PRODUCT/PROCESS CHANGE NOTIFICATION

PCN APM-DIS/07/3164
Notification Date 12/27/2007

APM - ASD & IPAD Division

Thyristors in TO-220AB package, Thyristors/Rectifiers in Die Form

Assy & Test Location Transfer to China

DIS - ASD & IPAD

Table 1. Change Implementation Schedule

Forecasted implementation date for change	20-Dec-2007
Forecasted availabillity date of samples for customer	20-Dec-2007
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	20-Dec-2007
Estimated date of changed product first shipment	27-Mar-2008

Table 2. Change Identification

Product Identification (Product Family/Commercial Product)	SCRs/Triacs in TO-220AB, Thyris/Rectif in die form
Type of change	Package assembly location change
Reason for change	Ain Sebaa plant closure announcement
Description of the change	The ST China plant that has been producing power devices in TO-220 with wire bonding technology for many years is now starting the production of Thyristors with clip bonding.
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	Trace code, internal codification and QA number
Manufacturing Location(s)	

Table 3. List of Attachments

Customer Part numbers list	
Qualification Plan results	

Customer Acknowledgement of Receipt **PCN APM-DIS/07/3164**

Please sign and return to STMicroelectronics Sales Office **Notification Date 12/27/2007**

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

Remark

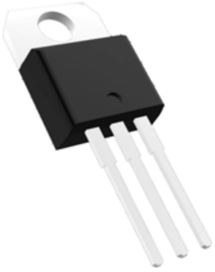
DOCUMENT APPROVAL

Name	Function
Paris, Eric	Division Marketing Manager
Duclos, Franck	Division Product Manager
Besson, Andre	Division Q.A. Manager

APM - ASD & IPAD Division[1]

<u>Thyristors in TO-220AB package, Thyristors/Rectifiers in Die Form</u>:

Assy & Test Location Transfer to China



TO-220AB

Die Form

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[1] *(1) APM: Analog, Power & MEMS Group - ASD: Application Specific Device - IPAD: Integrated Passive and Active Devices*

WHY THIS CHANGE?

With reference to APCN APM/07/3145 regarding Ain Sebaa manufacturing activity closure announcement, we have decided the progressive transfer of the **assembly and test** to our ST China plant for all our **SCRs** and **TRIACs** in **TO-220AB** with **clip bonding** technology, as well as the back-end operations for all our **Thyristors** and **Rectifiers** in **die form**.

Sourcing	Current	Temporary	Final
Assembly & test location	MOROCCO	CHINA MOROCCO	CHINA

The current assembly in the above mentioned Morocco plant is forecasted to gradually close down by the end of **Q2 2009**. The involved product series are listed in the table below:

Product Sub-Family	Product PN or Series	Package
Rectifiers	JTHxxx JTTHxxx JTPSxxx	Die Form
SCRs	JCMxxx JTMxxx JTTxxxx TXNxxxxRG TYNxxxxRG TYPxxxxRG	Die Form Die Form Die Form TO-220AB Ins TO-220AB TO-220AB
TRIACs	AVSxxx BTAxxx-xxxxRG BTBxxx-xxxRG TXxxx-xxxRG	TO-220AB / TO-220AB Ins TO-20AB Ins TO-220AB TO-220AB

Specific Thyristors in TO-220AB package and Thyristors/Rectifiers in Die Form not expressly included in the above table are included in this change.

WHAT IS THE CHANGE?

The ST China plant has been producing power devices in TO-220 with wire bonding technology for many years and is now starting the production of Thyristors with clip bonding.

This is done with **no impact** on the **electrical, dimensional** and **thermal parameters** of the products with respect to the product datasheet. The verification is included in the qualification program.

There is **no change** in the **packing modes** and the standard **delivery quantities** either. The products will be delivered in compliance with the RoHS*.

(*) Restriction of the use of certain Hazardous Substances

HOW AND WHEN?

Qualification program and results availability:

The **qualification program** mainly consists of **comparative electrical characterizations** and **reliability tests**.

This **qualification program** is provided in appendix 1 to this document. The **reliability test report** and the **characterization report** of the qualification program are available on request **now**.

Samples availability:

Samples of selected devices, including the test vehicles, are **available** on request as indicated below:

Salestypes	Product Sub-Family	Availability
TYN208BRG TYN612TRG	SCRs	Now
BTA06-600CRG BTA12-600CWRG BTA24-800BWRG BTA24-800CWRG BTB06-600CRG BTB12-600CWRG BTB16-700BWRG BTB24-800CWRG	TRIACs	Now

Other samples are available on request for delivery within notice period if ordered within 30 days from PCN reception.

Change implementation schedule:

The **production start** and **first shipments** will be implemented according to our work in progress and materials availability as indicated in the schedule below:

Package Type	Production Start	1st Shipments
TO-220AB (Insulated and not Insulated)	From Week 51-2007	From Week 13-2008
Die Form	From Week 17-2008	From Week 18-2008

Lack of acknowledgement of the PCN within **30 days** will constitute acceptance of the change. After acknowledgement, lack of additional response within the **90 day** period will constitute acceptance of the change (Jedec Standard No. 46-C). In any case, **first shipments** may start earlier with customer's **written agreement**.

Marking and traceability:

Unless otherwise stated by customer specific requirement, parts assembled in TO-220AB in the new plant will have a **differentiated marking** as indicated below:

Assembly location	Assy plant	Seq. nbr	Diffus. plant	Country of origin	Date Code (3 digits)
China (new)	**GK**	LLL	VU	**CHN**	YWW Y = 1 digit indicating the year WW = 2 digits indicating the week number
Morocco (current)	*N/A*	*N/A*	VU	MAR	

The **traceability** of the parts assembled in TO-220 in the ST China plant will be ensured by the **country of origin**, by an **internal codification**, and by the **Q.A. number**. The traceability for the parts in **die form** will be ensured by this same information on the packing labelling.

Appendix 1: Reliability tests for qualification program.

Thyristors in TO-220AB package, Thyristors/Rectifiers in Die Form: Assy & Test Location Transfer to China

Reliability tests of QUALIFICATION PROGRAM

Test vehicles	Desription	Package
BTA06-600CRG	Standard Triac 6A 600V 25 mA	TO-220AB Ins
BTA12-600CWRG	Snubberless Triac 12A 600V 35 mA	TO-220AB Ins
BTA24-800CWRG	Snubberless Triac 25A 800V 35 mA	TO-220AB Ins
BTB06-600CRG	Standard Triac 6A 600V 25 mA	TO-220AB
BTB24-800CWRG	Snubberless Triac 25A 800V 35 mA	TO-220AB

QUALIFICATION TESTS					
TEST	**CONDITIONS**	**DURATION**	**NBR OF LOTS (*)**	**SAMPLE SIZE**	**ACCEPTANCE CRITERIA**
Parametric verification	Data sheet specification	Not applicable	3	30 pcs / lot	Datasheet
Pressure Cooker Test JESD22-A102	121°C 2 atm. 100%RH	96 Hrs	2	77 pcs / lot	0 failure
Temperature Cycling JESD22 A104	-55°C/+150°C - Air/Air	1000 cycles	3	77 pcs / lot	0 failure
Temperature Humidity Bias JESD22 A101	Tamb = 85°C RH = 85% Vac = 100V	1000 hours	2	77 pcs / lot	0 failure
High Temperature Reverse Bias JESD22-A108	Vac = V_{DRM} Tj = 125°C	1000 hours	2	40 pcs / lot	0 failure
Construction analysis	Random samples, 3 lots Insulated, 3 lots non Insulated	Not applicable	6	5 pcs	Assembly rules
Physical dimension JESD22 B100	As per package dimensions & tolerances	Not applicable	1	30 pcs	0 failure
Solderability SnPb & SnAgCu JESD22-B102D	Dry ageing 16hrs / 220°C & 245°C – 5 sec dip. Steam aging 8hrs / 220°C & 245°C – 5 sec dip.	Not applicable	1	30 pcs / lot	0 failure

(*) Lots selected among test vehicles of the list above.

NOTE: Parts in die form are qualified by all tests performed on products in TO-220AB package according to internal ST specification for die qualification.

(1) APM: Analog, Power & MEMS Group - ASD: Application Specific Device - IPAD: Integrated Passive and Active Devices

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