

# Low-Voltage CMOS Quad 2-Input Multiplexer

## MC74LCX257

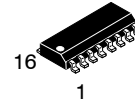
With 5.0 V–Tolerant Inputs and Outputs  
(3–State, Non–Inverting)

The MC74LCX257 is a high performance, quad 2–input 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 MC74LCX257 inputs to be safely driven from 5.0 V devices.

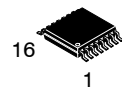
Four bits of data from two sources can be selected using the Select input. The four outputs present the selected data in the true (non–inverted) form. The outputs may be switched to a high impedance state by placing a logic HIGH on the Output Enable ( $\overline{OE}$ ) input. Current drive capability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

### Features

- Designed for 2.3 to 3.6 V  $V_{CC}$  Operation
- 5.0 V Tolerant – Interface Capability with 5.0 V TTL Logic
- Supports Live Insertion and Withdrawal
- $I_{OFF}$  Specification Guarantees High Impedance When  $V_{CC} = 0$  V
- LVTTTL Compatible
- LVCMOS 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

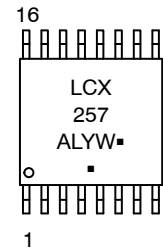
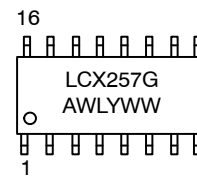


SOIC–16  
D SUFFIX  
CASE 751B



TSSOP–16  
DT SUFFIX  
CASE 948F

### MARKING DIAGRAM



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 3 of this data sheet.

MC74LCX257

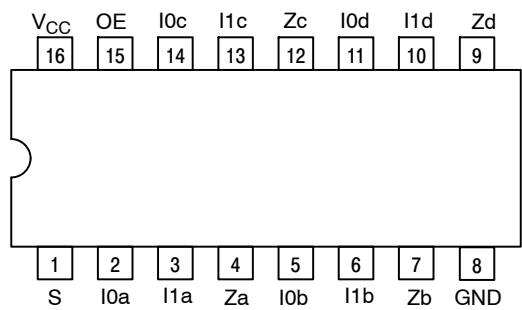


Figure 1. Pinout: 16-Lead Plastic Package  
(Top View)

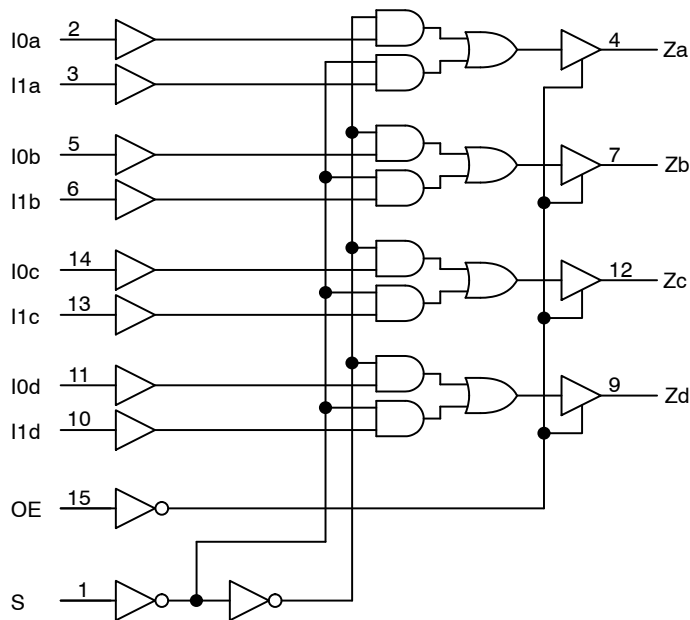


Figure 2. Logic Diagram

PIN NAMES

| Pins            | Function             |
|-----------------|----------------------|
| I0n             | Source 0 Data Inputs |
| I1n             | Source 1 Data Inputs |
| $\overline{OE}$ | Output Enable Input  |
| S               | Select Input         |
| Zn              | Outputs              |

TRUTH TABLE

| Inputs          |   |     |     | Outputs |
|-----------------|---|-----|-----|---------|
| $\overline{OE}$ | S | I0n | I1n | Zn      |
| H               | X | X   | X   | Z       |
| 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 and Transitions are Acceptable  
Z = High Impedance State

For ICC reasons, DO NOT FLOAT Inputs

# MC74LCX257

## MAXIMUM RATINGS

| Symbol    | Parameter                        | Value                             | Condition                            | Units |
|-----------|----------------------------------|-----------------------------------|--------------------------------------|-------|
| $V_{CC}$  | DC Supply Voltage                | -0.5 to +7.0                      |                                      | V     |
| $V_I$     | DC Input Voltage                 | $-0.5 \leq V_I \leq +7.0$         |                                      | V     |
| $V_O$     | DC Output Voltage                | $-0.5 \leq V_I \leq +7.0$         | Output in 3-State                    | V     |
|           |                                  | $-0.5 \leq V_O \leq V_{CC} + 0.5$ | Output in HIGH or LOW State (Note 1) | V     |
| $I_{IK}$  | DC Input Diode Current           | -50                               | $V_I < GND$                          | mA    |
| $I_{OK}$  | DC Output Diode Current          | -50                               | $V_O < GND$                          | mA    |
|           |                                  | +50                               | $V_O > V_{CC}$                       | mA    |
| $I_O$     | DC Output Source/Sink Current    | $\pm 50$                          |                                      | mA    |
| $I_{CC}$  | DC Supply Current Per Supply Pin | $\pm 100$                         |                                      | mA    |
| $I_{GND}$ | DC Ground Current Per Ground Pin | $\pm 100$                         |                                      | mA    |
| $T_{STG}$ | Storage Temperature Range        | -65 to +150                       |                                      | °C    |
| MSL       | Moisture Sensitivity             |                                   | Level 1                              |       |

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1.  $I_O$  absolute maximum rating must be observed.

## RECOMMENDED OPERATING CONDITIONS

| Symbol              | Parameter                                                                                                                                               | Min        | Type                 | Max              | Units |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------|------------------|-------|
| $V_{CC}$            | Supply Voltage<br>Operating<br>Data Retention Only                                                                                                      | 2.0<br>1.5 | 2.5, 3.3<br>2.5, 3.3 | 3.6<br>3.6       | V     |
| $V_I$               | Input Voltage                                                                                                                                           | 0          |                      | 5.5              | V     |
| $V_O$               | Output Voltage<br>(HIGH or LOW State)<br>(3-State)                                                                                                      | 0<br>0     |                      | $V_{CC}$<br>5.5  | V     |
| $I_{OH}$            | HIGH Level Output Current<br>$V_{CC} = 3.0\text{ V} - 3.6\text{ V}$<br>$V_{CC} = 2.7\text{ V} - 3.0\text{ V}$<br>$V_{CC} = 2.3\text{ V} - 2.7\text{ V}$ |            |                      | -24<br>-12<br>-8 | mA    |
| $I_{OL}$            | LOW Level Output Current<br>$V_{CC} = 3.0\text{ V} - 3.6\text{ V}$<br>$V_{CC} = 2.7\text{ V} - 3.0\text{ V}$<br>$V_{CC} = 2.3\text{ V} - 2.7\text{ V}$  |            |                      | +24<br>+12<br>+8 | mA    |
| $T_A$               | Operating Free-Air Temperature                                                                                                                          | -40        |                      | +85              | °C    |
| $\Delta t/\Delta V$ | Input Transition Rise or Fall Rate, $V_{IN}$ from 0.8 V to 2.0 V, $V_{CC} = 3.0\text{ V}$                                                               | 0          |                      | 10               | ns/V  |

## ORDERING INFORMATION

| Device          | Package               | Shipping†        |
|-----------------|-----------------------|------------------|
| MC74LCX257DR2G  | SOIC-16<br>(Pb-Free)  | 2500 Tape & Reel |
| MC74LCX257DTG   | TSSOP-16<br>(Pb-Free) | 96 Units / Rail  |
| MC74LCX257DTR2G | TSSOP-16<br>(Pb-Free) | 2500 Tape & Reel |

†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](#).

# MC74LCX257

## DC ELECTRICAL CHARACTERISTICS

| Symbol           | Characteristic                        | Condition                                                                                                        | T <sub>A</sub> = -40°C to +85°C |      | Units |
|------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------|------|-------|
|                  |                                       |                                                                                                                  | Min                             | Max  |       |
| V <sub>IH</sub>  | HIGH Level Input Voltage (Note 2)     | 2.3 V ≤ V <sub>CC</sub> ≤ 2.7 V                                                                                  | 1.7                             |      | V     |
|                  |                                       | 2.7 V ≤ V <sub>CC</sub> ≤ 3.6 V                                                                                  | 2.0                             |      |       |
| V <sub>IL</sub>  | LOW Level Input Voltage (Note 2)      | 2.3 V ≤ V <sub>CC</sub> ≤ 2.7 V                                                                                  |                                 | 0.7  | V     |
|                  |                                       | 2.7 V ≤ V <sub>CC</sub> ≤ 3.6 V                                                                                  |                                 | 0.8  |       |
| V <sub>OH</sub>  | HIGH Level Output Voltage             | 2.3 V ≤ V <sub>CC</sub> ≤ 3.6 V; I <sub>OH</sub> = -100 μA                                                       | V <sub>CC</sub> - 0.2           |      | V     |
|                  |                                       | V <sub>CC</sub> = 2.3 V; I <sub>OH</sub> = -8 mA                                                                 | 1.8                             |      |       |
|                  |                                       | V <sub>CC</sub> = 2.7 V; I <sub>OH</sub> = -12 mA                                                                | 2.2                             |      |       |
|                  |                                       | V <sub>CC</sub> = 3.0 V; I <sub>OH</sub> = -18 mA                                                                | 2.4                             |      |       |
|                  |                                       | V <sub>CC</sub> = 3.0 V; I <sub>OH</sub> = -24 mA                                                                | 2.2                             |      |       |
| V <sub>OL</sub>  | LOW Level Output Voltage              | 2.3 V ≤ V <sub>CC</sub> ≤ 3.6 V; I <sub>OL</sub> = 100 μA                                                        |                                 | 0.2  | V     |
|                  |                                       | V <sub>CC</sub> = 2.3 V; I <sub>OL</sub> = 8 mA                                                                  |                                 | 0.6  |       |
|                  |                                       | V <sub>CC</sub> = 2.7 V; I <sub>OL</sub> = 12 mA                                                                 |                                 | 0.4  |       |
|                  |                                       | V <sub>CC</sub> = 3.0 V; I <sub>OL</sub> = 16 mA                                                                 |                                 | 0.4  |       |
|                  |                                       | V <sub>CC</sub> = 3.0 V; I <sub>OL</sub> = 24 mA                                                                 |                                 | 0.55 |       |
| 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 <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 CHARACTERISTICS t<sub>RI</sub> = t<sub>FI</sub> = 2.5 ns; R<sub>L</sub> = 500 Ω

| Symbol                                 | Parameter                                      | Waveform | Limits                          |            |                         |            |                                 |            | Units |
|----------------------------------------|------------------------------------------------|----------|---------------------------------|------------|-------------------------|------------|---------------------------------|------------|-------|
|                                        |                                                |          | T <sub>A</sub> = -40°C to +85°C |            |                         |            |                                 |            |       |
|                                        |                                                |          | V <sub>CC</sub> = 3.3 V ± 0.3 V |            | V <sub>CC</sub> = 2.7 V |            | V <sub>CC</sub> = 2.5 V ± 0.2 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>In to Zn                  | 1        | 1.5<br>1.5                      | 6.0<br>6.0 | 1.5<br>1.5              | 6.5<br>6.5 | 1.5<br>1.5                      | 7.2<br>7.2 | ns    |
| t <sub>PLH</sub><br>t <sub>PHL</sub>   | Propagation Delay<br>S to Zn                   | 1, 2     | 1.5<br>1.5                      | 7.0<br>7.0 | 1.5<br>1.5              | 8.5<br>8.5 | 1.5<br>1.5                      | 9.1<br>9.1 | ns    |
| t <sub>PZH</sub><br>t <sub>PZL</sub>   | Output Enable Time to<br>High and Low Level    | 3        | 1.5<br>1.5                      | 7.0<br>7.0 | 1.5<br>1.5              | 8.5<br>8.5 | 1.5<br>1.5                      | 9.1<br>9.1 | ns    |
| t <sub>PHZ</sub><br>t <sub>PLZ</sub>   | Output Disable Time from<br>High and Low Level | 3        | 1.5<br>1.5                      | 5.5<br>5.5 | 1.5<br>1.5              | 6.0<br>6.0 | 1.5<br>1.5                      | 6.6<br>6.6 | ns    |
| t <sub>OSHL</sub><br>t <sub>OSLH</sub> | Output-to-Output Skew<br>(Note 3)              |          |                                 | 1.0<br>1.0 |                         |            |                                 |            | ns    |

3. 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>OSHL</sub>) or LOW-to-HIGH (t<sub>OSLH</sub>); parameter guaranteed by design.

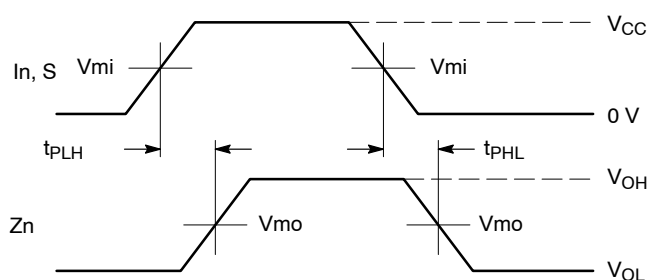
## DYNAMIC SWITCHING CHARACTERISTICS

| Symbol    | Characteristic                         | Condition                                                                                                                                                                          | $T_A = +25^\circ\text{C}$ |              |     | Units |
|-----------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------|-----|-------|
|           |                                        |                                                                                                                                                                                    | Min                       | Typ          | Max |       |
| $V_{OLP}$ | Dynamic LOW Peak Voltage<br>(Note 4)   | $V_{CC} = 3.3\text{ V}, C_L = 50\text{ pF}, V_{IH} = 3.3\text{ V}, V_{IL} = 0\text{ V}$<br>$V_{CC} = 2.5\text{ V}, C_L = 30\text{ pF}, V_{IH} = 2.5\text{ V}, V_{IL} = 0\text{ V}$ |                           | 0.8<br>0.6   |     | V     |
| $V_{OLV}$ | Dynamic LOW Valley Voltage<br>(Note 4) | $V_{CC} = 3.3\text{ V}, C_L = 50\text{ pF}, V_{IH} = 3.3\text{ V}, V_{IL} = 0\text{ V}$<br>$V_{CC} = 2.5\text{ V}, C_L = 30\text{ pF}, V_{IH} = 2.5\text{ V}, V_{IL} = 0\text{ V}$ |                           | -0.8<br>-0.6 |     | V     |

4. 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.

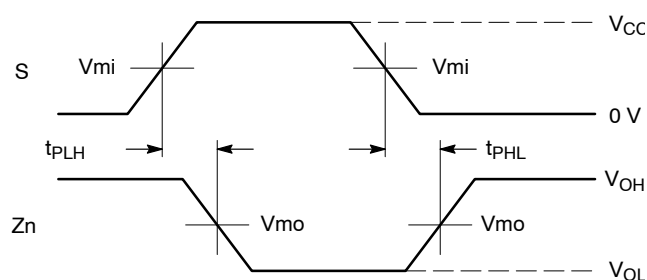
## CAPACITIVE CHARACTERISTICS

| Symbol    | Parameter                     | Condition                                                    | Typical | Units |
|-----------|-------------------------------|--------------------------------------------------------------|---------|-------|
| $C_{IN}$  | Input Capacitance             | $V_{CC} = 3.3\text{ V}, V_I = 0\text{ V or } V_{CC}$         | 7       | pF    |
| $C_{I/O}$ | Input/Output Capacitance      | $V_{CC} = 3.3\text{ V}, V_I = 0\text{ V or } V_{CC}$         | 8       | pF    |
| $C_{PD}$  | Power Dissipation Capacitance | 10 MHz, $V_{CC} = 3.3\text{ V}, V_I = 0\text{ V or } V_{CC}$ | 25      | pF    |



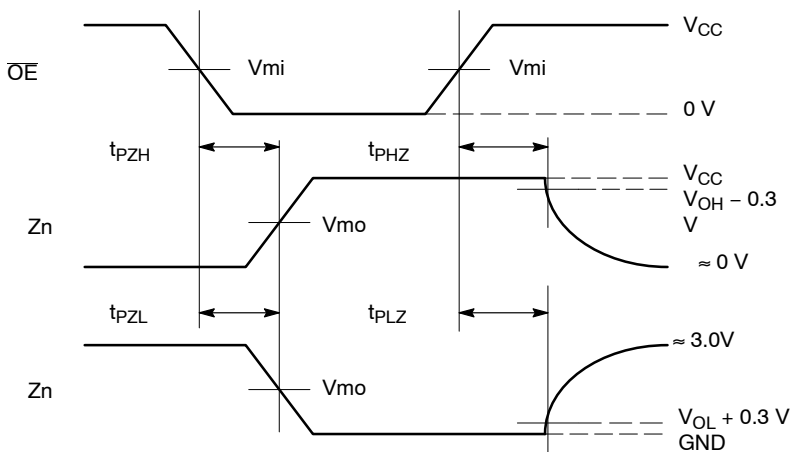
WAVEFORM 1 – NON-INVERTING PROPAGATION DELAYS

$t_R = t_F = 2.5\text{ ns}$ , 10% to 90%;  $f = 1.0\text{ MHz}$ ;  $t_W = 500\text{ ns}$



WAVEFORM 2 – INVERTING PROPAGATION DELAYS

$t_R = t_F = 2.5\text{ ns}$ , 10% to 90%;  $f = 1.0\text{ MHz}$ ;  $t_W = 500\text{ ns}$

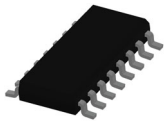


WAVEFORM 3 – OUTPUT ENABLE AND DISABLE TIMES

$t_R = t_F = 2.5\text{ ns}$ , 10% to 90%;  $f = 1.0\text{ MHz}$ ;  $t_W = 500\text{ ns}$

| Symbol   | $V_{CC}$                        |                         |                                 |
|----------|---------------------------------|-------------------------|---------------------------------|
|          | $3.3\text{ V} \pm 0.3\text{ V}$ | $2.7\text{ V}$          | $2.5\text{ V} \pm 0.2\text{ V}$ |
| $V_{mi}$ | 1.5 V                           | 1.5 V                   | $V_{CC}/2$                      |
| $V_{mo}$ | 1.5 V                           | 1.5 V                   | $V_{CC}/2$                      |
| $V_{HZ}$ | $V_{OL} + 0.3\text{ V}$         | $V_{OL} + 0.3\text{ V}$ | $V_{OL} + 0.15\text{ V}$        |
| $V_{LZ}$ | $V_{OH} - 0.3\text{ V}$         | $V_{OH} - 0.3\text{ V}$ | $V_{OH} - 0.15\text{ V}$        |

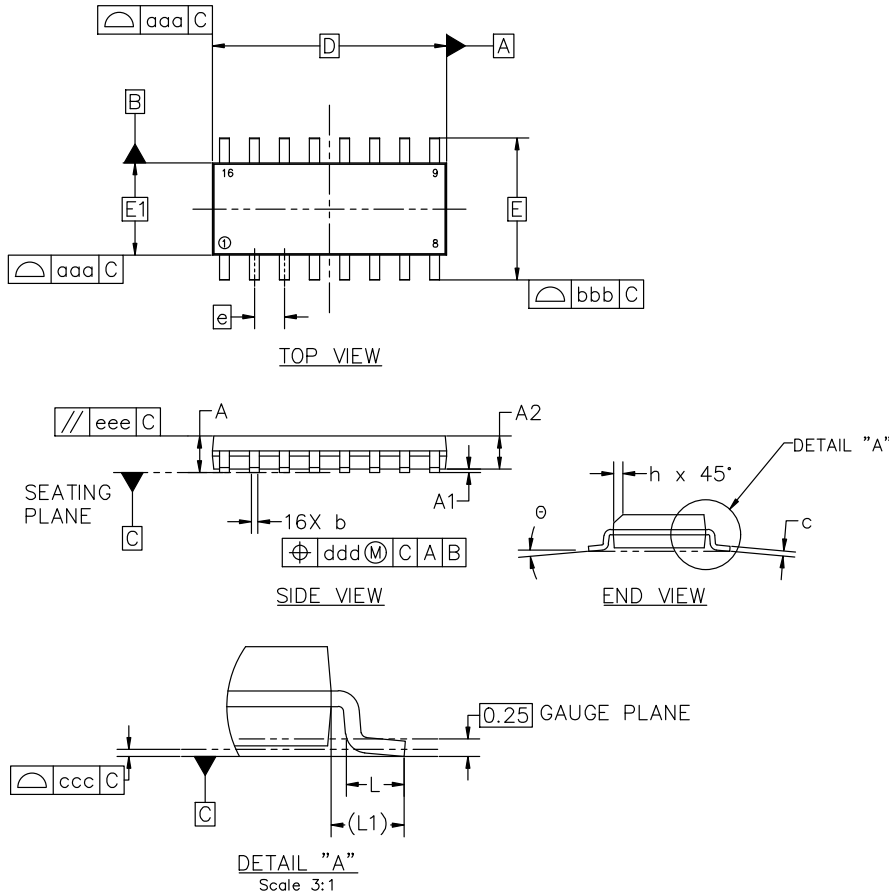
Figure 3. AC Waveforms


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

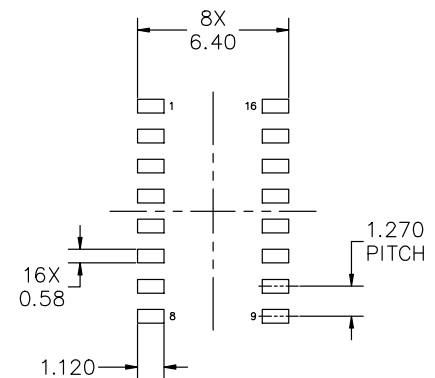
DATE 18 OCT 2024

## 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

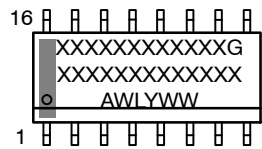
|                         |                                     |                                                                                                                                                                                  |
|-------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DOCUMENT NUMBER:</b> | <b>98ASB42566B</b>                  | Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red. |
| <b>DESCRIPTION:</b>     | <b>SOIC-16 9.90X3.90X1.37 1.27P</b> | <b>PAGE 1 OF 2</b>                                                                                                                                                               |

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi 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. onsemi does not convey any license under its patent rights nor the rights of others.

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

DATE 18 OCT 2024

GENERIC  
MARKING DIAGRAM\*

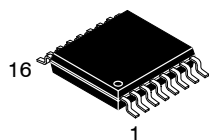


XXXXX = Specific Device Code  
A = Assembly Location  
WL = Wafer Lot  
Y = Year  
WW = Work Week  
G = Pb-Free Package

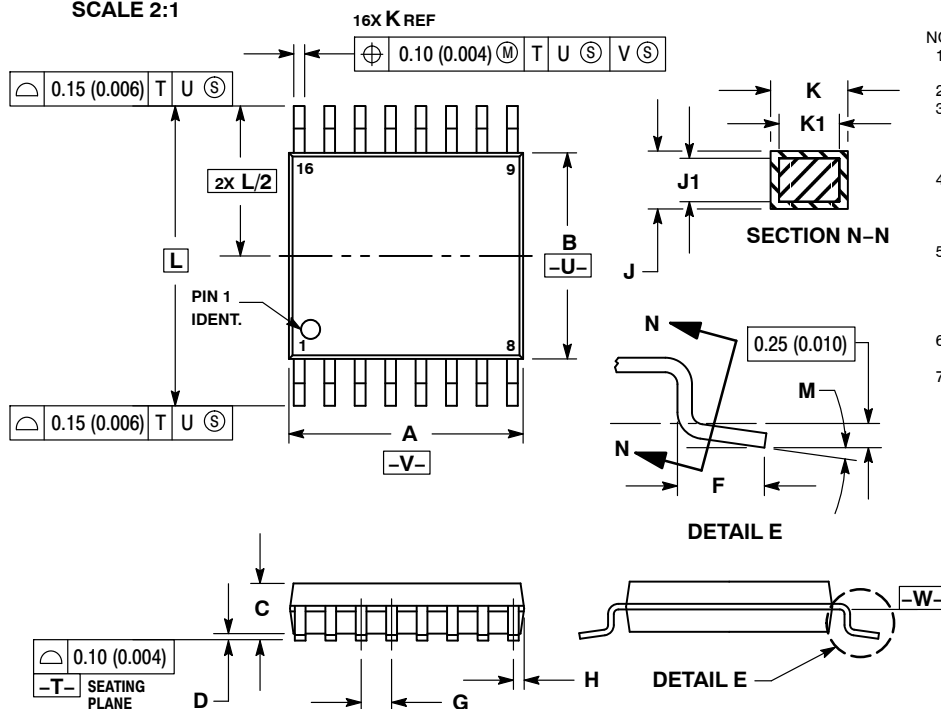
\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

|                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 |                                                                                                                                                                                                                                                                                                                             |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                              |                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DOCUMENT NUMBER:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 98ASB42566B                  | Electronic versions are uncontrolled except when accessed directly from the Document Repository.<br>Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red. |
| DESCRIPTION:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SOIC-16 9.90X3.90X1.37 1.27P | PAGE 2 OF 2                                                                                                                                                                         |
| onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi 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. onsemi does not convey any license under its patent rights nor the rights of others. |                              |                                                                                                                                                                                     |

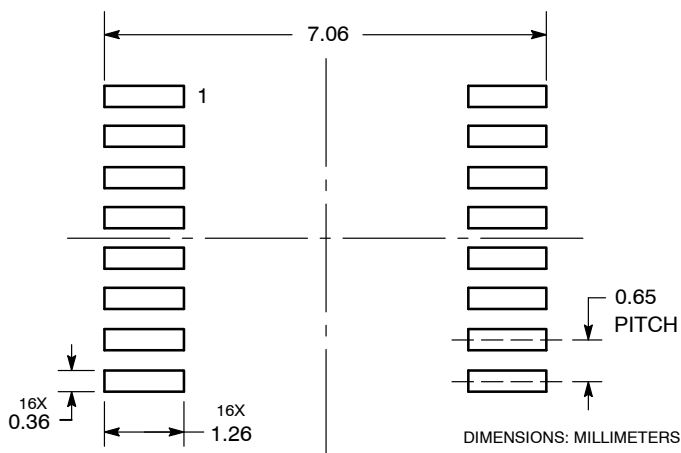

**TSSOP-16 WB**  
**CASE 948F**  
**ISSUE B**

DATE 19 OCT 2006

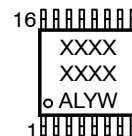

**NOTES:**

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.

|                         |                    |                                                                                                                                                                                  |
|-------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DOCUMENT NUMBER:</b> | <b>98ASH70247A</b> | Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red. |
| <b>DESCRIPTION:</b>     | <b>TSSOP-16</b>    | <b>PAGE 1 OF 1</b>                                                                                                                                                               |

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi 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. onsemi does not convey any license under its patent rights nor the rights of others.



**onsemi**, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'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). **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** 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. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** 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. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** 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 **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## ADDITIONAL INFORMATION

### TECHNICAL PUBLICATIONS:

Technical Library: [www.onsemi.com/design/resources/technical-documentation](http://www.onsemi.com/design/resources/technical-documentation)  
onsemi Website: [www.onsemi.com](http://www.onsemi.com)

### ONLINE SUPPORT: [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at  
[www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)