

UM5204/5304EEBF
Rev.01

Reliability Report
FOR
UM5204/5304EEBF

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Conclusion

The UM5204/5304EEBF successfully meets the quality and reliability standards required of all Union products. In addition, Union's continuous reliability monitoring program ensures that all outgoing product will continue to meet Union's quality and reliability standards.

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I. Device Description

A. General

UM5204/UM5304 are surge rated diode arrays designed to protect high speed data interfaces. This series has been specifically designed to protect sensitive components which are connected to data and transmission lines from over-voltage caused by ESD (electrostatic discharge).

The unique design incorporates surge rated, low capacitance steering diodes and a TVS diode in a single package.

During transient conditions, the steering diodes direct the transient to either the positive side of the power supply line or to ground. The internal TVS diode prevents over-voltage on the power line, protecting any downstream components.

The low capacitance array configuration allows the user to protect four high-speed data or transmission lines. The low inductance construction minimizes voltage overshoot during high current surges. They may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4.

B. Absolute Maximum Ratings

Peak Pulse Power ($t_p = 8/20\mu s$) (P_{pk})	150 Watts
Lead Soldering Temperature (T_L)	260°C (10 sec.)
Operating Temperature (T_A)	-55 to +125 °C
Storage Temperature (T_{STG})	-55 to +150 °C
Maximum Junction Temperature T_{JMAX}	150 °C

II. Manufacturing Information

- A. Process: Bipolar
- B. Wafer Type: UM1005
- C. Fabrication Location: P.R.China
- D. Assembly Location: P.R.China

III. Packaging Information

- A. Package Type: SC89-6/SOT563
- B. Lead Frame: Copper

- C. Lead Finish: Solder Plate
- D. Die Attach: N/A
- E. Bondwire: Gold (1.0 mil dia.)
- F. Mold Material: Epoxy with silica filler
- G. Flammability Rating: Class UL94-V0
- I. Classification of Moisture Sensitivity per JEDEC standard JESD22-A113: Level 1

IV. Die Information

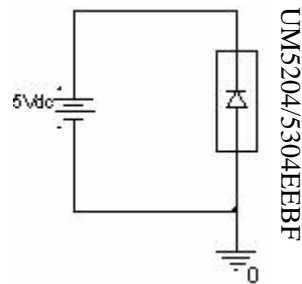
- A. Dimensions: 0.50 x 0.40 mm²
- B. Passivation: Si₃N₄/SiO₂ (Silicon nitride/ Silicon dioxide)
- C. Interconnect: Al/Si/Cu
- D. Backside Metallization: Au
- E. Minimum Metal Width: Metal 1 .2microns
- F. Minimum Metal Spacing: Metal 1 .2 microns
- G. Bondpad Dimensions: 90 x 90 mm²
- H. Isolation Dielectric: SiO₂
- I. Die Separation Method: Wafer Saw

V. Reliability Evaluation

- A. Accelerated Life Test

Sample Size	Conditions	Pass	Failure
80	T _j =125°C,168hr	80	0

Test Circuit



- B. Reliability evaluation test

Test Item	Test Condition	Failure Identifi-cation	Package	Sample Size	Number of Failure
Precondition JESD22-A113-D	-65-150° C,Dewell=15Min, 5 Cycle; 125° C,24h; 85° C/85%RH, 168h; 240° C, 3 Times	Electrical parameters & functionality	SC89-6	100	0
TEMP. Cycle JESD22-A104-B	-65-150° C,Dewell=15Min, 5 Cycle, 1000 Cycles	Electrical parameters & functionality	SC89-6	25	0

Pressure Cooker JESD22-A102-C	121° C, 100%RH, 2atm, 336h	Electrical parameters & functionality	SC89-6	25	0
Temp. & Humi. JESD22-A101-B	85° C/85%RH, 1000h	Electrical parameters & functionality	SC89-6	25	0
High Temp. Storage JESD22-A103-B	150° C, 1000h	Electrical parameters & functionality	SC89-6	25	0

C. ESD

The UM5204/5304EEBF die type has been found to have all pins able to withstand a transient pulse of $\pm 15\text{KV}$ (Air) and 8KV (Contact), per IEC 61000-4-2, level 4. (reference following ESD Test Circuit).

Terminal A: Each pin individually connected to terminal A except Pin 2 with the other pins floating.

Terminal B: Pin 2 connected to terminal B.

