



PRODUCT/PROCESS CHANGE NOTIFICATION

PCN APM-DIS/07/2752
Notification Date 08/14/2007

APM - ASD & IPAD Division
SCRS & TRIACs in TO-220AB non insulated /D2PAK /I2PAK packages
Raw Copper Leadframe Implementation
DIS - ASD & IPAD

Table 1. Change Identification

Product Identification (Product Family/Commercial Product)	SCRS & TRIACs in TO-220AB (NI) / D2PAK / I2PAK
Type of change	Package assembly material change
Reason for change	Process rationalization
Description of the change	The assembly Bill Of Material is changed for a raw Copper leadframe instead of Copper with Ni layer, keeping same drawing, same internal composition, same suppliers.
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	Date code and Q.A. number
Manufacturing Location(s)	

Table 2. Change Implementation Schedule

Forecasted implementation date for change	12-Oct-2007
Forecasted availability date of samples for customer	07-Aug-2007
Forecasted date for STMicroelectronics change Qualification Plan results availability	16-Aug-2007
Estimated date of changed product first shipment	16-Nov-2007

DOCUMENT APPROVAL

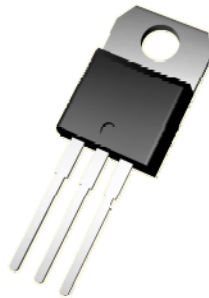
Name	Function
Moreau, Jean Benoit	Division Marketing Manager
Duclos, Franck	Division Product Manager
Besson, Andre	Division Q.A. Manager



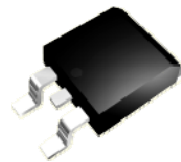
APM - ASD & IPAD Division¹

SCRS & TRIACs in TO-220AB non insulated /D²PAK /I²PAK packages:

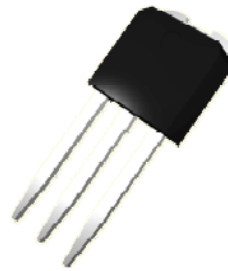
Raw Copper Leadframe Implementation



TO-220AB Non Insulated



D²PAK



I²PAK

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

WHY THIS CHANGE?

As a consequence of its programs for constant process improvement, STMicroelectronics has decided to progressively expand the use of raw copper leadframes for its **SCRs** and **TRIACs** using the **clip bonding** technology: **TO-220AB non insulated**, **D²PAK** and **I²PAK** packages.

The **products series** involved in this production extension are listed below.

Product Family	Product series	Product series
SCRs	TNxx- xxxG(-TR)	D ² PAK
	TYNxxxRG	TO-220AB (NI) ¹
	TYPxxxRG	TO-220AB (NI) ¹
TRIACs	AVSxx	TO-220AB (NI) ¹
	BTBxx-xxxRG	TO-220AB (NI) ¹
	Txxx-xxxG(-TR)	D ² PAK
	Txxx-xxxR	I ² PAK
	Txxx-xxxT	TO-220AB (NI) ¹

⁽¹⁾ NI = non insulated

WHAT IS THE CHANGE?

The assembly Bill Of Material status is modified as summarized in the table below.

Material	Current	New
Lead Frame	Copper with Ni layer	Raw Copper (same drawing, same internal composition, same suppliers)
Die Attach	Soft solder (PbSn2Ag2.5) - Unchanged	
Clip Bonding	Raw Copper - Unchanged	
Moulding Compound	Same Epoxy Resins	
Lead Finish	Matte Sn - Unchanged	

There will be **no impact** on the **electrical**, **dimensional** and **thermal parameters** of the products with respect to the product datasheet. This was verified in the qualification program. The products will be delivered in compliance with the RoHS*, with no change in the **MSL** as for devices in D²PAK (Moisture Sensitivity Level 1).

(* Restriction of the use of certain Hazardous Substances)

HOW AND WHEN?Qualification and test results:

The **reliability tests plan** supporting the qualification program for the modified bill of materials is provided in **appendix 1** of the present document. The production ramp-up will be monitored with a **pre-launch control plan** implemented on selected parameters.

The **reliability test report** of the qualification program will be available on request from **week 33-2007**.

Sampling:

Qualification samples of the devices produced with the new BOM will be **available** on request as indicated below:

Product Family	Salestypes	Availability
TRIACs	BTB06-600CRG BTB16-700BWRG BTB24-600BWRG T1635-600G T1635H-6T	From Week 28-2007

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

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:

Salestypes	Production Start	1st Shipments
ALL	From Week 41-2007	From Week 46-2007

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:

Parts assembled with the new BOM will have the same marking as currently produced parts. The **traceability** will be ensured by the **date code** and by the **Q.A. number**.

Appendix 1: Reliability tests for qualification program of change



SCRS & TRIACs in TO-220AB non insulated / D²PAK / I²PAK packages: Raw Copper Leadframe Implementation

Reliability tests plan for QUALIFICATION PROGRAM

Product Family	Test Vehicle Salestypes	Package
TRIACs	BTB06-600CRG BTB24-600BWRG T1635H-6T T1635-600G	TO-220AB (NI) ¹ TO-220AB (NI) ¹ TO-220AB (NI) ¹ D ² PAK

⁽¹⁾ NI = non insulated

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 Hours	3	77 pcs / lot	0 failure
Temperature Cycling JESD22 A104	-55°C/+150°C - Air/Air	1,000 cycles	2	77 pcs / lot	0 failure
Thermal Fatigue MIL STD750 – method 1037	T _j = 125°C ΔT _{case} = 55°C ± 5°C (T _j = 150°C, ΔT _{case} = 65°C ± 5°C for T1635H-6T)	10,000 cycles	2	30 pcs / lot	0 failure
Construction analysis	Random samples	Not applicable	1	5pcs	Assembly rules
Wire pull test MIL750-1037	Bond breaking force measurement	Not applicable	3	10 bonds from 5 devices	0 failure
Solderability JESD22-B102D	Dry ageing 16hrs / 220°C & 245°C – 5 sec dip. Steam aging 8hrs / 220°C & 245°C – 5 sec dip.	Not applicable	3	10 pcs / lot	0/30

(*) Lots selected among test vehicles indicated above.

NOTE : A preconditioning sequence is performed before PCT and TC reliability tests according to JESD22-A113 for surface mount devices (D²PAK).

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