



# PRODUCT/PROCESS CHANGE NOTIFICATION

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PCN APM-DIS/09/4358  
Notification Date 02/16/2009

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**APM - ASD & IPAD Division**

**Protection, Rectifiers, IPAD and AC Switches in SOT/SOD packages**

**Conversion to ECOPACK(r)2 "Halogen-free" Grade**

**Table 1. Change Implementation Schedule**

Forecasted implementation date for change	20-Feb-2009
Forecasted availability date of samples for customer	09-Feb-2009
Forecasted date for <b>STMicroelectronics</b> change Qualification Plan results availability	09-Feb-2009
Estimated date of changed product first shipment	18-May-2009

**Table 2. Change Identification**

Product Identification (Product Family/Commercial Product)	Protection, Rectif, IPAD & ACSwitches in SOT/Dx23
Type of change	Package assembly material change
Reason for change	Production rationalization
Description of the change	The purpose of this change is to meet the so called "Halogen-Free" requirements of the market through the implementation of the ECOPACK(r)2 program. The ECOPACK(r)2 grade is defined as follows: 1. RoHS compliant, including with its exemptions, 2. 500 ppm maximum of Antimony as oxide or organic compound in each organic assembly materials (glue, substrate, mold compounds, housing). 3. 900ppm maximum of [Bromine + Chlorine], this value referring to the maximum total content.
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	labeling, product marking and QA number
Manufacturing Location(s)	



## DOCUMENT APPROVAL


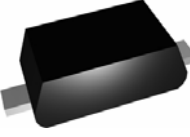







Name	Function
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**APM - ASD & IPAD Division<sup>1</sup>**

**Protection, Rectifiers, IPAD and AC Switches in SOT/SOD packages:**

**Conversion to ECOPACK®2 “Halogen-free” Grade**

 <b>SOD-123</b>	 <b>SOD-323</b>	 <b>SOT-523</b>
 <b>SOT-23</b>	 <b>SOT23-5L</b>	 <b>SOT23-6L</b>
 <b>SOT323-5L</b>	 <b>SOT323-6L</b>	 <b>SOT323</b>

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

**WHY THIS CHANGE?**

The purpose of this change is to meet the so called “**Halogen-Free**” requirements of the market through the implementation of the **ECOPACK®2** program.

The **ECOPACK®2** grade is defined as follows:

1. **RoHS compliant**, including with its exemptions,
2. **500 ppm** maximum of **Antimony** as oxide or organic compound in each organic assembly materials (glue, substrate, mold compounds, housing).
3. **900ppm** maximum of [**Bromine + Chlorine**], this value referring to the maximum total content.

**WHAT IS THE CHANGE?**

**ST ECOPACK®2** specification includes the suppression of halogenated substances when currently used in the moulding compound, and their replacement by new moulding compounds.

Additionally, **ECOPACK®2** products include the compliance to the ST banned substances list.

All P/N series involved in this change are listed below.

Product Sub-Family	Product Series	Packages
<b>AC Switches</b>	P0102AL 5AA4 P0102BL 5AA4 P0109AL 5AA4 SMDB3	SOD-123 SOD-323 SOD-523 SOT23-3L SOT23-5L SOT323-3L
<b>Protection</b>	DSL01-0xxSC5 ESDA14V2xxxx ESDA25x ESDA5V3xxx ESDA6V1xxxx ESDLIN1524BJ	
<b>Rectifiers</b>	BARxxxxFILM BASxxxxFILM BATxxxxFILM	
<b>IPAD</b>	USBxxxxW5 USBxxxxW6 USBxxxxP6	

The use of the **Halogen free** moulding compound will **not impact** the **electrical, dimensional** and **thermal** parameters, maintaining unchanged current information published on the relevant datasheets. The verification is included in the qualification program.

The devices produced with the new moulding compound comply with the **UL 94 V-0 standard**.

(\*) *Restriction of the use of certain Hazardous Substances*

**HOW AND WHEN?****Qualification and test results:**

The **reliability test plan** supporting the **qualification program** for the halogen-free moulding compound is provided in **appendix 1**.

The qualification report is available on request **now**.

**Sampling:**

For all the concerned Products Families, **samples of selected devices**, including the test vehicles, are available **on request as indicated below**.

Salestypes	Package	Availability
P0102AL 5AA4	SOT23-3L	Now
BAT20JFILM	SOD323	
BAT30KFILM	SOT523	
BAT41JFILM	SOD323	
BAT41KFILM	SOT523	
BAT46ZFILM	SOD123	
BAT54KFILM	SOT523	
ESDA5V3L	SOT23-3L	
BAT54JFILM	SOD323	
BAT30CWFILM	SOT323	
BAT54CWFILM	SOT323	
BAT54SWFILM	SOT323	
BAT46FILM	SOT23-3L	

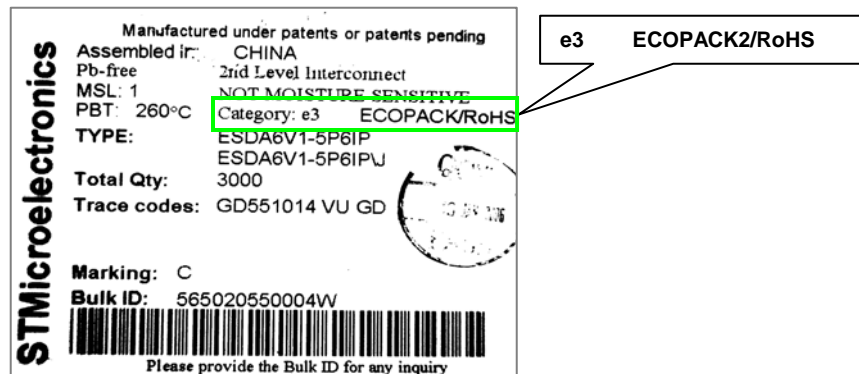
Other samples are available on request for delivery within notice period if ordered within 30 days from notification.

**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
<b>ALL</b>	From Week 08-2009	From Week 19-2009

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**.

**Traceability:****ECOPACK®2 label**

More information on the adopted marking and labelling is available in Information Letter # CRP/08/4251 issued on Dec.23rd, 2008.

The **traceability** is mainly ensured by the **labeling**, the **product marking** when space on the component body allows it, and by the **Q.A. number**.

Appendix 1: Reliability tests for qualification program of change





Protection, Rectifiers, IPAD and AC Switches in SOT/SOD packages: Conversion to ECOPACK®2 “Halogen-free” Grade

**Reliability tests of QUALIFICATION PROGRAM**

Test vehicles (*)	Product Family
STPS0520Z	Rectifiers
BAT41KFILM	
BAT46FILM	
ESDA6V1W5	Protection
ESDA6V1-5W6	
DALC208SC6	
P0102AL-5AA4	AC Switches

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	6	77 pcs / lot	0 failure
Temperature Humidity Bias JESD22 A101	Tamb = 85°C RH = 85% VR = 0.8 x VRRM or 100V max	1000 hours	6	77 pcs / lot	0 failure
High Temperature Reverse Bias JESD22-A108	VR = 0.8 x VRRM Tj = Tjmax or 100V max	1000 hours	4	77 pcs / lot	0 failure
Construction analysis	Random samples, 3 lots Insulated, 3 lots non Insulated	Not applicable	3	5 pcs	Assembly rules
Physical dimension JESD22 B100	As per package dimensions & tolerances	Not applicable	1	30 pcs	0 failure
Resistance to Solder Heat JESD22B-106-A	2 oil dipping 260°C 10s ON / 15s OFF		3	30 pcs/lot	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	4	15 pcs / lot	0 failure

(\*) selected as per structural similarity procedures according to AEC-Q101

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

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