PRODUCT/PROCESS CHANGE NOTIFICATION
Detailed description

Amkor ATP (Philippines) additional back-end source for STM8 and STM32 non-automotive products in LQFP 7x7 & 10x10 packages

MMS - Microcontrollers Division (MCD)

Dear Customer,

In order to sustain the strong demand on STM8 and STM32 devices and provide a better service to our customers, ST Microcontrollers Division will add ATP (Philippines) back-end source for non-automotive STM8 and STM32 family products in LQFP 7x7 and LQFP 10x10 packages.
This line is already qualified and running production in volume.

What are the changes?

Changes are described in the below table:

	Existing manufacturing sites			Added manufacturing site
Assembly site	STATS ChipPAC Shanghai China	ST Muar Malaysia	ST Muar Malaysia	Amkor ATP Philippines
Leadframe	Copper Frame Spot Ag	Pre Plated Frame	Copper Frame Spot Ag	Copper Frame Spot Ag
Leadfinishing	Pure Tin (e3)	Ni Pd Au (e4)	Pure Tin (e3)	Pure Tin (e3)
Resin	Sumitomo G700E	Sumitomo : - G700LS for LQFP 7x7 - G700F for LQFP 10x10	Sumitomo G700LS for LQFP 10x10	Sumitomo G631HQ
Glue	Ablestik 3230	Hitachi EN4900	Hitachi EN4900GC	Evertech AP4200
Test site	STATS ChipPAC Shanghai China	ST Muar Malaysia	ST Muar Malaysia	Amkor ATP Philippines

How & when will the change be qualified?

This change will be qualified using the standard STMicroelectronics Corporate Procedures for Quality and Reliability, in full compliancy with the JESD-47 international standard. You can find in attached Qualification Report RERMCD1515 and Qualification Plan RERMCD1313.

Example:

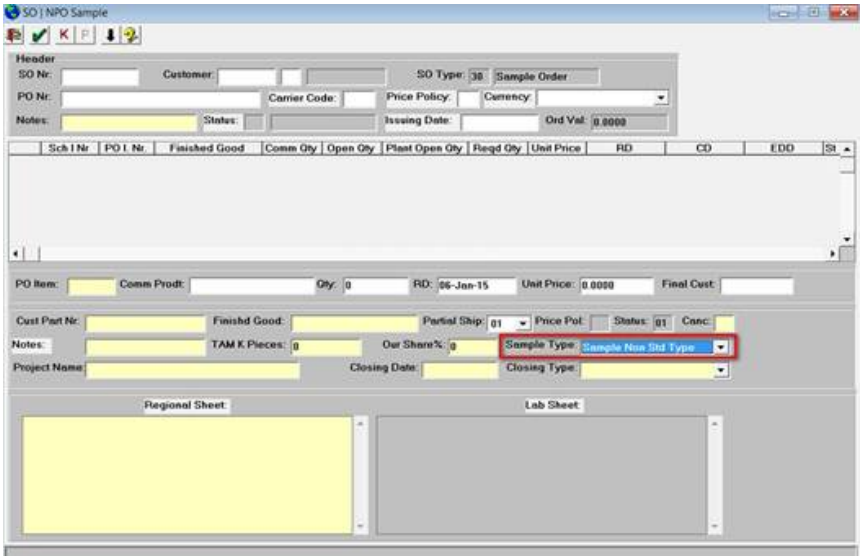
Commercial Product STM32F030K6T6 listed in Group 2 below and so, qualification plan is report RERMCD1515 in attached, qualification report should be available week 49 2015, and implementation date should be week 01 2016.

	Qualification		Implementation
Products listed in Groups below	Document	Qualification Report date	Implementation date
Group 1	Qual report RERMCD1313	Now, in attached	Week 39 2015
Group 2	Qual plan RERMCD1515	Week 49 2015	Week 01 2016

How to order samples?

For all sample request linked to this PCN, please:

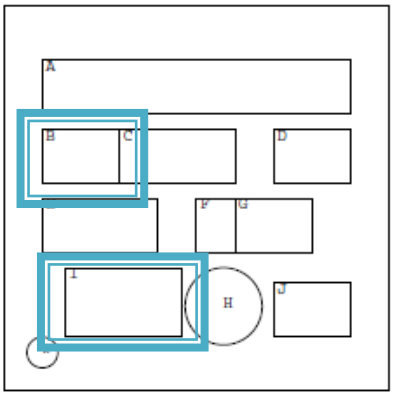
- request sample through Notice tool.
- place **non standard** sample order using the following field in your system.
- insert “PCN 9108” into the remarks of your order.



How can the change be seen?

Traceability of the change is ensured by ST internal tools.

The marking instruction indicated on the products is changing from:



B : **Assembly plant** change from

- STATS ChipPAC Shanghai China GH
- ST Muar Malaysia 9H

to

- Amkor Philippines 7B

I : **Country Of Origin** change from

- STATS ChipPAC Shanghai China CHN
- ST Muar Malaysia MYS

to

- Amkor Philippines PHL

We remain available to discuss any concern that you may have regarding this Product Change Notification.

With our sincere regards.

Michel Buffa

Microcontroller Division General Manager

List of Commercial Products

Commercial Product	Group
STM32F030C6T6	Group 2
STM32F030C6T6TR	Group 2
STM32F030C8T6	Group 2
STM32F030C8T6TR	Group 2
STM32F030CCT6	Group 1
STM32F030K6T6	Group 2
STM32F030K6T6TR	Group 2
STM32F030R8T6	Group 2
STM32F030R8T6TR	Group 2
STM32F030RCT6	Group 1
STM32F031C4T6	Group 2
STM32F031C4T6TR	Group 2
STM32F031C6T6	Group 2
STM32F031C6T6BOO	Group 2
STM32F031C6T6TR	Group 2
STM32F031C6T7	Group 2
STM32F031K6T6	Group 2
STM32F031K6T7	Group 2
STM32F038C4T6	Group 2
STM32F038C6T6	Group 2
STM32F038C6T7	Group 2
STM32F042C4T6	Group 2
STM32F042C6T6	Group 2
STM32F042C6T6TR	Group 2
STM32F042K4T6	Group 2
STM32F042K6T6	Group 2
STM32F042K6T7	Group 2
STM32F051C4T6	Group 2
STM32F051C6T6	Group 2
STM32F051C6T6TR	Group 2
STM32F051C6T7	Group 2
STM32F051C8T6	Group 2
STM32F051C8T6TR	Group 2
STM32F051C8T7	Group 2
STM32F051C8T7TR	Group 2
STM32F051K4T6	Group 2
STM32F051K4T6TR	Group 2
STM32F051K6T6	Group 2
STM32F051K6T6TR	Group 2
STM32F051K6T7	Group 2
STM32F051K6T7TR	Group 2
STM32F051K8T6	Group 2
STM32F051K8T6TR	Group 2
STM32F051K8T7	Group 2
STM32F051R4T6	Group 2
STM32F051R4T6TR	Group 2
STM32F051R6T6	Group 2
STM32F051R6T6TR	Group 2
STM32F051R6T7TR	Group 2
STM32F051R8T6	Group 2
STM32F051R8T6ENG	Group 2
STM32F051R8T6TR	Group 2
STM32F051R8T7	Group 2
STM32F051R8T7TR	Group 2
STM32F058R8T6	Group 2
STM32F070C6T6	Group 2
STM32F070CBT6	Group 1
STM32F070CBT6TR	Group 1
STM32F070RBT6	Group 1
STM32F071C8T6	Group 1
STM32F071CBT6	Group 1
STM32F071CBT6TR	Group 1
STM32F071CBT7	Group 1
STM32F071RBT6	Group 1
STM32F071RBT6TR	Group 1
STM32F071RBT7TR	Group 1
STM32F072C8T6	Group 1
STM32F072C8T6TR	Group 1
STM32F072CBT6	Group 1
STM32F072CBT6TR	Group 1
STM32F072CBT7	Group 1
STM32F072R8T6	Group 1
STM32F072R8T6TR	Group 1
STM32F072RBT6	Group 1
STM32F072RBT6TR	Group 1
STM32F078CBT6	Group 1
STM32F078RBT6	Group 1
STM32F091CBT6	Group 1
STM32F091CCT6	Group 1
STM32F091CCT6J	Group 1
STM32F091CCT7	Group 1
STM32F091RBT6	Group 1
STM32F091RCT6	Group 1
STM32F091RCT6TR	Group 1
STM32F091RCT6U	Group 1
STM32F091RCT7	Group 1
STM32F098CCT6	Group 1
STM32F098RCT6	Group 1
STM32F100C4T6B	Group 1
STM32F100C4T6BTR	Group 1
STM32F100C4T7B	Group 1
STM32F100C6T6B	Group 1
STM32F100C6T6BTR	Group 1
STM32F100C6T7B	Group 1
STM32F100C8T6B	Group 1
STM32F100C8T6BTR	Group 1
STM32F100C8T7B	Group 1
STM32F100C8T7BTR	Group 1
STM32F100CBT6B	Group 1
STM32F100CBT6BTR	Group 1
STM32F100CBT7B	Group 1
STM32F100CBT7BTR	Group 1

STM32F100R4T6B	Group 1
STM32F100R4T6BTR	Group 1
STM32F100R6T6B	Group 1
STM32F100R6T6BTR	Group 1
STM32F100R8T6B	Group 1
STM32F100R8T6BTR	Group 1
STM32F100R8T7B	Group 1
STM32F100RBT6B	Group 1
STM32F100RBT6BTR	Group 1
STM32F100RCT6	Group 1
STM32F100RCT6B	Group 1
STM32F100RCT6BTR	Group 1
STM32F100RCT6TR	Group 1
STM32F100RDT6B	Group 1
STM32F100RDT6BTR	Group 1
STM32F100RET6B	Group 1
STM32F100RET6BTR	Group 1
STM32F101C4T6A	Group 1
STM32F101C6T6A	Group 1
STM32F101C6T6ATR	Group 1
STM32F101C8GAL	Group 1
STM32F101C8T6	Group 1
STM32F101C8T6TR	Group 1
STM32F101CBT6	Group 1
STM32F101CBT6TR	Group 1
STM32F101R4T6A	Group 1
STM32F101R6T6A	Group 1
STM32F101R6T6ATR	Group 1
STM32F101R8T6	Group 1
STM32F101R8T6TR	Group 1
STM32F101RBT6	Group 1
STM32F101RBT6TR	Group 1
STM32F101RCT6	Group 1
STM32F101RCT6TR	Group 1
STM32F101RDT6	Group 1
STM32F101RDT6TR	Group 1
STM32F101RET6	Group 1
STM32F101RFT6	Group 2
STM32F101RFT6TR	Group 2
STM32F101RGT6	Group 2
STM32F101RGT6TR	Group 2
STM32F102C4T6A	Group 1
STM32F102C4T6ATR	Group 1
STM32F102C6T6A	Group 1
STM32F102C6T6ATR	Group 1
STM32F102C8T6	Group 1
STM32F102C8T6TR	Group 1
STM32F102CBT6	Group 1
STM32F102CBT6TR	Group 1
STM32F102R4T6A	Group 1
STM32F102R6T6A	Group 1
STM32F102R8T6	Group 1
STM32F102RBT6	Group 1
STM32F102RBT6TR	Group 1
STM32F102RCT6	Group 1
STM32F103C4T6A	Group 1
STM32F103C6T6A	Group 1
STM32F103C6T6ATR	Group 1
STM32F103C6T7A	Group 1
STM32F103C6T7ATR	Group 1
STM32F103C8T6	Group 1
STM32F103C8T6TR	Group 1
STM32F103C8T7	Group 1
STM32F103C8T7TR	Group 1
STM32F103CBT6	Group 1
STM32F103CBT6TR	Group 1
STM32F103CBT7	Group 1
STM32F103CBT7TR	Group 1
STM32F103R4T6A	Group 1
STM32F103R6T6A	Group 1
STM32F103R6T6ATR	Group 1
STM32F103R6T7A	Group 1
STM32F103R8T6	Group 1
STM32F103R8T6TR	Group 1
STM32F103R8T7	Group 1
STM32F103R8T7TR	Group 1
STM32F103RBT6	Group 1
STM32F103RBT6TR	Group 1
STM32F103RBT7	Group 1
STM32F103RBT7TR	Group 1
STM32F103RCT6	Group 1
STM32F103RCT6TR	Group 1
STM32F103RCT7	Group 1
STM32F103RCUVWTR	Group 1
STM32F103RDT6	Group 1
STM32F103RDT6TR	Group 1
STM32F103RET6	Group 1
STM32F103RET6TR	Group 1
STM32F103RET7	Group 1
STM32F103RFT6	Group 2
STM32F103RFT6JTR	Group 2
STM32F103RFT6TR	Group 2
STM32F103RGT6	Group 2
STM32F103RGT6TR	Group 2
STM32F103RGT7	Group 2
STM32F301C4T6	Group 1
STM32F301C6T6	Group 1
STM32F301C8T6	Group 1
STM32F301R6T6	Group 1
STM32F301R8T6	Group 1
STM32F302C4T6	Group 1
STM32F302C6T6	Group 1
STM32F302C8T6	Group 1
STM32F302C8T7	Group 1

STM32F302CBT6	Group 1
STM32F302CBT7	Group 1
STM32F302CCT6	Group 1
STM32F302R6T6	Group 1
STM32F302R8T6	Group 1
STM32F302R8T6TR	Group 1
STM32F302R8T7	Group 1
STM32F302RBT6	Group 1
STM32F302RBT6TR	Group 1
STM32F302RBT7	Group 1
STM32F302RCT6	Group 1
STM32F302RCT6TR	Group 1
STM32F302RCT7	Group 1
STM32F302RDT6	Group 1
STM32F302RDT6TR	Group 1
STM32F302RET6	Group 1
STM32F303C6T6	Group 1
STM32F303C8T6	Group 1
STM32F303CBT6	Group 1
STM32F303CBT6TR	Group 1
STM32F303CBT7	Group 1
STM32F303CCT6	Group 1
STM32F303CCT6TR	Group 1
STM32F303CCT7	Group 1
STM32F303K6T6	Group 2
STM32F303K8T6	Group 2
STM32F303R6T6	Group 1
STM32F303R8T6	Group 1
STM32F303RBT6	Group 1
STM32F303RBT6TR	Group 1
STM32F303RBT7	Group 1
STM32F303RBT7TR	Group 1
STM32F303RCT6	Group 1
STM32F303RCT6TR	Group 1
STM32F303RCT7	Group 1
STM32F303RDT6	Group 1
STM32F303RET6	Group 1
STM32F303RET6TR	Group 1
STM32F303RET7	Group 1
STM32F318C8T6	Group 1
STM32F318R8T6	Group 1
STM32F328C8T6	Group 1
STM32F328K8T6	Group 2
STM32F328R8T6	Group 1
STM32F334C4T6	Group 1
STM32F334C6T6	Group 1
STM32F334C6T7	Group 1
STM32F334C8T6	Group 1
STM32F334C8T7	Group 1
STM32F334K4T6	Group 2
STM32F334K6T6	Group 2
STM32F334K8T6	Group 2
STM32F334K8T7	Group 2
STM32F334R6T6	Group 1
STM32F334R8T6	Group 1
STM32F334R8T6TR	Group 1
STM32F334R8T7	Group 1
STM32F358CCT6	Group 1
STM32F358RCT6	Group 1
STM32F373C8T6	Group 1
STM32F373C8T6TR	Group 1
STM32F373CBT6	Group 1
STM32F373CCT6	Group 1
STM32F373CCT7	Group 1
STM32F373R8T6	Group 1
STM32F373R8T6TR	Group 1
STM32F373RBT6	Group 1
STM32F373RCT6	Group 1
STM32F373RCT6TR	Group 1
STM32F378CCT6	Group 1
STM32F378RCT6	Group 1
STM32F398RET6	Group 1
STM32F401RBT6	Group 1
STM32F401RBT6TR	Group 1
STM32F401RCT6	Group 1
STM32F401RCT6TR	Group 1
STM32F401RCT6U	Group 1
STM32F401RCT7	Group 1
STM32F401RDT6	Group 2
STM32F401RET6	Group 2
STM32F401RET6U	Group 2
STM32F411RCT6	Group 2
STM32F411RET6	Group 2
STM32F411RET6U	Group 2
STM32F446RCT6	Group 1
STM32F446RCT7TR	Group 1
STM32F446RET6	Group 1
STM32F446RET6U	Group 1
STM32FEBKC6T6A	Group 1
STM32FEBKC6T6ATR	Group 1
STM32L011K4T6	Group 2
STM32L031C6T7	Group 2
STM32L031K6T7	Group 2
STM32L051C6T6	Group 2
STM32L051C6T6TR	Group 2
STM32L051C8T3	Group 2
STM32L051C8T6	Group 2
STM32L051C8T6TR	Group 2
STM32L051C8T7	Group 2
STM32L051K6T6	Group 2
STM32L051K8T6	Group 2
STM32L051K8T7	Group 2
STM32L051R6T6	Group 2
STM32L051R8T6	Group 2

STM32L051R8T7	Group 2
STM32L052C6T6	Group 2
STM32L052C8T6	Group 2
STM32L052C8T7	Group 2
STM32L052K6T6	Group 2
STM32L052K8T6	Group 2
STM32L052K8T6D	Group 2
STM32L052K8T7	Group 2
STM32L052R6T6	Group 2
STM32L052R8T6	Group 2
STM32L052R8T7	Group 2
STM32L053C6T6	Group 2
STM32L053C6T7	Group 2
STM32L053C8T6	Group 2
STM32L053C8T6D	Group 2
STM32L053C8T6TR	Group 2
STM32L053C8T7	Group 2
STM32L053R6T6	Group 2
STM32L053R8T3	Group 2
STM32L053R8T6	Group 2
STM32L053R8T6D	Group 2
STM32L053R8T7	Group 2
STM32L062K8T6	Group 2
STM32L063C8T6	Group 2
STM32L063R8T6	Group 2
STM32L071CZT6	Group 2
STM32L071CZT7	Group 2
STM32L071KZT6	Group 2
STM32L073CZT6	Group 2
STM32L073KZT6	Group 2
STM32L073RZT6	Group 2
STM32L073RZT6U	Group 2
STM32L081KZT6	Group 2
STM32L083CZT6	Group 2
STM32L083RZT6	Group 2
STM32L100R8T6	Group 1
STM32L100R8T6A	Group 2
STM32L100R8T6TR	Group 1
STM32L100RBT6	Group 1
STM32L100RBT6A	Group 2
STM32L100RBT6ATR	Group 2
STM32L100RBT6TR	Group 1
STM32L100RCT6	Group 2
STM32L100RCT6TR	Group 2
STM32L151C6T6	Group 1
STM32L151C6T6A	Group 2
STM32L151C6T6TR	Group 1
STM32L151C8T6	Group 1
STM32L151C8T6A	Group 2
STM32L151C8T6TR	Group 1
STM32L151CBT6	Group 1
STM32L151CBT6A	Group 2
STM32L151CBT6D	Group 2
STM32L151CBT6TR	Group 1
STM32L151CCT6	Group 2
STM32L151CCT6J	Group 2
STM32L151CCT6TR	Group 2
STM32L151R6T6	Group 1
STM32L151R6T6A	Group 2
STM32L151R6T6TR	Group 1
STM32L151R8T6	Group 1
STM32L151R8T6A	Group 2
STM32L151RBT6	Group 1
STM32L151RBT6A	Group 2
STM32L151RBT6ATR	Group 2
STM32L151RBT6D	Group 2
STM32L151RBT6TR	Group 1
STM32L151RBT7A	Group 2
STM32L151RCT6	Group 2
STM32L151RCT6A	Group 1
STM32L151RCT6ATR	Group 1
STM32L151RDT6	Group 1
STM32L151RDT6TR	Group 1
STM32L151RDT7	Group 1
STM32L151RET6	Group 2
STM32L151RET6TR	Group 2
STM32L152C6T6	Group 1
STM32L152C6T6A	Group 2
STM32L152C8T6	Group 1
STM32L152C8T6A	Group 2
STM32L152CBT6	Group 1
STM32L152CBT6A	Group 2
STM32L152CCT6	Group 2
STM32L152CCT6D	Group 2
STM32L152R6T6	Group 1
STM32L152R6T6A	Group 2
STM32L152R6T6TR	Group 1
STM32L152R8T6	Group 1
STM32L152R8T6A	Group 2
STM32L152R8T6TR	Group 1
STM32L152RBT6	Group 1
STM32L152RBT6A	Group 2
STM32L152RCT6	Group 2
STM32L152RCT6A	Group 1
STM32L152RCT6D	Group 2
STM32L152RDT6	Group 1
STM32L152RET6	Group 2
STM32L162RCT6	Group 2
STM32L162RCT6A	Group 1
STM32L162RDT6	Group 1
STM32L162RDT6TR	Group 1
STM32L162RET6	Group 2
STM32L476RCT6	Group 2
STM32L476RET6	Group 2

STM32L476RGT6	Group 2
STM32L476RGT6U	Group 2
STM32L486RGT6	Group 2
STM32LP151NTOTR	Group 1
STM32P051C8JAETR	Group 2
STM32P072RBMBYTR	Group 1
STM32P101CBMBD	Group 1
STM32P101CBMBDTR	Group 1
STM32P101RCMBR	Group 1
STM32P101RCMBRTR	Group 1
STM32P101RCMCF	Group 1
STM32P101RFMBP	Group 2
STM32P102C8MAPTR	Group 1
STM32P103C8MBCTR	Group 1
STM32P103CBMAZTR	Group 1
STM32P103MAYATR	Group 1
STM32P103RFMBB	Group 2
STM8L052R8T6	Group 1
STM8L052R8T6TR	Group 1
STM8L101K3T3	Group 2
STM8L101K3T6	Group 2
STM8L151C2T6	Group 1
STM8L151C3T3	Group 1
STM8L151C3T6	Group 1
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STM8L151C8T6	Group 1
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STM8L151R6T6TR	Group 1
STM8L151R8T6	Group 1
STM8L151R8T6TR	Group 1
STM8L152C8T6	Group 1
STM8L152C8T6TR	Group 1
STM8L152R6T6	Group 1
STM8L152R6T6TR	Group 1
STM8L152R8T3	Group 1
STM8L152R8T6	Group 1
STM8L162R8T6	Group 1
STM8LP151T6MCETR	Group 1
STM8LP151T6MEJ	Group 1
STM8LP151T6MEJTR	Group 1
STM8S003K3T6C	Group 2
STM8S003K3T6CTR	Group 2
STM8S103K3T3C	Group 2
STM8S103K3T3CTR	Group 2
STM8S103K3T6C	Group 2
STM8S103K3T6CTR	Group 2
STM8S105S4T6C	Group 2
STM8S105S4T6CTR	Group 2
STM8S105S6T3C	Group 2
STM8S105S6T6C	Group 2
STM8S105S6T6CTR	Group 2
STM8S207S6T3C	Group 2
STM8S207S6T3CTR	Group 2
STM8S207S6T6C	Group 2
STM8S207S6T6CTR	Group 2
STM8S207S8T3C	Group 2
STM8S207S8T3CTR	Group 2
STM8S207S8T6C	Group 2
STM8S207S8T6CTR	Group 2
STM8S207SBT3C	Group 2
STM8S207SBT6C	Group 2
STM8S208S6T3C	Group 2
STM8S208S6T6C	Group 2
STM8S903K3T3C	Group 2
STM8S903K3T3CTR	Group 2
STM8S903K3T6C	Group 2
STM8S903K3T6CTR	Group 2
STM8SP103K3MAZTR	Group 2
STM8SP103K3MBZTR	Group 2

MMS- MCD RER1313 Reliability Report

Qualification Type : ASSEMBLY LINE QUALIFICATION

AMKOR ATP1 Philippines additional source for STM8 and STM32 standard products in LQFP7x7 & 10x10 packages

(PCN MMS-MIC/14/8363 dated 31 Mar 2014)

Product / Process & Package Information	**Test Vehicle 1 LQFP7*7 48L**	**Test Vehicle 2 LQFP7*7 32L**	***Test Vehicle 3 (LQFP7*7 48L for monitoring)***	**Test Vehicle 4 LQFP10*10 64L**	**Test Vehicle 5 LQFP10*10 64L**
Commercial Product:	STM8L152C4T6	STM8S207K8TC	STM8S105C6T6	STM32F205RGT6	STM32F105RCT6
Product Line:	STM8L/ die 764	STM8S/ die 765	STM8S/ die 766	STM32F/ die 411	STM32F/ die 418
Product Description:	Micro 8bits	Micro 8bits	Micro 8bits	Micro 32bits	Micro 32bits
Finish Good Code:	ES8L152C4T6 $P3	ES8S207K8TCOR$PC	ES8S105C6T6OR $P8	ES32F205RGT6 $P7	ES32F105RCT6 $P2
Mask Set Revision:	F764XXXZ	F765XXXV	F766XXXX	E411XXX1	F418XXXZ
Silicon Process Technology:	CMOSF9GO2	CMOSF9GO1	CMOSF9GO1	CMOS M10T 90nm	CMOS M8 0.18µm EMBEDDED FLASH
Wafer Fabrication Location:	ST Rousset France	ST Rousset France	ST Rousset France	ST Crolles France	TSMC Fab 3 Taiwan
Electrical Wafer Sort Test Plant Location:	Asia Pac Singapore EWS ST Singapore	Asia Pac Singapore EWS ST Singapore	Asia Pac Singapore EWS ST Singapore	Asia Pac Singapore EWS ST Singapore	ARDENTEC Hsinchu EWS Taiwan
Package:	LQFP 48 7x7x1.4	LQFP 32 7x7x1.4	LQFP 48 7x7x1.4	LQFP 64 10X10X1.4	LQFP 64 10X10X1.4
Assembly Plant location:	AMKOR ATP1 Philippines	AMKOR ATP1 Philippines	AMKOR ATP1 Philippines	AMKOR ATP1 Philippines	AMKOR ATP1 Philippines
Final Test plant location:	AMKOR ATP1 Philippines	AMKOR ATP1 Philippines	AMKOR ATP1 Philippines	AMKOR ATP1 Philippines	AMKOR ATP1 Philippines

Approval List			
Function	**Location**	**Name**	**Date**
Division Q&R Responsible	ST Rousset	Gisèle SEUBE	Nov 6th, 2014
Division Quality Manager	ST Rousset	Pascal NARCHE	Nov 6th, 2014

Contents

1 RELIABILITY RESULTS OVERVIEW

1.1 Objectives

This report summarizes the reliability results for LQFP7*7-10*10 packages manufactured at of AMKOR ATP1.

Product	Package
STM8L152C4T6	LQFP 7x7x1.4- 48Leads
STM8S207K8TC	LQFP 7x7x1.4- 32Leads
STM8S105C6T6	*LQFP 7x7x1.4- 48Leads*
STM32F205RGT6	LQFP 10x10x1.4- 64Leads
STM32F105RCT6	LQFP 10x10x1.4- 64Leads

1.2 Context

In order to sustain the strong demand on STM8 and STM32 devices and provide a better service to our customers, ST Microcontrollers Division qualified Amkor ATP1 (Philippines) as an additional manufacturing site for standard STM8 and STM32 family products, assembled in LQFP 7x7 and LQFP 10x10 packages.

Changes are described in the below table:

	Existing manufacturing sites		Added manufacturing site
Assembly site	STATS ChipPAC Shanghai China	ST Muar Malaysia	Amkor ATP1 Philippines
Leadframe	Copper Frame Spot Ag	Pre Plated Frame	Copper Frame Spot Ag
Leadfinishing	Pure Tin (e3)	Ni Pd Au (e4)	Pure Tin (e3)
Resin	Sumitomo G700E	Sumitomo : - G700LS for LQFP 7x7 - G700F for LQFP 10x10	Sumitomo G631HQ
Glue	Ablestik 3230	Hitachi EN4900	Evertech AP4200
Test site	STATS ChipPAC Shanghai China	ST Muar Malaysia	Amkor ATP1 Philippines
Strip test	No	Yes for LQFP 7x7 No for LQFP 10x10	Yes

Changes will be qualified using the standard STMicroelectronics Corporate Procedures for Quality and Reliability, in full compliancy with the JESD-47 international standard.

1.3 Conclusion

All reliability tests have been completed with positive results. Neither functional nor parametric rejects were detected at final electrical testing.
According to the positive reliability results, the pre-qualification is granted for LQFP7*7-10*10 assembly and test line at AMKOR ATP1.

2 RELIABILITY TEST VEHICLES Characteristics

2.1 Reliability Test vehicles description

Package line	Assembly Line	Package	Device (Partial RawLine Code)	Diffusion Process	Number of Lots
1	**LQFP 7x7**	32L Pure Sn	STM8S (5V*765)	F9GO1	1
		48L Pure Sn	STM8L (5B*764) *STM8S (5B*766)*	F9GO2 *F9GO1*	1 *1 Monitoring*
2	**LQFP 10x10**	64L Pure Sn	STM32F (5W*411) STM32F (5W*418)	M10 0.18µm embedded Flash	1 1

2.2 Reliability Information

Lot ID	Qual Lot 1	Qual lot 2	Monitoring lot 3	Qual lot 4	Qual lot 5
Die Name /cut:	764Z	765V	766X	411-1	418Z
Diffusion Lot Number:	G3486591	G3491882	VG4110011	VQ332500	CBM483
Wafer ID:	G3486591=2	G3491882=2	G41100111	VQ332500	93349041
Trace Code:	QL414223	QL412458	7B4431442	QL417293	QL417468
EWS location:	ST Singapore	ST Singapore	ST Singapore	ST Singapore	Ardentec Taiwan
Assy Location:	AMKOR ATP1	AMKOR ATP1	AMKOR ATP1	AMKOR ATP1	AMKOR ATP1
Assy lot number	G3486591=2	G3491882=2	G41100111	Q3325001	93349041
FT location:	Qual Sample : ST Muar Production ATP	Qual Sample: ST Muar Production ATP	Qual Sample: ST Muar Production ATP	Qual Sample: ST Muar Production ATP	Qual Sample: ST Muar Production ATP
Raw Line Code Package:	P35B*764ESXZ	P55V*765ESXV	P35B*766ESXX	P15W*411ESX1	P15W*418ESXZ
Reliability Lab location :	ST Muar	ST Muar	ST Muar	ST Muar	ST Muar

2.3 Front-End information

Front-End	Qual Lot 1	Qual lot 2	Monitoring lot 3	Qual lot 4	Qual lot 5
Wafer Fab Name:	ST Rousset	ST Rousset	ST Rousset	ST Crolles	TSMC Fab3
Wafer Fab Location:	France	France	France	France	Taiwan
Process Technology Name:	CMOSF9GO2	CMOSF9GO1	CMOSF9GO1	CMOS M10T 90nm	CMOS M8 0.18µm EMBEDDED FLASH
Wafer Diameter:	8 inches	8 inches	8 inches	12 inches	8 inches
Wafer Thickness:	375+/-25 µm	375+/-25 µm	375+/-25 µm	775+/-25 µm	381+/-25 µm
Die Size:	1.738x2.876 mm	3.010 x 2 .458 mm	2.118 x 2.358 mm	4.006 x 3.674 mm	4.292 x 4.348 mm
Technology Mask Revision Number:	Z	V	Y	1	Z
Scribe Line size x/y:	80/80 µm	80/80 µm	80/80 µm	80/80 µm	80/80µm
Pad Die Size /Pad type:	65x108 µm/ CUP	65x108 µm/ CUP	65x108 µm/ CUP	59x123µm CUP 63x73µm CUP	65x70µm CUP
Metal Layers Number /Materials /Thickness:	Metal1 TaN/Ta/Cu 0.260 µm Metal2 TaN/Ta/Cu 0.360 µm Metal3 TaN/Ta/Cu 0.360 µm Metal4 TaN/Ta/Cu 0.360 µm Metal5 Ti/AlCu/TxTN 0.900 µm	Metal1 TaN/Ta/Cu 0.280 µm Metal2 TaN/Ta/Cu 0.350 µm Metal3 TaN/Ta/Cu 0.350 µm Metal4 Ti/AlCu/TxTN 0.900 µm	Metal1 TaN/Ta/Cu 0.280 µm Metal2 TaN/Ta/Cu 0.350 µm Metal3 TaN/Ta/Cu 0.350 µm Metal4 Ti/AlCu/TxTN 0.900 µm	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 1.200 µm	Metal 1 Tin/AlCu/Tin 0.450 µm Metal 2 Tin/AlCu/Tin 0.450 µm Metal 3 Tin/AlCu/Tin 0.450 µm Metal 4 Tin/AlCu/Tin 0.450 µm Metal 5 Tin/AlCu/Tin 0.875 µm
Passivation Layers Thickness:	USG oxide + Nitride UV (12kA + 5.5kA)	USG oxide + Nitride UV (12kA + 5.5kA)	USG oxide + Nitride UV (12kA + 5.5kA)	PSG 6kA + Nitride 5kA	HDPox 10kA+SRO 1.5kA+PESIN 6kA
Back Metal Finishing	RAW SILICON - BACK GRINDING	RAW SILICON - BACK GRINDING	RAW SILICON - BACK GRINDING	RAW SILICON - BACK GRINDING	RAW SILICON - BACK GRINDING

2.4 Back-End information

Back-End	Qual Lot 1	Qual lot 2	Monitoring lot 3	Qual lot 4	Qual lot 5
Package Description:	LQFP 7x7x1.4 48L	LQFP 7x7x1.4 32L	LQFP 7x7x1.4 48L	LQFP 10x10x1.4 64L	LQFP 10x10x1.4 64L
Assembly Plant Name:	AMKOR ATP1	AMKOR ATP1	AMKOR ATP1	AMKOR ATP1	AMKOR ATP1
Assembly Plant Location/ Address:	Amkor Technology Km.22 East Service Road, South Superhighway Cupang, Muntinlupa 1702 Philippines	Amkor Technology Km.22 East Service Road, South Superhighway Cupang, Muntinlupa 1702 Philippines	Amkor Technology Km.22 East Service Road, South Superhighway Cupang, Muntinlupa 1702 Philippines	Amkor Technology Km.22 East Service Road, South Superhighway Cupang, Muntinlupa 1702 Philippines	Amkor TechnologyKm. 22 East Service Road, South Superhighway Cupang, Muntinlupa 1702 Philippines
Die Thickness after Back grinding:	NA	NA	NA	375+/-25µm	NA
Die sawing method:	Step cut	Step cut	Step cut	Step cut	Step cut
Die attach material: Type: Supplier:	Glue AP4200 Evertech	Glue AP4200 Evertech	Glue AP4200 Evertech	Glue AP4200 Evertech	Glue AP4200 Evertech
Lead frame material: L/F Finishing Type: Die paddle size: Supplier:	LQFP7x7 48L Cu sp Ag 4.1sq SHINKO	LQFP7x7 32L Cu sp Ag 3.5sq SHINKO	LQFP7x7 48L Cu sp Ag 4.1sq SHINKO	LQFP10x10 64L Cu spAg 4.5sq MITSUI	LQFP10x10 64L Cu spAg 6sq MITSUI
Wire bonding: Type /Diameter: Supplier:	GOLD WIRE 2N 0.8MIL MKE	GOLD WIRE 2N 0.8MIL MKE	GOLD WIRE 2N 0.8MIL MKE	GOLD WIRE 2N 0.8MIL HERAEUS	GOLD WIRE 2N 0.8MIL HERAUS
Pitch:	80µm	80µm	80µm	65µm	80µm
POA:	0110596	0060661	0110596	0051434	0051434
Molding Compound Supplier:	Resin G631HQ Sumitomo	Resin G631HQ Sumitomo	Resin G631HQ Sumitomo	Resin G631HQ Sumitomo	Resin G631HQ Sumitomo
Package Moisture Sensitivity Level (JEDEC J-STD020D):	3 (1 WEEK at <=30C/60%RH)	3 (1 WEEK at <=30C/60%RH)	3 (1 WEEK at <=30C/60%RH)	3 (1 WEEK at <=30C/60%RH)	3 (1 WEEK at <=30C/60%RH)

3 RELIABILITY RESULTS SUMMARY

3.1 Die Oriented Tests

	Die Related Tests					Results LQFP7*7	
Description	***Test/Method***	***Conditions***	***Sample Size***	***Criteria***	***Readout / Duration***	***Die 764***	***Die 765***
Electrostatic discharge - Charge Device Model							
ESD CDM	ANSI/ESD STM5.3.1	500V	3 units	500V	NA	0/ 3	0/ 3

	Die Related Tests					Results LQFP10*10	
Description	***Test/Method***	***Conditions***	***Sample Size***	***Criteria***	***Readout / Duration***	***Die 411***	***Die 418***
Electrostatic discharge - Charge Device Model							
ESD CDM	ANSI/ESD STM5.3.1	500V	3 units	500V	NA	0/ 3	0/ 3

3.2 Package Oriented Test LQFP7*7

	Package Related Tests					Results LQFP7*7		
Description	***Test/Method***	***Conditions***	***Sample Size***	***Criteria***	***Readout / Duration***	***Die 764***	***Die 765***	***Die 766***
Preconditioning: moisture sensitivity level 3								
PC	J-STD-020D JESD22-A113	MSL3	308 units	Electrical test: A0/R1 (Accepted 0 reject/ Rejected 1 reject)	NA	0/308	0/308	0/308
Delamination after preconditioning								
Delamination		SAM	60 units	Delamination A0/R1	NA	0/60	0/60	0/60
High Temperature Storage Life								
HTSL	JESD 22A103	150°C	77 units	Elect test A0/R1	1000h	0/77	0/77	0/77
Thermal Cycling after Preconditioning								
TC	JESD 22A104	-65c/+150°c	77 units	Elect test A0/R1	500cy	0/77	0/77	0/77
Autoclave after Preconditioning								
AC	JESD 22A102	121°C ,100% RH	77 units	Elect test A0/R1	96h	0/77	0/77	0/77

Temperature Humidity Bias after Preconditioning								
THB	JESD 22A110	85°C/85%RH Biased	77 units	Elect test A0/R1	1000h	NA	0/77	0/77
Temperature Humidity Storage after Preconditioning								
THS	JESD 22A118	85°C/85%RH no Bias	77 units	Elect test A0/R1	1000h	0/77	NA	NA
Physical Dimension								
Dimension measurement	JESD 22B100/B108		10 units	Measurement A0R1	NA	0/10	0/10	NA
Solderability								
Lead Solderability	JESD 22B102		45 leads	Visual inspection A0R1	NA	0/45	0/45	NA

3.3 Package Oriented Test LQFP10*10

	Package Related Tests					**Results LQFP 10*10**	
Description	***Test/Method***	***Conditions***	***Sample Size***	***Criteria***	***Readout / Duration***	***Die 411***	***Die 418***
Preconditioning: moisture sensitivity level 3							
PC	J-STD-020D JESD22-A113	MSL3	308 units	Electrical test: A0/R1 (Accepted 0 reject/ Rejected 1 reject)	NA	0/308	0/308
Delamination		SAM	60 units	Delamination A0/R1	NA	0/60	0/60
High Temperature Storage Life							
HTSL	JESD 22A103	150°C	77 units	Elect test A0/R1	1000h	0/77	0/77
Thermal Cycling after Preconditioning							
TC	JESD 22A104	-65c/+150°c	77 units	Elect test A0/R1	500cy	0/77	0/77
Autoclave after Preconditioning							
AC	JESD 22A102	121°C ,100% RH	77 units	Elect test A0/R1	96h	0/77	0/77
Temperature Humidity Bias after Preconditioning							
THB	JESD 22A110	85°C/85%RH Biased	77 units	Elect test A0/R1	1000h	0/77	NA
Temperature Humidity Storage after Preconditioning							
THS	JESD 22A118	85°C/85%RH no Bias	77 units	Elect test A0/R1	1000h	NA	0/77

Physical Dimension							
Dimension measurement	JESD 22B100/B108		10 units	Measurement A0R1	NA	0/10	0/10
Solderability							
Lead Solderability	JESD 22B102		45 leads	Visual inspection A0R1	NA	0/45	0/45

4 APPLICABLE AND REFERENCE DOCUMENTS

ADCS/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 from product qualification
SOP 2.6.19:	Process maturity level
ANSI-ESD STM5.3.1:	Electrostatic discharge (ESD) sensitivity testing charge device model (CDM)
JESD 22-A103	High Temperature Storage Life
J-STD-020D:	Moisture/reflow sensitivity classification for non-hermetic solid state surface mount devices
JESD22-A113:	Preconditioning of non-hermetic surface mount devices prior to reliability testing
JESD22-A102	Autoclave test (pressure pot)
JESD22-A104:	Temperature cycling
JESD22-A118:	Temperature Humidity Storage
JESD22-A110:	Temperature Humidity Bake
JESD 22B102:	Solderability test
JESD22B100/B108:	Physical dimension

5 GLOSSARY AND TESTS DESCIPTION

ESD CDM	Electrostatic discharge (charge device model)
PC	Preconditioning (solder simulation)
THB	Temperature humidity bias
THS	Temperature Humidity storage
TC	Temperature cycling
AC	Autoclave
HTSL	High temperature storage life
SAM	Scanning Acoustic Microscopy
ADCS/DMS	ST Advanced Documentation Controlled system/ Documentation Management system

6 REVISION HISTORY

Version	Date	Author	Comment
1.0	Aug 22nd, 2014	Gisele SEUBE	Initial release for pre-qualification
1.1	Sept 25th, 2014	Gisele SEUBE	Updated results for monitoring lot die 766
1.2	Nov 6th, 2014	Gisele SEUBE	Updated of final results for monitoring lot die 766

RERMCD1515 reliability plan for ATP LQFP7*7-10*10 - PCN 9108

Reliability Evaluation Plan

June16th 2015

MMS MCD Quality & Reliability Department

life.augmented

PCN9108- RERMCD1515 reliability plan for AMKOR ATP LQFP7*7-10*10 additional back end source

- Context :

- In order to sustain the strong demand on STM8 and STM32 devices and provide a better service to our customers, ST Microcontrollers Division will add ATP (Philippines) back-end source for standard STM8 and STM32 family products in LQFP 7x7 and LQFP 10x10 packages.

- This line is already qualified and running production in volume(ref to RERMCD1313 reliability report).

- RERMCD1515 Reliability evaluation plan will be conducted to qualify STM8 and STM32 products not covered by RERMCD1313 results.

RERMCD1515
STM8 & STM32 TEST VEHICLES

Package line	Assembly Line	Package	Device (Partial RawLine Code)	Diffusion Process	Number of Lots
LQFP	LQFP7*7	32L	STM8L (5V*767) STM32 (5V*438)	F9GO1 TSMC 0.18µm	**1** **1**
		48L	STM32L (5B*425) STM32F (5B*444)	F9GO2S TSMC 0.18µm	**1** **1**
	LQFP10*10	64L	STM32F (5W*458) STM32F (5W*430) STM32L (5W*415) STM32L(5W*447)	M10 TSMC 0.18µm TSMC 90nm F9GO2S	**1** **1** **1** **1**
		44L	STM8S(4Y*766)	F9GO1	**1**

RERMCD 1515
STM8-STM32 LQFP7x7-10x10
RELIABILITY TRIALS

Package Reliability Trials :

(*) tests performed after preconditioning

Reliability Trial		Test Conditions	Pass Criteria	Unit per Lot	Lot qty
PC	Pre Conditioning: Moisture Sensitivity Jedec Level 3 J-STD-020/ JESD22-A113	Bake (125°C / 24 hrs) Soak (30°C / 60% RH / 192 hrs) for level 3 Convection reflow: 3 passes with Jedec level 3	3 passes MSL3	308	**1/ device**
AC or Uhast(*)	Autoclave JESD22 A102 UnBiased Highly Accelerated Temperature and Humidity Stress JESD22 A118	121°C, 100% RH, 2 Atm 130°C, 85%RH, 2 atm	96h	77	**1/ device**
TC(*)	Thermal Cycling JESD22 A104	-50°C, +150°C	1000Cy	77	**1/ device**
THB(*) or THS(*)	Temperature Humidity Bias JESD22 A101	85°C, 85% RH, bias	1000h	77	**1/ device**
	Temperature Humidity Storage JESD22 A110	85°C, 85% RH, no bias	1000h	77	
HTSL	High Temperature Storage Life JESD22 A103	150°C- no bias	1000h	77	**1/ device**
ESD	ESD Charge Device Model ANSI/ESD STM5.3.1	250V	250V	3	**1/ device**

Public Products List

PCN Title : Amkor ATP (Philippines) additional back-end source for STM8 and STM32 non automotive products in LQFP 7x7 & 10x10 packages

PCN Reference : MMS/15/9108

PCN Created on : 19-Feb-2015

Subject : Public Product List

Dear Customer,

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

STM8S207S6T3CTR	STM32F303RET7	STM32F103RDT6TR
STM32F101R8T6	STM32F101R8T6TR	STM8S903K3T6CTR
STM32L063R8T6	STM32F091RBT6	STM32F051C8T6
STM32F103RCT6	STM32L151RCT6ATR	STM32L053R8T7
STM32F102R6T6A	STM32F070C6T6	STM8L152R6T6
STM8L101K3T6	STM32F103CBT6	STM32F103R8T6
STM32L052C6T6	STM8S103K3T6CTR	STM32F100RBT6B
STM32L476RGT6	STM32F334K4T6	STM8L151C8T6
STM32F101RBT6	STM32F103CBT7	STM32F100C6T6BTR
STM32F334K8T7	STM32L151R8T6A	STM32L053C8T6
STM32F101RCT6TR	STM32F102R8T6	STM32F030C8T6
STM32F038C6T6	STM32F103C8T6TR	STM32F100CBT6B
STM32F373RCT6TR	STM32F103RDT6	STM32F030K6T6
STM32F302RDT6	STM32F103RCT7	STM32F051K6T7TR
STM32F030C8T6TR	STM32F100C8T6B	STM32F101RDT6
STM32F072R8T6	STM32F103C8T7	STM8L152R8T6
STM32L151CBT6	STM32F042C4T6	STM32F072C8T6
STM32L152RDT6	STM32L051R8T6	STM8S903K3T6C
STM32F100R8T7B	STM32F031K6T7	STM32L051R6T6
STM32F100RBT6BTR	STM32F070RBT6	STM32L151CBT6TR
STM32F103RFT6	STM8S207S8T3CTR	STM32F101CBT6
STM32F303CBT6TR	STM8S103K3T3CTR	STM32F100RCT6B
STM32L152R8T6TR	STM32L151RBT6A	STM32F334K8T6
STM32F102C8T6TR	STM32F100R6T6B	STM32L051C8T7
STM32F051R8T6	STM32F103RBT6	STM32F373CBT6
STM32L152RCT6A	STM32F101CBT6TR	STM32F101RDT6TR
STM32F072R8T6TR	STM32F100C6T6B	STM32F101R4T6A
STM32F051C4T6	STM8S207S6T3C	STM32L151C8T6A
STM32F051K6T7	STM32L151RDT6TR	STM32F101RET6
STM32F401RDT6	STM32F401RCT6	STM32F103CBT6TR
STM32F051C6T6TR	STM32F302C6T6	STM32L162RCT6
STM8L151R6T6	STM32F100R8T6B	STM32F051K8T7
STM32F103C8T7TR	STM8S208S6T3C	STM32F072CBT6
STM32F103RET7	STM32F102CBT6TR	STM8L052R8T6TR
STM32F101C6T6A	STM32F103R6T6ATR	STM32F103C6T6A
STM32F102C4T6A	STM32F328C8T6	STM32F100C8T6BTR

STM32F051R6T6TR	STM32F303RCT6	STM32F373RCT6
STM32F031C6T7	STM32F103RET6	STM32F103R4T6A
STM32L151RET6	STM32F102C8T6	STM32F038C6T7
STM32L151R6T6TR	STM8S105S4T6C	STM32F072RBT6
STM32F102RBT6	STM32F102CBT6	STM8S207S6T6CTR
STM32F051C8T7TR	STM32F102RBT6TR	STM32F101RBT6TR
STM8S103K3T3C	STM32L051K8T6	STM32F051K6T6TR
STM32F103C4T6A	STM32L100R8T6A	STM8S105S6T6C
STM32F071CBT6TR	STM32F302R6T6	STM32F373R8T6TR
STM8L152C8T6	STM32L151CCT6TR	STM32F091RCT6
STM32L051C8T6TR	STM32F103R6T6A	STM32L152RBT6A
STM32F103CBT7TR	STM8S207S6T6C	STM32F302RCT6TR
STM32F401RET6	STM8L151C2T6	STM32L052K6T6
STM8S003K3T6C	STM8S207S8T3C	STM32F301C8T6
STM32F051R4T6	STM32F334C8T6	STM32F334C4T6
STM32F334C8T7	STM32F303CBT7	STM32F100RDT6BTR
STM32L052K8T6	STM32L151RBT6D	STM32L152CCT6
STM32F103R8T7TR	STM32F100CBT6BTR	STM32F103RET6TR
STM32F071RBT7TR	STM32F378CCT6	STM32L053C6T6
STM32L053R6T6	STM32F100C4T6BTR	STM32F303RET6
STM32F100R4T6B	STM32F051R8T6TR	STM32F091RCT6TR
STM8L151C8T7	STM8L151R8T6TR	STM32F103C6T7A
STM32F103R8T6TR	STM32F078CBT6	STM32F401RBT6
STM32F051K4T6TR	STM32F103C8T6	STM32F101RCT6
STM32L152CBT6A	STM32F373C8T6	STM32F072RBT6TR
STM32F101RFT6	STM32F303R8T6	STM32F103RCT6TR
STM8S105S4T6CTR	STM32F303CBT6	STM32L486RGT6
STM32F030R8T6	STM32F303C8T6	STM32L051K8T7
STM32L053C6T7	STM32L051C8T3	STM32F373RBT6
STM8S207S8T6C	STM32F401RBT6TR	STM32F051R8T7
STM32F102C4T6ATR	STM32F411RCT6	STM32L476RET6
STM32L052R8T7	STM32F051C6T6	STM32F334K6T6
STM32L162RET6	STM32F303RCT7	STM32L052R6T6
STM32L152R6T6	STM32L100RCT6	STM32F102R4T6A
STM32F031C4T6	STM32F051K4T6	STM32F051K6T6
STM32F100R8T6BTR	STM32L162RDT6	STM32L152R6T6TR
STM32F303R6T6	STM32F030K6T6TR	STM32F446RCT6
STM32L151C8T6TR	STM32L051C8T6	STM32F103RGT6
STM32F100R4T6BTR	STM8S207SBT3C	STM8S105S6T6CTR
STM32L052R8T6	STM32L100R8T6	STM32F378RCT6
STM32F302RCT6	STM32L151RBT6TR	STM8L151C3T6
STM32F030C6T6TR	STM32L151C6T6A	STM32F101C6T6ATR
STM32F334R8T6	STM32F100CBT7B	STM32F031C6T6TR
STM32F302RCT7	STM32F031C6T6	STM32L151RDT7
STM32F101C8T6	STM32L052K8T6D	STM32L162RDT6TR
STM32F373CCT6	STM32L152RCT6	STM32F302C8T7
STM32F373R8T6	STM32F373C8T6TR	STM32F042K6T6
STM32F100C8T7B	STM32F051K8T6TR	STM32F303RET6TR
STM32F302CBT6	STM32F303K8T6	STM32F103R8T7
STM32L151RBT6ATR	STM8S105S6T3C	STM32L100R8T6TR

STM32L152R8T6A	STM32F058R8T6	STM32L151CCT6J
STM32F301R8T6	STM32L151RBT6	STM32F051R6T6
STM32L100RBT6	STM32L152C8T6	STM32L100RBT6ATR
STM32L100RCT6TR	STM32F334R8T7	STM32F071RBT6
STM32L151RDT6	STM32F072C8T6TR	STM8S903K3T3CTR
STM32F042K6T7	STM32F078RBT6	STM32F051R6T7TR
STM32F303K6T6	STM32F051R4T6TR	STM32F070CBT6
STM32F334C6T7	STM32L053C8T6D	STM32L051C6T6
STM32F302RBT7	STM8S208S6T6C	STM32L053C8T7
STM32F358RCT6	STM8L151C8T3	STM32F302R8T6TR
STM32L152CBT6	STM32L151C8T6	STM8L101K3T3
STM8L151C8T6TR	STM8S207S8T6CTR	STM32F302RDT6TR
STM32L053R8T6	STM32F030C6T6	STM32F030CCT6
STM32F030RCT6	STM32F031K6T6	STM32F030R8T6TR
STM32L151R6T6A	STM32L152R6T6A	STM32F051K8T6
STM32F103RFT6JTR	STM32F102C6T6ATR	STM32F302C8T6
STM32F101R6T6ATR	STM32F072CBT6TR	STM8S207SBT6C
STM32F031C4T6TR	STM32F070CBT6TR	STM32F051C8T6TR
STM32L062K8T6	STM32F100RDT6B	STM32F098RCT6
STM32L100RBT6A	STM8L162R8T6	STM32F301C6T6
STM32F301R6T6	STM32L051R8T7	STM32F071CBT6
STM32F102C6T6A	STM32F091CCT7	STM32L151R6T6
STM32F051C6T7	STM32L063C8T6	STM8L151C3T3
STM32L152C6T6A	STM32F303CCT6TR	STM32F091CBT6
STM32F091CCT6J	STM32L151R8T6	STM32F303CCT6
STM32F401RCT6TR	STM32F100R6T6BTR	STM32F334C6T6
STM32F302CCT6	STM32F334R6T6	STM8L151R8T6
STM32L152C8T6A	STM32F302R8T6	STM32F303RBT6
STM32F100C4T6B	STM32F302CBT7	STM32L151C6T6TR
STM32L151CCT6	STM32F100CBT7BTR	STM8S103K3T6C
STM32F103C6T7ATR	STM32F100C6T7B	STM8L152R6T6TR
STM32F098CCT6	STM32F401RCT7	STM32F071RBT6TR
STM32L052K8T7	STM32L151RET6TR	STM32L162RCT6A
STM32L151RCT6	STM32F071CBT7	STM32F302RBT6TR
STM32F101RGT6	STM8L152C8T6TR	STM32F103R6T7A
STM32F051C8T7	STM32F103RFT6TR	STM32F358CCT6
STM32F091RCT7	STM32F101R6T6A	STM32L152R8T6
STM32F042C6T6	STM32F303RCT6TR	STM32F303RBT7
STM32F101RGT6TR	STM32L151RBT7A	STM32F302RET6
STM32L151RCT6A	STM32L151CBT6A	STM32F100RET6B
STM32L051K6T6	STM32F100C8T7BTR	STM32L052C8T6
STM32L151CBT6D	STM32L053C8T6TR	STM8S003K3T6CTR
STM32L052C8T7	STM32F446RET6	STM32F100RET6BTR
STM32F303C6T6	STM32L152C6T6	STM32L152RET6
STM32L051C6T6TR	STM32F100C4T7B	STM32F091CCT6
STM32F303RDT6	STM32L053R8T3	STM8L052R8T6
STM32F411RET6	STM32F103RGT6TR	STM32F318C8T6
STM32L152RBT6	STM32F302RBT6	STM32L151C6T6
STM32F302R8T7	STM32L100RBT6TR	STM32F334R8T6TR
STM8L152R8T3	STM32F103RGT7	

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