

# SN54LS673, SN54LS674, SN74LS673, SN74LS674 16-BIT SHIFT REGISTERS

SDLS195 – MARCH 1985 – REVISED MARCH 1988

## 'LS673

- 16-Bit Serial-In, Serial-Out Shift Register with 16-Bit Parallel-Out Storage Register
- Performs Serial-to-Parallel Conversion

## 'LS674

- 16-Bit Parallel-In, Serial-Out Shift Register
- Performs Parallel-to-Serial Conversion

## description

### SN54LS673, SN74LS673

The 'LS673 is a 16-bit shift register and a 16-bit storage register in a single 24-pin package. A three-state input/output (SER/Q15) port to the shift register allows serial entry and/or reading of data. The storage register is connected in a parallel data loop with the shift register and may be asynchronously cleared by taking the store-clear input low. The storage register may be parallel loaded with shift-register data to provide shift-register status via the parallel outputs. The shift register can be parallel loaded with the storage-register data upon command.

A high logic level at the chip-level ( $\overline{CS}$ ) input disables both the shift-register clock and the storage register clock and places SER/Q15 in the high-impedance state. The store-clear function is not disabled by the chip select.

Caution must be exercised to prevent false clocking of either the shift register or the storage register via the chip-select input. The shift clock should be low during the low-to-high transition of chip select and the store clock should be low during the high-to-low transition of chip select.

### SN54LS674, SN74LS674

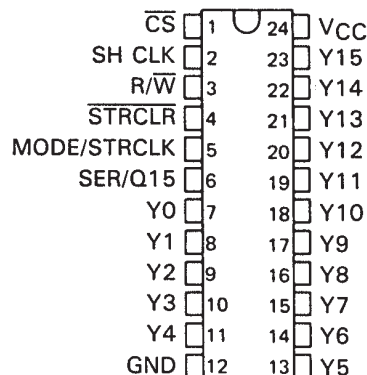
The 'LS674 is a 16-bit parallel-in, serial-out shift register. A three-state input/output (SER/Q15) port provides access for entering a serial data or reading the shift-register word in a recirculating loop.

The device has four basic modes of operation:

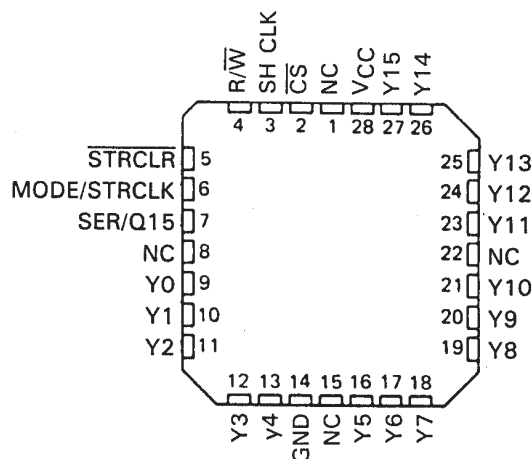
- 1) Hold (do nothing)
- 2) Write (serially via input/output)
- 3) Read (serially)
- 4) Load (parallel via data inputs)

Low-to-high-level changes at the chip select input should be made only when the clock input is low to prevent false clocking.

### SN54LS673 . . . J OR W PACKAGE SN74LS673 . . . DW OR N PACKAGE (TOP VIEW)



### SN54LS673 . . . FK PACKAGE (TOP VIEW)

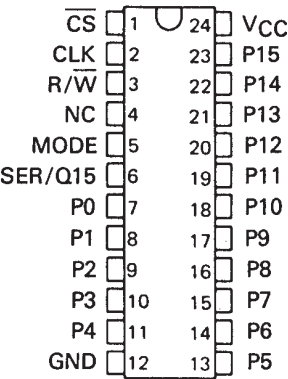


NC—No internal connection

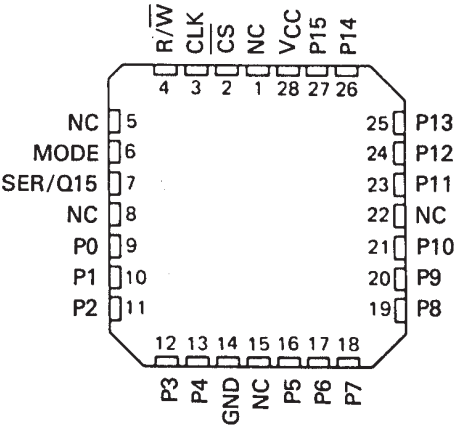
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SN54LS674 . . . J OR W PACKAGE  
SN74LS674 . . . DW OR N PACKAGE  
(TOP VIEW)



SN54LS674 . . . FK PACKAGE  
(TOP VIEW)



'LS673  
FUNCTION TABLE

| INPUTS |     |        |        |                 | SER/<br>Q15 | SHIFT REGISTER FUNCTIONS |                            |                            |                  | STORAGE<br>REGISTER<br>FUNCTIONS |      |
|--------|-----|--------|--------|-----------------|-------------|--------------------------|----------------------------|----------------------------|------------------|----------------------------------|------|
| CS     | R/W | SH CLK | STRCLR | MODE/<br>STRCLK |             | SHIFT                    | READ FROM<br>SERIAL OUTPUT | WRITE INTO<br>SERIAL INPUT | PARALLEL<br>LOAD | CLEAR                            | LOAD |
| H      | X   | X      | X      | X               | Z           | NO                       | NO                         | NO                         | NO               |                                  | NO   |
| X      | X   | X      | L      | X               |             |                          |                            |                            |                  | YES                              |      |
| L      | L   | ↓      | X      | X               | Z           | YES                      | NO                         | YES                        | NO               |                                  |      |
| L      | H   | X      | X      | X               | Q15         |                          | YES                        | NO                         |                  |                                  | NO   |
| L      | H   | ↓      | X      | L               | Q14n        | YES                      | YES                        | NO                         | NO               |                                  | NO   |
| L      | H   | ↓      | L      | H               | L           | NO                       | YES                        |                            | YES              | YES                              | NO   |
| L      | H   | ↓      | H      | H               | Y15n        | NO                       | YES                        |                            | YES              | NO                               | NO   |
| L      | L   | X      | H      | ↑               | Z           |                          | NO                         |                            | NO               | NO                               | YES  |

'LS674 FUNCTION TABLE

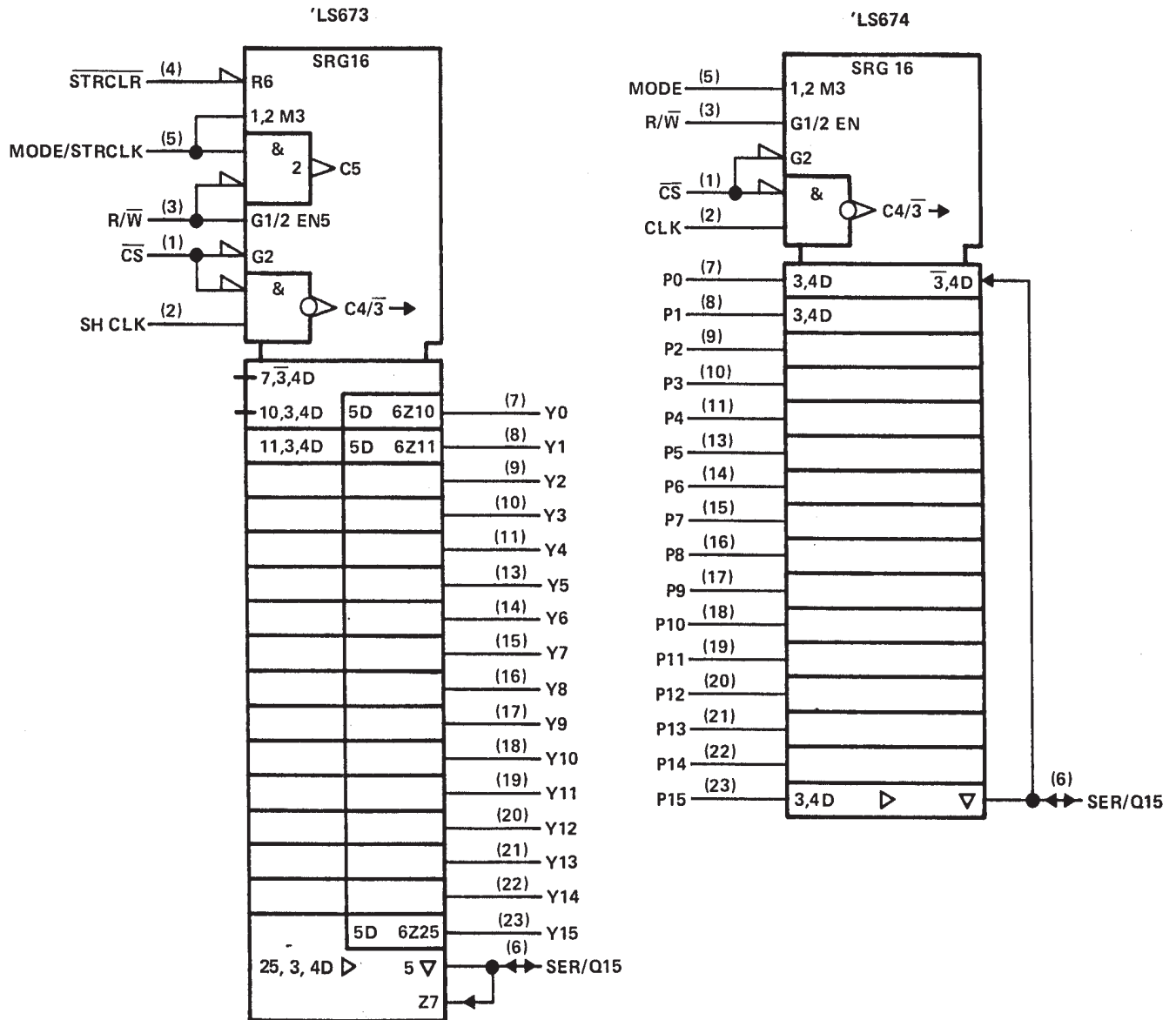
| INPUTS |     |      |     | SER/<br>Q15 | OPERATION                     |
|--------|-----|------|-----|-------------|-------------------------------|
| CS     | R/W | MODE | CLK |             |                               |
| H      | X   | X    | X   | Z           | Do nothing                    |
| L      | L   | X    | ↓   | Z           | Shift and write (serial load) |
| L      | H   | L    | ↓   | Q14n        | Shift and read                |
| L      | H   | H    | ↓   | P15         | Parallel load                 |

H = high level (steady state)  
L = low level (steady state)  
↑ = transition from low to high level  
↓ = transition from high to low level  
X = irrelevant (any input including transitions)  
Z = high impedance, input mode  
Q14n = content of 14th bit of the shift register before the most recent ↓ transition of the clock.  
Q15 = present content of 15th bit of the shift register  
Y15n = content of the 15th bit of the storage register before the most recent ↓ transition of the clock.  
P15 = level of input P15

# SN54LS673, SN54LS674, SN74LS673, SN74LS674 16-BIT SHIFT REGISTERS

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logic symbols†



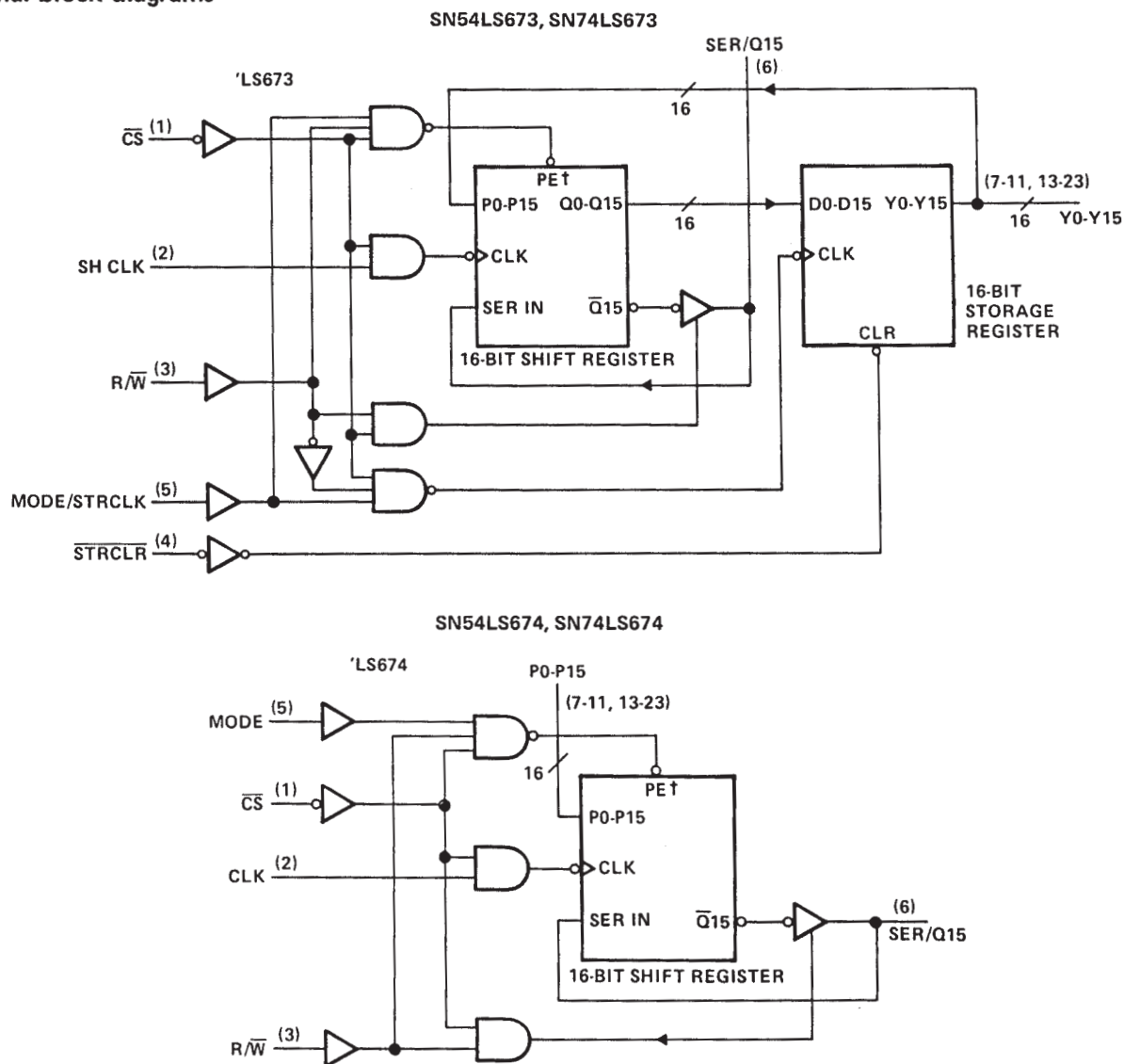
†These symbols are in accordance with ANSI/IEEE Std. 91-1984 and IEC Publication 617-12.  
Pin numbers shown are for DW, J, N, and W packages.

# SN54LS673, SN54LS674, SN74LS673, SN74LS674

## 16-BIT SHIFT REGISTERS

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### functional block diagrams



†When PE is active, data is synchronously parallel loaded into the shift registers from the 16 P inputs and no shifting takes place.  
Pin numbers shown are for DW, J, N, and W packages.

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| EQUIVALENT OF SER/Q15<br>AND PARALLEL INPUTS                                                                                                                                                                                                 | EQUIVALENT OF<br>OTHER INPUTS                                                     | SER/Q15 OUTPUT                                                                     | TYPICAL OF Y0 THRU Y15<br>OUTPUTS ('LS673 ONLY)                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  <p>SER/Q15: <math>R_{eq} = 20\text{ k}\Omega\text{ NOM}</math><br/>           PARALLEL INPUTS:<br/> <math>R_{eq} = 30\text{ k}\Omega\text{ NOM}</math></p> |  |  |  |

|                                                            |                |
|------------------------------------------------------------|----------------|
| Supply voltage, V <sub>CC</sub> (see Note 1)               | 7 V            |
| Input voltage: SER/Q15                                     | 5.5 V          |
| All others                                                 | 7 V            |
| Off-state output voltage                                   | 5.5 V          |
| Operating free-air temperature range: SN54LS673, SN54LS674 | −55°C to 125°C |
| SN74LS673, SN74LS674                                       | 0°C to 70°C    |
| Storage temperature range                                  | −65°C to 150°C |

### recommended operating conditions

|                       |                                |                                          | SN54LS' |     |     | SN74LS' |     |      | UNIT |
|-----------------------|--------------------------------|------------------------------------------|---------|-----|-----|---------|-----|------|------|
|                       |                                |                                          | MIN     | NOM | MAX | MIN     | NOM | MAX  |      |
| V <sub>CC</sub>       | Supply voltage                 |                                          | 4.5     | 5   | 5.5 | 4.75    | 5   | 5.25 | V    |
| I <sub>OH</sub>       | High-level output current      | SER/Q15                                  | -1      |     |     | -2.6    |     |      | mA   |
|                       |                                | Y0 thru Y15                              | -0.4    |     |     | -0.4    |     |      |      |
| I <sub>OL</sub>       | Low-level output current       | SER/Q15                                  | 12      |     |     | 24      |     |      | mA   |
|                       |                                | Y0 thru Y15                              | 4       |     |     | 8       |     |      |      |
| f <sub>clock</sub>    | Clock frequency                |                                          | 0       |     | 20  | 0       |     | 20   | MHz  |
| t <sub>w(clock)</sub> | Width of clock input pulse     |                                          | 20      |     |     | 20      |     |      | ns   |
| t <sub>w(clear)</sub> | Width of clear input pulse     |                                          | 20      |     |     | 20      |     |      | ns   |
| t <sub>su</sub>       | Setup time                     | SER/Q15                                  |         | 20  |     | 20      |     | ns   |      |
|                       |                                | P0 thru P15                              |         | 20  |     | 20      |     |      |      |
|                       |                                | Mode                                     |         | 35  |     | 35      |     |      |      |
|                       |                                | R/ $\overline{W}$ , $\overline{CS}$      |         | 35  |     | 35      |     |      |      |
|                       |                                | SH CLK ↓ to Mode/STR CLK ↑<br>See Note 2 |         | 25  |     | 25      |     |      |      |
| t <sub>h</sub>        | Hold time                      | SER/Q15                                  |         | 0   |     | 0       |     | ns   |      |
|                       |                                | P0 thru P15                              | 'LS673  | 0   |     | 0       |     |      |      |
|                       |                                |                                          | 'LS674  | 5.0 |     | 5.0     |     |      |      |
|                       |                                | Mode                                     |         | 0   |     | 0       |     |      |      |
| T <sub>A</sub>        | Operating free-air temperature |                                          | -55     |     | 125 | 0       |     | 70   | °C   |

**NOTE 2:** This setup time ensures the storage register will see stable data from the shift register.

# SN54LS673, SN54LS674, SN74LS673, SN74LS674

## 16-BIT SHIFT REGISTERS

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

| PARAMETER        |                                                      | TEST CONDITIONS†                               | SN54LS'                                                                                                     |                         |       | SN74LS' |       |      | UNIT |
|------------------|------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------|-------|---------|-------|------|------|
|                  |                                                      |                                                | MIN                                                                                                         | TYP‡                    | MAX   | MIN     | TYP‡  | MAX  |      |
| V <sub>IH</sub>  | High-level input voltage                             |                                                | 2                                                                                                           |                         |       | 2       |       |      | V    |
| V <sub>IL</sub>  | Low-level input voltage                              |                                                |                                                                                                             |                         | 0.7   |         |       | 0.8  | V    |
| V <sub>IK</sub>  | Input clamp voltage                                  | V <sub>CC</sub> = MIN, I <sub>I</sub> = -18 mA |                                                                                                             |                         | -1.5  |         |       | -1.5 | V    |
| V <sub>OH</sub>  | High-level output voltage                            | SER/Q15                                        | V <sub>CC</sub> = MIN, V <sub>IH</sub> = 2 V,                                                               | 2.4                     | 3.2   | 2.4     | 3.1   |      | V    |
|                  |                                                      | Y0 thru Y15¶                                   | V <sub>IL</sub> = V <sub>ILmax</sub> , I <sub>OH</sub> = MAX                                                | 2.5                     | 3.4   | 2.7     | 3.4   |      |      |
| V <sub>OL</sub>  | Low-level output voltage                             | SER/Q15                                        | V <sub>CC</sub> = MIN, V <sub>IH</sub> = 2 V,                                                               | I <sub>OL</sub> = 12 mA | 0.25  | 0.4     | 0.25  | 0.4  | V    |
|                  |                                                      |                                                |                                                                                                             | I <sub>OL</sub> = 24 mA |       |         | 0.35  | 0.5  |      |
|                  |                                                      | Y0 thru Y15¶                                   | V <sub>IL</sub> = V <sub>ILmax</sub>                                                                        | I <sub>OL</sub> = 4 mA  | 0.25  | 0.4     | 0.25  | 0.4  |      |
|                  |                                                      |                                                |                                                                                                             | I <sub>OL</sub> = 8 mA  |       |         | 0.35  | 0.5  |      |
| I <sub>OZH</sub> | Off-state output current, high-level voltage applied | SER/Q15                                        | V <sub>CC</sub> = MAX, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = V <sub>ILmax</sub> , V <sub>O</sub> = 2.7 V |                         | 40    |         | 40    | μA   |      |
| I <sub>OZL</sub> | Off-state output current, low-level voltage applied  | SER/Q15                                        | V <sub>CC</sub> = MAX, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = V <sub>ILmax</sub> , V <sub>O</sub> = 0.4 V |                         | - 0.4 |         | - 0.4 | mA   |      |
| I <sub>I</sub>   | Input current at maximum input voltage               | SER/Q15                                        | V <sub>CC</sub> = MAX                                                                                       | V <sub>I</sub> = 5.5 V  | 0.1   |         | 0.1   | mA   |      |
|                  |                                                      | Others                                         |                                                                                                             | V <sub>I</sub> = 7 V    | 0.1   |         | 0.1   |      |      |
| I <sub>IH</sub>  | High-level input current                             | SER/Q15                                        | V <sub>CC</sub> = MAX, V <sub>I</sub> = 2.7 V                                                               |                         | 40    |         | 40    | μA   |      |
|                  |                                                      | Others                                         |                                                                                                             |                         | 20    |         | 20    |      |      |
| I <sub>IL</sub>  | Low-level input current                              |                                                | V <sub>CC</sub> = MAX, V <sub>I</sub> = 0.4 V                                                               |                         | -0.4  |         | -0.4  | mA   |      |
| I <sub>OS</sub>  | Short-circuit output current§                        | SER/Q15                                        | V <sub>CC</sub> = MAX                                                                                       |                         | -30   | -130    | -30   | -130 | mA   |
|                  |                                                      | Y0 thru Y15¶                                   |                                                                                                             |                         | -20   | -100    | -20   | -100 |      |
| I <sub>CC</sub>  | Supply current                                       | 'LS673                                         | V <sub>CC</sub> = MAX                                                                                       |                         | 50    | 80      | 52    | 80   | mA   |
|                  |                                                      | 'LS674                                         |                                                                                                             |                         | 25    | 40      | 25    | 40   |      |

† For conditions shown as MIN or MAX use the appropriate value specified under recommended operating conditions.

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

§ Not more than one output should be shorted at a time, and duration of the short circuit should not exceed one second.

¶ 'LS673 only.

switching characteristics, V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C, see note 2

| PARAMETER        | 'LS673  |             | 'LS674  |         | TEST CONDITIONS                                | MIN | TYP | MAX | UNIT |
|------------------|---------|-------------|---------|---------|------------------------------------------------|-----|-----|-----|------|
|                  | FROM    | TO          | FROM    | TO      |                                                |     |     |     |      |
| f <sub>max</sub> | SH CLK  | SER/Q15     | CLK     | SER/Q15 | R <sub>L</sub> = 667 Ω, C <sub>L</sub> = 45 pF | 20  | 28  |     | MHz  |
| t <sub>PHL</sub> | STRCLR  | Y0 thru Y15 |         |         | R <sub>L</sub> = 2 kΩ, C <sub>L</sub> = 15 pF  |     | 25  | 40  | ns   |
| t <sub>PLH</sub> | MODE/   | Y0 thru Y15 |         |         |                                                |     | 28  | 45  |      |
| t <sub>PHL</sub> | STRCLK  |             |         |         |                                                |     | 30  | 45  |      |
| t <sub>PLH</sub> | SH CLK  | SER/Q15     | CLK     | SER/Q15 | R <sub>L</sub> = 667 Ω, C <sub>L</sub> = 45 pF |     | 21  | 33  | ns   |
| t <sub>PHL</sub> |         |             |         |         |                                                |     | 26  | 40  |      |
| t <sub>PZH</sub> | CS, R/W | SER/Q15     | CS, R/W | SER/Q15 | R <sub>L</sub> = 667 Ω, C <sub>L</sub> = 45 pF |     | 30  | 45  | ns   |
| t <sub>PZL</sub> |         |             |         |         |                                                |     | 30  | 45  |      |
| t <sub>PHZ</sub> | CS, R/W | SER/Q15     | CS, R/W | SER/Q15 | R <sub>L</sub> = 667 Ω, C <sub>L</sub> = 5 pF  |     | 25  | 40  | ns   |
| t <sub>PLZ</sub> |         |             |         |         |                                                |     | 25  | 40  |      |

NOTE 2: Load circuits and voltage waveforms are shown in Section 1.



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**PACKAGING INFORMATION**

| Orderable part number          | Status<br>(1) | Material type<br>(2) | Package   Pins | Package qty   Carrier | RoHS<br>(3) | Lead finish/<br>Ball material<br>(4) | MSL rating/<br>Peak reflow<br>(5) | Op temp (°C) | Part marking<br>(6)                    |
|--------------------------------|---------------|----------------------|----------------|-----------------------|-------------|--------------------------------------|-----------------------------------|--------------|----------------------------------------|
| <a href="#">5962-88602013A</a> | Active        | Production           | LCCC (FK)   28 | 42   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-<br>88602013A<br>SNJ54LS<br>673FK |
| <a href="#">5962-8860201JA</a> | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | 5962-8860201JA<br>SNJ54LS673J          |
| <a href="#">5962-8860201JA</a> | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | 5962-8860201JA<br>SNJ54LS673J          |
| <a href="#">5962-8860201LA</a> | Active        | Production           | CDIP (JT)   24 | 15   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-8860201LA<br>SNJ54LS673JT         |
| <a href="#">5962-8860201LA</a> | Active        | Production           | CDIP (JT)   24 | 15   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-8860201LA<br>SNJ54LS673JT         |
| <a href="#">5962-88607013A</a> | Active        | Production           | LCCC (FK)   28 | 42   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-<br>88607013A<br>SNJ54LS<br>674FK |
| <a href="#">5962-88607013A</a> | Active        | Production           | LCCC (FK)   28 | 42   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-<br>88607013A<br>SNJ54LS<br>674FK |
| <a href="#">5962-8860701JA</a> | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | 5962-8860701JA<br>SNJ54LS674J          |
| <a href="#">5962-8860701JA</a> | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | 5962-8860701JA<br>SNJ54LS674J          |
| <a href="#">SN54LS673J</a>     | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | SN54LS673J                             |
| <a href="#">SN54LS673J</a>     | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | SN54LS673J                             |
| SN54LS673J.A                   | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | SN54LS673J                             |
| SN54LS673J.A                   | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | SN54LS673J                             |
| <a href="#">SN54LS674J</a>     | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | SN54LS674J                             |
| <a href="#">SN54LS674J</a>     | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | SN54LS674J                             |
| SN54LS674J.A                   | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | SN54LS674J                             |
| SN54LS674J.A                   | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | SN54LS674J                             |
| <a href="#">SN74LS673DW</a>    | Active        | Production           | SOIC (DW)   24 | 25   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | 0 to 70      | LS673                                  |

| Orderable part number        | Status<br>(1) | Material type<br>(2) | Package   Pins | Package qty   Carrier | RoHS<br>(3) | Lead finish/<br>Ball material<br>(4) | MSL rating/<br>Peak reflow<br>(5) | Op temp (°C) | Part marking<br>(6)                    |
|------------------------------|---------------|----------------------|----------------|-----------------------|-------------|--------------------------------------|-----------------------------------|--------------|----------------------------------------|
| <a href="#">SN74LS673DW</a>  | Active        | Production           | SOIC (DW)   24 | 25   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | 0 to 70      | LS673                                  |
| SN74LS673DW.A                | Active        | Production           | SOIC (DW)   24 | 25   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | 0 to 70      | LS673                                  |
| SN74LS673DW.A                | Active        | Production           | SOIC (DW)   24 | 25   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | 0 to 70      | LS673                                  |
| <a href="#">SN74LS674DW</a>  | Active        | Production           | SOIC (DW)   24 | 25   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | 0 to 70      | LS674                                  |
| <a href="#">SN74LS674DW</a>  | Active        | Production           | SOIC (DW)   24 | 25   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | 0 to 70      | LS674                                  |
| SN74LS674DW.A                | Active        | Production           | SOIC (DW)   24 | 25   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | 0 to 70      | LS674                                  |
| SN74LS674DW.A                | Active        | Production           | SOIC (DW)   24 | 25   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | 0 to 70      | LS674                                  |
| <a href="#">SNJ54LS673FK</a> | Active        | Production           | LCCC (FK)   28 | 42   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-<br>88602013A<br>SNJ54LS<br>673FK |
| <a href="#">SNJ54LS673FK</a> | Active        | Production           | LCCC (FK)   28 | 42   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-<br>88602013A<br>SNJ54LS<br>673FK |
| SNJ54LS673FK.A               | Active        | Production           | LCCC (FK)   28 | 42   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-<br>88602013A<br>SNJ54LS<br>673FK |
| SNJ54LS673FK.A               | Active        | Production           | LCCC (FK)   28 | 42   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-<br>88602013A<br>SNJ54LS<br>673FK |
| <a href="#">SNJ54LS673J</a>  | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | 5962-8860201JA<br>SNJ54LS673J          |
| <a href="#">SNJ54LS673J</a>  | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | 5962-8860201JA<br>SNJ54LS673J          |
| SNJ54LS673J.A                | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | 5962-8860201JA<br>SNJ54LS673J          |
| SNJ54LS673J.A                | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | 5962-8860201JA<br>SNJ54LS673J          |
| <a href="#">SNJ54LS673JT</a> | Active        | Production           | CDIP (JT)   24 | 15   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-8860201LA<br>SNJ54LS673JT         |
| <a href="#">SNJ54LS673JT</a> | Active        | Production           | CDIP (JT)   24 | 15   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-8860201LA<br>SNJ54LS673JT         |

| Orderable part number        | Status<br>(1) | Material type<br>(2) | Package   Pins | Package qty   Carrier | RoHS<br>(3) | Lead finish/<br>Ball material<br>(4) | MSL rating/<br>Peak reflow<br>(5) | Op temp (°C) | Part marking<br>(6)                    |
|------------------------------|---------------|----------------------|----------------|-----------------------|-------------|--------------------------------------|-----------------------------------|--------------|----------------------------------------|
| SNJ54LS673JT.A               | Active        | Production           | CDIP (JT)   24 | 15   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-8860201LA<br>SNJ54LS673JT         |
| SNJ54LS673JT.A               | Active        | Production           | CDIP (JT)   24 | 15   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-8860201LA<br>SNJ54LS673JT         |
| <a href="#">SNJ54LS674FK</a> | Active        | Production           | LCCC (FK)   28 | 42   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-<br>88607013A<br>SNJ54LS<br>674FK |
| <a href="#">SNJ54LS674FK</a> | Active        | Production           | LCCC (FK)   28 | 42   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-<br>88607013A<br>SNJ54LS<br>674FK |
| SNJ54LS674FK.A               | Active        | Production           | LCCC (FK)   28 | 42   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-<br>88607013A<br>SNJ54LS<br>674FK |
| SNJ54LS674FK.A               | Active        | Production           | LCCC (FK)   28 | 42   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-<br>88607013A<br>SNJ54LS<br>674FK |
| <a href="#">SNJ54LS674J</a>  | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | 5962-8860701JA<br>SNJ54LS674J          |
| <a href="#">SNJ54LS674J</a>  | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | 5962-8860701JA<br>SNJ54LS674J          |
| SNJ54LS674J.A                | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | 5962-8860701JA<br>SNJ54LS674J          |
| SNJ54LS674J.A                | Active        | Production           | CDIP (J)   24  | 15   TUBE             | No          | Call TI                              | N/A for Pkg Type                  | -55 to 125   | 5962-8860701JA<br>SNJ54LS674J          |

<sup>(1)</sup> **Status:** For more details on status, see our [product life cycle](#).

<sup>(2)</sup> **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

<sup>(3)</sup> **RoHS values:** Yes, No, RoHS Exempt. See the [TI RoHS Statement](#) for additional information and value definition.

**(4) Lead finish/Ball material:** Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

**(5) MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

**(6) Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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**OTHER QUALIFIED VERSIONS OF SN54LS673, SN54LS674, SN74LS673, SN74LS674 :**

- Catalog : [SN74LS673](#), [SN74LS674](#)
- Military : [SN54LS673](#), [SN54LS674](#)

NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product
- Military - QML certified for Military and Defense Applications

## TUBE

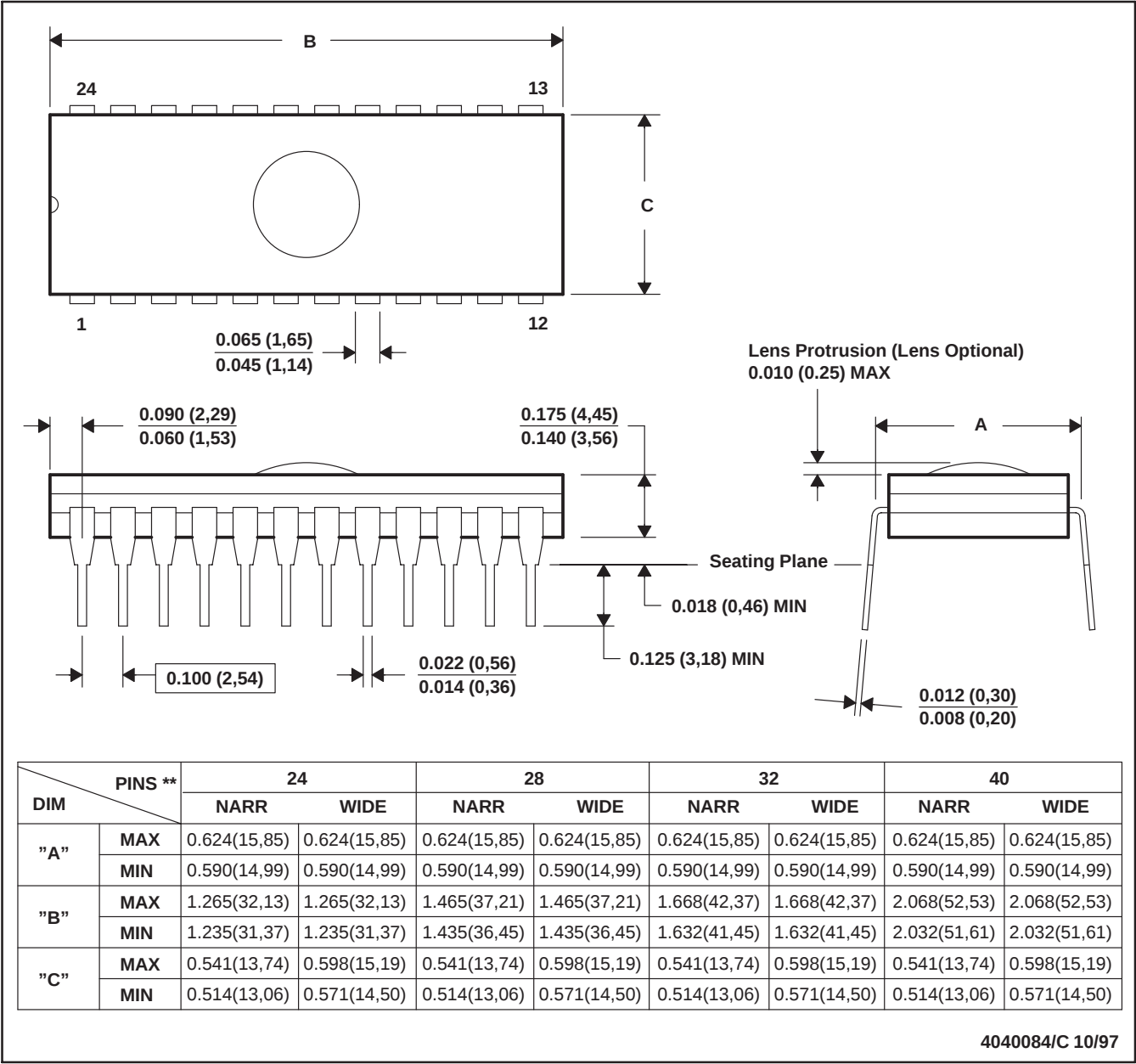


\*All dimensions are nominal

| Device        | Package Name | Package Type | Pins | SPQ | L (mm) | W (mm) | T (μm) | B (mm) |
|---------------|--------------|--------------|------|-----|--------|--------|--------|--------|
| SN74LS673DW   | DW           | SOIC         | 24   | 25  | 506.98 | 12.7   | 4826   | 6.6    |
| SN74LS673DW.A | DW           | SOIC         | 24   | 25  | 506.98 | 12.7   | 4826   | 6.6    |
| SN74LS674DW   | DW           | SOIC         | 24   | 25  | 506.98 | 12.7   | 4826   | 6.6    |
| SN74LS674DW.A | DW           | SOIC         | 24   | 25  | 506.98 | 12.7   | 4826   | 6.6    |

J (R-GDIP-T\*\*)
24 PINS SHOWN

CERAMIC DUAL-IN-LINE PACKAGE

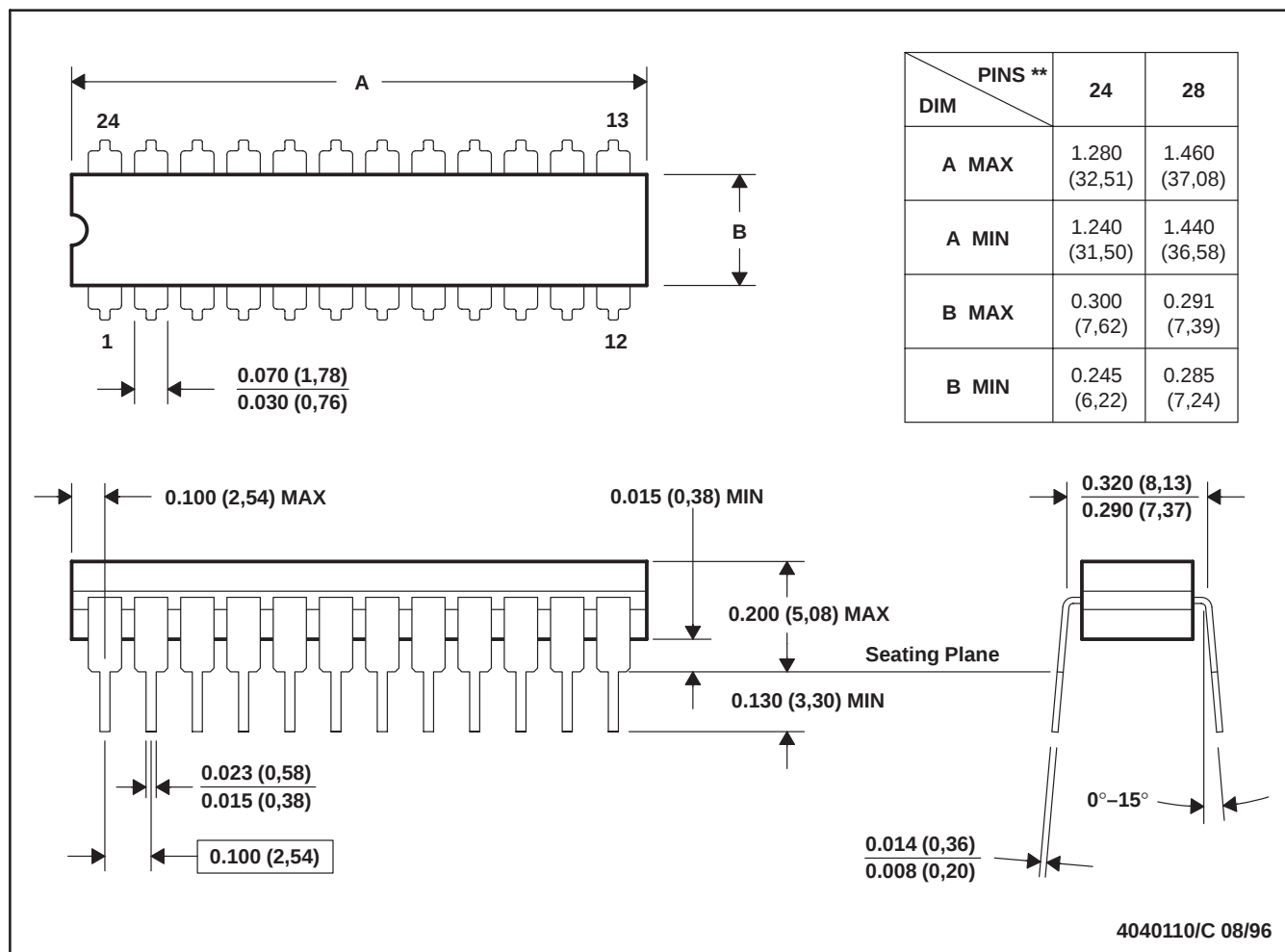


- NOTES: A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. Window (lens) added to this group of packages (24-, 28-, 32-, 40-pin).
- D. This package can be hermetically sealed with a ceramic lid using glass frit.
- E. Index point is provided on cap for terminal identification.

## JT (R-GDIP-T\*\*)

## CERAMIC DUAL-IN-LINE

24 LEADS SHOWN



- NOTES: A. All linear dimensions are in inches (millimeters).  
 B. This drawing is subject to change without notice.  
 C. This package can be hermetically sealed with a ceramic lid using glass frit.  
 D. Index point is provided on cap for terminal identification.  
 E. Falls within MIL STD 1835 GDIP3-T24, GDIP4-T28, and JEDEC MO-058 AA, MO-058 AB

FK (S-CQCC-N\*\*)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



| NO. OF<br>TERMINALS<br>** | A                |                  | B                |                  |
|---------------------------|------------------|------------------|------------------|------------------|
|                           | MIN              | MAX              | MIN              | MAX              |
| 20                        | 0.342<br>(8,69)  | 0.358<br>(9,09)  | 0.307<br>(7,80)  | 0.358<br>(9,09)  |
| 28                        | 0.442<br>(11,23) | 0.458<br>(11,63) | 0.406<br>(10,31) | 0.458<br>(11,63) |
| 44                        | 0.640<br>(16,26) | 0.660<br>(16,76) | 0.495<br>(12,58) | 0.560<br>(14,22) |
| 52                        | 0.740<br>(18,78) | 0.761<br>(19,32) | 0.495<br>(12,58) | 0.560<br>(14,22) |
| 68                        | 0.938<br>(23,83) | 0.962<br>(24,43) | 0.850<br>(21,6)  | 0.858<br>(21,8)  |
| 84                        | 1.141<br>(28,99) | 1.165<br>(29,59) | 1.047<br>(26,6)  | 1.063<br>(27,0)  |

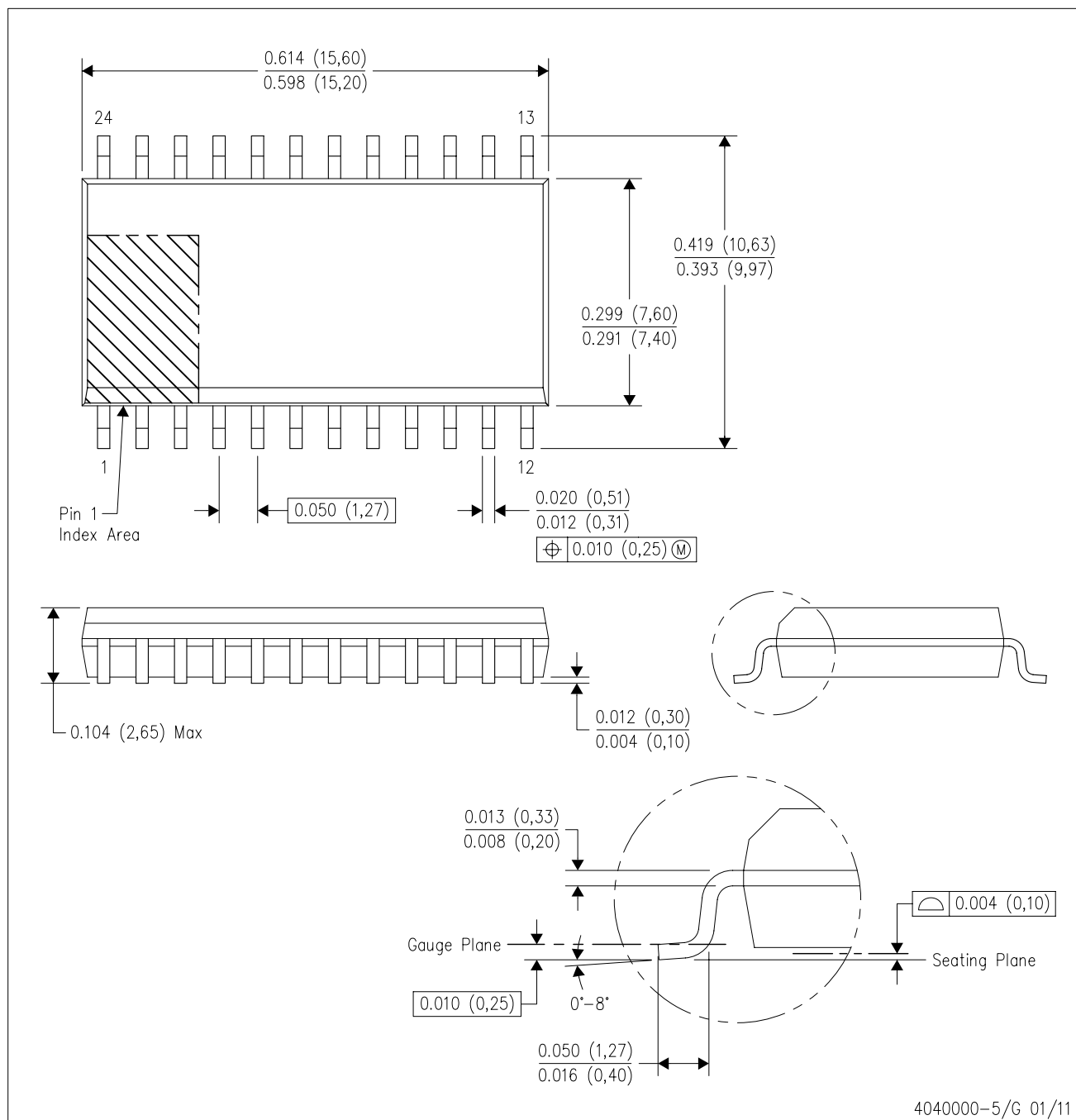


4040140/D 01/11

- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - This package can be hermetically sealed with a metal lid.
  - Falls within JEDEC MS-004

DW (R-PDSO-G24)

PLASTIC SMALL OUTLINE



4040000-5/G 01/11

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