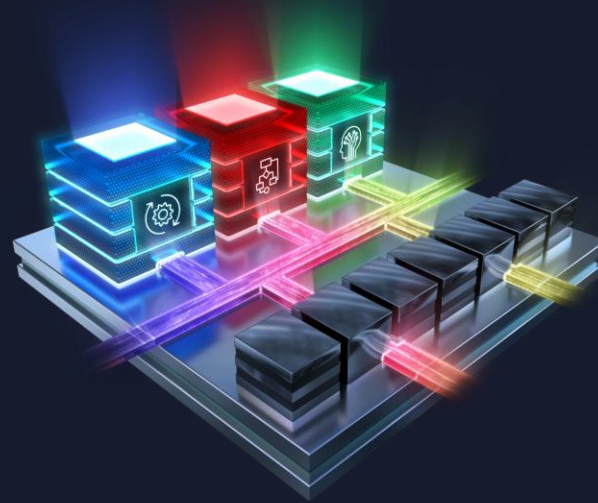


# Versal ACAP Prime Series Product Selection Guide



*Industry's First Adaptive Compute Acceleration Platform (ACAP)*

|                       |                              |                 | VM1102   | VM1302                   | VM1402                   | VM1502                   | VM1702                   | VM1802                   | VM2502                   | VM2602                   | VM2702                   | VM2902                |
|-----------------------|------------------------------|-----------------|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------------|
| Adaptable Engines     | System Logic Cells (K)       |                 | 352  | 572                      | 1,002                    | 797                      | 1,663                    | 1,968                    | 2,030                    | 1,263                    | 1,805                    | 2,154                 |
|                       | LUTs                         |                 | 161,024  | 261,376                  | 457,984                  | 364,544                  | 760,064                  | 899,840                  | 927,872                  | 577,536                  | 825,000                  | 984,576               |
|                       | Distributed RAM (Mb)         |                 | 5  | 8                        | 14                       | 11                       | 23                       | 27                       | 28                       | 18                       | 25                       | 30                    |
| Memory                | Total Block RAM (Mb)         |                 | 8  | 16                       | 40                       | 19                       | 100                      | 34                       | 48                       | 55                       | 74                       | 90                    |
|                       | Total UltraRAM (Mb)          |                 | 27   | 47                       | 47                       | 60                       | 64                       | 130                      | 197                      | 119                      | 169                      | 204                   |
|                       | Total SRAM Capacity (Mb)     |                 | 35   | 63                       | 87                       | 80                       | 187                      | 164                      | 245                      | 174                      | 243                      | 294                   |
| Intelligent Engines   | DSP Engines                  |                 | 472  | 736                      | 1,504                    | 1,312                    | 2,096                    | 1,968                    | 3,984                    | 1,880                    | 2,500                    | 3,080                 |
| Scalar Engines        | Application Processing Unit  |                 | Dual-core Arm® Cortex-A72, 48KB/32KB L1 Cache w/ parity & ECC; 1MB L2 Cache w/ ECC |                          |                          |                          |                          |                          |                          |                          |                          |                       |
|                       | Real-time Processing Unit    |                 | Dual-core Arm Cortex-R5F, 32KB/32KB L1 Cache, and 256KB TCM w/ECC                  |                          |                          |                          |                          |                          |                          |                          |                          |                       |
|                       | Memory                       |                 | 256KB On-Chip Memory w/ECC   |                          |                          |                          |                          |                          |                          |                          |                          |                       |
|                       | Connectivity                 |                 | Ethernet (x2); USB 2.0 (x1); UART (x2); SPI (x2); I2C (x2); CAN-FD (x2)            |                          |                          |                          |                          |                          |                          |                          |                          |                       |
| Foundational Platform | NoC Master / NoC Slave Ports |                 | 5  | 16                       | 16                       | 14                       | 22                       | 28                       | 28                       | 16                       | 26                       | 26                    |
|                       | DDR Bus Widths               |                 | 64   | 128                      | 256                      | 128                      | 128                      | 256                      | 288                      | 384                      | 384                      | 384                   |
|                       | DDR Memory Controllers       |                 | 1  | 2                        | 4                        | 2                        | 2                        | 4                        | 5                        | 6                        | 6                        | 6                     |
|                       | CCIX & PCIe® w/DMA (CPM)     |                 | -  | -                        | -                        | 1 x Gen4x16, CCIX        | 1 x Gen4x16, CCIX        | 1 x Gen4x16, CCIX        | 1 x Gen4x16, CCIX        | 1 x Gen4x16, CCIX        | 1 x Gen4x16, CCIX        | 1 x Gen4x16, CCIX     |
|                       | PCI Express®                 |                 | 1 x Gen4x8   | 2 x Gen4x8               | 2 x Gen4x8               | 4 x Gen4x8               | 4 x Gen4x8               | 4 x Gen4x8               | 1 x Gen4x8               | 1 x Gen4x8               | 2 x Gen4x8               | 2 x Gen4x8            |
|                       | Multirate Ethernet MAC       |                 | 1  | 2                        | 2                        | 4                        | 2                        | 4                        | 1                        | 2                        | 2                        | 2                     |
| Package Footprint     | Package Dimensions (mm)      | Ball Pitch (mm) | XPIO, HDIO, MIO GTY, GTM   | XPIO, HDIO, MIO GTY, GTM | XPIO, HDIO, MIO GTY, GTM | XPIO, HDIO, MIO GTY, GTM | XPIO, HDIO, MIO GTY, GTM | XPIO, HDIO, MIO GTY, GTM | XPIO, HDIO, MIO GTY, GTM | XPIO, HDIO, MIO GTY, GTM | XPIO, HDIO, MIO GTY, GTM |                       |
| B625                  | 21x21                        | 0.8             | 216, 22, 78<br>4, 0  |                          |                          |                          |                          |                          |                          |                          |                          |                       |
| B1024                 | 31x31                        | 0.92            | 216, 22, 78<br>12, 0   | 216, 44, 78<br>16, 0     | 324, 44, 78<br>16, 0     |                          | 324, 22, 78<br>16, 0     |                          |                          |                          |                          |                       |
| B1369                 | 35x35                        | 0.92            |  | 216, 44, 78<br>24, 0     | 324, 44, 78<br>24, 0     | 324, 44, 78<br>24, 0     | 378, 22, 78<br>32, 0     |                          |                          |                          |                          |                       |
| A1760                 | 40x40                        | 0.92            |  | 432, 44, 78<br>24, 0     | 648, 44, 78<br>24, 0     |                          |                          |                          | 756, 22, 78<br>20, 0     |                          |                          |                       |
| C1760                 | 40x40                        | 0.92            |  |                          |                          | 378, 44, 78<br>44, 0     | 378, 22, 78<br>24, 0     | 378, 44, 78<br>44, 0     | 378, 22, 78<br>20, 32    | 378, 44, 78<br>24, 32    | 378, 44, 78<br>24, 32    |                       |
| D1760                 | 40x40                        | 0.92            |  |                          |                          |                          |                          | 648, 44, 78<br>24, 0     |                          |                          |                          |                       |
| A2197                 | 45x45                        | 0.92            |  |                          |                          |                          |                          | 648, 44, 78<br>44, 0     | 648, 44, 78<br>16, 16    |                          |                          |                       |
| A2785                 | 50x50                        | 0.92            |  |                          |                          |                          |                          |                          | 702, 44, 78<br>16, 28    | 702, 22, 78<br>20, 32    | 702, 44, 78<br>32, 44    | 702, 44, 78<br>40, 52 |

## Notes:

1. GTY transceivers operate at data rates up to 32.75Gb/s.
2. GTM transceivers operate at data rates up to 58Gb/s.

# Versal™ Prime Series – Figures of Merit

|                     |                                   |              | VM1102 | VM1302 | VM1402 | VM1502 | VM1702 | VM1802 | VM2502 | VM2602 | VM2702 | VM2902 |
|---------------------|-----------------------------------|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Intelligent Engines | DSP Engine Peak Perf – INT8       | TOPs         | 3.3    | 5.1    | 10.4   | 9.1    | 14.5   | 13.6   | 27.5   | 13.0   | 17.3   | 21.3   |
|                     | DSP Engine Peak Perf – INT24      | TOPs         | 1.1    | 1.7    | 3.5    | 3.0    | 4.8    | 4.5    | 9.2    | 4.3    | 5.8    | 7.1    |
|                     | DSP Engine Peak Perf – CINT18     | Complex TOPs | 0.5    | 0.7    | 1.5    | 1.3    | 2.0    | 1.9    | 3.9    | 1.8    | 2.5    | 3.0    |
|                     | DSP Engine Peak Perf – FP32       | TFLOPs       | 0.8    | 1.2    | 2.4    | 2.1    | 3.4    | 3.2    | 6.4    | 3.0    | 4.0    | 5.0    |
| Adaptable Engines   | Adaptable Engine Peak Perf – INT1 | TOPs         | 168    | 273    | 479    | 381    | 795    | 941    | 970    | 604    | 863    | 1,029  |
|                     | Adaptable Engine Peak Perf – INT2 | TOPs         | 77     | 125    | 219    | 175    | 378    | 431    | 445    | 277    | 395    | 472    |
|                     | Adaptable Engine Peak Perf – INT4 | TOPs         | 20     | 32     | 57     | 45     | 95     | 112    | 115    | 72     | 103    | 122    |
|                     | Adaptable Engine Peak Perf – INT8 | TOPs         | 5      | 8      | 15     | 12     | 24     | 29     | 30     | 18     | 26     | 31     |
| Scalar Engines      | Arm Cortex-A72 Performance        | DMIPs        | 15,980 | 15,980 | 15,980 | 15,980 | 15,980 | 15,980 | 15,980 | 15,980 | 15,980 | 15,980 |
|                     | Arm Cortex-R5F Performance        | DMIPs        | 2,505  | 2,505  | 2,505  | 2,505  | 2,505  | 2,505  | 2,505  | 2,505  | 2,505  | 2,505  |
| Memory              | Total Bandwidth – Block RAM       | Tb/s         | 26     | 55     | 138    | 67     | 347    | 118    | 167    | 190    | 257    | 315    |
|                     | Total Bandwidth – UltraRAM        | Tb/s         | 10     | 18     | 18     | 23     | 24     | 49     | 74     | 45     | 64     | 77     |
|                     | Total SRAM Bandwidth              | Tb/s         | 37     | 73     | 155    | 90     | 371    | 168    | 242    | 235    | 321    | 392    |
| I/O                 | Transceiver Bandwidth             | Tb/s         | 0.39   | 0.79   | 0.79   | 1.44   | 1.05   | 1.44   | 0.52   | 0.66   | 2.10   | 1.31   |
|                     | Sensor I/O Bandwidth              | Gb/s         | 269    | 0      | 614    | 0      | 394    | 0      | 1,824  | 1,037  | 0      | 1,037  |
| Platform Engines    | DDR4 Memory Bandwidth             | Gb/s         | 208    | 408    | 816    | 408    | 408    | 816    | 920    | 1,232  | 1,232  | 1,232  |
|                     | LPDDR4 Memory Bandwidth           | Gb/s         | 272    | 544    | 1,096  | 544    | 544    | 1,096  | 1,232  | 1,640  | 1,640  | 1,640  |
|                     | NoC Cross-sectional Bandwidth     | Tb/s         | 0.6    | 1.1    | 1.1    | 1.1    | 1.1    | 2.2    | 2.2    | 1.1    | 1.1    | 1.1    |

Prime Series: Figures of Merit

All parameters listed are maximum values. Verify all data in this document with the device data sheets or product guides found at: [www.xilinx.com](http://www.xilinx.com). XMP453 (v1.1)