

# Low-Voltage CMOS Quad 2-Input Multiplexer

With 5 V-Tolerant Inputs (Non-Inverting)

## MC74LCX157

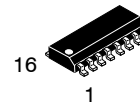
The MC74LCX157 is a high performance, quad 2-input multiplexer operating from a 1.65 to 5.5 V supply. High impedance TTL compatible inputs significantly reduce current loading to input drivers while TTL compatible outputs offer improved switching noise performance. A  $V_I$  specification of 5.5 V allows MC74LCX157 inputs to be safely driven from 5 V devices.

Four bits of data from two sources can be selected using the Select and Enable inputs. The four outputs present the selected data in the true (non-inverted) form. The MC74LCX157 can also be used as a function generator. Current drive capability is 24 mA at the outputs at 3 V.

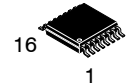
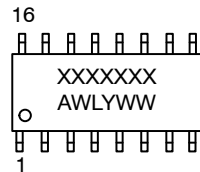
### Features

- Designed for 1.65 to 5.5 V  $V_{CC}$  Operation
- 5 V Tolerant Inputs – Interface Capability With 5 V TTL Logic
- LVTTTL Compatible
- LVC MOS Compatible
- 24 mA Balanced Output Sink and Source Capability at 3 V
- Near Zero Static Supply Current (10  $\mu$ A) Substantially Reduces System Power Requirements
- Latchup Performance Exceeds 100 mA
- ESD Performance:
  - ♦ Human Body Model >2000 V
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

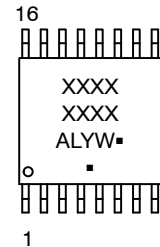
### MARKING DIAGRAMS



SOIC-16  
D SUFFIX  
CASE 751B



TSSOP-16  
DT SUFFIX  
CASE 948F



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 on page 7 of this data sheet.

MC74LCX157

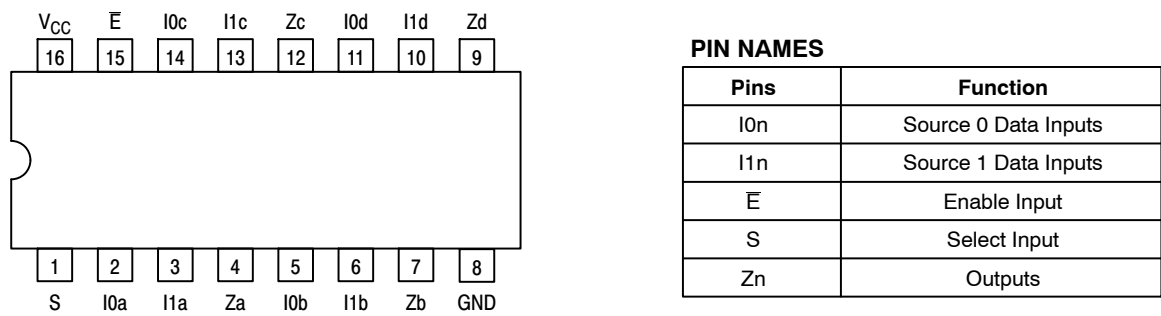


Figure 1. 16-Lead Pinout (Top View)

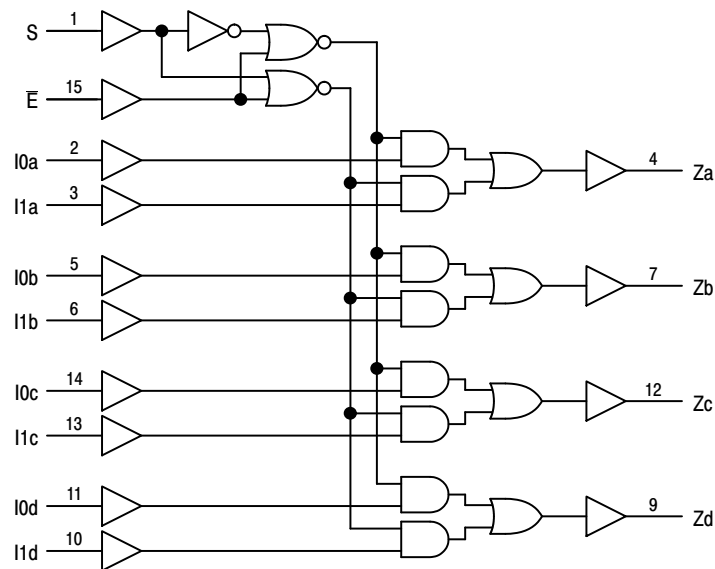


Figure 2. Logic Diagram

TRUTH TABLE

| Inputs |   |     |     | Outputs |
|--------|---|-----|-----|---------|
| E      | S | I0n | I1n | Zn      |
| H      | X | X   | X   | L       |
| L      | H | X   | L   | L       |
| L      | H | X   | H   | H       |
| L      | L | L   | X   | L       |
| L      | L | H   | X   | H       |

H = High Voltage Level; L = Low Voltage Level; X = High or Low Voltage Level ; For I<sub>CC</sub> Reasons DO NOT FLOAT Inputs

# MC74LCX157

## MAXIMUM RATINGS

| Symbol                | Parameter                                                                                                            | Value                                                  | Unit |
|-----------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|------|
| $V_{CC}$              | DC Supply Voltage                                                                                                    | -0.5 to +6.5                                           | V    |
| $V_I$                 | DC Input Voltage (Note 1)                                                                                            | -0.5 to +6.5                                           | V    |
| $V_O$                 | DC Output Voltage (Note 1)<br>Active-Mode (High or Low State)<br>Tri-State Mode<br>Power-Down Mode ( $V_{CC} = 0$ V) | -0.5 to $V_{CC} + 0.5$<br>-0.5 to +6.5<br>-0.5 to +6.5 | V    |
| $I_{IK}$              | DC Input Diode Current<br>$V_I < GND$                                                                                | -50                                                    | mA   |
| $I_{OK}$              | DC Output Diode Current<br>$V_O < GND$                                                                               | -50                                                    | mA   |
| $I_O$                 | DC Output Source/Sink Current                                                                                        | $\pm 50$                                               | mA   |
| $I_{CC}$ or $I_{GND}$ | DC Supply Current per Supply Pin or Ground Pin                                                                       | $\pm 100$                                              | mA   |
| $T_{STG}$             | Storage Temperature Range                                                                                            | -65 to +150                                            | °C   |
| $T_L$                 | Lead Temperature, 1 mm from Case for 10 secs                                                                         | 260                                                    | °C   |
| $T_J$                 | Junction Temperature Under Bias                                                                                      | +150                                                   | °C   |
| $\theta_{JA}$         | Thermal Resistance (Note 1)<br>SOIC-16<br>TSSOP-16                                                                   | 126<br>159                                             | °C/W |
| $P_D$                 | Power Dissipation in Still Air at 25°C<br>SOIC-16<br>TSSOP-16                                                        | 995<br>787                                             | mW   |
| MSL                   | Moisture Sensitivity                                                                                                 | Level 1                                                | -    |
| $F_R$                 | Flammability Rating Oxygen Index: 28 to 34                                                                           | UL 94 V-0 @ 0.125 in                                   | -    |
| $V_{ESD}$             | ESD Withstand Voltage (Note 3)<br>Human Body Model<br>Charged Device Model                                           | 2000<br>N/A                                            | V    |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1.  $I_O$  absolute maximum rating must be observed.
2. Measured with minimum pad spacing on an FR4 board, using 76 mm-by-114 mm, 2-ounce copper trace no air flow per JESD51-7.
3. HBM tested to EIA / JESD22-A114-A. CDM tested to JESD22-C101-A. JEDEC recommends that ESD qualification to EIA/JESD22-A115A (Machine Model) be discontinued.

## RECOMMENDED OPERATING CONDITIONS

| Symbol     | Parameter                                                                                                                                                       | Min              | Typ              | Max                    | Unit |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|------------------------|------|
| $V_{CC}$   | Supply Voltage<br>Operating<br>Data Retention Only                                                                                                              | 1.65<br>1.5      | 3.3<br>3.3       | 5.5<br>5.5             | V    |
| $V_I$      | Digital Input Voltage                                                                                                                                           | 0                | -                | 5.5                    | V    |
| $V_O$      | Output Voltage<br>Active Mode (High or Low State)<br>Tri-State Mode<br>Power Down Mode ( $V_{CC} = 0$ V)                                                        | 0<br>0<br>0      | -<br>-<br>-      | $V_{CC}$<br>5.5<br>5.5 | V    |
| $T_A$      | Operating Free-Air Temperature                                                                                                                                  | -40              | -                | +125                   | °C   |
| $t_r, t_f$ | Input Rise or Fall Rate<br>$V_{CC} = 1.65$ V to 1.95 V<br>$V_{CC} = 2.3$ V to 2.7 V<br>$V_I$ from 0.8 V to 2.0 V, $V_{CC} = 3.0$ V<br>$V_{CC} = 4.5$ V to 5.5 V | 0<br>0<br>0<br>0 | -<br>-<br>-<br>- | 20<br>20<br>10<br>5    | nS/V |

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

4. Unused inputs must always be tied to an appropriate logic voltage level (e.g., either GND or  $V_{CC}$ ). Unused outputs must be left open.

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## DC ELECTRICAL CHARACTERISTICS

| Symbol           | Parameter                             | Conditions                                          | V <sub>CC</sub> (V) | 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              |                                                     | 1.65 – 1.95         | 0.65 x V <sub>CC</sub>            | –                      | 0.65 x V <sub>CC</sub>             | –                      | V    |
|                  |                                       |                                                     | 2.3 – 2.7           | 1.7                               | –                      | 1.7                                | –                      |      |
|                  |                                       |                                                     | 3.0 – 3.6           | 2.0                               | –                      | 2.0                                | –                      |      |
|                  |                                       |                                                     | 4.5 – 5.5           | 0.70 x V <sub>CC</sub>            | –                      | 0.70 x V <sub>CC</sub>             | –                      |      |
| V <sub>IL</sub>  | LOW Level Input Voltage               |                                                     | 1.65 – 1.95         | –                                 | 0.35 x V <sub>CC</sub> | –                                  | 0.35 x V <sub>CC</sub> | V    |
|                  |                                       |                                                     | 2.3 – 2.7           | –                                 | 0.7                    | –                                  | 0.7                    |      |
|                  |                                       |                                                     | 3.0 – 3.6           | –                                 | 0.8                    | –                                  | 0.8                    |      |
|                  |                                       |                                                     | 4.5 – 5.5           | –                                 | 0.30 x V <sub>CC</sub> | –                                  | 0.30 x V <sub>CC</sub> |      |
| V <sub>OH</sub>  | High-Level Output Voltage             | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> |                     |                                   |                        |                                    |                        | V    |
|                  |                                       | I <sub>OH</sub> = -100 μA                           | 1.65 to 5.5         | V <sub>CC</sub> - 0.1             | –                      | V <sub>CC</sub> - 0.1              | –                      |      |
|                  |                                       | I <sub>OH</sub> = -4 mA                             | 1.65                | 1.29                              | –                      | 1.29                               | –                      |      |
|                  |                                       | I <sub>OH</sub> = -8 mA                             | 2.3                 | 1.8                               | –                      | 1.8                                | –                      |      |
|                  |                                       | I <sub>OH</sub> = -12 mA                            | 2.7                 | 2.2                               | –                      | 2.2                                | –                      |      |
|                  |                                       | I <sub>OH</sub> = -16 mA                            | 3.0                 | 2.4                               | –                      | 2.4                                | –                      |      |
|                  |                                       | I <sub>OH</sub> = -24 mA                            | 3.0                 | 2.2                               | –                      | 2.2                                | –                      |      |
|                  |                                       | I <sub>OH</sub> = -32 mA                            | 4.5                 | 3.7                               | –                      | 3.7                                | –                      |      |
| V <sub>OL</sub>  | Low-Level Output Voltage              | V <sub>I</sub> = V <sub>IH</sub> or V <sub>IL</sub> |                     |                                   |                        |                                    |                        | V    |
|                  |                                       | I <sub>OL</sub> = 100 μA                            | 1.65 to 5.5         | –                                 | 0.1                    | –                                  | 0.1                    |      |
|                  |                                       | I <sub>OL</sub> = 4 mA                              | 1.65                | –                                 | 0.24                   | –                                  | 0.24                   |      |
|                  |                                       | I <sub>OL</sub> = 8 mA                              | 2.3                 | –                                 | 0.3                    | –                                  | 0.3                    |      |
|                  |                                       | I <sub>OL</sub> = 12 mA                             | 2.7                 | –                                 | 0.4                    | –                                  | 0.4                    |      |
|                  |                                       | I <sub>OL</sub> = 16 mA                             | 3.0                 | –                                 | 0.4                    | –                                  | 0.4                    |      |
|                  |                                       | I <sub>OL</sub> = 24 mA                             | 3.0                 | –                                 | 0.55                   | –                                  | 0.55                   |      |
|                  |                                       | I <sub>OL</sub> = 32 mA                             | 4.5                 | –                                 | 0.6                    | –                                  | 0.6                    |      |
| I <sub>I</sub>   | Input Leakage Current                 | V <sub>I</sub> = 0 to 5.5 V                         | 3.6                 | –                                 | ±5.0                   | –                                  | ±5.0                   | μA   |
| I <sub>OFF</sub> | Power Off Leakage Current             | V <sub>I</sub> = 5.5 V or V <sub>O</sub> = 5.5 V    | 0                   | –                                 | 10                     | –                                  | 10                     | μA   |
| I <sub>CC</sub>  | Quiescent Supply Current              | V <sub>I</sub> = 5.5 V or GND                       | 3.6                 | –                                 | 10                     | –                                  | 10                     | μA   |
| ΔI <sub>CC</sub> | Increase in I <sub>CC</sub> per Input | V <sub>IH</sub> = V <sub>CC</sub> - 0.6 V           | 2.3 to 3.6          | –                                 | 500                    | –                                  | 500                    | μA   |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

# MC74LCX157

## AC ELECTRICAL CHARACTERISTICS

| Symbol                                | Parameter                      | Test Condition      | V <sub>CC</sub> (V) | T <sub>A</sub> = -40 °C to +85 °C |      | T <sub>A</sub> = -40 °C to +125 °C |      | Unit |
|---------------------------------------|--------------------------------|---------------------|---------------------|-----------------------------------|------|------------------------------------|------|------|
|                                       |                                |                     |                     | Min                               | Max  | Min                                | Max  |      |
| t <sub>PLH</sub> , t <sub>PHL</sub>   | Propagation Delay, In to Zn    | See Figures 3 and 4 | 1.65 to 1.95        | –                                 | 11.2 | –                                  | 11.2 | ns   |
|                                       |                                |                     | 2.3 to 2.7          | –                                 | 7.0  | –                                  | 7.0  |      |
|                                       |                                |                     | 2.7                 | –                                 | 6.3  | –                                  | 6.3  |      |
|                                       |                                |                     | 3.0 to 3.6          | –                                 | 5.8  | –                                  | 5.8  |      |
|                                       |                                |                     | 4.5 to 5.5          | –                                 | 4.8  | –                                  | 4.8  |      |
| t <sub>PLH</sub> , t <sub>PHL</sub>   | Propagation Delay, S to Zn     | See Figures 3 and 4 | 1.65 to 1.95        | –                                 | 11.6 | –                                  | 11.6 | ns   |
|                                       |                                |                     | 2.3 to 2.7          | –                                 | 8.4  | –                                  | 8.4  |      |
|                                       |                                |                     | 2.7                 | –                                 | 8.0  | –                                  | 8.0  |      |
|                                       |                                |                     | 3.0 to 3.6          | –                                 | 7.0  | –                                  | 7.0  |      |
|                                       |                                |                     | 4.5 to 5.5          | –                                 | 5.8  | –                                  | 5.8  |      |
| t <sub>PLH</sub> , t <sub>PHL</sub>   | Propagation Delay, E to Zn     | See Figures 3 and 4 | 1.65 to 1.95        | –                                 | 11.6 | –                                  | 11.6 | ns   |
|                                       |                                |                     | 2.3 to 2.7          | –                                 | 8.4  | –                                  | 8.4  |      |
|                                       |                                |                     | 2.7                 | –                                 | 8.0  | –                                  | 8.0  |      |
|                                       |                                |                     | 3.0 to 3.6          | –                                 | 7.0  | –                                  | 7.0  |      |
|                                       |                                |                     | 4.5 to 5.5          | –                                 | 5.8  | –                                  | 5.8  |      |
| t <sub>OSSL</sub> , t <sub>OSLH</sub> | Output to Output Skew (Note 5) |                     | 1.65 to 1.95        | –                                 | –    | –                                  | –    | ns   |
|                                       |                                |                     | 2.3 to 2.7          | –                                 | –    | –                                  | –    |      |
|                                       |                                |                     | 2.7                 | –                                 | –    | –                                  | –    |      |
|                                       |                                |                     | 3.0 to 3.6          | –                                 | 1.0  | –                                  | 1.0  |      |
|                                       |                                |                     | 4.5 to 5.5          | –                                 | –    | –                                  | –    |      |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

5. Skew is defined as the absolute value of the difference between the actual propagation delay for any two separate outputs of the same device. The specification applies to any outputs switching in the same direction, either HIGH-to-LOW (t<sub>OSSL</sub>) or LOW-to-HIGH (t<sub>OSLH</sub>).

## DYNAMIC SWITCHING CHARACTERISTICS

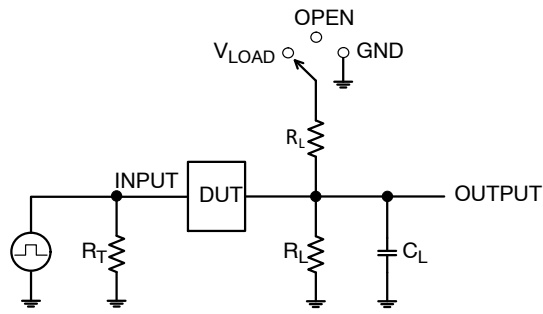
| Symbol           | Characteristic                      | Condition                                                                                       | T <sub>A</sub> = +25 °C |     |     | Units |
|------------------|-------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------|-----|-----|-------|
|                  |                                     |                                                                                                 | Min                     | Typ | Max |       |
| V <sub>OLP</sub> | Dynamic LOW Peak Voltage (Note 6)   | 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 6) | 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     |

6. 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    |

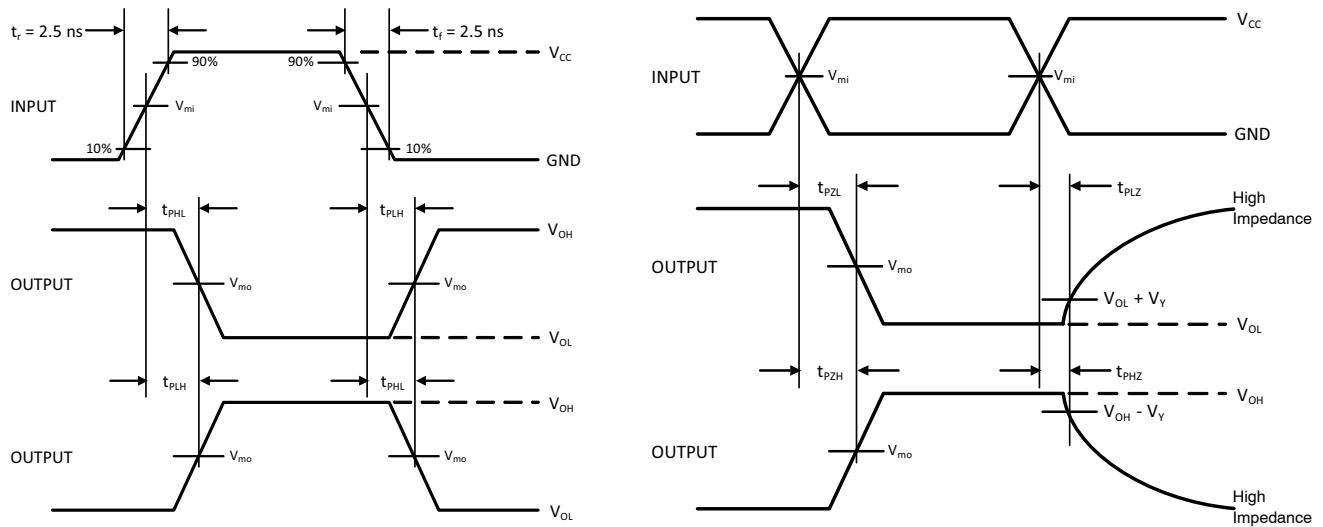
## MC74LCX157



$C_L$  includes probe and jig capacitance  
 $R_T$  is  $Z_{OUT}$  of pulse generator (typically 50  $\Omega$ )  
 $f = 1$  MHz

| Test                | Switch Position |
|---------------------|-----------------|
| $t_{PLH} / t_{PHL}$ | Open            |
| $t_{PLZ} / t_{PZL}$ | $V_{LOAD}$      |
| $t_{PHZ} / t_{PZH}$ | GND             |

Figure 3. Test Circuit



| $V_{CC}, V$  | $R_L, \Omega$ | $C_L, pF$ | $V_{LOAD}$        | $V_m, V$   | $V_Y, V$ |
|--------------|---------------|-----------|-------------------|------------|----------|
| 1.65 to 1.95 | 500           | 30        | $2 \times V_{CC}$ | $V_{CC}/2$ | 0.15     |
| 2.3 to 2.7   | 500           | 30        | $2 \times V_{CC}$ | $V_{CC}/2$ | 0.15     |
| 2.7          | 500           | 50        | 6 V               | 1.5        | 0.3      |
| 3.0 to 3.6   | 500           | 50        | 6 V               | 1.5        | 0.3      |
| 4.5 to 5.5   | 500           | 50        | $2 \times V_{CC}$ | $V_{CC}/2$ | 0.3      |

Figure 4. Switching Waveforms

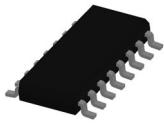
## MC74LCX157

### ORDERING INFORMATION

| Device          | Marking    | Package               | Shipping <sup>†</sup> |
|-----------------|------------|-----------------------|-----------------------|
| MC74LCX157DR2G  | LCX157G    | SOIC-16<br>(Pb-Free)  | 2500 / Tape & Reel    |
| MC74LCX157DTR2G | LCX<br>157 | 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](#).

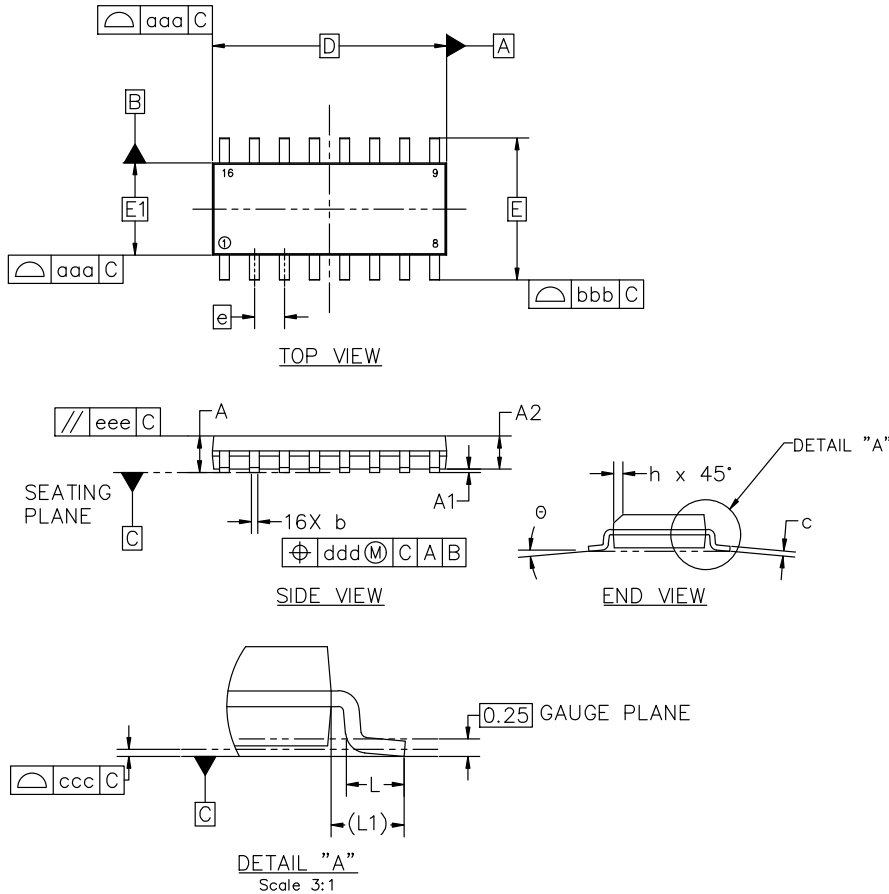



**SOIC-16 9.90x3.90x1.37 1.27P**  
**CASE 751B**  
**ISSUE M**

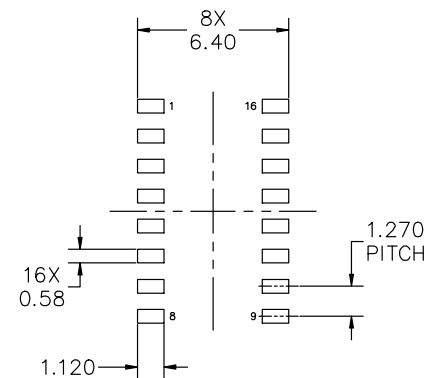
DATE 18 OCT 2024

## NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. DIMENSION IN MILLIMETERS. ANGLE IN DEGREES.
3. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15mm PER SIDE.
5. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127mm TOTAL IN EXCESS OF THE b DIMENSION AT MAXIMUM MATERIAL CONDITION.



| MILLIMETERS                    |          |      |      |
|--------------------------------|----------|------|------|
| DIM                            | MIN      | NOM  | MAX  |
| A                              | 1.35     | 1.55 | 1.75 |
| A1                             | 0.10     | 0.18 | 0.25 |
| A2                             | 1.25     | 1.37 | 1.50 |
| b                              | 0.35     | 0.42 | 0.49 |
| c                              | 0.19     | 0.22 | 0.25 |
| D                              | 9.90 BSC |      |      |
| E                              | 6.00 BSC |      |      |
| E1                             | 3.90 BSC |      |      |
| e                              | 1.27 BSC |      |      |
| h                              | 0.25     | ---  | 0.50 |
| L                              | 0.40     | 0.83 | 1.25 |
| L1                             | 1.05 REF |      |      |
| θ                              | 0°       | ---  | 7°   |
| TOLERANCE OF FORM AND POSITION |          |      |      |
| aaa                            | 0.10     |      |      |
| bbb                            | 0.20     |      |      |
| ccc                            | 0.10     |      |      |
| ddd                            | 0.25     |      |      |
| eee                            | 0.10     |      |      |



\*FOR ADDITIONAL INFORMATION ON OUR PB-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE onsemi SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERM/D

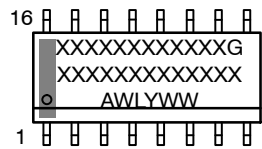
|                         |                                     |                                                                                                                                                                                  |
|-------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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| <b>DESCRIPTION:</b>     | <b>SOIC-16 9.90X3.90X1.37 1.27P</b> | <b>PAGE 1 OF 2</b>                                                                                                                                                               |

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SOIC-16 9.90x3.90x1.37 1.27P  
CASE 751B  
ISSUE M

DATE 18 OCT 2024

GENERIC  
MARKING DIAGRAM\*

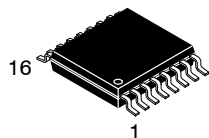


XXXXX = Specific Device Code  
A = Assembly Location  
WL = Wafer Lot  
Y = Year  
WW = Work Week  
G = Pb-Free Package

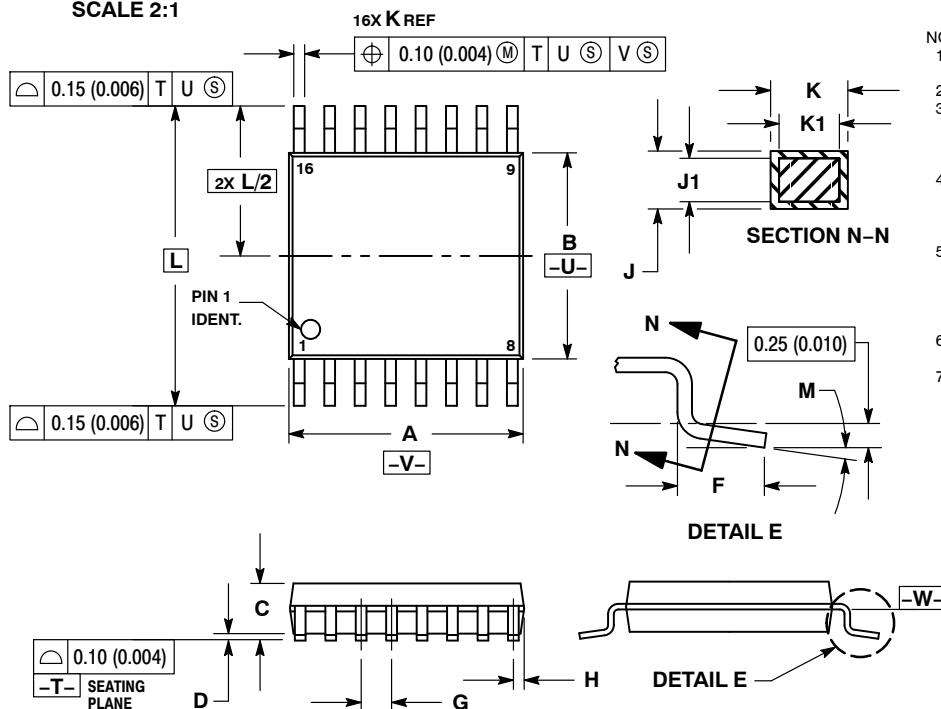
\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

|                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| STYLE 1:<br>PIN 1. COLLECTOR<br>2. BASE<br>3. EMITTER<br>4. NO CONNECTION<br>5. EMITTER<br>6. BASE<br>7. COLLECTOR<br>8. COLLECTOR<br>9. BASE<br>10. EMITTER<br>11. NO CONNECTION<br>12. EMITTER<br>13. BASE<br>14. COLLECTOR<br>15. EMITTER<br>16. COLLECTOR                           | STYLE 2:<br>PIN 1. CATHODE<br>2. ANODE<br>3. NO CONNECTION<br>4. CATHODE<br>5. CATHODE<br>6. NO CONNECTION<br>7. ANODE<br>8. CATHODE<br>9. CATHODE<br>10. ANODE<br>11. NO CONNECTION<br>12. CATHODE<br>13. CATHODE<br>14. NO CONNECTION<br>15. ANODE<br>16. CATHODE | STYLE 3:<br>PIN 1. COLLECTOR, DYE #1<br>2. BASE, #1<br>3. EMITTER, #1<br>4. COLLECTOR, #1<br>5. COLLECTOR, #2<br>6. BASE, #2<br>7. EMITTER, #2<br>8. COLLECTOR, #2<br>9. COLLECTOR, #3<br>10. BASE, #3<br>11. EMITTER, #3<br>12. COLLECTOR, #3<br>13. COLLECTOR, #4<br>14. BASE, #4<br>15. EMITTER, #4<br>16. COLLECTOR, #4                                                                                         | STYLE 4:<br>PIN 1. COLLECTOR, DYE #1<br>2. COLLECTOR, #1<br>3. COLLECTOR, #2<br>4. COLLECTOR, #2<br>5. COLLECTOR, #3<br>6. COLLECTOR, #3<br>7. COLLECTOR, #4<br>8. COLLECTOR, #4<br>9. BASE, #4<br>10. EMITTER, #4<br>11. BASE, #3<br>12. EMITTER, #3<br>13. BASE, #2<br>14. EMITTER, #2<br>15. BASE, #1<br>16. EMITTER, #1 |
| STYLE 5:<br>PIN 1. DRAIN, DYE #1<br>2. DRAIN, #1<br>3. DRAIN, #2<br>4. DRAIN, #2<br>5. DRAIN, #3<br>6. DRAIN, #3<br>7. DRAIN, #4<br>8. DRAIN, #4<br>9. GATE, #4<br>10. SOURCE, #4<br>11. GATE, #3<br>12. SOURCE, #3<br>13. GATE, #2<br>14. SOURCE, #2<br>15. GATE, #1<br>16. SOURCE, #1 | STYLE 6:<br>PIN 1. CATHODE<br>2. CATHODE<br>3. CATHODE<br>4. CATHODE<br>5. CATHODE<br>6. CATHODE<br>7. CATHODE<br>8. CATHODE<br>9. ANODE<br>10. ANODE<br>11. ANODE<br>12. ANODE<br>13. ANODE<br>14. ANODE<br>15. ANODE<br>16. ANODE                                 | STYLE 7:<br>PIN 1. SOURCE N-CH<br>2. COMMON DRAIN (OUTPUT)<br>3. COMMON DRAIN (OUTPUT)<br>4. GATE P-CH<br>5. COMMON DRAIN (OUTPUT)<br>6. COMMON DRAIN (OUTPUT)<br>7. COMMON DRAIN (OUTPUT)<br>8. SOURCE P-CH<br>9. SOURCE P-CH<br>10. COMMON DRAIN (OUTPUT)<br>11. COMMON DRAIN (OUTPUT)<br>12. COMMON DRAIN (OUTPUT)<br>13. GATE N-CH<br>14. COMMON DRAIN (OUTPUT)<br>15. COMMON DRAIN (OUTPUT)<br>16. SOURCE N-CH |                                                                                                                                                                                                                                                                                                                             |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                              |                                                                                                                                                                                     |
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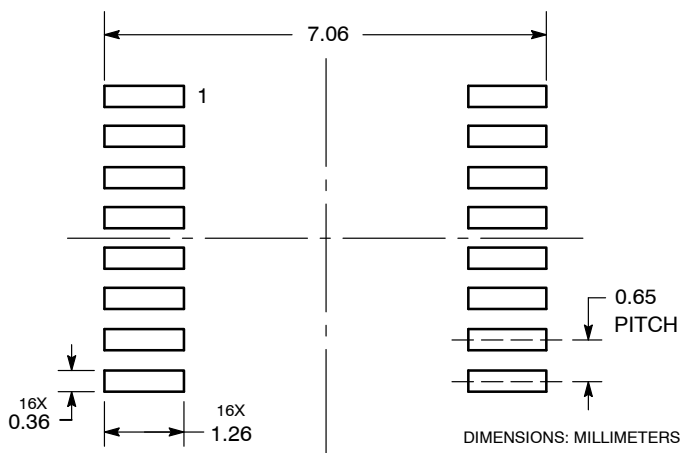

**TSSOP-16 WB**  
**CASE 948F**  
**ISSUE B**

DATE 19 OCT 2006

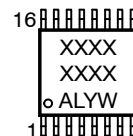

**NOTES:**

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-.

| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | MIN         | MAX  | MIN       | MAX   |
| A   | 4.90        | 5.10 | 0.193     | 0.200 |
| B   | 4.30        | 4.50 | 0.169     | 0.177 |
| C   | ---         | 1.20 | ---       | 0.047 |
| D   | 0.05        | 0.15 | 0.002     | 0.006 |
| F   | 0.50        | 0.75 | 0.020     | 0.030 |
| G   | 0.65 BSC    |      | 0.026 BSC |       |
| H   | 0.18        | 0.28 | 0.007     | 0.011 |
| J   | 0.09        | 0.20 | 0.004     | 0.008 |
| J1  | 0.09        | 0.16 | 0.004     | 0.006 |
| K   | 0.19        | 0.30 | 0.007     | 0.012 |
| K1  | 0.19        | 0.25 | 0.007     | 0.010 |
| L   | 6.40 BSC    |      | 0.252 BSC |       |
| M   | 0°          | 8°   | 0°        | 8°    |

**RECOMMENDED  
SOLDERING FOOTPRINT\***


\*For additional information on our Pb-Free strategy and soldering details, please download the onsemi Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

**GENERIC  
MARKING DIAGRAM\***


XXXX = Specific Device Code  
A = Assembly Location  
L = Wafer Lot  
Y = Year  
W = Work Week  
G or ■ = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "■", may or may not be present. Some products may not follow the Generic Marking.

|                         |                    |                                                                                                                                                                                  |
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