

PRODUCT / PROCESS CHANGE INFORMATION

1. PCI basic data

1.1 Company		STMicroelectronics International N.V
1.2 PCI No.	EMBEDDED PROCESSING/26/16284	
1.3 Title of PCI	JSCC (China) – Leadframe redesign for molding machine compatibility on the VQFPN 8x8 68L package	
1.4 Product Category	STM32H56x, STM32H57x, STM32H72x, STM32H73x, STM32H7Rx, STM32H7Sx, STM32WB55x and STM32WBA6x	
1.5 Issue date	2026-09-01	

2. PCI Team

2.1 Contact supplier	
2.1.1 Name	KRISZTINA NEMETH
2.1.2 Phone	+49 8946006
2.1.3 Email	krisztina.nemeth@st.com
2.2 Change responsibility	
2.2.1 Product Manager	Patrick AIDOUNE
2.1.2 Marketing Manager	Marie TOURNUT
2.1.3 Quality Manager	Pascal NARCHE

3. Change

3.1 Category	3.2 Type of change	3.3 Manufacturing Location
Materials	Direct Material: Leadframe - Any Other change: design, etc.)	JSCC (China)

4. Description of change

	Old	New
4.1 Description	Current Mold Machine: ASM, Current Leadframe design is only for ASM machine	New Mold Machine: TOWA New Strip outline of Lead frame was redesigned to meet layout of new molding machine.
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	no impact on final product	

5. Reason / motivation for change

5.1 Motivation	ST VQFN8X8 demand is increase and JSCC will phase out old ASM machine, so to qualify TOWA machine for capacity increase. Due to different mold machine model, Strip outline of Lead frame need redesign to meet new layout of molding machine
5.2 Customer Benefit	SERVICE IMPROVEMENT

6. Marking of parts / traceability of change

6.1 Description	traceability ensured by ST internal tools.
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7. Timing / schedule

7.1 Date of qualification results	2026-08-10
7.2 Intended start of delivery	2026-10-05
7.3 Qualification sample available?	Not Applicable

8. Qualification / Validation

8.1 Description	16284 MDG-MCD RERMCD1524 - STM32F7x- Die 452XXxA - Reliability Evaluation Report - REV1.3.pdf		
8.2 Qualification report and qualification results	Available (see attachment)	Issue Date	2026-09-01

9. Attachments (additional documentations)
16284 Public product.pdf 16284 MDG-MCD RERMCD1524 - STM32F7x- Die 452XXXA - Reliability Evaluation Report - REV1.3.pdf 16284 _Additional information.pdf

10. Affected parts		
10. 1 Current		10.2 New (if applicable)
10.1.1 Customer Part No	10.1.2 Supplier Part No	10.1.2 Supplier Part No
	STM32H562RGV6	
	STM32H562RIV6	
	STM32H563RGV6	
	STM32H563RIV6	
	STM32H573RIV6	
	STM32H725REV6	
	STM32H725RGV3	
	STM32H735RGV6	
	STM32WB55RCV6	
	STM32WB55REV6	
	STM32WB55REV6TR	
	STM32WB55RGV6	
	STM32WB55RGV6TR	
	STM32WB55RGV7	
	STM32WBA65RIV6	

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Public Products List

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PCI Title : JSCC (China) – Leadframe redesign for molding machine compatibility on the VQFPN 8x8 68L package

PCI Reference : EMBEDDED PROCESSING/26/16284

Subject : Public Products List

Dear Customer,

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

STM32H563RGV6	STM32H7R3R8V6	STM32WBA65RGV6TR
STM32WBA65RGV7	STM32H562RGV6	STM32H725RGV6
STM32H7S3R8V6	STM32WB55REV7	STM32WB55RGV7TR
STM32H573RIV6TR	STM32WB55RGV6TR	STM32WB55RCV6
STM32H563RIV6	STM32H562RIV6	STM32H725REV6
STM32H725RGV3	STM32H573RIV6	STM32WBA65RGV6
STM32WB55RGV7	STM32WB55REV6TR	STM32H735RGV6
STM32WBA65RIV6TR	STM32WBA65RIV6	STM32WB55RCV7
STM32WBA65RIV7TR	STM32H725RGV3TR	STM32WB55REV6
STM32WB55RGV6	STM32WBA65RIV7	

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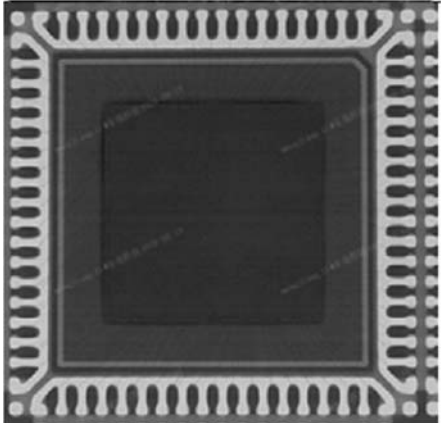
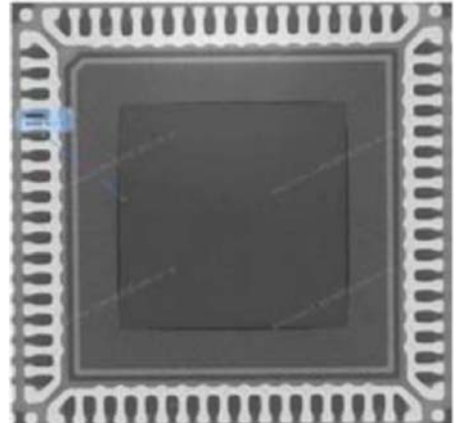
JSCC (China) – Leadframe redesign for molding machine compatibility on the VQFPN 8x8 68L package

MDRF– General Purpose & Automotive Microcontrollers Division (GPAM)

What are the changes?

The current **VQFPN 8X8** package molding machine (ASM) has been replaced by a well-known molding machine (Towa), already running for all other QFN packages in JSCC.

- The leadframe was modified to ensure compatibility with the new molding machine,
- The paddle edge was changed from flat to wave shape to improve mold anchorage and reduce delamination risk,
- There is no impact on the POA dimensions, the LF paddle size and the bonding

	<u>Before</u>	<u>After</u>
Leadframe	Rough Copper – Ag plated – 6sq flat edge paddle	Rough Copper – Ag plated – 6sq wave shape paddle
<u>X-Ray</u>		

- Design has been changed to improve delamination performances



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MDG RELIABILITY EVALUATION REPORT

Identification Number: RERMCD1524

Product Evaluation STM32F7x – 512K

CMOSM10 90nm FLASH EMBEDDED

Qualification Type: Product & Package Evaluation

Product / Process information	
Commercial product	STM32F72x / STM32F73x
Product line	452X66
Product description	STM32F7x 512Kbytes FLASH
Finish Good Code	ES32F723IEK6\$P1 (UFBGA176 USB PHY) ES32F722IEK6\$P1 (UFBGA176) ES32F723ZEI6\$P (UFBGA144 USB PHY) ES32F722IET6\$E1 (LQFP176) ES32F723IET6\$E1 (LQFP176 USB PHY) ES32F722ZET6\$P1 (LQFP144) ES32F723ZET6\$P1 (LQFP144 USB PHY) ES32F722VET6\$P1 (LQFP100) ES32F723VET6\$P1 (LQFP100 USB PHY) ES32F722RET6\$B1 (LQFP64) ES32F723IET6\$E1 (WLCSP100 USB PHY) CS32F723REV6\$61 (VFQFPN 68L)
Production Mask Set revision	452XXXA cut1.0
Product Division	Microcontrollers Division (MCD)
Silicon process technology	CMOSM10 90nm
Wafer fabrication location	ST Crolles 300 (12'), France
Electrical Wafer Sort test plant location	ST Rousset, France

Reliability Evaluation assessment: PASS

Approval List: Document revision REV1.0			
Function	Site	Name	Date
Div Q&R Responsible	Grenoble Rousset	Dominique GALIANO Frederic BRAVARD	6-Oct-2016
Div Quality Manager	Rousset	Pascal NARCHE	6-Oct-2016
Approval List: Document revision REV1.1			
Div Q&R Responsible	Grenoble Rousset	Dominique GALIANO Frederic BRAVARD	25-Nov-2016
Approval List: Document revision REV1.2			
Div Q&R Responsible	Rousset	Frederic BRAVARD	26-Mar-2019
Approval List: Document revision REV1.3			
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1 RELIABILITY EVALUATION overview

1.1 Objectives

The aim of this report is to present the results of reliability evaluation performed on STM32F7x - die 452XXXA 512Kbytes, diffused in ST Crolles 300 (CMOSM10 90nm), and assembled on the following packages:

LQFP176	24x24 ASE	Gold
LQFP176 USB PHY	24x24 ASE	Gold
LQFP144	20x20 ATP1	Gold
LQFP144 USB PHY	20x20 ATP1	Gold
LQFP100	14x14 ATP1	Gold
LQFP100 USB PHY	14x14 ATP1	Gold
LQFP64	10x10 SCC	Gold
UFBGA176	10x10 ATP3	Gold
UFBGA176 USB PHY	10x10 ATP3	Gold
UFBGA144 USB PHY	7x7 ATP3	Gold
WLCSP 100 USB PHY	ATT1	
VFQFPN 68	8x8 JSCC	Copper

1.2 Conclusion

All reliability tests defined in the reliability strategy, have been completed with positive results. Neither functional nor parametric rejects were detected at final electrical testing.

According to good reliability tests results, the qualification is granted for the STM32F7x – 512K - die 452XXXA-, diffused in ST Crolles 12” – France, for defined mission profile and assembled in below packages

- UFBGA176 10x10 with and without USB PHY in AMKOR ATP3 Philippine
- UFBGA144 7x7 USB PHY in AMKOR ATP3 Philippine
- LQFP176 24x24 with and without USB PHY in ASE TAIWAN
- LQFP144 20x20 with and without USB PHY in AMKOR ATP1 Philippine
- LQFP100 14x14 with and without USB PHY in AMKOR ATP1 Philippine
- LQFP64 10x10 in JSCC China
- WLCSP100 USB PHY in ATT1 AMKOR TAIWAN
- VFQFPN68 8x8 in JSCC China

Refer to section Reliability evaluation: results summary for details on reliability test results.

2 RELIABILITY Device Characteristics

2.1 Reliability Device description

The STM32F7x – die 452XXXA – is processed in CMOSM10 90nm, diffused in ST Crolles (France). It extends the existing STM32F7x family by embedded innovative features.

The STM32F7x family operates in the –40 to +105 °C temperature range, from a 1.8 V – 3.6V (PDR ON) and 1.7-3.6V (PDR_OFF) power supply.

For additional information concerning the product behavior, refer to STM32F7x datasheet

2.2 Reliability Device Traceability

2.2.1 Reliability information

Devices used for die and package reliability evaluation:

RER Lot ID	Lot 1	Lot 2	Lot 3	Lot 4
Finish Good	ES32F723IEK6\$P1	ES32F722IEK6\$P1	ES32F723ZEI6\$P	ES32F722IET6\$E1
Die Name / Cut	452XXXA Cut1.0	452XXXA Cut1.0	452XXXA Cut1.0	452XXXA Cut1.0
Laboratory location	ST GRENOBLE, France	ST GRENOBLE, France	ST GRENOBLE, France	ST GRENOBLE, France
Fab name location	ST CROLLES 300, France	ST CROLLES 300, France	ST CROLLES 300, France	ST CROLLES 300, France
EWS name location	ST ROUSSET	ST ROUSSET	ST ROUSSET	ST ROUSSET
Assembly plant location	AMKOR ATP3	AMKOR ATP3	AMKOR ATP3	ASE TAIWAN
FT name location	ST GRENOBLE	ST GRENOBLE	ST GRENOBLE	ST GRENOBLE
Package description	UFBGA176 10x10 USB PHY	UFBGA176 10x10	UFBGA144 7x7 USB PHY	LQFP176 24x24

RER Lot ID	Lot 5	LOT 6	LOT 7	LOT 8
Finish Good	ES32F723IET6\$E1	ES32F722ZET6\$P1	ES32F723ZET6\$P1	ES32F722VET6\$P1
Die Name / Cut	452XXXXA Cut1.0	452XXXXA Cut1.0	452XXXXA Cut1.0	452XXXXA Cut1.0
Laboratory location	ST GRENOBLE, France	ST GRENOBLE, France	ST GRENOBLE, France	ST GRENOBLE, France
Fab name location	ST CROLLES 300, France	ST CROLLES 300, France	ST CROLLES 300, France	ST CROLLES 300, France
EWS name location	ST ROUSSET	ST ROUSSET	ST ROUSSET	ST ROUSSET
Assembly plant location	ASE TAIWAN	AMKOR ATP1	AMKOR ATP1	AMKOR ATP1
FT name location	ST GRENOBLE	ST GRENOBLE	ST GRENOBLE	ST GRENOBLE
Package description	LQFP176 24x24 USB PHY	LQFP144 20x20	LQFP144 20x20 USB PHY	LQFP100 14x14

RER Lot ID	LOT 9	LOT 10	LOT 11	LOT12
Finish Good	ES32F723VET6\$P1	ES32F722RET6\$B1	ES32F723IET6\$E1	CS32F723REV6\$61
Die Name / Cut	452XXXXA Cut1.0	452XXXXA Cut1.0	452XXXXA Cut1.0	452XXXXA Cut1.0
Laboratory location	ST GRENOBLE, France	ST GRENOBLE, France	ST GRENOBLE France	ST GRENOBLE France ST MUAR Malaysia
Fab name location	ST CROLLES 300, France	ST CROLLES 300, France	ST CROLLES 300, France	ST CROLLES 300, France
EWS name location	ST ROUSSET	ST ROUSSET	ST ROUSSET	ST ROUSSET
Assembly plant location	AMKOR ATP1	STATS ChipPAC China	AMKOR ATT1	STATS ChipPAC China
FT name location	ST GRENOBLE	ST GRENOBLE	ST GRENOBLE	STATS ChipPAC China
Package description	LQFP100 14x14 USB PHY	LQFP64 10x10	WLCSP100 USB PHY	VFQFPN 8x8 68L

Comment: ST is certified ISO/TS 16949. This induces certification for all internal and subcontractor plants
ST certification document can be downloaded under the following link:
<http://best.st.com/Corporate/Quality/Documents/>

2.2.2 Front-End Information

	Diffusion FAB
Wafer Fab Name	ST Crolles 300
Wafer Fab Location/ Address	STMicroelectronics, Crolles 2, 850 rue Jean Monnet, 38926, CROLLES, France
Process Technology Name	CMOSM10 90nm
Wafer Diameter	12 inch
Wafer Thickness	775µm +/- 25µm
Die Size	4810 µm x 4376 µm
Technology Mask Number	43
Layer Under Metallization - Material - Thickness	40 nm Nitride + 600 nm Oxide
Metal Layers - Number - Materials - Thickness	Metal 1 TaN/CuSeed/Cu 0.240 µm Metal 2 TaN/CuSeed/Cu 0.330 µm Metal 3 TaN/CuSeed/Cu 0.330 µm Metal 4 TaN/CuSeed/Cu 0.330 µm Metal 5 TaN/CuSeed/Cu 0.330 µm Metal 6 TaN/CuSeed/Cu 0.850 µm Metal 7 AlCu/TinArc 1.450 µm
Passivation Layers - Number - Materials - Thickness	PSG + UV Nitride (tot:1.1 µm)
Back Metal Finishing - Thickness	NA
Die overcoat: - Material - Thickness	NA
Other Device using same process	STM32F4x and STM32F7x family
FIT Level (Ea=0.7eV, C.L: 60%, 55°C)	FIT = 4.0 at qualification date
Soft Error Rate - Alpha SER [FIT/Mb] - Neutron SER [FIT/Mb] - Conditions	Alpha SER: 525 Fit/Mb condition: 0.001 α/cm²/h Neutron SER: 1195 Fit/Mb condition 125°C 13 n/cm²/h (>400MeV)
Wafer Level Reliability - Electro-Migration (EM) - Time Dependent Dielectric Breakdown (TDDB) or Gate Oxide Integrity (GOI) - Hot Carrier Injection (HCI) - Negative Bias Thermal Instability (NBTI) - Stress Migration (SM)	Yes Yes Yes Yes Yes

2.2.3 Back-End Information

Package Description	UFBGA176 With and without USB PHY	UFBGA144 USB PHY	LQFP176 With and without USB PHY	LQFP144 With and without USB PHY
Assembly Plant Name	AMKOR ATP3	AMKOR ATP3	ASE TAIWAN	AMKOR ATP1
Assembly Plant Location/ Address	Site P3 119 North Science Avenue Special Economic Processing Zone Laguna Technopark, Binan Laguna PHILIPPINES 4024	Site P3 119 North Science Avenue Special Economic Processing Zone Laguna Technopark, Binan Laguna PHILIPPINES 4024	26 Chin 3rd Road Nantze Export Processing Zone, Kaohsiung, Taiwan 811, R.O.C TAIWAN	Site P1 KM22 East Service Road Special Economic Zone Cupang, Muntinlupa City PHILIPPINES 1702
Die Thickness after Back grinding	75 µm +/- 12	75 µm +/- 12	300µm +/-25µm	375+/-25µm
Die sawing method	Step Cut	Step cut	Sawing	Step cut
Die attach material - Type (Glue/Film) - Supplier / refer	DAF ATB130U Ablestik	DAF ATB130U Ablestick	GLUE 8143 YIZTECH	Glue epoxy CRM-1076YB SUMITOMO
Wire bonding - Type / diameter - Supplier / characteristics - Method (ultrasonic / Thermosonic)	GOLD WIRE DIAM. 0.8 MIL Thermosonic	GOLD WIRE DIAM. 0.8 MIL Thermosonic	WIRE GOLD DIAM. 0.8 MIL Thermosonic	GOLD WIRE 2N 0.8MIL TANAKA Thermosonic
Lead Frame or substrate Material - Type / Thickness - Supplier / refer.	SUBS UFBGA 10x10 Low CTE DS7409HGB (LE)	SUBS UFBGA10X10 P08 144L	176L ASE WITH SLOT 243 sq	Pre plated Frame NiPdAu 5.75sq
Lead Plating - Natures - Thickness	NA	NA	Pur tin DR plating with slots C7025	Pur tin DR plating with slots C194
Balls Material & Diameter (BGA & CSP)	SOLDER BALLS WITH 200 DIAM SN96.5 AG3.5%	SOLDER BALLS WITH 250 DIAM SN96.5 AG3.5%	NA	NA
Routing Layer Material (CSP)	NA	NA	NA	NA
PBO Passivation (CSP)	NA	NA	NA	NA
Back side coating (CSP) - Material - Thickness	NA	NA	NA	NA
Molding Compound / Resin encapsulation - Type - Supplier / refer.	NITTO GE100LFCS	NITTO GE100LFCS	EME-G631H SUMITOMO	G631HQ SUMITOMO
Package Moisture Sensitivity Level (JEDEC J-STD020D)	MSL3	MSL3	MSL3	MSL3

Package Description	LQFP100 14x14 With and without USB PHY	LQFP64 10x10	WLCSP100 USB PHY	QFN68 8x8
Assembly Plant Name	AMKOR ATP1	STATS ChipPAC Shanghai	AMKOR ATT1	STATS ChipPAC Jiangsu
Assembly Plant Location/ Address	Site P1 KM22 East Service Road Special Economic Zone Cupang, Muntinlupa City PHILIPPINES 1702	188 Hua Xu Road Xujin County, Qingpu District Shanghai 201702 People's Republic of China	No.11, Guangfu Road Hsinchu Industrial Park Hukou County HSINCHU 303 TAIWAN R.O.C	No.78, Changshan Rd. Jiangyin, Jiangsu, China, 214400
Die Thickness after Back grinding	375µm +/- 25µm	375 +/- 25 µm	355µm +/- 25 µm	254+/-25µm
Die sawing method	Step cut	Step cut	Laser Grooving + Mechanical dicing	Laser Grooving + Mechanical dicing
Die attach material - Type (Glue/Film) - Supplier / refer	Sumitomo Epoxy CRM 1076YB	D/A Ablestik 3230	NA	Glue Hitachi EN4900GC
Wire bonding - Type / diameter - Supplier / characteristics - Method (ultrasonic / Thermosonic)	WIRE GOLD DIAM. 0.8 MIL Thermosonic	GOLD WIRE DIAM. 0.8 MIL Thermosonic	NA	CuPd 0.8 mils
Lead Frame or substrate Material - Type / Thickness - Supplier / refer.	LQFP100 14x14 Pure Tin	LF for LQFP 10X10 64L 6MM SQ SLOTS Sn	NA	LF VQFN 8x8 68L 6x6 eff Ru Ag Pur Tin
Lead Plating - Natures - Thickness	Pur tin DR plating with slots C194	100% Matt Tin 10µm thickness : tolerance 7 to 20 µm for connections	NA	E3 pure tin
Balls Material & Diameter (BGA & CSP)	NA	NA	SOLDER BALL SACN125 230 µm	NA
Routing Layer Material (CSP)	NA	NA	Copper RDL Ti/Cu/Cu UBM	NA
PBO Passivation (CSP)	NA	NA	HD8820	NA
Back side coating (CSP) - Material - Thickness	NA	NA	Back side coating PET film 25µm	NA
Molding Compound / Resin encapsulation - Type - Supplier / refer.	G631HQ Sumitomo	G700E	NA	SUMITOMO G631BQ- CJ
Package Moisture Sensitivity Level (JEDEC J-STD020D)	MSL3	MSL3	MSL1	MSL3

3 RELIABILITY EVALUATION PLAN / strategy & results summary

3.1 Reliability evaluation : strategy & results summary

The STM32F7x (die 452XXXA) is processed in the CMOSM10 90nmFLASH embedded process. This technology has been qualified on STM32F2x products serie.

Product	Qualification Report
STM32F207	RERMCD 1302

Below package configurations are qualified for STM32Fx products in CMOSM10

- UFBGA10x10 176L AMKOR ATP3
- UFBGA 7x7 144L AMKOR ATP3
- LQFP14x14 100L AMKOR ATP1
- LQFP20x20 144L AMKOR ATP1
- LQFP24x24 176L ASE
- LQFP10x10 64L SCC
- WLCSP AMKOR ATT1
- VFQFPN8x8 68L JSCC

Corresponding references

Package	Assy site	Reliability report
UFBGA10x10 176L	AMKOR ATP3	RERMCD1402
UFBGA 7x7 144L	AMKOR ATP3	RERMCD1402
LQFP24x24 176L	ASE (TAIWAN)	RERMCD1416
LQFP20x20 144L	AMKOR ATP1	RERMCD1312
LQFP14x14 100L	AMKOR ATP1	RERMCD1312
LQFP10x10 64L	SCC	RERMCD1114
WLCSP180	AMKOR ATT1	RERMCD1213
VFQFPN8x8	JSCC	MDRF-GPM-RER2220

Based on these data, and according to "RELIABILITY TESTS AND CRITERIA FOR QUALIFICATION" specification (DMS 0061692), the following qualification strategy has been defined:

- Die Qualification:
 - 1 diffusion lot (in UFBGA176 10x10 176L USB PHY package from ATP3)
- Package Qualification: full similarity
 - 1 assembly lot for CDM in UFBGA176 with and without USB PHY packages from ATP3
 - 1 assembly lot for CDM in UFBGA144 USB PHY package from ATP3
 - 1 assembly lot for CDM in LQFP176 with and without USB PHY packages from ASE
 - 1 assembly lot for CDM in LQFP144 with and without USB PHY packages from ATP1
 - 1 assembly lot for CDM in LQFP100 with and without USB PHY packages from ATP1
 - 1 assembly lot for CDM in LQFP64 package from SCC
 - 1 assembly lot for CDM in WLCSP100 USB PHY package from ATT1
 - 1 assembly lot for CDM + CA in VFQFPN68 package from JSCC

3.2 Die related tests:

The die oriented test results are summarized in table 1.

Table 1. Die oriented test results (UFBGA176 USB PHY ATP3)

Die Related Tests - short description						
Descr	Test/ Method	Conditions	Sample Size	Criteria	Read out / Duration	Lot 1
Die 452						Cut 1.0
Electrostatic discharge - Human Body Model						
ESD - HBM	ANSI/ ESDA/ JEDEC JS-001	UFBGA176 USB PHY	3x1	A0/R1 2000V		0/3
Electrostatic discharge - Charge Device Model						
ESD - CDM	ANSI/ ESD STM 5.3.1	UFBGA176 USB PHY	3x1	Class 3	250v	0/3
LATCH UP						
LU	JESD 78	UFBUSB PHY	6x1	A0/R1 130°C	130°C	0/6
NVM Endurance & Data Retention – 10kcy EW @ 125°C then Storage						
EDR	JESD-22A117	HTB 150°C	77x1	A0/R1 10kcy + 1500h	168h	0/77
					500h	0/77
					1000h	0/77
					1500h	0/77
NVM Endurance & Data Retention – 10kcy EW @ 25°C then Storage						
EDR	JESD-22A117	HTB 150°C	77x1	A0/R1 10kcy + 168h	168h	0/77
NVM Endurance & Data Retention – 10kcy EW @ -40°C then Storage						
EDR	JESD-22A117	HTB 150°C	77x1	A0/R1 10kcy + 168h	168h	0/77
Early Life Failure Rate						
ELFR	MIL-STD-883 Method 1005 JESD22-A108 JESD74	ELFR 125°C, 3V6	500x1	A0/R1 48h	48h	0/500
High Temperature Operating Live						
HTOL	JESD-22A108	HTOL 125°C, 3V6	77x1	A0/R1 1200h	168h	0/77
					600h	0/77
					1200h	0/77

3.3 Package related tests:

The package oriented test results are summarized in the following tables.

Table 2. UFBGA176 ATP3 Package oriented test results

Short description						Results
Descript.	Test/Method	Conditions	Sample Size	Criteria	Read out /Duration	Lot 2
Die 452						Cut 1.0
Electrostatic discharge - Charge Device Model						
CDM	ANSI/ ESD STM 5.3.1	UFBGA176	3x1	Class 3	250v	0/3

Table 3. UFBGA144 USB PHY ATP3 Package oriented test results

Short description						Results
Descript.	Test/Method	Conditions	Sample Size	Criteria	Read out /Duration	Lot 3
Die 452						Cut 1.0
Electrostatic discharge - Charge Device Model						
CDM	ANSI/ ESD STM 5.3.1	UFBGA144 USB PHY	3x1	Class 3	250v	0/3

Table 4. LQFP176 ASE Package oriented test results

Short description						Results
Descript.	Test/Method	Conditions	Sample Size	Criteria	Read out /Duration	Lot 4
Die 452						Cut 1.0
Electrostatic discharge - Charge Device Model						
CDM	ANSI/ ESD STM 5.3.1	LQFP176	3x1	Class 3	250v	0/3

Table 5. LQFP176 USB PHY ASE Package oriented test results

Short description						Results
Descript.	Test/Method	Conditions	Sample Size	Criteria	Read out /Duration	Lot 5
Die 452						Cut 1.0
Electrostatic discharge - Charge Device Model						
CDM	ANSI/ ESD STM 5.3.1	LQFP176 USB PHY	3x1	Class 3	250v	0/3

Table 6. LQFP144 ATP1 Package oriented test results

Short description						Results
Descript.	Test/Method	Conditions	Sample Size	Criteria	Read out /Duration	Lot 6
Die 452						Cut 1.0
Electrostatic discharge - Charge Device Model						
CDM	ANSI/ ESD STM 5.3.1	LQFP144	3x1	Class 3	250v	0/3

Table 7. LQFP144 USB PHY ATP1 Package oriented test results

Short description						Results
Descript.	Test/Method	Conditions	Sample Size	Criteria	Read out /Duration	Lot 7
Die 452						Cut 1.0
Electrostatic discharge - Charge Device Model						
CDM	ANSI/ ESD STM 5.3.1	LQFP144 USB PHY	3x1	Class 3	250v	0/3

Table 8. LQFP100 ATP1 Package oriented test results

Short description						Results
Descript.	Test/Method	Conditions	Sample Size	Criteria	Read out /Duration	Lot 8
Die 452						Cut 1.0
Electrostatic discharge - Charge Device Model						
CDM	ANSI/ ESD STM 5.3.1	LQFP100	3x1	Class 3	250v	0/3

Table 9. LQFP100 USB PHY ATP1 Package oriented test results

Short description						Results
Descript.	Test/Method	Conditions	Sample Size	Criteria	Read out /Duration	Lot 9
Die 452						Cut 1.0
Electrostatic discharge - Charge Device Model						
CDM	ANSI/ ESD STM 5.3.1	LQFP100	3x1	Class 3	250v	0/3

Table 10. LQFP64 SCC Package oriented test results

Short description						Results
Descript.	Test/Method	Conditions	Sample Size	Criteria	Read out /Duration	Lot 10
Die 452						Cut 1.0
Electrostatic discharge - Charge Device Model						
CDM	ANSI/ ESD STM 5.3.1	LQFP64	3x1	Class 3	250v	0/3

Table 11. WLCSP 100 USB PHY ATT1 Package oriented test results

Short description						Results
Descript.	Test/Method	Conditions	Sample Size	Criteria	Read out /Duration	Lot 11
Die 452						Cut 1.0
Electrostatic discharge - Charge Device Model						
CDM	ANSI/ ESD STM 5.3.1	WLCSP100 USB PHY	3x1	Class 3	250v	0/3

Table 10. VQFN68 SCC Package oriented test results

Short description						Results
Descript.	Test/Method	Conditions	Sample Size	Criteria	Read out /Duration	Lot 10
Die 452						Cut 1.0
Electrostatic discharge - Charge Device Model						
CDM	JEDEC JS-002	VQFN68	3x1	C2a	500v	0/3
CA	Construction analysis including solderability, physical dimensions	JESD 22B102 JESD B100/ B108 ST internal specifications	50x1	0 fail		0/50

APPLICABLE AND REFERENCE DOCUMENTS

- DMS 0061692: RELIABILITY TESTS AND CRITERIA FOR QUALIFICATIONS
- SOP 2.6.2: Process qualification and transfer management
- SOP 2.6.7: Product Maturity Level
- SOP 2.6.9: Package and process maturity management in Back End
- SOP 2.6.11: Program management for product qualification
- SOP 2.6.19: Process maturity level
- ANSI/ESDA/JEDEC JS-001: Electrostatic discharge (ESD) sensitivity testing human body model (HBM)
- ANSI-ESD STM5.3.1: Electrostatic discharge (ESD) sensitivity testing charge device model (CDM)
- JEDEC JS-002: Electrostatic discharge (ESD) sensitivity testing charge device model (CDM)
- JESD78A: IC Latch-up test
- JESD22-A103: High temperature storage life
- JESD22-A117: Endurance and Data retention
- J-STD-020D: Moisture/reflow sensitivity classification for nonhermetic solid state surface mount devices
- JESD22-A113: Preconditioning of nonhermetic surface mount devices prior to reliability testing
- JESD22-A101: Steady state temperature humidity bias life test
- JESD22-A118: Accelerated moisture resistance - unbiased hast
- JESD22-A104: Temperature cycling
- JESD 22B102: Solderability test
- JESD B100/ B108 Physical dimension

4 Glossary

EDR	NVM endurance, data retention and operational life
HTOL	High temperature operating life
HTB	High temperature bake
WEB	Program/Erase endurance cycling + bake
ESD HBM	Electrostatic discharge (human body model)
ESD CDM	Electrostatic discharge (charge device model)
LU	Latch-up
PC	Preconditioning (solder simulation)
THB	Temperature humidity bias
TC	Temperature cycling
UHAST	Unbiased HAST
HTSL	High temperature storage life
ELFR	Early life failure rate
CA	Construction analysis

5 REVISION HISTORY

Date	Revision	Changes
03-Oct-16	1	Initial release
22-Nov-2016	1.1	Retention 1000h/1500h, WLCSP 100 USB PHY CDM
26-Mar-2019	1.2	Typo error corrections on the die size and Number of masks (F.E Information)
1-Jul-2026	1.3	Added VFQFPN68 and typo error corrections

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