



	Apollo330 Plus Series	Apollo510 Lite Series	Apollo510	Apollo510B
SoC Frequency	96 MHz 192 / 250 MHz turboSPOT®	96 MHz 192 / 250 MHz turboSPOT	96 MHz 250 MHz turboSPOT	96 MHz 250 MHz turboSPOT
SoC	32-bit Arm® Cortex®-M55 with Helium™ technology, DMA, Arm Cortex-M4 network coprocessor	32-bit Arm Cortex-M55 with Helium technology, DMA, Arm Cortex-M4 network coprocessor	32-bit Arm Cortex-M55 with Helium technology, DMA	32-bit Arm Cortex-M55 with Helium technology, DMA, Network coprocessor
CoreMark® Efficiency (CM/mJ)	>120	>120	120	120
NVM	2MB	2MB	4MB	4MB
SRAM	2MB	2MB	3.75MB	3.75MB
Operation Voltage	1.71-2.2V	1.71-2.2V	1.71-2.2V	1.71-2.2V
ADC	12-bit, 11 channel, up to 1.7 MS/s Sampling Rate	12-bit, 11 channel, up to 1.7 MS/s Sampling Rate	12-bit, 11-channel, up to 2.8 MS/s Sampling Rate	12-bit, 11-channel, up to 2.8 MS/s Sampling Rate
UART	2	2	4	4
I/O	I²C/SPI masters (6x) 1x full-duplex I²C/SPI Slave USB 2.0 FS/HS SDIO v3.0/eMMC (2x)	I²C/SPI masters (6x) 1x full-duplex I²C/SPI Slave USB 2.0 FS/HS SDIO (v3.0) / eMMC (2x)	I²C/SPI Master (8x) 1x full-duplex/1x half-duplex I²C/SPI Slave USB 2.0 FS/HS SDIO v3.0/eMMC (2x)	I²C/SPI Master (7x) 1x full-duplex/1x half-duplex I²C/SPI Slave USB 2.0 FS/HS SDIO v3.0/eMMC (2x)
MSPI Master	1/2/4-bit wide (2x) up to 96 MT/s (SDR/DDR) 1/2/4/8/16-bit wide (1x) up to 250 MT/s (SDR/DDR)	1/2/4-bit wide (2x) up to 96 MT/s (SDR/DDR) 1/2/4/8/16-bit wide (1x) up to 250 MT/s (SDR/DDR)	1/2/4/8-bit wide (2x) up to 96 MT/s (SDR/DDR) 1/2/4/8/16-bit wide (2x) up to 250 MT/s (SDR/DDR)	1/2/4/8-bit wide (1x) up to 96 MT/s (SDR/DDR) 1/2/4/8/16-bit wide (1x) up to 250 MT/s (SDR/DDR)
I²S	I²S Master/Slave full-duplex (1x)	I²S Master/Slave full-duplex (1x)	I²S Master/Slave (2x) full-duplex, with ASRC (1x)	I²S Master/Slave (2x) full-duplex, with ASRC (1x)
Audio	PDM stereo DMIC interface (1x) PLL for Precision Audio	PDM stereo DMIC interface (1x) PLL for Precision Audio	PDM stereo DMIC interface (1x) Low Power Audio ADC (1x) PLL for Precision Audio	PDM stereo DMIC interface (1x) Low Power Audio ADC (1x) PLL for Precision Audio
Display	--	SPI 3-wire/4-wire Dual/QuadSPI MIPI DSI at 1.5 Gbps (2 lanes) 1-layer Display Controller Memory in Pixel (MiP) Interface	SPI 3-wire/4-wire Dual/QuadSPI MIPI DSI at 1.5 Gbps (2 lanes) 4-layer Display Controller Memory in Pixel (MiP) Interface	SPI 3-wire/4-wire Dual/QuadSPI MIPI DSI at 1.5 Gbps (2 lanes) 4-layer Display Controller
Graphics	--	2D/2.5D GPU with anti-aliasing, dithering, and HW vector graphics acceleration	2D/2.5D GPU with anti-aliasing, dithering, and HW vector graphics acceleration	2D/2.5D GPU with anti-aliasing, dithering, and HW vector graphics acceleration
Security	secureSPOT® 3.0 Arm TrustZone® Security	secureSPOT 3.0 Arm TrustZone Security	secureSPOT 3.0 Arm TrustZone Security	secureSPOT 3.0 Arm TrustZone Security
Connectivity	Bluetooth® Low Energy 5.4 (Apollo330B Plus and ApolloM Plus) +Bluetooth Classic & LE Audio (Apollo330M Plus) 802.15.4, Thread, and Matter (Apollo330M Plus)	Bluetooth Low Energy 5.4 (Apollo510B and Apollo510D Lite) +Bluetooth Classic & LE Audio (Apollo510D Lite)	--	Bluetooth Low Energy 5.4
RF Sensitivity	-95/-98/-104 dBm (2 Mbps/1 Mbps/125 kbps)	-95/-98/-104dBm (2 Mbps/1 Mbps/125 kbps)	--	-94/-97/-103 dBm (2 Mbps/1 Mbps/125 kbps)
Tx Output Power	Up to +13 dBm	Up to +13 dBm	--	Up to +6 dBm
Packages	5.3 x 5.3 x 0.8 mm, BGA w/ 120 GPIO 4.0 x 4.0 x 0.5 mm, CSP w/ 68 GPIO	5.3 x 5.3 x 0.8 mm, BGA w/ 120 GPIO 4.0 x 4.0 x 0.5 mm, CSP w/ 68 GPIO	6.6 x 6.6 x 0.8 mm, BGA w/ 183 GPIO 4.9 x 4.7 x 0.5 mm, CSP w/ 144 GPIO	5.6 x 5.6 x 0.8 mm, BGA w/ 97 GPIO
Ordering Information	AP330NPA-CCR (CSP), AP330NPA-IBR (BGA), AP330BPA-CCR (CSP), AP330BPA-ICR (CSP), AP330MPA-CCR (CSP), AP330MPA-IBR (BGA), AP330MPEVB	AP510NLA-CCR (CSP), AP510NLA-CBR (BGA), AP510BLA-ICR (CSP), AP510DLA-CCR (CSP), AP510DLA-CBR (BGA), AP510DLA-IBR (BGA), AP510DLEVB	AP510NFA-CBR (BGA) AP510NFA-CCR (CSP) AP510EVB (EVB)	AP510BFA-CBR (BGA) AP510BEVB (EVB)

	Apollo2	Apollo3 & Apollo3 Blue	Apollo3 Blue Plus	Apollo4 Lite & Apollo4 Blue Lite	Apollo4 Plus & Apollo4 Blue Plus
SoC Frequency	48 MHz	48 MHz 96 MHz turboSPOT	48 MHz 96 MHz turboSPOT	96 MHz 192 MHz turboSPOT	96 MHz 192 MHz turboSPOT
SoC	32-bit Arm Cortex-M4F	32-bit Arm Cortex-M4F, DMA Arm Cortex-M0 network coprocessor (Blue)	32-bit Arm Cortex-M4F, DMA Arm Cortex-M0 network coprocessor (Blue)	32-bit Arm Cortex-M4F, DMA Arm Cortex-M0 network coprocessor (Blue)	32-bit Arm Cortex-M4F, DMA Arm Cortex-M0 network coprocessor (Blue)
CoreMark Efficiency (CM/mJ)	88	83	83	72	94
NVM	1MB Flash	1MB	2MB	2MB	2MB
SRAM	256KB	384KB	768KB	1.4MB	2.75MB
Operation Voltage	1.755-3.63 V	1.755-3.63 V	1.755-3.63 V	1.71-2.2 V	1.71-2.2 V
ADC	14-bit, 15-channel, up to 2.67 MS/s Sampling Rate	14-bit, 15-channel, up to 2.67 MS/s Sampling Rate	14-bit, 15-channel, up to 2.67 MS/s Sampling Rate	12-bit, 11-channel, up to 2.8 MS/s Sampling Rate	12-bit, 11-channel, up to 2.8 MS/s Sampling Rate
UART	2	2	2	4	4
I/O	I ² C/SPI Master (6x) I ² C/SPI Slave	I ² C/SPI Master (6x) I ² C/SPI Slave	I ² C/SPI Master (6x) I ² C/SPI Slave	I ² C/SPI Master (8x) (Blue 7x) I ² C/SPI Slave SDIO v3.0/eMMC (1x)	I ² C/SPI Master (8x) (Blue 7x) I ² C/SPI Slave USB FS SDIO v3.0/eMMC (1x)
MSPI Master	--	1/2/4/8-bit wide up to 48 MT/s (SDR) ISO7816 Master	1/2/4/8-bit wide (3x) up to 48 MT/s (SDR) ISO7816 Master	1/2/4/8-bit wide (2x) 1/2/4/8/16-bit wide up to 96 MT/s (SDR/DDR)	1/2/4/8-bit wide (2x) 1/2/4/8/16-bit wide (KXR pkg only) up to 96 MT/s (SDR/DDR)
I²S	I ² S Slave for PDM Audio Pass-through	I ² S Slave for PDM Audio Pass-through	I ² S Slave for PDM Audio Pass-through	I ² S Master/Slave full-duplex	I ² S Master/Slave (2x) full-duplex with ASRC (2x)
Audio	PDM stereo DMIC interface (1x)	PDM stereo DMIC interface (1x)	PDM stereo DMIC interface (1x)	PDM stereo DMIC interface (1x)	PDM stereo DMIC interface (4x) Low Power Stereo Audio ADC (1x)
Display	--	SPI 3-wire/4-wire	SPI 3-wire/4-wire Dual/QuadSPI	SPI 3-wire/4-wire Dual/QuadSPI	SPI 3-wire/4-wire Dual/QuadSPI MIPI DSI at 500 Mbps (2 lanes) (Blue 1 lane) 4-layer Display Controller
Graphics	--	--	--	2D/2.5D GPU with anti-aliasing and dithering	2D/2.5D GPU with anti-aliasing, dithering, and vector graphics assist
Security	--	secureSPOT	secureSPOT w/ Secure Boot	secureSPOT 2.0 Secure Boot, Root of Trust	secureSPOT 2.0 Secure Boot, Root of Trust
Connectivity	--	Bluetooth Low Energy 5 (Blue)	Bluetooth Low Energy 5	Bluetooth Low Energy 5.4 (Blue)	Bluetooth Low Energy 5.4 (Blue)
RF Sensitivity	--	-93 dBm (Blue)	-93 dBm	-95 dBm (Blue)	-95 dBm (Blue)
Tx Output Power	--	Up to +3 dBm (Blue)	Up to +3 dBm	Up to +6 dBm (Blue)	Up to +6 dBm (Blue)
Packages	4.5 x 4.5 x 0.8 mm, 64-pin BGA w/ 50 GPIO 2.6 x 2.6 x 0.5 mm, CSP 49-pin w/ 34 GPIO 2.6 x 2.6 x 0.3 mm, CSP-49 w/ 34 GPIO (Thin)	5 x 5 x 0.8 mm, BGA-81 w/ 50 GPIO 3.3 x 3.4 x 0.5 mm, CSP-66 w/ 37 GPIO 3.3 x 3.4 x 0.3 mm, CSP-66 w/ 37 GPIO (Thin) 8 x 8 x 0.8 mm, QFN-64 w/ 38 GPIO (Blue)	5.3 x 4.3 x 0.8 mm, BGA-108 w/ 74 GPIO	5 x 5 x 0.8 mm, BGA-146 w/ 84 GPIO 4.7 x 4.7 x 0.9 mm, BGA-131 w/ 75 GPIO (Blue)	5 x 5 x 0.8 mm, BGA-146 w/ 105 GPIO 4.7 x 4.7 x 0.9 mm, BGA-131 w/ 81 GPIO (Blue)
Ordering Information	AMAPH1KK-KBR (BGA) AMAPH1KK-KCR (CSP) AMAPH1KK-KCR-TB (Thin CSP) AMAPHEVB (EVB)	AMAP31KK-KBR (BGA) AMAP31KK-KCR (CSP) AMA3B1KK-KBR-B0 (BGA) (Blue) AMA3B1KK-KCR-B0 (CSP) (Blue) AMA3B1KK-KCR-TB (Thin CSP) (Blue) AMA3B1KK-KCR-QR-B0 (QFN) (Blue) AMA3BEVB (EVB)	AMA3B2KK-KBR (BGA) AMA3B2EVB (EVB)	AMAP42KL-KBR (BGA) AMAP4LEVB (EVB) AMA4B2KL-KXR (BGA) (Blue) AMA4BLEVB (EVB) (Blue)	AMAP42KP-KBR (BGA) AMAP4PEVB (EVB) AMAP4PDISP (Display Kit) AMA4B2KP-KXR (BGA) (Blue) AMA4B2KP-KBR (BGA) (Blue) AMAP4BPXEVB (EVB) (Blue)