

## Description

The 74LVC573A provides eight transparent D-type latches. While the latch-enable (LE) input is high, the Q outputs follow the data (D) inputs. When LE is taken low, the Q outputs are latched at the logic levels set up at the D inputs. A buffered output-enable (OE) input can be used to place the eight outputs in either a normal logic state (high or low logic levels) or the 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 bus lines without interface or pullup components. OE does not affect the internal operations of the latches. Old data can be retained or new data can be entered while the outputs are in the high-impedance state.

These devices feature inputs and outputs on opposite sides of the package that facilitate printed circuit board layout. The device is designed for operation with a power supply range of 1.65V to 3.6V.

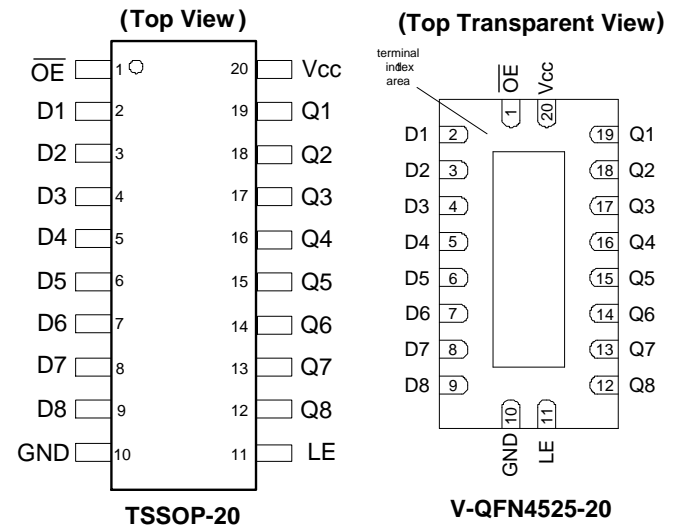
The inputs are tolerant to 5.5V allowing this device to be used in a mixed voltage environment. The device is fully specified for partial power down applications using I<sub>OFF</sub>. The I<sub>OFF</sub> circuitry disables the output preventing damaging current backflow when the device is powered down.

## Features

- Supply Voltage Range from 1.65V to 3.6V
- Sinks or Sources 24mA at V<sub>CC</sub> = 3V
- CMOS Low Power Consumption
- I<sub>OFF</sub> Supports Partial-Power Down Operation
- Inputs or Outputs Accept Up to 5.5V
- Inputs Can Be Driven by 3.3V or 5V Allowing for Mixed Voltage Applications
- Schmitt Trigger Action at All Inputs
- Typical V<sub>OLP</sub> (Quiet Output Ground Bounce) Less than 0.8V with V<sub>CC</sub> = 3.3V and T<sub>A</sub> = +25°C
- Typical V<sub>OHV</sub> (Quiet Output Dynamic VOH) Greater than 2.0V with V<sub>CC</sub> = 3.3V and T<sub>A</sub> = +25°C
- ESD Protection Tested per JESD 22
  - Exceeds 200-V Machine Model (A115)
  - Exceeds 2000-V Human Body Model (A114)
  - Exceeds 1000-V Charged Device Model (C101)
- Latch-Up Exceeds 250mA per JESD 78, Class I
- All devices are:
  - **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
  - **Halogen and Antimony Free. "Green" Device (Note 3)**

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen and Antimony free, "Green" and Lead-Free.
  3. Halogen and Antimony free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

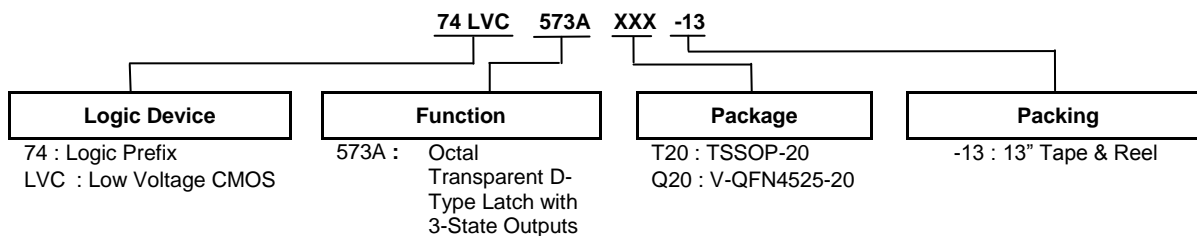
## Pin Assignments



## Applications

- General Purpose Logic
- Bus Driving
- Power Down Signal Isolation
- Wide Array of Products such as:
  - PCs, Notebooks, Netbooks, Ultrabooks
  - Networking Computer Peripherals, Hard Drives, CD/DVD ROM
  - TV, DVD, DVR, Set Top Box

## Ordering Information



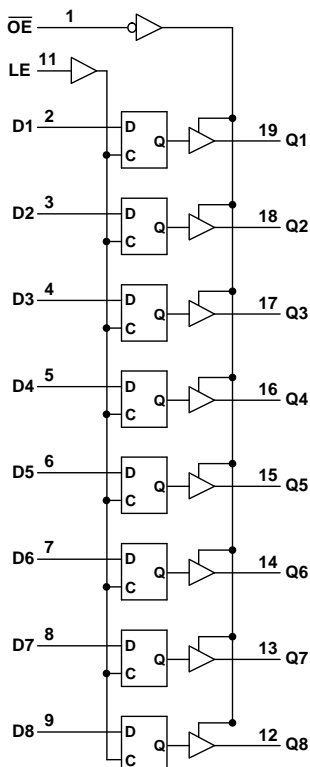
| Part Number     | Package Code | Package (Notes 4 & 5) | Package Size                                | 13" Tape and Reel |                    |
|-----------------|--------------|-----------------------|---|-------------------|--------------------|
|                 |              |                       |   | Quantity          | Part Number Suffix |
| 74LVC573AT20-13 | T20          | TSSOP-20              | 6.4mm X 6.5mm X 1.2mm<br>0.65mm Lead Pitch  | 2500/Tape & Reel  | -13                |
| 74LVC573AQ20-13 | Q20          | V-QFN4525-20          | 2.5mm X 4.5mm X 0.95mm<br>0.50mm Lead Pitch | 2500/Tape & Reel  | -13                |

- Notes:
4. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  5. V-QFN4525-20 is a JEDEC recognized naming convention that specifies the package thickness category as V and the number 4525 describes the package as 4.5mm X 2.5mm.

## Pin Descriptions

| Pin Number | Pin Name        | Description    |
|------------|-----------------|----------------|
| 1          | $\overline{OE}$ | Output Enable  |
| 2          | D1              | Data Input     |
| 3          | D2              | Data Input     |
| 4          | D3              | Data Input     |
| 5          | D4              | Data Input     |
| 6          | D5              | Data Input     |
| 7          | D6              | Data Input     |
| 8          | D7              | Data Input     |
| 9          | D8              | Data Input     |
| 10         | GND             | Ground         |
| 11         | LE              | Latch Enable   |
| 12         | Q8              | Latch Output   |
| 13         | Q7              | Latch Output   |
| 14         | Q6              | Latch Output   |
| 15         | Q5              | Latch Output   |
| 16         | Q4              | Latch Output   |
| 17         | Q3              | Latch Output   |
| 18         | Q2              | Latch Output   |
| 19         | Q1              | Latch Output   |
| 20         | V <sub>CC</sub> | Supply Voltage |

## Logic Diagram



## Function Table

| (Each Latch)    |    |   |                |
|-----------------|----|---|----------------|
| INPUTS          |    |   | OUTPUT         |
| $\overline{OE}$ | LE | D | Q              |
| L               | H  | H | H              |
| L               | H  | L | L              |
| L               | L  | X | Q <sub>0</sub> |
| H               | X  | X | Z              |

**Absolute Maximum Ratings** (Notes 6 & 7)

| Symbol           | Description   | Rating       | Unit |
|------------------|---|--------------|------|
| ESD HBM          | Human Body Model ESD Protection   | 2            | kV   |
| ESD CDM          | Charged Device Model ESD Protection                                       | 1            | kV   |
| ESD MM           | Machine Model ESD Protection  | 200          | V    |
| V <sub>CC</sub>  | Supply Voltage Range  | -0.5 to +7.0 | V    |
| V <sub>I</sub>   | Input Voltage Range   | -0.5 to +7.0 | V    |
| I <sub>IK</sub>  | Input Clamp Current V <sub>I</sub> < 0V                                   | -20          | mA   |
| I <sub>OK</sub>  | Output Clamp Current V <sub>O</sub> < 0V                                  | -50          | mA   |
| I <sub>O</sub>   | Continuous Output Current -0.5V < V <sub>O</sub> < V <sub>CC</sub> + 0.5V | ±50          | mA   |
| I <sub>CC</sub>  | Continuous Current Through V <sub>CC</sub>                                | 100          | mA   |
| I <sub>GND</sub> | Continuous Current Through GND  | -100         | mA   |
| T <sub>J</sub>   | Operating Junction Temperature  | -40 to +150  | °C   |
| T <sub>STG</sub> | Storage Temperature   | -65 to +150  | °C   |
| P <sub>TOT</sub> | Total Power Dissipation   | 500          | mW   |

- Notes:
- Stresses beyond the absolute maximum may result in immediate failure or reduced reliability. These are stress values and device operation should be within recommend values.
  - Forcing the maximum allowed voltage could cause a condition exceeding the maximum current or conversely forcing the maximum current could cause a condition exceeding the maximum voltage. The ratings of both current and voltage must be maintained within the controlled range.

**Recommended Operating Conditions** (Note 8)

| Symbol          | Parameter                          | Conditions              | Min  | Max             | Unit |
|-----------------|------------------------------------|-------------------------|------|-----------------|------|
| V <sub>CC</sub> | Supply Voltage                     | Operating               | 1.65 | 3.6             | V    |
|                 |                                    | Data Retention Only     | 1.5  | —               | V    |
| V <sub>I</sub>  | Input Voltage                      | —                       | 0    | 5.5             | V    |
| V <sub>O</sub>  | Output Voltage                     | —                       | 0    | V <sub>CC</sub> | V    |
| I <sub>OH</sub> | High-Level Output Current          | V <sub>CC</sub> = 1.65V | —    | -4              | mA   |
|                 |                                    | V <sub>CC</sub> = 2.3V  | —    | -8              |      |
|                 |                                    | V <sub>CC</sub> = 2.7V  | —    | -12             |      |
|                 |                                    | V <sub>CC</sub> = 3.0V  | —    | -24             |      |
| I <sub>OL</sub> | Low-Level Output Current           | V <sub>CC</sub> = 1.65V | —    | 4               | mA   |
|                 |                                    | V <sub>CC</sub> = 2.3V  | —    | 8               |      |
|                 |                                    | V <sub>CC</sub> = 2.7V  | —    | 12              |      |
|                 |                                    | V <sub>CC</sub> = 3.0V  | —    | 24              |      |
| Δt/ΔV           | Input Transition Rise or Fall Rate | —                       | —    | 10              | ns/V |
| T <sub>A</sub>  | Operating Free-Air Temperature     | —                       | -40  | +125            | °C   |

- Note: 8. Unused inputs should be held at V<sub>CC</sub> or Ground.

**Electrical Characteristics**

| Symbol                  | Parameter  | Test Conditions  | V <sub>CC</sub>                         | T <sub>A</sub> = -40°C to +85°C |                        | T <sub>A</sub> = -40°C to +125°C |                        | Unit |    |
|-------------------------|--|--|---|---------------------------------|------------------------|----------------------------------|------------------------|------|----|
|                         |  |  |   | Min                             | Max                    | Min                              | Max                    |      |    |
| V <sub>IH</sub>         | High-Level Input Voltage                         | —  | 1.65V to 1.95V                          | V <sub>CC</sub> X 0.65          | —                      | V <sub>CC</sub> X 0.65           | —                      | V    |    |
|                         |  | —  | 2.3V to 2.7V                            | 1.7                             | —                      | 1.7                              | —                      |      |    |
|                         |  | —  | 3.0V to 3.6V                            | 2                               | —                      | 2                                | —                      |      |    |
| V <sub>IL</sub>         | Low-Level Input Voltage                          | —  | 1.65V to 1.95V                          | —                               | V <sub>CC</sub> X 0.35 | —                                | V <sub>CC</sub> X 0.35 | V    |    |
|                         |  | —  | 2.3V to 2.7V                            | —                               | 0.7                    | —                                | 0.7                    |      |    |
|                         |  | —  | 3.0V to 3.6V                            | —                               | 0.8                    | —                                | 0.8                    |      |    |
| V <sub>OH</sub>         | High-Level Output Voltage                        | I <sub>OH</sub> = -50μA                                      | 1.65V to 3.6V                           | V <sub>CC</sub> -0.2            | —                      | V <sub>CC</sub> -0.3             | —                      | V    |    |
|                         |  | I <sub>OH</sub> = -4mA                                       | 1.65V                                   | 1.2                             | —                      | 1.05                             | —                      |      |    |
|                         |  | I <sub>OH</sub> = -8mA                                       | 2.3V                                    | 1.7                             | —                      | 1.65                             | —                      |      |    |
|                         |  | I <sub>OH</sub> = -12mA                                      | 2.7V                                    | 2.2                             | —                      | 2.05                             | —                      |      |    |
|                         |  |  | 3.0V                                    | 2.4                             | —                      | 2.48                             | —                      |      |    |
| I <sub>OH</sub> = -24mA | 3.0V   | 2.3  | —                                       | 2.0                             | —                      |                                  |                        |      |    |
| V <sub>OL</sub>         | Low-Level Output Voltage                         | I <sub>OL</sub> = 100μA                                      | 1.65V to 3.6V                           | —                               | 0.2                    | —                                | 0.3                    | V    |    |
|                         |  | I <sub>OL</sub> = 4mA  | 1.65V                                   | —                               | 0.45                   | —                                | 0.65                   |      |    |
|                         |  | I <sub>OL</sub> = 8mA  | 2.3V                                    | —                               | 0.60                   | —                                | 0.80                   |      |    |
|                         |  | I <sub>OL</sub> = 12mA                                       | 2.7V                                    | —                               | 0.40                   | —                                | 0.60                   |      |    |
|                         |  | I <sub>OL</sub> = 24mA                                       | 3.0V                                    | —                               | 0.55                   | —                                | 0.80                   |      |    |
| I <sub>OFF</sub>        | Power Down Leakage Current                       | V <sub>I</sub> or V <sub>O</sub> = 0 or 5.5V                 | 0V                                      | —                               | ±10                    | —                                | 20                     | μA   |    |
| I <sub>I</sub>          | Input Current Control Pins                       | V <sub>I</sub> = GND or 5.5V                                 | 0 to 3.6V                               | —                               | ±5                     | —                                | ±20                    | μA   |    |
| I <sub>OZ</sub>         | Z-State Current Including Input Current I/O Pins | V <sub>I</sub> = GND or 5.5V<br>V <sub>O</sub> = 0 to 5.5V   | 3.6V                                    | —                               | ±5                     | —                                | ±20                    | μA   |    |
| I <sub>CC</sub>         | Supply Current                                   | V <sub>I</sub> = GND or V <sub>CC</sub> , I <sub>O</sub> = 0 | 3.6V                                    | —                               | 10                     | —                                | 40                     | μA   |    |
| ΔI <sub>CC</sub>        | Additional Supply Current                        | One Input at V <sub>CC</sub> -0.6V I <sub>O</sub> = 0A       | 2.7V to 3.6V                            | —                               | 500                    | —                                | 5000                   | μA   |    |
| C <sub>I</sub>          | Input Capacitance                                | Control Pins   | V <sub>I</sub> = GND or V <sub>CC</sub> | 0V to 3.6V                      | 4.0 Typical            |                                  | 4.0 Typical            |      | pF |
|                         |  | I/O Pins   |   |                                 | 5.5 Typical            |                                  | 5.5 Typical            |      |    |

**NEW PRODUCT**

**Switching Characteristics**

| Symbol           | Parameter  | Test Conditions | V <sub>CC</sub> | T <sub>A</sub> = +25°C |     |      | T <sub>A</sub> = -40°C to +85°C |      | T <sub>A</sub> = -40°C to +125°C |      | Unit |
|------------------|--|-----------------|-----------------|------------------------|-----|------|---------------------------------|------|----------------------------------|------|------|
|                  |  |                 |                 | Min                    | Typ | Max  | Min                             | Max  | Min                              | Max  |      |
| t <sub>w</sub>   | Pulse Width LE                                     | Figure 1        | 1.8V ± 0.15V    | 5.0                    | 2.5 | —    | 5.0                             | —    | 5.5                              | —    | ns   |
|                  |  |                 | 2.5V ± 0.2V     | 4.0                    | 2.0 | —    | 4.0                             | —    | 4.5                              | —    |      |
|                  |  |                 | 2.7V            | 3.0                    | 1.7 | —    | 3.0                             | —    | 3.5                              | —    |      |
|                  |  |                 | 3.3V ± 0.3V     | 3.0                    | 1.5 | —    | 3.0                             | —    | 3.5                              | —    |      |
| t <sub>SU</sub>  | Set-up Time D <sub>N</sub> to LE                   | Figure 1        | 1.8V ± 0.15V    | 4.0                    | 2.0 | —    | 4.0                             | —    | 4.5                              | —    | ns   |
|                  |  |                 | 2.5V ± 0.2V     | 3.0                    | 1.5 | —    | 3.0                             | —    | 3.5                              | —    |      |
|                  |  |                 | 2.7V            | 2.0                    | 1.0 | —    | 2.0                             | —    | 2.5                              | —    |      |
|                  |  |                 | 3.3V ± 0.3V     | 2.0                    | 1.0 | —    | 2.0                             | —    | 2.5                              | —    |      |
| t <sub>H</sub>   | Hold Time D <sub>N</sub> to LE                     | Figure 1        | 1.8V ± 0.15V    | 3.0                    | 1.5 | —    | 3.0                             | —    | 3.5                              | —    | ns   |
|                  |  |                 | 2.5V ± 0.2V     | 2.0                    | 1.0 | —    | 2.0                             | —    | 2.5                              | —    |      |
|                  |  |                 | 2.7V            | 1.5                    | 1.0 | —    | 1.5                             | —    | 2.0                              | —    |      |
|                  |  |                 | 3.3V ± 0.3V     | 1.5                    | 1.0 | —    | 1.5                             | —    | 2.0                              | —    |      |
| t <sub>PD</sub>  | Propagation Delay D <sub>N</sub> to Q <sub>N</sub> | Figure 1        | 1.8V ± 0.15V    | 1                      | 6   | 12.2 | 1                               | 12.7 | 1                                | 16.9 | ns   |
|                  |  |                 | 2.5V ± 0.2V     | 1                      | 3.9 | 7.8  | 1                               | 8.3  | 1                                | 8.7  |      |
|                  |  |                 | 2.7V            | 1                      | 4.2 | 7.8  | 1                               | 8.1  | 1                                | 9.5  |      |
|                  |  |                 | 3.3V ± 0.3V     | 1.5                    | 3.8 | 6.8  | 1.5                             | 7.4  | 1.5                              | 8    |      |
| t <sub>PD</sub>  | Propagation Delay LE to Q <sub>N</sub>             | Figure 1        | 1.8V ± 0.15V    | 1                      | 7   | 14.8 | 1                               | 15.3 | 1                                | 22.5 | ns   |
|                  |  |                 | 2.5V ± 0.2V     | 1                      | 4.5 | 10   | 1                               | 10.5 | 1                                | 12.4 |      |
|                  |  |                 | 2.7V            | 1                      | 5.4 | 8.2  | 1                               | 9.5  | 1                                | 12   |      |
|                  |  |                 | 3.3V ± 0.3V     | 1.5                    | 4.4 | 7.2  | 1.5                             | 8.5  | 1.5                              | 11   |      |
| t <sub>EN</sub>  | Enable Time to Q <sub>N</sub> $\overline{OE}$      | Figure 1        | 1.8V ± 0.15V    | 1                      | 7.8 | 16.5 | 1                               | 17   | 1                                | 18.7 | ns   |
|                  |  |                 | 2.5V ± 0.2V     | 1                      | 4   | 9    | 1                               | 9.5  | 1                                | 10.3 |      |
|                  |  |                 | 2.7V            | 1                      | 4.4 | 8.3  | 1                               | 8.5  | 1                                | 9.5  |      |
|                  |  |                 | 3.3V ± 0.3V     | 1.7                    | 4.1 | 7.3  | 1.7                             | 7.5  | 1.7                              | 9    |      |
| t <sub>DIS</sub> | Disable Time to Q <sub>N</sub> $\overline{OE}$     | Figure 1        | 1.8V ± 0.15V    | 1                      | 7.8 | 16.5 | 1                               | 17   | 1                                | 18.4 | ns   |
|                  |  |                 | 2.5V ± 0.2V     | 1                      | 4   | 9    | 1                               | 9.5  | 1                                | 10.5 |      |
|                  |  |                 | 2.7V            | 1                      | 4.4 | 8.3  | 1                               | 8.5  | 1                                | 9.1  |      |
|                  |  |                 | 3.3V ± 0.3V     | 1.7                    | 4.1 | 7.3  | 1.7                             | 7.5  | 1.7                              | 9    |      |
| t <sub>DIS</sub> | Disable Time to Q <sub>N</sub> $\overline{OE}$     | Figure 1        | 1.8V ± 0.15V    | 1                      | 7.8 | 16.5 | 1                               | 17   | 1                                | 18.4 | ns   |
|                  |  |                 | 2.5V ± 0.2V     | 1                      | 4   | 9    | 1                               | 9.5  | 1                                | 10.5 |      |
|                  |  |                 | 2.7V            | 1                      | 4.4 | 8.3  | 1                               | 8.5  | 1                                | 9.1  |      |
|                  |  |                 | 3.3V ± 0.3V     | 1.7                    | 4.1 | 7.3  | 1.7                             | 7.5  | 1.7                              | 9    |      |
| tsk(0)           | Output Skew Time                                   | —               | 3.3V ± 0.3V     | —                      | —   | 1.0  | —                               | —    | —                                | 1.5  | ns   |

**Operating Characteristics**

 T<sub>A</sub> = +25°C

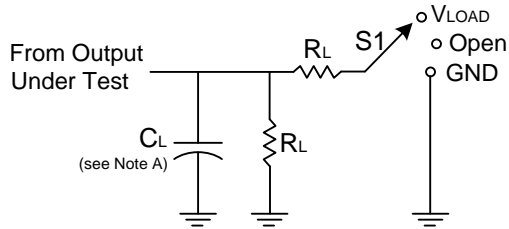
| Symbol          | Parameter                              | Test Conditions              | V <sub>CC</sub> | Typ  | Unit |
|-----------------|--|------------------------------|-----------------|------|------|
| C <sub>PD</sub> | Power Dissipation Capacitance per Gate | f = 10MHz<br>Outputs Enabled | 1.8V ± 0.15V    | 9.9  | pF   |
|                 |  |                              | 2.5V ± 0.2V     | 10.2 |      |
|                 |  |                              | 3.3V ± 0.3V     | 10.6 |      |

## Package Characteristics

| Symbol        | Parameter                              | Package      | Test Conditions | Min | Typ | Max | Unit |
|---------------|--|--------------|-----------------|-----|-----|-----|------|
| $\theta_{JA}$ | Thermal Resistance Junction-to-Ambient | TSSOP-20     | (Note 9)        | —   | 74  | —   | °C/W |
| $\theta_{JC}$ | Thermal Resistance Junction-to-Case    | TSSOP-20     | (Note 9)        | —   | 15  | —   | °C/W |
| $\theta_{JA}$ | Thermal Resistance Junction-to-Ambient | V-QFN4525-20 | (Note 9)        | —   | 67  | —   | °C/W |
| $\theta_{JC}$ | Thermal Resistance Junction-to-Case    | V-QFN4525-20 | (Note 9)        | —   | 20  | —   | °C/W |

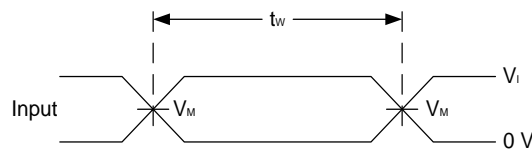
Note: 9. Test conditions for TSSOP-20 and V-QFN4525-20: Devices mounted on 4 layer FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout per JESD 51-7.

**Parameter Measurement Information**

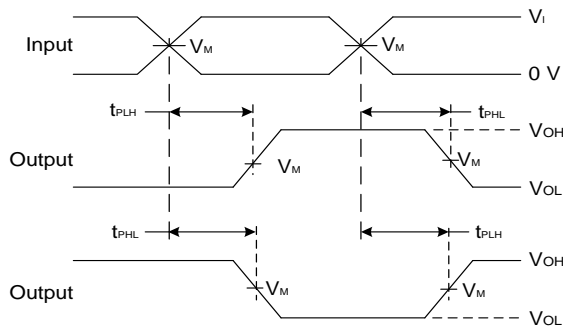


| TEST              | S1         |
|-------------------|------------|
| $t_{PLH}/t_{PHL}$ | Open       |
| $t_{PLZ}/t_{PZL}$ | $V_{LOAD}$ |
| $t_{PHZ}/t_{PZH}$ | GND        |

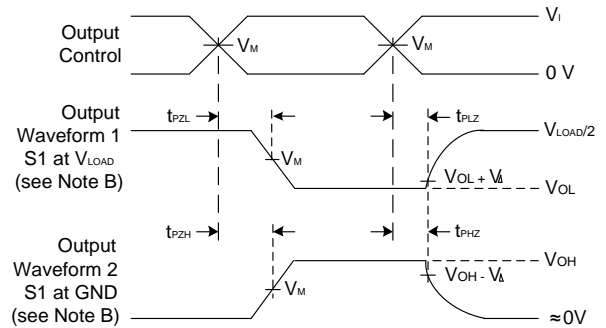
| $V_{CC}$         | Inputs   |              | $V_M$      | $V_{LOAD}$        | $C_L$ | $R_L$        | $V_{\Delta}$ |
|------------------|----------|--------------|------------|-------------------|-------|--------------|--------------|
|                  | $V_I$    | $t_r/t_f$    |            |                   |       |              |              |
| $1.8V \pm 0.15V$ | $V_{CC}$ | $\leq 2ns$   | $V_{CC}/2$ | $2 \times V_{CC}$ | 30pF  | 1K $\Omega$  | 0.15V        |
| $2.5V \pm 0.2V$  | $V_{CC}$ | $\leq 2ns$   | $V_{CC}/2$ | $2 \times V_{CC}$ | 30pF  | 500 $\Omega$ | 0.15V        |
| 2.7V             | 2.7V     | $\leq 2.5ns$ | 1.5V       | 6V                | 50pF  | 500 $\Omega$ | 0.3V         |
| $3.3V \pm 0.3V$  | 2.7V     | $\leq 2.5ns$ | 1.5V       | 6V                | 50pF  | 500 $\Omega$ | 0.3V         |



**Voltage Waveform Pulse Duration**



**Voltage Waveform Propagation Delay Times  
Inverting and Non Inverting Outputs**



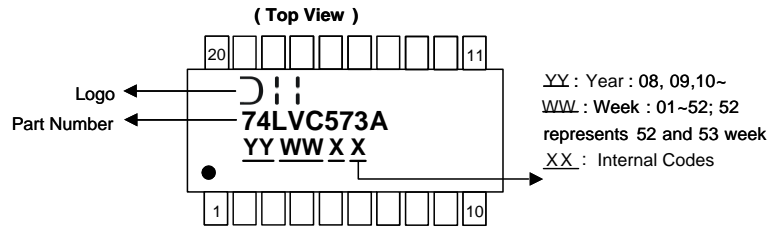
**Voltage Waveform Enable and Disable Times  
Low and High Level Enabling**

- Notes:
- A. Includes test lead and test apparatus capacitance.
  - B. All pulses are supplied at pulse repetition rate  $\leq 10MHz$ .
  - C. Inputs are measured separately one transition per measurement.
  - D.  $t_{PLZ}$  and  $t_{PHZ}$  are the same as  $t_{DIS}$ .
  - E.  $t_{PZL}$  and  $t_{PZH}$  are the same as  $t_{ENO}$ .
  - F.  $t_{PLH}$  and  $t_{PHL}$  are the same as  $t_{PD}$ .

**Figure 1 Load Circuit and Voltage Waveforms**

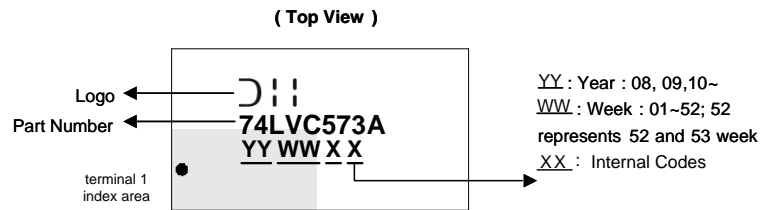
**Marking Information**

(1) TSSOP-20



| Part Number  | Package  |
|--------------|----------|
| 74LVC573AT20 | TSSOP-20 |

(2) V-QFN4525-20



| Part Number  | Package      |
|--------------|--------------|
| 74LVC573AQ20 | V-QFN4525-20 |

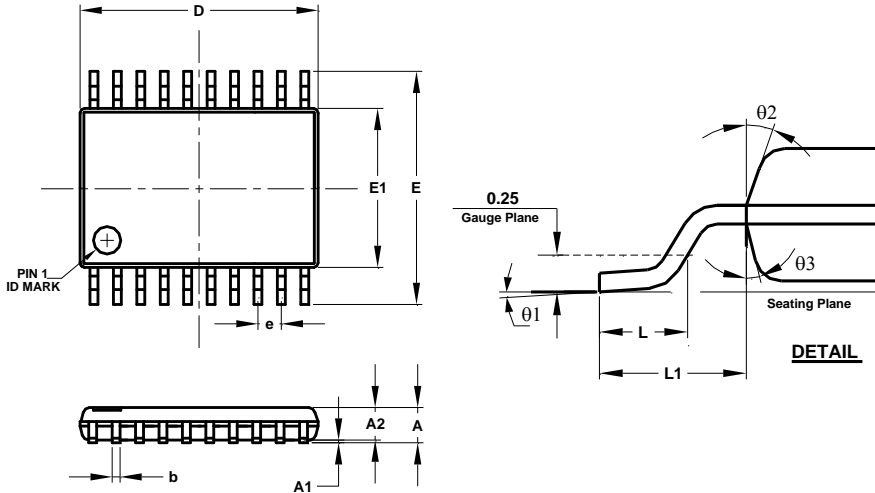


**Package Outline Dimensions**

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

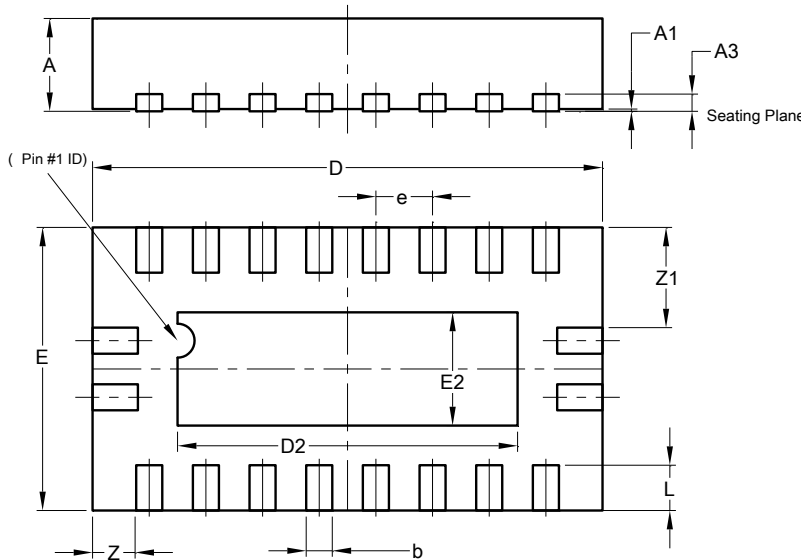
NEW PRODUCT

(1) Package Type: TSSOP-20



| TSSOP-20             |          |      |      |
|----------------------|----------|------|------|
| Dim                  | Min      | Max  | Typ  |
| A                    | -        | 1.20 | -    |
| A1                   | 0.05     | 0.15 | -    |
| A2                   | 0.80     | 1.05 | -    |
| b                    | 0.19     | 0.30 | -    |
| c                    | 0.09     | 0.20 | -    |
| D                    | 6.40     | 6.60 | 6.50 |
| E                    | 6.20     | 6.60 | 6.40 |
| E1                   | 4.30     | 4.50 | 4.40 |
| e                    | 0.65 BSC |      |      |
| L                    | 0.45     | 0.75 | 0.60 |
| L1                   | 1.0 REF  |      |      |
| θ1                   | 0°       | 8°   | -    |
| θ2                   | 10°      | 14°  | 12°  |
| θ3                   | 10°      | 14°  | 12°  |
| All Dimensions in mm |          |      |      |

(2) Package Type: V-QFN4525-20

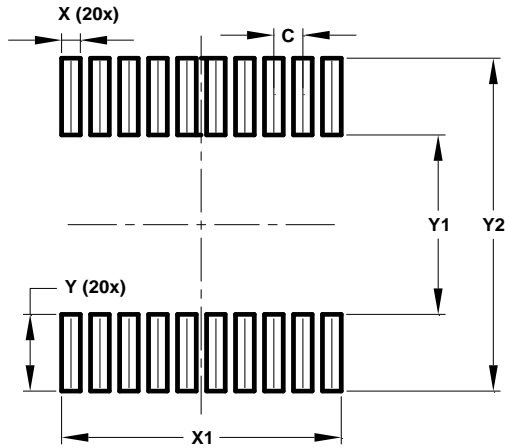


| V-QFN4525-20         |         |      |       |
|----------------------|---------|------|-------|
| Dim                  | Min     | Max  | Typ   |
| A                    | 0.75    | 0.85 | 0.80  |
| A1                   | 0.00    | 0.05 | 0.02  |
| A3                   | -       | -    | 0.15  |
| b                    | 0.18    | 0.30 | 0.23  |
| D                    | 4.45    | 4.55 | 4.50  |
| D2                   | 2.85    | 3.15 | 3.00  |
| E                    | 2.45    | 2.55 | 2.50  |
| E2                   | 0.85    | 1.15 | 1.00  |
| e                    | 0.50BSC |      |       |
| L                    | 0.30    | 0.50 | 0.40  |
| Z                    | -       | -    | 0.385 |
| Z1                   | -       | -    | 0.885 |
| All Dimensions in mm |         |      |       |

### Suggested Pad Layout

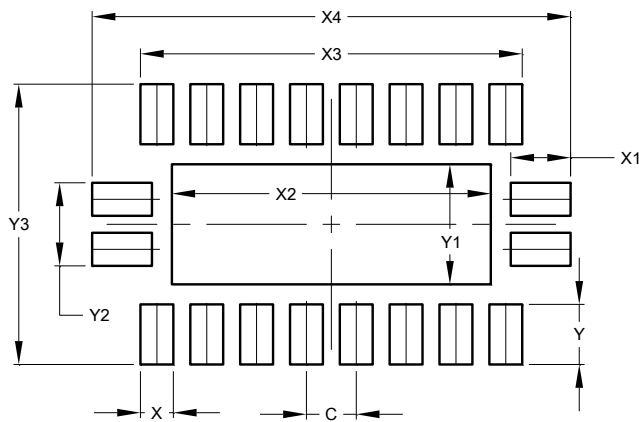
Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.

(1) Package Type: TSSOP-20



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.650         |
| X          | 0.420         |
| X1         | 6.270         |
| Y          | 1.780         |
| Y1         | 4.160         |
| Y2         | 7.720         |

(2) Package Type: V-QFN4525-20



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.500         |
| X          | 0.330         |
| X1         | 0.600         |
| X2         | 3.200         |
| X3         | 3.830         |
| X4         | 4.800         |
| Y          | 0.600         |
| Y1         | 1.200         |
| Y2         | 0.830         |
| Y3         | 2.800         |

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