



Selection Guide and Roadmap



Mars and Mercury SoC Modules Selection Guide

Cyclone V SoC and Arria 10 SoC modules

Valid as of October 5th 2021. Consult the product web pages for a full listing of available models.

	Mars™ MA3	Mercury™ SA1	Mercury+™ SA2	Mercury+™ AA1		
FPGA Family	Cyclone® V SX	Cyclone® V SX	Cyclone® V ST	Arria® 10		
FPGA Device Name	C6	C6	D6	SX 270	SX 270	SX 480
FPGA Speed Grade*2	7	7	7	3	2	2
FPGA Part Number*2	"5CSXFC6C6 U23I7N"	"5CSXFC6C6 U23I7N"	"5CSTFD6D5 F31I7N"	10AS027E4 F29E3SG	10AS027E2 F29I2SG	10AS048E3 F29I2SG
CPU Cores	2 x ARM® Cortex™-A9	2 x ARM® Cortex™-A9	2 x ARM® Cortex™-A9	2 x ARM® Cortex™-A9		
CPU Frequency @ MHz	800	800	800	1'000	1'200	1'200
HPS Cores & Peripherals	2 x CAN	2 x CAN	2 x CAN	3 x EMAC		
HPS Ethernet USB	1 Gbps USB 2.0 OTG	1 Gbps USB 2.0 OTG	1 Gbps USB 2.0	1 Gbps USB 2.0		
HPS SDRAM Size (MByte)	1,024	1,024	2,048	2,048 + ECC		4,096 + ECC
HPS SDRAM Type Bandwidth (MByte/s)	DDR3L 3,200	DDR3L 3,200	DDR3L 3,200	DDR4 7,464	DDR4 8,532	DDR4 8,532
FPGA System Logic Elements	110'000	110'000	110'000	270'000		480'000
FPGA Block RAM (kbit)	5'570	5'570	5'570	15'000		28'620
FPGA DSP Systolic FIR (GMAC/s)	112	112	112	1'228	1'461	2'408
FPGA MGT Transceivers @ Gbps*6	2 @ 3.125	6 @ 3.125	9 @ 6.144	12 @ 10.3125	12 @ 12.5	
FPGA Peripherals	PCIe® Gen1 x2	PCIe® Gen1 x4	PCIe® Gen2 x4	PCIe® Gen3 x8		
FPGA Ethernet USB*5	1 Gbps 100 Mbps	-	2 x 100 Mbps Cypress FX3™ USB 3.0	Cypress FX3™ USB 3.0		
FPGA SDRAM Size (MByte)	-	-	-	2,048 + ECC		4,096 + ECC
FPGA SDRAM Type Bandwidth (MByte/s)	-	-	-	DDR4 7,464	DDR4 8,532	DDR4 8,532
Flash Memory	64M QSPI 16G eMMC	64M QSPI 16G eMMC	64M QSPI 16G eMMC	64M QSPI 16G eMMC		
Connector Pins IO Pins	200 104	336 178	504 294	504 286		
FPGA 3.3V FPGA 1.8V Pins HPS Pins	76 - 16	134 - 16	234 - 18	- 212 18		
Module Dimensions (mm)	67.6 x 30	56 x 54	74 x 54	74 x 54		
Temperature Range*2	-40..+85°C	-40..+85°C	-40..+85°C	0..+85°C	-40..+85°C	-40..+85°C
Boot Modes	QSPI SD Card eMMC	QSPI SD Card eMMC	QSPI SD Card USB3	QSPI SD Card eMMC USB3		
Product Status	Active	Active	Active	Active		
Estimated Product Lifetime*3	2030+	2030+	2030+	2030+		
Preferred Model MOQ*4	Yes	Yes	Yes	Yes	No 40	Yes
Product Model	MA-MA3-C6-7I-D10	ME-SA1-C6-7I-D10	ME-SA2-D6-7I-D11	ME-AA1-270-3E4-D11E	ME-AA1-270-2I2-D11E	ME-AA1-480-2I3-D12E

*** Notes**

1. We are actively looking for interested customers in this or a similar module. Please contact us with your detailed requirements.
2. The module is also available in different speed and temperature grades. Visit the product web page for more information.
3. Please contact us about production data backup and module production license options.
4. For non-preferred models, the minimum order quantity (MOQ) only applies if the modules are not in stock – contact us for more details.
5. Check out our FPGA Manager IP solution for simple data streaming into Windows/Linux embedded/host PCs.
6. Please ensure that adequate signal integrity is obtained over the full signal path when using MGT's at high performance.

General notes

- Not all features are available simultaneously. Please check the documentation to know the applicable constraints.
- All specifications and release dates are subject to change without notice. Please verify component specifications with vendors' datasheets.
- Enclustra maintains an errata and revision history document for each product. Please also check the errata of the FPGA device and other components.
- All prices are non-binding estimates – please use the online Enquire/Order form to get definitive pricing and lead-time information.
- All trademarks are the property of their respective owners. All prices do not include shipping, taxes and duties.