

PRODUCT/PROCESS CHANGE NOTIFICATION PCN 9511 – Additional information

ST Muar (Malaysia) additional back-end line - STM32 LQFP 14x14 selected products

MMS - Microcontrollers Division (MCD)

What are the changes?

Changes are described in the below table on LQFP 14x14 packages:

	Existing manufacturing sites / lines			Added manufacturing site / line
Assembly site	Amkor ATK (Korea)	Amkor ATP (Philippines)	ST Muar (Malaysia)	ST Muar (Malaysia)
Mold compound	Nitto GE7470LQ	Sumitomo G631HQ	Sumitomo EME- G700L	Sumitomo EME- G700LS
Glue	Ablestik 8200C	Sumitomo CRM1076YB	Henkel 3280T	Henkel ABP8302
Leadframe finishing (*)	PPF	PPF	PPF	Pure Tin
Silver wire	0.8mil Au	0.8mil Au	1.0mil Au	0.8mil Ag

(*) Lead color and surface finish change depending on lead finishing

When?

The production will start from:

Commercial Products	<u>Date of Final Qualification</u> <u>Report Availability</u>	<u>Date of First</u> <u>Shipment</u>
Products phase 1	Week 31 2016	Week 35 2016
Products phase 2	Week 43 2016	Week 48 2016

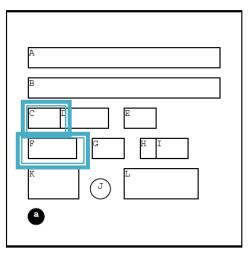
At the end of this document, for each Commercial Product, you will get information timing Phase 1 or Phase 2.

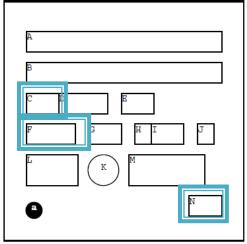
How can the change be seen?

The marking instruction indicated on the products is changing.

1/ for products changing from Amkor ATK (Korea) / Amkor ATP (Philippines) to Muar (Malaysia) assembly site:

- Assembly plant changes from HP to 7B (in C)
- Country Of Origin changes from KOR or PHL to MYs (in F)
- 2 digits are added for enhanced traceability (in N)



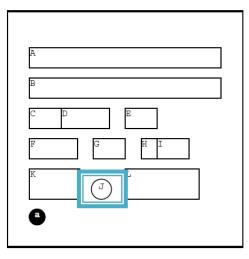


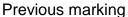
Previous marking

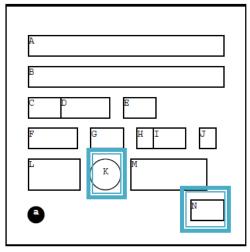
New marking

2/ for products remaining at ST Muar (Malaysia) assembly site:

- Second level interconnect changes from e4 (in J) to e3 (in K)
- 2 digits are added for enhanced traceability (in N)





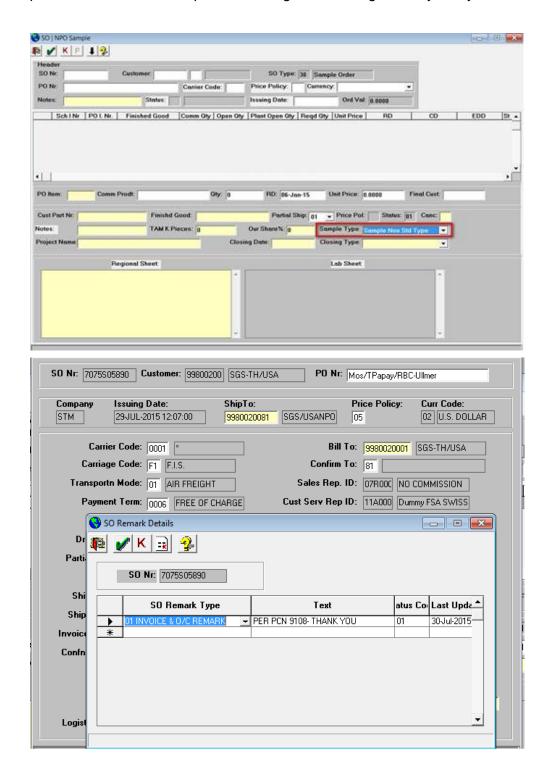


New marking

How to order samples?

For all sample request linked to this PCN, please:

- request sample(s) through Notice tool, indicating a single Commercial
 Product for each request.
- insert "PCN 9511" into the remarks of your order.
- place **non standard** sample order using the following field in your system.



List of Commercial Products:

		CTM22F40FVCTCM	Dhace 1
Commercial Product	Phase1 / Phase2	STM32F105VCT6W	Phase 1
STM32F071V8T6	Phase 1	STM32F105VCT7	Phase 1
STM32F071V8T6TR	Phase 1	STM32F107VBT6 STM32F107VCMIC	Phase 1 Phase 1
STM32F071V8T7	Phase 1		Phase 1
STM32F071V8T7TR	Phase 1	STM32F107VCT6	
STM32F071VBT6	Phase 1	STM32F107VCT6TR	Phase 1
	Phase 1	STM32F107VCT7	Phase 1
STM32F071VBT6TR		STM32F205VBT6	Phase 2
STM32F072V8T6	Phase 1	STM32F205VCT6	Phase 2
STM32F072VBT6	Phase 1	STM32F205VCT6TR	Phase 2
STM32F078VBT6	Phase 1	STM32F205VCT7	Phase 2
STM32F100V8T6B	Phase 1	STM32F205VCT7TR	Phase 2
STM32F100V8T6BTR	Phase 1	STM32F205VET6	Phase 2
STM32F100V8T7B	Phase 1	STM32F205VET6TR	Phase 2
STM32F100VBT6B	Phase 1	STM32F205VET7	Phase 2
STM32F100VBT6BTR	Phase 1	STM32F205VFT6	Phase 2
STM32F100VBT7B	Phase 1	STM32F205VFT6TR	Phase 2
STM32F100VCT6B	Phase 1	STM32F205VGT6	Phase 2
STM32F100VCT6BTR	Phase 1	STM32F205VGT6J	Phase 2
STM32F100VDT6B	Phase 1	STM32F205VGT6TR	Phase 2
STM32F100VDT6BTR	Phase 1	STM32F205VGT6V	Phase 2
STM32F100VDT7B	Phase 1	STM32F205VGT6W	Phase 2
STM32F100VET6B	Phase 1	STM32F205VGT7	Phase 2
STM32F100VET6BTR	Phase 1	STM32F205VGT7TR	Phase 2
STM32F100VET7B	Phase 1	STM32F207VCDEF	Phase 2
STM32F101V8T6	Phase 1	STM32F207VCT6	Phase 2
STM32F101V8T6TR	Phase 1	STM32F207VCT6TR	Phase 2
STM32F101VBT6	Phase 1	STM32F207VCT7	Phase 2
STM32F101VBT6TR	Phase 1	STM32F207VET6	Phase 2
STM32F101VFT6	Phase 1	STM32F207VET6TR	Phase 2
STM32F101VFT6TR	Phase 1	STM32F207VFT6	Phase 2
STM32F101VGT6	Phase 1	STM32F207VFT6TR	Phase 2
STM32F103V8T6	Phase 1	STM32F207VGT6	Phase 2
STM32F103V8T6TR	Phase 1	STM32F207VGT6J	Phase 2
STM32F103VBT6	Phase 1	STM32F207VGT6TR	Phase 2
STM32F103VBT6TR	Phase 1	STM32F207VGT6U	Phase 2
STM32F103VBT7	Phase 1	STM32F207VGT7	Phase 2
STM32F103VBT7TR	Phase 1	STM32F215VET6	Phase 2
STM32F103VFT6	Phase 1	STM32F215VGT6	Phase 2
STM32F103VFT6TR	Phase 1	STM32F217VET6	Phase 2
STM32F103VFT7	Phase 1	STM32F217VET6TR	Phase 2
STM32F103VGT6	Phase 1	STM32F217VGT6	Phase 2
STM32F103VGT6J	Phase 1	STM32F217VGT6TR	Phase 2
STM32F103VGT6TR	Phase 1	STM32F217VGT7	Phase 2
STM32F103VGT7	Phase 1	STM32F301VBT6	Phase 1
STM32F105V8T6	Phase 1	STM32F301VCT6	Phase 1
STM32F105VBT6	Phase 1	STM32F301VCT6TR	Phase 1
STM32F105VCT6	Phase 1	STM32F302VBT6	Phase 1
STM32F105VCT6TR	Phase 1	STM32F302VBT6TR	Phase 1
STM32F105VCT6V	Phase 1	STM32F302VCT6	Phase 1
011VIOZI 100V C 10V	FIIdot I	STM32F302VCT6TR	Phase 1
		STM32F302VDT6	Phase 1
		· - · -	

STM32F302VDT6TR	Phase 1	STM32F417VET6TR	Phase 2
STM32F302VET6	Phase 1	STM32F417VGT6	Phase 2
STM32F302VET6TR	Phase 1	STM32F417VGT6TR	Phase 2
STM32F303VBT6	Phase 1	STM32F417VGT7	Phase 2
STM32F303VBT6TR	Phase 1	STM32F427VGT6	Phase 2
STM32F303VCT6	Phase 1	STM32F427VGT7	Phase 2
STM32F303VCT6TR	Phase 1	STM32F427VIT6	Phase 2
STM32F303VCT7	Phase 1	STM32F427VIT6SEN	Phase 2
STM32F303VDT6	Phase 1	STM32F427VIT6TR	Phase 2
STM32F303VET6	Phase 1	STM32F427VIT7TR	Phase 2
STM32F303VET6TR	Phase 1	STM32F429VET6	Phase 2
STM32F303VET7	Phase 1	STM32F429VET6TR	Phase 2
STM32F358VCT6	Phase 1	STM32F429VGT6	Phase 2
STM32F373V8T6	Phase 1	STM32F429VGT6TR	Phase 2
STM32F373VBT6	Phase 1	STM32F429VIT6	Phase 2
STM32F373VBT7	Phase 1	STM32F429VIT6TR	Phase 2
STM32F373VCT6	Phase 1	STM32F429VIT6U	Phase 2
STM32F378VCT6	Phase 1	STM32F437VGT6	Phase 2
STM32F398VET6	Phase 1	STM32F437VGT7	Phase 2
STM32F401VBT6	Phase 2	STM32F437VGT7TR	Phase 2
STM32F401VBT6TR	Phase 2	STM32F437VIT6	Phase 2
STM32F401VCT6	Phase 2	STM32F437VIT6TR	Phase 2
STM32F401VCT6U	Phase 2	STM32F437VIT6WTR	Phase 2
STM32F401VCT7	Phase 2	STM32F437VIT7	Phase 2
STM32F401VDT6	Phase 2	STM32F437VIT7TR	Phase 2
STM32F401VET6	Phase 2	STM32F439VGT6	Phase 2
STM32F401VET6U	Phase 2	STM32F439VIT6	Phase 2
STM32F405VGT6	Phase 2	STM32F439VIT6U	Phase 2
STM32F405VGT6J	Phase 2	STM32F446VCT6	Phase 2
STM32F405VGT6TR	Phase 2	STM32F446VET6	Phase 2
STM32F405VGT6V	Phase 2	STM32F446VET6U	Phase 2
STM32F405VGT6W	Phase 2	STM32F446VET7	Phase 2
STM32F405VGT7	Phase 2	STM32F722VET6	Phase 2
STM32F405VGT7TR	Phase 2	STM32F745VET6	Phase 2
STM32F407VET6	Phase 2	STM32F745VGT6	Phase 2
STM32F407VET6TR	Phase 2	STM32F746VET6	Phase 2
STM32F407VGT6	Phase 2	STM32F746VGT6	Phase 2
STM32F407VGT6J	Phase 2	STM32F746VGT6U	Phase 2
STM32F407VGT6TR	Phase 2	STM32F746VGT7	Phase 2
STM32F407VGT6U	Phase 2	STM32F756VGT6	Phase 2
STM32F407VGT7	Phase 2	STM32F756VGT6U	Phase 2
STM32F407VGT7TR	Phase 2	STM32F767VIT6	Phase 2
STM32F411VCT6	Phase 2	STM32F777VIT6	Phase 2
STM32F411VCT6TR	Phase 2	STM32FBCXVBT6	Phase 1
STM32F411VET6	Phase 2	STM32L071V8T6	Phase 1
STM32F411VET6U	Phase 2	STM32L071VBT6	Phase 1
STM32F412VGT6	Phase 2	STM32L071VZT6	Phase 1
STM32F412VGT6TR	Phase 2	STM32L072V8T6	Phase 1
STM32F413VHT6	Phase 2	STM32L072VBT6	Phase 1
STM32F415VGT6	Phase 2	STM32L072VZT6	Phase 1
OTMODE 445 VOTOTO	D 1 0	CTM00L070V0TC	Db 4
STM32F415VGT6TR	Phase 2	STM32L073V8T6	Phase 1

STM32L073VBT6	Phase 1
STM32L073VZT3	Phase 1
STM32L073VZT6	Phase 1
STM32L073VZT6D	Phase 1
STM32L073VZT6U	Phase 1
STM32L083V8T6	Phase 1
STM32L083VBT6	Phase 1
STM32L083VZT6	Phase 1
STM32L151V8T6A	Phase 1
STM32L151VBT6A	Phase 1
STM32L151VBT6D	
• • • • • • • • • • • • • • • • • • • •	Phase 1
STM32L151VCT6	Phase 1
STM32L151VCT6D	Phase 1
STM32L151VCT6TR	Phase 1
STM32L151VET6	Phase 1
STM32L152V8T6A	Phase 1
STM32L152VBT6A	Phase 1
STM32L152VBT6ATR	Phase 1
STM32L152VBT6S	Phase 1
STM32L152VCT6	Phase 1
STM32L152VCT6D	Phase 1
STM32L152VDT6X	Phase 1
STM32L152VET6	Phase 1
STM32L152VET6D	Phase 1
STM32L158VT6	Phase 1
STM32L162VCT6	Phase 1
STM32L162VCT6D	Phase 1
STM32L162VET6	Phase 1
STM32L433VCT6	Phase 2
STM32L443VCT6	Phase 2
STM32L452VET6	Phase 2
STM32L471VET6	Phase 2
STM32L471VGT6	Phase 2
STM32L475VCT6	Phase 2
STM32L475VET6	Phase 2
STM32L475VGT6	Phase 2
STM32L476VCT6	Phase 2
STM32L476VET6	Phase 2
STM32L476VGT6	Phase 2
STM32L476VGT6U	Phase 2
STM32L476VGT7	
•	Phase 2
STM32L486VGT6	Phase 2
STM32L486VGT6TR	Phase 2
STM32P101VFMBT	Phase 1
STM32P301VCMBM	Phase 1
STM32P301VCMBMTR	Phase 1
STM32F100VCT6	Phase 1
STM32F100VDT6	Phase 1
STM32F100VET6	Phase 1
STM32F101VCT6	Phase 1
STM32F101VCT6TR	Phase 1
STM32F101VDT6	Phase 1

STM32F101VDT6TR

STM32F103VCT6TR

STM32F103VDT6TR STM32F103VDT7

STM32F103VET6TR

STM32F103VET7TR STM32FBCXVCT6

STM32FBCXVCT6

STM32F101VET6

STM32F103VCT6

STM32F103VDT6

STM32F103VET6

STM32F103VET7

Phase 1

Phase 1

Phase 1

Phase 1

Phase 1 Phase 1

Phase 1

Phase 1

Phase 1 Phase 1

Phase 1

Phase 1

Phase 1



RERMCD1604 reliability plan for ST Muar (Malaysia) additional back-end line - STM32 LQFP 14x14 selected product - PCN 9511

Reliability Evaluation Plan

April 8th 2016

MMS MCD Quality & Reliability Department



RERMCD1604 reliability plan for ST Muar (Malaysia) additional back-end line - STM32 2 LQFP 14x14 selected product - PCN 9511

Context:

Due to the success on the market of STM32 devices, ST Microcontrollers Division decided to qualify an additional line to maintain state of the art service level to our customers, improving flexibility on manufacturing sites, thanks to extra capacity.

What are the changes?

Changes are described in the below table on LQFP 14x14 packages:

		Existing manufacturing sites		Added manufacturing site
Assembly site	Amkor ATK (Korea)	Amkor ATP (Philippines)	ST Muar (Malaysia)	ST Muar (Malaysia)
Mold compound	Nitto GE7470LQ	Sumitomo G631HQ	Sumitomo EME-G700L	Sumitomo EME-G700LS
Glue	Ablestik 8200C	Sumitomo CRM1076YB	Henkel 3280T	Henkel ABP8302
Leadframe finishing (*)	PPF	PPF	PPF	Pure Tin
Silver wire	0.8mil Au	0.8mil Au	1.0mil Au	0.8mil Ag

(*) Lead color and surface finish change depending on lead finishing

RERMCD1604 STM32 TEST VEHICLES

Package line	Assembly Line Package	Products Phase	Device (Partial RawLine Code)	Diffusion Process	Number of Lots
SHD	LQFP 14*14 1001	1	STM32 (1L*410) STM32 (1L*414) STM32L (1L*427) STM32 (1L*430)	TSMC 0.18µm TSMC 0.18µm F9GO2S TSMC 0.18µm	1 1 1 1 as monitoring
LQFP		2	STM32 (1L*411) STM32 (1L*419) STM32(1L*435)	M10 M10 TSMC 90nm	1 1 1

RERMCD1604 -STM32 LQFP14x14

Package Reliability Trials:

(*) tests performed after preconditioning

RELIABILITY TRIALS 4

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 / 168 hrs) for level 3 Convection reflow: 3 passes with Jedec level 2	3 passes MSL1	308	1/ device qual & monitoring
AC or Uhast(*)	Autoclave JESD22 A102 or 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 qual & monitoring
TC(*)	Thermal Cycling JESD22 A104	-50°C, +150°C Or equivalent -65°C +150°C	1000Cy 500Cy (1000cy/2000cy as monitoring)	77	1/ device qual & monitoring
WPT/WBS After TC	Wire Bond Pull- Mil Std883 method 2011 Wire Bond Shear ,AECQ100-001	3g min pull strengh 15g min bond shear	500Cy 1000Cy 2000Cy		
THB(*)	Temperature Humidity Bias JESD22 A101	85°C, 85% RH, bias	1000h	77	1/ device qual
THS(*)	Temperature Humidity No Bias JESD22 A110	85°C, 85% RH, No bias	1000h	77	1/ device monitoring
HTSL	High Temperature Storage Life JESD22 A103	150°C- no bias	1000h	77	1/ device qual & monitoring
Construction analysis including Solderability, Physical demensions	JESD 22B102 JESDB100/B108			15 10	1/ Lead frame and Front end technology
ESD	ESD Charge Device Model ANSI/ESD STM5.3.1	250V or 500V depending on device datasheet	250V or 500V	3	1/ device qual & monitoring

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.
The ST logo is registered trademark of STMicroelectronics All other names are the property of their respective owners
© 2016 STMicroelectronics - All Rights Reserved STMicroelectronics group of companies Australia - Brazil - Canada - China - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.
www.st.com



Public Products List

PCN Title: ST Muar (Malaysia) additional back-end line - STM32 LQFP 14x14 selected products

PCN Reference: MMS/16/9511
PCN Created on: 05-Nov-2015

Subject: Public Products List

Dear Customer,

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

STM32F446VET7	STM32F078VBT6	STM32F401VDT6
STM32F103VET7TR	STM32F303VCT6TR	STM32F103VET7
STM32F401VCT6	STM32F103VCT6	STM32F205VGT6W
STM32L072VBT6	STM32F071V8T7	STM32F302VET6
STM32L071VZT6	STM32F101VFT6TR	STM32F217VGT6
STM32F101VET6	STM32F103VET6TR	STM32F103VDT6
STM32L476VET6	STM32F103VGT6J	STM32F101V8T6
STM32F100VDT6	STM32F205VCT7	STM32F437VIT6WTR
STM32F217VET6TR	STM32F100VET6	STM32F373VCT6
STM32L151VET6	STM32F101VDT6TR	STM32F103VGT6
STM32F401VCT7	STM32L151V8T6A	STM32F205VCT7TR
STM32F071VBT6	STM32F100VBT7B	STM32F373VBT6
STM32F745VGT6	STM32F100VCT6BTR	STM32F107VBT6
STM32F100VCT6	STM32F101VBT6	STM32L151VBT6A
STM32F101VCT6TR	STM32F401VBT6	STM32F103VDT7
STM32F205VGT7TR	STM32F101VCT6	STM32F303VCT7
STM32F103VFT6TR	STM32F407VET6	STM32F101VBT6TR
STM32F100VDT7B	STM32F100VDT6B	STM32F207VGT6J
STM32F101VDT6	STM32F205VGT6TR	STM32F103VDT6TR
STM32F101VGT6	STM32F417VGT6TR	STM32F071V8T6
STM32F071VBT6TR	STM32L443VCT6	STM32F207VCT7
STM32F105V8T6	STM32F105VBT6	STM32F427VIT6TR
STM32F105VCT6	STM32L071V8T6	STM32F302VCT6TR
STM32F100VBT6B	STM32F100VBT6BTR	STM32F303VCT6
STM32F745VET6	STM32F101VFT6	STM32F437VIT6TR
STM32F103V8T6TR	STM32F429VGT6	STM32L083VZT6
STM32L152VBT6A	STM32F105VCT6TR	STM32F207VCT6
STM32F302VDT6	STM32F107VCT6	STM32F103VBT7TR
STM32F100VET6BTR	STM32F103VFT7	STM32L162VET6
STM32L475VGT6	STM32F439VIT6	STM32L152V8T6A
STM32F103VCT6TR	STM32F437VIT6	STM32F100VCT6B
STM32L151VCT6TR	STM32F207VFT6TR	STM32L072VZT6
STM32F205VET7	STM32F103VET6	STM32F205VCT6
STM32F205VGT6V	STM32F417VGT7	STM32F217VGT6TR
STM32F101V8T6TR	STM32F103VBT7	STM32F427VIT6
STM32F411VCT6	STM32F417VET6	STM32F401VET6
STM32F373V8T6	STM32L152VDT6X	STM32F103VGT6TR

	I	1
STM32L476VCT6	STM32F405VGT6J	STM32F446VCT6
STM32F105VCT6W	STM32F411VCT6TR	STM32F100V8T7B
STM32F207VFT6	STM32F405VGT7	STM32F103V8T6
STM32F302VDT6TR	STM32F205VBT6	STM32F429VIT6
STM32F103VBT6	STM32F302VBT6	STM32F205VGT7
STM32L152VET6	STM32L476VGT6	STM32F107VCT6TR
STM32F429VIT6U	STM32F398VET6	STM32F205VFT6TR
STM32F205VET6TR	STM32F405VGT6TR	STM32F207VGT6
STM32F405VGT6	STM32F105VCT6V	STM32F072V8T6
STM32F302VCT6	STM32F767VIT6	STM32F303VET6
STM32F205VET6	STM32F207VGT6TR	STM32F103VBT6TR
STM32F100V8T6B	STM32F071V8T6TR	STM32F302VBT6TR
STM32F378VCT6	STM32F439VGT6	STM32F407VGT7TR
STM32F415VGT6	STM32F303VBT6TR	STM32L152VCT6
STM32L073VZT3	STM32F207VGT6U	STM32F072VBT6
STM32L073VZT6	STM32F103VGT7	STM32F405VGT7TR
STM32F205VGT6J	STM32F100VDT6BTR	STM32F217VET6
STM32F373VBT7	STM32F358VCT6	STM32F407VGT6
STM32F100VET7B	STM32F205VCT6TR	STM32F437VGT6
STM32F401VBT6TR	STM32F207VGT7	STM32F100VET6B
STM32F437VIT7TR	STM32F071V8T7TR	STM32F105VCT7
STM32L152VBT6ATR	STM32F215VET6	STM32L471VGT6
STM32F756VGT6	STM32F215VGT6	STM32F302VET6TR
STM32L073V8T6	STM32F303VBT6	STM32L071VBT6
STM32F205VFT6	STM32F439VIT6U	STM32F205VGT6
STM32L433VCT6	STM32F407VGT6J	STM32F303VDT6
STM32L083VBT6	STM32F207VET6TR	STM32F303VET6TR
STM32F427VIT7TR	STM32L162VCT6	STM32F437VGT7
STM32F207VCT6TR	STM32F103VFT6	STM32F407VET6TR
STM32F405VGT6W	STM32L073VBT6	STM32F429VET6TR
STM32F405VGT6V	STM32L072V8T6	STM32F437VIT7
STM32F207VET6	STM32F429VGT6TR	STM32L073VZT6D
STM32F303VET7	STM32F417VET6TR	STM32L486VGT6TR
STM32F411VET6	STM32L476VGT7	STM32L471VET6
STM32F415VGT6TR	STM32L475VCT6	STM32F746VGT6
STM32F446VET6	STM32F429VIT6TR	STM32F427VGT6
STM32F407VGT6TR	STM32F746VET6	STM32L486VGT6
STM32F429VET6	STM32L475VET6	STM32F746VGT7
STM32L151VCT6	STM32F437VGT7TR	STM32F407VGT7
STM32F417VGT6	STM32L083V8T6	
	•	•

IMPORTANT NOTICE - PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2016 STMicroelectronics - All rights reserved