OpenGL Matrix - December 2012

G-Truc Creation

Vendor	NVIDIA								Intel			
Drivers version	310.70							1	15.31.64.2885			
Release date	18/12/2012							16/12/2012				
OpenGL Extensions	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	N.I. Cayman	S.I.	HD 4000
GL_AMD_vertex_shader_viewport_index	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	V	V	V	X
GL_AMD_vertex_shader_layer	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	V	V	V	X
GL_NV_vertex_buffer_unified_memory	V	V	V	V	V	Χ	Χ	Χ	Χ	X	Χ	X
GL AMD transform feedback3 lines triangles	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	X	V	V	X
GL_EXT_texture_sRGB_decode	Χ	Χ	Χ	V	V	Χ	Χ	X	V	V	V	X
GL_KHR_texture_compression_astc_ldr	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	X	X	Χ	X
<u>GL_NV_texture_multisample</u>	V	V	V	V	V	Χ	Χ	Χ	Χ	Χ	Χ	X
GL_EXT_texture_mirror_clamp	V	V	V	V	V	V	V	V	V	V	V	X
GL_ARB_robustness	V	V	V	V	V	Χ	Χ	X	X	X	Χ	X
GL_AMD_stencil_operation_extended	Χ	Χ	Χ	X	Χ	Χ	Χ	X	X	X	V	X
GL_AMD_sparse_texture	Χ	X	Χ	Χ	Χ	Χ	Χ	X	X	X	V	X
GL_ARB_shading_language_include	V	V	V	V	V	Χ	Χ	X	X	X	Χ	X
GL_AMD_shader_trinary_minmax	Χ	Χ	Χ	X	Χ	Χ	Χ	X	X	Χ	V	X
GL_ARB_shader_stencil_export	Χ	Χ	Χ	Χ	Χ	Χ	Χ	X	V	V	V	X
GL_NV_shader_buffer_store	X	Χ	Χ	V	V	X	Χ	X	X	X	Χ	X
GL_NV_shader_buffer_load	V	V	V	V	V	X	Χ	X	X	X	Χ	X
GL_NV_shader_atomic_float	X	Χ	Χ	V	V	X	Χ	Χ	Χ	X	Χ	X
GL_AMD_seamless_cubemap_per_texture	X	X	Χ	Χ	V	Χ	Χ	V	V	V	V	X
GL_AMD_sample_positions	Χ	Χ	Χ	X	Χ	V	V	V	V	V	V	X
GL_AMD_query_buffer_object	Χ	Χ	Χ	X	Χ	Χ	Χ	Χ	V	V	V	X
GL_AMD_pinned_memory	Χ	Χ	Χ	Χ	Χ	V	V	V	V	V	V	X
GL_NV_multisample_coverage	V	V	V	V	V	Χ	Χ	X	X	X	Χ	X
GL_INTEL_map_texture	X	Χ	Χ	Χ	Χ	X	Χ	Χ	X	X	Χ	V
GL_EXT_framebuffer_multisample_blit_scaled	Χ	Χ	Χ	Χ	V	X	Χ	Χ	Χ	X	Χ	X
GL_NV_explicit_multisample	V	V	V	V	V	V	V	V	V	V	V	X
GL_EXT_direct_state_access	V	V	V	V	V	V	V	V	V	V	V	X
GL ARB debug output	V	V	V	V	V	V	V	V	V	V	V	X

GL NV copy image	V	V	V	V	V	V	V	V	V	V	V	X
GL ARB cl event	X	Х	Х	Х	Х	Χ	Х	Х	Х	Х	Χ	X
GL AMD blend minmax factor	X	Χ	Χ	Χ	Χ	Χ	Χ	Χ	Χ	V	V	X
GL NV bindless texture	X	Χ	X	Х	V	Χ	Χ	Χ	Χ	X	Χ	X
Support	35%	6 35%	35%	45%	55%	23%	23%	26%	42%	48	% 589	% 3%
OpenGL 4.3	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	N.I. Cayman	S.I.	HD 4000
GL ARB vertex attrib binding	V	V	V	V	V	Χ	Χ	Χ	Χ	Х	Χ	Х
GL ARB texture view	V	V	V	V	V	Χ	Χ	Χ	Χ	X	Χ	X
GL ARB texture storage multisample	V	V	V	V	V	Χ	Χ	Χ	Χ	Χ	Χ	Χ
GL ARB texture query levels	V	V	V	V	V	Χ	Χ	Χ	Χ	X	Χ	Χ
GL ARB texture buffer range	V	V	V	V	V	Χ	Χ	Χ	Χ	Χ	Χ	Χ
GL ARB stencil texturing	V	V	V	V	V	Χ	Χ	Χ	Χ	Χ	Χ	Χ
GL ARB shader storage buffer object	X	Χ	Χ	V	V	Χ	Χ	Χ	Χ	X	Χ	Χ
GL ARB shader image size	X	Χ	Χ	V	V	Χ	Χ	Χ	Χ	Χ	Χ	Χ
GL ARB robustness isolation	V	V	V	V	V	Χ	Χ	Χ	Χ	X	Χ	Χ
GL ARB robust buffer access behavior	V	V	V	V	V	Χ	Χ	Χ	Χ	X	Χ	Χ
GL ARB program interface query	V	V	V	V	V	Χ	Χ	Χ	Χ	Χ	Χ	Χ
GL ARB multi draw indirect	X	Χ	Х	V	V	Χ	Χ	Χ	Χ	Χ	Χ	Χ
GL ARB invalidate subdata	V	V	V	V	V	Χ	Χ	Χ	Χ	X	Χ	Χ
GL ARB internalformat query2	V	V	V	V	V	Χ	Χ	Χ	Χ	X	Χ	Χ
GL ARB framebuffer no attachments	V	V	V	V	V	Χ	Χ	Χ	Χ	Χ	Χ	Χ
GL ARB fragment layer viewport	V	V	V	V	V	Χ	Χ	Χ	Χ	X	Χ	Χ
GL ARB explicit uniform location	V	V	V	V	V	Χ	Χ	Χ	Χ	Χ	Χ	Χ
GL ARB ES3 compatibility	V	V	V	V	V	Χ	Χ	Χ	Χ	X	Χ	Χ
GL KHR debug	V	V	V	V	V	Χ	Χ	Χ	Χ	X	Χ	Χ
GL ARB copy image	V	V	V	V	V	Χ	Χ	Χ	Χ	X	Χ	Χ
GL ARB compute shader	X	Χ	Χ	V	V	Χ	Χ	Χ	Χ	Χ	Χ	Χ
GL ARB clear buffer object	V	V	V	V	V	Χ	Χ	Χ	Χ	X	Χ	Χ
GL ARB arrays of arrays	V	V	V	V	V	Χ	Χ	Χ	Χ	Χ	Χ	Χ
Support	83%	6 83%		100%	100%	0%	0%	0%	0%	6 0	% 09	% 0%
OpenGL 4.2	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	N.I. Cayman	S.I.	HD 4000
GL ARB transform feedback instanced	X	Χ	Χ	V	V	V	V	V	V	V	V	X

GL ARB texture compression bptc	X	Χ	Χ	V	V	X	Χ	Χ	V	٧	V	X
GL ARB texture storage	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB shading language packing	V	V	V	V	V	٧	V	V	V	V	V	X
GL ARB shading language 420pack	V	V	V	V	V	V	V	V	V	V	V	X
GL ARB shader image load store	X	Х	Х	V	V	Χ	Х	Х	V	V	V	X
GL ARB shader atomic counters	X	Χ	Χ	V	V	Χ	Χ	Χ	V	V	V	X
GL ARB map buffer alignment	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB internalformat query	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB conservative depth	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB compressed texture pixel storage	V	V	V	V	V	V	V	V	V	V	V	X
GL ARB base instance	X	Χ	Χ	V	V	Χ	Х	Χ	V	V	V	V
Support	58%	6 58%	6 58%	100%	100%	67%	67%	67%	100%	100%	100%	42%
OpenGL 4.1	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	N.I. Cayman	S.I.	HD 4000
GL_ARB_viewport_array	V	V	V	V	V	V	V	V	V	V	V	X
GL ARB vertex attrib 64bit	X	Χ	Χ	V	V	Χ	X	X	V	V	V	X
GL_ARB_shader_precision	X	Χ	Χ	V	V	V	V	V	V	V	V	X
GL ARB separate shader objects	V	V	V	V	V	V	V	V	V	V	V	X
GL_ARB_get_program_binary	V	V	V	V	V	V	V	V	V	V	\ /	V
									•	V	V	^
GL_ARB_ES2_compatibility	V	V	V	V	٧	V	V	V	V	V	V V	V
GL_ARB_ES2_compatibility Support	V 67%		•	V 5 100%	•	V	V	V	V	V	_	•
Support	V 67%		67%	100%	100%	V 83%	V 83%	V 83%	V 100%	V 100%	V	6 17%
Support OpenGL 4.0	V 67% G80		67%	•	100% Kepler	V 83% R600	83% RV670	83% RV700	V 100% Evergreen	V 100% N.I. Cayman	V 5 100% S.I.	HD 4000
Support		Tesla	67%	100%	100%	V 83%	V 83%	V 83%	V 100%	V 100%	V 5 100%	6 17%
Support OpenGL 4.0		67% Tesla	67% GT21X	100% Fermi	100% Kepler	V 83% R600	83% RV670	83% RV700	V 100% Evergreen	V 100% N.I. Cayman	V 5 100% S.I.	HD 4000
OpenGL 4.0 GL_ARB_transform_feedback3		Tesla	GT21X X	Fermi	Kepler V	R600 V	V 83% RV670 V	V 83% RV700 V	V 100% Evergreen V	V 100% N.I. Cayman	V 5 100% S.I. V	HD 4000 V
OpenGL 4.0 GL ARB transform feedback3 GL ARB transform feedback2		Tesla X	GT21X X V	Fermi V V	Kepler V V	R600 V	V 83% RV670 V V	V 83% RV700 V V	V 100% Evergreen V V	N.I. Cayman V V	S.I. V	HD 4000 V
OpenGL 4.0 GL ARB transform feedback3 GL ARB transform feedback2 GL ARB texture query lod		Tesla X V X	GT21X X V	Fermi V V V	Kepler V V V	R600 V	V 83% RV670 V V X	V 83% RV700 V V	V 100% Evergreen V V	N.I. Cayman V V	S.I. V V	HD 4000 V V V
OpenGL 4.0 GL ARB transform feedback3 GL ARB transform feedback2 GL ARB texture query lod GL ARB texture gather		Tesla X V X X	GT21X X V V	Fermi V V V V	Kepler V V V V	R600 V	V 83% RV670 V V X	V 83% RV700 V V V	V 100% Evergreen V V V V	N.I. Cayman V V V	S.I. V V V V	HD 4000 V V V V
OpenGL 4.0 GL ARB transform feedback3 GL ARB transform feedback2 GL ARB texture query lod GL ARB texture gather GL ARB texture cube map array		Tesla X V X X X	GT21X X V V V	Fermi V V V V	Kepler V V V V V	R600 V V X X	V 83% RV670 V V X V V	V 83% RV700 V V V V V V	Evergreen V V V V V	N.I. Cayman V V V	S.I. V V V V V V	HD 4000 V V V V
OpenGL 4.0 GL ARB transform feedback3 GL ARB transform feedback2 GL ARB texture query lod GL ARB texture gather GL ARB texture cube map array GL ARB texture buffer object rgb32		Tesla X V X X X	GT21X X V V V V	Fermi V V V V	Kepler V V V V V V V V	R600 V V X X	V 83% RV670 V V X V V V V	V 83% RV700 V V V V	Evergreen V V V V V V V	N.I. Cayman V V V	S.I. V V V V V V V	HD 4000 V V V V V V
OpenGL 4.0 GL ARB transform feedback3 GL ARB transform feedback2 GL ARB texture query lod GL ARB texture gather GL ARB texture cube map array GL ARB texture buffer object rgb32 GL ARB tessellation shader		Tesla X V X X X X X	GT21X X V V V V X	Fermi V V V V	Kepler V V V V V V V	R600 V V X X	V 83% RV670 V V V V V V V X	V 83% RV700 V V V V V V X	Evergreen V V V V V V V V V	N.I. Cayman V V V	S.I. V V V V V V V V V V V V V V V V V V	HD 4000 V V V V V V V V
OpenGL 4.0 GL ARB transform feedback3 GL ARB transform feedback2 GL ARB texture query lod GL ARB texture gather GL ARB texture cube map array GL ARB texture buffer object rgb32 GL ARB tessellation shader GL ARB shader subroutine		Tesla X V X X X X X X X	GT21X X V V V V X X	Fermi V V V V V V	Kepler V V V V V V V V	R600 V V X X	V 83% RV670 V V V V V V V X X X	83% RV700 V V V V V	Evergreen V V V V V V V V V V V	N.I. Cayman V V V	S.I. V V V V V V V V V V V V V V V V V V	HD 4000 V V V V V V V V V

GL ARB draw indirect	X	Χ	X	V	V	Χ	Χ	Χ	V	V	V	V
GL ARB draw buffers blend	X	Χ	V	V	V	V	V	V	V	V	٧	V
Support	0%	8%	46%	100%	100%	31%	54%	62%	100%	100%	100%	100%
OpenGL 3.3	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	N.I. Cayman	S.I.	HD 4000
GL ARB vertex type 2 10 10 10 rev	V	V	V	V	V	V	V	V	V	V	٧	V
GL ARB timer query	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
GL ARB texture rgb10 a2ui	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB shader bit encoding	V	V	V	V	V	V	V	V	V	V	٧	V
GL ARB sampler objects	V	V	V	V	V	V	V	V	V	V	٧	V
GL ARB occlusion query2	V	V	V	V	V	V	V	V	V	V	٧	V
GL ARB instanced arrays	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB explicit attrib location	V	V	V	V	V	V	V	V	V	V	٧	V
GL ARB blend func extended	V	V	V	V	V	V	V	V	V	V	٧	V
Support	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
OpenGL 3.2	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	N.I. Cayman	S.I.	HD 4000
OpenGL 3.2 GL_ARB_vertex_array_bgra	G80 V	Tesla V	GT21X V	Fermi V	Kepler V	R600 V	RV670 V	RV700 V	Evergreen V	N.I. Cayman	S.I.	HD 4000
·	G80 V V									•		
GL_ARB_vertex_array_bgra	G80 V V V	V	V	V	V	V	V	V	V	V	V	V
GL ARB vertex array bgra GL ARB texture multisample	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
GL ARB vertex array bgra GL ARB texture multisample GL ARB sync	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
GL ARB vertex array bgra GL ARB texture multisample GL ARB sync GL ARB seamless cube map	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
GL ARB vertex array bgra GL ARB texture multisample GL ARB sync GL ARB seamless cube map GL ARB provoking vertex	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
GL ARB vertex array bgra GL ARB texture multisample GL ARB sync GL ARB seamless cube map GL ARB provoking vertex GL ARB geometry shader4	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
GL ARB vertex array bgra GL ARB texture multisample GL ARB sync GL ARB seamless cube map GL ARB provoking vertex GL ARB geometry shader4 GL ARB fragment coord conventions	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 V V
GL ARB vertex array bgra GL ARB texture multisample GL ARB sync GL ARB seamless cube map GL ARB provoking vertex GL ARB geometry shader4 GL ARB fragment coord conventions GL ARB depth clamp	V V V V V V	V V V V V V	V V V V V V	V V V V V V	V V V V V V V V V V V V V V V V V V V	V V V V V V	V V V V V V	V V V V V V	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 bgra GL ARB texture multisample GL ARB sync GL ARB seamless cube map GL ARB provoking vertex GL ARB geometry shader4 GL ARB fragment coord conventions GL ARB depth clamp GL ARB draw elements base 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
GL ARB vertex array bgra GL ARB texture multisample GL ARB sync GL ARB seamless cube map GL ARB provoking vertex GL ARB geometry shader4 GL ARB fragment coord conventions GL ARB depth clamp GL ARB draw elements base 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
GL ARB vertex array bgra GL ARB texture multisample GL ARB sync GL ARB seamless cube map GL ARB provoking vertex GL ARB geometry shader4 GL ARB fragment coord conventions GL ARB depth clamp GL ARB draw elements base vertex Support	V V V V V V V	V V V V V V V V	V V V V V 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 V	V V V V V V V	V V V V V V V	V V V V V V V V V 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 bgra GL ARB texture multisample GL ARB sync GL ARB seamless cube map GL ARB provoking vertex GL ARB geometry shader4 GL ARB fragment coord conventions GL ARB depth clamp GL ARB draw elements base vertex Support	V V V V V V V	V V V V V V V Tesla	V V V V V V T100%	V V V V V V T100%	V V V V V V V T100%	V V V V V V V R600	V V V V V V T100%	V V V V V V T100%	V V V V V V V T 100%	V V V V V V V V N.I. Cayman	V V V V V V V T100%	V V V V V V V T100%
GL ARB vertex array bgra GL ARB texture multisample GL ARB sync GL ARB seamless cube map GL ARB provoking vertex GL ARB geometry shader4 GL ARB fragment coord conventions GL ARB depth clamp GL ARB draw elements base vertex Support OpenGL 3.1 GL ARB uniform buffer object	V V V V V V V	V V V V V V V Tesla	V V V V V V V T T T T T T T T V	V V V V V V V T 100% Fermi V	V V V V V V T100%	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 total	V V V V V V V V N.I. Cayman	V V V V V V 100%	V V V V V V V T100%

GL NV primitive restart	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
GL ARB copy buffer	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB compatibility	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%
OpenGL 3.0	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	N.I. Cayman	S.I.	HD 4000
GL ARB vertex array object	V	V	V	V	V	V	V	V	V	V	V	V
GL EXT_transform_feedback	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB texture rg	V	٧	V	V	V	٧	V	V	V	V	V	V
GL EXT texture shared exponent	V	٧	V	V	V	V	V	V	V	V	V	V
GL EXT texture integer	V	٧	V	V	V	V	V	V	V	V	V	V
GL ARB texture float	V	٧	V	V	V	V	V	V	V	V	V	V
GL ARB texture compression rgtc	V	٧	V	V	V	V	V	V	V	V	V	V
GL EXT texture array	V	٧	V	V	V	V	V	V	V	V	V	V
GL EXT_packed float	V	V	V	V	V	V	V	V	V	V	V	V
GL EXT packed depth stencil	V	٧	V	V	V	V	V	V	V	V	V	V
GL ARB map buffer range	V	٧	V	V	V	V	V	V	V	V	V	V
GL ARB half float vertex	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB half float pixel	V	V	V	V	V	V	V	V	V	V	V	V
GL EXT gpu shader4	V	٧	V	V	V	V	V	V	V	V	V	V
GL ARB framebuffer sRGB	V	٧	V	V	V	V	V	V	V	V	V	V
GL ARB framebuffer object	V	٧	V	V	V	V	V	V	V	V	V	V
GL_ARB_depth_buffer_float	V	V	V	V	V	V	V	V	V	V	V	V
GL NV conditional render	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB color buffer float	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%
OpenGL 2.1	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	N.I. Cayman	S.I.	HD 4000
GL EXT_texture_sRGB	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB pixel buffer object	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%
OpenGL 2.0	G80	Tesla	GT21X	Fermi	Kepler	R600	RV670	RV700	Evergreen	N.I. Cayman	S.I.	HD 4000

GL_ARB_vertex_shader	V	V	V	V	V	V	V	V	V	V	V	V
GL ARB texture non power of two	V	V	V	V	V	V	V	V	V	V	V	V
GL_EXT_stencil_two_side	V	V	V	V	V	V	V	V	V	V	V	V
GL_ARB_shading_language_100	V	V	V	V	V	V	V	V	V	V	V	V
GL_ARB_shader_objects	V	V	V	V	V	V	V	V	V	V	V	V
GL_ARB_point_sprite	V	V	V	V	V	V	V	V	V	V	V	V
GL_ARB_fragment_shader	V	V	V	V	V	V	V	V	V	V	V	V
GL_ARB_draw_buffers	V	V	V	V	V	V	V	V	V	V	V	V
GL_EXT_blend_equation_separate	V	V	V	V	V	V	V	V	V	V	V	V
Support	100%	100%	100%	100%	100%	100%	100%	100%	6	100%	100% 100%	6 100%