



# **SEMTECH**

GENNUM PRODUCTS

**GS3470**

**Reliability Qualification Report**

# Revision History

Version	ECO	Date	Modifications / Changes
0	ECO-036963	May 2017	New document

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# 1 Device Specifics

## 1.1 Manufacturing Summary

Table 1. Manufacturing Summary

<b>Semtech Device Codes</b>	GS3470
<b>Silicon Fab Technology</b>	TSMC 65nm LP
<b>Assembly House</b>	ASE-M
<b>Package Type</b>	9mm x 9mm (0.8mm pitch) 100-pin BGA

## 1.2 Product Information

The GS3470 product is the Next Generation 3GB/s Broadcast Receiver (Des) - an updated, lower power version of the GS2970A.

The GS3470 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 SERDES is manufactured in TSMC Semiconductor 65nm LP process. The TSMC qualification report is accepted on Agile#GENDOC-056973.

### 1.4 Product Qualification Approach

Due to its new architecture design and packaging, HTOL, ESD, LU as well as full package qualification was executed.

## 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	GS3470	80	Pass
Temperature Cycling	JESD22-A104 MSL Preconditioning, -55°C to +125°C (Condition B)	1000 cycles	GS3470	30 each from 3 lots	Pass
Highly Accelerated Stress Test (HAST)	JESD22-A110 MSL Preconditioning, 130°C, 85% R.H., $V_{ccmax}$	96 hours	GS3470	30 each from 3 lots	Pass
High Temperature Storage	JESD22-A103 150 °C	1000 hours	GS3470	30 each from 3 lots	Pass
Moisture Sensitivity Level	J-STD-020 MSL3, $T_{max}=260^\circ\text{C}$ Preconditioning		GS3470	270 (90 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	GS3470	1, 2, 3 kV	3	Pass 3KV
Charged Device Model ESD	JESD22-C101	GS3470	250,300,350V	3	Pass 350V
Latch Up	JESD78	GS3470	25°C	3	Pass
	V <sub>cc</sub> =1.2 V, 2.5 V; +/- 100 mA Level II, Class A		85°C	3	Pass

### 3 Conclusion

The product GS3470 passed all reliability tests, and no performance degradation was observed during the evaluation. This device meets Semtech's Reliability Standards and is considered fit for Customer use.