

PCN Number:
Chgnot.doc rev. 13 1/14

Product/Process Change Notification (PCN)

Customer: Newark

Date: August 21, 2015

Customer Part # affected:

A1101ELHLT-T	A1102LLHLT-T	A1104ELHLT-T
A1101ELHLX-T	A1102LLHLX-T	A1104ELHLX-T
A1101LLHLT-T	A1103ELHLT-T	A1104LLHLT-T
A1101LLHLX-T	A1103ELHLX-T	A1104LLHLX-T
A1102ELHLT-T	A1103LLHLT-T	
A1102ELHLX-T	A1103LLHLX-T	
<i>Including all finishing suffix variations of the sales roots listed</i>		

Originator: Stelios Kalakonas

Phone: 603-626-2484

Fax: 603-641-5336

Duration of Change:

Permanent

Temporary (explain)

Summary description of change: Part Change:

Process Change:

Other:

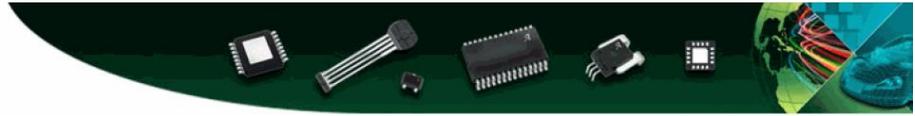
This notification encompasses both a wafer, package and brand enhancement to the subject devices.

1. Wafer Fabrication:

The subject devices will change from Polar Semiconductor, LLC's (PSL) 6" wafer line to PSL's 8" wafer line using the same DABIC5 design process technology. The transfer is consistent with the industry's trend to pare down older capacity (< 200mm). In addition to the inherent quality improvements associated with this transfer Allegro will be able to extend the products life and remain competitive by mitigating the escalating costs of maintaining the 6" wafer line.

2. Assembly Dual Sourcing:

In 2011 Allegro MicroSystems, LLC qualified a sub-contractor assembly site in Perak, Malaysia for our standard SOT-23W package. In addition Allegro has installed and qualified a new in-house SOT-23W high-density (HD) assembly line at Allegro Manila, Philippines facility that replicates the line at the subcontractor. The devices listed in this PCN will transition from an aging standard SOT-23W assembly line to dual assembly sites using modern equipment and the latest assembly techniques. The transition to a dual source assembly line will allow Allegro to offer our customers additional security of supply.



3. Top Brand

Update to reflect Allegro's latest branding format. This brand update provides manufacturing added flexibility and standardization which allows Allegro to better serve customer demand fluctuation.

What is the part or process changing from?

1. Wafer Fabrication:

These devices are manufactured from wafers fabricated on PSL's 6" wafer line. This line is located in a class 100 clean room with 0.50 um process capability. The 6" wafer line uses batch processing with a combination of automatic, semi-automatic and manual equipment with limited automatic recipe download capabilities.

2. Assembly Location:

Existing Allegro standard SOT-23W assembly line located at Allegro facility in Manila, Philippines and/or SOT-23W assembly lines located at our subcontractor's facility in Perak, Malaysia (for customers previously PCN'd).

3. Top Branding:

Please see attached picture of top brand for the existing Allegro standard SOT-23W package.

What is the part or process changing to?

1. Wafer Fabrication:

These devices will be manufactured from wafers fabricated on PSL's 8" wafer line. This line is located in a class 10 clean room with 0.35 um process capability. The 8" wafer line uses single wafer processing with automatic and robotic equipment with automatic recipe download.

2. Assembly Location:

Dual source SOT-23W assembly lines located at Allegro's subcontractor facility in Perak, Malaysia (Carsem) and Allegro's new line in Manila, Philippines (AMPI). Parts from these two assembly lines are in full compliance with the electrical and dimensional parameters on the existing Allegro published datasheet.

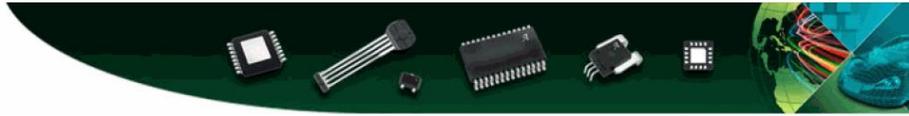
3. Top Branding:

Please see attached picture of top brand for the subcontractor and new Allegro SOT-23W (HD) package

Other minor changes in the flow and BOM internal to the package will be provided in the PPAP.

There is no impact to form, fit or function for these part changes.

Note: Validation of equivalence within a specific application is at the discretion of the Customer.



Is a PPAP update required?

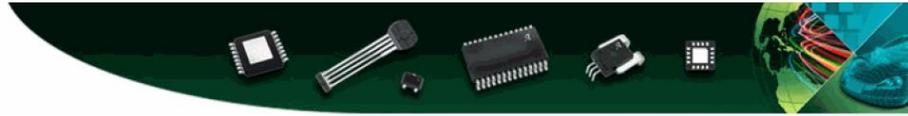
Yes

No

Reliability testing required?
(See attached qual results)

Yes

No (explain)



Reliability Qualification Results

Device: A1101LLH-T
Assy Lot #: 1409435DDAA
Fab Location: PSL
Package: LH (SOT23W)

Number of Leads: 3
Assembly Location: AMPI
Tracking Number: 2642
Lead Finish: 100% Sn

Reason For Qualification: *Dablc5 Continuous Time Switches and Latches on Amp's HD SOT23W*

Reliability Qualification Results						
STR#2642					Requirements	
Stress Test	Abv.	Test #	Test Method	Test Conditions	S.S.	Results
Preconditioning	PC	A1	JESD22-A113/J-STD-020	85°C/85% RH, 168 hrs, Peak Reflow=260°C;	323	0 Rejects
Temperature Humidity Bias	THB	A2	JESD22-A101	85°C, 85% RH, 0, 1000 hrs	77	0 Rejects
HAST	HAST	A2	JESD22-A110	130°C, 2 ATM, 85% RH, 0, 96 hrs	77	0 Rejects
Autoclave	AC	A3	JESD22-A102	121°C, 100% RH, 15 PSIG, 0, 96 hrs	77	0 Rejects
Temperature Cycle	TC	A4	JESD22-A104	-65°C to +175°C, 0, 500, 1000 Cycles	77	0 Rejects
High Temperature Storage Life	HTSL	A6	JESD22-A103	175°C, 0, 1000 hrs	77	0 Rejects
High Temperature Operating Life	HTOL	B1	JESD22-A108	150°C, 0, 408, 1000 hrs	77	0 Rejects
Early Life Failure Rate	ELFR	B2	AEC-Q100-008 / JESD22-A108	150°C, 0, 48 hrs	800	0 Rejects
Wire Bond Shear	WBS	C1	AEC-Q100-001	Temp conditions and sample size are defined in the test method.		0 Rejects; Cpk>1.33
Wire Bond Pull	WBP	C2	800021	Temp conditions and sample size are defined in the test method.		0 Rejects; Cpk>1.33
Solderability	SD	C3	JESD22-B102	Meniscograph	15	0 rejects; > 95% Lead Coverage
Latch-Up	LU	E4	AEC Q100-004	Test Conditions, Sampling Size are defined in the Test Method		Class II, Level A
Electrical Distributions	ED	E5	AEC Q100-009	Tri-Temp Electrical Distributions	30 pcs/lot	0 Rejects; Cpk>1.67

This device qualification is considered to be passing all environmental stress evaluations per the *Allegro MicroSystems, LLC*. 900019 specification and AEC-Q100.

Approved by:

Bob Demers

Bob Demers
 Quality and Reliability Engineering
 Allegro MicroSystems, LLC



Reliability Qualification Results

Device: **A1102LLH-T**
 Assy Lot #: **1152204KDAA, 1424745KNAA**
 Fab Location: **PSL**
 Package: **LH (SOT23W)**

Number of Leads: **3**
 Assembly Location: **Carsem**
 Tracking Number: **2023, 2727**
 Lead Finish: **100% Sn**

Reason For Qualification: **Dabic5 Continuous Time Switches and Latches on Carsems HD SOT23W**

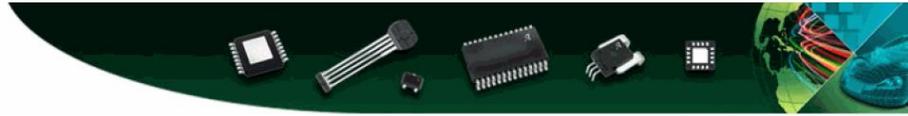
Reliability Qualification Results						
STR#2023, STR#2727					Requirements	
Stress Test	Abv.	Test #	Test Method	Test Conditions	S.S.	Results
Preconditioning	PC	A1	JESD22-A113	85°C/85% RH, 168 hrs, Peak Reflow=260°C	236	0 Rejects
HAST	HAST	A2	JESD22-A110	130°C, 2 ATM, 85% RH, 0, 96 hrs	77	0 Rejects
Autoclave	AC	A3	JESD22-A102	121°C, 100% RH, 15 PSIG, 0, 96 hrs	77	0 Rejects
Temperature Cycle	TC	A4	JESD22-A104	-65°C to +175°C, 0, 500, 1000 Cycles	77	0 Rejects
High Temperature Operating Life	HTOL	B1	JESD22-A108	150°C, 0, 1000 hrs	77	0 Rejects
Very High Temperature Operating Life	VHTB	B1-A	JESD22-A108	175°C, 0, 500 hrs	77	0 rejects
Early Life Failure Rate	ELFR	B2	AEC-Q100-008 / JESD22-A108	150°C, 0, 48 hrs	800	0 Rejects
Wire Bond Pull	WBP	C2	800021	Temp conditions and sample size are defined in the test method.		0 Rejects; Cpk>1.67
Electrostatic Discharge Human Body Model	HBM	E2	AEC-Q100-002	Test Conditions, Sampling Size are defined in the Test Method		Classification H3B, HBM =12 kV
Electrostatic Discharge Charged Device Model (LH)	CDM	E3	AEC-Q100-011	Test Conditions, Sampling Size are defined in the Test Method		Classification = C6, > 1kV
Latch-Up	LU	E4	AEC Q100-004	Test Conditions, Sampling Size are defined in the Test Method		Class II, Level A
Electrical Distributions	ED	E5	AEC Q100-009	Tri-Temp Characterization	3 lots	0 Rejects; Cpk>1.67

This device qualification is considered to be passing all environmental stress evaluations per the *Allegro MicroSystems, LLC* 900019 specification and AEC-Q100.

Approved by:

Bob Demers

Bob Demers
 Product Safety and Reliability
 Allegro MicroSystems, LLC.



Reliability Qualification Results

Device: A1205LLH-T
Assy Lot #: 1145710DDAA
Fab Location: PSL
Package: LH (SOT23W)

Number of Leads: 3
Assembly Location: Carsem
Tracking Number: 2030
Lead Finish: 100% Sn

Reason For Qualification: **Dabic5 - Continuous-Time Switches and Latches on Carsems HD SOT23W**

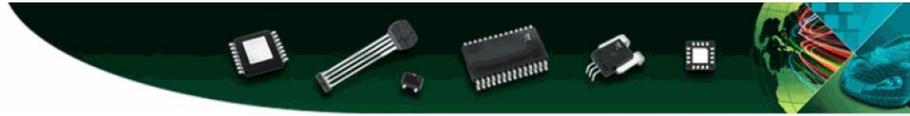
Reliability Qualification Test Plan/Results						
STR#2030						Requirements
Stress Test	Abv.	Test #	Test Method	Test Conditions	S.S.	Results
Preconditioning	PC	A1	JESD22-A113	85°C/85% RH, 168 hrs, Peak Reflow=260°C	236	0 Rejects
HAST	HAST	A2	JESD22-A110	130°C, 2 ATM, 85% RH, 0, 96 hrs	77	0 Rejects
Autoclave	AC	A3	JESD22-A102	121°C, 100% RH, 15 PSIG, 0, 96 hrs	77	0 Rejects
Temperature Cycle	TC	A4	JESD22-A104	-65°C to +175°C, 0, 500, 1000 Cycles	77	0 Rejects
High Temperature Operating Life	HTOL	B1	JESD22-A108	150°C, 0, 1000 hrs	77	0 Rejects
Very High Temperature Operating Life	VHTB	B1-A	JESD22-A108	175°C, 0, 500 hrs	77	0 rejects
Early Life Failure Rate	ELFR	B2	AEC-Q100-008 / JESD22-A108	150°C, 0, 48 hrs	800	0 Rejects
Wire Bond Pull	WBP	C2	800021	Temp conditions and sample size are defined in the test method.		0 Rejects; Cpk>1.67
Electrostatic Discharge Human Body Model	HBM	E2	AEC-Q100-002	Test Conditions, Sampling Size are defined in the Test Method		Classification H3A, HBM =6.5 kV
Electrostatic Discharge Charged Device Model (LH)	CDM	E3	AEC-Q100-011	Test Conditions, Sampling Size are defined in the Test Method		Classification = C5, > 1kV
Latch-Up	LU	E4	AEC Q100-004	Test Conditions, Sampling Size are defined in the Test Method		Class II, Level A
Electrical Distributions	ED	E5	AEC Q100-009	Tri-Temp Characterization	3 lots	0 Rejects; Cpk>1.67

This device qualification is considered to be passing all environmental stress evaluations per the *Allegro MicroSystems, Inc.* 900019 specification and AEC-Q100.

Approved by:

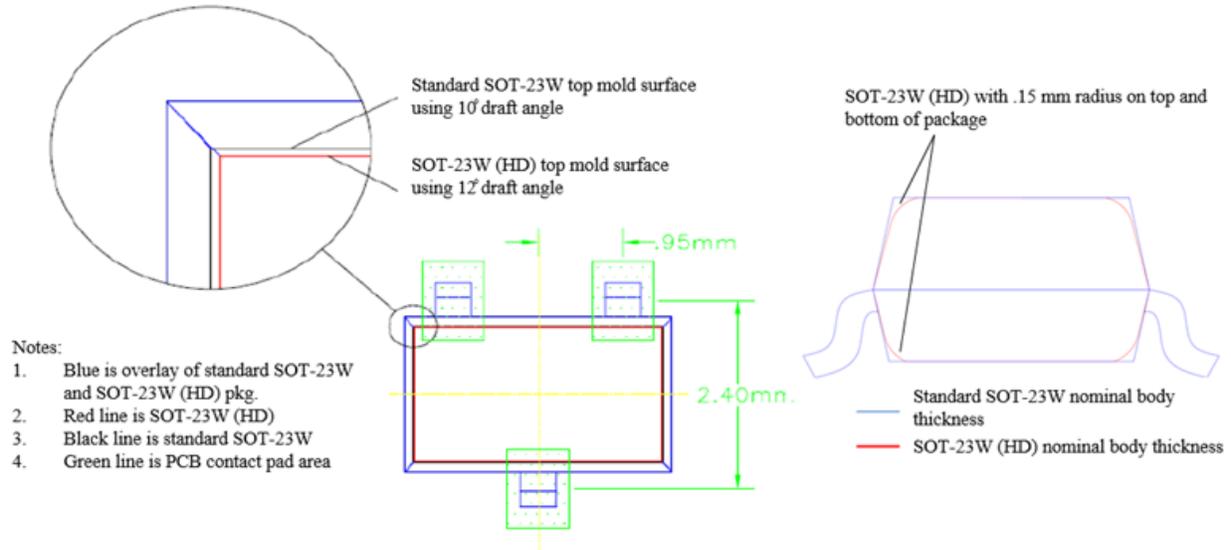
Bob Demers

Bob Demers
 Quality and Reliability Engineering
 Allegro MicroSystems, LLC



Package Body Overlay

Standard SOT23W vs. SOT-23W (HD)



	Standard SOT-23W	SOT-23W (HD)
	Nominal	Nominal
Radii	NA	0.15
Draft angle	10°	12°

Top Brand Comparison	
From: Standard SOT-23W	To: SOT-23W (HD)
01E	101

- **Standard SOT-23W Brand:**
Last two digits of part number + Temperature range designator
- **SOT-23W (HD) Brand:**
Last three digits of the part number

