Implementation Limits
This table lists the implementation limits in Metal.

GPU	Apple	Apple	Apple	Apple	Apple	Apple	Apple	Mac	Mac	Catalyst	Catalyst
Family	1	2	3	4	5	6	7	1	2	1	2
GPU Family Constant	MTLGPUFamilyApple1	MTLGPUFamilyApple2	MTLGPUFamilyApple3	MTLGPUFamilyApple4	MTLGPUFamilyApple5	MTLGPUFamilyApple6	MTLGPUFamilyApple7	MTLGPUFamilyMac1	MTLGPUFamilyMac2	MTLGPUFamilyMacCatalyst1	MTLGPUFamilyMacCatalyst2
Function arguments											
Maximum number of vertex attributes, per vertex descriptor	31	31	31	31	31	31	31	31	31	31	31
Maximum number of entries in the buffer argument table, per graphics or compute function	31	31	31	31	31	31	31	31	31	31	31
Maximum number of entries in the texture argument table, per graphics or compute function	31	31	31	96	96	128	128	128	128	128	128
Maximum number of entries in the sampler state argument table, per graphics or compute function[3]	16	16	16	16	16	16	16	16	16	16	16
Maximum number of entries in the threadgroup memory argument table, per compute function	31	31	31	31	31	31	31	31	31	31	31
Maximum number of inlined constant data buffers, per graphics or compute function	31	31	31	31	31	31	31	14	14	14	14
Maximum length of an inlined constant data buffer, per graphics or compute function	4 KB	4 KB	4 KB	4 KB	4 KB	4 KB	4 KB	4 KB	4 KB	4 KB	4 KB
Maximum threads per threadgroup	512	512	512	1024	1024	1024	1024	1024	1024	1024	1024
Maximum total threadgroup memory allocation	16352 B	16352 B	16 KB	32 KB	32 KB	32 KB	32 KB	32 KB	32 KB	32 KB	32 KB
Maximum total tile memory allocation[4]	Not accessible	Not accessible	Not accessible	32 KB	32 KB	32 KB	32 KB	Not accessible	Not accessible	Not accessible	Not accessible
Threadgroup memory length alignment	16 B	16 B	16 B	16 B	16 B	16 B	16 B	16 B	16 B	16 B	16 B
Maximum function memory allocation for a buffer in the constant address space	No limit	No limit	No limit	No limit	No limit	No limit	No limit	64 KB	64 KB	64 KB	64 KB
Maximum number of inputs (scalars or vectors) to a fragment function, declared with the stage_in qualifier[5]	60	60	60	124	124	124	124	32	32	32	32
Maximum number of input components to a fragment function, declared with the stage_in qualifier[5]	60	60	60	124	124	124	124	124	124	124	124
Maximum number of function constants	65536	65536	65536	65536	65536	65536	65536	65536	65536	65536	65536
Maximum tessellation factor	Not available	Not available	16	16	64	64	64	64	64	64	64
Maximum number of viewports and scissor rectangles, per vertex function	1	1	1	1	16	16	16	16	16	16	16
Maximum number of raster order groups, per fragment function	Not available	Not available	Not available	8	8	8	8	8	8	8	8
Argument Buffers											
Maximum number of buffers inside an argument buffer	31	31	31	96	96	500000[6]	500000[6]	Varies by tier[7]	Varies by tier[7]	Varies by tier[7]	Varies by tier[7]
Maximum number of textures inside an argument buffer	31	31	31	96	96	500000[6]	500000[6]	Varies by tier[7]	Varies by tier[7]	Varies by tier[7]	Varies by tier[7]
Maximum number of samplers inside an argument buffer	16	16	16	16	16	1024	1024	Varies by tier[7]	Varies by tier[7]	Varies by tier[7]	Varies by tier[7]
Resources											
Minimum buffer offset alignment	4 B	4 B	4 B	4 B	4 B	4 B	4 B	256 B	256 B	256 B	256 B
Maximum 1D texture width	8192 px	8192 px	16384 px	16384 px	16384 px	16384 px	16384 px	16384 px	16384 px	16384 px	16384 px
Maximum 2D texture width and height	8192 px	8192 px	16384 px	16384 px	16384 px	16384 px	16384 px	16384 px	16384 px	16384 px	16384 px