JAN20
NanoXplore
FACTS SHEET

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- **Current version** : **v2.9.6 issued 05/12/2019**
- **V2.9.6 new features** : On top of bugs fixed,
  - Bitstream NG-Large,
  - NX_R5_L component provided in NX library,
  - NX_HSSL_L component provided in NX library,
  - DFI DDR2 IP available (provided example),
  - FIFO IP available (in Nxcore),
  - Support for preplace Fes in specific tiles with PrePlaceFile option.
- **V2.9.6 tweaks**:
  - Updated encryption mechanism,
  - IP licensing mechanism,
  - Remote obsolete threshold options,
  - Add check of NX_WFG connections in first step of Synthesis.
- **Next release** : **v2.9.6** expected CW1951

DOCUMENTATION
http://download.nanoxplore.com

✓	NXmap Reference Guide:	v2.0 (22oct18)
✓	NXmap User Manual	v2.9.4 (18jun19)
✓	NXmap using Python IDE	v1.1 (17jun19)
✓	NX Library Guide	v1.5 (17jun19)
✓	NXBase2 User Manual:	v2.2.2 (18jun19)
✓	Cookbook:	v1.4 (5sep19)
✓	Nxscope User Manual & startup	v1.1 (21oct19)
✓	NX SpW Bank IP	v1.0 (28nov18)
✓	NX SERDES IP	v1.0 (21oct19)
✓	NX DFI DDR2 IP	v1.0 (5dec19)
✓	NG-Medium datasheet:	v1.9 (18oct19)
✓	NG-Medium Cfg Guide:	v1.1 (21oct19)
✓	NG-Medium NXPE	v1b (17jan19)
✓	NG-Medium IBIS models	v1 (14nov18)
✓	NG-Medium Devkit-v3 UG:	v1.04 (18feb19)
✓	NG-Medium Radiation report:	v3.3 (23oct19)
✓	NG-Large datasheet	v1.0 (3dec18)
✓	NG-Large Pkg & pinout	v1.0 (21oct19)
✓	NG-Large NXPE	v1.a (17jan19)
✓	NG-Large Devkit-v1 UG	v1.0 (23oct19)

See you at
SEFUW#05 – 17-19mar20
@ Noordwijk (NL)

NXmap v3 coming soon ...
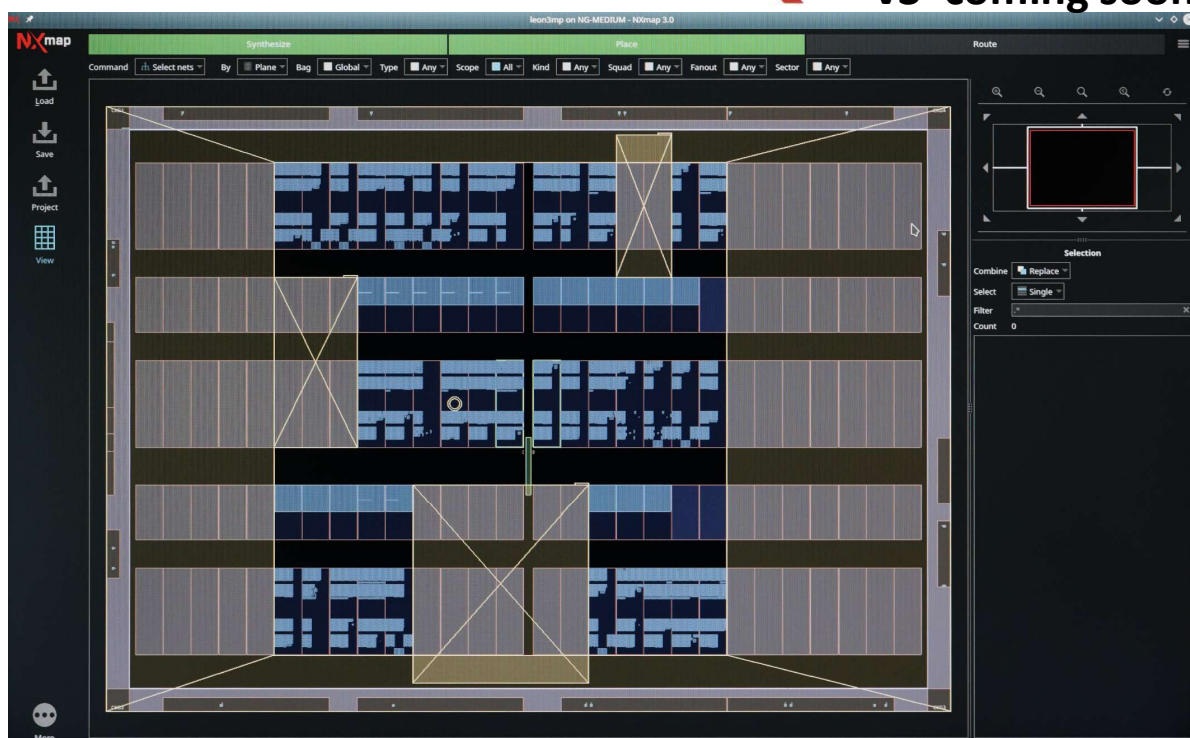
NG medium

Technology: 65nm CMos
Organic Package: FG625   **Proposed QA level**: PR, M, MP, B and E grades
Ceramic Packages: CQ352, LG625, CG625   **Proposed QA flows**: PR, M, Q and V grades
Industrial status:

NXmap v2/v3	Proto	EK v4	M/S parts Organic	Mil Parts Ceramic	Spa parts Ceramic	SMD Or ESCC
NOW/Apr20	NOW	NOW	SEP20	NOW	NOW	SEP20

News: NXmap training course done successfully in Dec19.
Qualification: NX1H35AS (= NG-Medium Metal-fix) qualification running, acc. DLA instructions.
          NG-Medium/FG625 selected for the 1st ESCC9000P (Plastic) qualification.
Flight Heritage: Floripasat-1 launch with Amazonia-1 scheduled JUN20.

NG large

Technology: 65nm CMos
Organic Package: FF1752   **Proposed QA level**: PR, M, MP grades
Ceramic Packages: LF1752, CF1752   **Proposed QA flows**: PR, M, Q and V grades
Industrial status:

NXmap v2/v3	Proto PR	EK v1	Mil parts Organic	Mil parts Ceramic	Spa parts Ceramic	SMD Or ESCC
NOW/Apr20	NOW	NOW	SEP20	Q1CY21	Q2CY21	TBD

News: Design validated. 1st NG-Large Evaluation Kits delivered end-19.
Qualification: Started.
Flight Heritage: Several projects identified. 1st Flight heritage expected H1CY21.

NG ultra

Technology: 28nm FDSOI
Organic Package: FF1752   **Proposed QA level**: PR, M, MP, B and E grades
Ceramic Packages: LF1752, CF1752   **Proposed QA flows**: PR, M, Q and V grades
Industrial status:

NXmap v3	1st-run Proto	EK v1	M/S Parts Organic	Mil Parts Ceramic	Spa Parts Ceramic	SMD Or ESCC
Q4CY20	Q4CY20	Q1CY21	Q3CY21	Q4CY21	Q2CY22	TBD

News: Design completed. 1st-run samples expected within coming months.
Qualification: Too early.
Flight Heritage: N/A.

Next device will be the Ultra-150

Definitions
- NXmap, Prototype(s), Product Evaluation Kit (EK): Availability dates.
- Military & Space parts Organic: Organic product industrialized & ORDer entry OPEN.
- Mililtary parts Ceramic: Ceramic product, M/MP flow(s) industrialized & ORDer entry OPEN.
- Space parts Ceramic: Ceramic product, Q/V flows industrialized & ORDer entry OPEN.
- SMD or ESCC: Expected date when either the SMD or ESCC specification number will become valid & active.

RHBD FPGA Products

NG medium / NG large / NG ultra

Device	Details	NX1H35AS	Details	NX1H140TSP	Details	NX2H540TSC
Capacity		C65Space		C65Space		C28FD Space
ASIC Gates		550 000		1 900 000		8 000 000
Logic Modules (FPGA)	3x Tiles + 2CGBs		7x Tiles + 4CGBs		15x Tiles + 9CGBs	
Register	384DFF*28*3rows	32 256	384DFF*48*7rows	129 024	384DFF on 15rows	505 344
LUT-4	408LUT*28*3rows	34 272	408LUT*48*7rows	137 088	408LUT on 15rows	536 928
Carry	96CY*28*3rows	8 064	96CY*48*7rows	32 256	96CY on 15rows	126 336
Embedded RAM		2,9Mb		9,9Mb		33Mb
DPRAM	28RAM*2* 48Kb	2.688K	48RAM*4* 48Kb	9.216K	672RAM * 48Kb	32.256K
Core Register File	28RF*2*3rows	168	48RF*2*7rows	672	672RF *2*2	2 688
Core Register File Bits	168*64*(16+6)bits	168K with ECC	672*64*(16+6)bits	672K with ECC	2688*32*18	1 512K hardened
Clocks / PLL	4 CLK / 4 PLL	4	4 CLK / 4 PLL	4	7 CLK / 7 PLL	7
Additional Features (SOC)						
SpaceWire PHY (8 IOBs)	2x/Complex IOBank	16	2x/Complex IOBank	20	2x/Complex IOBank	20
DDR3/4 PHY (11IOBs)	2x/Complex IOBank	16	2x/Complex IOBank	20	2x/Complex IOBank	20
DSP Blocks	From 2 CGBs	112	From 4 CGBs	384	From 9 rows	1344
SpaceWire link I/F 430Mbps	CODEC	1	CODEC	1	CODEC	1
SERDES Tx/Rx	-	-	4 Hex x 6 SERDES	24x @ 6,25Gbps	8 Quad x 4 SERDES	32x @ 12,5Gbps
Hard IP Processor core	-	-	ARM Cortex-R5	1	ARM Cortex-R52	4
SoC Peripherals	NXcore	TBD	NXcore	TBD	DALHIA	YES
Design Security		NO		NO		YES
Inputs / Outputs (I/O)		-		-		-
I/O banks	8 Complex + 5 Simple	13	10 Complex + 14 Simple	24	10 Complex + 4 Simple	14
Packages - User I/Os (PKG)						
CQ352	48*48mm / 0,5mm	192	-	-	-	-
LG/CG625	29*29mm / 1mm	374	-	-	-	-
FG625	27*27mm / 1mm	374	-	-	-	-
LF1752 & CF1752			45*45mm / 1mm	684	45*45mm / 1mm	436 + SoC 308
FF1752			42,5*42,5mm / 1mm	684	42,5*42,5mm / 1mm	436 + SoC 308

Packages

Ceramic

NG-Medium
- CQ352
  - CQFP technology
  - 352pins
  - 0,5mm pitch
- LG625
  - Fine pitch 1mm
  - 29*29mm body
- CG625
  - CLASP
  - Or Copper Ribbon

NG-Medium
- FG625
  - Fine pitch 1mm
  - 27*27mm body
  - Wire-bonded
  - Lead-free

NG-Large
- LF1752
  - Fine pitch 1mm
  - 45*45mm body
- CF1752
  - CLASP
  - Or Copper Ribbon

NG-Large
- FF1752
  - Fine pitch 1mm
  - 42,5*42,5mm body
  - Flip-chip
  - Lead-free

NG-Ultra
Same as NG-Large
- LF1752
- CF1752

NG-Ultra
Same as NG-Large
- FF1752

Ultra-150
- LF484 & CF484
  - Fine pitch 1mm
- CQ256 (TBC)
  - 0,5mm pitch

Ultra-150
- FF484
  - Fine pitch 1mm
  - 23*23mm body
  - Flip-Chip
  - Lead-free

Organic

NG-MEDIUM (NX1H35AS) → NG-LARGE (NX1H140TSP) → NG-ULTRA (NX2H540TSC) → Ultra-150 (NX2H150TSA)

CERAMIC & ORGANIC packages ballprint & pinout compatible
NG-Medium: FG625 with LG625,
NG-Large: FF1752 with LF1752,
NG-Ultra: FF1752 with LF1752 (TBC,
Ultra-150: LF484 wth FF484 (TBC).

QA Flows

Ceramic	M	Q	V
WLAT	✗	✓	✓
TID / Report	✗	✓	✓
SLDC	✗	✓	✓
T/C	✗	10cy	10cy
IVI	2010B SPL	2010B 100%	2010A 100%
Pind-Test	✗	On Request	✓
Serialization	✗	✗	✓
Burn-In	✗	160h	240h
PDA	✗	5%	5%
Electrical Test	-55°C & +125°C	25°C then -55°C & +125°C	25°C then -55°C,+125°C R&R
QCI	✗	✗	✓
EVI	SPL	✓ 100%	100%
CoC	✗	✓	✓

Organic	M	MP	B	E
WLAT	✗	✗	✓	✓
TID / Report	✗	✗	✓	✓
SLDC	✗	✗	✓	✓
T/C	✗	10cy	10cy	10cy
IVI	2010B SPL	2010B SPL	2010B 100%	2010A 100%
CSAM	✗	✗	✓	✓
Serialization	✗	✗	✗	✓
Burn-In	✗	48h	160h	240h
PDA	✗	✗	1%	1%
Electrical Test	-55°C & +125°C	+25°C then -55°C & +125°C	+25°C then -55°C & +125°C	25°C then -55°C & +125°C R&R
LAT 1/2/3	✗	✗	✓	✓
EVI	SPL	SPL	100%	100%
CoC	✗	✗	✓	✓

Feel free to contact support@nanoxplore for any questions about NanoXplore HW or SW issues

NX NEWS

NXmap Training course

Please note, next NanoXplore NXmap training course which will hold at NX headquarters in Sèvres (F-92310) will be scheduled 28/30apr20. Cost is 300€/person.
The following one will happen Q4CY20.
Please contact sales@nanoxplore.com for additional details and to register.

NX web site

Please visit our brand new web site
https://www.nanoxplore.fr
https://www.nanoxplore.com

Feel free to contact support@nanoxplore for any questions about NanoXplore HW or SW issues