PRODUCT/PROCESS CHANGE NOTIFICATION

PCN MPA-DIS/06/2031
Notification Date 10/16/2006

MPA - ASD & IPAD Division

100V Power Schottky Rectifiers

Die layout optimisation

DIS - ASD & IPAD

Table 1. Change Identification

Product Identification (Product Family/Commercial Product)	100V Power Schottky Rectifiers - STPSxx100xx
Type of change	Product design change
Reason for change	Manufacturing efficiency and service improvement
Description of the change	Die layout optimisation
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	Product labeling - Traceability ensured by QA nbr
Manufacturing Location(s)	

Table 2. Change Implementation Schedule

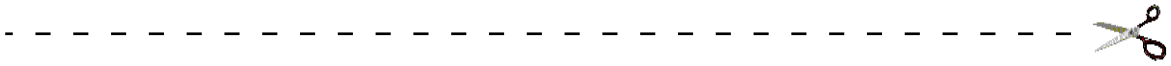
Forecasted implementation date for change	12-Oct-2006
Forecasted availabillity date of samples for customer	12-Oct-2006
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	12-Oct-2006
Estimated date of changed product first shipment	12-Jan-2007

Table 3. Change Responsibility

	Name	Signature	Date
Division Product Manager	S. CHAMARD		Oct.12 ,06
Division Q.A. Manager	A. BESSON		Oct.12 ,06
Division Marketing Manager	J.B. MOREAU		Oct.12 ,06

Table 4. List of Attachments

Customer Part numbers list	
Qualification Plan results	



Customer Acknowledgement of Receipt	**PCN MPA-DIS/06/2031**
Please sign and return to STMicroelectronics Sales Office	**Notification Date 10/16/2006**
☐ Qualification Plan Denied	Name:
☐ Qualification Plan Approved	Title:
	Company:
☐ Change Denied	Date:
☐ Change Approved	Signature:

Remark

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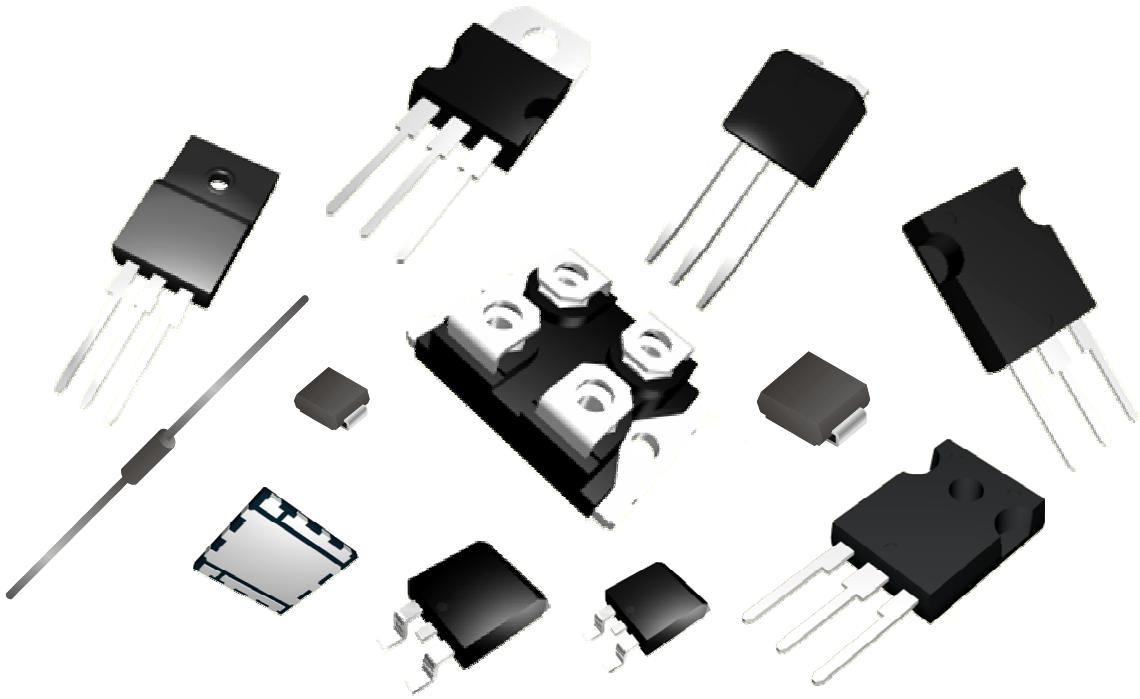
MPA - ASD & IPAD Division[1]

100V Power Schottky Rectifiers:

Die layout optimisation



(1) MPA: Micro, Power, Analog - ASD: Application Specific Device - IPAD: Integrated Passive and Active Devices

WHY THIS CHANGE?

The permanent evolution of our technology, sustained by the introduction of new products and the constant trend for ever increased current density by Silicon area, leads us to implement a new **die layout optimization** for our Power Schottky Rectifiers, starting with the 100V, 1 to 160A products.

This change will allow higher **manufacturing efficiency** and consequently to better meet the **growing demand** on our Power Schottky Rectifiers.

The involved product series are listed below:

Product Series	Package	Current Range
STPSxx100	TO220	20-30A
STPSxxH100	SMA, SMB, DO-41, DPAK, D²PAK, I²PAK, PowerFLAT, TO-220AB, TO-220AC, TO-220FPAB, TO-220FPAC, TO-247, Max247, ISOTOP	1 to 160A
STPSxxS100	I²PAK, TO-220AB, TO220FPAB	20-40A

WHAT IS THE CHANGE?

The **die periphery** will be optimised with our last technology development, meaning with the **sawing street now standard** to all Power Schottky Rectifiers and with a **guard ring resized** according to our design rules.

The **active area** remains exactly the **same** as for current versions, resulting in rigorously the **same electrical parameters and performance for all products**, with respect to the product datasheet.

The verification by characterization that there is **no impact on the electrical parameters**, including the **forward voltage drop** (V_F), the **leakage current** (I_R), the **breakdown voltage** (V_{BR}) and the **surge capability** (peak avalanche power and ESD parameters) is included in the qualification program.

The change will be simultaneously implemented in the manufacturing sites of Singapore and France.

HOW AND WHEN?

Qualification program and results availability:

The **qualification program** for this die layout optimisation mainly consists of **reliability tests** and **comparative electrical characterizations** according to the **AEC Q101** standard.

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

Samples and characterization data availability:

Qualification samples and electrical **characterization data** of selected devices are **available** on request as indicated below.

Salestypes	Package	Availability
STPS2H100A	SMA	From wk 45
STPS2H100U	SMB	Now
STPS5H100B(-TR)	DPAK	Now
STPS8H100D	DPAK	From wk 45
STPS8H100G-TR	DPAK	Now
STPS8H100FP	TO-220FPAB	Now
STPS10H100CFP	TO-220FPAB	Now
STPS10H100CT	TO-220AB	Now
STPS20100CT	TO-220AB	Now
STPS20H100CFP	TO-220FPAB	Now
STPS20H100CG-TR	D²PAK	Now
STPS20H100CR	I²PAK	From wk 45
STPS20H100CT	TO-220AB	Now
STPS20S100CFP	TO-220FPAB	Now
STPS20S100CT	TO-220AB	Now
STPS30H100CT	TO-220AB	Now
STPS30H100CW	TO-247	Now
STPS40H100CW	TO-247	Now
STPS41H100CG-TR	D²PAK	Now
STPS41H100CR	I²PAK	Now
STPS61H100CW	TO-247	Now

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

Change implementation schedule:

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

Production Start	1st Shipments
From Week 41-2006	From Week 02-2007

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-B). In any case, **first shipments** may start earlier with customer's **written agreement**.

Marking and traceability:

The **marking** of the components will include the differentiation of the die layout in the lot number.

The **traceability** for the new die layout will be ensured by an **internal codification** and by the **Q.A. number**.

Appendix 1: Reliability tests for qualification program.

100V Power Schottky Rectifiers: Die layout optimisation

QUALIFICATION PROGRAM (according to AEC Q101 standard)

Test vehicles	Package
STPS2H100U	SMB
STPS5H100B	DPAK
STPS20H100CT	TO-220AB

QUALIFICATION TESTS					
TEST	**CONDITIONS**	**DURATION**	**NBR OF LOTS (*)**	**SAMPLE SIZE**	**ACCEPTANCE CRITERIA**
Parametric verification vs datasheet + distribution comparison	See datasheet	-	3	25 pcs / lot	Datasheet
Thermal Cycling JESD22-A104	-55°C/+150°C Air/Air	1000 cycles	3	77 pcs / lot	0 failure
Pressure Cooker Test JESD22-A102	121°C 2 atm 100%RH	96 Hours	3	77 pcs / lot	0 failure
High Temperature Reverse Bias JESD22 A-108	V = 0.8 V_{RRM} Tamb = 150°C	1000 hours	3	77 pcs / lot	0 failure
Temperature Humidity Bias JESD22-A101	Tamb = 85°C RH = 85% V = 0.8V_{RRM}	1000 hours	3	77 pcs / lot	0 failure
Resistance to Solder Heat JESD22-B106-B	2 dipping 260°C	2 x 10s	2	30 pcs / lot	0 failure
Die shear MIL750-2017	Die shear resistance	N/A	3	10 pcs / lot	0 failure

(*) Lots selected among test vehicles of the list above or of other devices presenting sufficient technological similarities in application of the AEC Q101.
NOTE: A preconditioning sequence on SMD products is performed before TC, PCT and THB reliability tests according to JESD22-A113

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