PRODUCT/PROCESS CHANGE NOTIFICATION

PCN APG-BOD/07/3148
Notification Date 12/12/2007

Double Source of VIPower M0.5 Technology in CT6 and AMK6 plants.

BOD - CAR BODY

Table 1. Change Implementation Schedule

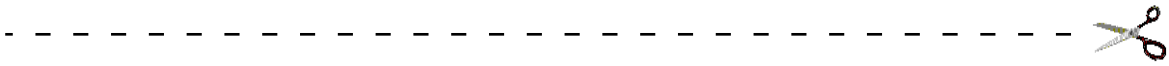
Forecasted implementation date for change	31-Mar-2008
Forecasted availabillity date of samples for customer	05-Dec-2007
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	05-Dec-2007
Estimated date of changed product first shipment (according to JEDEC standard JESD46C 'customer Notification of product/process change by semiconductor suppliers')	31-Mar-2008

Table 2. Change Identification

Product Identification (Product Family/Commercial Product)	See enclosed
Type of change	Waferfab location change
Reason for change	To improve service and available capacities.
Description of the change	Following APCN APG-BOD/06/2124 of October 24, 2006 notice is hereby given that qualification of M0.5 technology in AMK6 (Singapore) plants has been completed. AMK6 has been qualified to produce VIPower M0.5 technology products.
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	Trace-Code "V6" indetify AMK Diffusion Plant.
Manufacturing Location(s)	

Table 3. List of Attachments

Customer Part numbers list	
Qualification Plan results	



Customer Acknowledgement of Receipt	**PCN APG-BOD/07/3148**
Please sign and return to STMicroelectronics Sales Office	**Notification Date 12/12/2007**

☐ Qualification Plan Denied	Name:
☐ Qualification Plan Approved	Title:
	Company:
☐ Change Denied	Date:
☐ Change Approved	Signature:

Remark

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DOCUMENT APPROVAL

Name	Function
Russo, Alfio	Division Marketing Manager
Aparo, Sebastiano	Division Product Manager
Parrino, Emanuele	Division Q.A. Manager

PROCESS/PRODUCT CHANGE NOTIFICATION ®

Double Source of VIPower M0.5 Technology in CT6 and AMK6 plants.

INVOLVED P&L FAMILY: 30

WHAT:

Following APCN APG-BOD/06/2124 of October 24, 2006 notice is hereby given that qualification of M0.5 technology in AMK6 (Singapore) plants has been completed. AMK6 has been qualified to produce VIPower M0.5 technology products.

WHY:

To improve service and available capacities.

WHO:
All Customers using VIPower products in M0.5 technology , in particular, for the moment only VND5012AK-E (VNF8) will be transferred, other silicon lines/part numbers will be transferred in the future, but relevant schedule is not yet fixed. Customers involved for future products will be informed accordingly.
No other additional full qualification will be performed, enclosed VNF8 qualification will be used as family qualification.

WHEN:

The change will be implemented according to the following scheduled dates:
-**Qualification results**:
enclosed to this PCN.
-**Samples availability**:
VND5012AK-E (VNF8) samples available.
-**1st shipment** :
March 2008. Shipment of parts belonging to AMK plant may occur prior this date
upon Customer agreement (according to Jedec JESD46C standard).
In case of no Customer feedback before H2/2008 this PCN will be considered automatically accepted.

WHERE:

The plant involved in this change is ST Singapore AMK6 wafer Fab. (receiving plant).

Qualification of M0.5 in AMK6 has been defined taking into account:

-SOP262, OP31 qualification procedures.

-AEC Q100 Automotive qualification guideline.

-The experience gained during the M0.3 CT6 transfer to AMK6.

VNF8 silicon line housed in PowerSSO-24 (VND5012AK-E) has been chosen as test vehicle of qualification.

Here following is the qualification results.

APG

Automotive Product Group
Car Body Division

AEC_Q100 Rev.F Qualification Plan Results

Object: VIPower M0_5 technology silicon line transfer from CT6 Catania (Italy) to AMK6 Ang Mo Kio (Singapore), test vehicle VND5012AK-E (VNF8)

General Information	
Product Line	VNF8
Commercial Product	VND5012AK-E
Silicon process technology	VIPower M0_5
Package	PowerSSO24

Locations	
Diffusion fab location	AMK6 Ang Mo Kio (Singapore)
Assembly plant location	Muar (Malaysia)
Test plant location	Muar (Malaysia)
Reliability location	Catania (Italy)

Author:
A.Marmoni
APG Q&R Catania

ST approved:
E.Parrino
APG Q&R Catania Mng

Reliability and electrical test executed by:
M.Palermo
IMS Rel Dept. – APG Support

AEC #	Test Name	STM Test Conditions	Sample Size/ Lots	Results Fails/SS/Lots	Comments
4	**PC** Pre Cond	Preconditioning at Jedec Level 3, store 192 hours at Ta=30ºC, RH=60%, IR reflow (3 times) at 260ºC	Before all trials. Reliability executed on units soldered on card edge		
2	**HTOL** High Temp. Op. Life	Ta=125C, Vcc=28V for 1000 hours	77/3	0/77/3	
5	**THB** Temp Humidity Bias	Ta=85ºC, RH=85%, Vcc=24V for 1000 hours	77/3	0/77/3	
6	**AC** Autoclave	Ta=121ºC, Pa=2atm for 96 hours	77/3	0/77/3	
7	**TC** Temp. Cycling	Ta=-65ºC +150ºC for 500 cycles	77/3	0/77/3	
8	**PTC** Power Temp. Cycling	Per JA105. Ta=-40ºC +125ºC for 1000 cycles. Test before and after at room and hot temperatures.	45/1	0/45/1	
	ENV. SEQ. Enviromental Sequence	**TC** (Ta=-65ºC +150ºC for 100 cycles) + **AC** (Ta=121ºC, Pa=2atm for 96 hours)	50/3	0/50/3	STM additional test
17	**WBP** Wire Bond Pull	Per M2011 Condition C or D. 0 and Ppk >= 1.66 or Cpk >= 1.33	30 bonds from minimum 5 of units from 1 lot	Passed	
18	**WBS** Wire Bond Shear	Per AEC-Q100-00. See Appendix 3 procedure. 0 and Ppk >= 1.66 or Cpk >= 1.33	30 bonds from minimum 5 of units from 1 lot	Passed	

SUMMARY OF ESD/LATCH-UP TEST RESULTS

ref. :Agrate Report 141_2007

DEVICE:	VNF8 (VND5012AK-E)
PACKAGE :	PowerSSO-24
PROCESS:	M0.5
DIFF. PLANT:	AMK6 AngMoKio

ESD PERFORMED TESTS AND REFERENCE SPECIFICATION

ESD PERFORMED	JEDEC STANDARD	International spec. of Automotive Electronic Council	Internal spec. ST Microelectronics
HBM	JEDEC/JESD22-A114E	CDF-AEC -Q100-002 rev.F	0060102 REV I
MM	JEDEC/JESD22-A115-A	CDF-AEC -Q100-003 rev.F	
CDM	JEDEC/JESD22-C101-C	CDF-AEC -Q100-011 rev.F	

RESULTS SUMMARY

DEVICE NAME	ESD TEST	CONDITION	SAMPLE SIZE	VOLTAGE	NUMBER OF PASSED SAMPLES
VNF8	HBM	AEC -Q100-002	3 pcs	+/- 4000 V	3 GOOD
	MM	AEC -Q100-003	3 pcs	+/- 400 V	3 GOOD
	CDM	AEC -Q100-011	3 pcs	+/- 1500 V	3 GOOD

ESD VOLTAGE LEVEL CLASSIFICATION

	STMicroelectronics CLASS	Voltage Range Classification
HBM	ST0	0-499V
	ST05	500-999V
	ST1	1000-1999V
	ST2	2000-3999V
	ST4	4000V and above(*)
MM	ST0	0-99V
	ST01	100-199V
	ST02	200-399V
	ST4	400V and above(*)
CDM	ST0	0-249V
	ST025	250-499V
	ST05	500-749V
	ST075	750-999V
	ST1	1000-1500V and above(*)

(*) device is classifiable in this voltage range.

LATCH-UP PERFORMED TESTS and REFERENCE SPECIFICATION

L-U PERFORMED	JEDEC STANDARD	International spec. of Automotive Electronic Council	Internal spec. ST Microelectronics
I-test	EIA/JESD78 A	AEC-Q100-004 Rev.F	0018695 REV H
Supply OverVoltage Test	EIA/JESD78 A		

LATCH-UP TEST CONCLUSIONS

1. Device VNF8 (sample size 12pcs) passed the JEDEC – Level B for Latch-Up test requirements.
2. All VNF8 Devices undertest passed the DC parametric and functional testing after the Latch-Up test.

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