OpenGL Matrix - November 2013

G-Truc Creation

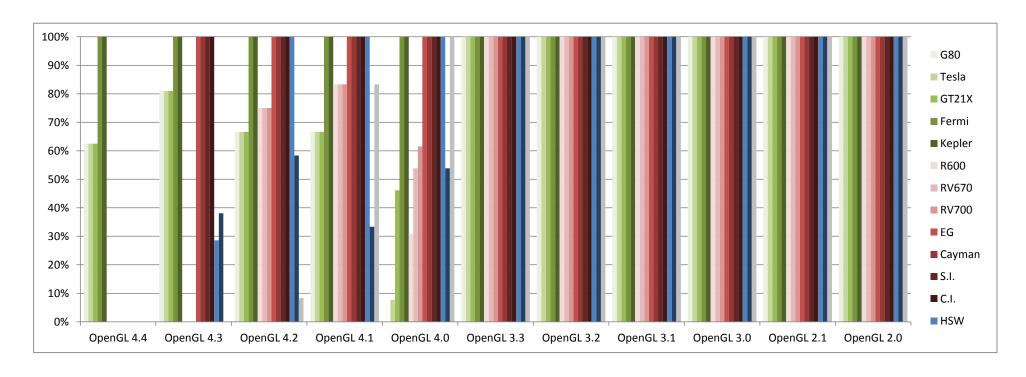
Vendor		NVIDIA 331.10 beta						AMD							Mesa	Apple
Drivers version		3	331.10 b	eta				13.	11 bet	a 9.2			33	325	git-10.0	10.9
Release date		()2/10/20	013				08	3/11/20	013			30/08	3/2013	06/11/2013	3 22/10/2013
Platforms	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	EG	Cayman	S.I.	C.I.	IVB	HSW	Mesa	MacOS X
OpenGL 4.4	63%	63%	63%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	09	6 0%
OpenGL 4.3	81%	81%	81%	100%	100%	0%	0%	0%	100%	100%	100%	100%	19%	29%	389	6 0%
OpenGL 4.2	67%	67%	67%	100%	100%	75%	75%	75%	100%	100%	100%	100%	92%	100%	589	6 8%
OpenGL 4.1	67%	67%	67%	100%	100%	83%	83%	83%	100%	100%	100%	100%	100%	100%	339	6 83%
OpenGL 4.0	0%	8%	46%	100%	100%	31%	54%	62%	100%	100%	100%	100%	100%	100%	549	6 100%
OpenGL 3.3	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	1009	6 100%
OpenGL 3.2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	1009	6 100%
OpenGL 3.1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	1009	6 100%
OpenGL 3.0	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	1009	6 100%
OpenGL 2.1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	1009	6 100%
OpenGL 2.0	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	1009	6 100%

Nomenclature:

Supported

Not supported

Support added from previous report



OpenGL Extensions	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	EG	Cayman	S.I.	C.I.	IVB	HSW	Mesa	MacOS X
KHR texture compression astc ldr	Χ	Χ	Χ	Х	Χ	Х	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Х	Х
ARB robustness	V	V	V	V	V	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	X
ARB sparse texture	Χ	Χ	Χ	V	V	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	X
ARB shading language include	V	V	V	V	V	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	V
ARB shader stencil export	X	Х	Χ	Χ	Χ	X	Χ	Χ	V	V	٧	V	X	Χ	X	X
ARB shader group vote	X	Χ	Χ	V	V	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	X
ARB shader draw parameters	X	Χ	Χ	V	V	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	X
ARB seamless cubemap per texture	X	Χ	Χ	X	V	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	X
ARB robustness isolation	V	V	V	V	V	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	X
ARB robust buffer access behavior	V	V	V	V	V	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	X
ARB debug output	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	Х

ARB indirect parameters	Χ	Χ	Χ	V	V	X	Χ	Χ	Χ	Χ	Х	Χ	Χ	Χ	Χ	X
ARB compute variable group size	Χ	Χ	Χ	V	V	X	Χ	Х	Х	Х	Х	Χ	Χ	Х	Х	Χ
ARB compatibility	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X	Χ
ARB cl event	Χ	Χ	Χ	Х	Х	Х	Χ	Х	Х	Х	Х	Χ	Χ	Х	Х	Χ
ARB bindless texture	Χ	Χ	Χ	Х	V	X	Χ	Х	Х	Х	Х	Χ	Χ	Χ	Χ	Χ
EXT texture sRGB decode	V	V	V	V	V	X	Χ	Х	V	V	V	V	V	V	Х	V
EXT texture mirror clamp	V	V	V	V	V	V	V	V	V	V	V	V	X	Χ	Х	V
EXT framebuffer multisample blit scaled	V	V	V	V	V	X	Χ	Х	Х	Х	Х	Χ	Х	Χ	Χ	V
EXT direct state access	V	V	V	V	V	V	V	V	V	V	V	V	X	Χ	Χ	X
EXT depth bounds test	V	V	V	V	V	X	Χ	Х	Х	Х	V	V	X	Χ	Χ	V
NV vertex buffer unified memory	V	V	V	V	V	X	Χ	X	X	X	X	Χ	Χ	Χ	Χ	X
NV texture multisample	V	V	V	V	V	X	Χ	Х	Х	Х	X	Χ	Χ	Χ	Χ	X
NV texture barrier	V	V	V	V	V	V	V	V	V	V	V	V	X	Χ	Χ	V
NV shader buffer store	Χ	Χ	Χ	V	V	X	Χ	X	X	Χ	X	Χ	Χ	Χ	Χ	X
NV shader buffer load	V	V	V	V	V	X	Χ	X	X	Χ	X	Χ	Χ	Χ	Χ	X
NV shader atomic float	Χ	Χ	Χ	V	V	X	Χ	X	X	Χ	X	Χ	Χ	Χ	Χ	X
NV multisample coverage	V	V	V	V	V	X	Χ	Χ	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ
NV explicit multisample	V	V	V	V	V	V	V	V	V	V	V	V	X	Χ	Χ	X
NV copy image	V	V	V	V	V	V	V	V	V	V	V	V	X	Χ	Χ	X
NV bindless texture	Χ	Χ	Χ	Χ	V	X	Χ	Χ	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ
NV bindless multi draw indirect	Χ	Χ	Χ	V	V	X	Χ	X	X	Χ	X	Χ	Χ	Χ	Χ	Χ
NV blend equation advanced	Χ	Χ	Χ	V	V	X	Χ	Χ	X	Χ	Χ	Χ	Χ	Χ	Х	X
INTEL map texture	Χ	Χ	Χ	Χ	X	Χ	Χ	X	X	Χ	X	Χ	Χ	V	X	Χ
INTEL fragment shader ordering	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	Χ	Χ	Χ	V	V	X	Χ
ATI texture mirror once	V	V	V	V	V	V	V	V	V	V	V	V	X	Χ	Χ	V
AMD vertex shader viewport index	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	V	V	V	V	X	Χ	Χ	X
AMD vertex shader layer	Χ	Χ	Χ	Χ	X	Χ	Χ	X	V	V	V	V	X	Χ	Χ	Χ
AMD transform feedback3 lines triangles	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	X	V	V	V	X	Χ	Χ	X
AMD stencil operation extended	Χ	Χ	Χ	X	Χ	X	Χ	Χ	X	Χ	V	V	X	X	Χ	X
AMD sparse texture	Χ	Χ	Χ	X	Χ	Χ	Χ	X	X	Χ	V	V	X	Χ	Χ	X
AMD shader trinary minmax	Χ	Χ	Χ	X	Χ	X	Χ	Χ	X	Χ	V	V	X	X	Χ	X
AMD seamless cubemap per texture	Χ	Χ	Χ	Х	V	X	Χ	V	V	V	V	V	X	Χ	Χ	X
AMD sample positions	Χ	Χ	Χ	Χ	Χ	V	V	V	V	V	V	V	X	Χ	Χ	X

AMD query buffer object	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	V	V	V	V	X	Χ	Χ	X	
AMD pinned memory	X	Χ	Х	Х	Χ	V	V	V	V	V	V	V	Χ	Χ	Х	X	
AMD_occlusion_query_event	X	Χ	Х	Х	Х	Х	Х	Х	Χ	Х	Χ	V	Х	Χ	Х	X	
AMD blend minmax factor	X	Χ	Χ	Х	Χ	Х	X	Х	Χ	V	٧	V	Χ	Χ	Х	X	
Support	40%	40%	40%	58%	67%	21%	21%	23%	33%	38%	46%	48%	6 89	6 10%	6	2% 1	15%
OpenGL 4.4	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	EG	Cayman	S.I.	C.I.	IVB	HSW	Mesa	MacOS X	
ARB buffer storage	X	Χ	Χ	V	V	Χ	Χ	X	Χ	Χ	Χ	Χ	X	Χ	Χ	X	
ARB clear texture	X	Χ	Χ	V	V	Χ	X	X	Χ	Χ	Χ	Χ	X	Χ	Χ	X	
ARB enhanced layouts	V	V	V	V	V	Χ	Χ	X	Χ	Χ	Χ	Χ	X	Χ	Χ	X	
ARB multi bind	V	V	V	V	V	X	X	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	
ARB query buffer object	Χ	Χ	Χ	V	V	X	Χ	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	
ARB texture mirror clamp to edge	V	V	V	V	V	Χ	X	X	Χ	Χ	Χ	Χ	X	Χ	Χ	X	
ARB texture stencil8	V	V	V	V	V	X	Χ	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	
ARB vertex type 10f 11f 11f rev	V	٧	V	V	V	Χ	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	
Support	63%	63%	63%	100%	100%	0%	0%	0%	6 0%	6 0%	6 0%	6 0%	6 0%	6 09	6	0%	0%
																•	
OpenGL 4.3	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	EG	Cayman	S.I.	C.I.	IVB	HSW	Mesa	MacOS X	
OpenGL 4.3 GL ARB vertex attrib binding	G80 V	Tesla V	GT21X V	Fermi V	Kepler V	R600 X	RV670 X	RV700 X	EG V	Cayman V	S.I.	C.I.	IVB X	HSW X	Mesa V	MacOS X	
	G80 V V																
GL ARB vertex attrib binding	G80 V V V	V	V	V	٧	Х	Χ	Χ	V	V	V	V		Χ	V	X	
GL ARB vertex attrib binding GL ARB texture view	G80 V V V	V V	V	V V	V V	Х	X X	X X	V V	V	V V	V V		X X	V V	X	
GL ARB vertex attrib binding GL ARB texture view GL ARB texture storage multisample	G80 V V V V	V V V	V V V	V V V	V V V	X X X	X X X	X X X	V V V	V V V	V V V	V V V		X X X	V V V	X X X	
GL ARB vertex attrib binding GL ARB texture view GL ARB texture storage multisample GL ARB texture query levels	G80 V V V V V	V V V	V V V	V V V	V V V	X X X	X X X X	X X X	V V V	V V V	V V V	V V V		X X X	V V V	X X X	
GL ARB vertex attrib binding GL ARB texture view GL ARB texture storage multisample GL ARB texture query levels GL ARB texture buffer range	G80 V V V V V	V V V V	V V V V	V V V V	V V V V	X X X X	X X X X	X X X X	V V V V	V V V V	V V V V	V V V V		X X X X	V V V V	X X X X	
GL ARB vertex attrib binding GL ARB texture view GL ARB texture storage multisample GL ARB texture query levels GL ARB texture buffer range GL ARB stencil texturing	G80 V V V V V X X	V V V V V	V V V V V	V V V V V	V V V V	X X X X X	X X X X X	X X X X X	V V V V	V V V V V	V V V V	V V V V		X X X X X	V V V V	X X X X X	
GL ARB vertex attrib binding GL ARB texture view GL ARB texture storage multisample GL ARB texture query levels GL ARB texture buffer range GL ARB stencil texturing GL ARB shader storage buffer object	G80 V V V V V X X V	V V V V V	V V V V V	V V V V V	V V V V V	X X X X X X	X X X X X	X X X X X	V V V V V	V V V V V V V	V V V V V	V V V V V	X X X X X	X X X X X V	V V V V X	X X X X X X	
GL ARB vertex attrib binding GL ARB texture view GL ARB texture storage multisample GL ARB texture query levels GL ARB texture buffer range GL ARB stencil texturing GL ARB shader storage buffer object GL ARB shader image size	G80 V V V V X X X	V V V V V X X	V V V V V X X X	V V V V V V	V V V V V V	X X X X X X	X X X X X X	X X X X X X X	V V V V V V	V V V V V	V V V V V V	V V V V V V V V V V V V V V V V V V V	X X X X X X	X X X X X X	V V V V X	X X X X X X	
GL ARB vertex attrib binding GL ARB texture view GL ARB texture storage multisample GL ARB texture query levels GL ARB texture buffer range GL ARB stencil texturing GL ARB shader storage buffer object GL ARB shader image size GL ARB program interface query	G80 V V V V V X X V	V V V V V X X	V V V V V X X X V	V V V V V V V	V V V V V V	X X X X X X X	X X X X X X X	X X X X X X X	V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	X X X X X X X V	X X X X X V V	V V V V X X	X X X X X X X	
GL ARB vertex attrib binding GL ARB texture view GL ARB texture storage multisample GL ARB texture query levels GL ARB texture buffer range GL ARB stencil texturing GL ARB shader storage buffer object GL ARB shader image size GL ARB program interface query GL ARB multi draw indirect	G80 V V V V V X X V V V	V V V V V X X X V X	V V V V V X X X V X	V V V V V V V	V V V V V V V	X X X X X X X X	X X X X X X X X	X X X X X X X X	V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	X X X X X X X V	X X X X X V V	V V V V X X X	X X X X X X X X	
GL ARB vertex attrib binding GL ARB texture view GL ARB texture storage multisample GL ARB texture query levels GL ARB texture buffer range GL ARB stencil texturing GL ARB shader storage buffer object GL ARB shader image size GL ARB program interface query GL ARB multi draw indirect GL ARB invalidate subdata	G80 V V V V X X V V V V	V V V V V X X X V V X X V V	V V V V V X X X V V X	V V V V V V V V	V V V V V V V V V V V V V V V V V V V	X X X X X X X X X	X X X X X X X X	X X X X X X X X	V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	X X X X X X X V V	X X X X X V V X V	V V V V X X X X	X X X X X X X X	
GL ARB vertex attrib binding GL ARB texture view GL ARB texture storage multisample GL ARB texture query levels GL ARB texture buffer range GL ARB stencil texturing GL ARB shader storage buffer object GL ARB shader image size GL ARB program interface query GL ARB multi draw indirect GL ARB invalidate subdata GL ARB internalformat query2	G80 V V V V X X V V V V V V V V V V V V V	V V V V V X X X V V V V V V V V V V V V	V V V V V X X V V V V	V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	X X X X X X X X X	X X X X X X X X X	X X X X X X X X X X X X X X X	V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	X X X X X X X V V	X X X X X X V V X X X	V V V V X X X X X	X X X X X X X X X	

Support	67%	67%	67%	100%	100%	83%	83%	83%	100%	100%	100%	100%	100%	100%	3	3%
GL ARB ES2 compatibility	V	V	٧	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB get program binary	V	V	V	٧	V	٧	V	V	V	V	٧	V	V	V	V	X
GL ARB separate shader objects	V	V	V	V	V	٧	V	V	V	V	٧	V	V	V	Χ	V
GL ARB shader precision	Χ	Χ	Х	V	V	V	V	V	V	V	V	V	V	V	Х	V
GL ARB vertex attrib 64bit	Χ	Χ	Х	V	V	Χ	Χ	Χ	V	V	V	V	V	V	X	V
GL ARB viewport array	V	V	V	V	V	V	V	V	٧	V	٧	٧	V	V	Χ	V
OpenGL 4.1	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	EG	Cayman	S.I.	C.I.	IVB	HSW	Mesa	MacOS 2
Support	67%	67%	67%	100%	100%	75%	75%	75%	100%	100%	100%	100%	92%	100%	•	8%
GL ARB base instance	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X
GL ARB compressed texture pixel storage	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X	X
GL ARB conservative depth	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X
GL ARB internalformat query	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB map buffer alignment	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X
GL ARB shader atomic counters	X	X	X	V		X	X		V	V	V	V	V	V	X	X
GL ARB shader image load store	X	X	X	V			X		V	V	V	V	X	V	X	X
GL ARB shading language 420pack	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X	X
GL ARB shading language packing	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X
GL ARB texture storage	V	V	V	V	V		V	V	V	V	V	V	V	V	V	X
GL ARB texture compression bptc	X	X	X	V		X	X		V	V	V	V	V	V	X	X
GL ARB transform feedback instanced	X	Х	X	V	V	V	V	V	V	V	V V	V	V	V	V	X
OpenGL 4.2	G80	Tesla	GT21X	Earmi	Kepler	R600	PV670	RV700	FG	Cayman	S I	C.I.	IVB	HSW	Mesa	MacOS 2
Support	81%	81%	81%	100%	100%	U%	0%	0%	100%	100%	100%	100%	19%	29%	3	870
GL ARB arrays of arrays	81%	V	V	V	V	X 0%	, i	7.	V 100%	V	100%	٧	V	V	χ	X 8%
GL ARB clear buffer object	V	V	V	V	V	X	X	X	V	V	V	V	X	X	X	X
GL ARB compute shader	X	X	X	V	V	X	X	X	V	V	V	V	X	V	X	X
GL ARB copy image	V	V	V	V	V	X	X	X	V	V	V	V	X	X	X	X
GL KHR debug	V	V	V	V	V	Χ	X	X	V	V	V	V	V	V	V	X
GL ARB ES3 compatibility				V	V	Х	X	,,	V	V	V	V	X	Χ	V	X

GL ARB transform feedback3	X	Χ	Χ	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB transform feedback2	X	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB texture query lod	X	Χ	V	V	V	Х	Χ	V	V	V	٧	V	V	٧	V	V
GL ARB texture gather	X	Χ	V	V	V	Х	V	V	V	V	V	V	V	V	V	V
GL ARB texture cube map array	X	Χ	V	V	V	X	V	V	V	V	V	V	V	V	V	V
GL ARB texture buffer object rgb32	X	Χ	Х	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB tessellation shader	X	Χ	Х	V	V	Х	Χ	Χ	V	V	V	V	٧	V	Х	V
GL ARB shader subroutine	X	Χ	Х	V	V	Х	Х	Χ	V	V	V	V	٧	V	Х	V
GL ARB sample shading	X	Χ	V	V	V	X	V	V	V	V	V	V	V	V	Χ	V
GL ARB gpu shader5	X	Χ	Χ	V	V	Х	Χ	Χ	V	V	V	V	V	V	Χ	V
GL ARB gpu shader fp64	X	Χ	Χ	V	V	X	Χ	Χ	V	V	V	V	V	V	X	V
GL ARB draw indirect	X	Χ	Χ	V	V	X	Χ	Χ	V	V	V	V	V	V	X	V
GL ARB draw buffers blend	X	Χ	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Support	0%	8%	46%	100%	100%	31%	54%	62%	100%	100%	100%	100%	6 100%	100%	5 54	% 100%
OpenGL 3.3	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	EG	Cayman	S.I.	C.I.	IVB	HSW	Mesa	MacOS X
GL ARB vertex type 2 10 10 10 rev	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB timer query	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB texture swizzle	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB texture swizzle GL ARB texture rgb10 a2ui	V V	V V	V V	V	V V	V		V V		V V	V V	V V	V	V V	V V	V V
<u> </u>	V V V			•		_	V		V							
GL ARB texture rgb10 a2ui	V V V	V	V	V	V	V	V V	V	V V	V	V	V	V	V	V	V
GL ARB texture rgb10 a2ui GL ARB shader bit encoding	V V V V	V V	V V	V V	V V	V V	V V V	V V	V V V	V V	V V	V V	V V	V V	V V	V V
GL ARB texture rgb10 a2ui GL ARB shader bit encoding GL ARB sampler objects GL ARB occlusion query2 GL ARB instanced arrays	V V V V	V V V	V V V	V V V	V V V	V V V	V V V V	V V V	V V V	V V V	V V V	V V V	V V V	V V V	V V V	V V V
GL ARB texture rgb10 a2ui GL ARB shader bit encoding GL ARB sampler objects GL ARB occlusion query2	V V V V V	V V V V	V V V V	V V V	V V V	V V V	V V V V	V V V	V V V V	V V V V	V V V	V V V	V V V	V V V	V V V	V V V
GL ARB texture rgb10 a2ui GL ARB shader bit encoding GL ARB sampler objects GL ARB occlusion query2 GL ARB instanced arrays GL ARB explicit attrib location GL ARB blend func extended	V V V V V V	V V V V V	V V V V V V V V	V V V V	V V V V V	V V V V V V V V	V V V V V V V V	V V V V V	V V V V V	V V V V V V V V	V V V V V V V	V V V V V V V V	V V V V V V V V	V V V V V V V V	V V V V V	V V V V
GL ARB texture rgb10 a2ui GL ARB shader bit encoding GL ARB sampler objects GL ARB occlusion query2 GL ARB instanced arrays GL ARB explicit attrib location	V V V V V V V	V V V V V	V V V V V V V V	V V V V V V V V	V V V V V	V V V V V V V	V V V V V V V V	V V V V V	V V V V V	V V V V V V V V	V V V V V V V	V V V V V V V V	V V V V V V V	V V V V V V V V	V V V V V	V V V V V
GL ARB texture rgb10 a2ui GL ARB shader bit encoding GL ARB sampler objects GL ARB occlusion query2 GL ARB instanced arrays GL ARB explicit attrib location GL ARB blend func extended Support	V V V V V V 100%	V V V V V	V V V V V V V V	V V V V V V V V	V V V V V	V V V V V V V V	V V V V V V V	V V V V V V V	V V V V V V V	V V V V V V V	V V V V V V V V	V V V V V V	V V V V V V V V	V V V V V V	V V V V V	V V V V V V V
GL ARB texture rgb10 a2ui GL ARB shader bit encoding GL ARB sampler objects GL ARB occlusion query2 GL ARB instanced arrays GL ARB explicit attrib location GL ARB blend func extended Support OpenGL 3.2	V V V V V V 100%	V V V V V	V V V V V V	V V V V V V V	V V V V V	V V V V V V V V	V V V V V V V V	V V V V V V V	V V V V V V V	V V V V V V V V	V V V V V V V V	V V V V V V V V	V V V V V V V V	V V V V V V V V	V V V V V	V V V V V
GL ARB texture rgb10 a2ui GL ARB shader bit encoding GL ARB sampler objects GL ARB occlusion query2 GL ARB instanced arrays GL ARB explicit attrib location GL ARB blend func extended Support OpenGL 3.2 GL ARB vertex array bgra		V V V V V V V	V V V V V V	V V V V V V V	V V V V V V V	V V V V V V V V	V V V V V V T100%	V V V V V V V	V V V V V V T 100%	V V V V V V V	V V V V V V V V	V V V V V V	V V V V V V V V	V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V
GL ARB texture rgb10 a2ui GL ARB shader bit encoding GL ARB sampler objects GL ARB occlusion query2 GL ARB instanced arrays GL ARB explicit attrib location GL ARB blend func extended Support OpenGL 3.2 GL ARB vertex array bgra GL ARB texture multisample	G80	V V V V V T 100%	V V V V V V V T T T T T T T T T T T T T	V V V V V V V T 100%	V V V V V V V Kepler	V V V V V V V V R600	V V V V V V V RV670 V	V V V V V 100%	V V V V V V V T 100%	V V V V V V T100%	V V V V V V V S 100%	V V V V V V V C.I.	V V V V V V V V V V V V V V V V V V V	V V V V V V V T 100%	V V V V V V Mesa	V V V V V V W MacOS X
GL ARB texture rgb10 a2ui GL ARB shader bit encoding GL ARB sampler objects GL ARB occlusion query2 GL ARB instanced arrays GL ARB explicit attrib location GL ARB blend func extended Support OpenGL 3.2 GL ARB vertex array bgra	G80	V V V V V V Tesla V	V V V V V V V V GT21X V	V V V V V V V V V Fermi V	V V V V V V T 100%	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V 100%	V V V V V V Cayman V	V V V V V V V S 100%	V V V V V V V C.I. V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V T 100% HSW V	V V V V V V V Mesa V	V V V V V V V V MacOS X V

GL ARB provoking vertex	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB geometry shader4	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB fragment coord conventions	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB depth clamp	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB draw elements base vertex	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Support	1009	% 1009	% 100%	6 100%	6 100%	6 100%	100%	100%	4 100%	100%	100%	6 100%	6 100%	6 100%	10	0% 100%
OpenGL 3.1	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	EG	Cayman	S.I.	C.I.	IVB	HSW	Mesa	MacOS X
GL ARB uniform buffer object	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL EXT texture snorm	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB texture rectangle	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB texture buffer object	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL NV primitive restart	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB draw instanced	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB copy buffer	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Support	1009	% 1009	% 100%	6 100 ₉	6 100%	6 100%	100%	100%	6 100%	100%	5 100%	6 100%	6 100%	6 100%	5 10	0% 100%
•																
OpenGL 3.0	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Everg	r Cayman	S.I.	C.I.	IVB	HSW	Mesa	MacOS X
OpenGL 3.0 GL ARB vertex array object	G80 V	Tesla V	GT21X	Fermi V	Kepler V	R600 V	RV670 V	RV700 V	Everg V	r Cayman V	S.I.	C.I.	IVB V	HSW V	Mesa V	MacOS X V
GL ARB vertex array object		V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB vertex array object GL EXT transform feedback		V V	V V	V V	V	V V	V V	V V	V V	V V	V V	V V	V V	V V	V V	V
GL ARB vertex array object GL EXT transform feedback GL ARB texture rg		V V V	V V V	V V V	V V V	V V V	V V V	V V V	V V V							
GL ARB vertex array object GL EXT transform feedback GL ARB texture rg GL EXT texture shared exponent		V V V	V V V	V V V	V V V	V V V	V V V	V V V	V V V							
GL ARB vertex array object GL EXT transform feedback GL ARB texture rg GL EXT texture shared exponent GL EXT texture integer		V V V V	V V V V	V V V V	V V V V	V V V V	V V V V	V V V V	V V V V							
GL ARB vertex array object GL EXT transform feedback GL ARB texture rg GL EXT texture shared exponent GL EXT texture integer GL ARB texture float		V V V V V	V V V V	V V V V	V V V V V V	V V V V V	V V V V V	V V V V V	V V V V	V V V V V	V V V V V	V V V V V	V V V V V	V V V V V	V V V V	V V V V V
GL ARB vertex array object GL EXT transform feedback GL ARB texture rg GL EXT texture shared exponent GL EXT texture integer GL ARB texture float GL ARB texture compression rgtc		V V V V V	V V V V V	V V V V V	V V V V V V V V	V V V V V	V V V V V	V V V V V	V V V V V	V V V V V	V V V V V	V V V V V	V V V V V	V V V V V	V V V V V	V V V V V
GL ARB vertex array object GL EXT transform feedback GL ARB texture rg GL EXT texture shared exponent GL EXT texture integer GL ARB texture float GL ARB texture compression rgtc GL EXT texture array		V V V V V V	V V V V V V	V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V	V V V V V V V V	V V V V V V	V V V V V V	V V V V V V	V V V V V V	V V V V V V	V V V V V V	V V V V V V	V V V V V V	V V V V V V
GL ARB vertex array object GL EXT transform feedback GL ARB texture rg GL EXT texture shared exponent GL EXT texture integer GL ARB texture float GL ARB texture compression rgtc GL EXT texture array GL EXT packed float		V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V	V V V V V V
GL ARB vertex array object GL EXT transform feedback GL ARB texture rg GL EXT texture shared exponent GL EXT texture integer GL ARB texture float GL ARB texture compression rgtc GL EXT texture array GL EXT packed float GL EXT packed depth stencil		V V V V V V V	V V V V V V V	V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V	V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V	V V V V V V V
GL ARB vertex array object GL EXT transform feedback GL ARB texture rg GL EXT texture shared exponent GL EXT texture integer GL ARB texture float GL ARB texture compression rgtc GL EXT texture array GL EXT packed float GL EXT packed depth stencil GL ARB map buffer range		V V V V V V V V V V V V V V V V V V V	V V V V V V V	V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V	V V V V V V V
GL ARB vertex array object GL EXT transform feedback GL ARB texture rg GL EXT texture shared exponent GL EXT texture integer GL ARB texture float GL ARB texture compression rgtc GL EXT texture array GL EXT packed float GL EXT packed depth stencil GL ARB map buffer range GL ARB half float vertex		V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V V V

GL ARB framebuffer object	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
GL ARB depth buffer float	V	٧	V	V	V	٧	V	V	٧	V	V	V	V	٧	V	V	
GL NV conditional render	V	V	V	V	V	V	V	V	V	V	V	V	V	٧	V	V	
GL ARB color buffer float	V	V	V	V	V	V	V	V	V	V	٧	V	V	٧	V	V	
Support	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		100%	100%
OpenGL 2.1	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	EG	Cayman	S.I.	C.I.	IVB	HSW	Mesa	MacO:	S X
GL EXT texture sRGB	V	V	V	V	V	V	V	V	V	V	٧	٧	V	٧	V	V	
GL ARB pixel buffer object	V	٧	V	V	V	٧	V	V	٧	V	V	V	V	٧	V	V	
Support	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		100%	100%
OpenGL 2.0	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	EG	Cayman	S.I.	C.I.	IVB	HSW	Mesa	MacO	S X
OpenGL 2.0 GL ARB vertex shader	G80 V	Tesla V	GT21X V	Fermi V	Kepler V	R600 V	RV670 V	RV700 V	EG V	Cayman V	S.I. V	C.I.	IVB V	HSW V	Mesa V	MacO: V	S X
<u> </u>	G80 V V	Tesla V V	GT21X V V	Fermi V V	Kepler V V		RV670 V V	RV700 V V	EG V V	Cayman V V		C.I. V V					5 X
GL ARB vertex shader	G80 V V V	Tesla V V V	V	Fermi V V	V	V	V	RV700 V V V	EG V V	Cayman V V V		C.I. V V		V	V	V	S X
GL ARB vertex shader GL ARB texture non power of two	G80 V V V	V V	V V	Fermi V V V	V V	V V	V V	V V	V V	V V		C.I. V V V		V V	V V	V V	5 X
GL ARB vertex shader GL ARB texture non power of two GL EXT stencil two side	G80 V V V V	V V V	V V V	V V V	V V V	V V V	V V V	V V V	V V V	V V V	V V V	C.I. V V V V V	V V V	V V V	V V V	V V V	SX
GL ARB vertex shader GL ARB texture non power of two GL EXT stencil two side GL ARB shading language 100	G80 V V V V V	V V V	V V V	V V V	V V V	V V V	V V V	V V V	V V V	V V V	V V V	C.I. V V V V V V	V V V	V V V	V V V	V V V	S X
GL ARB vertex shader GL ARB texture non power of two GL EXT stencil two side GL ARB shading language 100 GL ARB shader objects	G80 V V V V V	V V V V	V V V V	V V V	V V V V	V V V V	V V V V	V V V V	V V V	V V V V	V V V	C.I. V V V V V V V V V V	V V V V	V V V V	V V V V	V V V V	5 X
GL ARB vertex shader GL ARB texture non power of two GL EXT stencil two side GL ARB shading language 100 GL ARB shader objects GL ARB point sprite	G80 V V V V V V V V	V V V V	V V V V V	V V V V V	V V V V	V V V V V	V V V V V	V V V V V	V V V V V	V V V V V	V V V V V	C.I. V V V V V V V V V V V V V	V V V V V	V V V V	V V V V	V V V V V	S X
GL ARB vertex shader GL ARB texture non power of two GL EXT stencil two side GL ARB shading language 100 GL ARB shader objects GL ARB point sprite GL ARB fragment shader	G80 V V V V V V V V V	V V V V	V V V V V	V V V V V	V V V V V V V V	V V V V V	V V V V V	V V V V V	V V V V V	V V V V V V V	V V V V V	C.I. V V V V V V V V V	V V V V V	V V V V V	V V V V V	V V V V V	S X