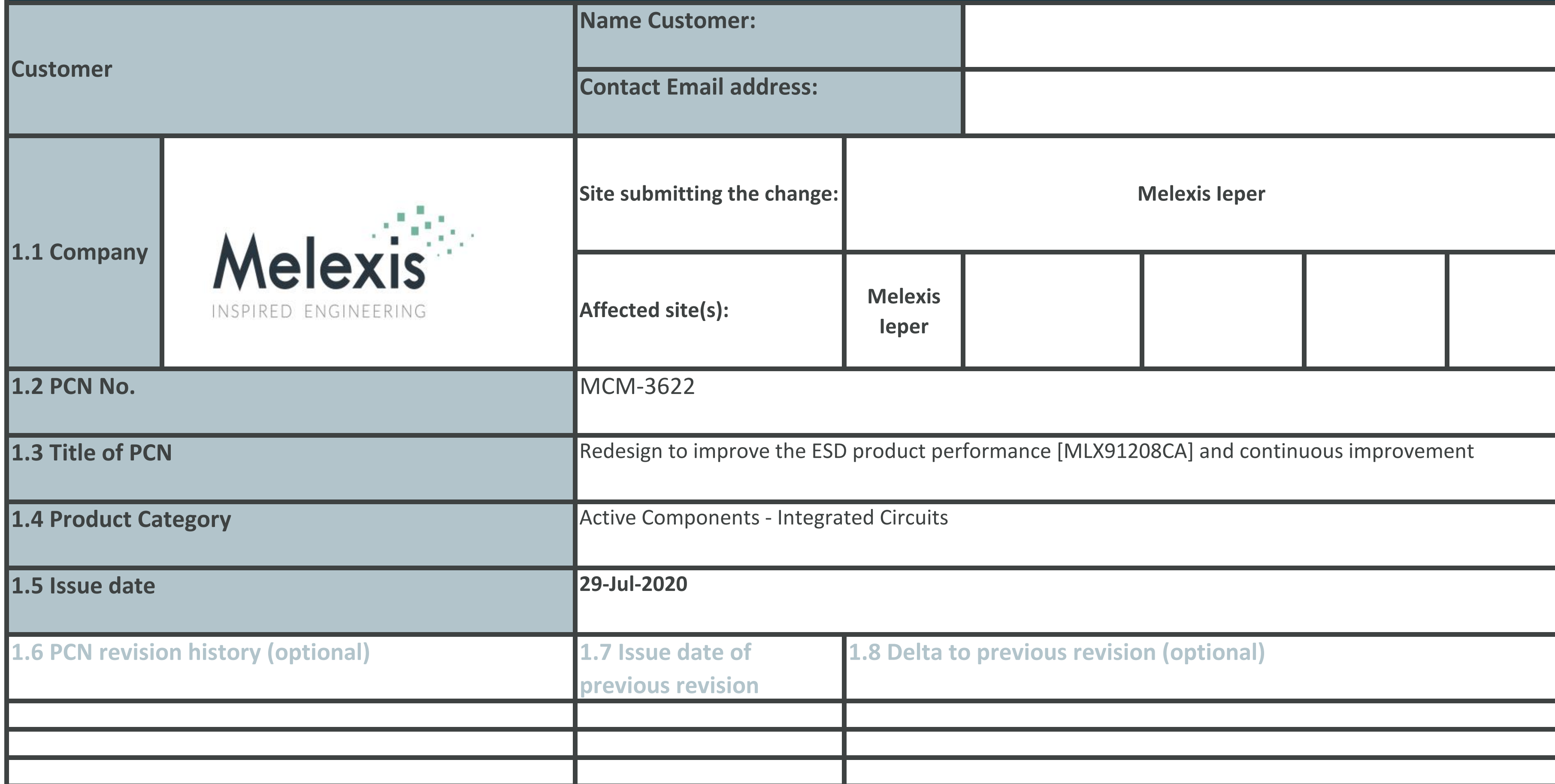

1. Product Change Notification [PCN] basic data							
Customer		Name Customer:					
		Contact Email address:					
1.1 Company	Melexis INSPIRED ENGINEERING	Site submitting the change:	Melexis Ieper				
		Affected site(s):	Melexis Ieper				
1.2 PCN No.		MCM-3622					
1.3 Title of PCN		Redesign to improve the ESD product performance [MLX91208CA] and continuous improvement					
1.4 Product Category		Active Components - Integrated Circuits					
1.5 Issue date		**29-Jul-2020**					
1.6 PCN revision history (optional)		1.7 Issue date of previous revision	1.8 Delta to previous revision (optional)				

2. PCN Team	
2.1 Contact supplier	
2.1.1 Name	Lisa Vanheerswynghels
2.1.2 Phone	+32 57 22 62 07

2.1.3 Email	pcn_mlx@melexis.com	
2.2 Team supplier (optional)		
2.2.1 Name (optional)	2.2.2 Phone (optional)	2.2.3 Email (optional)

3. Changes

No.	3.0 Ident	3.1 Category	3.2 Type of change
#1	SEM-DE-01	DESIGN	Design changes in active elements.
#2	SEM-DE-02	DESIGN	Design changes in routing .
#3			
#4			
#5			

4. Description of change

	Old	New
Description #1	Metal trace width 3.3um	**Metal trace enlarging for improved ESD performance on non-global pin**: test pin - which is grounded in the application diagram) Metal trace width 9 um

Description #2	Existing ESD diode	**Removal of ESD diode at the root of ESD window effect - improves the performance.** This is metal fix without changing of transistors: diode disconnection
Description #3	Small (test pin) bond pad	**Bondpad (test pin) enlargement** to the same size as all the other bondpads - not bonded/ used on the MLX91208 but on a different product variant.
Description #4	The decoupling cap was 100% on BASE	**DPI EMC robustness improvement by re-locating a decoupling capacitor**: The improvement consists in shifting the decoupling cap of regulator bipolar 100% on BASE to "~20% on BASE and 80% on COLLECTOR"
Description #5	Standard BOM (Bill of Material)	**Zero-Delam BoM**: package outline drawing (POD) and supplier identical, but change towards roughened leadframe, chemical deflash, plasma clean and post-mold cure recipe tweak + mold compound that contribute to higher robustness vs delamination (G700HA).

Description #6	**Datasheet parameters spec update according to the product performance** **[removal]** * Programmable items: Parameter "PLATEPOL" existing in the Datasheet * Thermal Offset Drift Resolution: ΔTVoqRes = 0,075 mV/°C * Thermal Sensitivity Drift Resolution: TCres = 40 ppm/°C [added] * Tj,max not mentioned [adjusted - typical or unit change but maintaining spec] * Supply Current, Idd =7mA (Typ) to Max= 14 * Output Resistance, Test conditions: Vout = 50% Vdd, RL = 5kΩ * Output Short Circuit Current (permanent short) -> Ishort = 35 to 180 mA * Leakage current: Ileak(min) = 0,5uA, Ileak(nom) = 1,5uA * Over-voltage level Low to High voltage, Vdd_ovd2 = 6,7 V * Ratiometry enable detection Test conditions: Low to High Voltage), Vratio_d (max) = 4,45 V * Ratiometry enable detection (Test conditions:	**Datasheet parameters spec update according to the product performance** **[removal]** * Programmable items: Parameter "PLATEPOL" removed from the Datasheet * Thermal Offset Drift Resolution: removed from the Datasheet as trimmed by Melexis * Thermal Sensitivity Drift Resolution: removed from the Datasheet as trimmed by Melexis [added] * Added Tj,max= -55 to 155°C [adjusted - typical or unit change but maintaining spec] * Supply Current, Idd =9mA (Typ) to Max= 14 * Output Resistance, Test conditions: Vout = 50% Vdd, RL = 6kΩ * Output Short Circuit Current (permanent short) -> not destroyed * Leakage current: Min and Nom value removed from the DS. Max spec remain unchanged * Over-voltage level Low to High voltage, Vdd_ovd2 = 6,5 V * Ratiometry enable detection (Test conditions: Low to High Voltage), Vratio_d (max) = 4,5 V * Ratiometry enable detection (Test conditions: Hysteresis), Vratio_h (min) = 0,01 V
4.6 Anticipated impact on form, fit, function, reliability or processability?	Reliability: Zero Delam BoM targeted to mitigate delamination risk and consequently to improve on lifetime performance. Function: none of the changes are functional in the sense that the sensor's function is not adjusted. Form, fit and processability not impacted.	
4.7 Reference parts with customer number (optional)		

5. Reason / motivation for change

5.1 Motivation	- ESD => crank up to 2kV on the test pin too which is grounded in the application (requested by 1 customer as corrective action) - Layout (non-electrical) => widened trace + bondpad size increase for different product variant - DPI EMC robustness improvement by re-locating a decoupling capacitor -> Easy to implement together with the other changes and no risk. In the same time bringing EMC robustness boost - Zero Delam => align the package to the new Melexis guidelines (all new SOIC8 products going to production today are going to this version - zero delam package already qualified at Melexis on several other products) - Datasheet parameters spec update -> Datasheet errata
5.2 Additional explanation (optional)	

6. Marking of parts / traceability of change

6.1 Description	Ordering code remains unchanged for the customer Package marking remains the same => visual traceability is based on lot number visible on the package combined with database at MLX. => electrical traceability is possible reading the MLXID in the non-volatile memory which contains unique identifiers down to wafer number and wafer position.

7. Timing / schedule

7.1 Date of qualification results	Available	Qualification has been performed and was successful, confirming the improvements and the robustness over lifetime.
7.2 Last order date (optional)	31-Aug-20	
7.3 Last delivery date (optional)	31-Dec-20	
7.4 Intended start of delivery	Switch date negotiable (IC available now already) but no later than 31-Dec-2020	The intention is to bring all existing CA version customers to CB version, new start of production at customers since 1-Jan-2020 have all been with the CB version. Running production and PV stage projects are targeted with this PCN. Please contact your Customer Relations responsible for detailed information. Note that the start of delivery can shift depending on the moment Melexis receives the customer approval.
7.5 Qualification samples available?	Yes available	

	Samples can be requested through pcn_mlx@melexis.com	
7.6 Customer feedback required until	**14-Aug-2020**	Please provide your initial feedback through the 'Customer Feedback' sheet as acknowledgement

8. Qualification / validation

8.1 Description (e.g. qualification or validation plan/re	Qualification Report			
8.2 Qualification report and qualification results	Available (see attachment)	**issue date**		**0**

9. Input to customer for risk assessment process

It is not recommended to start own qualification plan as the change has been qualified at Melexis with the supported documentation.
The changes related to the package BoM are a continuous improvement with proven-in-use deployment in the field of automotive applications.
The changes on the silicon are either cosmetic or disconnecting an diode at the origin of an ESD weakness on the application-grounded test pin.

10. Attachments (e.g. new datasheet, additional documentation, pictures, process flow, sample plan, ...)

MLX91208CB_PQR.pdf
PPT information.pdf
Datasheet_3901091208.PDF

11. Affected parts

11.1 Current	11.2 New (if applicable)

11.1.1 Customer Part No.	11.1.2 Supplier Part Name	11.1.3 Supplier Part No. (opt)	11.1.4 Package Name	11.1.5 Part Descr. (opt)	11.1.6 Addtl Part Info (opt)	11.2.2 Supplier Part Name	11.2.3 Supplier Part No. (opt)	11.2.4 Package Name	11.2.6 Addtl Part Info (opt)
N/A	MLX91208LDC-CAH-000-SP		SOIC8.GR						
N/A	MLX91208LDC-CAH-000-TU		SOIC8.GR						
N/A	MLX91208LDC-CAL-000-SP		SOIC8.GR						
N/A	MLX91208LDC-CAL-000-TU		SOIC8.GR						
N/A	MLX91208LDC-CAV-000-RE		SOIC8.GR						
N/A	MLX91208LDC-CAV-000-SP		SOIC8.GR						
N/A	MLX91208LDC-CAV-000-TU		SOIC8.GR						
N/A	MLX91208LDC-CAV-001-SP		SOIC8.GR						
N/A	MLX91208LDC-CAV-001-TU		SOIC8.GR						