



Selection Guide and Roadmap



Mars Modules Selection Guide

Cyclone V SoC and Cyclone 10 modules

Valid as of 26 th February 2018	Mars™ MA3				Mars™ MI3	
FPGA Family	Cyclone® V SE		Cyclone® V SX		Cyclone® 10 GX	
FPGA Device Name	A4	A5	C5	C6	85	220
FPGA Speed Grade*2	8	7	8	7	6	5
FPGA Part Number*2	5CSEBA4 U23C8N	5CSEBA5 U23I7N	5CSXFC5C6 U23C8N	5CSXFC6C6 U23I7N	10CX085Y U484E6G	10CX220 U484I5G
CPU Cores	2 x ARM® Cortex™-A9				-	
CPU Frequency @ MHz	600	800	600	800	-	
HPS Cores & Peripherals	2 x CAN				-	
HPS Ethernet USB	1 Gbps USB 2.0 OTG				-	
HPS SDRAM Size (MByte)	1,024				-	
HPS SDRAM Type Bandwidth (MByte/s)	DDR3L 3,200				-	
FPGA System Logic Elements	40'000	85'000		110'000	85'000	220'000
FPGA Block RAM (kbit)	2'700	3'970		5'570	5'820	11'740
FPGA DSP Systolic FIR (MMAC/s)	67	87	70	112	124	338
FPGA MGT Transceivers @ Gbps*6	N/A		2 @ 3.125		4 @ 5.0	
FPGA Peripherals	N/A		PCIe® Gen1 x2		PCIe® Gen2 x4	
FPGA Ethernet USB*5	1 Gbps + 100 Mbps				1 Gbps	
FPGA SDRAM Size (MByte)	-				512	1'024
FPGA SDRAM Type Bandwidth (MByte/s)	-				DDR3L 3,200	
Flash Memory	64M QSPI 16G eMMC				64M QSPI	
Connector Pins IO Pins	200 96		200 104		200 108	
FPGA 3.3V FPGA 1.8V Pins HPS Pins	80 - 16		76 - 16		- 88 -	
Module Dimensions (mm)	67.6 x 30				67.6 x 30	
Temperature Range*2	0..+70°C	-40..+85°C	0..+70°C	-40..+85°C	0..+85°C	-40..+85°C
Boot Modes	QSPI SD Card eMMC Passive Serial				QSPI Passive Serial	
Product Status	Mass Production				Advance*1	
Estimated Product Lifetime*3	2030+				TBD	
Preferred Configuration MOQ*4	No 120	No 90	No 90	Yes	TBD	
Module Order Code	MA-MA3-A4- 8C-D10	MA-MA3-A5- 7I-D10	MA-MA3-C5- 8C-D10	MA-MA3-C6- 7I-D10	MA-MI3-85- 6E-D9	MA-MI3-220- 5I-D10
Budgetary Price 1+ (EUR)	161	218	208	244	139	220
Budgetary Price 30+ (EUR)	151	197	188	229	131	207
Budgetary Price 100+ (EUR)	142	176	169	215	123	195
Budgetary Price 1000+ (EUR)	115	137	130	179	104	169
Budgetary Price 10000+ (EUR)	86	103	94	134	83	139

* Notes

- We are actively looking for customers interested in this or a similar module. Please contact us with your detailed requirements.
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- Our FPGA Manager™ IP Solution offers simple data streaming to/from Windows/Linux/Embedded Linux hosts.
- Adequate signal integrity over the full signal path must be ensured when using MGTs at high performance rates

General notes

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Mercury Modules Selection Guide Cyclone V SoC and Cyclone IV modules

Valid as of 26 th February 2018	Mercury™ CA1			Mercury™ SA1		Mercury+™ SA2	
FPGA Family	Cyclone® IV E			Cyclone® V SX		Cyclone® V SX	Cyclone® V ST
FPGA Device Name	30	75	115	C5	C6	C5	D6
FPGA Speed Grade*2	8		7	8	7	8	7
FPGA Part Number*2	EP4CE30 F23C8N	EP4CE75 F23C8N	EP4CE115 F23I7N	5CSXFC5C6 U23C8N	5CSXFC6C6 U23I7N	5CSXFC5D6 F31C8N	5CSTFD6D5 F31I7N
CPU Cores	-			2 x ARM® Cortex™-A9		2 x ARM® Cortex™-A9	
CPU Frequency @ MHz	-			600	800	600	800
HPS Cores & Peripherals	-			2 x CAN		2 x CAN	
HPS Ethernet USB	-			1 Gbps USB 2.0 OTG		1 Gbps USB 2.0	
HPS SDRAM Size (MByte)	-			1,024		1,024	2,048
HPS SDRAM Type Bandwidth (MByte/s)	-			DDR3L 3,200		DDR3L 3,200	
FPGA System Logic Elements	28'848	75'408	114'480	85'000	110'000	85'000	110'000
FPGA Block RAM (kbit)	594	2'745	3'888	3'970	5'570	3'970	5'570
FPGA DSP Systolic FIR (MMac/s)	13	40	53	70	90	70	90
FPGA MGT Transceivers @ Gbps*6	-			6 @ 3.125		9 @ 3.125	9 @ 6.144
FPGA Peripherals	-			PCIe® Gen1 x4		PCIe® Gen1 x4	PCIe® Gen2 x4
FPGA Ethernet USB*5	1 Gbps FTDI USB 2.0			-		2 x 100 Mbps Cypress FX3™ USB 3.0	
FPGA SDRAM Size (MByte)	128		256	-		-	
FPGA SDRAM Type Bandwidth (MByte/s)	DDR2 666			-		-	
Flash Memory	16M SPI			64M QSPI		64M QSPI	
Connector Pins IO Pins	336 146			336 178		504 294	
FPGA 3.3V FPGA 1.8V Pins HPS Pins	146 - -			134 - 16		234 - 18	
Module Dimensions (mm)	56 x 54			56 x 54		74 x 54	
Temperature Range*2	0..+70°C		-40..+85°C	0..+70°C	-40..+85°C	0..+70°C	-40..+85°C
Boot Modes	Passive Serial Active Serial USB2			QSPI SD Card Passive Serial		QSPI SD Card Passive Serial USB3	
Product Status	Mass Production			Mass Production		Mass Production	
Estimated Product Lifetime*3	2025+			2030+		2030+	
Preferred Configuration MOQ*4	Yes	Yes	No 50	No 100	Yes	No 80	Yes
Module Order Code	ME-CA1-30- 8C-D7	ME-CA1-75- 8C-D7	ME-CA1-115- 7I-D8	ME-SA1-C5- 8C-D10	ME-SA1-C6- 7I-D10	ME-SA2-C5- 8C-D10	ME-SA2-D6- 7I-D11
Budgetary Price 1+ (EUR)	201	299	459	183	260	256	345
Budgetary Price 30+ (EUR)	183	272	418	172	244	234	317
Budgetary Price 100+ (EUR)	165	247	379	162	230	212	290
Budgetary Price 1000+ (EUR)	126	196	300	132	193	170	239
Budgetary Price 10000+ (EUR)	90	144	215	97	147	130	187

*** Notes**

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Mercury Modules Selection Guide

Arria 10, Stratix 10 and Cyclone 10 modules

Valid as of 26 th February 2018	Mercury+™ AA1				Mercury+™ IS1		Mercury+™ IC1	
FPGA Family	Arria® 10				Stratix® 10		Cyclone® 10 GX	
FPGA Device Name	SX 270	SX 270	SX 480	SX 480	SX 400	SX 650	105	220
FPGA Speed Grade*2	3	2	1	2	3	1	6	5
FPGA Part Number*2	10AS027E4 F29E35G	10AS027E2 F29I2SG	10AS048E2 F29E1HG	10AS048E3 F29I2SG	1SX040LH3 F35E3VG	1SX065LH3 F35I1VG	10CX105Y F780E6G	10CX220 F780I5G
CPU Cores	2 x ARM® Cortex™-A9				4 x ARM® Cortex™-A53		-	
CPU Frequency @ MHz	1'000	1'200	1'500	1'200	1'000	1'500	-	
HPS Cores & Peripherals	3 x EMAC				3 x EMAC		-	
HPS Ethernet USB	1 Gbps USB 2.0				1 Gbps USB 2.0 OTG		-	
HPS SDRAM Size (MByte)	2,048 + ECC		4,096 + ECC		4,096 + ECC		-	
HPS SDRAM Type Bandwidth (MByte/s)	DDR4 7,464	DDR4 8,532	DDR4 9,600	DDR4 8,532	DDR4 8,532	DDR4 10,664	-	
FPGA System Logic Elements	270'000		480'000		378'000	612'000	104'000	220'000
FPGA Block RAM (kbit)	15'000		28'620		30'740	49'780	7'640	11'740
FPGA DSP Systolic FIR (MMAC/s)	1'228	1'461	2'999	2'408	1'729	4'608	185	338
FPGA MGT Transceivers @ Gbps*6	12 @ 10.3125	12 @ 12.5			16 @ 15		12 @ 10.3125	
FPGA Peripherals	PCIe® Gen3 x8 PCIe® Gen3 x4				2 x PCIe® Gen3 x16		PCIe® Gen2 x4	
FPGA Ethernet USB*5	Cypress FX3™ USB 3.0				1 Gbps		1 Gbps Cypress FX3™ USB 3.0	
FPGA SDRAM Size (MByte)	2,048 + ECC		4,096 + ECC		-		512	1'024
FPGA SDRAM Type Bandwidth (MByte/s)	DDR4 7,464	DDR4 8,532	DDR4 9,600	DDR4 8,532	-		DDR3L 3,200	
Flash Memory	64M QSPI 16G eMMC				128M QSPI 16G eMMC		64M QSPI	
Connector Pins IO Pins	504 286				504 286		504 270	
FPGA 3.3V FPGA 1.8V Pins HPS Pins	- 212 18				- 212 18		18 192 -	
Module Dimensions (mm)	74 x 54				74 x 54		74 x 54	
Temperature Range*2	0..+85°C	-40..+85°C	0..+85°C	-40..+85°C	0..+85°C	-40..+85°C	0..+85°C	-40..+85°C
Boot Modes	QSPI SD Card eMMC USB3				QSPI eMMC SD Card		QSPI Passive Serial USB3	
Product Status	Mass Production				Advance*1		Advance*1	
Estimated Product Lifetime*3	2030+				TBD		TBD	
Preferred Configuration MOQ*4	Yes	No 40	No 30	Yes	TBD		TBD	
Module Order Code	ME-AA1-270-3E4-D11E	ME-AA1-270-2I2-D11E	ME-AA1-480-1E2-D12E	ME-AA1-480-2I3-D12E	ME-IS1-400-3E3-D12E	ME-IS1-650-1I3-D12E	ME-IC1-105-6E-D9	ME-IC1-220-5I-D10
Budgetary Price 1+ (EUR)	440	533	788	867	1248	2024	281	369
Budgetary Price 30+ (EUR)	405	490	733	804	1166	1891	258	340
Budgetary Price 100+ (EUR)	371	449	681	746	1091	1771	235	312
Budgetary Price 1000+ (EUR)	309	377	593	648	924	1537	165	232
Budgetary Price 10000+ (EUR)	237	291	461	564	719	1196	131	189

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