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Unterpemsttten, July 17, 2014

Process Change Notification PCN18-2014

Installation of improved fab metallization process for 0.35 μ m technologies

Dear Customer,

AMS management team decided to take the next step in the roadmap towards advanced technology nodes. Within the next year 0.18 μ m technology will be ramped up in Fab B. This offers the possibility to reengineer and improve installed process steps.

Therefore, please be informed that ams will modify Fab B 0.35 μ m metallization processes towards improved single process steps established in semiconductor industry for advanced technologies already for years.

The modified process combines following single process steps:

- tungsten CMP replaces tungsten etchback process
- decreasing of aluminium metallization deposition temperature from 300°C to 200°C
- adaption of ARC layer for new aluminium metallization

These changes are applicable to all metal layers.

Products affected:

Please refer to product list on page 6

**Purpose of Change:**

The installation of enhanced single processes as part of ramp up of 0.18µm technology in Fab B enables the improvement of established 0.35µm technology. Already established process modules in Fab B will be rolled out to less advanced 0.35µm technology node at ams.

The applied changes are triggered by continuous improvements towards lower defect density and higher yield. Furthermore the changes increase process robustness and manufacturability due to better layer uniformity.

The new processes will provide additional flexibility and capacity to further improve responsiveness and on time delivery to ams customers.

Single Process Changes:

See detailed information in appendix

Qualification Strategy:

ams is qualifying process change based on established change management flow including safe launch phase.

The qualification includes:

- Inline and defect data review
- Wafer acceptance test
- Wafer probe test results
- Process reliability (electromigration) – three lot qualification
- Product reliability test (HTOL) - three lot qualification

Detailed qualification results can be provided upon request.

Target Date of Implementation:

September 2014

Sample Availability:

Sample availability has to be aligned

**Risk Assessment:**

The risk is classified as low based on following facts:

- State of the art metalization scheme for advanced process nodes
- Improved topography / layer uniformity - no plug recess
- Reduced defect density / higher yield
- Metallization and interconnect qualification, see above
- Process and line control via established fault detection and classification (FDC) system, reliability monitoring and MRB approach

Detailed risk assessment is covered by updated process FMEA.

Please be advised that unless we receive your written refusal concerning this PCN within 30 days, the PCN shall be deemed accepted.

If you do have further questions, please do not hesitate to contact us.

Best Regards,

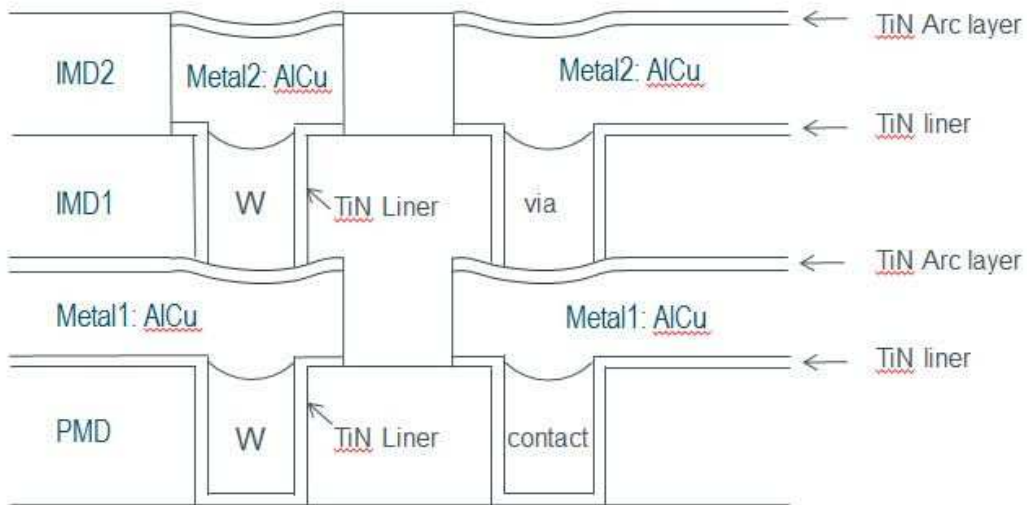
Udo Theißl
ams AG
QC Manager

Appendix:**Detailed information:****Process comparison:**

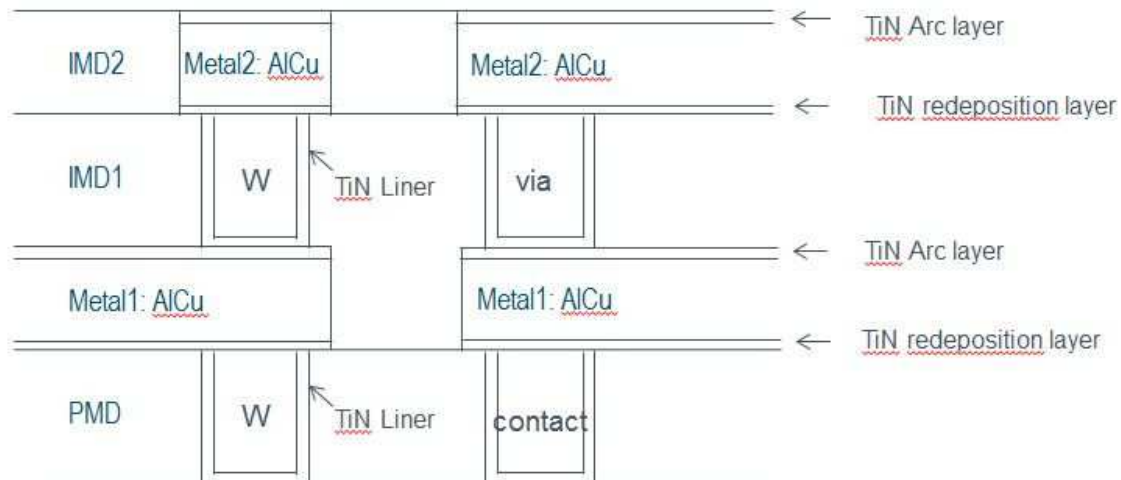
OLD PROCESS		NEW PROCESS	
contact	Contact/via formation	contact	Contact/via formation
liner	Liner deposition	liner	Liner deposition
WxD	Tungsten deposition	WxD	Tungsten deposition
	Tungsten etch back	CMP	Tungsten CMP
		Ti/TiN	Ti / TiN Redeposition
MxD	Metal deposition Arc layer	MxD	Metal deposition Arc layer

Metallization and interconnect – schematic

Old process:



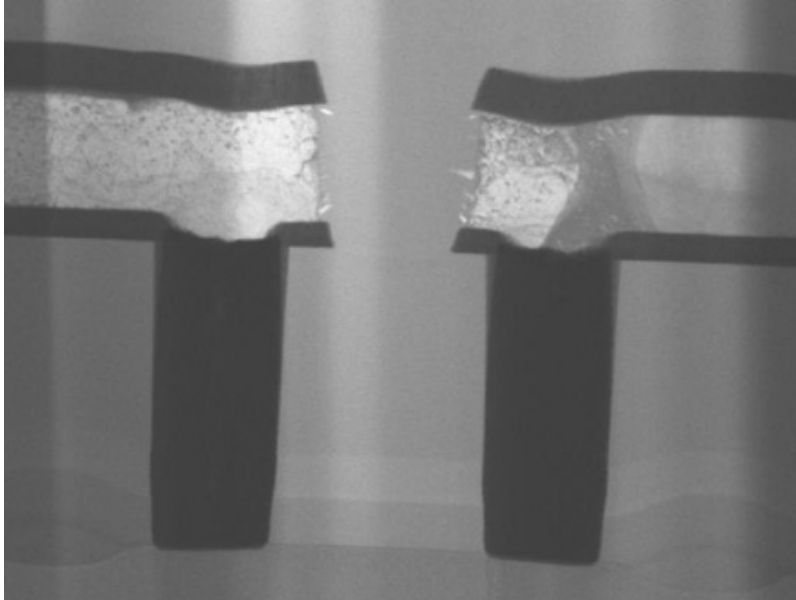
New process:



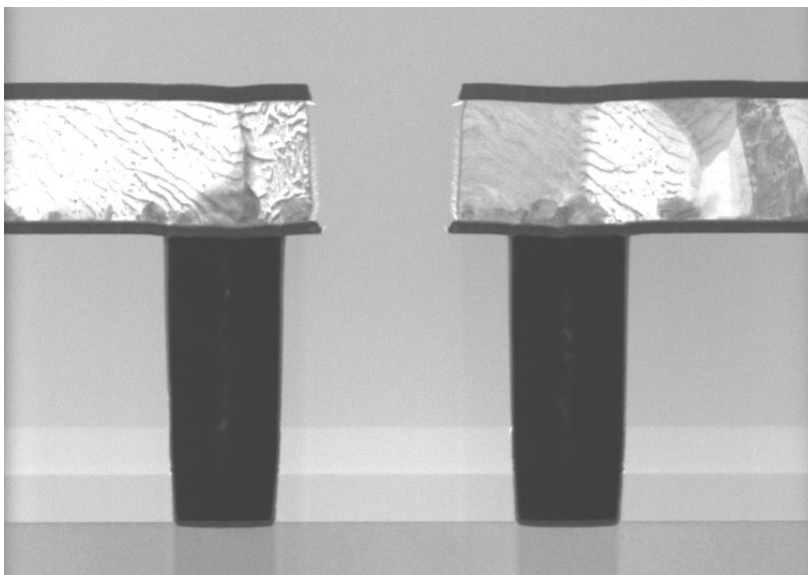


X-Section: STEM

Old Process:



New process:





Products affected:

AS1122 x
AS2522x
AS2523x
AS3421x
AS3422x
AS3728x
AS3820x
AS3821x
AS3822x
AS3823x
AS3910x
AS3911x
AS3922x
AS5013x
AS5600x