UM5080
Rev.01

Reliability Report

FOR

UM5080

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UNION SEMICONDUCTOR, INC.

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Conclusion

The UM5080 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

The UM5080 ESD protection diode protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events. The UM5080 is available in a DFN2 package with working voltages of 5 volt.

It gives designer the flexibility to protect one unidirectional line in applications where arrays are not practical. Additionally, it may be "sprinkled" around the board in applications where board space is at a premium. It may be used to meet the ESD immunity requirements of IEC 61000-4-2, ±30kV air, ±30kV contact discharge.

B. Absolute Maximum Ratings

Peak Pulse Power (tp = 8/20us) (P_{pk})	140 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: CMOS

B. Wafer Type: UU011

C. Fabrication Location: Tai Wan

D. Assembly Location: P.R.China

III. Packaging Information

A. Package Type: DFN1006H05-2L

B. Lead Frame: EFTEC64T

C. Lead Finish: NiPbAu

D. Die Attach: NO-Conductive epoxy(WBC)

E. Bond wire: Gold (0.8 mil dia.)

F. Mold Material: G770HCD

G. Flammability Rating: Class UL94-V0

H. Classification of Moisture Sensitivity

per JEDEC standard JESD22-A113: Level 1

IV. Die Information

A. Dimensions: 320 x 320 um^2

B. Passivation: Si_3N_4/SiO_2 (Silicon nitride/ Silicon dioxide)

C. Interconnect: Al/Si/Cu

D. Backside Metallization: Au

E. Minimum Metal Width: Metal 3.0 um

F. Minimum Metal Spacing: Metal 3.0 um

G. Bond pad Dimensions: 170x170 um^2

H. Isolation Dielectric: SiO_2

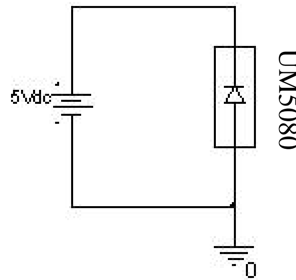
I. Die Separation Method: Wafer Saw

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 ºC,168h	Electrical parameters & functionality	DFN2	77	0

Test Circuit



B. Reliability evaluation test

Test Item	Test Condition	Failure Identification	Package	Sample Size	Number of Failure
Precondition JESD22-A113-D	TCT:-65-150ºC, 5Cycles; Bake:125ºC,24h; Soak:85ºC/85%RH,168h; Reflow:260±5ºC,3 Times	Electrical parameters & functionality & SAT	DFN2	231	0
Temp. Cycling JESD22-A104-C	-65-150ºC,Dewell=15Min, 500 Cycles	Electrical parameters & functionality	DFN2	77	0
Unbiased Temp/Humidity JESD22-A118-B	130ºC/85%RH,2.3atm, 96h	Electrical parameters & functionality	DFN2	77	0
Temperature Humidity JESD22-A101	85°C/85%RH,1000h	Electrical parameters & functionality	DFN2	77	0
High Temp Storage JESD22-A103-B	150ºC,1000h	Electrical parameters & functionality	DFN2	77	0

C. ESD

The UM5080 die type has been found to have all pins able to withstand a transient pulse of ± 30KV (Air) and 30KV (Contact).

Terminal A: Pin 1 connected to terminal A.

Terminal B: Pin 2 connected to terminal B.