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# Teledyne e2v LX2160-Space

## Radiation-Tolerant 16x ARM® Cortex®-A72 2.2 GHz Microprocessor

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### 1 **INTRODUCTION**

LX2160-Space is a radiation tolerant multicore processing solution, combining 16x Arm® Cortex®-A72 cores with datapath acceleration optimized for L2/3 packet processing, together with security offload, robust traffic management and quality of service, on low power FinFET process technology.

The high level of integration delivers significant performance benefits with up to 100 GbE, hardware L2 switching, DPAA2 with 100 Gbps decompression/compression and 50 Gbps Encryption engine, multiple PCIe Gen3.0. It also features a number of general-purpose interfaces such as CAN, SPI, I<sup>2</sup>C, and UART.

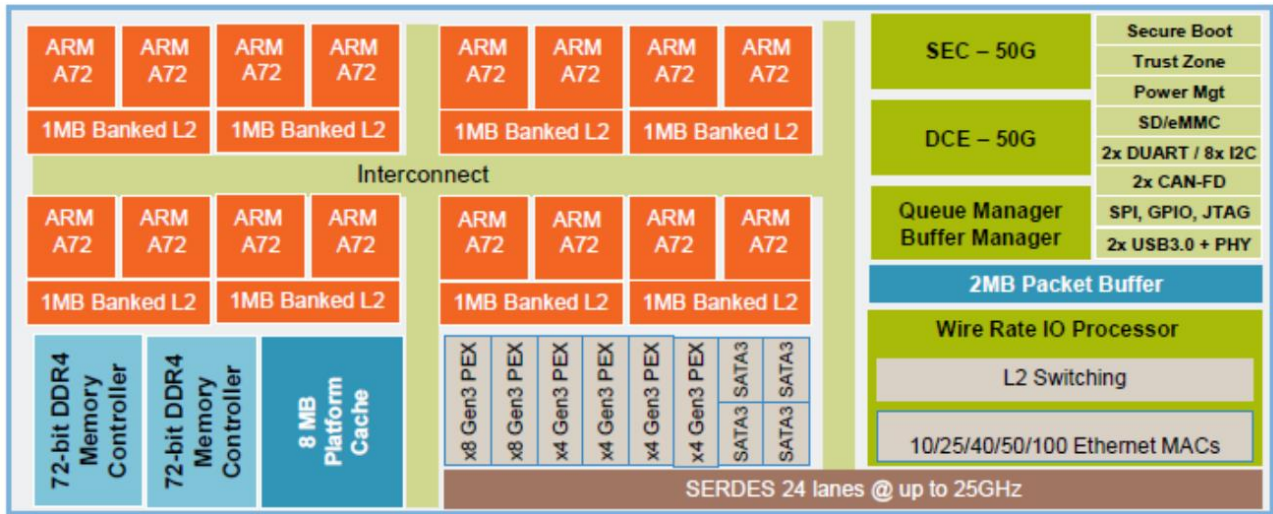
It is a Space-qualified, radiation-tolerant version of Teledyne e2v LX2160 standard Hi-Rel component.

This document provides the specific features and characteristics of the LX2160-Space. From the functional, electrical and computing performance point of view, LX2160-Space is equivalent to the standard version. For the general characteristics, the datasheet and reference manual of the commercial version are applicable.

### 2 **TYPICAL END APPLICATIONS**

- Communication Satellites / Constellations – Requiring AI / Security
- Human Mission Exploration & Science Missions
- Early Warning, Observation Satellites - Security / Automated situation detection & awareness / AI
- Defense In Space
- High bandwidth Space Observation
- Meteorological Satellites

### 3 BLOCK DIAGRAM



### 4 SPACE GRADE PARTS KEY FEATURES KEY FEATURES

#### 4.1 Space Qualification

- NASA Level 1, 2 or 3 based on NASA EEE-INST-002 - Section M4 – Screening and qualification in accordance with PEM-INST-001
- ECSS Class 1, 2 or 3 **ECSS-Q-ST-60** Screening and qualification in accordance with **ECSS-Q-ST-60-13C**
- Full lot traceability and serializing

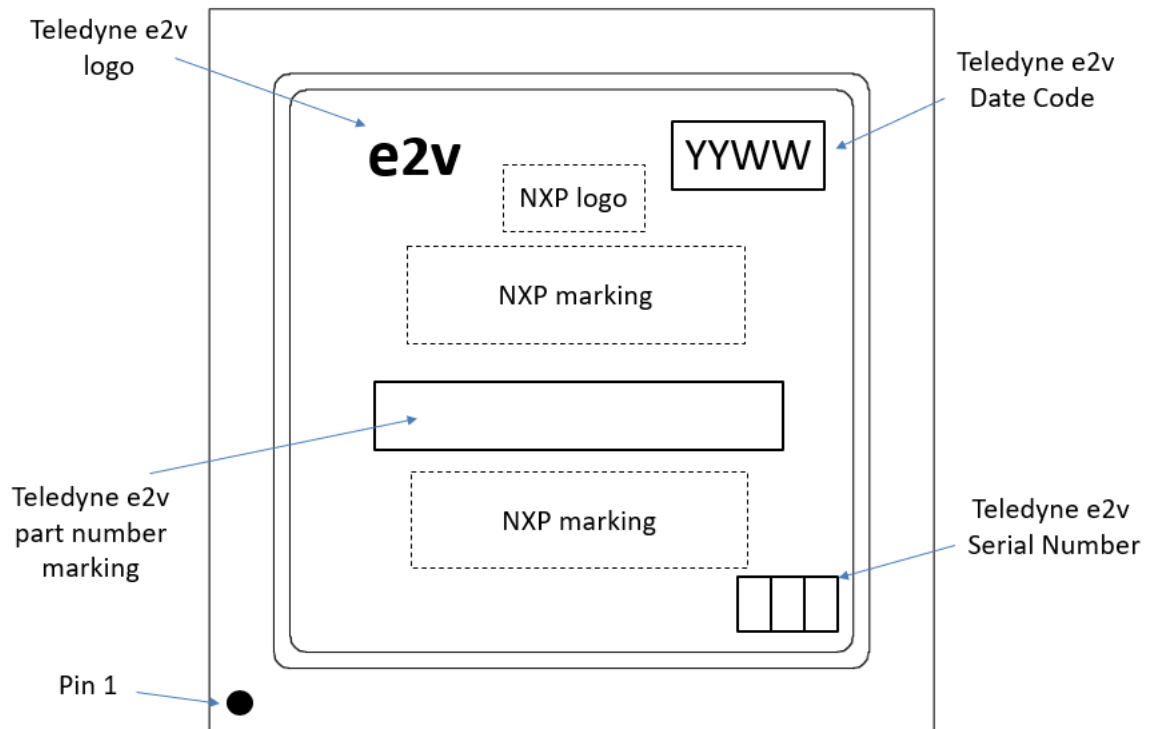
#### 4.2 Radiation Tolerance

Key Figures of the radiation performance of the device are highlighted below:

- SEL Target LET Threshold > 60 MeV.cm<sup>2</sup>/mg
- SEU/SEFI Cross sections will be available in dedicated reports
- TID Target 100 krad (Si)

### 4.3 Package & physical properties

Marking drawing for the LX2160-Space is given below:



#### Physical properties

- Solder Balls Composition - 63% Sn, 37% Pb
- Mass of the device with SnPb solder balls is TBC
- CTE of the package: please contact your Teledyne e2v technical support
- Outgassing: expected compliant with ASTM 595 and ESCC-Q-ST-70-02

General package characteristics are given in the datasheet of the standard version (Datasheet [ds-60s-222625\\_lx2160a.pdf](https://www.teledyneimaging.com/ds-60s-222625_lx2160a.pdf) ([teledyneimaging.com](https://www.teledyneimaging.com)))

## 5 LX2160-SPACE PART NUMBERING INFORMATION

Family	Performance Level	Number of cores	Derivatives	Temperature range	Options	Package Type	CPU Frequency, DDR Data Rate	Die Revision	Quality level <sup>(1)</sup>
LX(X) <sup>(2)</sup> = 16FFC	2	08 = 8 12 = 12 16 = 16	0 = first	A = -40/105 F = -40/125 M = -55/125	C = SEC, CANFD enabled E = SEC enabled, CAN 2.0b enabled (no CAN-FD support) N = SEC disabled, CAN 2.0b enabled (no CAN-FD support)	3 = 40x40mm FC PBGA / C4 = pb-free, / C5 = SnPb (63/37)	1826 = 1800 MHz, 2600 MT/s 2029 = 2000MHz, 2900 MT/s 2232 = 2200 MHz, 3200 MT/s	B = Rev 2.0	-N1 =Nasa Level 1 -N2 = Nasa Level 2 -N3 = Nasa Level 3 EM = Engineering Models EQM = Engineering Qualification Models -E1 = ECSS Class 1 -E2 = ECSS Class 2 -E3 = ECSS Class 3

Notes:

(1) To know more about grades please refer to NE60S220869 on our website ([ne-60s-220869-b0.pdf](http://ne-60s-220869-b0.pdf) ([teledyneimaging.com](http://teledyneimaging.com)))

(2) The letter X in the part number designates a "Prototype" product that has not been qualified by e2v. Reliability of a LXX part number is not guaranteed and such part-number shall not be used in Flight Hardware. Product changes may still occur while shipping prototypes.

## 6 LX2160 PRODUCT FEATURES

Please refer to Teledyne e2v datasheet reference: Datasheet [ds-60s-222625\\_lx2160a.pdf](http://ds-60s-222625_lx2160a.pdf) ([teledyneimaging.com](http://teledyneimaging.com))

## 7 REVISION HISTORY

This table summarizes revisions to this document.

Issue	Date	Comments
DS 60S 223095(A)	May 2023	Initial revision

## IMPORTANT NOTICE

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