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Premstaetten, October 25, 2018

PCN05A-2018 (NanEye-PCR-08A)
NanEye2D Supply Chain update)
UPDATE – October 2018

Dear Customer,

In order to ensure the continuous improvement and to reinforce the NanEye2D supply chain, ams has qualified Xintec for the TSV (Trough Silicon Via) process. It is ams intention to use Xintec as the primary source of the TSV process.

With this update, ams has the clear objective to create a more robust, efficient and quality driven NanEye2D supply chain, supporting all customers forecast demands.

This is an revision of the notification that was sent on February 26th, 2018. The update includes the following:

- the statement on the change of material in the product.
- Update of the part number list (2x2 chip versions are subject to a separate PCN)

The changes are in *Italic font*.

Impact on design

In 1X4 variation, Xintec solder balls have lower amount of solder material compared to IZM (nominal ball height of 40 um for Xintec compared to 52 um for IZM). However pull test results are PASS for Xintec sample cameras.

The change in the supply chain includes a change of material. The main changes in material are:

- *RDL (Redistribution layer) changing from Copper to Aluminum*
- *Protection of the RDL changing from Overcoat to Solder Mask.*

For the cabled versions no material changes are affecting the outside of the product. All material changes for the cabled versions are inside the product. For the chip versions the change on the outside is the solder mask only.

MDF (Material Declaration Form) can be obtained on request.

Bankverbindungen/
Bankaccounts
UniCredit Bank Austria AG, Graz

IBAN EUR AT28 1200 0763 1316 1100
BIC BKAUATWW
IBAN USD AT60 1200 0763 1316 1106

Firmenbuchgericht Graz
Firmenbuch Nr. FN 34109k

DVR 0420352
UID/VAT ATU 28560205



Impact on product performance

Sample cameras have been built and tested without showing degradation of product performance.

Impact on supply chain

The supply chain will be updated in order to introduce Xintec

Impact on reliability/qualification status

A qualification program has been completed successfully to qualify the change.

Affected products

Please refer to product list starting on pg 4

The 2x2 chip versions have been removed from the part number list. For the 2x2 chip versions this change is foreseen in the future and will be announced by a separate PCN.

Timing of change

According to the qualification report, the qualification is concluded with positive results, and ams will introduce Xintec immediately into the supply chain.

Verification strategy

Sample cameras has been built and tested without showing degradation of product performance.



Traceability

Traceability will be ensured by the wafer batch ID number in SAP.

Verification of implementation

Yield and electrical test results of first production batches will be reviewed and compared to historical production data.

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

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

Best regards,

A handwritten signature in black ink, appearing to read 'M. Pflieger', with a horizontal line extending to the right.

Michael Pflieger
ams AG
Director Operations ISS



Affected products

PRODUCT LIST

The 2x2 chip versions have been removed from the part number list. For the 2x2 chip versions this change is foreseen in the future and will be announced by a separate PCN.

<u>material ID</u>	<u>product description</u>
301170004	NE2D_CHIP_RGB CON
301170005	NE2D_RGB_FOV90F4.0_2M FT SE
301170006	NE2D_RGB_FOV90F6.0_2M FT SE
301170007	NE2D_RGB_FOV90_F2.7_2M FT SE
301170008	NE2D_RGB_FOV120_F2.8_2M FT SE
301180009	NE2D_B&W_FOV90_F2.7_2M FT SE
301170009	NE2D_RGB_FOV90_F6.0_HSW FT SE
302630001	NE2D_RGB_FOV120_F2.8_3M FT SE
301180003	NE2D_B&W_FOV120_F2.8_2M FT SE
301180004	NE2D_B&W_FOV90_F4.0 FT SE
301170010	NE2D_RGB_FOV90F4.0_NB_2M FT SE
302690001	NE2D_RGB_2M FT SE
301170011	NE2D_RGB_FOV120_F2.8_NOCABLE FT SE
301170012	NE2D_RGB_FOV90F4.0_NP_2MFT SE
301170013	NE2D_RGB_FOV90F6.0_0.30M FT SE
301170014	NE2D_RGB_FOV90F6.0_0.31M_S FT SE
301170015	NE2D_RGB_FOV90F6.0_3M_S FT SE
301170016	NE2D_RGB_FOV90_F2.7_STEREO FT SE
301170017	NE2D_RGB_FOV90_F2.7_NB_2M FT SE
301170018	NE2D_RGB_FOV90F4.0_1M FT SE
301170019	NE2D_RGB_FOV90F4.0_NP_1M FT SE
301180005	NE2D_B&W_2M FT SE
301170020	NE2D_RGB_FOV90F4.0_FT SE
301170021	NE2D_RGB_FOV90F4.0_NP_1.05MFCS FT SE
301170022	NE2D_RGB_FOV90F6.0_NB_2M FT SE
302540001	NE2D_RGB_FOV90F4.0_NP_2M_50UM FT SE
301170046	NE2D_RGB_FOV120_F2.8_2M_S FT SE
301170049	NE2D_RGB_FOV90F6.0_1.5M SE
301170023	NE2D_RGB_FOV90_F4.0_TUBE FT SE



<u>material ID</u>	<u>product description</u>
302610001	NE2D_RGB_NP_NB_2M FT SE
301180006	NE2D_B&W_FOV90_F2.7_NB_2M FT SE
302720001	NE2D_RGB_FOV120_F2.8_NB_2M FT SE
301170024	NE2D_RGB_FOV120_F2.8_NP_2.4M_USB FT SE
301170025	NE2D_RGB_FOV120_F2.8_0.87M_BSCI FT SE
301170026	NE2D_RGB_NP_2M FT SE
302730001	NE2D_RGB_FOV120_F2.8_NP_2M FT SE
301170047	NE2D_RGB_FOV90_F2.7_0.19M FT SE
301170027	NE2D_RGB_FOV160_F2.4_0.9M FT SE
302680001	NE2D_B&W_FOV90_F2.7_2.5M FT SE
301170028	NE2D_RGB_FOV90_F2.7_1.33M FT SE
301170029	NE2D_RGB_FOV90_F2.7_LED_RING FT SE
301170030	NE2D_RGB_FOV160_F2.4_2M FT SE
302700001	NE2D_B&W_2M_NB FT SE
302550001	NE2D_RGB_FOV120_F2.8_2.4M_BSCI FT SE
302580001	NE2D_RGB_FOV120_F2.8_0.6M_BSCI FT SE
301170031	NE2D_RGB_FOV120_F2.8_LED_RING FT SE
301170032	NE2D_RGB_FOV90_F4.0_LED_RING FT SE
302660001	NE2D_RGB_FOV90F4.0_NP_1.05MRCRW FT SE
301170033	NE2D_RGB_FOV120_F2.8_3M_S FT SE
301170034	NE2D_RGB_FOV90_F2.7_0.17M FT SE
301170035	NE2D_RGB_FOV160_F2.4_LED_RING FT SE
301170045	NE2D_RGB_FOV90_F6.0_LED_RING FT SE
302560001	NE2D_B&W_1.5M_SC FT SE
302710001	NE2D_RGB_FOV90F6.0_NB_3M FT SE
301170036	NE2D_RGB_FOV90_F2.7_1.33M_S FT SE
301170037	NE2D_RGB_FOV120_F2.8_0.4M FT SE
301180007	NE2D_B&W_1.5M_NP FT SE
301170038	NE2D_RGB_FOV90F4.0_2.1M FT SE
301170039	NE2D_RGB_FOV120_F4.0_0.5M FT SE
302620001	NE2D_RGB_FOV120_F2.8_NP_2.4M_BSCI FT SE
302510001	NE2D_B&W_FOV120_F2.8_NB_NP_1M FT SE
301170040	NE2D_RGB_F2.8_2LED_RING_BFM_V2.0 FT SE
301180008	NE2D_B&W_FOV120_F2.8_STEREO FT SE
302750001	NE2D_RGB_FOV120_F2.8_NB_3M FT SE
301170043	NE2D_RGB_FOV160_F2.4_1M FT SE
301170041	NE2D_RGB_FOV120_F4.0_2M FT SE
301170048	NE2D_RGB_FOV90F4.0_ST_2M FT SE
301170044	NE2D_RGB_FOV120_F4.0_1.1M FT SE



<u>material ID</u>	<u>product description</u>
301170003	NE2D_CHIP_RGB SW
301170042	NE2D_RGB_FOV90F4.0_ST_2M_PF FT SE
301170050	NE2D_RGB_FOV90_F6.0 CLOSERF FT SE
301170051	NE2D_RGB_FOV120_F2.8 NOP1.45 SE
301170052	NE2D_RGB_F2.8_2LEDRING_BFS_V2.0 FT SE
301170053	NE2D_RGB_FOV160_F2.4_1.45M_BSCI FT SE
301170054	NE2D_RGB_FOV120_F2.8 SE
301170055	NE2D_B&W_FOV160_F2.4_2M FT SE
301170056	NE2D_RGB_FOV90F4.0_3M FT SE
301170057	NE2D_RGB_FOV90F4.0_3M FT SE
301170059	NE2D_RGB_FOV90_F2.7_0.17M_FB FT SE
301170060	NE2D_RGB_FOV120_F4.0_1M_NP FT SE
301170061	NE2D_RGB_FOV90_F2.7_1.78MSH FT SE
301170062	NE2D_RGB_FOV160_F2.4_3M FT SE
301170063	NE2D_RGB_FOV120_F2.8_0.87M_BSCIV1.2 FTSE
301170064	NE2D_RGB_FOV120_F4.0_3M FT SE
301170065	NE2D_RGB_FOV90_F2.7_0.3M FT SE
301170066	NE2D_RGB_FOV120_F2.8_6W FT SE
301170067	NE2D_RGB_FOV90_F2.7_1.1M FT SE
301170071	NE2D_RGB_1X4 SAW
301170072	NE2D_RGB_CHIP_1X4 CON
301170074	NE2D_RGB_FOV160_F2.4_NP_2.4M_USB FT SE
301180001	NE2D_CHIP_B&W SW
301180010	NE2D_B&W_FOV90F6.0_3M FT SE
301200017	NE2D_B&W_1X4 SAW
301200028	NE2D_B&W_1X4 SAW
301200030	NE2D_B&W_CHIP_1X4 CON
302630002	NE2D_RGB_FOV120_F2.8_2.4M FT SE
302630003	NE2D_RGB_FOV120_F2.8_2.4MCH FT SE
302630004	NE2D_RGB_FOV120_F2.8_3.6MCH FT SE
302630003	NE2D_RGB_FOV120_F2.8_2.4MCH FT SE
302630004	NE2D_RGB_FOV120_F2.8_3.6MCH FT SE