Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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S32V234: 64-bit Multi-core A53 processor for vision and ADAS applications

Product Summary

The NXP® S32V234 is a high-performance processor with the right set of features to support safe computation-intensive applications around vision and sensor fusion for transportation and industrial markets. It includes quad Arm Cortex®-A53 cores running at up to 1 GHz, dual APEX-2 vision accelerators enabled by OpenCL™ and OpenCV™, 3D GPU (Vivante GC3000), MIPI CSI2 and parallel image sensor interfaces, embedded ISP for HDR, color conversion, tone mapping, etc. and 4 MB on chip system RAM.

The S32V234 processor addresses ISO 26262 ASIL B/C requirements and includes the CSE2, a hardware security encryption module together with Arm TrustZone® technology that provides protection against IP theft and malicious hacking.

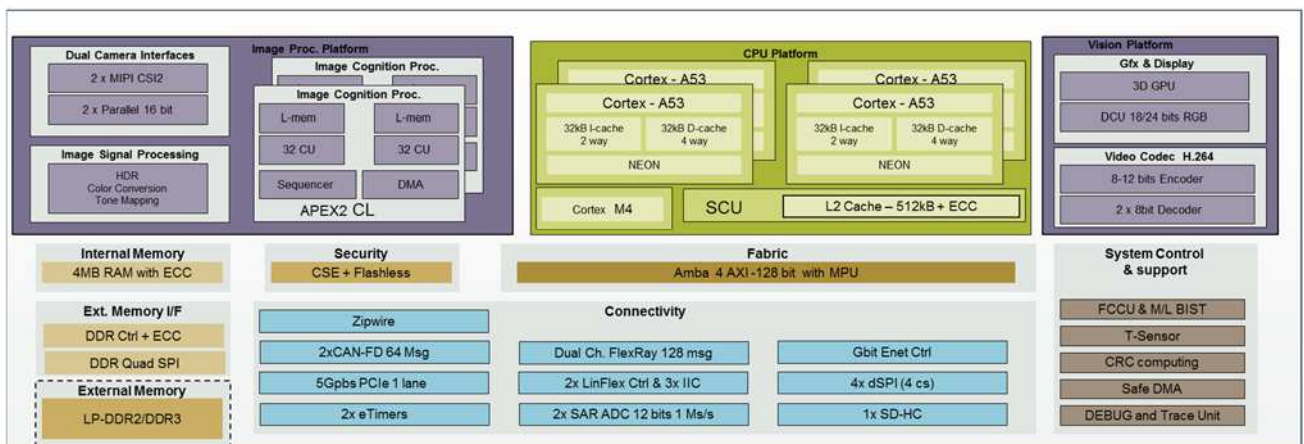## 1 S32V234 Processor Specification Highlights

High Performance Processing – Up to Quad core Arm A53 600-1GHz Safe Clusters @ ~10000 DMIPS

Vision Acceleration – Dual APEX-2 image cognition processor cores enabled by OpenCV
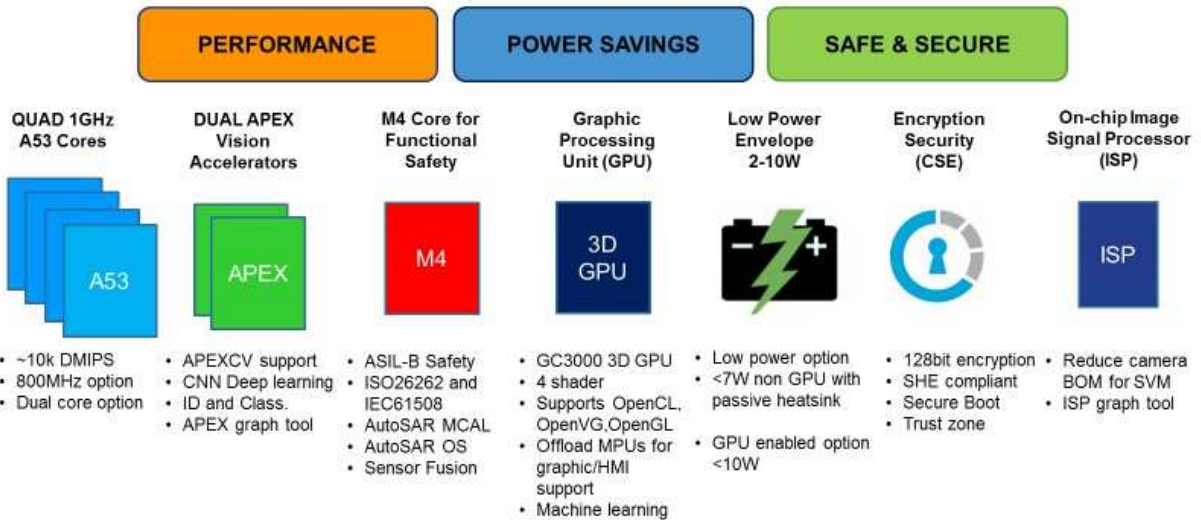
Automotive Safety – Developed according to ISO 26262 standard reaching ASIL B and higher

Security Enabled – HIS-SHE compliant Crypto Service Engine optimized for flash less devices

S32V234 Functional Block Diagram

S32V Value Drivers

PERFORMANCE			POWER SAVINGS		SAFE & SECURE	
QUAD 1GHz A53 Cores	DUAL APEX Vision Accelerators	M4 Core for Functional Safety	Graphic Processing Unit (GPU)	Low Power Envelope 2-10W	Encryption Security (CSE)	On-chip Image Signal Processor (ISP)

- ~10k DMIPS
- 800MHz option
- Dual core option

- APEXCV support
- CNN Deep learning
- ID and Class.
- APEX graph tool

- ASIL-B Safety
- ISO26262 and IEC61508
- AutoSAR MCAL
- AutoSAR OS
- Sensor Fusion

- GC3000 3D GPU
- 4 shader
- Supports OpenCL, OpenVG,OpenGL
- Offload MPUs for graphic/HMI support
- Machine learning

- Low power option
- <7W non GPU with passive heatsink
- GPU enabled option <10W

- 128bit encryption
- SHE compliant
- Secure Boot
- Trust zone

- Reduce camera BOM for SVM
- ISP graph tool

2 Target Application

Surround View
Front Cameras
Rear Cameras
Sensor Fusion
Lane Departure
360° Surround View
Facial Recognition
Optical Flow
Traffic Count
Autonomous Farming

Machine Vision
Autonomous Drive
Object Classification
Pedestrian Detection
Stereo Disparity
CNN/DNN Neural Networks
Drone / UAV Safety

3 Part Attributes

General Purpose Processing

- Two 2 x Arm A53 Safe Clusters
  - 64 bit, 1.0 GHz
  - 2 x 256 KB L2 cache per cluster
  - Neon SIMD
  - ~10,000 DMIPS
- 2 x 32b DDR3/LPDDR2 at 533 MHz

Accelerated Processing

- Image Signal Processing

- 2 x APEX2 – Image cognition Processing
  Open CL
- h.264 Codec and MJPEG decoder
- 3D GPU GC3000 (4 Shader)

Functional SAFETY

- Classic ASIL B/C capable SoC
- LBIST, MBIST
- Voltage and temperature monitoring

- Full memory ECC, E2E ECC
- Software Core Self Tests
    - Software independent fault monitoring and reporting
- Safe DMA, CRC processing and MCAL

High Speed Serial Interfaces

- 1 PCIe controllers
- 1 dual channel FlexRay®
- 1 Zipwire
- 2 x MIPI CSI2 - 4 lanes 6 Gb/s

Low Speed Serial Interfaces

- 2 CAN –FD
- 4 SPI, 2 LinFLEX
- 4 x Timer
- FlexRay

Security

- 1 CSE3 – Flashless

4 Development tools and Ecosystem

Evaluation Boards / **Hardware**

SBC-S32V234

- The SBC-S32V234 is a EVB consisting of
    - o MPX-S32V234 is a SOM based adapter with the S32V234 MPU
    - o CRX-S32V234 is the carrier board adapter that MPX-S32V234 plugs into

OV10640CSP-S32V

The OV10640CSP-S32V is a MIPI camera that features the OV10640 image sensor. This camera allows users to make full use of the ISP integrated in the S23V234 MPU.

S32V234-EVB2

The NXP S32V234-EVB2 is an evaluation system and development platform.

Features:

- Video input (VIU connectors, 2 x MIPI)
- Video Output (RGM to LVDS converter, RGB to HDMI converter)
- Ethernet and FlexRay
- Memory plus SD card slot

- Various Communication and General IO connectors
- Accelerometer and magnetometer plus gyroscope
- Expansion card options

MXOV10635-S32V

The Maxim MXOV10635-S32V is a LVDS Camera that features the OV10635 image sensor which integrates an image signaling processor.

MAX9286S32V234

The Maxim MAX9286S32V234 is a deserializer adapter for expanding 1x MIPI port to up to 4 LVDS cameras for surround view.

S32**V** Part Numbering FS32V234CON1VUB (Superset w/CSE security)
FS32V234CMN1VUB (Superset w/no CSE)

F/P	Product status
S32	Product Type/Brand = Automotive
V	Product Line
2	Series/Family (incl. generation)
3	Core platform/ Performance indicator
4	Product (eg no of cores)
C	Option #1: Speed
M	Option #2: Config
N1	Fab and Mask rev must be 2 max
V	Temperature Suffix
UB	Package Suffix
R	Tape and Reel Indicator

Ordering Partnumber (always 16char)

Product Status for ordering and marking
PS32 for prototype and FS32 for qualified ordering pn

Examples
S32V234 (The S32V200 series)

Options -
Option1: Speed (Number): B = 800MHz; C = 1GHz
Option 2: Config (Letter)
Use a decoder to allow flexibility, example:

Config	ISP	3D GPU	CSE	LP
A	Yes	No	No	No
B		reserved		
C		reserved		
D		reserved		
E		reserved		
F		reserved		
G		reserved		
H		reserved		
I		reserved		
J	Yes	No	No	Yes
K	Yes	No	Yes	No
L	Yes	No	Yes	Yes
M	Yes	Yes	No	No
N	Yes	Yes	No	Yes
O	Yes	Yes	Yes	No
P		reserved		

Series
S32V234 would be 2nd generation (after Monitor), hence V200.

Core / Platform
Cortex A53 based

Product
Quad core version = V234
Dual core version = V232

Temperature
C = -40C to 105C Tj
V = -40C to 125C Tj

Package Suffix
UB = 621 FC-BGA

Tape & Reel
R = Tape & Reel
T = Trays/Tubes in order to fill the 16 char

Most Likely NCAP Front Camera (Low Power)

Config	ISP	3D GPU	CSE	LP
J	Yes	No	No	Yes
L	Yes	No	Yes	Yes
N	Yes	Yes	No	Yes

Most Likely Data Fusion (High Power)

Config	ISP	3D GPU	CSE	LP
K	Yes	No	Yes	No
G	Yes	Yes	Yes	No

Most Likely Surround View

Config	ISP	3D GPU	CSE	LP
M	Yes	Yes	No	No
O	Yes	Yes	Yes	No

Active Part numbers

PS32V234CMN1AVUB
FS32V234CMN1VUB
FS32V234CON1VUB
FS32V234CKN1VUB
FS32V234BMN1VUB
FS32V234BJN1VUB
FS32V234BLN1VUB
FS32V232BMN1VUB

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