



Public Products List

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PCI Title : New Lead frame supplier in CARSEM China for selected products in WFDFPN 2x3

PCI Reference : AMS/22/13685

Subject : Public Products List

Dear Customer,

Please find below the Standard Public Products List impacted by the change.

STEF512SRDBPUR	STEF512SRXCPUR	
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Reliability Evaluation Report

STEF512SRX, STEF512SRDB
New Lead Frame Mitsui China

General Information	
Product Line	UBFN01, UBCD01
P/N	STEF512SRX, STEF512SRDB
Product Division	AMS
Package	DFN10 2x3
Silicon Process Technology	BCD8SP

Location	
Wafer Fab	CM5F-Catania CTM8
Assembly Plant	SC-CARSEM-China
Results	
Reliability Assessment	PASS

DOCUMENT INFORMATION

Version	Date	Pages	Prepared by	Approved by	Comment
1.0	12/08/22	5	Ivan Grasso	Giuseppe Lisi	

Note: This report is a summary of the reliability trials performed in good faith by STMicroelectronics in order to evaluate the potential reliability risks during the product life using a set of defined test methods.

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1 APPLICABLE AND REFERENCE DOCUMENTS

Document reference	Short description
JESD47	Stress-Test-Driven Qualification of Integrated Circuits

2 GLOSSARY

Item	Short description
T _j	Temperature at junction of the device
T _A	Temperature of ambient air
RH	Relative Humidity
V _{cc} max	Max Operative Voltage

3 RELIABILITY EVALUATION OVERVIEW

3.1 Objectives

This report is intended to provide reliability results for STEF512SRX diffused in BCD8sp process technology, a dual electronic fuse packaged in QFN 2x3 10L at SC-CARSEM-China with **new Lead Frame Mitsui China**. Results are referred to the reliability stress tests performed on STEF512SRX.

3.2 Conclusion

Qualification requirements have been fulfilled without exception. Reliability tests have shown that the devices behave correctly against environmental tests (no failure). The stability of electrical parameters during the accelerated tests demonstrates the ruggedness of the products and safe operation, which is consequently expected during their lifetime.

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4 TESTS RESULTS SUMMARY

ST refers to the JEDEC standard JESD47 when conducting reliability tests for the qualification of new product.

4.1 Test plan and results summary

Package qualification tests

Stress (Abb.)	Ref.	Conditions	Requirements				Notes
			# Lot	SS	Duration	Results	
MSL Preconditioning Must be performed prior to: THB, HAST, TC, AC, & UHAST	JESD22 A113 J-STD-020	Preconditioning: (Test @ Rm) SMD only; Moisture Preconditioning for THB/HAST, AC/UHST, TC, & PTC; Peak Reflow Temp = 260C	MSL1				
High Temperature Storage Life (HTSL)	JESD22 A103	T _A ≥ 150°C	3 Lots	77	1000hrs	0/231	
Temperature-Humidity-Bias (THB)	JESD22 A101	THB, 85°C, 85% RH Vcc max	3 Lots	77	1000hrs	0/231	1
Unbiased Highly Accelerated Temperature and Humidity Stress (UHAST)	JESD22 A118	uHAST, 130°C, 85%RH	3 Lots	77	96hrs	0/231	1
Temperature Cycling (TC)	JESD22 A104	C -65°C to +150°C	3 Lots	77	500cycles	0/231	1

Notes:

1. Preconditioning with soak per J-STD-020 at rated moisture sensitivity level prior to acceleration stress testing.

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4.2 Tests Description

Test name	Description	Purpose
Package Oriented		
MSL Preconditioning must be performed prior to: THB, HAST, TC, AC, & UHAST	The device is submitted to a typical temperature profile used for surface mounting devices, after a controlled moisture absorption.	As stand-alone test: to investigate the moisture sensitivity level. As preconditioning before other reliability tests: to verify that the surface mounting stress does not impact on the subsequent reliability performance. The typical failure modes are "popcorn" effect and delamination.
High Temperature Storage Life (HTSL)	The device is stored in unbiased condition at the max. temperature allowed by the package materials, sometimes higher than the max. operative temperature.	To investigate the failure mechanisms activated by high temperature, typically wire-bonds solder joint ageing, data retention faults, metal stress-voiding.
Temperature-Humidity-Bias (THB)	The device is biased in static configuration minimizing its internal power dissipation, and stored at controlled conditions of ambient temperature and relative humidity.	To evaluate the package moisture resistance with electrical field applied, both electrolytic and galvanic corrosion are put in evidence.
Autoclave (AC)	The device is stored in saturated steam, at fixed and controlled conditions of pressure and temperature.	To investigate corrosion phenomena affecting die or package materials, related to chemical contamination and package hermeticity.
Temperature Cycling (TC)	The device is submitted to cycled temperature excursions, between a hot and a cold chamber in air atmosphere.	To investigate failure modes related to the thermo-mechanical stress induced by the different thermal expansion of the materials interacting in the die-package system. Typical failure modes are linked to metal displacement, dielectric cracking, molding compound delamination, wire-bonds failure, die-attach layer degradation.

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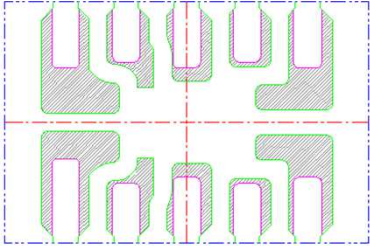
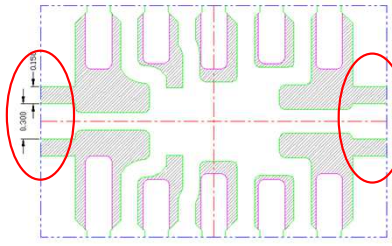
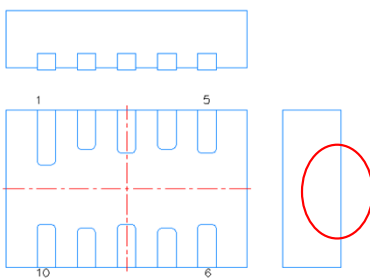
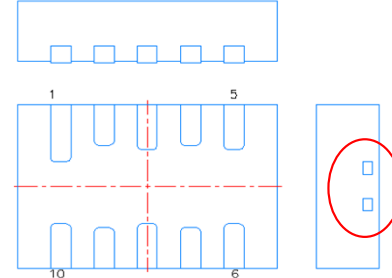
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Comparison Material/Design of DCI LF vs MITC for part 444876 - C201005

Change comparison-Material

Item 444876	DCI	MITC	Remark
L/F	Malaysia	Shanghai	Different
lead frame treatment	Non Roughness	Non Roughness	same
Raw material	C194	C194	same
Second_lvl_intct	e3 Sn	e3 Sn	same
Shelf life	2 year	2 year	same

Change comparison- Design

444876		DCI	MITC	Description
Supplier		Malaysia	Shanghai	Different
Tie bar on lead#1,5,6,10		No tie bar	Have tie bar	Different
LF unit design	Drawing			MIT propose add tie bar in long lead#1,5,6,10 to avoid lead deformation and get the good lead coplanarity performance for this FC product .
PKG Outline	Side view have metal tie bar shape exposed	Side view cannot see the tie bar	Side view can see the tie bar after PKG saw	POD side view is different
	Drawing			
Others(plating)		Bare copper	Bare copper	Plating is same

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