



SEMTECH

GENNUM PRODUCTS

GS6080/GS6081

Reliability Qualification Report

Revision History

Version	ECR	Date	Modifications / Changes
0	ECO-012924	May 2013	New document
1	ECO-027526	Aug 2015	MSL level correction – qual'd at MSL1

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1 Device Specifics

1.1 Manufacturing Summary

Table 1.: Manufacturing Summary

Gennum Device Codes	GS6080/GS6081
Silicon Fab Technology	Jazz Semiconductor 0.18 μm , SiGe120 SBC18HA
Package Assembly	ASE-M
Package Type	16 QFN, 4x4 mm, 0.65 mm pitch

1.2 Product Information

The GS6081 is a high-speed BiCMOS integrated circuit designed to drive one to four 75 Ω coaxial cables. The GS6080 is a high-speed BiCMOS integrated circuit designed to drive one to two 75 Ω coaxial cables. The GS6080 and GS6081 may drive data rates up to 5.94Gb/s and provides two selectable slew rates in order to achieve compliance to SMPTE 424M, SMPTE 292M and SMPTE 259M.

The GS6080 and GS6081 can be powered from either a 3.3V or a 2.5V supply. The GS6080 and GS6081 are Pb-free, and the encapsulation compound does not contain halogenated flame retardant. This component and all homogeneous subcomponents are RoHS compliant.

The devices shall be fully functional and shall meet all operational specifications over the ambient temperature range -40 $^{\circ}\text{C}$ to +85 $^{\circ}\text{C}$.

1.3 Process Qualification

The die is manufactured by Jazz using the SiGe120 SBC18HX process. The Jazz process qualification report has been accepted and is stored in Agile under Gendoc-034874. The product is packaged at ASE-M in a 16 pin QFN package using Cu-wire technology. The ASE-M copper wire qualification report is stored in Agile under Gendoc-056784.

1.4 Product Qualification Approach

The GS6080 and GS6081 contain the same die, the GS6080 product has a reduced feature set relative to the GS6081. Qualification results obtained with the GS6081 are representative of the GS6080 reliability.

GS6080, and GS6081 will be assembled in ASE-Malaysia and it will employ copper wire technology. The GN2036 contains a die from the same fab process in a more complex QFN package that also employs the same Cu wire technology and it is also assembled at ASE-M. Therefore package level stresses have been bridged to the GN2036 qualification. The GN2036 qualification report is in Agile under GENDOC-057878.

Because the die in the GS6080 package is shifted from the centre of the die paddle; temperature cycling was performed on the GS6080 to confirm the reliability of the shifted die configuration.

Details of the tests performed and bridged qualification tests are presented on the next page.

2 Reliability Qualification Stresses

2.1 Environmental Tests

Table 2.: Environmental Tests

Stress	Conditions	Duration	Qualification Vehicle	Sample Size	Failures
High Temperature Operating Life	JESD22-A108 $T_j \geq 125^\circ\text{C}$, $V_{cc} \geq V_{ccmax}$	1000 hours	GS6081	77	0
Temperature Cycling	JESD22-A104 MSL Preconditioning, -55°C to +125°C (Condition B)	500 cycles	GN2036	231 (77 each from three assembly lots)	0
			GS6080	25	0
Biased HAST	JESD22-A101 MSL Preconditioning, 85°C/85% RH	96 hours	GN2036	231 (77 each from three assembly lots)	0
High Temperature Storage	JESD22-A103 150 °C	1000 hours	GN2036	90 (45 each from two wafer lots)	0
Moisture Sensitivity Level	J-STD-020 MSL1, $T_{max}=260^\circ\text{C}$		GN2036	462 (154 each from three assembly lots)	0

2.2 Electrostatic Discharge and Latch Up Tests

Table 3.: Electrostatic Discharge and Latch Up Tests

Stress	Conditions	Qualification Vehicle	Stress Level	Sample Size	Failures
Human Body Model ESD	JEDEC22-A114	GS6081	2.5 kV	3	0
Machine Model ESD	JESD22-A115	GS6081	200 V	3	0
Charged Device Model ESD	JESD22-C101	GS6081	1.5 kV	3	0
Latch Up	JESD78 V _{cc} =3.5 V, 5.25 V; +/- 100 mA Level II, Class A	GS6081	25°C	6	0
			85°C	6	0

3 Conclusion

Reliability qualification of the GS6080 and GS6081 are complete. The products are considered fit for sale and customer use.