

Product/Process Change Notification (PCN)

Customer: Digi-Key Corporation

Date: 12-21-2017

Customer Part # affected: A3942KLGTR-T

Originator: R. Fennelly

Phone: 508-853-5000

Duration of Change: Permanent Temporary (explain)

Summary description of change: Part Change: Process Change: Other:

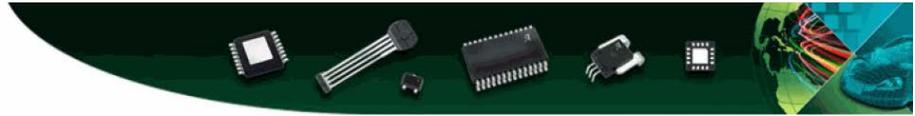
- 1) Allegro currently manufactures the A3942KLGTR-T on the 6" wafer fab ABCD4 technology line at Polar Semiconductor LLC (PSL), Bloomington, MN, USA. Allegro will closing the 6" wafer line in March 2018 and will transition manufacturing to the 8" ABCD4 technology wafer fab line at Polar Semiconductor LLC (PSL), Bloomington, MN, USA.
- 2) Allegro will permanently close its wafer probe operations in Worcester, Massachusetts, USA by March 31, 2018. Wafer probe operations will be moved to Allegro MicroSystems Philippines, Inc. (AMPI) located in Manila, Philippines.
- 3) In addition to the current Allegro MicroSystems, LLC test facility location in Manila Philippines, a new test facility referred to as Allegro MicroSystems (Thailand) Co., Ltd. (AMTC) located in Saraburi, Thailand will be added as a primary test location.

What is the part or process changing from (provide details)?

- 1) Currently the A3942KLGTR-T is manufactured on Polar Semiconductor LLC (PSL), Bloomington, MN, USA 6" wafer fab ABCD4 technology line.
- 2) Currently the A3942KLGTR-T is probed at Allegro MicroSystems, LLC Worcester, USA
- 3) The listed device is currently tested at the Allegro MicroSystems, LLC test facility located in Manila Philippines, a new test facility referred to as will be added as a primary test location.

What is the part or process changing to (describe the anticipated impact of this change on form, fit and/or function)?

- 1) The A3942KLGTR-T will be manufactured on Polar Semiconductor LLC (PSL), Bloomington, MN, USA 8" wafer fab ABCD4 technology line.
- 2) Probe location for the A3942KLGTR-T will be moved to AMPI. Allegro is utilizing the same probe equipment, test programs and test methodologies in its Philippine facility as is currently being



performed in its US facility. Relocation of probe operations reduces movement of wafers between factories shortening overall cycle time and minimizing wafer handling. All expansions of probe capability and capacity will now occur at AMPI to support Allegro’s future business growth.

The primary test location for the listed device will be the Allegro MicroSystems (Thailand) Co., Ltd. (AMTC) located in Saraburi, Thailand location.

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



Reliability Qualification Results

Device: 3942 (939421) **Number of Leads:** 38
Assy Lot #: 1642730KDAA, 1733949KAAA **Assembly Location:** Carsem
Fab Location: PSL **Tracking Number:** 3725, 3945
Package: LG (TSSOP) **Lead Finish:** 100% Tin

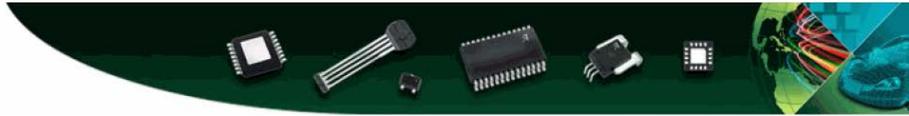
Reason For Qualification: 3942 - Quad High-Side Gate Driver

Reliability Qualification Results						
3942, STR#3725, STR#3945						Requirements
Stress Test	Abv.	Test #	Test Method	Test Conditions	S.S.	Results
Preconditioning	PC	A1	JESD22-A113/ J-STD-020	85°C/60% RH, 168 hrs, Peak Reflow=260°C; MSL2, (HAST, AC, TC)	231	0 Rejects
HAST	HAST	A2	JESD22-A110	130°C, 2 ATM, 85% RH, 0, 96 hrs	77	0 Rejects
Autoclave	AC	A3	JESD22-A102	Ta=121°C, 100% RH, 15 psig, 0, 96 hrs	77	0 Rejects
Temperature Cycle	TC	A4	JESD22-A104	Ta = -65°C to +175°C, 0, 500, 1000 Cycles	77	0 Rejects
High Temperature Operating Life	HTOL	B1	JESD22-A108	Ta = 150°C, 0, 1000 hrs	77	0 Rejects
Early Life Failure Rate	ELFR	B2	AEC-Q100-008 / JESD22-A108	Ta = 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. (after TC)		0 Rejects; Ppk>1.67
Electrostatic Discharge Human Body Model	HBM	E2	AEC-Q100-002 / JS-001-2014	Test Conditions, Sampling Size are defined in the Test Method		Classification 2, HBM = 2.0kV
Electrostatic Discharge Charged Device Model	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 Electrical Distributions	30 pcs	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:
Robert Demers
 Robert Demers
 Sr. Product Safety and Reliability
 Allegro MicroSystems, LLC

Allegro MicroSystems, LLC *Proprietary*



PCN Number:
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Is a PPAP update required? Yes No

Is reliability testing required? (If Yes, refer to attached plan) Yes No (explain)

See Reliability Qualification results provided above

Expected completion date for internal qualification: Complete

Expected PPAP availability date: NA

Target implementation date: December 2018

Estimated date of first shipment: January 2019

Expected sample availability date: Available upon request

NOTE: the specific line closure timing and the implementation date is estimated based on current activity and projected supply. The actual IP date is subject to change based on material depletion and may require an earlier transition.

Customer Approval Required: Yes Date Required:
No Notification Only

Please note: It is our intention to inform our customer of changes as early as possible. Under Allegro’s procedure for product/process change notification, Allegro strives, based on its technical judgment, to provide notification of significant changes that may affect form, fit or function. However, as Allegro cannot ensure evaluation of product/process changes for each and every application; the customer retains responsibility to validate the impact of a change on its application suitability. If samples are needed for validation of a change, requests may be made via the contact information provided herein. Please contact your Account Manager or local Sales contact for any questions. We would kindly request your consideration so we can meet our target date for implementation. Unless both parties agree to extend the implementation date, this change will be implemented as scheduled.

Customer comments/Conditions of Acceptance:

Approved by: _____ Date: _____ Title: _____
cc: Allegro Sales/Marketing/Quality