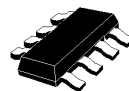


## DUAL BUS BUFFER NON INVERTED (3-STATE)

- HIGH SPEED:  $t_{PD} = 3.8ns$  (TYP.) at  $V_{CC} = 5V$
- LOW POWER DISSIPATION:  
 $I_{CC} = 1\mu A$ (MAX.) at  $T_A = 25^\circ C$
- POWER DOWN PROTECTION ON INPUTS AND OUTPUTS
- COMPATIBLE WITH TTL LEVEL:  
 $V_{IH} = 2.0V$ (MIN),  $V_{IL} = 0.8V$ (MAX)
- SYMMETRICAL OUTPUT IMPEDANCE:  
 $|I_{OH}| = I_{OL} = 8mA$  (MIN) at  $V_{CC} = 4.5V$
- BALANCED PROPAGATION DELAYS:  
 $t_{PLH} \cong t_{PHL}$
- OPERATING VOLTAGE RANGE:  
 $V_{CC}(OPR) = 4.5V$  to  $5.5V$
- IMPROVED LATCH-UP IMMUNITY

### DESCRIPTION

The 74V2T241 is an advanced high-speed CMOS DUAL BUS BUFFER NON INVERTER fabricated with sub-micron silicon gate and double-layer metal wiring C<sup>2</sup>MOS technology. It has one active-high and one active-low output enable. Power down protection is provided on all



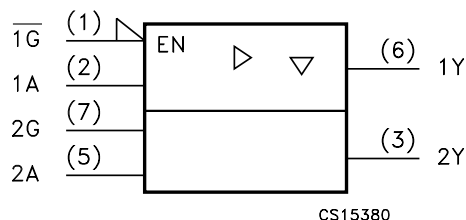
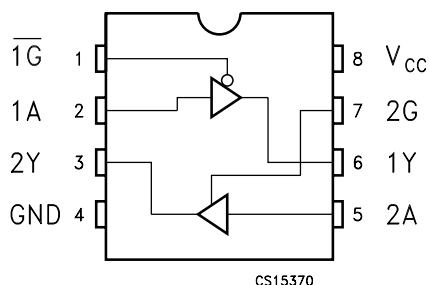
SOT23-8L

### ORDER CODES

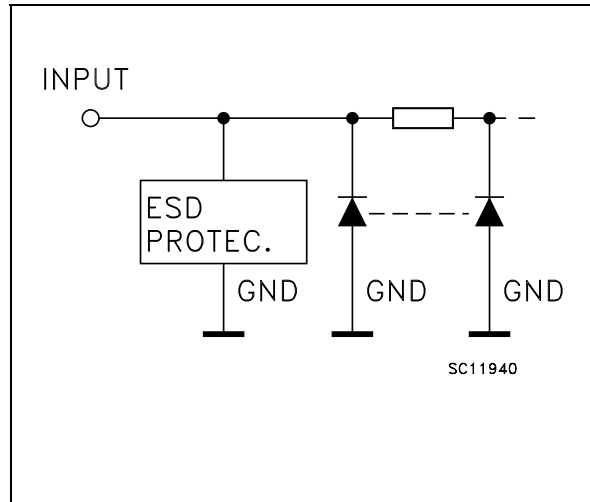
| PACKAGE  | T & R       |
|----------|-------------|
| SOT23-8L | 74V2T241STR |

inputs and outputs and 0 to 7V can be accepted on inputs with no regard to the supply voltage. This device can be used to interface 5V to 3V systems and it is ideal for portable applications like personal digital assistant, camcorder and all battery-powered equipment. All inputs and outputs are equipped with protection circuits against static discharge, giving them ESD immunity and transient excess voltage.

### PIN CONNECTION AND IEC LOGIC SYMBOLS



## INPUT EQUIVALENT CIRCUIT



## PIN DESCRIPTION

| PIN N° | SYMBOL               | NAME AND FUNCTION       |
|--------|----------------------|-------------------------|
| 1, 7   | $\overline{1G}$ , 2G | Output Enable Inputs    |
| 2, 5   | 1A, 2A               | Data Inputs             |
| 3, 6   | 2Y, 1Y               | Data Outputs            |
| 4      | GND                  | Ground (0V)             |
| 8      | V <sub>CC</sub>      | Positive Supply Voltage |

## TRUTH TABLE

| $\overline{1G}$ | 2G | A | Y |
|-----------------|----|---|---|
| L               | H  | L | L |
| L               | H  | H | H |
| H               | L  | X | Z |

X: "H" or "L"

Z: High Impedance

## ABSOLUTE MAXIMUM RATINGS

| Symbol                              | Parameter                            | Value                         | Unit |
|-------------------------------------|--------------------------------------|-------------------------------|------|
| V <sub>CC</sub>                     | Supply Voltage                       | -0.5 to +7.0                  | V    |
| V <sub>I</sub>                      | DC Input Voltage                     | -0.5 to +7.0                  | V    |
| V <sub>O</sub>                      | DC Output Voltage (see note 1)       | -0.5 to +7.0                  | V    |
| V <sub>O</sub>                      | DC Output Voltage (see note 2)       | -0.5 to V <sub>CC</sub> + 0.5 | V    |
| I <sub>IK</sub>                     | DC Input Diode Current               | - 20                          | mA   |
| I <sub>OK</sub>                     | DC Output Diode Current              | - 20                          | mA   |
| I <sub>O</sub>                      | DC Output Current                    | ± 25                          | mA   |
| I <sub>CC</sub> or I <sub>GND</sub> | DC V <sub>CC</sub> or Ground Current | ± 50                          | mA   |
| T <sub>stg</sub>                    | Storage Temperature                  | -65 to +150                   | °C   |
| T <sub>L</sub>                      | Lead Temperature (10 sec)            | 260                           | °C   |

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these conditions is not implied.

1) V<sub>CC</sub>=0V or  $\overline{nG}$ =V<sub>CC</sub>(Output in High Impedance state)

2) High or Low State

## RECOMMENDED OPERATING CONDITIONS

| Symbol          | Parameter                                                        | Value                | Unit |
|-----------------|------------------------------------------------------------------|----------------------|------|
| V <sub>CC</sub> | Supply Voltage                                                   | 4.5 to 5.5           | V    |
| V <sub>I</sub>  | Input Voltage                                                    | 0 to 5.5             | V    |
| V <sub>O</sub>  | Output Voltage (see note 1)                                      | 0 to 5.5             | V    |
| V <sub>O</sub>  | Output Voltage (see note 2)                                      | 0 to V <sub>CC</sub> | V    |
| T <sub>op</sub> | Operating Temperature                                            | -55 to 125           | °C   |
| dt/dv           | Input Rise and Fall Time (note 3) (V <sub>CC</sub> = 5.0 ± 0.5V) | 0 to 20              | ns/V |

1) V<sub>CC</sub>=0V or Output in High Impedance state

2) High or Low State

3) V<sub>IN</sub> from 0.8 to 2.0V

## DC SPECIFICATIONS

| Symbol           | Parameter                             | Test Condition         |                                                                                    | Value                 |      |       |             |       |              | Unit  |      |
|------------------|---------------------------------------|------------------------|------------------------------------------------------------------------------------|-----------------------|------|-------|-------------|-------|--------------|-------|------|
|                  |                                       | V <sub>CC</sub><br>(V) |                                                                                    | T <sub>A</sub> = 25°C |      |       | -40 to 85°C |       | -55 to 125°C |       |      |
|                  |                                       |                        |                                                                                    | Min.                  | Typ. | Max.  | Min.        | Max.  | Min.         |       | Max. |
| V <sub>IH</sub>  | High Level Input Voltage              | 4.5 to 5.5             |                                                                                    | 0.8                   |      |       | 0.8         |       | 0.8          |       | V    |
| V <sub>IL</sub>  | Low Level Input Voltage               | 4.5 to 5.5             |                                                                                    |                       |      | 2.0   |             | 2.0   |              | 2.0   | V    |
| V <sub>OH</sub>  | High Level Output Voltage             | 4.5                    | I <sub>O</sub> =-50 μA                                                             | 4.4                   | 4.5  |       | 4.4         |       | 4.4          |       | V    |
|                  |                                       | 4.5                    | I <sub>O</sub> =-8 mA                                                              | 3.94                  |      |       | 3.8         |       | 3.7          |       |      |
| V <sub>OL</sub>  | Low Level Output Voltage              | 4.5                    | I <sub>O</sub> =50 μA                                                              |                       | 0.0  | 0.1   |             | 0.1   |              | 0.1   | V    |
|                  |                                       | 4.5                    | I <sub>O</sub> =8 mA                                                               |                       |      | 0.36  |             | 0.44  |              | 0.44  |      |
| I <sub>OZ</sub>  | High Impedance Output Leakage Current | 5.5                    | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub><br>V <sub>O</sub> = 5.5 or GND |                       |      | ±0.25 |             | ± 2.5 |              | ± 2.5 | μA   |
| I <sub>I</sub>   | Input Leakage Current                 | 0 to 5.5               | V <sub>I</sub> = 5.5V or GND                                                       |                       |      | ± 0.1 |             | ± 1   |              | ± 1   | μA   |
| I <sub>OPD</sub> | Power down Output Leakage Current     | 0                      | V <sub>O</sub> = 5.5                                                               |                       |      | 0.5   |             | 5     |              | 10    | μA   |
| I <sub>CC</sub>  | Quiescent Supply Current              | 5.5                    | V <sub>I</sub> = V <sub>CC</sub> or GND                                            |                       |      | 1     |             | 10    |              | 10    | μA   |

AC ELECTRICAL CHARACTERISTICS (Input t<sub>r</sub> = t<sub>f</sub> = 3ns)

| Symbol                               | Parameter              | Test Condition         |                        |                       | Value                 |      |      |             |      |              |      | Unit |
|--------------------------------------|------------------------|------------------------|------------------------|-----------------------|-----------------------|------|------|-------------|------|--------------|------|------|
|                                      |                        | V <sub>CC</sub><br>(V) | C <sub>L</sub><br>(pF) |                       | T <sub>A</sub> = 25°C |      |      | -40 to 85°C |      | -55 to 125°C |      |      |
|                                      |                        |                        |                        |                       | Min.                  | Typ. | Max. | Min.        | Max. | Min.         | Max. |      |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay Time | 5.0 <sup>(**)</sup>    | 15                     |                       |                       | 3.8  | 5.5  | 1.0         | 6.5  | 1.0          | 7.5  | ns   |
|                                      |                        | 5.0 <sup>(**)</sup>    | 50                     |                       |                       | 4.3  | 6.5  | 1.0         | 7.5  | 1.0          | 8.5  |      |
| t <sub>PLZ</sub><br>t <sub>PHZ</sub> | Output Disable Time    | 5.0 <sup>(**)</sup>    | 15                     | R <sub>L</sub> = 1 KΩ |                       | 3.6  | 5.0  | 1.0         | 6.0  | 1.0          | 7.0  | ns   |
|                                      |                        | 5.0 <sup>(**)</sup>    | 50                     | R <sub>L</sub> = 1 KΩ |                       | 5.1  | 7.0  | 1.0         | 8.0  | 1.0          | 9.0  |      |
| t <sub>PZL</sub><br>t <sub>PZH</sub> | Output Enable Time     | 5.0 <sup>(**)</sup>    | 15                     | R <sub>L</sub> = 1 KΩ |                       | 3.7  | 5.9  | 1.0         | 7.0  | 1.0          | 8.0  | ns   |
|                                      |                        | 5.0 <sup>(**)</sup>    | 50                     | R <sub>L</sub> = 1 KΩ |                       | 4.1  | 6.5  | 1.0         | 7.5  | 1.0          | 8.5  |      |

(\*\*) Voltage range is 5.0V ± 0.5V

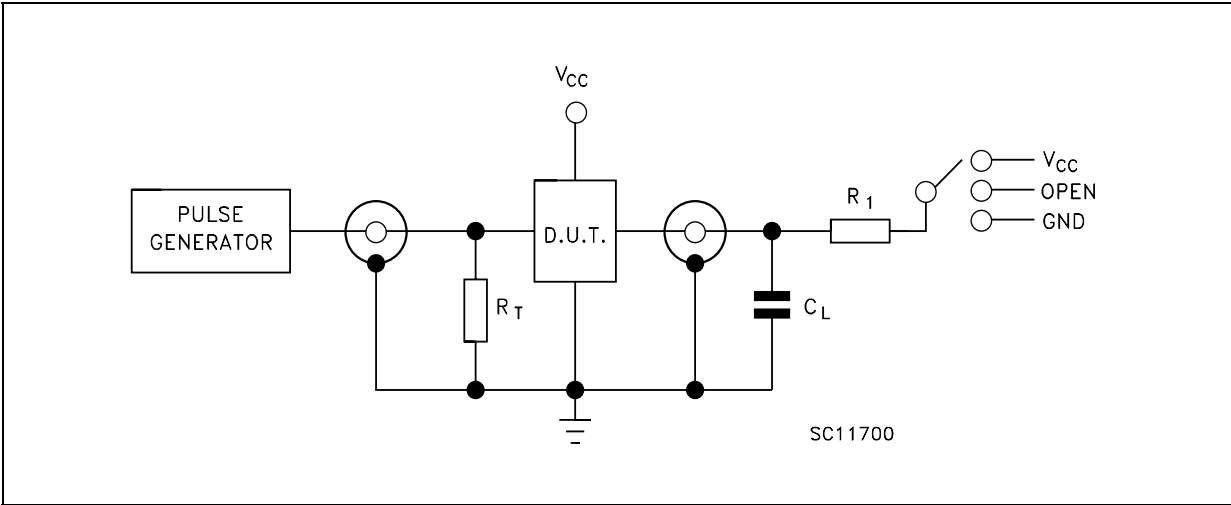
## CAPACITIVE CHARACTERISTICS

| Symbol           | Parameter                              | Test Condition | Value                 |      |      |             |      |              |      |    | Unit |
|------------------|----------------------------------------|----------------|-----------------------|------|------|-------------|------|--------------|------|----|------|
|                  |                                        |                | T <sub>A</sub> = 25°C |      |      | -40 to 85°C |      | -55 to 125°C |      |    |      |
|                  |                                        |                | Min.                  | Typ. | Max. | Min.        | Max. | Min.         | Max. |    |      |
| C <sub>IN</sub>  | Input Capacitance                      |                |                       | 4    | 10   |             | 10   |              | 10   | pF |      |
| C <sub>OUT</sub> | Output Capacitance                     |                |                       | 6    |      |             |      |              |      | pF |      |
| C <sub>PD</sub>  | Power Dissipation Capacitance (note 1) |                |                       | 14   |      |             |      |              |      | pF |      |

1) C<sub>PD</sub> is defined as the value of the IC's internal equivalent capacitance which is calculated from the operating current consumption without load. (Refer to Test Circuit). Average current can be obtained by the following equation. I<sub>CC(OPR)</sub> = C<sub>PD</sub> × V<sub>CC</sub> × f<sub>IN</sub> + I<sub>CC</sub>/2



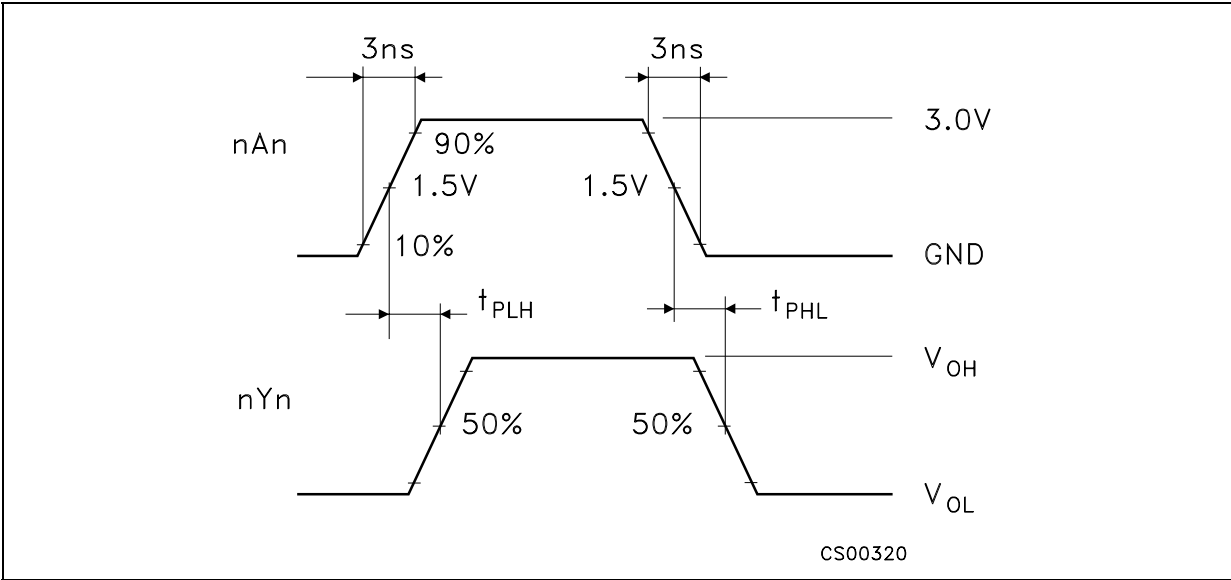
TEST CIRCUIT TEST CIRCUIT

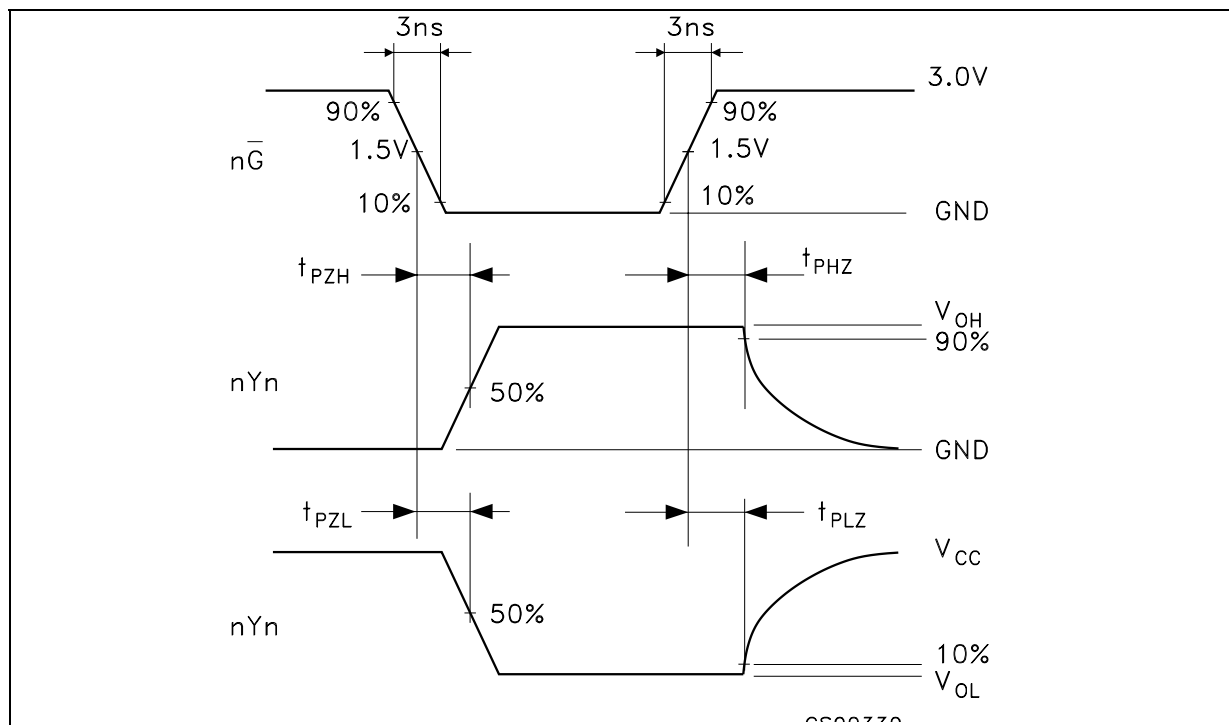


| TEST                  | SWITCH   |
|-----------------------|----------|
| $t_{PLH}$ , $t_{PHL}$ | Open     |
| $t_{PZL}$ , $t_{PLZ}$ | $V_{CC}$ |
| $t_{PZH}$ , $t_{PHZ}$ | GND      |

$C_L$  = 15/50pF or equivalent (includes jig and probe capacitance)  
 $R_1$  = 1K $\Omega$  or equivalent  
 $R_T$  =  $Z_{OUT}$  of pulse generator (typically 50 $\Omega$ )

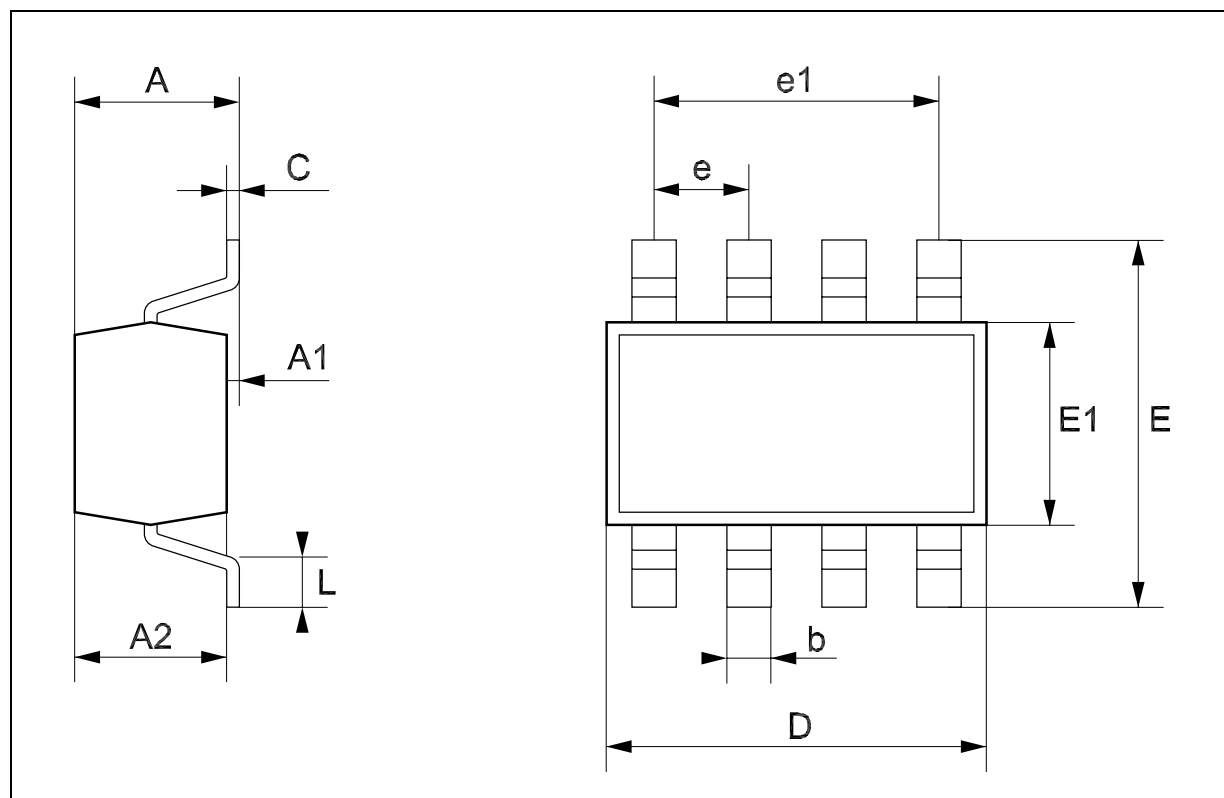
WAVEFORM 1 : PROPAGATION DELAYS (f=1MHz; 50% duty cycle)



**WAVEFORM 2: OUTPUT ENABLE AND DISABLE TIME** ( $f=1\text{MHz}$ ; 50% duty cycle)

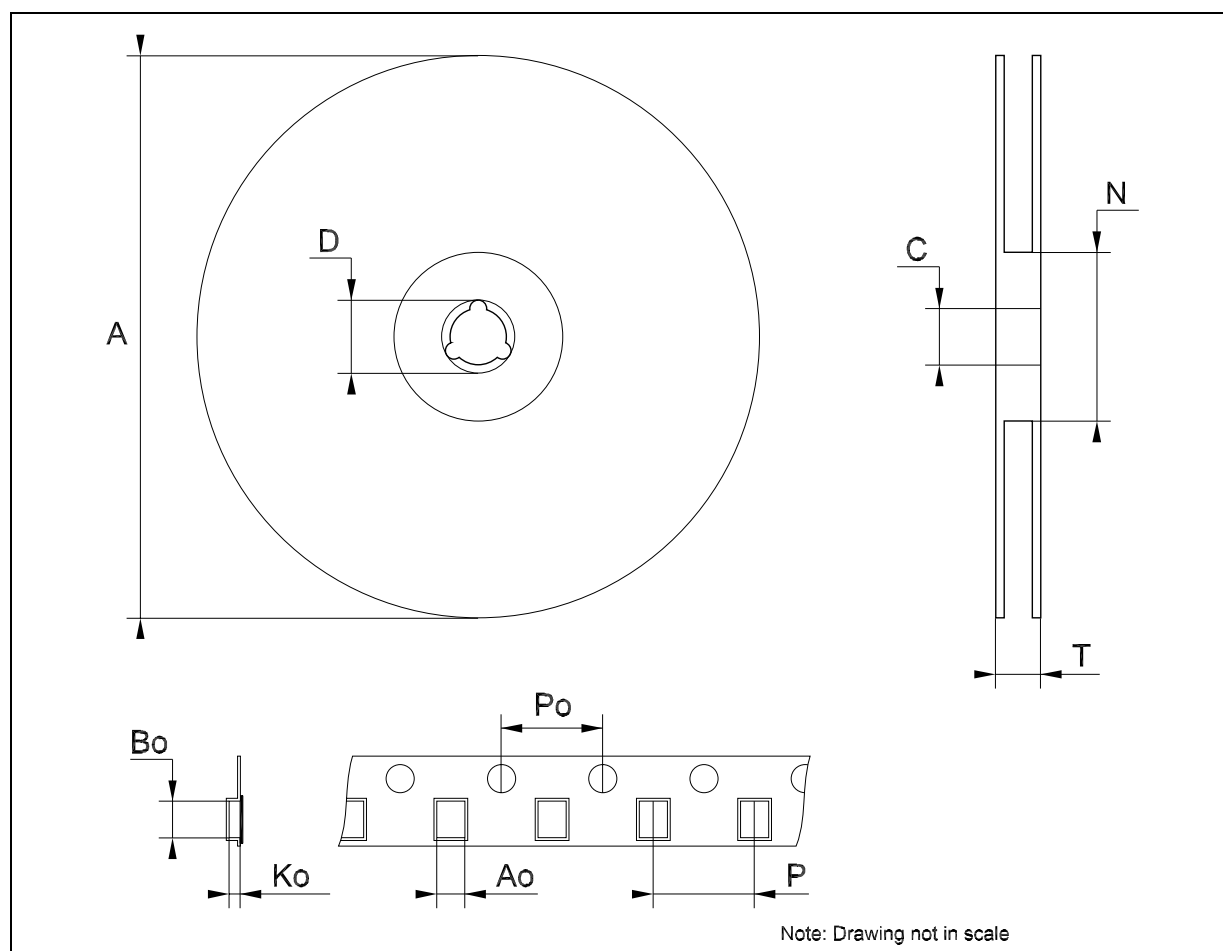
## SOT23-8L MECHANICAL DATA

| DIM. | mm.  |      |      | mils  |      |       |
|------|------|------|------|-------|------|-------|
|      | MIN. | TYP  | MAX. | MIN.  | TYP. | MAX.  |
| A    | 0.90 |      | 1.45 | 35.4  |      | 57.1  |
| A1   | 0.00 |      | 0.15 | 0.0   |      | 5.9   |
| A2   | 0.90 |      | 1.30 | 35.4  |      | 51.2  |
| b    | 0.22 |      | 0.38 | 8.6   |      | 14.9  |
| C    | 0.09 |      | 0.20 | 3.5   |      | 7.8   |
| D    | 2.80 |      | 3.00 | 110.2 |      | 118.1 |
| E    | 2.60 |      | 3.00 | 102.3 |      | 118.1 |
| E1   | 1.50 |      | 1.75 | 59.0  |      | 68.8  |
| e    | 0    | .65  |      |       | 25.6 |       |
| e1   |      | 1.95 |      |       | 76.7 |       |
| L    | 0.35 |      | 0.55 | 13.7  |      | 21.6  |



## Tape &amp; Reel SOT23-xL MECHANICAL DATA

| DIM. | mm.  |      |      | inch  |       |       |
|------|------|------|------|-------|-------|-------|
|      | MIN. | TYP  | MAX. | MIN.  | TYP.  | MAX.  |
| A    |      |      | 180  |       |       | 7.086 |
| C    | 12.8 | 13.0 | 13.2 | 0.504 | 0.512 | 0.519 |
| D    | 20.2 |      |      | 0.795 |       |       |
| N    | 60   |      |      | 2.362 |       |       |
| T    |      |      | 14.4 |       |       | 0.567 |
| Ao   | 3.13 | 3.23 | 3.33 | 0.123 | 0.127 | 0.131 |
| Bo   | 3.07 | 3.17 | 3.27 | 0.120 | 0.124 | 0.128 |
| Ko   | 1.27 | 1.37 | 1.47 | 0.050 | 0.054 | 0.058 |
| Po   | 3.9  | 4.0  | 4.1  | 0.153 | 0.157 | 0.161 |
| P    | 3.9  | 4.0  | 4.1  | 0.153 | 0.157 | 0.161 |



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

© The ST logo is a registered trademark of STMicroelectronics

© 2003 STMicroelectronics - Printed in Italy - All Rights Reserved  
STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco  
Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.

© <http://www.st.com>

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)

[www.lifeelectronics.ru](http://www.lifeelectronics.ru)