



PCN Number: 01222017 Chgnot.doc rev 13 1/14

Product/Process Change Notification (PCN)							
Customer:	Digi-Key Corproation	Date: 01-22-2017					
Customer Part	# affected: A3921KLPTR-	·T					
Originator: R	. Fennelly	Phone: 508-853-5000					
Duration of Cha	nge:	Permanent X Temporary (explain)					
Summary descri	iption of change: Part Change:	Process Change: X Other:					

- 1) Allegro currently manufactures the A3921KLPTR-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.

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

- 1) Currently the A3921KLPTR-T is manufactured on Polar Semiconductor LLC (PSL), Bloomington, MN, USA 6" wafer fab ABCD4 technology line.
- 2) Currently the A3921KLPTR-T is probed at Allegro MicroSystems, LLC Worcester, USA

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

- 1) The A3921KLPTR-T will be manufactured on Polar Semiconductor LLC (PSL), Bloomington, MN, USA 8" wafer fab ABCD4 technology line.
- 2) Probe location for the A3921KLPTR-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.

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







## **Reliability Qualification Results**

<u>Device:</u> 3921 (7821) <u>Assy Lot #:</u> 1701479UBCA <u>Number of Leads:</u> 28 <u>Fab Location:</u> PSL Package: LP (eTSSOP)
Assembly Location: Unisem
Lead Finish: 100% Sn
Tracking Number: 4152

Reason for Qualification: 3921 (7821) - Automotive Full Bridge MOSFET Driver

			Reliability Qu	ialification Results		
3921 - (7821), STR#4152				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, 60% RH, 0, 96 hrs	77	0 Rejects
Autoclave	AC	А3	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
Early Life Failure Rate	ELFR	B2	AEC-Q100-008 / JESD22-A108	150°C, 0, 48 hrs	800	0 Rejects
Wire Bond Pull	WBP	C2	Mil-Std-883 Method 2011			0 Rejects; Cpk>1.67
Electrostatic Discharge Human Body Model	нвм	E2	AEC-Q100-002	Test Conditions, Sampling Size are defined in the Test Method		Classification 2, HBM = 2.5kV
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	JESD78	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 qualification specifications 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 X				
Is reliability testing required? (If Yes, refer to attached plan)		Yes X	No (explain)				
See Reliability Qualification results	provided above						
Expected completion da	ate for internal qua	dification: Compl	ete				
Expe	cted PPAP availabi	lity 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 projected supply. The actual IP da an earlier transition.	•		•				
Yes	S Date Requ	ired:	_				
Customer Approval Required:	X Notification	n Only					
Please note: It is our intention to intention to intention and Allegro's procedure for product/prijudgment, to provide notification of function. However, as Allegro care every application; the customer retapplication suitability. If samples a the contact information provided he contact for any questions. We would date for implementation. Unless bowill be implemented as scheduled.	rocess change notific f significant changes not ensure evaluatio ains responsibility to re needed for valida erein. Please contac d kindly request you	cation, Allegro strive s that may affect form on of product/proces o validate the impact tion of a change, req t your Account Mana r consideration so w	es, based on its technical m, fit or es changes for each and t of a change on its juests may be made via ager or local Sales e can meet our target				
Customer comments/Conditions of	Acceptance:						
Approved by: cc: Allegro Sales/Marketing/Quality	Date:	Т	itle:				