

# OpenGL hardware matrix

Extensions exposed by OpenGL implementations

April 2016, G-Truc Creation

GF / Fermi: GeForce 400 series, GeForce 500 series  
GK / Kepler: GeForce 600 series, GeForce 700 series  
GK110 / Kepler 110: GeForce 780  
GM200 / Maxwell: GeForce 900 series  
EG / Evergreen: Radeon HD 5000 series, Radeon HD 6000 series  
N.I. / Northern Islands: Radeon HD 6900 series  
S.I. / Southern Islands: Radeon HD 7000 series, Radeon R7 250X, Radeon R7 265, Radeon R9 280  
C.I. / Sea Islands: Radeon HD 7790, Radeon R7 240, Radeon R7 250, Radeon R7 260, Radeon R9 270  
V.I. / Volcanic Islands: Radeon R9 285 / 290 / Fury  
SNB / Sandy Bridge: HD, HD 2000  
IVB / Ivy Bridge: HD4000, HD2500  
HSW / Haswell: Iris 5X00 series, HD 4X00 series  
BSW / Broadwell: Iris 6X00 series, HD 5X00 series

[illegible]

Supported
Not supported
Support added from previous report

[illegible]



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<u>ANGLE texture compression dxt3</u>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	V		X
<u>AMD vertex shader viewport index</u>	X	X	X	X	V	V	V	V	V	X	V	V	V	V	X		X
<u>AMD vertex shader layer</u>	X	X	X	X	V	V	V	V	V	X	V	V	V	V			X
<u>AMD transform feedback4</u>	X	X	X	X	X	X	V	V	V	X	X	X	X	X			X
<u>AMD transform feedback3 lines triangles</u>	X	X	X	X	X	V	V	V	V	X	X	X	X	X			X
<u>AMD stencil operation extended</u>	X	X	X	X	X	X	V	V	V	X	X	X	X	X			X
<u>AMD_sparse_texture_pool</u>	X	X	X	X	X	X	X	V	V	X	X	X	X	X			X
<u>AMD sparse texture</u>	X	X	X	X	X	X	V	V	V	X	X	X	X	X			X
<u>AMD shader trinary minmax</u>	X	X	X	X	X	X	V	V	V	X	X	X	X	V			X
<u>AMD shader stencil value export</u>	X	X	X	X	X	X	V	V	V	X	X	X	X	X			X
<u>AMD shader stencil export</u>	X	X	X	X	V	V	V	V	V	X	X	X	X	X			X
<u>AMD seamless cubemap per texture</u>	X	V	V	V	V	V	V	V	V	X	X	X	X	V			X
<u>AMD sample positions</u>	X	X	X	X	V	V	V	V	V	X	X	X	X	X			X
<u>AMD query buffer object</u>	X	X	X	X	V	V	V	V	V	X	X	X	X	X			X
<u>AMD pinned memory</u>	X	X	X	X	V	V	V	V	V	X	X	X	X	X			X
<u>AMD performance monitor</u>	X	X	X	X	V	V	V	V	V	X	X	X	X	V			X
<u>AMD occlusion query event</u>	X	X	X	X	X	X	X	V	V	X	X	X	X	X			X
<u>AMD interleaved elements</u>	X	X	X	X	X	X	V	V	V	X	X	X	X	X			X
<u>AMD_gpu_shader_half_float</u>	X	X	X	X	X	X	X	X	V	X	X	X	X	X			X
<u>AMD_gpu_shader_half_float2</u>	X	X	X	X	X	X	X	X	V	X	X	X	X	X			X
<u>AMD_gpu_shader_int64</u>	X	X	X	X	X	X	V	V	V	X	X	X	X	X			X
<u>AMD_gcn_shader</u>	X	X	X	X	X	X	V	V	V	X	X	X	X	X			X
<u>AMD_framebuffer_sample_positions</u>	X	X	X	X	X	X	V	V	V	X	X	X	X	X			X
<u>AMD depth clamp separate</u>	X	X	X	X	V	V	V	V	V	X	X	X	V	X			X
<u>AMD blend minmax factor</u>	X	X	X	X	X	V	V	V	V	X	X	X	X	X			X
<u>ATI texture mirror once</u>	V	V	V	V	V	V	V	V	V	X	X	X	X	X			V
Support	40%	45%	47%	73%	23%	24%	39%	41%	43%	7%	15%	15%	21%		9%		8%

OpenGL 4.5	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	BDW	SLK	Mesa	MacOS X
<u>KHR context flush control</u>	V	V	V	V	V	V	V	V	V	X	X	X	X	V	X
<u>KHR robust buffer access behavior</u>	V	V	V	V	V	V	V	V	V	X	X	X	X	V	X
<u>KHR robustness</u>	V	V	V	V	V	V	V	V	V	X	X	X	X	X	X
<u>ARB ES3_1 compatibility</u>	V	V	V	V	V	V	V	V	V	X	X	X	X	X	X

<u>ARB clip control</u>	V	V	V	V	V	V	V	V	V	X	X	X	V	V	X
<u>ARB conditional render inverted</u>	V	V	V	V	V	V	V	V	V	X	X	X	X	V	X
<u>ARB cull distance</u>	V	V	V	V	V	V	V	V	V	X	X	X	X	X	X
<u>ARB derivative control</u>	V	V	V	V	V	V	V	V	V	X	X	X	X	V	X
<u>ARB direct state access</u>	V	V	V	V	V	V	V	V	V	X	X	X	X	V	X
<u>ARB get texture sub image</u>	V	V	V	V	V	V	V	V	V	X	X	X	X	V	X
<u>ARB shader texture image samples</u>	V	V	V	V	V	V	V	V	V	X	X	X	X	V	X
<u>ARB texture barrier</u>	V	V	V	V	V	V	V	V	V	X	X	X	X	V	X
Support	100%	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	8%	75%	0%

OpenGL 4.4	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	BDW	SLK	Mesa	MacOS X
<u>ARB buffer storage</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X
<u>ARB clear texture</u>	V	V	V	V	V	V	V	V	V	X	V	V	V	V	X
<u>ARB enhanced layouts</u>	V	V	V	V	V	V	V	V	V	X	V	V	V	X	X
<u>ARB multi bind</u>	V	V	V	V	V	V	V	V	V	X	V	V	V	V	X
<u>ARB query buffer object</u>	V	V	V	V	V	V	V	V	V	X	V	V	V	V	X
<u>ARB texture mirror clamp to edge</u>	V	V	V	V	V	V	V	V	V	X	V	V	V	V	X
<u>ARB texture stencil8</u>	V	V	V	V	V	V	V	V	V	X	V	V	V	V	X
<u>ARB vertex type 10f 11f 11f rev</u>	V	V	V	V	V	V	V	V	V	X	V	V	V	V	X
Support	100%	100%	100%	100%	100%	100%	100%	100%	100%	13%	100%	100%	100%	88%	0%

OpenGL 4.3	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	BDW	SLK	Mesa	MacOS X
<u>ARB vertex attrib binding</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X
<u>ARB texture view</u>	V	V	V	V	V	V	V	V	V	X	V	V	V	V	X
<u>ARB texture storage multisample</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X
<u>ARB texture query levels</u>	V	V	V	V	V	V	V	V	V	X	V	V	V	V	X
<u>ARB texture buffer range</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X
<u>ARB stencil texturing</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X
<u>ARB shader storage buffer object</u>	V	V	V	V	V	V	V	V	V	X	V	V	V	V	X
<u>ARB shader image size</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X
<u>ARB program interface query</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X
<u>ARB multi draw indirect</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X
<u>ARB invalidate subdata</u>	V	V	V	V	V	V	V	V	V	X	V	V	V	V	X





<u>ARB ES2 compatibility</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Support	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	83%

OpenGL 4.0	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	BDW	SLK	Mesa	MacOS X
<u>ARB transform feedback3</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB transform feedback2</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB texture query lod</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB texture gather</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB texture cube map array</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB texture buffer object rgb32</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB tessellation shader</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB shader subroutine</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB sample shading</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB gpu shader5</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB gpu shader fp64</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB draw indirect</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB draw buffers blend</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Support	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

OpenGL 3.3	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	BDW	SLK	Mesa	MacOS X
<u>ARB vertex type 2 10 10 10 rev</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB timer query</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB texture swizzle</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB texture rgb10 a2ui</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB shader bit encoding</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB sampler objects</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB occlusion query2</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB instanced arrays</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB explicit attrib location</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<u>ARB blend func extended</u>	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Support	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

OpenGL 3.2	GF	GK	GM100	GM200	EG	N.I.	S.I.	C.I.	V.I.	IVB	HSW	BDW	SLK	Mesa	MacOS X
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