



PRODUCT/PROCESS CHANGE NOTIFICATION

PCN MMS-MIC/14/8390
Dated 07 May 2014

**STM8 & STM32 products in LQFP 14x14 & 20x20 packages -
Transfer assembly & test sites from Amkor ATK (Korea)
to Amkor ATP (Philippines)**

Table 1. Change Implementation Schedule

Forecasted implementation date for change	07-Nov-2014
Forecasted availability date of samples for customer	03-Oct-2014
Forecasted date for STMicroelectronics change Qualification Plan results availability	03-Oct-2014
Estimated date of changed product first shipment	07-Nov-2014

Table 2. Change Identification

Product Identification (Product Family/Commercial Product)	STM8 & STM32 products in LQFP 14x14 & 20x20
Type of change	Package assembly location change
Reason for change	Amkor ATK1 (Korea) assembly site closure
Description of the change	Due to Amkor ATK1 (Korea) assembly site closure, ST Microcontrollers Division intends to transfer manufacturing sites of LQFP 14x14 and 20x20 packages for standard STM8 and STM32 family products, from Amkor ATK (Korea) to Amkor ATP (Philippines).
Change Product Identification	See indicated below
Manufacturing Location(s)	

DOCUMENT APPROVAL

Name	Function
Colonna, Daniel	Marketing Manager
Buffa, Michel	Product Manager
Narche, Pascal	Q.A. Manager



PRODUCT/PROCESS CHANGE NOTIFICATION

STM8 & STM32 products in LQFP 14x14 & 20x20 packages Transfer assembly & test sites from Amkor ATK (Korea) to Amkor ATP (Philippines)

MMS - Microcontrollers Division (MCD)

Dear Customer,

Due to Amkor ATK1 (Korea) assembly site closure, ST Microcontrollers Division has decided to transfer manufacturing sites of LQFP 14x14 & 20x20 packages for standard STM8 and STM32 family products, from Amkor ATK (Korea) to Amkor ATP (Philippines).

What are the changes?

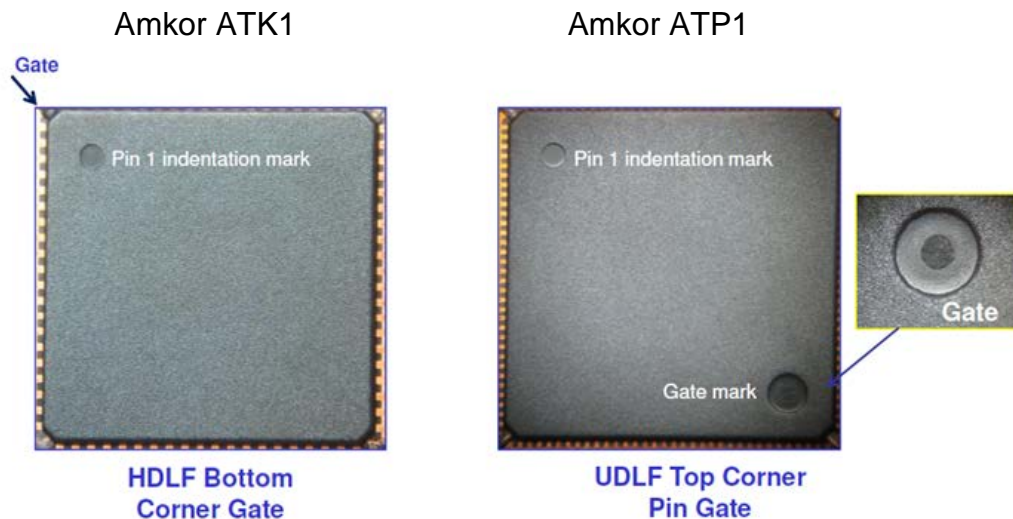
New Bill Of Material is described below:

	Previous	New
Assembly site	Amkor ATK1 (Korea)	Amkor ATP1 (Philippines)
Test site	Amkor ATK3 (Korea)	Amkor ATP3 (Philippines)
Mold compound	Nitto GE7470LQ	Sumitomo G631HQ
Glue	Ablestik 8200C	Sumitomo CRM1076YB
Leadframe	High Density Lead Frame (HDLF)	Ultra high Density Lead Frame (UDLF)

Chosen Bill Of Material is standard Bill Of Material, already running in high volumes for LQFP at Amkor ATP (Philippines).

Gate mark on Ultra high Density Lead Frame:

An additional gate mark is visible on top of the package, in addition to pin 1 identification mark.



Why ?

Due to Amkor ATK1 (Korea) assembly site closure, ST MCD division moves LQFP 14x14 20x20 packages production from Amkor ATK (Korea) to Amkor ATP (Philippines).

When ?

The production on the new platform will start week 45 2014.

How 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 below Qualification Plan.

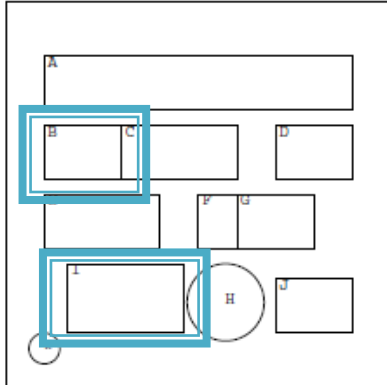
What is the impact of the change?

- **Form:** Gate mark added
- **Fit:** no change
- **Function:** no change

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 HP to 7B

I : Country Of Origin change from KOR to 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



RERMCD 1312-PPF QUALIFICATION PLAN

Qualification of :

LQFP14x14 & 20X20 at Amkor Philippines for Microcontrollers devices

Qualification Reference :	RERMCD1312
Issued on :	Mar 31, 2014
Assembly Plant :	AMKOR Philippines (ATP)
Assembly Line :	LQFP
Package / Process :	14x14 (80Leads- 100Leads) 20x20 (144Leads)
Device :	STM32- STM8S/L
Lead termination:	PPF
MSL:	MSL3

**Purpose**

Qualification of new assembly lines for Microcontrollers in LQFP 14x14 & 20x20 packages assembled at ATP (Philippines).

Ultra High Density Lead Frame will be qualified: an additional gate mark is visible on top of the package, in addition to pin 1 identification .

Test Vehicles :

Package line	Assembly Line	Package	Device (Partial RawLine Code)	Diffusion Process	Number of Lots
1	LQFP14*14	80L	STM8S (1S*765)	F9GO1 Rou 8'	1
		100L	STM32F (1L*414)	TSMC	1
			STM32F(1L*411) STM32F(1L*419)	M10 Rou 8' M10 Cro12'	1 1 Monitoring
	LQFP20*20	144L	STM32F (1A* 430) STM32F (1A*419)	TSMC M10 Cro12'	1 1

Package Reliability Trials :

(*) tests performed after preconditioning

Reliability Trial		Test Conditions	Pass Criteria	Unit per Lot	Qual Lot nb
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	5 +1 monit.
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	5 +1 monit.
TC(*)	Thermal Cycling JESD22 A104	-50°C, +150°C	1000Cy	77	5 +1 monit.
THB(*)	Temperature Humidity Bias JESD22 A101	85°C, 85% RH, bias	1000h	77	4 +1 monit.



THS(*)	Temperature Humidity Storage JESD22 A110	85°C, 85% RH, no bias	1000h	77	5 +1 monit.
HTSL	High Temperature Storage Life JESD22 A103	150°C- no bias	1000h	77	5 +1 monit.
ESD	ESD Charge Device Model ANSI/ESDSTM5.3.1	750V corners 500V all other pins	750V / 500V	3	All devices
Physical dimension	Dimension measurement JESD 22B100/B108		CPK >1.33 PPK >1.67	10	1 lot /package
Solderability	Lead solderability JESD 22B102		>95% lead coverag e	45 leads	1 lot /package

Attachment : Reliability tests description

Package oriented tests/ Trials description

1. Preconditioning

According to ST spec 0098044.

Preconditioning test sequence simulates storage and soldering of SMD (surface mount devices) before submitting them to the reliability tests. It aims to validate the moisture sensitivity level of the package, and prepare it to the stress of additional reliability tests, thus enabling a good modeling of the life of the packaged product.

Out-of-bag floor life storage and soldering are modeled by the following test sequence:

- Bake to completely remove moisture from the package;
- Moisture soak according to the package moisture level;
- IR reflow.

The aim is to check that the chip and plastic package withstand the stress due to report on card. Depending on their technology, packages may absorb moisture during their transportation and/or storage, moisture that is released during the soldering operation. At this step, the moisture absorbed is vaporized due to high temperature of solder report process. This phenomenon can create plastic swelling, "pop corn" effect, and cracks which eventually results in wire breakage, passivation cracks, and delamination.

2. Autoclave (AC)

The device is stored in saturated steam, at fixed and controlled conditions of pressure and temperature.

Purpose: to investigate corrosion phenomena affecting die or package materials, related to chemical contamination and package hermeticity.

To point out critical water entry paths with consequent electrochemical and galvanic corrosion.



1. Unbiased Highly Accelerated Temperature and Humidity Stress (UHASt)

The Unbiased HAST is performed for the purpose of evaluating the reliability of non-hermetic packaged solidstate devices in humid environments. It is a highly accelerated test which employs temperature and humidity under non-condensing conditions to accelerate the penetration of moisture through the external protective material (encapsulant or seal) or along the interface between the external protective material and the metallic conductors which pass through it. Bias is not applied in this test to ensure the failure mechanisms potentially overshadowed by bias can be uncovered (e.g. galvanic corrosion). This test is used to identify failure mechanisms internal to the package and is destructive.

2. Temperature Cycling (TC)

The device is submitted to cycled temperature excursions, between a hot and a cold chamber in air atmosphere (thermal gradient typical 10 C/min).

Purpose: 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, moulding compound delamination, wire-bonds failure, die-attach layer degradation.

3. 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.

The Temperature Humidity Bias follows the same method than HAST at lower temperature.

Purpose: to investigate failure mechanisms activated in the die-package environment by electrical field and wet conditions.

Typical failure mechanisms are electro-chemical corrosion and surface effects related to the molding compound.

The package moisture resistance with electrical field applied is verified, both electrolytic and galvanic corrosion are put in evidence.

Conditions:

- $T_a=85^{\circ}\text{C}$; R.H.=85%;
- Power supply voltage less or equal to max operative voltage to not exceed $T_j = 95^{\circ}\text{C}$.

4. Temperature Humidity Storage (THS)

The Temperature Humidity Storage is stored at controlled conditions of high temperature and relative humidity.

The Temperature Humidity Storage follows the same method than Unbiased HAST at lower temperature.

Purpose: to evaluate the reliability of non-hermetic packaged solid-state devices in humid environments. It is a highly accelerated test which employs temperature and humidity under non-condensing conditions to accelerate the penetration of moisture through the external protective material (encapsulant or seal) or along the interface between the external protective material and the metallic conductors which pass through it.

Bias is not applied in this test to ensure the failure mechanisms potentially overshadowed by bias can be uncovered (e.g. galvanic corrosion). This test is used to identify failure mechanisms internal to the package.

- Test conditions: 85°C / 85% RH.
- No power supply

5. 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.

Purpose: to investigate the failure mechanisms activated by high temperature, typically wire-bonds solder joint ageing, data retention faults, metal stress-voiding.

1. ESD Charge Device Model (CDM)

This ESD failure model is associated with the device and package itself. The CDM is intended to simulate charging/discharging events that occur in production equipment and processes. The Field induced CDM equivalent circuit used to describe this phenomenon is illustrated in Figure 1.

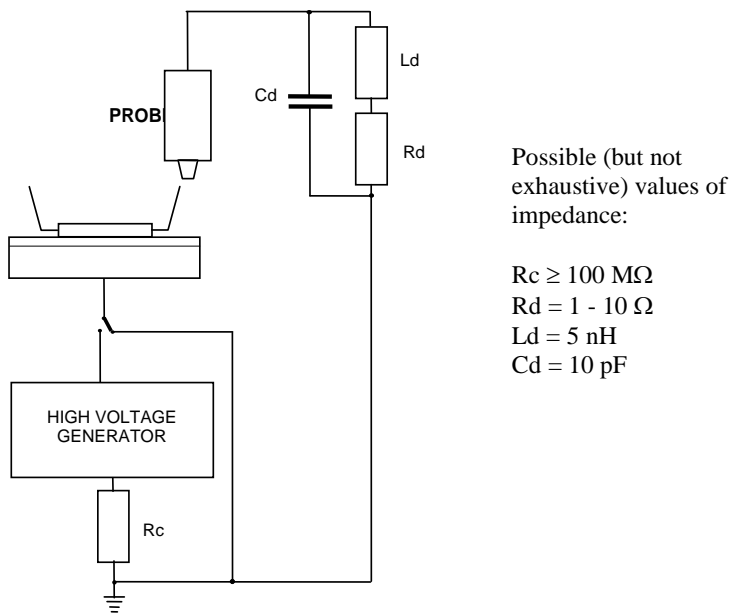


Fig.1 : Field induced CDM equivalent circuit



Public Products List

PCN Title : STM8 & STM32 products in LQFP 14x14 & 20x20 packages - Transfer assembly & test sites from Amkor ATK (Korea) to Amkor ATP
PCN Reference : MMS-MIC/14/8390
PCN Created on : 05-MAY-2014

Subject : Public Products List

Dear Customer,

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

ST COMMERCIAL PRODUCT

STM32F071V8T6	STM32F071VBT6	STM32F072V8T6
STM32F072VBT6	STM32F100V8T6B	STM32F100V8T7B
STM32F100VBT6B	STM32F100VBT6BTR	STM32F100VBT7B
STM32F100VCT6	STM32F100VCT6B	STM32F100VCT6BTR
STM32F100VDT6	STM32F100VDT6B	STM32F100VDT6BTR
STM32F100VDT7B	STM32F100VET6	STM32F100VET6B
STM32F100VET6BTR	STM32F100VET7B	STM32F100ZCT6B
STM32F100ZDT6B	STM32F100ZET6B	STM32F100ZET6BTR
STM32F100ZET7B	STM32F101V8T6	STM32F101V8T6TR
STM32F101VBT6	STM32F101VBT6TR	STM32F101VCT6
STM32F101VCT6TR	STM32F101VDT6	STM32F101VDT6TR
STM32F101VET6	STM32F101VFT6	STM32F101VFT6TR
STM32F101VGT6	STM32F101ZCT6	STM32F101ZDT6
STM32F101ZET6	STM32F101ZGT6	STM32F103V8T6
STM32F103V8T6TR	STM32F103VBT6	STM32F103VBT6TR
STM32F103VBT7	STM32F103VBT7TR	STM32F103VCT6
STM32F103VCT6TR	STM32F103VDT6	STM32F103VDT6TR
STM32F103VDT7	STM32F103VET6	STM32F103VET6TR
STM32F103VET7	STM32F103VET7TR	STM32F103VFT6
STM32F103VFT6TR	STM32F103VFT7	STM32F103VGT6
STM32F103VGT6J	STM32F103VGT6TR	STM32F103VGT7
STM32F103ZCT6	STM32F103ZCT7	STM32F103ZDT6
STM32F103ZET6	STM32F103ZET6TR	STM32F103ZET7
STM32F103ZFT6	STM32F103ZGT6	STM32F105V8T6
STM32F105VBT6	STM32F105VCT6	STM32F105VCT6TR
STM32F105VCT6V	STM32F105VCT6W	STM32F105VCT7
STM32F107VBT6	STM32F107VCT6	STM32F107VCT6TR
STM32F205VBT6	STM32F205VCT6	STM32F205VCT6TR
STM32F205VCT7	STM32F205VCT7TR	STM32F205VET6
STM32F205VET6TR	STM32F205VET7	STM32F205VFT6
STM32F205VFT6TR	STM32F205VGT6	STM32F205VGT6J
STM32F205VGT6V	STM32F205VGT6W	STM32F205VGT7
STM32F205VGT7TR	STM32F205ZCT6	STM32F205ZCT7
STM32F205ZCT7TR	STM32F205ZET6	STM32F205ZET6TR
STM32F205ZET7	STM32F205ZET7TR	STM32F205ZFT6



Public Products List

PCN Title : STM8 & STM32 products in LQFP 14x14 & 20x20 packages - Transfer assembly & test sites from Amkor ATK (Korea) to Amkor ATP
PCN Reference : MMS-MIC/14/8390
PCN Created on : 05-MAY-2014

Subject : Public Products List (Contd.)

ST COMMERCIAL PRODUCT

STM32F205ZGT6	STM32F205ZGT6J	STM32F205ZGT6TR
STM32F205ZGT6V	STM32F205ZGT6W	STM32F207VCT6
STM32F207VCT6TR	STM32F207VCT7	STM32F207VET6
STM32F207VET6TR	STM32F207VFT6	STM32F207VFT6TR
STM32F207VGT6	STM32F207VGT6J	STM32F207VGT6TR
STM32F207VGT6U	STM32F207VGT7	STM32F207ZCT6
STM32F207ZET6	STM32F207ZET6TR	STM32F207ZFT6
STM32F207ZGT6	STM32F207ZGT6J	STM32F207ZGT6TR
STM32F207ZGT6U	STM32F207ZGT7	STM32F215VET6
STM32F215VGT6	STM32F215ZET6	STM32F215ZET6TR
STM32F215ZGT6	STM32F217VET6	STM32F217VET6TR
STM32F217VGT6	STM32F217VGT6TR	STM32F217ZET6
STM32F217ZET7	STM32F217ZGT6	STM32F302VBT6
STM32F302VCT6	STM32F303VBT6	STM32F303VCT6
STM32F303VCT7	STM32F358VCT6	STM32F373V8T6
STM32F373VBT6	STM32F373VBT7	STM32F373VCT6
STM32F378VCT6	STM32F401VBT6	STM32F401VCT6
STM32F401VCT6U	STM32F401VET6	STM32F401VET6U
STM32F405VGT6	STM32F405VGT6J	STM32F405VGT6TR
STM32F405VGT6V	STM32F405VGT6W	STM32F405VGT7
STM32F405VGT7TR	STM32F405ZGT6	STM32F405ZGT6J
STM32F405ZGT6V	STM32F405ZGT6W	STM32F405ZGT7
STM32F407VET6	STM32F407VET6TR	STM32F407VGT6
STM32F407VGT6J	STM32F407VGT6TR	STM32F407VGT6U
STM32F407VGT7	STM32F407ZET6	STM32F407ZET7
STM32F407ZGT6	STM32F407ZGT6J	STM32F407ZGT6U
STM32F407ZGT7	STM32F415VGT6	STM32F415VGT6TR
STM32F415ZGT6	STM32F417VET6	STM32F417VET6TR
STM32F417VGT6	STM32F417VGT6TR	STM32F417VGT7
STM32F417ZET6	STM32F417ZGT6	STM32L151V8T6
STM32L151V8T6A	STM32L151VBT6	STM32L151VBT6A
STM32L151VCT6	STM32L151VCT6A	STM32L151VCT6ATR
STM32L151VCT6TR	STM32L151VDT6	STM32L151VET6
STM32L151ZCT6	STM32L151ZCT6TR	STM32L151ZDT6
STM32L151ZET6	STM32L152V8T6	



Public Products List

PCN Title : STM8 & STM32 products in LQFP 14x14 & 20x20 packages - Transfer assembly & test sites from Amkor ATK (Korea) to Amkor ATP
PCN Reference : MMS-MIC/14/8390
PCN Created on : 05-MAY-2014

Subject : Public Products List (Contd.)

ST COMMERCIAL PRODUCT

STM32L152V8T6A	STM32L152V8T6TR	STM32L152VBT6
STM32L152VBT6A	STM32L152VBT6TR	STM32L152VCT6
STM32L152VCT6A	STM32L152VDT6	STM32L152VET6
STM32L152ZCT6	STM32L152ZCT6TR	STM32L152ZDT6
STM32L152ZET6	STM32L162VCT6	STM32L162VDT6
STM32L162VET6	STM32L162ZDT6	STM32L162ZET6
STM8L151M8T6	STM8L151M8T6TR	STM8L152M8T3
STM8L152M8T6	STM8L152M8T6TR	STM8L152M8T7
STM8L162M8T6	STM8L162M8T6TR	STM8S207M8T6B
STM8S207M8T6BTR	STM8S207MBT6B	STM8S208MBT6B

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

ST PRODUCTS ARE NOT DESIGNED OR AUTHORIZED FOR USE IN: (A) SAFETY CRITICAL APPLICATIONS SUCH AS LIFE SUPPORTING, ACTIVE IMPLANTED DEVICES OR SYSTEMS WITH PRODUCT FUNCTIONAL SAFETY REQUIREMENTS; (B) AERONAUTIC APPLICATIONS; (C) AUTOMOTIVE APPLICATIONS OR ENVIRONMENTS, AND/OR (D) AEROSPACE APPLICATIONS OR ENVIRONMENTS. WHERE ST PRODUCTS ARE NOT DESIGNED FOR SUCH USE, THE PURCHASER SHALL USE PRODUCTS AT PURCHASER'S SOLE RISK, EVEN IF ST HAS BEEN INFORMED IN WRITING OF SUCH USAGE, UNLESS A PRODUCT IS EXPRESSLY DESIGNATED BY ST AS BEING INTENDED FOR "AUTOMOTIVE, AUTOMOTIVE SAFETY OR MEDICAL" INDUSTRY DOMAINS ACCORDING TO ST PRODUCT DESIGN SPECIFICATIONS. PRODUCTS FORMALLY ESCC, QML OR JAN QUALIFIED ARE DEEMED SUITABLE FOR USE IN AEROSPACE BY THE CORRESPONDING GOVERNMENTAL AGENCY.

RESTRICTIONS OF USE AND CONFIDENTIALITY OBLIGATIONS:

THIS DOCUMENT AND ITS ANNEXES CONTAIN ST PROPRIETARY AND CONFIDENTIAL INFORMATION. THE DISCLOSURE, DISTRIBUTION, PUBLICATION OF WHATSOEVER NATURE OR USE FOR ANY OTHER PURPOSE THAN PROVIDED IN THIS DOCUMENT OF ANY INFORMATION CONTAINED IN THIS DOCUMENT AND ITS ANNEXES IS SUBMITTED TO ST PRIOR EXPRESS AUTHORIZATION. ANY UNAUTHORIZED REVIEW, USE, DISCLOSURE OR DISTRIBUTION OF SUCH INFORMATION IS EXPRESSLY PROHIBITED.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners

© 2014 STMicroelectronics - All rights reserved.

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com