

SMARC™ Module with Intel® Apollo Lake family processor

PSMC-M1013

- Intel® Atom™ / Pentium® / Celeron® processors
- On Board LPDDR4 SDRAM up to 8GB
- Multiple display support (18/24-bit LVDS, HDMI, DP++)
- Dual GbE, Four PCI Express lanes, two USB 3.0 and up to six USB 2.0
- One SATA 3.0, on Board eMMC 5.0, on Board TPM(Opt.)

Specifications

CPU

Intel® Atom E3950, 4 cores, 1.6GHz/2.0 GHz, 12W TDP
 Intel® Atom E3940, 4 cores, 1.6GHz/1.8 GHz, 9.5W TDP
 Intel® Atom E3930, 2 cores, 1.3GHz/1.8 GHz, 6.5W TDP
 Intel® Pentium N4200, 4 cores, 1.1GHz/2.5 GHz, 6W TDP
 Intel® Celeron N3350, 2 cores, 1.1GHz/2.4 GHz, 6W TDP

Cache

2 MB L2 cache

Memory

Up to 8 GB LPDDR4 at 2133/2400 MT/s
 Dual memory channel, 64bit, non-ECC

Storage

eMMC 5.0 onboard flash up to 64 GB

DisplayPort Interface

LVDS

24-bit Dual Channel LVDS up to 1920x1200@60Hz

DDI1

HDMI 1.4b up to 3840x2160@30Hz

DDIO

DisplayPort 1.2 up to 4096x2160@60Hz (DP++)

Camera Interface

1x MIPI-CSI 2/4 lanes, 1x MIPI-CSI 2 lanes

Ethernet

Up to 2x Intel® i210AT (Commercial) / i210IT (Industrial)

I/O Interfaces

PCIe

4x PCIe x1 or 1x PCIe x4 Gen2

USB

4x USB2.0 , 2x USB 3.0/2.0

SATA

1x SATA 3.0 (6 Gbit/s)

Other I/O Interfaces

1x SDIO, 1x SATA 3.0, 1x I²C/SMBus, 5x I²C, 1x LPC, 2x HUART, 2x UART, 1x HDA, 1x I²S, 12x GPIO



Optional Heat-Spreader

Video

GPU Feature Support

Intel® Gen 9 LP Graphics supporting DirectX 12 | OpenGL 4.3 OpenCL 2.0 |
 OpenGL ES 3.0 | HW accelerated video decoding |
 HEVC/H.264/MVC/MPEG2/VP9/VC1/WMV9/MJPEG and encoding |
 HEVC/H.264/MVC/VP8/MJPEG |
 Content protection using PAVP 2.0 and HDCP 1.4/2.2

Embedded BIOS

AMI UEFI with Fast Boot support | Display Auto Detection |
 Flash Update | Password Lock | OEM Logo for startup screen

Mechanical and Environmental

Form Factor

SMARC 2.0

Dimension

SMARC module, 82 mm x 50 mm

Operating Temperature

Commercial: 0°C to +60°C

Industrial: -40°C to +85°C

Humidity

10-90% RH operating, non-condensing

5-95% RH storage (and operating with conformal coating)

Power

Standard Input

5V DC ±5%

Power Management

ACPI 5.0 compliant

Power Consumption

6W~12W (CPU)

Operation System

Windows 10 Enterprise, Windows 10 IoT, Linux



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Functional Diagram