# *High-Speed Four Channel Digital Isolators*

**UMISO7740A** ***SSOP16(0.635)/SOP16/WSOP16/WWSOP16***
**UMISO7741A** ***SSOP16(0.635)/SOP16/WSOP16/WWSOP16***
**UMISO7742A** ***SSOP16(0.635)/SOP16/WSOP16/WWSOP16***

## 1 Description

The UMISO774xA series are high-performance quad-channel, unidirectional digital isolators with $3kV_{RMS}$ (SSOP16(0.635) package), $3.75kV_{RMS}$ (SOP16 package), $5kV_{RMS}$ (WSOP16 package) and $7.5kV_{RMS}$ (WWSOP16 package) isolation rating and up to 20Mbps data rate. The devices offer high electromagnetic immunity and low emissions at low power consumption while isolating different ground domains and block high-voltage/high-current transients from sensitive or human interface circuitry. Each isolation channel has a logic input and output buffer separated by capacitive silicon dioxide ($SiO_2$) insulation barrier, the integrated Schmitt trigger on each input provide excellent noise immunity in automotive applications.

The UMISO774xA series offers all possible unidirectional channel configurations to accommodate any four channels design. The UMISO7740A series feature four channels transferring signals in one direction. The UMISO7741A series have three-forward and one-reverse direction channels, making it ideal for applications such as isolated SPI, RS-485 communication. The UMISO7742A series provide further design flexibility with two channels in each direction. Both the UMISO7741A and UMISO7742A series come with individual enable control pins for each side of the isolator which can be used to put the outputs in high impedance for multi-master driving applications to reduce power consumption.

The UMISO774xA series feature default outputs. When the input is either not powered or is open-circuit, the default output is low for devices with suffix L and high for devices with suffix H, see the Ordering Information table for suffixes associated with each option.

The UMISO774xA series are available in SSOP16(0.635) and SOP16 narrow body package, WSOP16 wide body package and WWSOP16 extra wide body package. The devices are characterized over ambient free-air temperatures from –40 ℃ to 125 ℃.

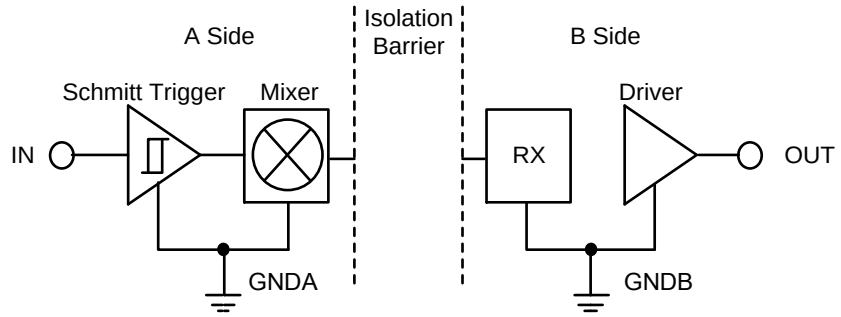
## 2 Features

- Data rate: up to 20Mbps
- Robust galvanic isolation of digital signals
  - High lifetime: >40 years
  - Up to 3000 $V_{RMS}$ isolation rating (SSOP16(0.635) package)
  - Up to 3750 $V_{RMS}$ isolation rating (SOP16 package)
  - Up to 5000 $V_{RMS}$ isolation rating (WSOP16 package)
  - Up to 7500 $V_{RMS}$ isolation rating (WWSOP16 package)
  - ±200 kV/μs typical CMTI
- Wide supply range: 3.0 V to 5.5V
- Extended ambient temperature range: –40 ℃ to 125 ℃
- Enable control input with tri-state output function
- Default output high (UMISO774xAH) and low (UMISO774xAL) options
- High Electromagnetic Immunity
- No start-up initialization required
- Available in SSOP16(0.635), SOP16, WSOP16 and WWSOP16 packages
- Excellent propagation delay and skew
  - Propagation delay: ≤ 100 ns
  - Pulse width distortion: ≤ 10 ns
- Compliant with safety regulatory
  - DIN EN IEC 60747-17 (VDE 0884-17)
  - UL according to UL1577
  - IEC 61010-1 and GB 4943.1-2022

## 3 Applications

- Industrial Automation
- Medical Systems
- Solar Inverter
- Motor Control
- Isolated Power Supplies
- Isolated ADC,DAC

## 4 Simplified Channel Structure

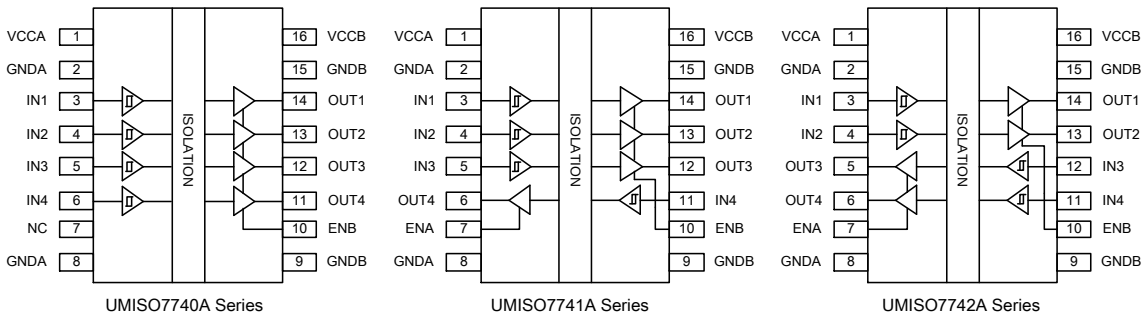



GNDA and GNDB are the isolated grounds for A side and B side respectively.

## 5 Selection Guide

| Part Number | A Side Inputs | B Side Inputs | Default Output |
|---|---|---|---|
| UMISO7740AL | 4 | 0 | Low |
| UMISO7740AH | 4 | 0 | High |
| UMISO7741AL | 3 | 1 | Low |
| UMISO7741AH | 3 | 1 | High |
| UMISO7742AL | 2 | 2 | Low |
| UMISO7742AH | 2 | 2 | High |

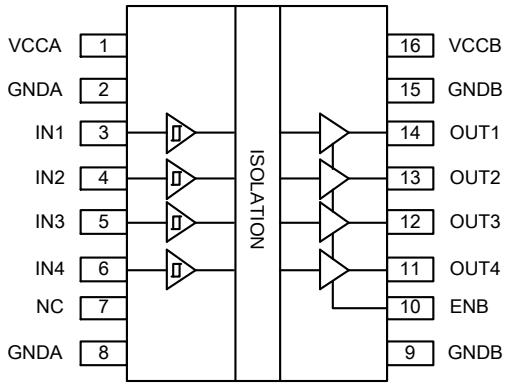
## 6 Functional Block Diagrams



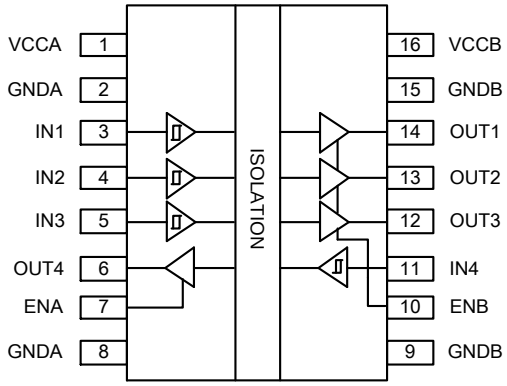
## 7 Ordering Information

| Part Number | A Side Inputs | B Side Inputs | Default Output | Isolation Rating ($V_{RMS}$) | Mark Code | Package | Shipping Qty |
|---|---|---|---|---|---|---|---|
| UMISO7740ALSAG | 4 | 0 | Low | 3000 | ISO7740AL | SSOP16(0.635) | 4000pcs/13Inch Tape & Reel |
| UMISO7740ALSG | | | | 3750 | ISO7740AL | SOP16 | 3000pcs/13Inch Tape & Reel |
| UMISO7740ALWSG | | | | 5000 | ISO7740AL | WSOP16 | 1500pcs/13Inch Tape & Reel |
| UMISO7740ALWWSG | | | | 7500 | ISO7740AL | WWSOP16 | 1000pcs/13Inch Tape & Reel |
| UMISO7740AHSAG | | | High | 3000 | ISO7740AH | SSOP16(0.635) | 4000pcs/13Inch Tape & Reel |
| UMISO7740AHSG | | | | 3750 | ISO7740AH | SOP16 | 3000pcs/13Inch Tape & Reel |
| UMISO7740AHWSG | | | | 5000 | ISO7740AH | WSOP16 | 1500pcs/13Inch Tape & Reel |
| UMISO7740AHWWSG | | | | 7500 | ISO7740AH | WWSOP16 | 1000pcs/13Inch Tape & Reel |
| UMISO7741ALSAG | 3 | 1 | Low | 3000 | ISO7741AL | SSOP16(0.635) | 4000pcs/13Inch Tape & Reel |
| UMISO7741ALSG | | | | 3750 | ISO7741AL | SOP16 | 3000pcs/13Inch Tape & Reel |
| UMISO7741ALWSG | | | | 5000 | ISO7741AL | WSOP16 | 1500pcs/13Inch Tape & Reel |
| UMISO7741ALWWSG | | | | 7500 | ISO7741AL | WWSOP16 | 1000pcs/13Inch Tape & Reel |
| UMISO7741AHSAG | | | High | 3000 | ISO7741AH | SSOP16(0.635) | 4000pcs/13Inch Tape & Reel |
| UMISO7741AHSG | | | | 3750 | ISO7741AH | SOP16 | 3000pcs/13Inch Tape & Reel |
| UMISO7741AHWSG | | | | 5000 | ISO7741AH | WSOP16 | 1500pcs/13Inch Tape & Reel |
| UMISO7741AHWWSG | | | | 7500 | ISO7741AH | WWSOP16 | 1000pcs/13Inch Tape & Reel |
| UMISO7742ALSAG | 2 | 2 | Low | 3000 | ISO7742AL | SSOP16(0.635) | 4000pcs/13Inch Tape & Reel |
| UMISO7742ALSG | | | | 3750 | ISO7742AL | SOP16 | 3000pcs/13Inch Tape & Reel |
| UMISO7742ALWSG | | | | 5000 | ISO7742AL | WSOP16 | 1500pcs/13Inch Tape & Reel |
| UMISO7742ALWWSG | | | | 7500 | ISO7742AL | WWSOP16 | 1000pcs/13Inch Tape & Reel |
| UMISO7742AHSAG | | | High | 3000 | ISO7742AH | SSOP16(0.635) | 4000pcs/13Inch Tape & Reel |
| UMISO7742AHSG | | | | 3750 | ISO7742AH | SOP16 | 3000pcs/13Inch Tape & Reel |
| UMISO7742AHWSG | | | | 5000 | ISO7742AH | WSOP16 | 1500pcs/13Inch Tape & Reel |
| UMISO7742AHWWSG | | | | 7500 | ISO7742AH | WWSOP16 | 1000pcs/13Inch Tape & Reel |

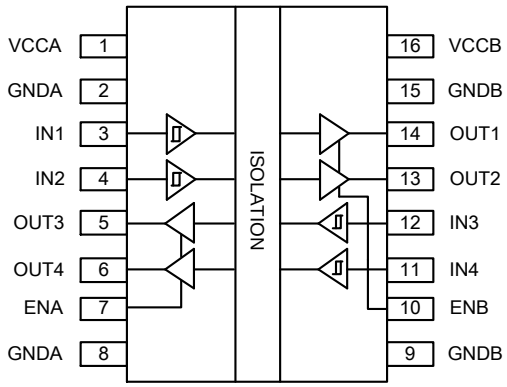
## 8 Pin Configuration and Function




**UMISO7740A**
**SSOP16(0.635) / SOP16 / WSOP16 / WWSOP16**




**UMISO7741A**
**SSOP16(0.635) / SOP16 / WSOP16 / WWSOP16**




**UMISO7742A**
**SSOP16(0.635) / SOP16 / WSOP16 / WWSOP16**

## 8 Pin Configuration and Function (continued)

Table 8-1. Pin Functions

| Pin No. | | | Pin Name | Function |
|---|---|---|---|---|
| UMISO7740A | UMISO7741A | UMISO7742A | | |
| 1 | 1 | 1 | VCCA | Power supply for isolator side A. |
| 2, 8 | 2, 8 | 2, 8 | GNDA | Ground reference for isolator side A. |
| 3 | 3 | 3 | IN1 | Logic input 1, corresponds to logic output 1. |
| 4 | 4 | 4 | IN2 | Logic input 2, corresponds to logic output 2. |
| 5 | 5 | 12 | IN3 | Logic input 3, corresponds to logic output 3. |
| 6 | 11 | 11 | IN4 | Logic input 4, corresponds to logic output 4. |
| 7 | - | - | NC | Not connected internally. Can be connected to supply, ground or left open on PCB. |
| - | 7 | 7 | ENA | Output enable A. Output pin on side A is enabled when ENA is high or floating; Output pin on side A is open and in high-impedance state when ENA is low. |
| 10 | 10 | 10 | ENB | Output enable B. Output pin on side B is enabled when ENB is high or floating; Output pin on side B is open and in high-impedance state when ENB is low. |
| 11 | 6 | 6 | OUT4 | Logic output 4, OUT4 is the logic output for the IN4 input. |
| 12 | 12 | 5 | OUT3 | Logic output 3, OUT3 is the logic output for the IN3 input. |
| 13 | 13 | 13 | OUT2 | Logic output 2, OUT2 is the logic output for the IN2 input. |
| 14 | 14 | 14 | OUT1 | Logic output 1, OUT1 is the logic output for the IN1 input. |
| 9, 15 | 9, 15 | 9, 15 | GNDB | Ground reference for isolator side B. |
| 16 | 16 | 16 | VCCB | Power supply for isolator side B. |

# 9 Specifications

## 9.1 Absolute Maximum Ratings (Note 1)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{CCA}$ | Supply voltage for isolator side A | Note 2 | -0.5 | | 6.5 | V |
| $V_{CCB}$ | Supply voltage for isolator side B | Note 2 | -0.5 | | 6.5 | V |
| $V_I$ | Voltage on INx, OUTx, ENx | Note 3 | -0.5 | | $V_{CCX}$ +0.5 | V |
| $V_{ESD}$ | Human body model (HBM),per ANSI/ESDA/JEDEC JS-001 | All pins | | ±8 | | kV |
| $I_{LU}$ | Latch up, per JEDEC JESD78 | | | ±200 | | mA |
| $I_O$ | Output current | | -15 | | 15 | mA |
| $T_J$ | Junction temperature | | -40 | | 150 | ℃ |
| $T_{STG}$ | Storage temperature | | -65 | | 150 | ℃ |

Note 1: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only, which do not imply functional operation of the device at these or any other conditions beyond those indicated under Recommended Operating Conditions. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
Note 2: All voltage values are with respect to the local ground terminal (GNDA or GNDB) and are peak voltage values.
Note 3: Maximum voltage must not exceed 6.5 V.

## 9.2 Recommended Operating Conditions (Note 1)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{CCA}$ | Supply voltage for isolator side A | | 3.0 | 3.3/5.0 | 5.5 | V |
| $V_{CCB}$ | Supply voltage for isolator side B | | 3.0 | 3.3/5.0 | 5.5 | V |
| $V_{CC(UVLO+)}$ | $V_{CC}$ undervoltage-lockout threshold when supply voltage is rising | | 2.6 | 2.7 | 2.9 | V |
| $V_{CC(UVLO-)}$ | $V_{CC}$ undervoltage-lockout threshold when supply voltage is falling | | 2.4 | 2.6 | 2.7 | V |
| $V_{HYS(UVLO)}$ | $V_{CC}$ undervoltage-lockout threshold hysteresis | | | 100 | | mV |
| $I_{OH}$ | High-level output current | $V_{CCO}$ = 5V | -4 | | | mA |
| | | $V_{CCO}$ = 3.3V | -2 | | | |
| $I_{OL}$ | Low-level output current | $V_{CCO}$ = 5V | | | 4 | mA |
| | | $V_{CCO}$ = 3.3V | | | 2 | |

### 9.2 Recommended Operating Conditions (continued)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{IH}$ | INx Input High Voltage | | $0.7V_{CCI}$ | | $V_{CCI}$ | V |
| $V_{IL}$ | INx Input Low Voltage | | 0 | | $0.3V_{CCI}$ | V |
| $V_{IH}$ | ENx Input High Voltage | | $0.7V_{CCO}$ | | $V_{CCO}$ | V |
| $V_{IL}$ | ENx Input Low Voltage | | 0 | | $0.3V_{CCO}$ | V |
| DR | Data rate | | | | 20 | Mbps |
| $T_A$ | Ambient temperature | | -40 | 25 | 125 | ℃ |

Note 1: $V_{CCI}$ = Iutput-side supply $V_{CC}$， $V_{CCO}$ = Output-side supply $V_{CC}$.

### 9.3 Thermal Information

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $R_{\theta JA}$ | Junction to ambient thermal resistance | SSOP16(0.635) | 140 | °C/W |
| | | SOP16 | 78.9 | |
| | | WSOP16 | 78.9 | |
| | | WWSOP16 | 78.9 | |

### 9.4 Power Rating

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **UMISO7740A** | | | | | | |
| $P_D$ | Maximum power dissipation | $V_{CCA}$ = $V_{CCB}$ = 5.5 V, $C_L$ = 15 pF, $T_J$ = 150°C, Input a 10 MHz, 50% duty cycle square wave. | | | 200 | mW |
| $P_{DA}$ | Maximum power dissipation on A side | | | | 80 | mW |
| $P_{DB}$ | Maximum power dissipation on B side | | | | 120 | mW |
| **UMISO7741A** | | | | | | |
| $P_D$ | Maximum power dissipation | $V_{CCA}$ = $V_{CCB}$ = 5.5 V, $C_L$ = 15 pF, $T_J$ = 150°C, Input a 10 MHz, 50% duty cycle square wave. | | | 200 | mW |
| $P_{DA}$ | Maximum power dissipation on A side | | | | 90 | mW |
| $P_{DB}$ | Maximum power dissipation on B side | | | | 110 | mW |
| **UMISO7742A** | | | | | | |
| $P_D$ | Maximum power dissipation | $V_{CCA}$ = $V_{CCB}$ = 5.5 V, $C_L$ = 15 pF, $T_J$ = 150°C, Input a 10 MHz, 50% duty cycle square wave. | | | 200 | mW |
| $P_{DA}$ | Maximum power dissipation on A side | | | | 100 | mW |
| $P_{DB}$ | Maximum power dissipation on B side | | | | 100 | mW |

## 9.5 Insulation Specifications

| Symbol | Parameter | Conditions | Value | | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | SSOP16 (0.635) | SOP16 | WSOP16 | WWSOP16 | |
| CLR | External clearance | Shortest terminal-to-terminal distance through air | 4 | 4 | 8 | 15 | mm |
| CPG | External creepage | Shortest terminal-to-terminal distance across the package surface | 4 | 4 | 8 | 15 | mm |
| DTI | Distance through the insulation | Minimum internal gap (internal clearance) | >20 | >20 | >20 | >20 | μm |
| CTI | Comparative tracking index | DIN EN 60112 (VDE 0303-11); IEC 60112 | >600 | >600 | >600 | >600 | V |
| | Material group | Per IEC 60664-1 | I | I | I | I | |
| | Overvoltage category per IEC 60664-1 | Rated mains voltage ≤ 150 $V_{RMS}$ | I-IV | I-IV | I-IV | I-IV | |
| | | Rated mains voltage ≤ 300 $V_{RMS}$ | I-III | I-III | I-IV | I-IV | |
| | | Rated mains voltage ≤ 600 $V_{RMS}$ | N/A | N/A | I-IV | I-IV | |
| | | Rated mains voltage ≤ 1000 $V_{RMS}$ | N/A | N/A | I-II | I-II | |
| **DIN V VDE V 0884-17:2021-10 ( Note 1)** | | | | | | | |
| $V_{IORM}$ | Maximum repetitive peak isolation voltage | AC voltage (bipolar) | 637 | 637 | 1414 | 1414 | $V_{PK}$ |
| $V_{IOWM}$ | Maximum operating isolation voltage | AC voltage; time-dependent dielectric breakdown (TDDB) test | 450 | 450 | 1000 | 1000 | $V_{RMS}$ |
| | | DC voltage | 637 | 637 | 1414 | 1414 | $V_{DC}$ |
| $V_{IOTM}$ | Maximum transient isolation voltage | $V_{TEST} = V_{IOTM}$, t = 60 s (certified); $V_{TEST} = 1.2 \times V_{IOTM}$, t = 1 s (100% product test) | 4242 | 5300 | 8060 | 10605 | $V_{PK}$ |
| $V_{IMP}$ | Maximum impulse voltage | Tested in air, 1.2/50 μs waveform per IEC 62368-1, | 5000 | 5000 | 7500 | 7500 | $V_{PK}$ |
| $V_{IOSM}$ | Maximum surge isolation voltage | $V_{IOSM} \geq 1.3 \times V_{IMP}$; Tested in oil (qualification test), 1.2/50 μs waveform per IEC 62368-1 | 6500 | 6500 | 10000 | 10000 | $V_{PK}$ |

## 9.5 Insulation Specifications (continued)

| Symbol | Parameter | Conditions | Value | | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | SSOP16 (0.635) | SOP16 | WSOP16 | WWSOP16 | |
| $q_{pd}$ | Apparent charge (Note 2) | Method a, after input/output safety test of the subgroup 2/3, $V_{ini} = V_{IOTM}$, $t_{ini}$ = 60 s; $V_{pd(m)} = 1.2 \times V_{IORM}$, $t_m$ = 10 s | ≤5 | ≤5 | ≤5 | ≤5 | pC |
| | | Method a, after environmental test of the subgroup 1, $V_{ini} = V_{IOTM}$, $t_{ini}$ = 60 s; $V_{pd(m)} = 1.3 \times V_{IORM}$, $t_m$ = 10 s | ≤5 | ≤5 | ≤5 | ≤5 | pC |
| | | Method b, at routine test (100% production test) and preconditioning (type test) $V_{ini} = 1.2 \times V_{IOTM}$, $t_{ini}$ = 1 s; $V_{pd(m)} = 1.875 \times V_{IORM}$ (for reinforced devices) or $V_{pd(m)} = 1.5 \times V_{IORM}$ (for basic devices), $t_m$ = 1 s (method b1) or $V_{pd(m)} = V_{ini}$, $t_m = t_{ini}$ (method b2) | ≤5 | ≤5 | ≤5 | ≤5 | pC |
| $C_{IO}$ | Barrier capacitance, input to output (Note 3) | $V_{IO}$ = 0.4 × sin (2πft), f = 1 MHz | 1.0 | 1.0 | 1.0 | 1.0 | pF |
| $R_{IO}$ | Isolation resistance (Note 3) | $V_{IO}$ = 500 V, $T_A$ = 25 ℃ | $>10^{12}$ | $>10^{12}$ | $>10^{12}$ | $>10^{12}$ | Ω |
| | | $V_{IO}$ = 500 V, 100 ℃ ≤ $T_A$ ≤ 125 ℃ | $>10^{11}$ | $>10^{11}$ | $>10^{11}$ | $>10^{11}$ | |
| | | $V_{IO}$ = 500 V at $T_s$ = 150 ℃ | $>10^{9}$ | $>10^{9}$ | $>10^{9}$ | $>10^{9}$ | |
| | Pollution degree | | 2 | 2 | 2 | 2 | |
| **UL 1577** | | | | | | | |
| $V_{ISO}$ | Maximum withstanding isolation voltage | $V_{TEST} = V_{ISO}$, t = 60 s (qualification) $V_{TEST} = 1.2 \times V_{ISO}$, t = 1 s (100% production test) | 3000 | 3750 | 5000 | 7500 | $V_{RMS}$ |

Note 1: This coupler is suitable for "safe electrical insulation" only within the safety ratings. Compliance with the safety ratings shall be ensured by means of suitable protective circuits.
Note 2: The characterization charge is discharging charge (pd) caused by partial discharge.
Note 3: Capacitance and resistance are measured with all pins on field-side and logic-side tied together.

## 9.6 Electrical Characteristics (Note 1)

### 9.6.1 Electrical Characteristics ($V_{CCA}$ = $V_{CCB}$ = 5 V ± 10%)

$V_{CCA}$ = $V_{CCB}$ = 5 V ± 10%, $T_A$ = -40 to 125°C (over recommended operating conditions, unless otherwise specified). All typical values are at 25°C.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{OH}$ | Output high voltage | $I_{OH}$ = -4 mA | $V_{CCO}$-0.4 | 4.8 | | V |
| $V_{OL}$ | Output low voltage | $I_{OL}$ = 4 mA | | 0.2 | 0.4 | V |
| $V_{IH}$ | INx input high | | | | 0.7$V_{CCI}$ | V |
| $V_{IL}$ | INx input low | | 0.3$V_{CCI}$ | | | V |
| $V_{IH}$ | ENx input high | | | | 0.7$V_{CCO}$ | V |
| $V_{IL}$ | ENx input low | | 0.3$V_{CCO}$ | | | V |
| $I_{IN}$ | INx and ENx input current | 0 V ≤$V_{IN}$≤ $V_{CCX}$ | -10 | | 10 | μA |
| $Z_O$ | Output impedance | | | 50 | | Ω |
| CMTI Immunity | Common-mode transient | $V_I$ = $V_{CCI}$ or 0 V, $V_{CM}$ = 1200 V, see Figure 10-4 | ±150 | ±200 | | kV/μs |
| $C_I$ | Input capacitance (Note 2) | $V_I$ = $V_{CC}$ / 2 + 0.4×sin(2πft), f = 1 MHz, $V_{CC}$ = 5 V | | 2 | | pF |

### 9.6.2 Electrical Characteristics ($V_{CCA}$ = $V_{CCB}$ = 3.3 V ± 10%)

$V_{CCA}$ = $V_{CCB}$ = 3.3 V ± 10%, $T_A$ = -40 to 125°C (over recommended operating conditions, unless otherwise specified). All typical values are at 25°C.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{OH}$ | Output high voltage | $I_{OH}$ = -2 mA | $V_{CCO}$-0.4 | 3.2 | | V |
| $V_{OL}$ | Output low voltage | $I_{OL}$ = 2 mA | | 0.1 | 0.4 | V |
| $V_{IH}$ | INx input high | | | | 0.7$V_{CCI}$ | V |
| $V_{IL}$ | INx input low | | 0.3$V_{CCI}$ | | | V |
| $V_{IH}$ | ENx input high | | | | 0.7$V_{CCO}$ | V |
| $V_{IL}$ | ENx input low | | 0.3$V_{CCO}$ | | | V |
| $I_{IN}$ | INx and ENx input current | 0 V ≤$V_{IN}$≤ $V_{CCX}$ | -10 | | 10 | μA |
| $Z_O$ | Output impedance | | | 50 | | Ω |
| CMTI Immunity | Common-mode transient | $V_I$ = $V_{CCI}$ or 0 V, $V_{CM}$ = 1200 V, see Figure 10-4 | ±150 | ±200 | | kV/μs |
| $C_I$ | Input capacitance (Note 2) | $V_I$ = $V_{CC}$ / 2 + 0.4×sin(2πft), f = 1 MHz, $V_{CC}$ = 3.3V | | 2 | | pF |

Note 1: $V_{CCI}$ = Input-side supply $V_{CC}$, $V_{CCO}$ = Output-side supply $V_{CC}$.
Note 2: Measured from pin to Ground.

## 9.7 Supply Current Characteristics

### 9.7.1 Supply Current Characteristics ($V_{CCA}$ = $V_{CCB}$ = 5 V ± 10%)

$V_{CCA}$ = $V_{CCB}$ = 5 V ± 10%, $T_A$ = -40 to 125°C (over recommended operating conditions, unless otherwise specified).

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| **UMISO7740A** | | | | | | | |
| $I_{CCA}$ | Supply Current - Outputs disabled | ENB = 0 V; $V_{IN}$ = 0V (UMISO7740AL); $V_{IN}$ =$V_{CCA}$(UMISO7740AH) | | | 1.31 | 2.8 | mA |
| $I_{CCB}$ | | | | | 3.83 | 5.9 | |
| $I_{CCA}$ | | ENB = 0 V; $V_{IN}$ = $V_{CCA}$ (UMISO7740AL); $V_{IN}$ = 0V (UMISO7740AH) | | | 5.22 | 8.6 | |
| $I_{CCB}$ | | | | | 3.91 | 6.2 | |
| $I_{CCA}$ | Supply Current - DC signal | ENB = $V_{CCB}$; $V_{IN}$ = 0V (UMISO7740AL); $V_{IN}$ = $V_{CCA}$ (UMISO7740AH) | | | 1.31 | 2.8 | mA |
| $I_{CCB}$ | | | | | 3.88 | 5.9 | |
| $I_{CCA}$ | | ENB = $V_{CCB}$; $V_{IN}$ = $V_{CCA}$ (UMISO7740AL); $V_{IN}$ = 0V(UMISO7740AH) | | | 5.23 | 8.6 | |
| $I_{CCB}$ | | | | | 3.92 | 6.2 | |
| $I_{CCA}$ | Supply Current - AC signal | ENB = $V_{CCB}$, all channels switching with 50% duty cycle square wave clock input with 5V amplitude; $C_L$ = 15 pF for each channel. | 1Mbps | | | 4.9 | |
| $I_{CCB}$ | | | | | | 6.0 | |
| $I_{CCA}$ | | | 10Mbps | | | 5.6 | |
| $I_{CCB}$ | | | | | | 7.5 | |
| $I_{CCA}$ | | | 20Mbps | | | 7.0 | |
| $I_{CCB}$ | | | | | | 9.5 | |
| **UMISO7741A** | | | | | | | |
| $I_{CCA}$ | Supply Current - Outputs disabled | ENA = ENB = 0 V; $V_{IN}$ = 0V (UMISO7741AL); $V_{IN}$ = $V_{CCI}$(UMISO7741AH) (Note 1) | | | 1.92 | 3.5 | mA |
| $I_{CCB}$ | | | | | 3.2 | 5.8 | |
| $I_{CCA}$ | | ENA = ENB = 0 V; $V_{IN}$ =$V_{CCI}$(UMISO7741AL); $V_{IN}$ = 0V (UMISO7741AH) | | | 4.84 | 7.8 | |
| $I_{CCB}$ | | | | | 4.24 | 6.9 | |

**9.7.1 Supply Current Characteristics ($V_{CCA}$ = $V_{CCB}$ = 5 V ± 10%) (continued)**

$V_{CCA}$ = $V_{CCB}$ = 5 V ± 10%, $T_A$ = -40 to 125°C (over recommended operating conditions, unless otherwise specified).

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $I_{CCA}$ | Supply Current - DC signal | ENA = ENB = $V_{CCI}$; $V_{IN}$ = 0V (UMISO7741AL); $V_{IN}$ = $V_{CCI}$ (UMISO7741AH) | | | 1.93 | 3.5 | mA |
| $I_{CCB}$ | | | | | 3.2 | 5.8 | |
| $I_{CCA}$ | | ENA = ENB = $V_{CCI}$; $V_{IN}$ = $V_{CCI}$ (UMISO7741AL); $V_{IN}$ = 0V (UMISO7741AH) | | | 4.85 | 7.8 | |
| $I_{CCB}$ | | | | | 4.24 | 6.9 | |
| $I_{CCA}$ | Supply Current - AC signal | ENA = ENB = $V_{CCI}$, all channels switching with 50% duty cycle square wave clock input with 5V amplitude; $C_L$ = 15 pF for each channel. | 1Mbps | | | 4.9 | |
| $I_{CCB}$ | | | | | | 5.7 | |
| $I_{CCA}$ | | | 10Mbps | | | 5.5 | |
| $I_{CCB}$ | | | | | | 7.2 | |
| $I_{CCA}$ | | | 20Mbps | | | 7.1 | |
| $I_{CCB}$ | | | | | | 8.7 | |
| **UMISO7742A** | | | | | | | |
| $I_{CCA}$ | Supply Current - Outputs disabled | ENA = ENB = 0 V; $V_{IN}$ = 0V (UMISO7742AL); $V_{IN}$ = $V_{CCI}$ (UMISO7742AH) (Note 1) | | | 2.55 | 5.1 | mA |
| $I_{CCB}$ | | | | | 2.55 | 5.1 | |
| $I_{CCA}$ | | ENA = ENB = 0 V; $V_{IN}$ = $V_{CCI}$ (UMISO7742AL); $V_{IN}$ = 0V (UMISO7742AH) | | | 4.54 | 8.0 | |
| $I_{CCB}$ | | | | | 4.54 | 8.0 | |

**9.7.1 Supply Current Characteristics ($V_{CCA}$ = $V_{CCB}$ = 5 V ± 10%) (continued)**

$V_{CCA}$ = $V_{CCB}$ = 5 V ± 10%, $T_A$ = -40 to 125°C (over recommended operating conditions, unless otherwise specified).

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $I_{CCA}$ | Supply Current - DC signal | ENA = ENB = $V_{CCI}$; $V_{IN}$ = 0V (UMISO7742AL); $V_{IN}$ = $V_{CCI}$ (UMISO7742AH) | | | 2.55 | 5.1 | mA |
| $I_{CCB}$ | | | | | 2.55 | 5.1 | |
| $I_{CCA}$ | | ENA = ENB = $V_{CCI}$; $V_{IN}$ = $V_{CCI}$ (UMISO7742AL); $V_{IN}$ = 0V (UMISO7742AH) | | | 4.54 | 8.0 | |
| $I_{CCB}$ | | | | | 4.54 | 8.0 | |
| $I_{CCA}$ | Supply Current - AC signal | ENA = ENB = $V_{CCI}$, all channels switching with 50% duty cycle square wave clock input with 5V amplitude; $C_L$ = 15 pF for each channel. | 1Mbps | | | 5.4 | |
| $I_{CCB}$ | | | | | | 5.4 | |
| $I_{CCA}$ | | | 10Mbps | | | 6.5 | |
| $I_{CCB}$ | | | | | | 6.5 | |
| $I_{CCA}$ | | | 20Mbps | | | 8.5 | |
| $I_{CCB}$ | | | | | | 8.5 | |

Note 1: $V_{CCI}$ = Input-side supply $V_{CC}$

### 9.7.2 Supply Current Characteristics ($V_{CCA}$ = $V_{CCB}$ = 3.3 V ± 10%)

$V_{CCA}$ = $V_{CCB}$ = 3.3 V ± 10%, $T_A$ = -40 to 125°C (over recommended operating conditions, unless otherwise specified).

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| **UMISO7740A** | | | | | | | |
| $I_{CCA}$ | Supply Current - Outputs disabled | ENB = 0 V; $V_{IN}$ = 0 V (UMISO7740AL); $V_{IN}$ =$V_{CCA}$(UMISO7740AH) | | | 1.24 | 2.8 | mA |
| $I_{CCB}$ | | | | | 3.72 | 5.9 | |
| $I_{CCA}$ | | ENB = 0 V; $V_{IN}$ = $V_{CCA}$ (UMISO7740AL); $V_{IN}$ = 0V(UMISO7740AH) | | | 5.14 | 8.6 | |
| $I_{CCB}$ | | | | | 3.81 | 6.2 | |
| $I_{CCA}$ | Supply Current - DC signal | ENB = $V_{CCB}$; $V_{IN}$ = 0V (UMISO7740AL); $V_{IN}$ =$V_{CCA}$(UMISO7740AH) | | | 1.24 | 2.8 | mA |
| $I_{CCB}$ | | | | | 3.73 | 5.9 | |
| $I_{CCA}$ | | ENB = $V_{CCB}$; $V_{IN}$ = $V_{CCA}$ (UMISO7740AL); $V_{IN}$ = 0V (UMISO7740AH) | | | 5.15 | 8.6 | |
| $I_{CCB}$ | | | | | 3.82 | 6.2 | |
| $I_{CCA}$ | Supply Current - AC signal | ENB = $V_{CCB}$, all channels switching with 50% duty cycle square wave clock input with 3.3V amplitude; $C_L$ = 15 pF for each channel. | 1Mbps | | | 4.9 | |
| $I_{CCB}$ | | | | | | 6.0 | |
| $I_{CCA}$ | | | 10Mbps | | | 5.6 | |
| $I_{CCB}$ | | | | | | 7.5 | |
| $I_{CCA}$ | | | 20Mbps | | | 7.0 | |
| $I_{CCB}$ | | | | | | 9.5 | |
| **UMISO7741A** | | | | | | | |
| $I_{CCA}$ | Supply Current - Outputs disabled | ENA = ENB = 0 V; $V_{IN}$ = 0V(UMISO7741AL); $V_{IN}$ = $V_{CCI}$(UMISO7741AH) (Note 1) | | | 1.85 | 3.5 | mA |
| $I_{CCB}$ | | | | | 3.1 | 5.8 | |
| $I_{CCA}$ | | ENA = ENB = 0 V; $V_{IN}$ =$V_{CCI}$(UMISO7741AL); $V_{IN}$ = 0 V(UMISO7741AH) | | | 4.77 | 7.8 | |
| $I_{CCB}$ | | | | | 4.14 | 6.9 | |

**9.7.2 Supply Current Characteristics ($V_{CCA}$ = $V_{CCB}$ = 3.3 V ± 10%) (continued)**
$V_{CCA}$ = $V_{CCB}$ = 3.3 V ± 10%, $T_A$ = -40 to 125°C (over recommended operating conditions, unless otherwise specified).

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $I_{CCA}$ | Supply Current - DC signal | ENA = ENB = $V_{CCI}$; $V_{IN}$ = 0 V (UMISO7741AL); $V_{IN}$ = $V_{CCI}$ (UMISO7741AH) | | | 1.85 | 3.5 | mA |
| $I_{CCB}$ | | | | | 3.1 | 5.8 | |
| $I_{CCA}$ | | ENA = ENB = $V_{CCI}$; $V_{IN}$ = $V_{CCI}$ (UMISO7741AL); $V_{IN}$ = 0 V (UMISO7741AH) | | | 4.77 | 7.8 | |
| $I_{CCB}$ | | | | | 4.14 | 6.9 | |
| $I_{CCA}$ | Supply Current - AC signal | ENA = ENB = $V_{CCI}$, all channels switching with 50% duty cycle square wave clock input with 3.3V amplitude; $C_L$ = 15 pF for each channel. | 1Mbps | | | 4.9 | |
| $I_{CCB}$ | | | | | | 5.7 | |
| $I_{CCA}$ | | | 10Mbps | | | 5.5 | |
| $I_{CCB}$ | | | | | | 7.2 | |
| $I_{CCA}$ | | | 20Mbps | | | 7.1 | |
| $I_{CCB}$ | | | | | | 8.7 | |
| **UMISO7742A** | | | | | | | |
| $I_{CCA}$ | Supply Current - Outputs disabled | ENA = ENB = 0 V; $V_{IN}$ = 0 V (UMISO7742L); $V_{IN}$ = $V_{CCI}$ (UMISO7742H) (Note 1) | | | 2.47 | 5.1 | mA |
| $I_{CCB}$ | | | | | 2.47 | 5.1 | |
| $I_{CCA}$ | | ENA = ENB = 0 V; $V_{IN}$ = $V_{CCI}$ (UMISO7742L); $V_{IN}$ = 0 V (UMISO7742H) | | | 4.45 | 8.0 | |
| $I_{CCB}$ | | | | | 4.45 | 8.0 | |

**9.7.2 Supply Current Characteristics ($V_{CCA}$ = $V_{CCB}$ = 3.3 V ± 10%) (continued)**
$V_{CCA}$ = $V_{CCB}$ = 3.3 V ± 10%, $T_A$ = -40 to 125°C (over recommended operating conditions, unless otherwise specified).

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $I_{CCA}$ | Supply Current - DC signal | ENA = ENB = $V_{CCI}$; $V_{IN}$ = 0V (UMISO7742L); $V_{IN}$ = $V_{CCI}$ (UMISO7742H) | | | 2.48 | 5.1 | mA |
| $I_{CCB}$ | | | | | 2.48 | 5.1 | |
| $I_{CCA}$ | | ENA = ENB = $V_{CCI}$; $V_{IN}$ = $V_{CCI}$ (UMISO7742L); $V_{IN}$ = 0V (UMISO7742H) | | | 4.45 | 8.0 | |
| $I_{CCB}$ | | | | | 4.45 | 8.0 | |
| $I_{CCA}$ | Supply Current - AC signal | ENA = ENB = $V_{CCI}$, all channels switching with 50% duty cycle square wave clock input with 3.3V amplitude; $C_L$ = 15 pF for each channel. | 1Mbps | | | 5.4 | |
| $I_{CCB}$ | | | | | | 5.4 | |
| $I_{CCA}$ | | | 10Mbps | | | 6.5 | |
| $I_{CCB}$ | | | | | | 6.5 | |
| $I_{CCA}$ | | | 20Mbps | | | 8.5 | |
| $I_{CCB}$ | | | | | | 8.5 | |

Note 1: $V_{CCI}$ = Input-side supply $V_{CC}$

## 9.8 Switching Characteristics

### 9.8.1 Switching Characteristics ($V_{CCA}$ = $V_{CCB}$ = 5 V ± 10%)

$V_{CCA}$ = $V_{CCB}$ = 5 V ± 10%, $T_A$ = -40 to 125°C (over recommended operating conditions, unless otherwise specified).

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| DR | Data rate | | | | 20 | Mbps |
| $PWM_{MIN}$ | Minimum pulse width | | | | 25 | ns |
| $t_{PLH}$ | Propagation delay time | see Figure 10-1 | | 34 | 100 | ns |
| $t_{PHL}$ | | see Figure 10-1 | | 34 | 100 | ns |
| PWD | Pulse width distortion, $\lvert t_{PLH} - t_{PHL} \rvert$ | see Figure 10-1 | | 1 | 10 | ns |
| $t_{SK(O)}$ | Channel-to-Channel output skew time (Note 1) | Same-direction channels | | 0.5 | 2 | ns |
| $t_{SK(PP)}$ | Part-to-Part output skew time (Note 2) | | | | 4 | ns |
| $t_R$ | Output signal rise time | see Figure 10-1 | | 2.5 | | ns |
| $t_F$ | Output signal fall time | see Figure 10-1 | | 2.5 | | ns |
| $t_{PHZ}$ | Disable propagation delay, high output to high impedance | see Figure 10-2 | | 16.5 | 50 | ns |
| $t_{PLZ}$ | Disable propagation delay, low output to high impedance | see Figure 10-2 | | 16.8 | 50 | ns |
| $t_{PZH}$ | Enable propagation delay, high impedance to high output | see Figure 10-2 | | 10.0 | 30 | ns |
| $t_{PZL}$ | Enable propagation delay, high impedance to low output | see Figure 10-2 | | 9.5 | 30 | ns |
| $t_{DO}$ | Default output delay time from input power loss | see Figure 10-3 | | 0.2 | 70 | μs |
| $t_{SU}$ | Start-up time | | | 18 | 300 | μs |

Note 1: $t_{SK(O)}$ is the skew between outputs of a single device with all driving inputs connected together and the outputs switching in the same direction while driving identical loads.
Note 2: $t_{SK(PP)}$ is the magnitude of the difference in propagation delay times between any terminals of different devices switching in the same direction while operating at identical supply voltages, temperature, input signals and loads.

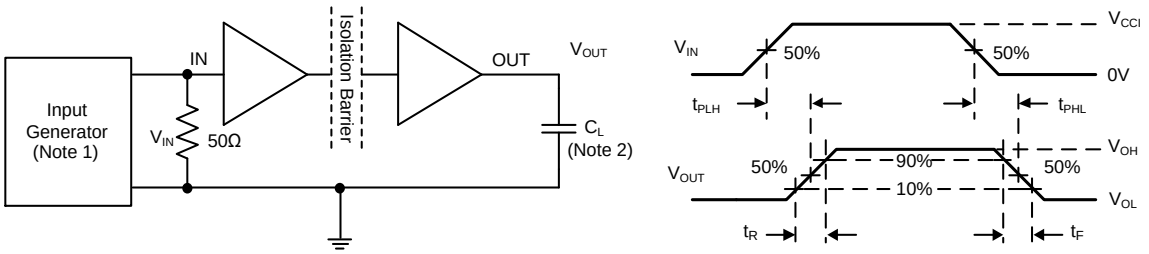
### 9.8.2 Switching Characteristics ($V_{CCA}$ = $V_{CCB}$ = 3.3 V ± 10%)

$V_{CCA}$ = $V_{CCB}$ = 3.3 V ± 10%, $T_A$ = -40 to 125°C (over recommended operating conditions, unless otherwise specified).

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| DR | Data rate | | | | 20 | Mbps |
| $PWM_{MIN}$ | Minimum pulse width | | | | 25 | ns |
| $t_{PLH}$ | Propagation delay time | see Figure 10-1 | | 35 | 100 | ns |
| $t_{PHL}$ | | see Figure 10-1 | | 35 | 100 | ns |
| PWD | Pulse width distortion, $\lvert t_{PLH} - t_{PHL} \rvert$ | see Figure 10-1 | | 1 | 10 | ns |
| $t_{SK(O)}$ | Channel-to-Channel output skew time (Note 1) | Same-direction channels | | 0.3 | 2 | ns |
| $t_{SK(PP)}$ | Part-to-Part output skew time (Note 2) | | | | 4.5 | ns |
| $t_R$ | Output signal rise time | see Figure 10-1 | | 2.5 | | ns |
| $t_F$ | Output signal fall time | see Figure 10-1 | | 2.5 | | ns |
| $t_{PHZ}$ | Disable propagation delay, high output to high impedance | see Figure 10-2 | | 20.0 | 50 | ns |
| $t_{PLZ}$ | Disable propagation delay, low output to high impedance | see Figure 10-2 | | 20.0 | 50 | ns |
| $t_{PZH}$ | Enable propagation delay, high impedance to high output | see Figure 10-2 | | 11.6 | 30 | ns |
| $t_{PZL}$ | Enable propagation delay, high impedance to low output | see Figure 10-2 | | 11.1 | 30 | ns |
| $t_{DO}$ | Default output delay time from input power loss | see Figure 10-3 | | 0.2 | 70 | μs |
| $t_{SU}$ | Start-up time | | | 18 | 300 | μs |

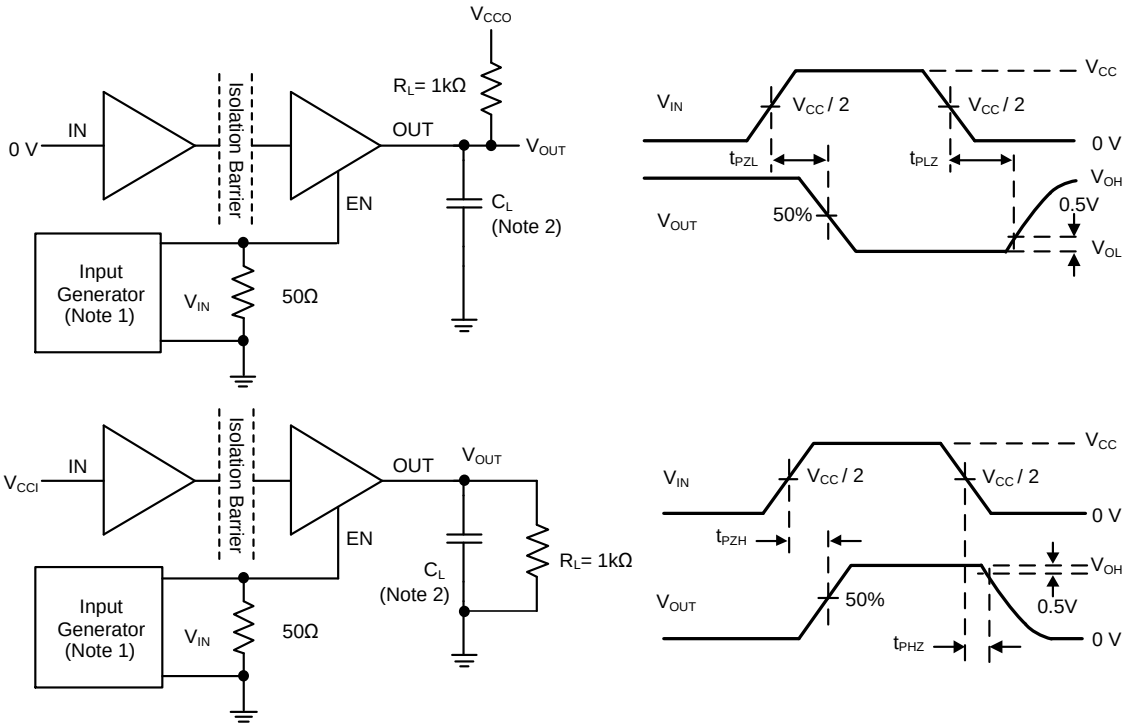
Note 1: $t_{SK(O)}$ is the skew between outputs of a single device with all driving inputs connected together and the outputs switching in the same direction while driving identical loads.
Note 2: $t_{SK(PP)}$ is the magnitude of the difference in propagation delay times between any terminals of different devices switching in the same direction while operating at identical supply voltages, temperature, input signals and loads.

## 10 Parameter Measurement Information




Note 1: A square wave generator provides $V_{IN}$ input signal with characteristics: frequency≤ 100kHz, 50% duty cycle, $t_R \leq 3ns$, $t_F \leq 3ns$, $Z_{OUT} = 50\Omega$. At the input, 50 Ω resistor is required to terminate input generator signal. It is not needed in actual application.
Note 2: $C_L$ = 15pF and includes external circuit (instrumentation and fixture etc.) capacitance. Since the load capacitance influence the output rising time, it's a key factor in the timing characteristic measurement.

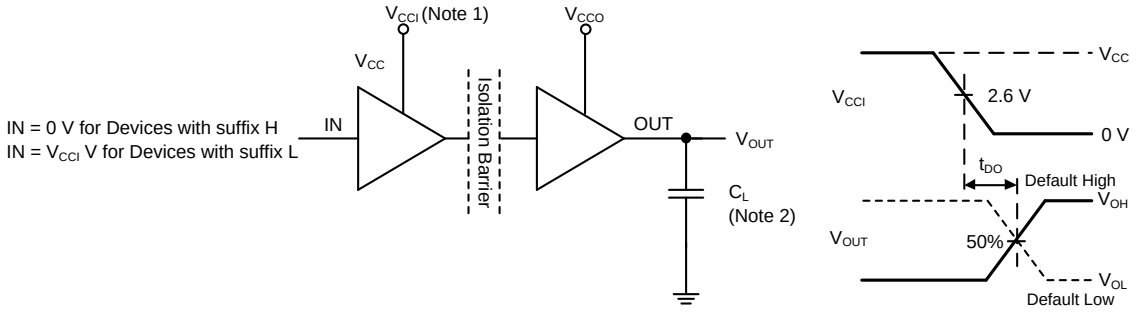
Figure 10-1. Switching Characteristics Test Circuit and Voltage Waveforms




Note 1: A square wave generator provides $V_{IN}$ input signal with characteristics: frequency≤10kHz, 50% duty cycle, $t_R \leq 3ns$, $t_F \leq 3ns$, $Z_{OUT} = 50\Omega$. At the input, 50Ω resistor is required to terminate input generator signal. It is not needed in actual application.
Note 2: $C_L$ = 15pF and includes external circuit (instrumentation and fixture etc.) capacitance. Since the load capacitance influence the output rising time, it's a key factor in the timing characteristic measurement.

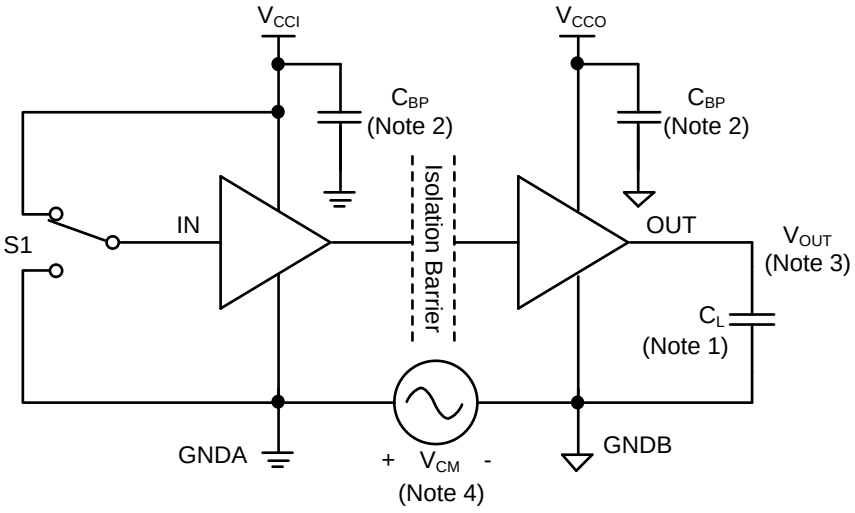
Figure 10-2. Enable/Disable Propagation Delay Time Test Circuit and Waveform

## 10 Parameter Measurement Information (continued)




Note 1: Power Supply Ramp Rate = 10 mV/ns. $V_{CCI}$ should ramp over $V_{CC\,(UVLO+)}$, and less than 5.5V.
Note 2: $C_L$ = 15pF and includes external circuit (instrumentation and fixture etc.) capacitance. Since the load capacitance influence the output rising time, it's a key factor in the timing characteristic measurement.

Figure 10-3. Default Output Delay Time Test Circuit and Voltage Waveforms




Note 1: $C_L$ = 15pF and includes external circuit (instrumentation and fixture etc.) capacitance.
Note 2: $C_{BP}$ (0.1 ~ 1uF) is bypass capacitance.
Note 3: Pass−fail criteria: the output must remain stable.
Note 4: The High Voltage Surge Generator generates repetitive high voltage surges with >1kV amplitude, rise time <10ns and fall time <10ns, to reach common−mode transient noise with >150kV/μs slew rate.

Figure 10-4. Common-Mode Transient Immunity Test Circuit

# 11 Detailed Description

## 11.1 Overview

The UMISO774xA devices are a family of automotive, four-channel digital galvanic isolators using Union's full differential capacitive isolation technology. These devices have an ON-OFF keying (OOK) modulation scheme to transfer digital signals across the $SiO_2$ based isolation barrier between circuits with different power domains. The transmitter sends a high frequency carrier across the barrier to represent one digital state and sends no signal to represent the other digital state. The receiver demodulates the signal and recovers input signal at output through a buffer stage. With this OOK architecture, the UMISO774xA devices build a robust data transmission path between different power domains, without any special start-up initialization requirement.

These devices also incorporate advanced full differential techniques to maximize the CMTI performance and minimize the radiated emissions due the high frequency carrier and I/O buffer switching.

## 11.2 Functional Block Diagram

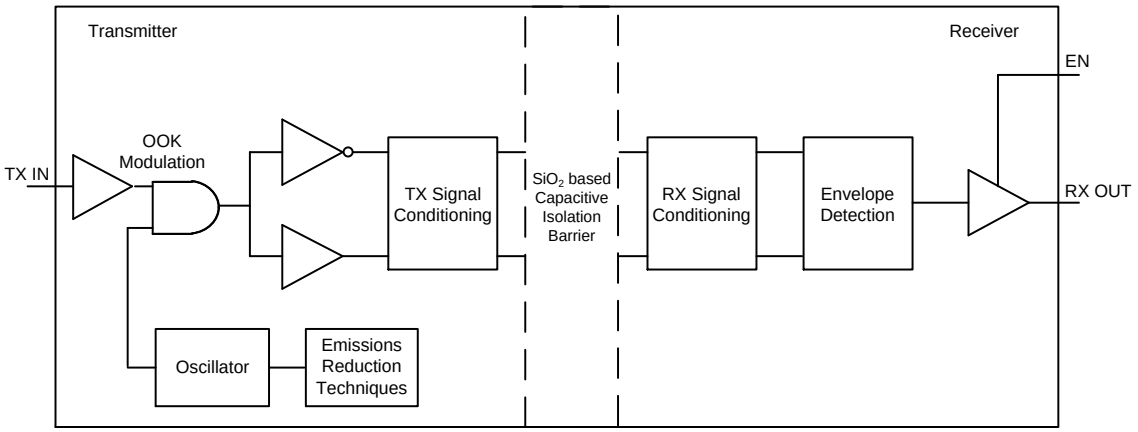



Figure 11-1. Functional Block Diagram of a Single Channel

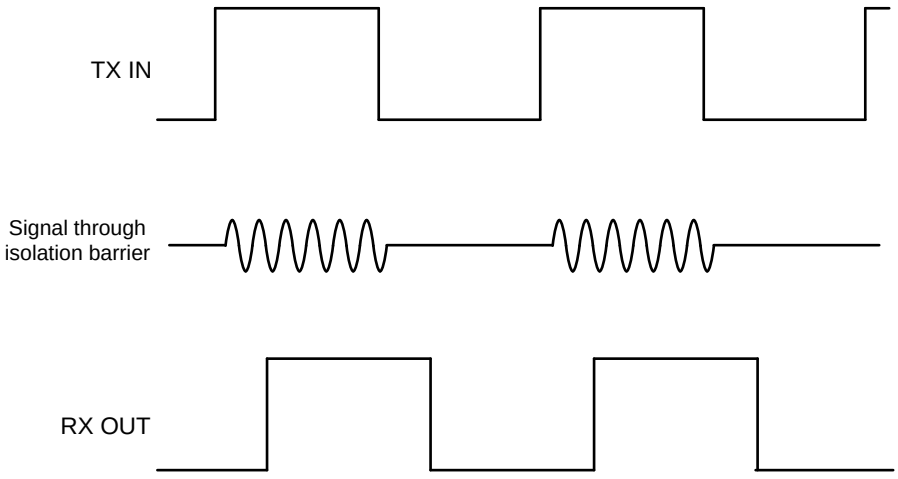



Figure 11-2. Conceptual Operation Waveforms of a Single Channel

### 11.3 Device Operation Modes (Note 1, 2, 3)

Table 11-1 lists the operation modes for the UMISO774xA devices.

Table 11-1. Operation Mode Table (Note 1, 2, 3)

| $V_{CCI}$ | $V_{CCO}$ | Enable (ENx) | Input (INx) | Output (OUTx) | Operation |
|---|---|---|---|---|---|
| X | PD | X | X | Undetermined | If the output side $V_{CCO}$ is unpowered, a channel output is undetermined. (Note 4) |
| X | PU | L | X | Z | High impedance mode:<br>A low level of Enable pin causes the output to be high impedance. |
| PD | PU | H or Open | X | Default | Default output mode:<br>When $V_{CCI}$ is unpowered, a channel output assumes the logic state based on its default option.<br>Default is High for UMISO774xAH and Low for UMISO774xAL. |
| PU | PU | H or Open | H | H | Normal operation mode:<br>A channel output follows the logic state of its input. |
| | | H or Open | L | L | |
| | | H or Open | Open | Default | Default output mode:<br>When input is open, the corresponding channel output goes to its default logic state.<br>Default is High for UMISO774xAH and Low for UMISO774xAL. |

Note 1: $V_{CCI}$ = Input−side $V_{CC}$; $V_{CCO}$ = Output−side $V_{CC}$; PU = Powered up ($V_{CC} > V_{CC\,(UVLO+)}$); PD = Powered down ($V_{CC} < V_{CC\,(UVLO-)}$); X = Irrelevant; H = High level; L = Low level; Z = High Impedance.

Note 2: A strongly driven input signal can weakly power the floating $V_{CC}$ through an internal protection diode and cause undetermined output.

Note 3: It is recommended to connect the enable inputs to external logic high or low level when the UMISO774xA devices operate in noisy environments.

Note 4: The outputs are in undetermined state when $V_{CCI} > V_{CC(UVLO+)}$ ,$V_{CCO} < V_{CC(UVLO-)}$.

# 12 Application and Implementation

## 12.1 Application Information

The UMISO774xA isolation ICs provide complete galvanic isolation between two power domains, protecting circuits from high common-mode transients and faults, and eliminating ground loops. In many applications, digital isolators are replacing optocouplers because they can reduce the power requirements and take up less board space while offering the same isolation capability. The UMISO774xA devices are the high-performance, four-channel digital isolators. These devices come with enable pins on each side which can be used to put the respective outputs in high impedance for multi-master driving applications. Unlike optocouplers, which require external components to improve performance, provide bias, or limit current, the UMISO774xA devices only require two external bypass capacitors to operate. To reduce ripple and the chance of introducing data errors, bypass $V_{CCA}$ and $V_{CCB}$ pins with 0.1μF to 1μF low-ESR ceramic capacitors to GNDA and GNDB respectively. Place the bypass capacitors as close to the power supply input pins as possible.

## 12.2 Typical Application

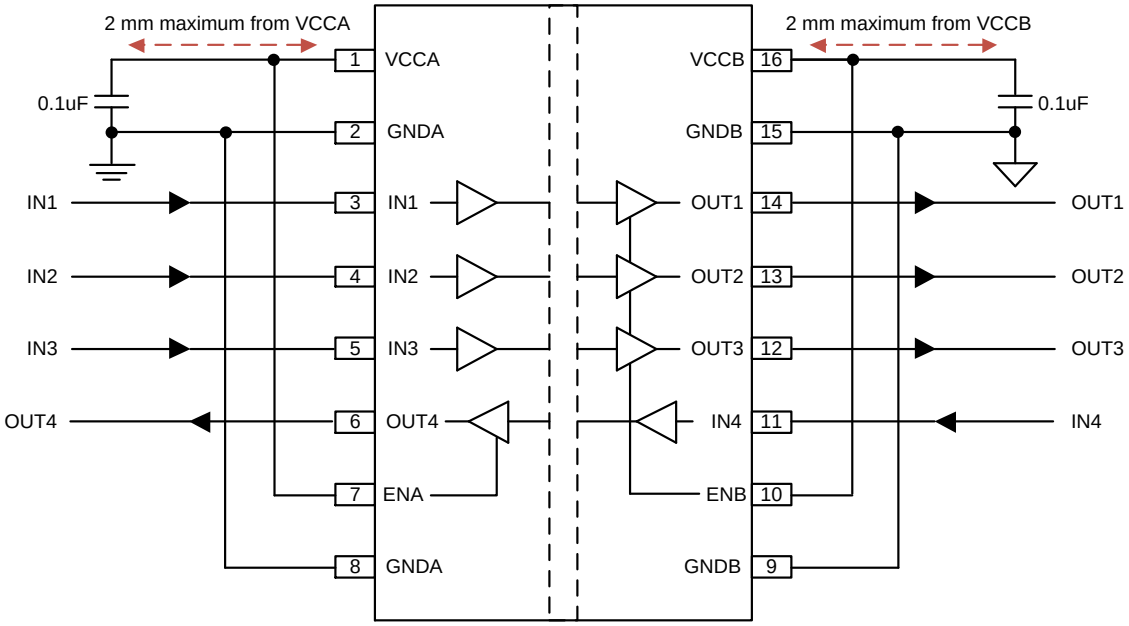
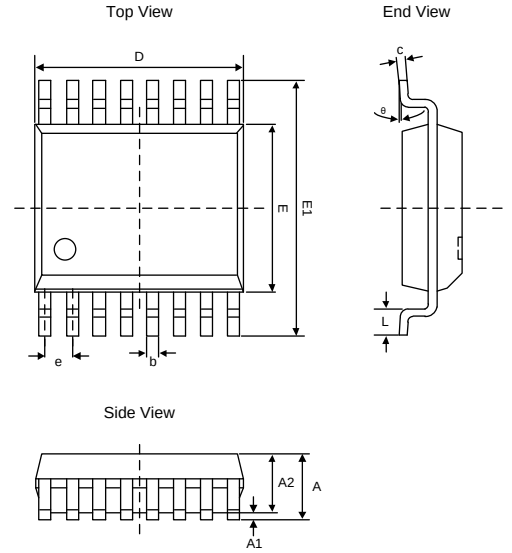



Figure 12-1. UMISO7741A Typical Application

## 13 Package Information

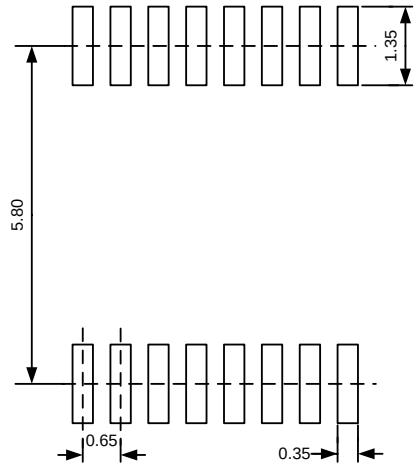
### SSOP16(0.635)

**Outline Drawing**




| Symbol | DIMENSIONS | | | | | |
|---|---|---|---|---|---|---|
| | MILLIMETERS | | | INCHES | | |
| | Min | Typ | Max | Min | Typ | Max |
| A | - | - | 1.75 | - | - | 0.070 |
| A1 | 0.10 | - | 0.25 | 0.004 | - | 0.010 |
| A2 | 1.30 | - | 1.55 | 0.052 | - | 0.062 |
| b | 0.20 | - | 0.31 | 0.008 | - | 0.012 |
| c | 0.17 | - | 0.25 | 0.007 | - | 0.010 |
| D | 4.70 | 4.90 | 5.10 | 0.188 | 0.196 | 0.204 |
| E | 3.80 | 3.90 | 4.00 | 0.152 | 0.156 | 0.160 |
| E1 | 5.80 | 6.00 | 6.20 | 0.232 | 0.24 | 0.248 |
| e | 0.635BSC | | | 0.025BSC | | |
| L | 0.40 | - | 1.27 | 0.016 | - | 0.051 |
| θ | 0 ° | - | 8° | 0° | - | 8° |

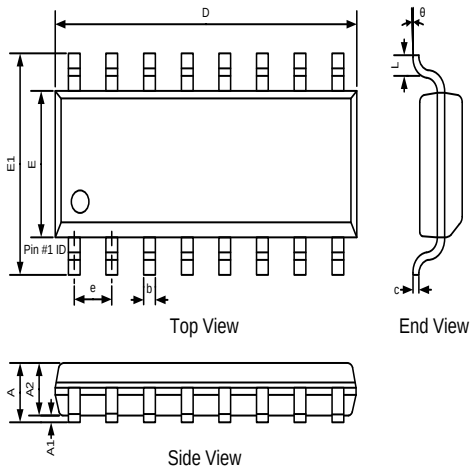
**Land Pattern**




NOTES:
1. Unit: mm.
2. General tolerance ±0.05mm unless otherwise specified.
3. The layout is just for reference.

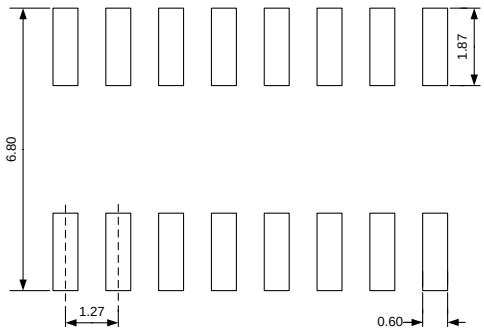
# SOP16

## Outline Drawing




| DIMENSIONS | | | | | | |
|---|---|---|---|---|---|---|
| Symbol | MILLIMETERS | | | INCHES | | |
| | Min | Typ | Max | Min | Typ | Max |
| A | - | - | 1.75 | - | - | 0.069 |
| A1 | 0.10 | - | 0.25 | 0.004 | - | 0.010 |
| A2 | 1.25 | - | 1.65 | 0.049 | - | 0.065 |
| b | 0.33 | - | 0.51 | 0.013 | - | 0.020 |
| c | 0.17 | - | 0.25 | 0.007 | - | 0.010 |
| D | 9.80 | - | 10.20 | 0.386 | - | 0.402 |
| E | 3.80 | 3.90 | 4.00 | 0.150 | 0.154 | 0.157 |
| E1 | 5.80 | 6.00 | 6.20 | 0.228 | 0.236 | 0.244 |
| e | 1.27BSC | | | 0.050BSC | | |
| L | 0.40 | - | 1.27 | 0.016 | - | 0.050 |
| θ | 0 ° | - | 8 ° | 0 ° | - | 8 ° |

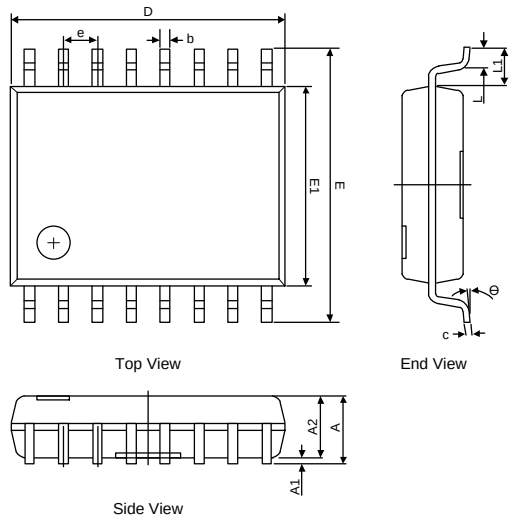
## Land Pattern




NOTES:
1. Unit: mm;
2. General tolerance ±0.05mm unless otherwise specified;
3. The layout is just for reference.

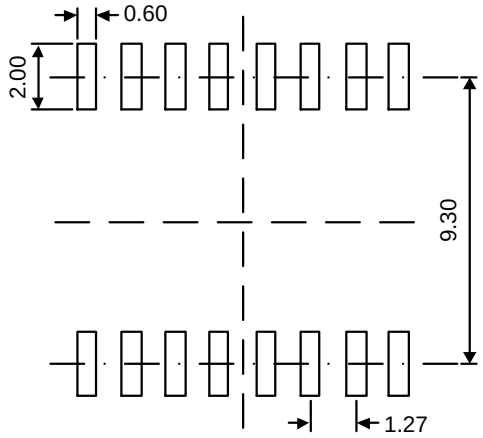
## WSOP16

### Outline Drawing




| DIMENSIONS | | | | | | |
|---|---|---|---|---|---|---|
| Symbol | MILLIMETERS | | | INCHES | | |
| | Min | Typ | Max | Min | Typ | Max |
| A | - | - | 2.65 | - | - | 0.104 |
| A1 | 0.10 | - | 0.30 | 0.004 | - | 0.012 |
| A2 | 2.25 | - | 2.35 | 0.089 | - | 0.093 |
| b | 0.35 | - | 0.43 | 0.014 | - | 0.017 |
| c | 0.24 | - | 0.29 | 0.009 | - | 0.011 |
| D | 10.2 | 10.3 | 10.4 | 0.402 | 0.406 | 0.409 |
| E | 10.1 | 10.3 | 10.5 | 0.398 | 0.406 | 0.413 |
| E1 | 7.4 | 7.5 | 7.6 | 0.291 | 0.295 | 0.299 |
| e | 1.27BSC | | | 0.050 BSC | | |
| L | 0.55 | - | 0.85 | 0.022 | - | 0.033 |
| L1 | 1.40REF | | | 0.060REF | | |
| θ | 0 ° | - | 8 ° | 0 ° | - | 8 ° |

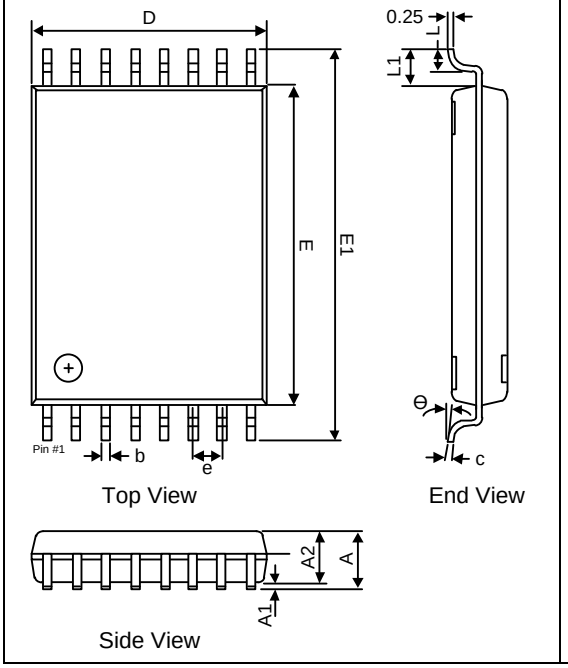
### Land Pattern




NOTES:
1. Unit: mm;
2. General tolerance ±0.05mm unless otherwise specified;
3. The layout is just for reference.

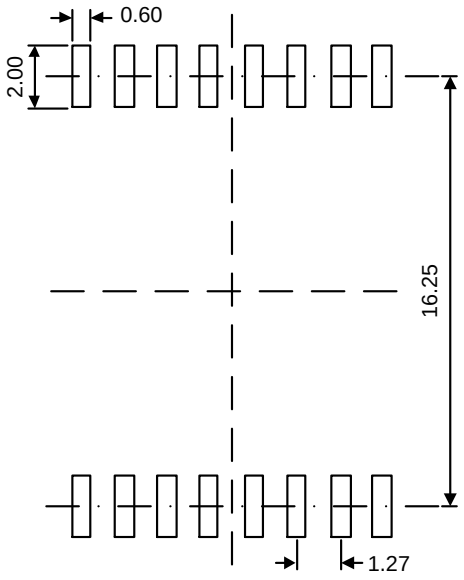
## WWSOP16

### Outline Drawing



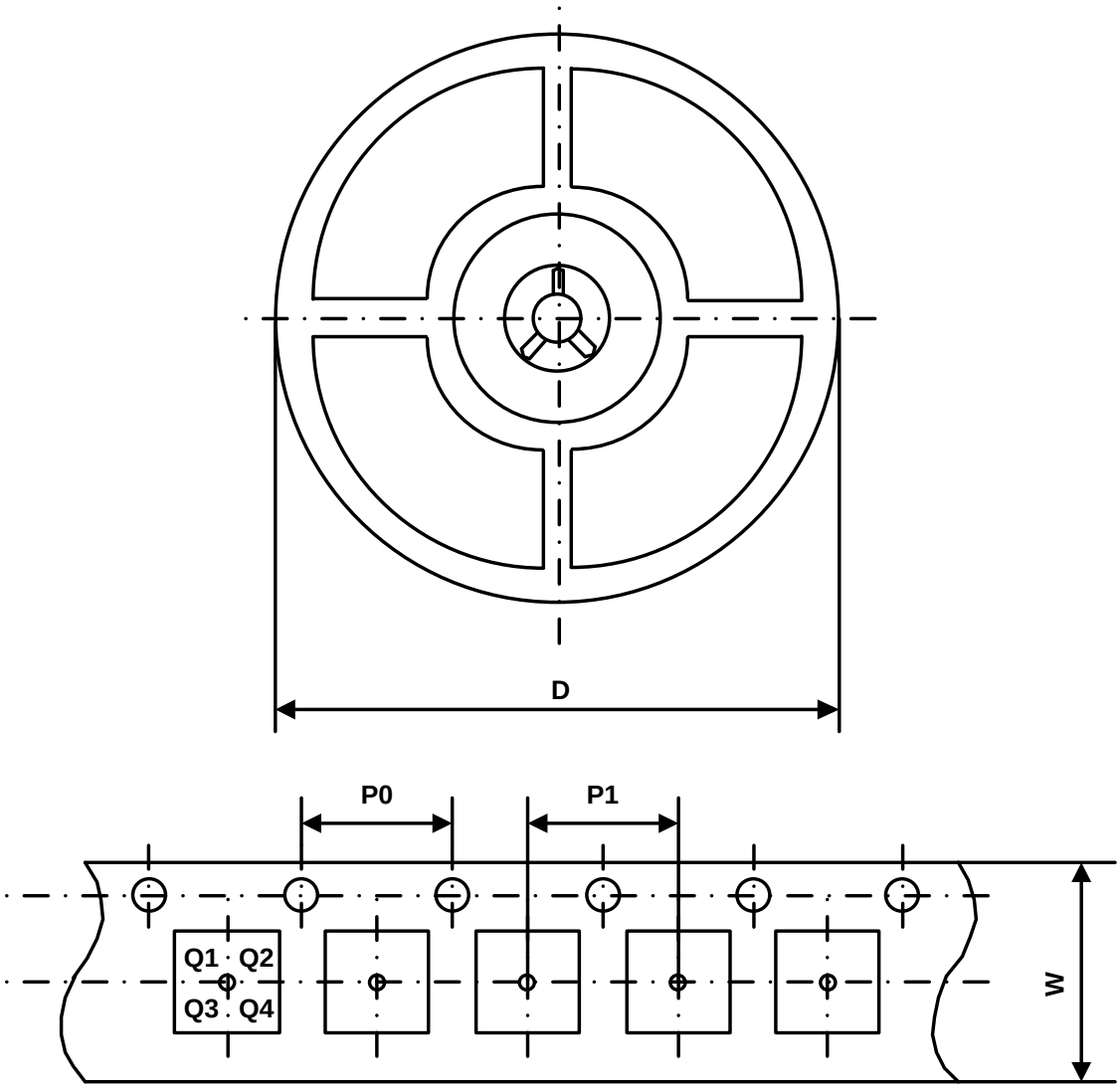

| DIMENSIONS | | | | | | |
|---|---|---|---|---|---|---|
| Symbol | MILLIMETERS | | | INCHES | | |
| | Min | Typ | Max | Min | Typ | Max |
| A | - | - | 2.65 | - | - | 0.104 |
| A1 | 0.10 | - | 0.30 | 0.004 | - | 0.012 |
| A2 | 2.236 | - | 2.336 | 0.088 | - | 0.092 |
| b | 0.31 | - | 0.51 | 0.012 | - | 0.020 |
| c | 0.22 | - | 0.28 | 0.009 | - | 0.011 |
| D | 10.20 | - | 10.40 | 0.402 | - | 0.409 |
| E | 13.90 | - | 14.10 | 0.547 | - | 0.555 |
| E1 | 17.10 | - | 17.40 | 0.673 | - | 0.685 |
| e | 1.27BSC | | | 0.050 BSC | | |
| L | 0.60 | - | 1.10 | 0.024 | - | 0.043 |
| L1 | 1.625REF | | | 0.064REF | | |
| θ | 0° | - | 8° | 0° | - | 8° |

### Land Pattern




NOTES:
1. Unit: mm;
2. General tolerance ±0.05mm unless otherwise specified;
3. The layout is just for reference.

## 14 Packing Information




| Part Number | Package Type | Carrier Width (W) | Pitch (P0) | Pitch (P1) | Reel Size (D) | PIN 1 Quadrant |
|---|---|---|---|---|---|---|
| UMISO7740ALSAG | SSOP16(0.635) | 12 mm | 4 mm | 8 mm | 330 mm | Q1 |
| UMISO7740AHSAG | SSOP16(0.635) | 12 mm | 4 mm | 8 mm | 330 mm | Q1 |
| UMISO7741ALSAG | SSOP16(0.635) | 12 mm | 4 mm | 8 mm | 330 mm | Q1 |
| UMISO7741AHSAG | SSOP16(0.635) | 12 mm | 4 mm | 8 mm | 330 mm | Q1 |
| UMISO7742ALSAG | SSOP16(0.635) | 12 mm | 4 mm | 8 mm | 330 mm | Q1 |
| UMISO7742AHSAG | SSOP16(0.635) | 12 mm | 4 mm | 8 mm | 330 mm | Q1 |

| Part Number | Package Type | Carrier Width (W) | Pitch (P0) | Pitch (P1) | Reel Size (D) | PIN 1 Quadrant |
|---|---|---|---|---|---|---|
| UMISO7740ALSG | SOP16 | 16 mm | 4 mm | 8 mm | 330 mm | Q1 |
| UMISO7740AHSG | SOP16 | 16 mm | 4 mm | 8 mm | 330 mm | Q1 |
| UMISO7741ALSG | SOP16 | 16 mm | 4 mm | 8 mm | 330 mm | Q1 |
| UMISO7741AHSG | SOP16 | 16 mm | 4 mm | 8 mm | 330 mm | Q1 |
| UMISO7742ALSG | SOP16 | 16 mm | 4 mm | 8 mm | 330 mm | Q1 |
| UMISO7742AHSG | SOP16 | 16 mm | 4 mm | 8 mm | 330 mm | Q1 |
| UMISO7740ALWSG | WSOP16 | 16 mm | 4 mm | 12 mm | 330 mm | Q1 |
| UMISO7740AHWSG | WSOP16 | 16 mm | 4 mm | 12 mm | 330 mm | Q1 |
| UMISO7741ALWSG | WSOP16 | 16 mm | 4 mm | 12 mm | 330 mm | Q1 |
| UMISO7741AHWSG | WSOP16 | 16 mm | 4 mm | 12 mm | 330 mm | Q1 |
| UMISO7742ALWSG | WSOP16 | 16 mm | 4 mm | 12 mm | 330 mm | Q1 |
| UMISO7742AHWSG | WSOP16 | 16 mm | 4 mm | 12 mm | 330 mm | Q1 |
| UMISO7740ALWWSG | WWSOP16 | 24 mm | 4 mm | 20 mm | 330 mm | Q1 |
| UMISO7740AHWWSG | WWSOP16 | 24 mm | 4 mm | 20 mm | 330 mm | Q1 |
| UMISO7741ALWWSG | WWSOP16 | 24 mm | 4 mm | 20 mm | 330 mm | Q1 |
| UMISO7741AHWWSG | WWSOP16 | 24 mm | 4 mm | 20 mm | 330 mm | Q1 |
| UMISO7742ALWWSG | WWSOP16 | 24 mm | 4 mm | 20 mm | 330 mm | Q1 |
| UMISO7742AHWWSG | WWSOP16 | 24 mm | 4 mm | 20 mm | 330 mm | Q1 |

## GREEN COMPLIANCE

Union Semiconductor is committed to environmental excellence in all aspects of its operations including meeting or exceeding regulatory requirements with respect to the use of hazardous substances. Numerous successful programs have been implemented to reduce the use of hazardous substances and/or emissions.
All Union components are compliant with the RoHS directive, which helps to support customers in their compliance with environmental directives. For more green compliance information, please visit:
https://www.union-ic.com/Quality.html

## IMPORTANT NOTICE

The information in this document has been carefully reviewed and is believed to be accurate. Nonetheless, this document is subject to change without notice. Union assumes no responsibility for any inaccuracies that may be contained in this document, and makes no commitment to update or to keep current the contained information, or to notify a person or organization of any update. Union reserves the right to make changes, at any time, in order to improve reliability, function or design and to attempt to supply the best product possible.