



# **SEMTECH**

GENNUM PRODUCTS

**GS6152**

**Reliability Qualification Report**

# Revision History

Version	ECO	Date	Modifications / Changes
0	ECO-026807	July 2015	New document

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# 1 Device Specifics

## 1.1 Manufacturing Summary

Table 1. Manufacturing Summary

<b>Genum Device Codes</b>	GS6152
<b>Silicon Fab Technology</b>	Jazz Semi SiGe 200 0.18 $\mu\text{m}$ SBC18H2A
<b>Assembly House</b>	ASE-M
<b>Package Type</b>	48 QFN, 6x6 mm, 0.4 mm pitch

## 1.2 Product Information

The GS6152 is a low-power, multi-rate serial digital CDR designed to automatically recover the embedded clock from a digital video signal and re-time the incoming video data. The GS6152 will recover the embedded clock signal and re-time the data from 6G UHD-SDI signals compliant with SMPTE ST 2081. In addition, it can also re-time SMPTE ST 259-C, SMPTE ST 292, SMPTE ST 424 or DVB-ASI compliant digital video signals as well as MADI audio streams.

GS6152 typical power consumption is 130mW (190mW with RCO enabled)

The GS6152 are Pb-free, and the encapsulation compound does not contain halogenated flame retardant. This component and all homogeneous subcomponents are RoHS compliant.

## 1.3 Process Qualification

The GS6152 silicon is manufactured in Jazz Semiconductor 0.18 $\mu\text{m}$  SiGe200 SBC18H2A process. The Jazz qualification report is accepted on Agile# GENDOC-053374. The internal qualification of GN2033 copper wire ASE-M packaged test vehicle was selected as a strategic opportunity to qualify the copper wire technology. The internal ASE-M copper wire qualification report is in Agile# GENDOC-056784.

## 1.4 Product Qualification Approach

The GS6152 uses a similar die, the same fab process and product family as the GS6150. The differences in design have been reviewed and do not impact reliability. Therefore GS6152 reliability is bridged to GS6150. The GS6150 Qualification Report is available in Agile ID# PRODDOC009543.

The GS6152 is packaged at ASE-M in a 48L QFN 6mmx6mm, 0.4mm pitch with copper wires, which is the same as the GS6150. All packaging qualification is bridged to the GS6150.

Details descriptions of the qualification can be found in the below tables.

## 2 Reliability Qualification Stresses

### 2.1 Environmental Tests

Table 2. Environmental Tests

Stress	Conditions	Duration	Qualification Vehicle	Sample Size	Results
High Temperature Operating Life	JESD22-A108 $T_j \geq 125^\circ\text{C}$ , $V_{cc} \geq V_{ccmax}$	1000 hours	Bridge to GS6150 Std Config	80	Pass
		190 hours	Bridge to GS6150 STD + DFT Config	80	Pass
Temperature Cycling	JESD22-A104 MSL Preconditioning, -55°C to +125°C (Condition B)	1000 cycles	Bridge to GS6150	25 each from 3 lots	Pass
Highly Accelerated Stress Test (HAST)	JESD22-A110 MSL3 Preconditioning, 130°C, 85% R.H., $V_{ccmax}$	96 hours	Bridge to GS6150	25 each from 3 lots	Pass
High Temperature Storage	JESD22-A103 150 °C	1000 hours	Bridge to GS6150	25 each from 3 lots	Pass
Moisture Sensitivity Level	J-STD-020 MSL3, $T_{max}=260^\circ\text{C}$ Preconditioning		Bridge to GS6150	150 (75 each from 3 lots)	Pass

## 2.2 Electrostatic Discharge and Latch Up Tests

**Table 3.** Electrostatic Discharge and Latch Up Tests

Stress	Conditions	Qualification Vehicle	Stress Level	Sample Size	Results
Human Body Model ESD	JESD22-A114	Bridge to GS6150	2, 3, 4 kV	3	Pass
Machine Model ESD	JESD22-A115	Bridge to GS6150	100, 150, 200 V	3	Pass
Charged Device Model ESD	JESD22-C101	Bridge to GS6150	1, 1.5, 2 kV	3	Pass
Latch Up	JESD78 V <sub>cc</sub> =3.5 V, 5.25 V; +/- 100 mA Level II, Class A	Bridge to GS6150	25°C	3	Pass
			85°C	3	Pass

### 3 Conclusion

Process qualification reports demonstrate that the processes used in the manufacture of the GS6152 are in volume production and are fully qualified by the suppliers and Semtech Corporation – Gennum Products Group. Semtech Corporation considers these process and libraries acceptable for use in the design and manufacture of Semtech products.

The GS6152 products have passed reliability testing required by Semtech-Gennum Products Group. No performance degradation has been observed during the evaluation. This product is considered suitable for production.