

# RER1802 for PCN10553 STM32F listed products – TSMC Singapore Wafer Fab SSMC additional source

## Reliability Evaluation Plan

May, 3<sup>rd</sup> 2018

MDG Quality & Reliability Department



# STM32F listed products – TSMC Singapore Wafer Fab SSMC additional source STM32 Die Test Vehicles

Die Vehicle	Process Perimeter	Assembly Line	Package	Number of Reliability Lots
422	TSMC 0.18µm	ATP1	LQFP100	3 lots to qualify Process Perimeter Then 1 lot by Die
440		JSCC	LQFP64	
444		MUAR	LQFP48	
445		JSCC	LQFP48	
448		ST MUAR	LQFP100	

# STM32F listed products – TSMC Singapore Wafer Fab SSMC additional source

## STM32 Die Reliability Trials

Reliability Trial & Standard		Test Conditions	Pass Criteria	Lot Strategy	Units per Lot
<b>ESD HBM</b>	ANSI/ESDA/JEDEC JS-001 JESD22-A114	25°C	2kV (class 2)	1 to 2 lots	3
<b>LU</b>	JESD78	125°C REG-ON Configuration 125°C REG-OFF Configuration	No concern	1 to 2 lots	6 / configuration
<b>EDR + Bake</b>	JESD22-A117 JESD22-A103	125°C & 3.6V Cycling 150°C Bake	10k cycles 1500h 1000h	1 to 2 lots 1 <sup>st</sup> product driver Other products	77
<b>EDR + Bake</b>	JESD22-A117 JESD22-A103	25°C & 3.6V Cycling 150°C Bake	10k cycles 168h	1 to 2 lots	77
<b>EDR + Bake</b>	JESD22-A117 JESD22-A103	-40°C & 3.6V Cycling 150°C Bake	10k cycles 168h	1 to 2 lots	77
<b>ELFR</b>	JESD22-A108 JESD74	125°C & 3.6V	48h	1 to 2 lots	800 units for products driver 500 units for other products
<b>HTOL</b>	JESD22-A108	125°C & 3.6V	1200h 600h	1 to 2 lots 1 <sup>st</sup> product driver Other products	77

# STM32F listed products – TSMC Singapore Wafer Fab SSMC additional source STM32 Package Test Vehicles

Package Line	Assembly Line	Package	Wire	Die Vehicle / Partial Rawline	Number of Reliability Lots
LQFP	ATP1	LQFP14*14 100L	Au	422 / 1L*422	3 lots to qualify Process Perimeter Then 1 lot by Package Assembly Line
	ST MUAR	LQFP14*14 100L	Ag	422 / 1L*422	
	ST MUAR	LQFP14*14 100L	Ag	448 / 1L*448	
	JSCC	LQFP10*10 64L	Ag	440 / 5W*440	
	JSCC	LQFP7*7 48L	Ag	445 / 5B*445	
	ASEKH	LQFP7*7 48L	Au	440 / 5B*440	
	MUAR	LQFP7*7 48L	Ag	444 / 5B*444	
QFN	JSCC	UQFN7*7 48L	Ag	440 / MI*440	
	JSCC	UQFN4*4 28L COL	Au	444 / MB*444	
TSSOP	STS	TSSOP20 Body 4.4	Ag	444 / YA*444	
UFBGA	ATP3	UFBGA64 5x5	Au	440 / 2I*440	
WLCSP	SCS	WLCSP 100b	NA	422 / 1M*422	

# STM32F listed products – TSMC Singapore Wafer Fab SSMC additional source STM32 Package Reliability trials

Reliability Trial & Standard		Test Conditions	Pass Criteria	Lot Strategy	Units per Lot
PC	Pre Conditioning Moisture Sensitivity Jedec Level 1 (*) Moisture Sensitivity Jedec Level 3 (*) J-STD-020/ JESD22-A113	Bake (125°C / 24h) Soak (85°C / 85% RH / 168 hrs) for level 1 (*) Soak (30°C / 60% RH / 192h) for level 3 (*) Convection reflow: 3 passes	3 Passes	1 to 2 lots	231 to 308 (***)
UHASt (**) (***)	Unbiased Highly Accelerated Temperature & Humidity Stress JESD22-A118	130°C, 85%RH, 2 Atm	96h	1 to 2 lots	77
TC (**)	Thermal Cycling  JESD22 A104	-50°C, +150°C Or equivalent -65°C +150°C	1000Cy  500Cy	1 to 2 lots	77
THB (**) Or HASt (**)	Temperature Humidity Bias JESD22-A101 Or Biased Highly Accelerated temperature & humidity stress JESD22 A110	85°C, 85% RH, bias Or 110°C, 1.2 atm , 85% RH bias	1000h Or 264h	1 to 2 lots	77
HTSL (**)	High Temperature Storage Life JESD22-A103	150°C - no bias	1000h	1 to 2 lots	77
Construction Analysis	JESD22-B102	Including Solderability & Physical Dimensions	No concern	1 by package assembly line	15
	JESD22-B100/B108				10
ESD CDM	ESD Charged Device Model ANSI/ESD STM5.3.1	Aligned with device datasheet	250V to 500V	1 by package assembly line	3

(\*) MSL1 for packages TSSOP20 and WLCSP100

MSL3 for other packages (LQFP48, LQFP64, LQFP100, UQFN28 COL, UQFN48, UFBGA64)

(\*\*) Tests performed after preconditioning

(\*\*\*) UHASt not done for BGA

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**PRODUCT/PROCESS  
CHANGE NOTIFICATION  
PCN 10553 – Additional information**

**STM32F listed products –  
TSMC Singapore Wafer Fab SSMC additional source**

**MDG - Microcontrollers Division (MCD)**

**What are the changes?**

Products	Current sources		Added source
	TSMC USA Wafer Fab 11	TSMC Taiwan Wafer Fab 8	TSMC Singapore Wafer Fab SSMC
STM32F030x8 STM32F051 STM32F058	X	X	X
STM32F301xB/C STM32F302xB/C STM32F303xB/C STM32F358xC	X		X

Datasheet parameters are unchanged. There is no hardware or software change for customers.

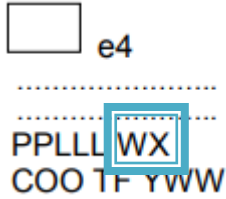
**When?**

The production will start from:

Package products	Date of Final Qualification Report Availability	Date of first Shipment
all except UBGA & WLCSP	Week 29 2018	Week 34 2018
UBGA & WLCSP	Week 32 2018	Week 37 2018

## How can the change be seen?

The standard marking is:



**WX** code indicates the diffusion traceability plant code.

Please refer to the DataSheet for marking details.

The marking is changing as follows:

Existing		Additional	
WX code	Fab	WX code	Fab
9U	TSMC USA Wafer Fab 11	9C	TSMC Singapore Wafer Fab SSMC
98	TSMC Taiwan Wafer Fab 8		