



SEMTECH

GENNUM PRODUCTS

GS12281

Reliability Qualification Report

Revision History

Version	ECO	Date	Modifications / Changes
0	ECO-037106	Jun 2017	New document – Interim Release
1	ECO-037888	July 2017	Updated GS12281 HTOL 500hrs, and GS12090 HTOL to 1000hrs
2	ECO-038079	Aug 2017	Updated with HTOL 1000hrs

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1 Device Specifics

1.1 Manufacturing Summary

Table 1. Manufacturing Summary

Semtech Device Codes	GS12281
Silicon Fab Technology	Jazz Semi SiGe 200 0.18 μm SBC18H2A
Assembly House	CARSEM
Package Type	40 QFN-COL, 4x6 mm, 0.4 mm pitch

1.2 Product Information

The GS12281 is a low-power, multi-rate, re-timing cable driver supporting rates up to 12G UHD-SDI. It is designed to receive 100 Ω differential input signals, automatically recover the embedded clock from the digital video signal and re-time the incoming data, and transmit the re-timed signal over 75 Ω coaxial cables. The 100 Ω trace input supports up to 17dB of insertion loss.

The GS12281 is 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 GS12281 is manufactured in Jazz Semiconductor 0.18um SiGe200 SBC18H2A process. The Jazz qualification report is accepted on Agile# GENDOC-053374

1.4 Product Qualification Approach

Due to its new architecture design Life Tests, ESD and LU were executed.

HTOL was executed on a reduced sample size due to similarity to the GS12090 (TX mode). Additionally as part of the GS12xxx family there are diagnostic features that are available to customers. These were stressed as part of the HTOL run.

GS12281 and GS12141 use the same package BOM and assembly. For the purposes of qualification GS12141 was selected as the test vehicle. Therefore, all GS12281 package level testing are bridged to the GS12141 package stresses.

Detailed descriptions of the qualification can be found in the table below.

2 Reliability Qualification Stresses

2.1 Environmental Tests

Table 2. Environmental Tests

Stress	Conditions	Duration	Qualification Vehicle	Sample Size	Result
High Temperature Operating Life	JESD22-A108	1000 hours	GS12281	40	Pass
	$T_j \geq 125^\circ\text{C}$, $V_{cc} \geq V_{ccmax}$	1000 hours	Bridge to GS12090	40/config2(TX only)	Pass
Temperature Cycling	JESD22-A104	1000 cycles	Bridge GS12141	to 25 each from 3 lots	Pass
	MSL Preconditioning, -55°C to $+125^\circ\text{C}$ (Condition B)				
Highly Accelerated Stress Test (HAST)	JESD22-A110	96 hours	Bridge GS12141	to 25 each from 3 lots	Pass
	MSL Preconditioning, 130°C , 85% R.H., V_{ccmax}				
High Temperature Storage	JESD22-A103 150°C	1000 hours	Bridge GS12141	to 25 each from 3 lots	Pass
Moisture Sensitivity Level	J-STD-020 MSL3, $T_{max}=260^\circ\text{C}$ Preconditioning		Bridge GS12141	to 225 (75 each from three assembly 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	JS-001	GS12281	1, 2, 3, 3.5 kV	3/1	Pass 2KV
Charged Device Model ESD	JESD22-C101	GS12281	500V, 750V 1 kV, 2KV	3/1	Pass 2KV
Latch Up	JESD78	GS12281	25°C	3	Pass
	V _{cc} =1.89 V; +/- 100 mA Level II, Class A		85°C	3	Pass

3 Conclusion

The product GS12281 has completed all ESD/LU, HTOL, and packaging qualification is bridged to GS12141, and no performance degradation has been observed during the evaluation. This product is considered fit for customer use.