



PRODUCT / PROCESS CHANGE NOTIFICATION

PCN-000980

Date: JUN-28-2024

Change Details

Part Number(s) Affected:

1	GN3052-3EA5AM3E3	7	GN3358-3EF8AW3E3
2	GN3257-3EB9BA6E3	8	GN3358-3EF9AU2E3
3	GN3289-3ED7BC2E3	9	GN3361-3EJ3AY2E3
4	GN3357-3EB9AT6E3	10	GN3362-3EJ2AX2E3
5	GN3357-3EB9AW3E3	11	GN3368-3EC8AT6E3
6	GN3357-3ED9AW3E3		

Customer Part Number(s) Affected: ☒ N/A

Description, Purpose and Effect of Change:

Final PCN Notification: Manufacturing Line Relocations

Following the advanced PCN (APCN-000953) sent on February 27, 2024, Semtech has completed the qualification for the relocation of the TO, barrel, and flex assembly manufacturing lines for the affected part numbers listed above.

Supplier	Manufacturing line	Plant / Location		Purpose and Effect of Change
		From	To	
Hisense (Semtech supplier)	TO assembly	Jiangmen (JM)	Qingdao (QD)	To adapt to market and technology changes and provide customers with better products. <i>Note: ROSA assembly will still remain at the JM plant.</i>
HuiFuKang – HFK (Hisense supplier)	Barrel assembly	Wanda	Chengdu	To ensure the normal production and delivery of materials.
Compass (Hisense supplier)	Flex assembly	Hong Kong	Xiamen	To ensure continuous supply because the Hong Kong factory will cease operations end of the second quarter of this year. <i>Note: Compass' new name is "Xiamen Compass Semiconductor Company Limited".</i>

[New information]

GN3357-3EB9AT6E3 and GN3368-3EC8AT6E3 are not affected with the Compass plant relocation because Compass has discontinued the flex for this part number. Flex for these part numbers remain available from DSN, Hisense alternative supplier.



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The production materials and process flow will remain unchanged for the three changes stated above.

Change Classification	<input checked="" type="checkbox"/> Major <input type="checkbox"/> Minor	Impact to Form, Fit, Function	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Impact to Data Sheet	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	New Revision or Date	<input checked="" type="checkbox"/> N/A


Impact to Performance, Characteristics or Reliability:

- There is no impact to form, fit, function, performance, and characteristics.

Implementation Date	SEP-28-2024	Work Week	39
Last Time Ship (LTS) Of unchanged product	N/A	Affecting Lot No. / Serial No. (SN)	N/A
Sample Availability	2 weeks lead time upon request	Qualification Report Availability	See following pages

Supporting Documents for Change Validation/Attachments:

- PRODDOC031816 Rev 0 - Reliability Qualification Report
- Complete addresses of old and new locations of manufacturing lines.
- Equipment comparison between Hisense' current and new TO assembly manufacturing line.

Quality Assurance		
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Complete addresses of old and new locations of manufacturing lines:

Supplier name	Current plant	New plant
Hisense	A Zone, No. 8 Hisense Road, Tangxia Town, Pengjiang District, Jiangmen City, Guangdong Province, China	No. 218, Qianwangang Road, Economic and Technological Development Zone, Qingdao, Shandong Province, China
HuiFuKang (HFK)	Building C, Wanda Industrial Zone, Shiyan Town, Baoan District, Shenzhen City, China	Chongzhou Chongyang County Street Chuangxinlu second section 500 (Chengdu Huifukang Industrial Park, China
Compass	5th Floor, Chiaphua Centre, 12 Siu Lek Yuen Road, Shatin, New Territories, Hong Kong	Xiamen Hai Cang Information Technology Industrial Park, Fujian Province, China

Equipment comparison between Hisense' current and new TO assembly manufacturing line

Process step	Current equipment Jiangmen (JM) plant	New equipment Qingdao (HD) plant
Auto die bonding	AD819-21 & AD862	DA100M & AD862
High Temperature oven	JPO-91-200CP	HCOD-39-200
OGP Smart microscope	Smartscope ZIP Lite 250	Smartscope ZIP Lite 250
Auto wire bonding	Eagle60AP-LD	Eagle60AP-LD & Kaijo e20a
Pull force tester	Dage4000	Dage4000PXY & MFM1200
High Temperature oven	JPO-125-2000	IPO-125
Auto seam sealing machine	LA-1000 Baking condition: 110 mins @ 115°C	CS3-2.1 Baking condition: 3 hrs @ 150°C
Gross leak test	KYKY	FU-3
Fine leak test	Phoeni XL300	UL1000 Fab



Reliability Qualification Report for Changes in TO Assembly, Barrel and Flex Manufacturing Locations for ROSA Products

Revision History

Version	ECO	Date	Modifications / Changes
0	ECO-071796	Jun 2024	New document

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1 Device Specifics

1.1 Manufacturing Summary

Table 1.: Manufacturing Summary

Semtech Device Codes	GN3357
Silicon Fab Technology	Jazz SiGe120 SBC18HAZ
Package Assembly	TO assembly: Hisense Qingdao Plant ROSA assembly: Hisense Jiangmen Plant
Photodiode	PA009211 APD
Lot Number	UM24223S1
Date Code	2408
TIA	GN1061
Barrel	50-M065
Flex	F10047
Qualified Supplier	
Production WP vendors	KYEC for GN1061
Production FT vendors	Hisense
Barrel Manufacture Vendor	HuiFuKang (Chengdu)
Flex Manufacture Vendor	Xiamen Compass Semiconductor

1.2 Product Qualification

The GN3357 APD ROSA is a fully integrated device with design features that ensure excellent RF stability, together with high sensitivity. The GN3357 optical design is optimised for very low back reflection. The GN3357 10Gb/s APD AGC ROSA product family is the latest generation of linear 10Gb/s ROSA using the GN1061 TIA. This product family is part of the Semtech 10Gb/s APD ROSA portfolio.

GN3357 with GN1061 TIA has been fully qualified previously. The TIA is manufactured in Jazz Semiconductor 0.18um SiGe SBC18HA process. The Jazz qualification report is accepted in Agile at Gendoc-043127. The qualification report for this TIA can be found on Agile at PRODDOC003429. The ROSA uses the PA009211 APD. The photodiode reliability qualification report can be found on Agile under Gendoc-054224.

1.3 Process Qualification Approach

TOs of current Semtech's ROSA products are being manufactured at Hisense Jiangmen (JM) plant. Hisense plans to relocate TO assembly line from existing JM plant to another location, the Qingdao(QD) plant. ROSA assembly will remain in existing location.

In addition to the relocation of TO to QD plant, the barrel manufacturer, HuiFuKang, will relocate its manufacturing plant from Wanda to Chengdu, and the flex manufacturer, Compass, will close its Hong Kong plant and relocate flex manufacturing to Xiamen. This qualification intends to qualify all three changes. GN3357 APD ROSA is selected to be the qualification vehicle for this change based on its production volume. The GN3357 ROSA has been fully qualified previously and the parts used in this qualification have following changes: a) TO assembled at QD plant, b) Barrel manufactured at HuiFuKang Chengdu and c) flex manufactured at Xiamen Compass Semiconductor. Given the fact that GN3357 ROSA with GN1061 TIA has been fully qualified previously and there will be no change in production materials and process flow, one lot qualification is sufficient. The results of this qualification can be bridged to other qualified ROSA products.

1.4 Product Scope

A total of 11 ROSA products are affected by this process change. Please see table below for full list of affected products.

Table 2.: List of Affected products

Product Name
GN3052-3EA5AM3E3
GN3257-3EB9BA6E3
GN3289-3ED7BC2E3
GN3357-3EB9AT6E3
GN3357-3EB9AW3E3
GN3357-3ED9AW3E3
GN3358-3EF8AW3E3
GN3358-3EF9AU2E3
GN3361-3EJ3AY2E3
GN3362-3EJ2AX2E3
GN3368-3EC8AT6E3

2 Reliability Qualification Results

2.1 Physical Characteristics Test Results

Table 3.: Physical Characteristics Test Results

Stress	Reference	Test Conditions	Qualification Vehicle	SS	Results
Hermeticity	MIL-STD-883E	Seal test Method 1014.12	GN3357 TO CAN	11	Pass
Solderability (On Flex)	MIL-STD-883E	Method 2003.8 Solder temperature: 260±5°C Time: 10±1s	GN3357 ROSA Flex	11	Pass
Resistance to Soldering Heat	MIL-STD-750	350 ±10°C, 4-5s	GN3357 ROSA Flex	11	Pass
Die Shear/wire pull/ball shear Strength	MIL-STD-883	Method 2019.7	GN3357 TO CAN	11	Pass
Flex Bending Test	IPC-6013A	180°, 25 times	GN3357 ROSA Flex	11	Pass

2.2 Non-Powered Environmental Stress and Mechanical Tests

Table 4.: Non-Powered Environmental Stress Tests and Mechanical Tests

Stress	Reference	Test Conditions	Qualification Vehicle	Sample Size	Results
Temperature Cycling	GR-468 Method 3.3.2.2	-40°C-85°C 500 cycles	GN3357 ROSA	11	Pass
Mechanical Shock and Vibration	GR-468 Method 3.3.1.1	On TC samples (100 cycles)	GN3357 ROSA	11	Pass
Thermal Shock	MIL-STD-883	0°C-100°C Liquid- to-liquid, 20 cycles	GN3357 TO CAN	11	Pass
Wiggle	n/a	Motor settings: Acceleration 0.5rev/sec; Velocity: 0.5 rev/sec. Load: 0.25 lbf and 0.5 lbf	GN3357 ROSA	11	Pass
Mate/De mate	GR-326-CORE Section 4.4.3.8	200 cycles	GN3357 ROSA	11	Pass

2.3 Powered Environmental Stress Tests

Table 5.: Powered Environmental Stress Tests

Stress	Reference	Test conditions	Qualification Vehicle	Minimum Sample Size	Results
Biased Damp Heat (BDH)	GR-468 Method 3.3.3.3	85C, 85%RH 1000 hrs for qual 2000 hrs for info	GN3357 TO CAN	11	Pass
RGA +BDH	Mil-Std-883	On BDH samples 1000 hrs for qual 2000 hrs for info	GN3357 TO CAN	11	Pass
Biased Damp Heat (BDH)	GR-468 Method 3.3.3.3	85C, 85%RH 1000 hrs for qual 2000 hrs for info	GN3357 ROSA	11	Pass
ESD	JESD22-A114-A (HBM)	2 kV on TIA and 200 V on APD	GN3357 ROSA	9 units for 2 kV TIA and 200 V on APD	Pass

3 Conclusion

The GN3357 APD ROSAs with TOs assembled in QD plant, barrels from HuiFuKang Chengdu, and Flex from Xiamen Compass have passed the required reliability stresses. Thus, ROSA products with new process can be considered as qualified and fit for production.