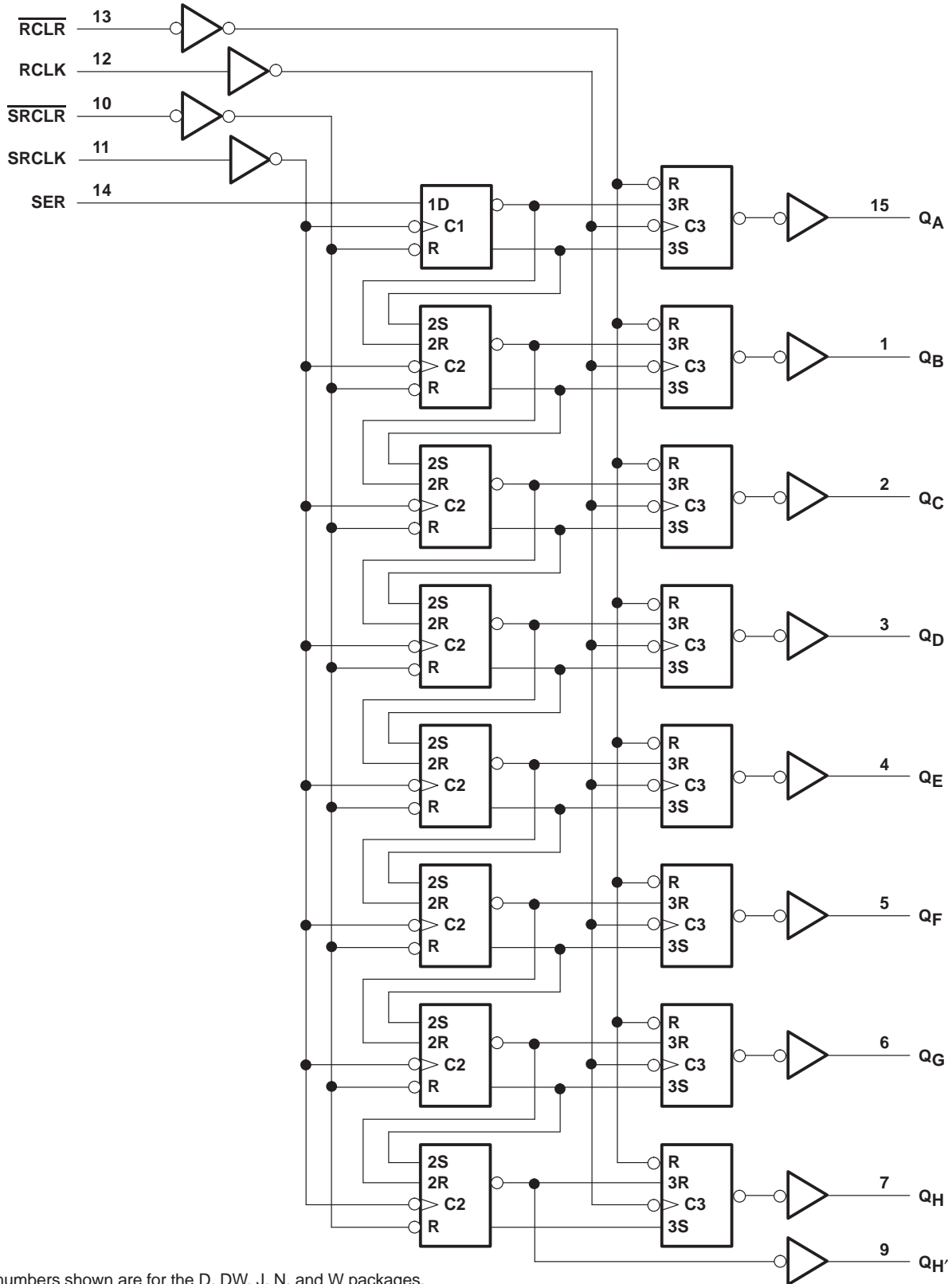
**FUNCTION TABLE**

| INPUTS |       |       |      |      | FUNCTION   |
|--------|-------|-------|------|------|--|
| SER    | SRCLK | SRCLR | RCLK | RCLR |  |
| X      | X     | L     | X    | X    | Shift register is cleared.   |
| L      | ↑     | H     | X    | X    | First stage of shift register goes low.<br>Other stages store the data of previous stage, respectively.  |
| H      | ↑     | H     | X    | X    | First stage of shift register goes high.<br>Other stages store the data of previous stage, respectively. |
| L      | ↓     | H     | X    | X    | Shift register state is not changed.   |
| X      | X     | X     | X    | L    | Storage register is cleared.   |
| X      | X     | X     | ↑    | H    | Shift register data is stored in the storage register.   |
| X      | X     | X     | ↓    | H    | Storage register state is not changed.   |

# SN54HC594, SN74HC594 8-BIT SHIFT REGISTERS WITH OUTPUT REGISTERS

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## logic diagram (positive logic)



Pin numbers shown are for the D, DW, J, N, and W packages.



# SN54HC594, SN74HC594 8-BIT SHIFT REGISTERS WITH OUTPUT REGISTERS

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## recommended operating conditions (see Note 3)

|                 |                                       | SN54HC594               |     |                 | SN74HC594 |      |                 | UNIT |
|-----------------|---------------------------------------|-------------------------|-----|-----------------|-----------|------|-----------------|------|
|                 |                                       | MIN                     | NOM | MAX             | MIN       | NOM  | MAX             |      |
| V <sub>CC</sub> | Supply voltage                        | 2                       | 5   | 6               | 2         | 5    | 6               | V    |
| V <sub>IH</sub> | High-level input voltage              | V <sub>CC</sub> = 2 V   |     | 1.5             | 1.5       |      | V               |      |
|                 |                                       | V <sub>CC</sub> = 4.5 V |     | 3.15            | 3.15      |      |                 |      |
|                 |                                       | V <sub>CC</sub> = 6 V   |     | 4.2             | 4.2       |      |                 |      |
| V <sub>IL</sub> | Low-level input voltage               | V <sub>CC</sub> = 2 V   |     |                 | 0.5       |      | V               |      |
|                 |                                       | V <sub>CC</sub> = 4.5 V |     |                 | 1.35      |      |                 |      |
|                 |                                       | V <sub>CC</sub> = 6 V   |     |                 | 1.8       |      |                 |      |
| V <sub>I</sub>  | Input voltage                         | 0                       |     | V <sub>CC</sub> | 0         |      | V <sub>CC</sub> | V    |
| V <sub>O</sub>  | Output voltage                        | 0                       |     | V <sub>CC</sub> | 0         |      | V <sub>CC</sub> | V    |
| t <sub>t</sub>  | Input transition (rise and fall) time | V <sub>CC</sub> = 2 V   |     | 1000            |           | 1000 |                 | ns   |
|                 |                                       | V <sub>CC</sub> = 4.5 V |     | 500             |           | 500  |                 |      |
|                 |                                       | V <sub>CC</sub> = 6 V   |     | 400             |           | 400  |                 |      |
| T <sub>A</sub>  | Operating free-air temperature        | -55                     |     | 125             | -40       |      | 85              | °C   |

NOTE 3: All unused inputs of the device must be held at V<sub>CC</sub> or GND to ensure proper device operation. Refer to the TI application report, *Implications of Slow or Floating CMOS Inputs*, literature number SCBA004.

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

| PARAMETER       | TEST CONDITIONS  |                          | V <sub>CC</sub>  | T <sub>A</sub> = 25°C |       |      | SN54HC594 |       | SN74HC594 |       | UNIT |
|-----------------|--|--------------------------|--|-----------------------|-------|------|-----------|-------|-----------|-------|------|
|                 |  |                          |  | MIN                   | TYP   | MAX  | MIN       | MAX   | MIN       | MAX   |      |
| V <sub>OH</sub> | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>        | I <sub>OH</sub> = -20 μA | 2 V  | 1.9                   | 1.998 |      | 1.9       |       | 1.9       | V     |      |
|                 |  |                          | 4.5 V  | 4.4                   | 4.499 |      | 4.4       |       | 4.4       |       |      |
|                 |  |                          | 6 V  | 5.9                   | 5.999 |      | 5.9       |       | 5.9       |       |      |
|                 |  | 4.5 V                    | Q <sub>H</sub> ', I <sub>OH</sub> = -4 mA                | 3.98                  | 4.3   |      | 3.7       |       | 3.84      |       |      |
|                 |  |                          | Q <sub>A</sub> -Q <sub>H</sub> , I <sub>OH</sub> = -6 mA | 3.98                  | 4.3   |      | 3.7       |       | 3.84      |       |      |
|                 |  |                          | Q <sub>H</sub> ', I <sub>OH</sub> = -5.2 mA              | 5.48                  | 5.8   |      | 5.2       |       | 5.34      |       |      |
| 6 V             | Q <sub>A</sub> -Q <sub>H</sub> , I <sub>OH</sub> = -7.8 mA | 5.48                     | 5.8  |                       | 5.2   |      | 5.34      |       |           |       |      |
| V <sub>OL</sub> | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub>        | I <sub>OL</sub> = 20 μA  | 2 V  |                       | 0.002 | 0.1  |           | 0.1   |           | 0.1   | V    |
|                 |  |                          | 4.5 V  |                       | 0.001 | 0.1  |           | 0.1   |           | 0.1   |      |
|                 |  |                          | 6 V  |                       | 0.001 | 0.1  |           | 0.1   |           | 0.1   |      |
|                 |  | 4.5 V                    | Q <sub>H</sub> ', I <sub>OL</sub> = 4 mA                 |                       | 0.17  | 0.26 |           | 0.4   |           | 0.33  |      |
|                 |  |                          | Q <sub>A</sub> -Q <sub>H</sub> , I <sub>OL</sub> = 6 mA  |                       | 0.17  | 0.26 |           | 0.4   |           | 0.33  |      |
|                 |  |                          | Q <sub>H</sub> ', I <sub>OL</sub> = 5.2 mA               |                       | 0.15  | 0.26 |           | 0.4   |           | 0.33  |      |
| 6 V             | Q <sub>A</sub> -Q <sub>H</sub> , I <sub>OL</sub> = 7.8 mA  |                          | 0.15   | 0.26                  |       | 0.4  |           | 0.33  |           |       |      |
| I <sub>I</sub>  | V <sub>I</sub> = V <sub>CC</sub> or 0                      |                          | 6 V  |                       | ±0.1  | ±100 |           | ±1000 |           | ±1000 | nA   |
| I <sub>OZ</sub> | V <sub>O</sub> = V <sub>CC</sub> or 0                      |                          | 6 V  |                       | ±0.01 | ±0.5 |           | ±10   |           | ±5    | μA   |
| I <sub>CC</sub> | V <sub>I</sub> = V <sub>CC</sub> or 0, I <sub>O</sub> = 0  |                          | 6 V  |                       |       | 8    |           | 160   |           | 80    | μA   |
| C <sub>i</sub>  |  |                          | 2 V<br>to 6 V  |                       | 3     | 10   |           | 10    |           | 10    | pF   |

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# SN54HC594, SN74HC594 8-BIT SHIFT REGISTERS WITH OUTPUT REGISTERS

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timing requirements over recommended operating free-air temperature range (unless otherwise noted)

|                    |                                     | V <sub>CC</sub> | T <sub>A</sub> = 25°C |     | SN54HC594 |     | SN74HC594 |     | UNIT |
|--------------------|-------------------------------------|-----------------|-----------------------|-----|-----------|-----|-----------|-----|------|
|                    |                                     |                 | MIN                   | MAX | MIN       | MAX | MIN       | MAX |      |
| f <sub>clock</sub> | Clock frequency                     | 2 V             | 5                     |     | 3.3       |     | 4         |     | MHz  |
|                    |                                     | 4.5 V           | 25                    |     | 17        |     | 20        |     |      |
|                    |                                     | 6 V             | 29                    |     | 20        |     | 24        |     |      |
| t <sub>w</sub>     | SRCLK or RCLK high or low           | 2 V             | 100                   |     | 150       |     | 125       |     | ns   |
|                    |                                     | 4.5 V           | 20                    |     | 30        |     | 25        |     |      |
|                    |                                     | 6 V             | 17                    |     | 25        |     | 21        |     |      |
|                    | SRCLR or RCLR low                   | 2 V             | 100                   |     | 150       |     | 125       |     |      |
|                    |                                     | 4.5 V           | 20                    |     | 30        |     | 25        |     |      |
|                    |                                     | 6 V             | 17                    |     | 25        |     | 21        |     |      |
| t <sub>su</sub>    | SER before SRCLK↑                   | 2 V             | 90                    |     | 135       |     | 110       |     | ns   |
|                    |                                     | 4.5 V           | 18                    |     | 27        |     | 22        |     |      |
|                    |                                     | 6 V             | 15                    |     | 23        |     | 19        |     |      |
|                    | SRCLK↑ before RCLK↑†                | 2 V             | 90                    |     | 135       |     | 110       |     |      |
|                    |                                     | 4.5 V           | 18                    |     | 27        |     | 22        |     |      |
|                    |                                     | 6 V             | 15                    |     | 23        |     | 19        |     |      |
|                    | SRCLR low before RCLK↑              | 2 V             | 50                    |     | 75        |     | 63        |     |      |
|                    |                                     | 4.5 V           | 10                    |     | 15        |     | 13        |     |      |
|                    |                                     | 6 V             | 9                     |     | 13        |     | 11        |     |      |
|                    | SRCLR high (inactive) before SRCLK↑ | 2 V             | 20                    |     | 20        |     | 20        |     |      |
|                    |                                     | 4.5 V           | 10                    |     | 10        |     | 10        |     |      |
|                    |                                     | 6 V             | 10                    |     | 10        |     | 10        |     |      |
|                    | RCLR high (inactive) before SRCLK↑  | 2 V             | 5                     |     | 5         |     | 5         |     |      |
|                    |                                     | 4.5 V           | 5                     |     | 5         |     | 5         |     |      |
|                    |                                     | 6 V             | 5                     |     | 5         |     | 5         |     |      |
| t <sub>h</sub>     | Hold time, SER after SRCLK↑         | 2 V             | 5                     |     | 5         |     | 5         |     | ns   |
|                    |                                     | 4.5 V           | 5                     |     | 5         |     | 5         |     |      |
|                    |                                     | 6 V             | 5                     |     | 5         |     | 5         |     |      |

† This setup time ensures that the output register receives stable data from the shift-register outputs. The clocks may be tied together, in which case the output register is one clock pulse behind the shift register.

# SN54HC594, SN74HC594 8-BIT SHIFT REGISTERS WITH OUTPUT REGISTERS

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switching characteristics over recommended operating free-air temperature range,  $C_L = 50$  pF (unless otherwise noted) (see Figure 1)

| PARAMETER | FROM (INPUT)              | TO (OUTPUT) | $V_{CC}$ | $T_A = 25^\circ\text{C}$ |     |     | SN54HC594 |     | SN74HC594 |     | UNIT |
|-----------|---------------------------|-------------|----------|--------------------------|-----|-----|-----------|-----|-----------|-----|------|
|           |                           |             |          | MIN                      | TYP | MAX | MIN       | MAX | MIN       | MAX |      |
| $f_{max}$ |                           |             | 2 V      | 5                        | 8   |     | 3.3       |     | 4         | MHz |      |
|           |                           |             | 4.5 V    | 25                       | 35  |     | 17        |     | 20        |     |      |
|           |                           |             | 6 V      | 29                       | 40  |     | 20        |     | 24        |     |      |
| $t_{pd}$  | SRCLK                     | $Q_H'$      | 2 V      |                          | 50  | 150 |           | 225 |           | 185 | ns   |
|           |                           |             | 4.5 V    |                          | 20  | 30  |           | 45  |           | 37  |      |
|           |                           |             | 6 V      |                          | 15  | 25  |           | 38  |           | 31  |      |
|           | RCLK                      | $Q_A-Q_H$   | 2 V      |                          | 50  | 150 |           | 225 |           | 185 |      |
|           |                           |             | 4.5 V    |                          | 20  | 30  |           | 45  |           | 37  |      |
|           |                           |             | 6 V      |                          | 15  | 25  |           | 38  |           | 31  |      |
| $t_{PHL}$ | $\overline{\text{SRCLK}}$ | $Q_H'$      | 2 V      |                          | 50  | 150 |           | 225 |           | 185 | ns   |
|           |                           |             | 4.5 V    |                          | 20  | 30  |           | 45  |           | 37  |      |
|           |                           |             | 6 V      |                          | 15  | 25  |           | 38  |           | 31  |      |
|           | $\overline{\text{RCLK}}$  | $Q_A-Q_H$   | 2 V      |                          | 50  | 125 |           | 185 |           | 155 |      |
|           |                           |             | 4.5 V    |                          | 20  | 25  |           | 37  |           | 31  |      |
|           |                           |             | 6 V      |                          | 15  | 21  |           | 31  |           | 26  |      |
| $t_t$     |                           | $Q_H'$      | 2 V      |                          | 38  | 75  |           | 110 |           | 95  | ns   |
|           |                           |             | 4.5 V    |                          | 8   | 15  |           | 22  |           | 19  |      |
|           |                           |             | 6 V      |                          | 6   | 13  |           | 19  |           | 16  |      |
|           |                           | $Q_A-Q_H$   | 2 V      |                          | 38  | 60  |           | 90  |           | 75  |      |
|           |                           |             | 4.5 V    |                          | 8   | 12  |           | 18  |           | 15  |      |
|           |                           |             | 6 V      |                          | 6   | 10  |           | 15  |           | 13  |      |

switching characteristics over recommended operating free-air temperature range,  $C_L = 150$  pF (unless otherwise noted) (see Figure 1)

| PARAMETER | FROM (INPUT)             | TO (OUTPUT) | $V_{CC}$ | $T_A = 25^\circ\text{C}$ |     |     | SN54HC594 |     | SN74HC594 |     | UNIT |
|-----------|--------------------------|-------------|----------|--------------------------|-----|-----|-----------|-----|-----------|-----|------|
|           |                          |             |          | MIN                      | TYP | MAX | MIN       | MAX | MIN       | MAX |      |
| $t_{pd}$  | RCLK                     | $Q_A-Q_H$   | 2 V      |                          | 90  | 200 |           | 300 |           | 250 | ns   |
|           |                          |             | 4.5 V    |                          | 23  | 40  |           | 60  |           | 50  |      |
|           |                          |             | 6 V      |                          | 19  | 34  |           | 51  |           | 43  |      |
| $t_{PHL}$ | $\overline{\text{RCLK}}$ | $Q_A-Q_H$   | 2 V      |                          | 90  | 200 |           | 300 |           | 250 | ns   |
|           |                          |             | 4.5 V    |                          | 23  | 40  |           | 60  |           | 50  |      |
|           |                          |             | 6 V      |                          | 19  | 34  |           | 51  |           | 43  |      |
| $t_t$     |                          | $Q_A-Q_H$   | 2 V      |                          | 45  | 210 |           | 315 |           | 265 | ns   |
|           |                          |             | 4.5 V    |                          | 17  | 42  |           | 63  |           | 53  |      |
|           |                          |             | 6 V      |                          | 13  | 36  |           | 53  |           | 45  |      |

operating characteristics,  $T_A = 25^\circ\text{C}$

| PARAMETER                              | TEST CONDITIONS | TYP | UNIT |
|--|-----------------|-----|------|
| $C_{pd}$ Power dissipation capacitance | No load         | 395 | pF   |

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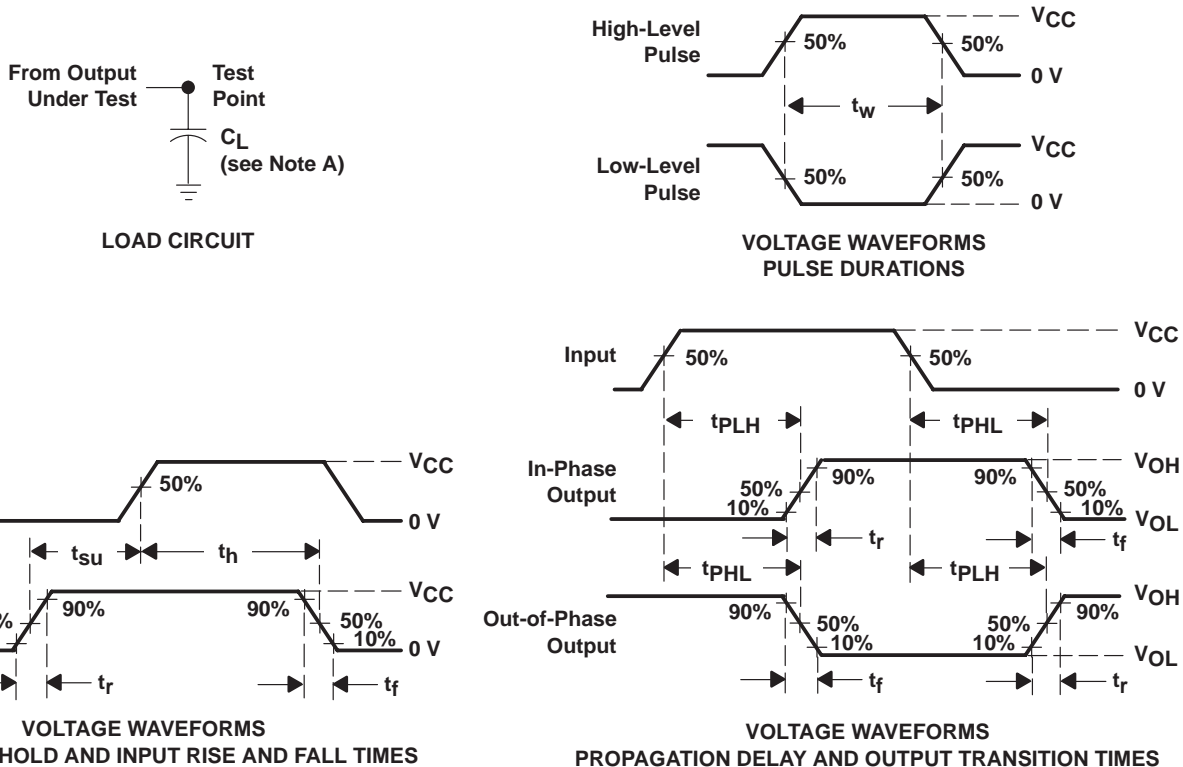


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# SN54HC594, SN74HC594 8-BIT SHIFT REGISTERS WITH OUTPUT REGISTERS

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## PARAMETER MEASUREMENT INFORMATION



- NOTES:
- A.  $C_L$  includes probe and test-fixture capacitance.
  - B. Phase relationships between waveforms were chosen arbitrarily. All input pulses are supplied by generators having the following characteristics:  $PRR \leq 1$  MHz,  $Z_O = 50 \Omega$ ,  $t_r = 6$  ns,  $t_f = 6$  ns.
  - C. For clock inputs,  $f_{max}$  is measured when the input duty cycle is 50%.
  - D. The outputs are measured one at a time with one input transition per measurement.
  - E.  $t_{PLH}$  and  $t_{PHL}$  are the same as  $t_{pd}$ .
  - F.  $t_f$  and  $t_r$  are the same as  $t_t$ .

Figure 1. Load Circuit and Voltage Waveforms

PACKAGING INFORMATION

| Orderable Device | Status <sup>(1)</sup> | Package Type | Package Drawing | Pins | Package Qty | Eco Plan <sup>(2)</sup> | Lead/Ball Finish | MSL Peak Temp <sup>(3)</sup> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| SN74HC594D       | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC594DE4     | ACTIVE                | SOIC         | D               | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC594DR      | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC594DRE4    | ACTIVE                | SOIC         | D               | 16   | 2500        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC594DT      | ACTIVE                | SOIC         | D               | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC594DTE4    | ACTIVE                | SOIC         | D               | 16   | 250         | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC594DW      | ACTIVE                | SOIC         | DW              | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC594DWE4    | ACTIVE                | SOIC         | DW              | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC594DWR     | ACTIVE                | SOIC         | DW              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC594DWRE4   | ACTIVE                | SOIC         | DW              | 16   | 2000        | Green (RoHS & no Sb/Br) | CU NIPDAU        | Level-1-260C-UNLIM           |
| SN74HC594N       | ACTIVE                | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |
| SN74HC594NE4     | ACTIVE                | PDIP         | N               | 16   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | N / A for Pkg Type           |

<sup>(1)</sup> The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSOLETE:** TI has discontinued the production of the device.

<sup>(2)</sup> Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

<sup>(3)</sup> MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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N (R-PDIP-T\*\*)

PLASTIC DUAL-IN-LINE PACKAGE

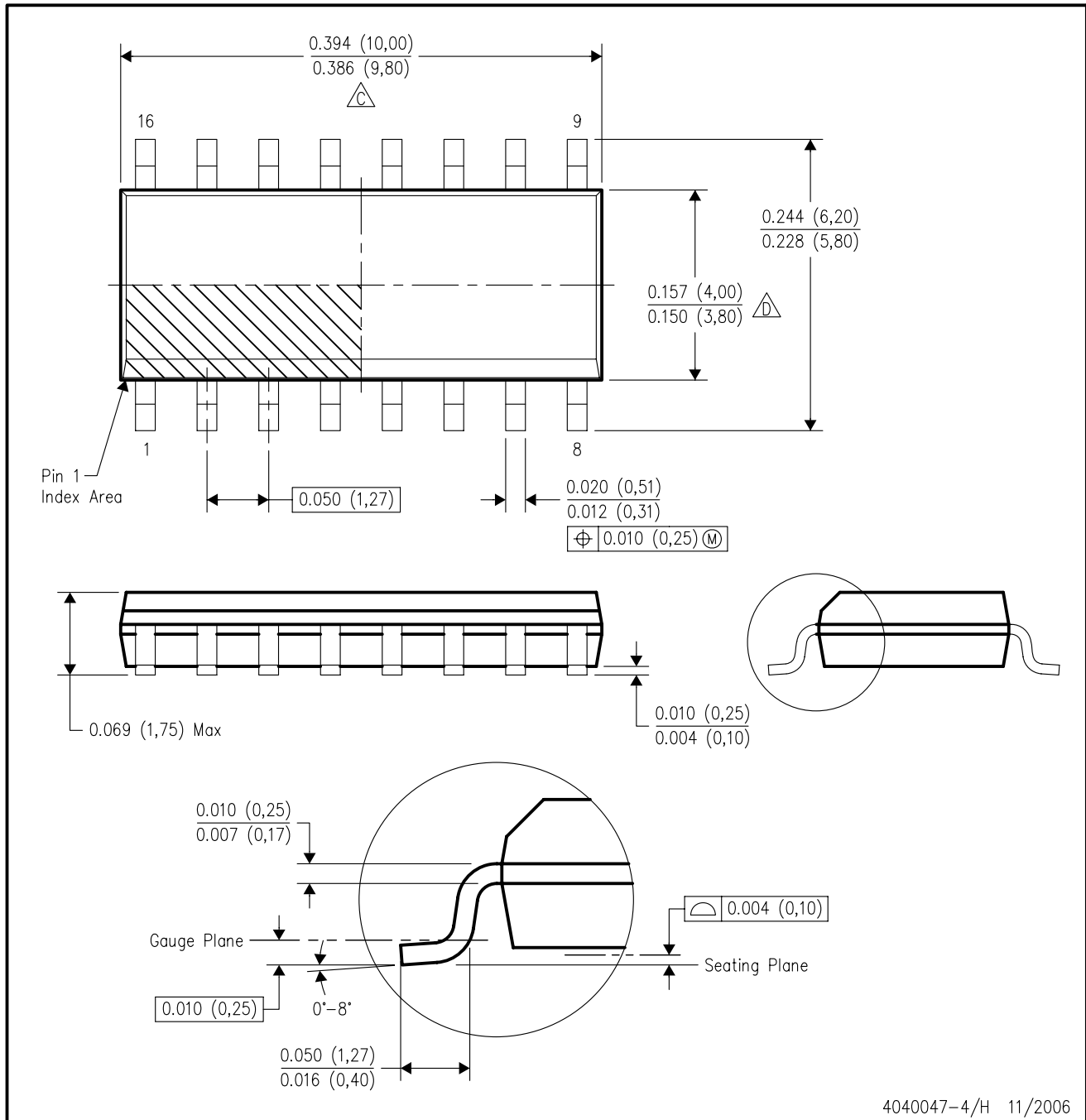
16 PINS SHOWN



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
  - The 20 pin end lead shoulder width is a vendor option, either half or full width.

D (R-PDSO-G16)

PLASTIC SMALL-OUTLINE PACKAGE

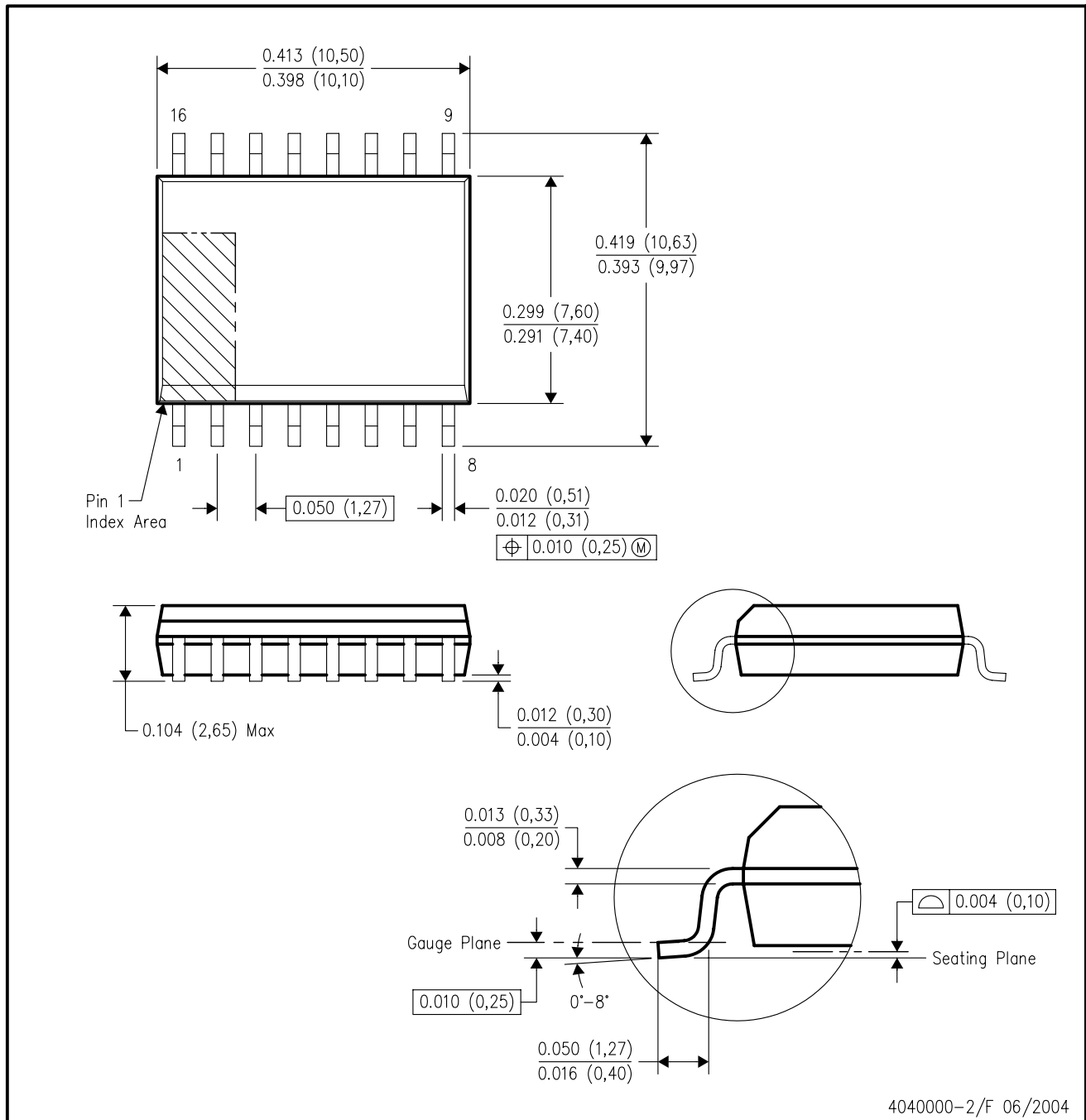


4040047-4/H 11/2006

- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed .006 (0,15) per end.
  - D. Body width does not include interlead flash. Interlead flash shall not exceed .017 (0,43) per side.
  - E. Reference JEDEC MS-012 variation AC.

DW (R-PDSO-G16)

PLASTIC SMALL-OUTLINE PACKAGE



4040000-2/F 06/2004

- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
  - D. Falls within JEDEC MS-013 variation AA.

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