

UM3302H
Rev.01

Reliability Report
FOR
UM3302H

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Conclusion

The UM3302H successfully meets the quality and reliability standards required of all Union products.

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I. Device Description

A. General

The UM3302H, a ESD protected level translator, provides the level shifting necessary to allow data transfer in multi-voltage system. This 2-channel non-inverting translator uses two separate configurable power-supply rails. The A port is designed to track VCCA. VCCA accepts any supply voltage from 1.2V to 3.6V. The B port is designed to track VCCB. VCCB accepts any supply voltage from 1.65V to 5.5V. This allows for universal low-voltage bidirectional translation between any of the 1.2V, 1.5V, 1.8V, 2.5V, 3.3V, and 5V voltage nodes. Both I/O ports are auto-sensing; thus, no direction pin is required, making it ideal for data transfer between low-voltage ASICs /PLDs and higher voltage systems.

The UM3302H operates at a guaranteed data rate of 20Mbps over the entire specified operating voltage range. Within specific voltage domains, higher data rates are up to 100Mbps.

When the output-enable (OE) input is low, all outputs are placed in the high-impedance state. The UM3302H is designed so that the OE input circuit is designed to track VCCA.

To ensure the high-impedance state during power up or power down, OE should be tied to GND through a pull down resistor; the minimum value of the resistor is determined by the current-sourcing capability of the driver.

The UM3302H is a dual channel level translator available in 1.90mm×0.90mm CSP8 bump package.

B. Absolute Maximum Ratings

<u>Item</u>	<u>Rating</u>
All Voltages Referenced to GND	
Supply Voltage (V CCA)	-0.5 to +4.5V
Supply Voltage (V CCB)	-0.5 to +6.5V
A Port Voltage (VA)	-0.5 to +4.5V
B Port Voltage (VB)	-0.5 to +6.5V
Lead soldering temperature (T _L)	300°C (10 sec.)
Operating Temperature (T _{OP})	-40 to +85 °C
Storage Temperature (T _{STG})	-65 to +150 °C

II. Manufacturing Information

- A. Process: CMOS
- B. Wafer Type: UW010
- C. Fabrication Location: P.R.China
- D. Assembly Location: P.R.China

III. Packaging Information

- A. Package Type: CSP8
- B. Lead Frame: N/A
- C. Lead Finish: N/A
- D. Die Attach: N/A
- E. Bond wire: N/A
- F. Mold Material: N/A
- G. Flammability Rating: Class UL94-V0
- H. ESD Level (HBM): $\pm 15\text{KV}$ (B Port); $\pm 2\text{KV}$ (Other Pin)
- J. Classification of Moisture Sensitivity
per JEDEC standard JESD22-A113: Level 1

IV. Die Information

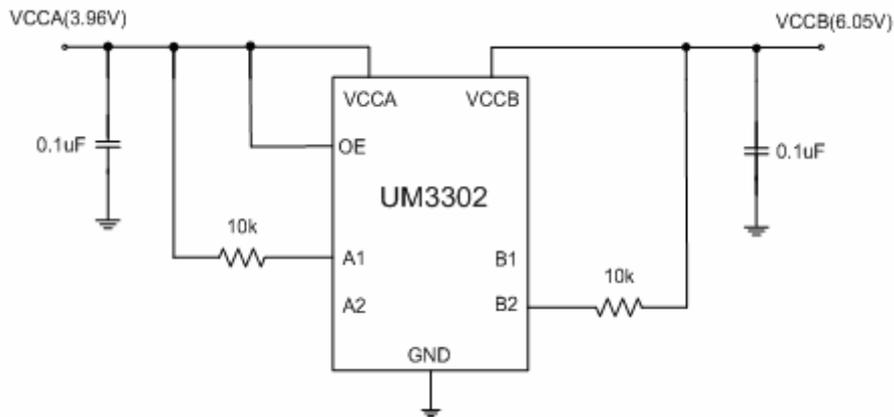
- A. Dimensions: $820 \times 1820 \text{ um}^2$
- B. Passivation: $\text{Si}_3\text{N}_4/\text{SiO}_2$ (Silicon nitride/ Silicon dioxide)
- C. Interconnect: Al/Si/Cu
- D. Backside Metallization: N/A
- E. Minimum Metal Width: 0.5 um
- F. Minimum Metal Spacing: 30.5 um
- G. Bondpad Dimensions: $222 \times 222 \text{ um}^2$
- H. Isolation Dielectric: SiO_2
- J. Die Separation Method: Wafer Saw

V. Reliability Evaluation

A. Operating Life Test

Test Item	Test Condition	Failure Identification	Package	Sample Size	Number of Failure
High Temp Operating Life JESD22-A108-B	125 °C, 168h, 1.1Vcc	Electrical parameters & functionality	CSP8	77	0

Test Circuit

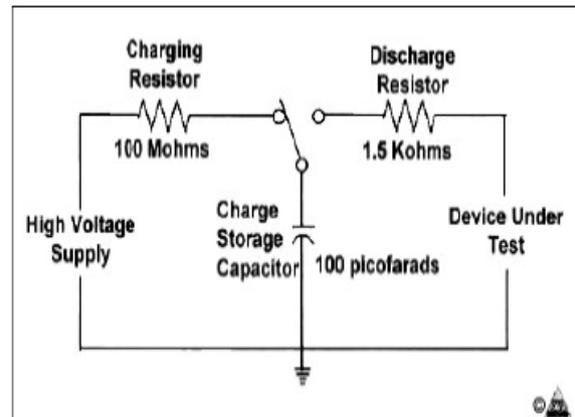
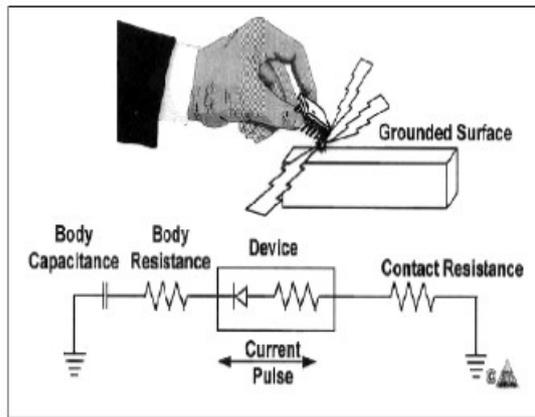


B. Reliability evaluation test

Test Item	Test Condition	Failure Identification	Package	Sample Size	Number of Failure
Precondition JESD22-A113-D	125°C, 24h, 85°C/85%RH, 168h, 260°C, 3 Times	Electrical parameters & functionality & SAT	CSP8	231	0
Temp. Cycling JESD22-A104-C	-65-150°C, Dewell=15Min, 500 Cycles	Electrical parameters & functionality	CSP8	77	0
Autoclave JESD22-A102-C	121°C, 100%RH, 2atm, 96hrs	Electrical parameters & functionality	CSP8	77	0
Unbiased Temp/Humidity JESD22-A118-B	130°C/85%RH, 96hrs	Electrical parameters & functionality	CSP8	77	0
High Temp Storage JESD22-A103-B	150°C, 1000h	Electrical parameters & functionality	CSP8	77	0

C. ESD and Latch-Up Test

The UM3302H die type has been found to have B Port able to pass $\pm 15\text{KV}$, other Pin pass $\pm 2\text{KV}$ ESD human body mode test. (Refer to following ESD Test Circuit). Latch-Up testing has shown that this device withstands a current of $\pm 200\text{mA}$.



- The ESD stress is developed with a 100pF capacitor discharging through a 1500 Ω resistor to the device.
- The use of 1500 Ω resistor implies that the human body mode approximates a current source.