

# MC74LCX258

## Low-Voltage CMOS Quad 2-Input Multiplexer

### With 5 V-Tolerant Inputs and Outputs (3-State, Inverting)

The MC74LCX258 is a high performance, quad 2-input inverting multiplexer with 3-state outputs operating from a 2.3 to 3.6 V supply. High impedance TTL compatible inputs significantly reduce current loading to input drivers while TTL compatible outputs offer improved switching noise performance. A  $V_I$  specification of 5.5 V allows MC74LCX258 inputs to be safely driven from 5 V devices.

Four bits of data from two sources can be selected using the Select input. The four outputs present the selected data in the inverted form. The outputs may be switched to a high impedance state by placing a logic HIGH on the Output Enable ( $\overline{OE}$ ) input. Current drive capability is 24 mA at the outputs.

#### Features

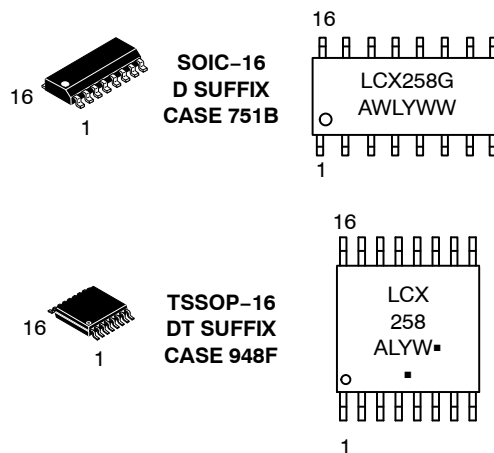
- Designed for 2.3 to 3.6 V  $V_{CC}$  Operation
- 5 V Tolerant – Interface Capability With 5 V TTL Logic
- Supports Live Insertion and Withdrawal
- $I_{OFF}$  Specification Guarantees High Impedance When  $V_{CC} = 0$  V
- TTL Compatible
- CMOS Compatible
- 24 mA Balanced Output Sink and Source Capability
- Near Zero Static Supply Current in all Three Logic States (10  $\mu$ A) Substantially Reduces System Power Requirements
- Latchup Performance Exceeds 500 mA
- ESD Performance:
  - ◆ Human Body Model >2000 V
  - ◆ Machine Model >200 V
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant



ON Semiconductor®

<http://onsemi.com>

#### MARKING DIAGRAMS



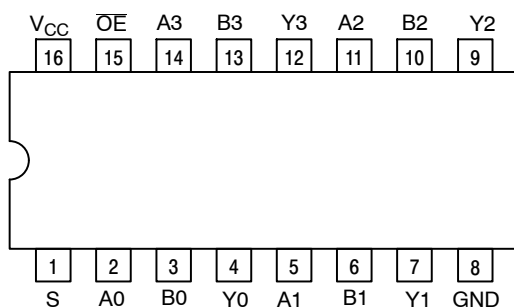
A = Assembly Location  
WL, L = Wafer Lot  
Y = Year  
WW, W = Work Week  
G or ■ = Pb-Free Package

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

# MC74LCX258



## PIN NAMES

| Pins | Function             |
|------|----------------------|
| An   | Source 0 Data Inputs |
| Bn   | Source B Data Inputs |
| OE   | Enable Input         |
| S    | Select Input         |
| Yn   | Outputs              |

**Figure 1. Pinout: 16-Lead Plastic Package**  
(Top View)

## TRUTH TABLE

| Inputs        |        | Outputs                           |
|---------------|--------|-----------------------------------|
| Output Enable | Select | Y0–Y3                             |
| H             | X      | Z                                 |
| L             | L      | $\overline{A0}$ – $\overline{A3}$ |
| L             | H      | $\overline{B0}$ – $\overline{B3}$ |

X = Don't Care

A0–A3, B0–B3 = The levels of the respective Data–Word Inputs

## PIN DESCRIPTIONS

### INPUTS

#### A0–A3 (Pins 2, 5, 11, 14)

Nibble A inputs. The data present on these pins is transferred to the outputs when the Select input is at a low level and the Output Enable input is at a low level. The data is presented to the outputs in inverted form for the LCX258.

#### B0–B3 (Pins 3, 6, 10, 13)

Nibble B inputs. The data present on these pins is transferred to the outputs when the Select input is at a high level and the Output Enable input is at a low level. The data is presented to the outputs in inverted form for the LCX258.

### OUTPUTS

#### Y0–Y3 (Pins 4, 7, 9, 12)

Data outputs. The selected input nibble is presented at these outputs when the Output Enable input is at a low level. The data present on these pins is in its inverted form for the LCX258. For the Output Enable input at a high level, the outputs are at a high level for the LCX258.

#### Select (Pin 1)

Nibble select. This input determines the data word to be transferred to the outputs. A low level on this input selects the A inputs and a high level selects the B inputs.

### CONTROL INPUTS

#### Output Enable (Pin 15)

Output Enable input. A low level on this input allows the selected data to be presented at the outputs. A high level on this input sets all of the outputs to 3–state off.

MC74LCX258

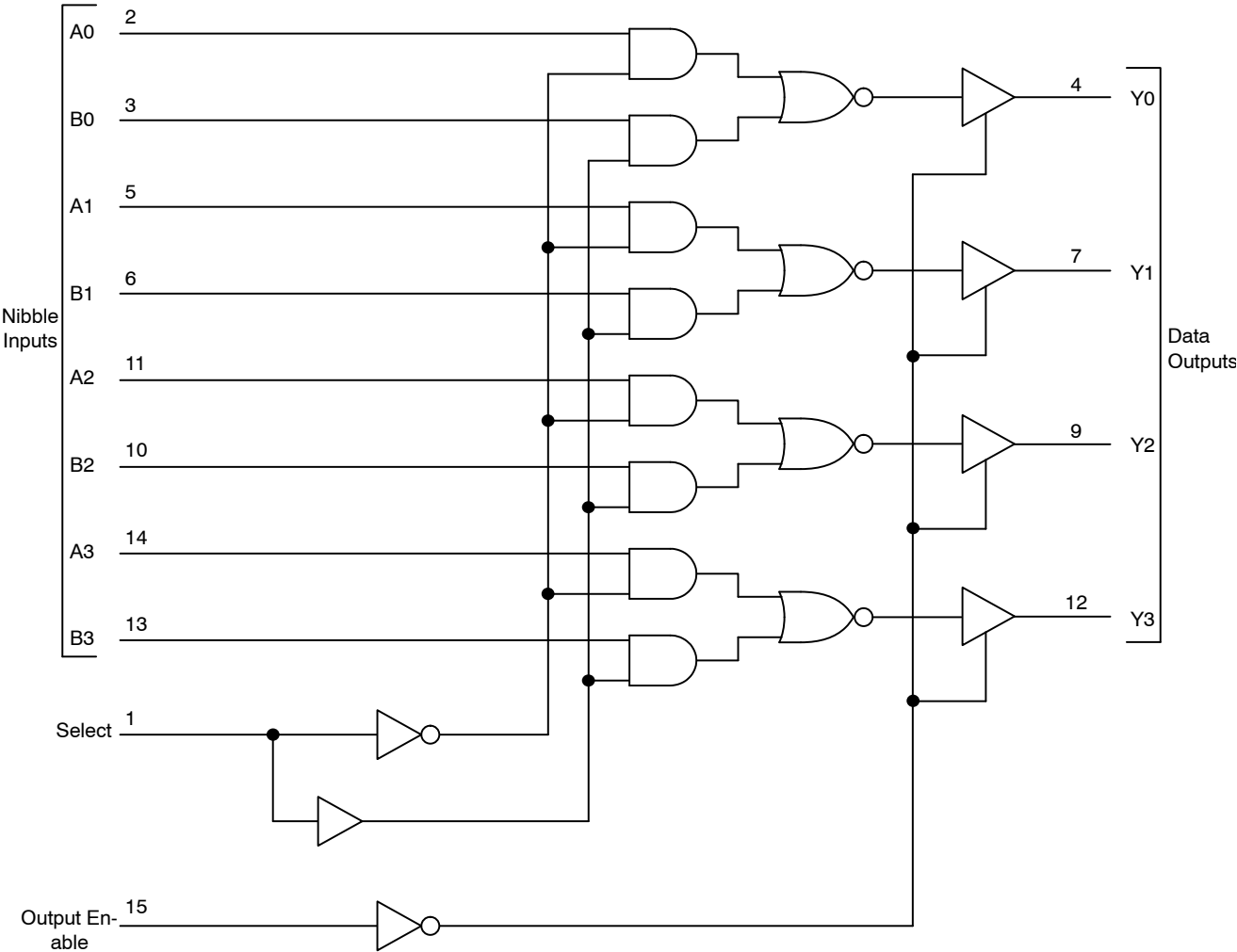


Figure 2. Expanded Logic Diagram

# MC74LCX258

## MAXIMUM RATINGS

| Symbol           | Parameter                        | Value   | Condition                        | Units |
|------------------|----------------------------------|---|----------------------------------|-------|
| V <sub>CC</sub>  | DC Supply Voltage                | -0.5 to +7.0                                  |                                  | V     |
| V <sub>I</sub>   | DC Input Voltage                 | -0.5 ≤ V <sub>I</sub> ≤ +7.0                  |                                  | V     |
| V <sub>O</sub>   | DC Output Voltage                | -0.5 ≤ V <sub>O</sub> ≤ V <sub>CC</sub> + 0.5 | Note 1                           | V     |
| I <sub>IK</sub>  | DC Input Diode Current           | -50   | V <sub>I</sub> < GND             | mA    |
| I <sub>OK</sub>  | DC Output Diode Current          | -50   | V <sub>O</sub> < GND             | mA    |
|                  |                                  | +50   | V <sub>O</sub> > V <sub>CC</sub> | mA    |
| I <sub>O</sub>   | DC Output Source/Sink Current    | ±50   |                                  | mA    |
| I <sub>CC</sub>  | DC Supply Current Per Supply Pin | ±100  |                                  | mA    |
| I <sub>GND</sub> | DC Ground Current Per Ground Pin | ±100  |                                  | mA    |
| T <sub>STG</sub> | Storage Temperature Range        | -65 to +150                                   |                                  | °C    |
| MSL              | Moisture Sensitivity             |   | Level 1                          |       |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. Output in HIGH or LOW State. I<sub>O</sub> absolute maximum rating must be observed.

## RECOMMENDED OPERATING CONDITIONS

| Symbol          | Parameter  | Min | Typ        | Max             | Units |
|-----------------|--|-----|------------|-----------------|-------|
| V <sub>CC</sub> | Supply Voltage<br>Operating<br>Data Retention Only   | 2.0 | 2.3 to 3.3 | 3.6             | V     |
|                 |  | 1.5 |            | 3.6             |       |
| V <sub>I</sub>  | Input Voltage  | 0   |            | 5.5             | V     |
| V <sub>O</sub>  | Output Voltage (HIGH or LOW State)   | 0   |            | V <sub>CC</sub> | V     |
| I <sub>OH</sub> | HIGH Level Output Current<br>V <sub>CC</sub> = 3.0 V – 3.6 V<br>V <sub>CC</sub> = 2.7 V – 3.0 V<br>V <sub>CC</sub> = 2.3 V – 2.7 V |     |            | -24             | mA    |
|                 |  |     |            | -12             |       |
|                 |  |     |            | -8              |       |
|                 |  |     |            |                 |       |
| I <sub>OL</sub> | LOW Level Output Current<br>V <sub>CC</sub> = 3.0 V – 3.6 V<br>V <sub>CC</sub> = 2.7 V – 3.0 V<br>V <sub>CC</sub> = 2.3 V – 2.7 V  |     |            | +24             | mA    |
|                 |  |     |            | +12             |       |
|                 |  |     |            | +8              |       |
|                 |  |     |            |                 |       |
| T <sub>A</sub>  | Operating Free-Air Temperature   | -40 |            | +85             | °C    |
| Δt/ΔV           | Input Transition Rise or Fall Rate, V <sub>IN</sub> from 0.8 V to 2.0 V,<br>V <sub>CC</sub> = 3.0 V                                | 0   |            | 10              | ns/V  |

## ORDERING INFORMATION

| Device          | Package               | Shipping <sup>†</sup> |
|-----------------|-----------------------|-----------------------|
| MC74LCX258DR2G  | SOIC-16<br>(Pb-Free)  | 2500 / Tape & Reel    |
| MC74LCX258DTG   | TSSOP-16<br>(Pb-Free) | 96 Units / Rail       |
| MC74LCX258DTR2G | TSSOP-16<br>(Pb-Free) | 2500 / Tape & Reel    |

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# MC74LCX258

## DC ELECTRICAL CHARACTERISTICS

| Symbol           | Characteristic                            | Condition   | T <sub>A</sub> = -40°C to +85°C                   |                                  | Units |
|------------------|---|---|---|----------------------------------|-------|
|                  |   |   | Min   | Max                              |       |
| V <sub>IH</sub>  | Minimum HIGH Level Input Voltage (Note 2) | 2.3 V ≤ V <sub>CC</sub> ≤ 2.7 V<br>2.7 V ≤ V <sub>CC</sub> ≤ 3.0 V<br>3.0 V ≤ V <sub>CC</sub> ≤ 3.6 V   | 1.7<br>2.0<br>2.0                                 |                                  | V     |
| V <sub>IL</sub>  | Maximum LOW Level Input Voltage (Note 2)  | 2.3 V ≤ V <sub>CC</sub> ≤ 2.7 V<br>2.7 V ≤ V <sub>CC</sub> ≤ 3.0 V<br>3.0 V ≤ V <sub>CC</sub> ≤ 3.6 V   |   | 0.7<br>0.8<br>0.8                | V     |
| V <sub>OH</sub>  | Minimum HIGH Level Output Voltage         | 2.3 V ≤ V <sub>CC</sub> ≤ 3.6 V; I <sub>OH</sub> = -100 μA<br>V <sub>CC</sub> = 2.3 V; I <sub>OH</sub> = -8 mA<br>V <sub>CC</sub> = 2.7 V; I <sub>OH</sub> = -12 mA<br>V <sub>CC</sub> = 3.0 V; I <sub>OH</sub> = -18 mA<br>V <sub>CC</sub> = 3.0 V; I <sub>OH</sub> = -24 mA | V <sub>CC</sub> - 0.2<br>1.7<br>2.2<br>2.4<br>2.2 |                                  | V     |
| V <sub>OL</sub>  | Maximum LOW Level Output Voltage          | 2.3 V ≤ V <sub>CC</sub> ≤ 3.6 V; I <sub>OH</sub> = 100 μA<br>V <sub>CC</sub> = 2.3 V; I <sub>OH</sub> = 8 mA<br>V <sub>CC</sub> = 2.7 V; I <sub>OH</sub> = 12 mA<br>V <sub>CC</sub> = 3.0 V; I <sub>OH</sub> = 16 mA<br>V <sub>CC</sub> = 3.0 V; I <sub>OH</sub> = 24 mA      |   | 0.2<br>0.7<br>0.4<br>0.4<br>0.55 | V     |
| I <sub>OZ</sub>  | 3-State Output Current                    | V <sub>CC</sub> = 3.6 V, V <sub>IN</sub> = V <sub>IH</sub> or V <sub>IL</sub> ,<br>V <sub>OUT</sub> = 0 to 5.5 V  |   | ±5                               | μA    |
| I <sub>OFF</sub> | Power Off Leakage Current                 | V <sub>CC</sub> = 0, V <sub>IN</sub> = 5.5 V or V <sub>OUT</sub> = 5.5 V  |   | 10                               | μA    |
| I <sub>IN</sub>  | Input Leakage Current                     | V <sub>CC</sub> = 3.6 V, V <sub>IN</sub> = 5.5 V or GND   |   | ±5                               | μA    |
| I <sub>CC</sub>  | Quiescent Supply Current                  | V <sub>CC</sub> = 3.6 V, V <sub>IN</sub> = 5.5 V or GND   |   | 10                               | μA    |
| ΔI <sub>CC</sub> | Increase in I <sub>CC</sub> per Input     | 2.3 V ≤ V <sub>CC</sub> ≤ 3.6 V; V <sub>IH</sub> = V <sub>CC</sub> - 0.6 V  |   | 500                              | μA    |

2. These values of V<sub>I</sub> are used to test DC electrical characteristics only.

## AC ELECTRICAL CHARACTERISTICS

| Symbol                                 | Parameter                        | Limits                           |            |                         |            |                                  |            | Units |
|--|----------------------------------|----------------------------------|------------|-------------------------|------------|----------------------------------|------------|-------|
|  |                                  | T <sub>A</sub> = -40°C to +85°C  |            |                         |            |                                  |            |       |
|  |                                  | V <sub>CC</sub> = 3.0 V to 3.6 V |            | V <sub>CC</sub> = 2.7 V |            | V <sub>CC</sub> = 2.3 V to 2.7 V |            |       |
|  |                                  | C <sub>L</sub> = 50 pF           |            | C <sub>L</sub> = 50 pF  |            | C <sub>L</sub> = 30 pF           |            |       |
|  |                                  | Min                              | Max        | Min                     | Max        | Min                              | Max        |       |
| t <sub>PLH</sub><br>t <sub>PHL</sub>   | Propagation Delay<br>A to B to Y | 1.0<br>1.0                       | 6.5<br>6.5 | 1.0<br>1.0              | 7.5<br>7.5 | 1.0<br>1.0                       | 8.5<br>8.5 | ns    |
| t <sub>PLH</sub><br>t <sub>PHL</sub>   | Propagation Delay<br>S to Y      | 1.0<br>1.0                       | 7.0<br>7.0 | 1.0<br>1.0              | 8.0<br>8.0 | 1.0<br>1.0                       | 9.0<br>9.0 | ns    |
| t <sub>PZL</sub><br>t <sub>PZH</sub>   | Propagation Delay<br>OE to Y     | 1.0<br>1.0                       | 7.0<br>7.0 | 1.0<br>1.0              | 8.0<br>8.0 | 1.0<br>1.0                       | 9.0<br>9.0 | ns    |
| t <sub>PLZ</sub><br>t <sub>PHZ</sub>   | Propagation Delay<br>OE to Y     | 1.0<br>1.0                       | 6.0<br>6.0 | 1.0<br>1.0              | 7.0<br>7.0 | 1.0<br>1.0                       | 8.0<br>8.0 | ns    |
| t <sub>OSHL</sub><br>t <sub>OSLH</sub> | Output-to-Output Skew            |                                  | 1.0<br>1.0 |                         |            |                                  |            | ns    |

## DYNAMIC SWITCHING CHARACTERISTICS

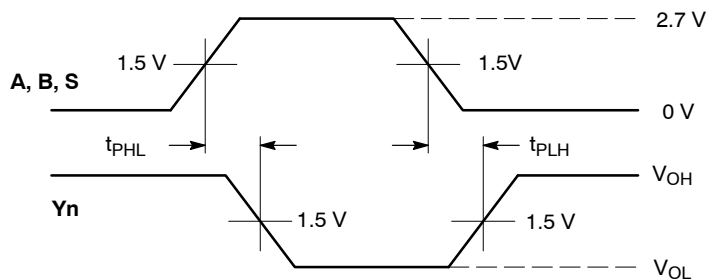
| Symbol           | Characteristic                      | Condition   | T <sub>A</sub> = +25°C |     |     | Units |
|------------------|-------------------------------------|---|------------------------|-----|-----|-------|
|                  |                                     |   | Min                    | Typ | Max |       |
| V <sub>OLP</sub> | Dynamic LOW Peak Voltage (Note 3)   | V <sub>CC</sub> = 3.3 V, C <sub>L</sub> = 50 pF, V <sub>IH</sub> = 3.3 V, V <sub>IL</sub> = 0 V |                        | 0.8 |     | V     |
| V <sub>OLV</sub> | Dynamic LOW Valley Voltage (Note 3) | V <sub>CC</sub> = 3.3 V, C <sub>L</sub> = 50 pF, V <sub>IH</sub> = 3.3 V, V <sub>IL</sub> = 0 V |                        | 0.8 |     | V     |

3. Number of outputs defined as "n". Measured with "n-1" outputs switching from HIGH-to-LOW or LOW-to-HIGH. The remaining output is measured in the LOW state.

## CAPACITIVE CHARACTERISTICS

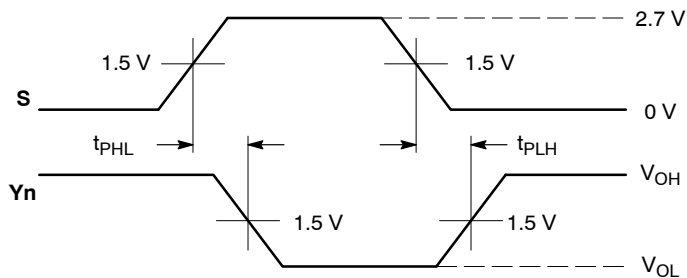
| Symbol           | Parameter                     | Condition  | Typical | Units |
|------------------|-------------------------------|--|---------|-------|
| C <sub>IN</sub>  | Input Capacitance             | V <sub>CC</sub> = 3.3 V, V <sub>I</sub> = 0 V or V <sub>CC</sub>         | 7       | pF    |
| C <sub>OUT</sub> | Output Capacitance            | V <sub>CC</sub> = 3.3 V, V <sub>I</sub> = 0 V or V <sub>CC</sub>         | 8       | pF    |
| C <sub>PD</sub>  | Power Dissipation Capacitance | 10 MHz, V <sub>CC</sub> = 3.3 V, V <sub>I</sub> = 0 V or V <sub>CC</sub> | 25      | pF    |

# MC74LCX258



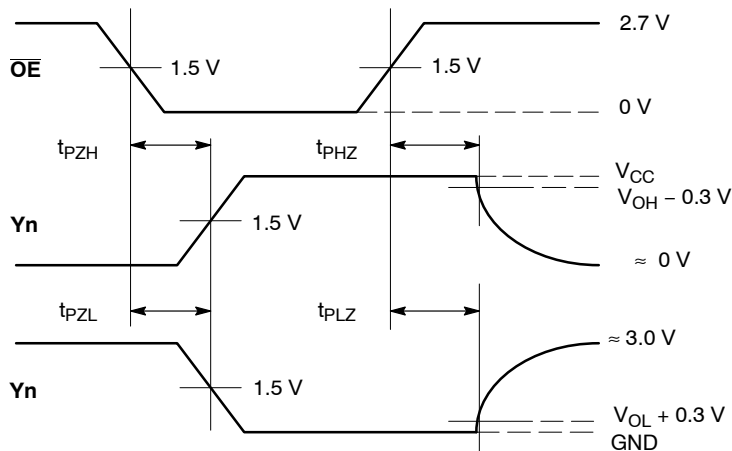
**WAVEFORM 1 - NONINVERTING PROPAGATION DELAYS**

$t_R = t_F = 2.5 \text{ ns}$ , 10% to 90%;  $f = 1 \text{ MHz}$ ;  $t_W = 500 \text{ ns}$



**WAVEFORM 2 - INVERTING PROPAGATION DELAYS**

$t_R = t_F = 2.5 \text{ ns}$ , 10% to 90%;  $f = 1 \text{ MHz}$ ;  $t_W = 500 \text{ ns}$

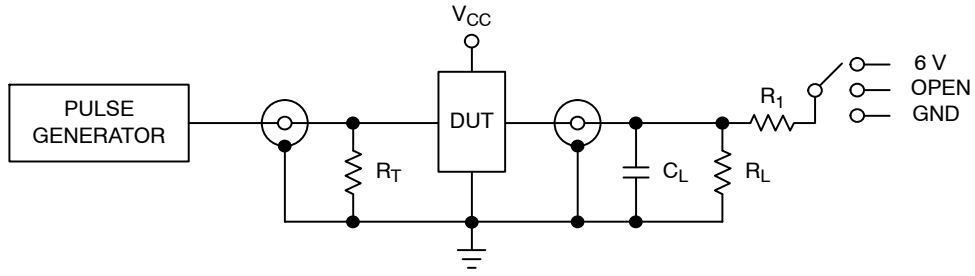


**WAVEFORM 3 - OUTPUT ENABLE AND DISABLE TIMES**

$t_R = t_F = 2.5 \text{ ns}$ , 10% to 90%;  $f = 1 \text{ MHz}$ ;  $t_W = 500 \text{ ns}$

**Figure 3. AC Waveforms**

# MC74LCX258



| Test   | Switch |
|--|--------|
| $t_{PLH}$ , $t_{PHL}$                        | Open   |
| $t_{PZL}$ , $t_{PLZ}$                        | 6 V    |
| Open Collector/Drain $t_{PLH}$ and $t_{PHL}$ | 6 V    |
| $t_{PZH}$ , $t_{PHZ}$                        | GND    |

$C_L = 50$  pF or equivalent (Includes jig and probe capacitance)

$R_L = R_1 = 500 \Omega$  or equivalent

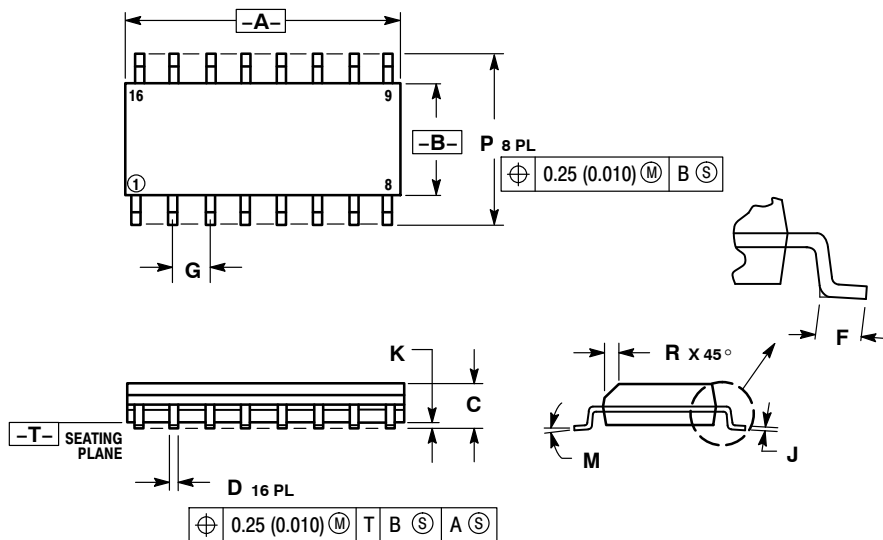
$R_T = Z_{OUT}$  of pulse generator (typically  $50 \Omega$ )

**Figure 4. Test Circuit**

# MC74LCX258

## PACKAGE DIMENSIONS

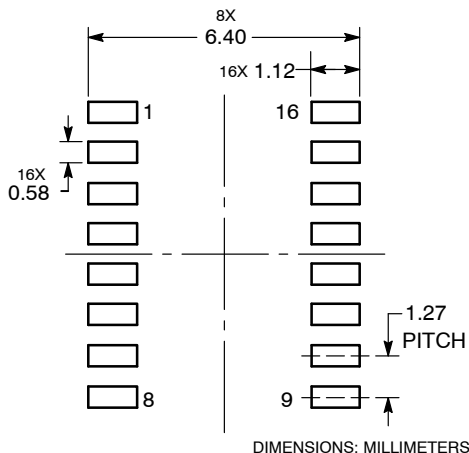
SOIC-16  
D SUFFIX  
CASE 751B-05  
ISSUE K



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: MILLIMETER.
  3. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
  4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
  5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

| DIM | MILLIMETERS |       | INCHES    |       |
|-----|-------------|-------|-----------|-------|
|     | MIN         | MAX   | MIN       | MAX   |
| A   | 9.80        | 10.00 | 0.386     | 0.393 |
| B   | 3.80        | 4.00  | 0.150     | 0.157 |
| C   | 1.35        | 1.75  | 0.054     | 0.068 |
| D   | 0.35        | 0.49  | 0.014     | 0.019 |
| F   | 0.40        | 1.25  | 0.016     | 0.049 |
| G   | 1.27 BSC    |       | 0.050 BSC |       |
| J   | 0.19        | 0.25  | 0.008     | 0.009 |
| K   | 0.10        | 0.25  | 0.004     | 0.009 |
| M   | 0°          | 7°    | 0°        | 7°    |
| P   | 5.80        | 6.20  | 0.229     | 0.244 |
| R   | 0.25        | 0.50  | 0.010     | 0.019 |

### SOLDERING FOOTPRINT

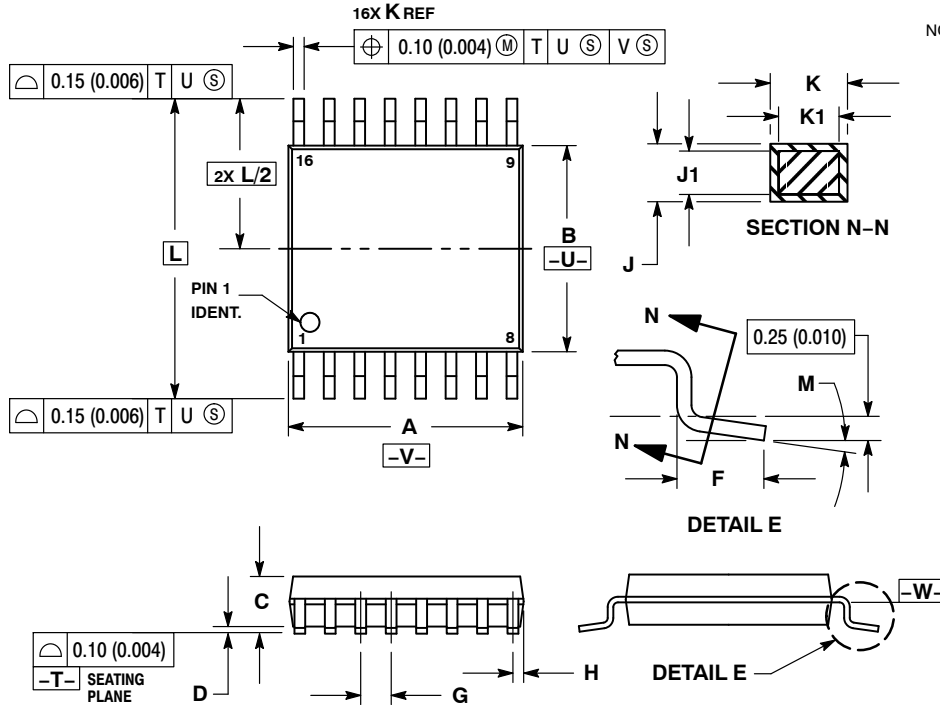




# MC74LCX258

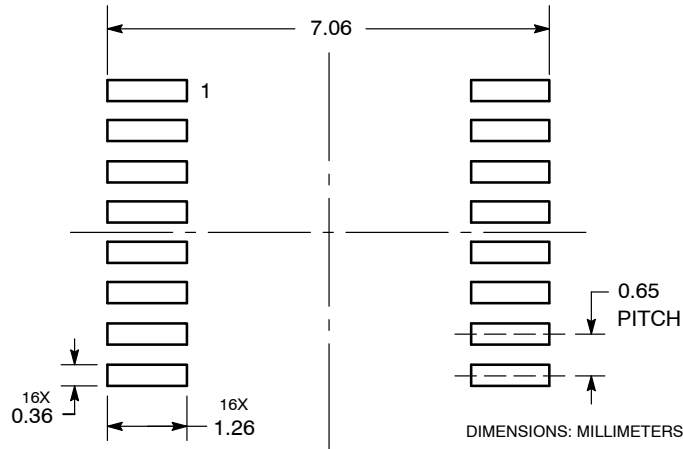
## PACKAGE DIMENSIONS

TSSOP-16  
DT SUFFIX  
CASE 948F-01  
ISSUE B



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: MILLIMETER.
  3. DIMENSION A DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
  4. DIMENSION B DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 (0.010) PER SIDE.
  5. DIMENSION K DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 (0.003) TOTAL IN EXCESS OF THE K DIMENSION AT MAXIMUM MATERIAL CONDITION.
  6. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
  7. DIMENSION A AND B ARE TO BE DETERMINED AT DATUM PLANE -W-

### SOLDERING FOOTPRINT



**ON Semiconductor** and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## PUBLICATION ORDERING INFORMATION

### LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor  
P.O. Box 5163, Denver, Colorado 80217 USA  
**Phone:** 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
**Fax:** 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
**Email:** [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5817-1050

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)  
**Order Literature:** <http://www.onsemi.com/orderlit>  
For additional information, please contact your local  
Sales Representative

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)