

RER1804 for PCN10962 F9GO2S Technology Rousset BEOL Aluminum to copper

Reliability Evaluation Plan

Oct 17th, 2018

MDG MCD Quality & Reliability Department



RER1804 – F9GO2S Technology Rousset BEOL Aluminum to copper STM32 Die Test Vehicles

Die Vehicle	Process Perimeter	Assembly Line	Package	Number of Reliability Lots
447	F9GO2S	MUAR / ATP	LQFP14*14 100L	3 lots to qualify Process Perimeter Then 1 lot for each additional Die
417	F9GO2S	JSCC / MUAR / ATP	LQFP10*10 64L	

RER1804 – F9GO2S Technology Rousset BEOL Aluminum to copper STM32 Die Reliability Trials

Reliability Trial & Standard		Test Conditions	Pass Criteria	Lot Strategy	Units per Lot
ESD HBM	0060102 JESD22-A114ANSI/ESDA JEDEC JS-001	25°C	2kV (class 2)	1 to 3 lots	3
ESD CDM	ESD Charged Device Model ANSI/ESD STM5.3.1	Aligned with device datasheet	250V to 500V	1 lot	3
LU	0018695 JESD78	105°C/125°C REG-ON/REG-OFF Configuration Aligned with device datasheet	No concern	1 to 3 lots	3 3
EDR + Bake	JESD22-A117 JESD22-A103	105°C & 3.6V Cycling 150°C Bake	10K + 100k cycles 1500h 1000h	1 to 3 lots For process perimeter (*) For die perimeter (**)	77
EDR + Bake	JESD22-A117 JESD22-A103	25°C & 3.6V Cycling 150°C Bake	10K + 100k cycles 168h	1 to 3 lots	77
EDR + Bake	JESD22-A117 JESD22-A103	-40°C & 3.6V Cycling 150°C Bake	10K + 100k cycles 168h	1 to 3 lots	77
ELFR	MIL-STD-883 Method 1005 JESD22-A108 JESD74	125°C & 3.6V	48h	3 lots for process perimeter 1 lot for Die perimeter	2000 units min in total
HTOL	MIL-STD-883 Method 1005 JESD22-A108	125°C & 3.6V 100MHz	1200h 600h	1 to 3 lots For process perimeter (*) For die perimeter (**)	77

(*) on 1st lot of process perimeter

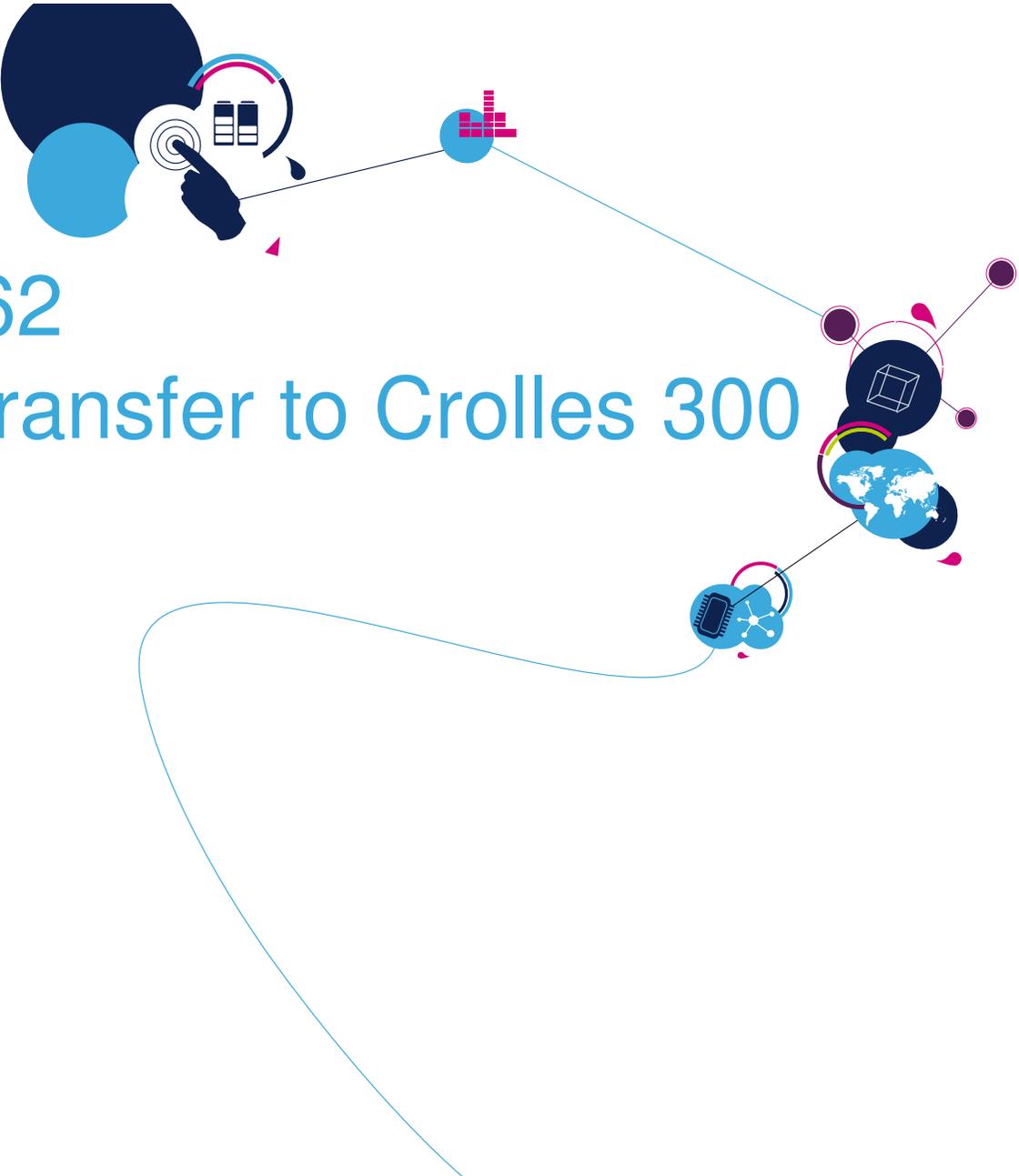
(**) on 2nd & 3rd of process perimeter or 1 lot of die perimeter

RER1804 – F9GO2S Technology Rousset BEOL Aluminum to copper STM32 Package Test Vehicles

Package Line	Assembly Line	Package	Die Vehicle / Partial Rawline code	Number of Reliability Lots
LQFP	MUAR	LQFP14*14 100L	447 / 1L*447	3 lots to qualify Process Perimeter Then 1 lot by Package Assembly Line
	JSCC	LQFP10*10 64L	417 / 5W*417	
	JSCC	LQFP7*7 48L	447 / 5B*447	
QFN	JSCC	UFQFPN5*5 32L	447 / MG*417	
WLCSP	SCS	WLCSP 49L	447 / OU*447	

RER1804 – F9GO2S Technology Rousset BEOL Aluminum to copper STM32 Package Reliability Trials

Reliability Trial & Standard		Test Conditions	Pass Criteria	Units per Lot	Lot Strategy
PC	Pre Conditioning: Moisture Sensitivity Jedec Level 1 J-STD-020/ JESD22-A113	Bake (125°C / 24h) Soak (85°C / 85% RH / 168h) for level 1 Convection reflow: 3 passes with Jedec level 1	3 Passes MSL1/3	231 to 308 (**)	1 to 3 lots
	Pre Conditioning: Moisture Sensitivity Jedec Level 3 J-STD-020/ JESD22-A113	Bake (125°C / 24h) Soak (30°C / 60% RH / 192h) for level 3 Convection reflow: 3 passes with Jedec level 3			
UHASt (*) (**)	Unbiased Highly Accelerated Temperature & Humidity Stress JESD22-A118	130°C, 85%RH, 2 Atm	96h	77	1 to 3 lots
TC (*)	Thermal Cycling JESD22-A104	-65°C +150°C	500Cy	77	1 to 3 lots
THB (*)	Temperature Humidity Bias JESD22-A101	85°C, 85% RH, bias	1000h	77	1 to 3 lots
HTSL (*)	High Temperature Storage Life JESD22-A103	150°C - no bias	1000h	77	1 to 3 lots
Construction Analysis	Upon In Process Control ST Specifications	Aligned with ST specifications	No concern	15	1 by package assembly line
				10	
ESD CDM	ESD Charged Device Model ANSI/ESD STM5.3.1	Aligned with device datasheet	250V to 500V	3	1 by package assembly line



RER1809 for PCN10962 F9GO2S Technology Transfer to Crolles 300

Reliability Evaluation Plan

Oct 17th, 2018

MDG MCD Quality & Reliability Department



RER1809 – F9GO2S Technology Transfer to Crolles 300 STM32 Die Test Vehicles

Die Vehicle	Process Perimeter	Assembly Line	Package	Number of Reliability Lots
447	F9GO2S	MUAR / ATP	LQFP14*14 100L	3 lots to qualify Process Perimeter Then 1 lot for each additional Die
417		JSCC / MUAR	LQFP10*10 64L	
437		ATP	LQFP20*20 144L	
427		MUAR / ATP	LQFP14*14 100L	
429		MUAR / ATP	LQFP14*14 100L	
457		JSCC / MUAR / ATP	LQFP7*7 32L	
425		JSCC / MUAR / ATP	LQFP7*7 48L	

RER1809 – F9GO2S Technology Transfer to Crolles 300 STM32 Die Reliability Trials

Reliability Trial & Standard		Test Conditions	Pass Criteria	Lot Strategy	Units per Lot
ESD HBM	0060102 JESD22-A114ANSI/ESDA JEDEC JS-001	25°C	2kV (class 2)	1 to 3 lots	3
ESD CDM	ESD Charged Device Model ANSI/ESD STM5.3.1	Aligned with device datasheet	250V to 500V	1 lot	3
LU	0018695 JESD78	105°C/125°C REG-ON/REG-OFF Configuration Aligned with device datasheet	No concern	1 to 3 lots	3 3
EDR + Bake	JESD22-A117 JESD22-A103	105°C & 3.6V Cycling 150°C Bake	10K + 100k cycles 1500h 1000h	1 to 3 lots For process perimeter (*) For die perimeter (**)	77
EDR + Bake	JESD22-A117 JESD22-A103	25°C & 3.6V Cycling 150°C Bake	10K + 100k cycles 168h	1 to 3 lots	77
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ELFR	MIL-STD-883 Method 1005 JESD22-A108 JESD74	125°C & 3.6V	48h	3 lots for process perimeter 1 lot for Die perimeter	2000 units min in total
HTOL	MIL-STD-883 Method 1005 JESD22-A108	125°C & 3.6V 100MHz	1200h 600h	1 to 3 lots For process perimeter (*) For die perimeter (**)	77

(*) on 1st lot of process perimeter

(**) on 2nd & 3rd of process perimeter or 1 lot of die perimeter

RER1809 – F9GO2S Technology Transfer to Crolles 300 STM32 Package Test Vehicles

Package Line	Assembly Line	Package	Die Vehicle / Partial Rawline code	Number of Reliability Lots
LQFP	MUAR	LQFP14*14 100L	447 / 1L*447	3 lots to qualify Process Perimeter Then 1 lot by Package Assembly Line
	JSCC	LQFP10*10 64L	417 / 5W*417	
	JSCC	LQFP7*7 48L	447 / 5B*447	
QFN	ATP1	UFQFPN3*3 20L	457 / E4*457	
	JSCC	UFQFPN4*4 28L	457 / MB*457	
	JSCC	UFQFPN5*5 32L	447 / MG*447	
WLCSP	ATT1	WLCSP 49L	447 / OU*447	
TSSOP20	ATP1	TSSOP 20	457 / YA*457	

RER1809 – F9GO2S Technology Transfer to Crolles 300 STM32 Package Reliability Trials

Reliability Trial & Standard		Test Conditions	Pass Criteria	Units per Lot	Lot Strategy
PC	Pre Conditioning: Moisture Sensitivity Jedec Level 1 J-STD-020/ JESD22-A113	Bake (125°C / 24h) Soak (85°C / 85% RH / 168h) for level 1 Convection reflow: 3 passes with Jedec level 1	3 Passes MSL1/3	231 to 308 (**)	1 to 3 lots
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UHASt (*) (**)	Unbiased Highly Accelerated Temperature & Humidity Stress JESD22-A118	130°C, 85%RH, 2 Atm	96h	77	1 to 3 lots
TC (*)	Thermal Cycling JESD22-A104	-65°C +150°C	500Cy	77	1 to 3 lots
THB (*)	Temperature Humidity Bias JESD22-A101	85°C, 85% RH, bias	1000h	77	1 to 3 lots
HTSL (*)	High Temperature Storage Life JESD22-A103	150°C - no bias	1000h	77	1 to 3 lots
Construction Analysis	Upon In Process Control ST Specifications	Aligned with ST specifications	No concern	15	1 by package assembly line
				10	
ESD CDM	ESD Charged Device Model ANSI/ESD STM5.3.1	Aligned with device datasheet	250V to 500V	3	1 by package assembly line



(*) Tests performed after preconditioning

(**) UHASt not done for BGA

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PRODUCT/PROCESS CHANGE NOTIFICATION

PCN 10962– Additional information

**STM32L010x8/B and STM32L05/06/07/08 products
Rousset 8" and Crolles CRL300**

MDG - Microcontrollers Division (MCD)

How to order samples?

For all samples requests linked to this PCN, please:

- place a **Non-standard** sample order (choose Sample Non Std Type from pull down menu)
- insert the PCN number “**PCN 10962**” into the NPO Electronic Sheet/**Regional Sheet**
- request sample(s) through Notice tool, indicating a single Commercial Product for each request

Partial Ship: 01 Price Pol: 05 Status: 01 Canc:
%: 0 Sample Type: Sample Non Std Type
Closing Type: Sample Std Type
Sample Non Std Type
Sample Non Std w Spl Tests
Lab Sheet:

SO | NPO Sample

Header
SO Nr: 0018502433 Customer: 99770200 01 ST-TOKYO SO Type: 30 Sample Ord: Cost Center: JT3129 SAMPLES /SALES J
PD Nr: JT3129/Tokumitsu/AXIS_NidecSank Carrier Code: 0001 Price Policy: 05 Currency: 02 U.S. DOLLAR Req Name: Tokumitsu
Notes: Status: 01 All items pending, n Issuing Date: 25-JUN-2018 Ord Val: 0.0000 Sample Req Date: 25-Jun-2018

Sch I Nr	PO I. Nr	Finished Good	Comm Qty	Open Qty	Plant Open Qty	Reqd Qty	Unit Price	RD	CD	EDD	St
1.1.10	000001	STM32F429NIH6	30	30	30	30	0.0000	25-Jun-18	01-Mar-59	01-Mar-59	01

Final Cust:
PO Item: 000001 Comm Prod: STM32F429NIH6 Qty: 30 RD: 25-Jun-18 Unit Price: 0.0000 Final Cust: 8800367006 SANSHIN/NPC

Cust Part Nr: Finshd Good: Partial Ship: 01 Price Pol: 05 Status: 01 Canc:
Notes: TAM K Pieces: 0 Our Share: 0 Sample Type: Sample Non Std Type
Project Name: Closing Date: Closing Type:

Regional Sheet: PCN 10595
Lab Sheet:



Public Products List

Public Products are off the shelf products. They are not dedicated to specific customers, they are available through ST Sales team, or Distributors, and visible on ST.com

PCN Title : STM32L010x8/B and STM32L05/06/07/08 products Rousset 8" and Crolles CRL300

PCN Reference : MDG/18/10962

Subject : Public Products List

Dear Customer,

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

STM32L072CZT6TR	STM32L072VBI6	STM32L071K8U3
STM32L051R6T6	STM32L052K8U6TR	STM32L072KZU6
STM32L071CBT3	STM32L072CZY3TR	STM32L051C8U6
STM32L051K6T6	STM32L072CZY6TR	STM32L051T6Y6TR
STM32L072RZT6TR	STM32L072RZI6DTR	STM32L051K8U6
STM32L073RZI6TR	STM32L083CBT6	STM32L051T8Y6DTR
STM32L071C8T6	STM32L051K8U7	STM32L051T8Y7DTR
STM32L053R8T6	STM32L072CZT7TR	STM32L071KBT6TR
STM32L052K8U6	STM32L072CZT7	STM32L053R8T6D
STM32L071C8T6TR	STM32L052R8T6	STM32L071RBT7
STM32L083RZT6	STM32L051K8U7TR	STM32L071VBT6TR
STM32L052T8Y6TR	STM32L072RBI6TR	STM32L052R6T6
STM32L053C8T7	STM32L051R8H7	STM32L053R6T6
STM32L071KBU6	STM32L051T8Y6TR	STM32L071KZT6
STM32L071V8T6	STM32L052K6T6	STM32L053R6H6
STM32L071RZH6TR	STM32L083VBT6	STM32L073RZI6
STM32L082CZY6TR	STM32L072VZT6	STM32L072KBU6
STM32L073VZT6	STM32L053C8U6	STM32L052T8F6DTR
STM32L053C8U6D	STM32L071CBT7	STM32L051K8T6TR
STM32L083V8T6	STM32L071KBT6	STM32L052K8U3TR
STM32L083CZT6	STM32L072CZY6DTR	STM32L063R8T6
STM32L073VBT6	STM32L073VBT7TR	STM32L072RBI6
STM32L072KBU3	STM32L051K6U6TR	STM32L081CZT6
STM32L052C8T6	STM32L053R8H6D	STM32L073RZT6
STM32L073RBH6	STM32L063C8T6	STM32L052T6Y6TR
STM32L051K6T6TR	STM32L073VBT6TR	STM32L072KZU7
STM32L082KZU6	STM32L053C6T6	STM32L052T8Y7TR
STM32L051C6T6TR	STM32L072RZH6	STM32L051C8T7
STM32L073V8T6	STM32L053C8T6TR	STM32L053R8T3
STM32L052K8U3	STM32L062K8T6	STM32L053C6T7
STM32L073CBT6	STM32L072RZI6D	STM32L072CBT6
STM32L071CZT7	STM32L083VZI6	STM32L082KBU6
STM32L053R8T6TR	STM32L051C8T6TR	STM32L051K8U6DTR
STM32L073RZT3	STM32L053C8T6	STM32L072VZI6
STM32L071KBU3	STM32L063R8T6TR	STM32L052C8T7
STM32L071KZU3	STM32L051K8U6TR	STM32L051K8T7



Public Products List

STM32L052C6T6	STM32L072V8T6	STM32L051R8T6
STM32L071VZT6	STM32L073RZT6TR	STM32L071RBT6
STM32L062K8U6	STM32L072RZH6TR	STM32L073RZH6
STM32L073CZT6	STM32L071KBU3TR	STM32L071CZY6TR
STM32L071KBU6TR	STM32L051C8T3	STM32L083VZT6
STM32L073CZT3	STM32L081KZT6	STM32L072RZI6
STM32L071V8T6TR	STM32L073VZT6D	STM32L053C8T6D
STM32L072RZI6TR	STM32L083CZT6TR	STM32L071CBT6
STM32L072RBT6	STM32L072RBH6TR	STM32L071RBT6TR
STM32L072RZT6	STM32L071RZH6	STM32L081KZU6
STM32L052R8T7	STM32L071RZT6TR	STM32L072V8I6
STM32L051R8T6TR	STM32L053R8T7	STM32L052C8U6
STM32L051K8U3	STM32L071K8U6	STM32L082CZY3TR
STM32L071KZU6	STM32L052K8U6DTR	STM32L071CZT6TR
STM32L052R6H6	STM32L071RZT6	STM32L073VZI6
STM32L051C6T6	STM32L071RBH6TR	STM32L071CBT3TR
STM32L052R8H6	STM32L073VZI6TR	STM32L052K8U6D
STM32L082KZT6	STM32L083RZT6TR	STM32L072KZU6TR
STM32L051K8T6	STM32L051C8T7TR	STM32L083RZH6
STM32L053R8H6	STM32L071CBT6TR	STM32L072VBT6
STM32L051R6H6	STM32L051R8H6	STM32L073VZT3
STM32L051R8H6TR	STM32L072CBY6TR	STM32L072CZT6
STM32L052K6U7	STM32L051R8T7	STM32L071RBH6
STM32L052C8T6D	STM32L052K8T6D	STM32L071VBT6
STM32L072RBT3	STM32L083RBH6	STM32L072RBT6TR
STM32L071C8T7	STM32L081CBT6TR	STM32L072KBU7
STM32L071CBY6TR	STM32L052K6U6	STM32L052K6U6TR
STM32L081CBT6	STM32L051K6U6	STM32L052K8T6
STM32L071CZT6	STM32L052K8T7	STM32L051C8T6
STM32L073RBT6	STM32L072KZT6	



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