ROLV Primitive© — Complete Benchmark Portfolio

All Verified Results · March 2026 · 1,628/1,628 PASS

Summary Table — Peak Results by Platform & Model

Hardware	Peak Speedup	At Sparsity	vs Baseline
NVIDIA H200	**13.64×**	80%	cuSPARSE
NVIDIA B200	**12.06×**	70%	cuSPARSE
AMD Instinct MI300X	**83.77×**	85%	rocSPARSE
Intel CPU (synthetic)	**8.72×**	92%	CPU-CSR
AMD EPYC 7B13	**5.01×**	70%	CPU-CSR
Google Axion ARM	**5.12×**	70%	CPU-CSR
Tesla T4 BF16	**9.97×**	95%	cuSPARSE
LLaMA-3.1-8B real weights	**11.3×**	80%	cuSPARSE
LLaMA-3.1-70B shapes	**11.95×**	80%	cuSPARSE
LLaMA-3.1-405B shapes	**12.4×**	80%	cuSPARSE
HF 5-model sweep	**19.42×**	95%	cuSPARSE
K/V batch 32-layer	**15.62×**	80%	cuSPARSE
Batch scaling (2048)	**10.90×**	80%	cuSPARSE
BF16 dtype	**253×**	70%	cuSPARSE-BF16
Qwen2.5-72B	**11.72×**	70%	cuSPARSE
Intel i7 LLaMA shapes	**42.4%×**	95%	CPU-CSR
Llama 4 Scout/Maverick	**11.91×**	70%	cuSPARSE

Kimi K2	**11.90×**	70%	cuSPARSE
DeepSeek V3	**11.80×**	80%	cuSPARSE
Mistral Large 3	**11.68×**	70%	cuSPARSE
Qwen3-235B-A22B	**11.47×**	70%	cuSPARSE
Microsoft Phi-4	**11.36×**	70%	cuSPARSE
GPT-OSS 120B/20B	**11.33×**	70%	cuSPARSE

Total: 1,628/1,628 PASS · max error 9.87×10^{-7} · ATOL=0.05 · 4 SHA-256 hashes per case

Baseline: <70% sparsity → cuBLAS/rocBLAS/MKL (dense vendor). ≥70% → cuSPARSE/rocSPARSE/CPU-CSR (sparse vendor). Both always measured and published.

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1. Synthetic Platform Sweep

Setup: 10k×10k matrix, batch=2,500, 2,000 iterations, uniform-random sparsity (worst case).

1a. NVIDIA H200

A hash: b2687223 · **V hash:** f8b47533

Sparsity	Baseline	Vendor ms	ROLV ms
0%	cuBLAS	2.48	2.51
50%	cuBLAS	2.48	1.31
70%	cuSPARSE	4.82	0.68
80%	**cuSPARSE**	**5.90**	**0.43**
90%	cuSPARSE	3.71	0.28
95%	cuSPARSE	2.02	0.19
99%	cuSPARSE	0.61	0.08

1b. NVIDIA B200

A hash: 6764dac0 · **V hash:** eabab8fa

Sparsity	Baseline	Vendor ms	ROLV ms
0%	cuBLAS	2.21	2.23
50%	cuBLAS	2.21	1.18
70%	**cuSPARSE**	**4.31**	**0.36**
80%	cuSPARSE	3.28	0.31
90%	cuSPARSE	1.84	0.21
95%	cuSPARSE	0.97	0.14
99%	cuSPARSE	0.29	0.06

1c. AMD Instinct MI300X

A hash: 76252923 · **V hash:** 7f9f717a

Sparsity	Baseline	Vendor ms	ROLV ms
0%	rocBLAS	5.86	5.96
50%	rocBLAS	5.78	3.00
70%	rocSPARSE	121.69	1.89
80%	rocSPARSE	92.31	1.85
85%	**rocSPARSE**	**74.27**	**0.89**
90%	rocSPARSE	54.00	0.81
95%	rocSPARSE	30.42	0.69

Note: rocSPARSE has a known performance regression on MI300X for this matrix topology. vs rocBLAS dense, ROLV peak is 8.5×.

1d. Intel CPU (synthetic)

Setup: 2k×2k, batch=500, 100 iters

Sparsity	Baseline	Vendor ms	ROLV ms

0%	MKL	0.81	0.82
50%	MKL	0.81	0.44
70%	CPU-CSR	1.43	0.28
80%	CPU-CSR	1.61	0.21
92%	**CPU-CSR**	**1.74**	**0.20**
95%	CPU-CSR	1.68	0.19
99%	CPU-CSR	1.42	0.18

1e. AMD EPYC 7B13

Setup: 2k×2k

Sparsity	Baseline	Vendor ms	ROLV ms
0%	rocBLAS	1.04	1.05
50%	rocBLAS	1.04	0.57
70%	**CPU-CSR**	**1.88**	**0.37**
80%	CPU-CSR	1.91	0.44
90%	CPU-CSR	1.76	0.38
99%	CPU-CSR	1.31	0.34

1f. Google Axion ARM (Neoverse V2) — NEW

Setup: Google Cloud C4A instance · aarch64 · 3000×3000 · batch=1000 · iters=1000
A hash: 82371dc0b1b8c82d6c23a5549bd3b344c92006b2f087ef0b519d86a8e4db26fd
V hash: 2f47fc317fb5727973a89de9216cefded3c40307badb17cab7c0e06b0f39ee76

Sparsity	Baseline	Vendor ms	ROLV ms
0%	OpenBLAS	198.3	198.2
10%	OpenBLAS	200.3	180.0

30%	OpenBLAS	198.2	140.5
50%	OpenBLAS	198.1	102.1
60%	OpenBLAS	199.9	82.0
70%	**CPU-CSR**	**317.8**	**62.0**
80%	CPU-CSR	210.9	41.8
90%	CPU-CSR	106.4	21.5
95%	CPU-CSR	53.7	11.9
99%	CPU-CSR	11.3	3.7

First ROLV result on ARM architecture. Same software operator, zero changes — ARM just works.

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2. LLaMA-3.1 Production Shape Sweeps — NVIDIA B200

2a. LLaMA-3.1-8B Real Weights — 60/60 PASS

Real downloaded weights, magnitude row pruning, batch=512.

Layer	Shape	Speedup	At Sparsity
embed_tokens	128256×4096	**11.3×**	80%
L0 mlp.gate_proj	14336×4096	**10.5×**	70%
L0 mlp.down_proj	4096×14336	**8.5×**	70%
L16 mlp.gate_proj	14336×4096	**9.8×**	70%
L31 mlp.gate_proj	14336×4096	**9.7×**	70%

2b. LLaMA-3.1-8B & 70B Shape Sweep — 84/84 PASS

Model	Layer	Shape	Peak Speedup
8B	embed_tokens	128256×4096	**11.27×**
8B	mlp.gate_proj	14336×4096	**10.47×**

8B	mlp.down_proj	4096×14336	**8.47×**
70B	**embed_tokens**	**128256×8192**	**11.95×**
70B	**mlp.gate_proj**	**28672×8192**	**11.45×**
70B	**mlp.down_proj**	**8192×28672**	**10.83×**

2c. LLaMA-3.1-405B Shape Sweep — 49/49 PASS

Layer	Shape	Peak Speedup
embed_tokens	128256×16384	**12.4×**
mlp.gate_proj	53248×16384	**12.2×**
mlp.down_proj	16384×53248	**11.9×**

Pattern confirmed: larger model = larger speedup. 8B < 70B < 405B across all layers.

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3. HuggingFace Real Model Sweep — NVIDIA B200

3a. 5-Model Sweep — 96/96 PASS

Model	Layer	Peak Speedup
Mistral-7B-Instruct-v0.3	embed_tokens	**10.50×**
Qwen2.5-7B-Instruct	embed_tokens	**19.27×**
DeepSeek-R1-Distill-Qwen-7B	embed_tokens	**19.42×**
LLaMA-2-7B (GSM8K)	embed_tokens	**10.28×**

3b. Qwen2.5-72B-Instruct — 36/36 PASS

Layer	Shape	Speedup
embed_tokens	152064×8192	**11.72×**
mlp.gate_proj	29568×8192	**11.39×**
mlp.up_proj	29568×8192	**11.38×**

mlp.down_proj	8192×29568	**10.93×**

3c. Intel i7 LLaMA Shapes (consumer CPU) — 84/84 PASS

Exact LLaMA-3.1-8B and 70B layer dimensions on Intel Core i7 laptop. batch=512.

Layer	Shape	Speedup	At Sparsity
8B mlp.down_proj	4096×14336	**42.4%×**	95%
8B mlp.down_proj	4096×14336	**39.9×**	70%
8B mlp.gate_proj	14336×4096	**21.3×**	80%
70B embed_tokens	128256×8192	**33.6×**	70%
70B mlp.gate_proj	28672×8192	**32.8×**	70%

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4. Production Model Shape Sweeps — NVIDIA B200, batch=512

All results below: synthetic weights at exact production dimensions, 200 iters, 20 warmup, ATOL=0.05, 4 SHA-256 hashes per case.

4a. Llama 4 Scout & Maverick — 54/54 PASS ★ NEW PORTFOLIO LEADER

H=5120, I_moe=8192, I_dense=16384, NQ=40, NKV=8, VOCAB=202048

Layer	Speedup	At Sparsity
embed_tokens	**11.91×**	**70%**
dense.gate_proj	9.15×	80%
dense.up_proj	9.15×	80%
expert.down_proj	8.17×	70%
q_proj	7.11×	80%

4b. Kimi K2 (1T total / 32B active) — 54/54 PASS

H=7168, I_moe=2048, NQ=128, NKV=16, VOCAB=102400

Layer	Speedup	At Sparsity

embed_tokens	**11.90×**	**70%**
shared_expert.down	8.44×	70%
routed_expert.down	8.40×	70%
q_proj	9.98×	70%

4c. DeepSeek V3 (671B total / 37B active) — 54/54 PASS

H=7168, I_moe=2048, KV_lora=512, VOCAB=129280

Layer	Speedup	At Sparsity
embed_tokens	**11.80×**	**80%**
shared_expert.down	8.37×	70%
q_proj	9.96×	70%

4d. Mistral Large 3 (675B total / 41B active) — 54/54 PASS

H=7168, I_expert=4096, NQ=128, NKV=128 (full MHA), KV_lora=512, VOCAB=131072

Layer	Speedup	At Sparsity
embed_tokens	**11.68×**	**70%**
shared_expert.down	9.40×	70%
routed_expert.down	9.40×	70%
q_proj	9.99×	70%

Larger per-expert intermediate (4096 vs 2048) yields stronger expert layer results than DeepSeek V3/Kimi K2.

4e. Qwen3-235B-A22B (235B total / 22B active) — 42/42 PASS

H=4096, I_moe=1536, NQ=64, NKV=4, VOCAB=151936, Apache 2.0

Layer	Speedup	At Sparsity
embed_tokens	**11.47×**	**70%**

expert.down_proj	4.66×	70%
q_proj	6.19×	70%

Small expert intermediate (1536) by design — 128 experts × 1536 = large total capacity.

4f. Microsoft Phi-4 (14B dense) — 42/42 PASS

H=5120, I=17920, NQ=40, NKV=10, VOCAB=100352, MIT license

Layer	Speedup	At Sparsity
embed_tokens	**11.36×**	**70%**
mlp.gate_proj	9.34×	70%
mlp.up_proj	9.34×	70%
mlp.down_proj	9.14×	70%
q_proj	7.00×	70%

Only dense model in this batch — no MoE. Strong MLP numbers confirm ROLV works equally well on dense decoder-only architectures.

4g. GPT-OSS 120B/20B (OpenAI) — 42/42 PASS

H=2880, I_expert=2880, NQ=64, NKV=8, Q_dim=4096, VOCAB=201088, Apache 2.0

Layer	Speedup	At Sparsity
embed_tokens	**11.33×**	**70%**
expert.gate_proj	5.55×	70%
expert.down_proj	5.53×	70%
q_proj	5.45×	70%

Smallest H in the portfolio (2880). Expert layer numbers reflect compact per-expert matrices.

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5. Supplementary Benchmarks — NVIDIA B200

5a. Tesla T4 BF16 — 24/24 PASS

Layer	Sparsity	Speedup
embed_tokens (BF16)	0%	1.89×
embed_tokens (BF16)	**95%**	**9.97×**

5b. BF16 Dtype Sweep — 70/70 PASS

Layer	vs cuBLAS-BF16 @ 80%	vs cuBLAS-BF1
70B embed_tokens	3.39×	5.76×
70B mlp.gate_proj	3.19×	4.25×
70B mlp.down_proj	2.85×	4.04×

cuSPARSE-BF16 has a known performance regression on B200. Honest comparison is vs cuBLAS-BF16.

5c. K/V Layer Batching (GQA) — 20/20 PASS

Layers batched	Shape	Speedup vs cu
1	512×3584	0.86×
8	4096×3584	5.85×
16	8192×3584	9.00×
32	**16384×3584**	**15.62×**

5d. Batch Size Scaling — 9/9 PASS

Batch	Speedup vs cuSPARSE	ROLV ms
1	1.24×	0.029
64	7.92×	0.072
512	7.92×	0.289
2048	**10.90×**	**0.834**

5e. Sparsity Structure Comparison — 12/12 PASS

Structure	Speedup range
Uniform random	1.0×
Power-law rows	7.6–9.2×
Block structured	7.8–9.4×

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6. Methodology

Correctness standard

- **ATOL = 0.05** on column-normalised outputs
- **Perturbation test**: modify one weight → output hash changes → confirms live computation
- **max error across all 1142 cases: 9.87×10^{-7}**
- **4 SHA-256 hashes per case**: weight matrix (A), input vector (V), vendor output, ROLV output

Baseline selection

Below 70% sparsity: cuBLAS/rocBLAS/MKL (dense vendor — optimal for lightly sparse weights).
Above 70%: cuSPARSE/rocSPARSE/CPU-CSR (sparse vendor — production inference engines). Both always published.

Energy measurement

GPU: pynvml (NVIDIA) / pyrsmi (AMD) — polls power rail every 15ms, integrates joules.
CPU: proxy estimate based on core count × TDP × CPU utilisation.

Zero-trust verification

Any result can be independently verified via huggingface.co/spaces/rolvai/rolv-verify. Supply your own input numbers, verify the output matches dense on a calculator — no trust required.

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AMD Instinct MI300X — Complete Model Portfolio

Hardware: AMD Instinct MI300X · ROCm/HIP · batch=512 · 200 iters · ATOL=0.05
Baselines: rocBLAS (dense, honest comparison) · rocSPARSE (sparse library — known regression on MI300X at high sparsity, published for transparency)
Correctness: 4 SHA-256 hashes + perturbation test per case · max error 9.87×10^{-7} · 486/486 PASS

Model	Cases	PASS	Peak vs rocBLA
LLaMA-3.1-405B shapes	36	36	**13.53× ★**
Llama 4 Scout & Maverick	54	54	**12.25×**
LLaMA-3.1 8B & 70B	72	72	**11.88×**
DeepSeek V3	54	54	**11.66×**
Qwen3-235B-A22B	42	42	**11.49×**
Qwen2.5-72B	36	36	**10.46×**
Mistral Large 3	54	54	**10.22×**
Kimi K2	54	54	**9.75×**
Microsoft Phi-4	42	42	**9.59×**
GPT-OSS 120B/20B	42	42	**9.04×**
Total	**486**	**486**	**13.53×**

★ = portfolio peak across all platforms and models.

Key AMD observations

LLaMA-3.1-405B embed_tokens at 95% sparsity — the peak row:

Baseline	Time	ROLV
rocBLAS	20.05ms	1.48ms
rocSPARSE	109.69ms	1.48ms

LLaMA-3.1-70B MLP layers at 80% sparsity on MI300X vs rocBLAS:

Layer	Shape	rocBLAS ms	ROLV ms
embed_tokens	128256×8192	9.82	2.24
mlp.gate_proj	28672×8192	1.91	0.71

mlp.up_proj	28672×8192	1.98	0.70
mlp.down_proj	8192×28672	2.33	1.95

LLaMA scaling on AMD confirms B200 pattern (larger model = larger speedup):

Model	embed peak vs
LLaMA-3.1-8B	9.83×
LLaMA-3.1-70B	11.88×
LLaMA-3.1-405B	13.53×

rocSPARSE regression note

rocSPARSE on MI300X has a known performance regression on large square matrices at high sparsity — it loads and processes the full matrix regardless of sparsity structure, collapsing its own throughput. ROLV skips zero rows entirely before any memory is loaded. Both baselines are published. vs rocBLAS is the honest production comparison.

Complete Portfolio Summary — All Platforms

Grand total: 1,628/1,628 PASS

Platform	Cases	Peak speedup
NVIDIA H200	22	13.64×
NVIDIA B200 (synthetic)	22	12.06×
NVIDIA B200 (model sweeps)	582	19.42×
NVIDIA B200 (LLaMA real weights)	60	11.3×
Tesla T4 BF16	24	9.97×
Intel CPU	22	8.72×
AMD EPYC 7B13	22	5.01×
Google Axion ARM	22	5.12×

AMD MI300X	**486**	**13.53×**
Total	**1,628**	

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7. AMD MI300X Model Portfolio — Complete Hash Tables

All 4 SHA-256 hashes per case. hash_A = weight matrix, hash_V = input vector, hash_D = dense baseline output, hash_R = ROLV output.

To verify: reproduce the weight matrix (deterministic seed published per harness), compute SHA-256, compare to hash_A. Then run dense matmul on your hardware — if hash_D matches, the baseline is confirmed. hash_R proves ROLV output.

If hash_D = hash_R the matrix was zero-sparse at that sparsity level (all active rows) — ROLV and dense are numerically identical.

LLaMA-3.1-405B shapes (AMD MI300X) — 36/36 PASS

Peak vs rocBLAS: **13.53×** · Peak vs rocSPARSE: **74.02×** · Max error: 5.72e-06

Layer	Sp%	M×K	hash_A	hash_V
embed_tokens	0%	128256×16384	`2a78e62a`	`1a6f2514`
embed_tokens	50%	128256×16384	`edab215f`	`1a6f2514`
embed_tokens	70%	128256×16384	`0ca785b4`	`1a6f2514`
embed_tokens	80%	128256×16384	`68d12e57`	`1a6f2514`
embed_tokens	90%	128256×16384	`2dcc2b14`	`1a6f2514`
embed_tokens	95%	128256×16384	`2bb52131`	`1a6f2514`
mlp.gate_proj	0%	53248×16384	`ac4afc65`	`d25c7a95`
mlp.gate_proj	50%	53248×16384	`78f017e6`	`d25c7a95`
mlp.gate_proj	70%	53248×16384	`ee278764`	`d25c7a95`

mlp.gate_proj	80%	53248×16384	`9793a119`	`d25c7a95`
mlp.gate_proj	90%	53248×16384	`7d96daf4`	`d25c7a95`
mlp.gate_proj	95%	53248×16384	`cb08894c`	`d25c7a95`
mlp.up_proj	0%	53248×16384	`f975a7cb`	`7b84cdb6`
mlp.up_proj	50%	53248×16384	`7d8ec58c`	`7b84cdb6`
mlp.up_proj	70%	53248×16384	`3d3fad69`	`7b84cdb6`
mlp.up_proj	80%	53248×16384	`23d99ebc`	`7b84cdb6`
mlp.up_proj	90%	53248×16384	`94f70bf1`	`7b84cdb6`
mlp.up_proj	95%	53248×16384	`6a7d5923`	`7b84cdb6`
mlp.down_proj	0%	16384×53248	`74841e63`	`f82de250`
mlp.down_proj	50%	16384×53248	`48b1c89b`	`f82de250`
mlp.down_proj	70%	16384×53248	`cd22dc30`	`f82de250`
mlp.down_proj	80%	16384×53248	`107d5756`	`f82de250`
mlp.down_proj	90%	16384×53248	`b83453a3`	`f82de250`
mlp.down_proj	95%	16384×53248	`8bb79003`	`f82de250`
q_proj	0%	16384×16384	`4f7728fc`	`74d6a9e5`
q_proj	50%	16384×16384	`8ad15c31`	`74d6a9e5`
q_proj	70%	16384×16384	`bd91640c`	`74d6a9e5`
q_proj	80%	16384×16384	`f7608f7d`	`74d6a9e5`
q_proj	90%	16384×16384	`c2905092`	`74d6a9e5`
q_proj	95%	16384×16384	`a456687b`	`74d6a9e5`

k_proj (GQA)	0%	1024×16384	`ef6eac30`	`694b1c02`
k_proj (GQA)	50%	1024×16384	`16b11922`	`694b1c02`
k_proj (GQA)	70%	1024×16384	`fa9f4028`	`694b1c02`
k_proj (GQA)	80%	1024×16384	`a935592b`	`694b1c02`
k_proj (GQA)	90%	1024×16384	`759c95a8`	`694b1c02`
k_proj (GQA)	95%	1024×16384	`71177e83`	`694b1c02`

DeepSeek V3 (AMD MI300X) — 54/54 PASS

Peak vs rocBLAS: **11.66×** · Peak vs rocSPARSE: **64.95×** · Max error: 9.78e-06

Layer	Sp%	M×K	hash_A	hash_V
embed_tokens	0%	129280×7168	`5053dd9b`	`69dbc495`
embed_tokens	50%	129280×7168	`9e2bb044`	`69dbc495`
embed_tokens	70%	129280×7168	`8fcd5c98`	`69dbc495`
embed_tokens	80%	129280×7168	`180d74ea`	`69dbc495`
embed_tokens	90%	129280×7168	`18642e8b`	`69dbc495`
embed_tokens	95%	129280×7168	`ee4b203b`	`69dbc495`
shared_expert.gate	0%	2048×7168	`0a934337`	`a85b0797`
shared_expert.gate	50%	2048×7168	`590e2667`	`a85b0797`
shared_expert.gate	70%	2048×7168	`1d708e8a`	`a85b0797`
shared_expert.gate	80%	2048×7168	`26413455`	`a85b0797`
shared_expert.gate	90%	2048×7168	`bad50d1f`	`a85b0797`
shared_expert.gate	95%	2048×7168	`1631db82`	`a85b0797`
shared_expert.up	0%	2048×7168	`2c83b94f`	`5fc82022`

shared_expert.up	50%	2048×7168	`b3be81f8`	`5fc82022`
shared_expert.up	70%	2048×7168	`c61f626a`	`5fc82022`
shared_expert.up	80%	2048×7168	`4a9e0a0d`	`5fc82022`
shared_expert.up	90%	2048×7168	`207d634b`	`5fc82022`
shared_expert.up	95%	2048×7168	`41cb3d65`	`5fc82022`
shared_expert.down	0%	7168×2048	`b767372b`	`e6c6cc91`
shared_expert.down	50%	7168×2048	`eb73f69a`	`e6c6cc91`
shared_expert.down	70%	7168×2048	`0d14bd44`	`e6c6cc91`
shared_expert.down	80%	7168×2048	`927f1b3b`	`e6c6cc91`
shared_expert.down	90%	7168×2048	`cd9b15e2`	`e6c6cc91`
shared_expert.down	95%	7168×2048	`4d785363`	`e6c6cc91`
routed_expert.gate	0%	2048×7168	`aa9a07d6`	`4f122bfa`
routed_expert.gate	50%	2048×7168	`1a0405f6`	`4f122bfa`
routed_expert.gate	70%	2048×7168	`f78b6bb7`	`4f122bfa`
routed_expert.gate	80%	2048×7168	`bd600267`	`4f122bfa`
routed_expert.gate	90%	2048×7168	`555961df`	`4f122bfa`
routed_expert.gate	95%	2048×7168	`52a324f0`	`4f122bfa`
routed_expert.up	0%	2048×7168	`3ef1fae0`	`e9a1793e`
routed_expert.up	50%	2048×7168	`be538ecd`	`e9a1793e`
routed_expert.up	70%	2048×7168	`403ca8c9`	`e9a1793e`
routed_expert.up	80%	2048×7168	`3a08d9d2`	`e9a1793e`

routed_expert.up	90%	2048×7168	`59c57ffa`	`e9a1793e`
routed_expert.up	95%	2048×7168	`a6f69a30`	`e9a1793e`
routed_expert.down	0%	7168×2048	`babc3da7`	`8211f6d5`
routed_expert.down	50%	7168×2048	`cd6379ad`	`8211f6d5`
routed_expert.down	70%	7168×2048	`d4a58e50`	`8211f6d5`
routed_expert.down	80%	7168×2048	`4209c576`	`8211f6d5`
routed_expert.down	90%	7168×2048	`d50cb144`	`8211f6d5`
routed_expert.down	95%	7168×2048	`2272943c`	`8211f6d5`
q_proj	0%	7168×7168	`bfa2bc73`	`1fad8fc2`
q_proj	50%	7168×7168	`8da02d67`	`1fad8fc2`
q_proj	70%	7168×7168	`a8a68959`	`1fad8fc2`
q_proj	80%	7168×7168	`fb00bd3a`	`1fad8fc2`
q_proj	90%	7168×7168	`8dde0808`	`1fad8fc2`
q_proj	95%	7168×7168	`3ffb948f`	`1fad8fc2`
kv_proj (MLA)	0%	512×7168	`9a82b3f3`	`e58a3471`
kv_proj (MLA)	50%	512×7168	`b3d052de`	`e58a3471`
kv_proj (MLA)	70%	512×7168	`abaa55b2`	`e58a3471`
kv_proj (MLA)	80%	512×7168	`001aee66`	`e58a3471`
kv_proj (MLA)	90%	512×7168	`dc74e3dd`	`e58a3471`
kv_proj (MLA)	95%	512×7168	`247721fa`	`e58a3471`

Kimi K2 (AMD MI300X) — 54/54 PASS

Peak vs rocBLAS: **9.74×** · Peak vs rocSPARSE: **58.25×** · Max error: 1.06e-05

Layer	Sp%	M×K	hash_A	hash_V
embed_tokens	0%	102400×7168	`01228e68`	`69dbc495`
embed_tokens	50%	102400×7168	`d5749b67`	`69dbc495`
embed_tokens	70%	102400×7168	`1a0071be`	`69dbc495`
embed_tokens	80%	102400×7168	`218e088a`	`69dbc495`
embed_tokens	90%	102400×7168	`bbcaf0ae`	`69dbc495`
embed_tokens	95%	102400×7168	`13f962c2`	`69dbc495`
shared_expert.gate	0%	2048×7168	`b80f938d`	`a85b0797`
shared_expert.gate	50%	2048×7168	`85aaf3fc`	`a85b0797`
shared_expert.gate	70%	2048×7168	`9269917c`	`a85b0797`
shared_expert.gate	80%	2048×7168	`c2c0edba`	`a85b0797`
shared_expert.gate	90%	2048×7168	`c246e686`	`a85b0797`
shared_expert.gate	95%	2048×7168	`1cd4077a`	`a85b0797`
shared_expert.up	0%	2048×7168	`509d5350`	`5fc82022`
shared_expert.up	50%	2048×7168	`9352b22e`	`5fc82022`
shared_expert.up	70%	2048×7168	`267442bb`	`5fc82022`
shared_expert.up	80%	2048×7168	`3a2f1809`	`5fc82022`
shared_expert.up	90%	2048×7168	`04254f4a`	`5fc82022`
shared_expert.up	95%	2048×7168	`98efa8f6`	`5fc82022`
shared_expert.down	0%	7168×2048	`d35d40d8`	`e6c6cc91`
shared_expert.down	50%	7168×2048	`f7672f79`	`e6c6cc91`

shared_expert.down	70%	7168×2048	`2e1dea91`	`e6c6cc91`
shared_expert.down	80%	7168×2048	`d43cd2d4`	`e6c6cc91`
shared_expert.down	90%	7168×2048	`802e3f33`	`e6c6cc91`
shared_expert.down	95%	7168×2048	`833971fe`	`e6c6cc91`
routed_expert.gate	0%	2048×7168	`5e755824`	`4f122bfa`
routed_expert.gate	50%	2048×7168	`26d93250`	`4f122bfa`
routed_expert.gate	70%	2048×7168	`1101e613`	`4f122bfa`
routed_expert.gate	80%	2048×7168	`c5ef225d`	`4f122bfa`
routed_expert.gate	90%	2048×7168	`71b73be4`	`4f122bfa`
routed_expert.gate	95%	2048×7168	`3903dd1e`	`4f122bfa`
routed_expert.up	0%	2048×7168	`9231b16b`	`e9a1793e`
routed_expert.up	50%	2048×7168	`e090bb0d`	`e9a1793e`
routed_expert.up	70%	2048×7168	`9e0b3b85`	`e9a1793e`
routed_expert.up	80%	2048×7168	`bd467055`	`e9a1793e`
routed_expert.up	90%	2048×7168	`77ff7878`	`e9a1793e`
routed_expert.up	95%	2048×7168	`c1757413`	`e9a1793e`
routed_expert.down	0%	7168×2048	`6367e6ce`	`8211f6d5`
routed_expert.down	50%	7168×2048	`f578e797`	`8211f6d5`
routed_expert.down	70%	7168×2048	`5ece33a6`	`8211f6d5`
routed_expert.down	80%	7168×2048	`1dd916c5`	`8211f6d5`
routed_expert.down	90%	7168×2048	`d8754730`	`8211f6d5`

routed_expert.down	95%	7168×2048	`5263d49f`	`8211f6d5`
q_proj	0%	7168×7168	`74cd32e6`	`1fad8fc2`
q_proj	50%	7168×7168	`9a2839c3`	`1fad8fc2`
q_proj	70%	7168×7168	`45534d05`	`1fad8fc2`
q_proj	80%	7168×7168	`9dc515b0`	`1fad8fc2`
q_proj	90%	7168×7168	`674b75aa`	`1fad8fc2`
q_proj	95%	7168×7168	`aadc8e28`	`1fad8fc2`
k_proj (MLA)	0%	2048×7168	`ce707c01`	`e58a3471`
k_proj (MLA)	50%	2048×7168	`5fbe576a`	`e58a3471`
k_proj (MLA)	70%	2048×7168	`4d792708`	`e58a3471`
k_proj (MLA)	80%	2048×7168	`fc48b6da`	`e58a3471`
k_proj (MLA)	90%	2048×7168	`49efaca9`	`e58a3471`
k_proj (MLA)	95%	2048×7168	`f4ec7db0`	`e58a3471`

LLaMA-3.1 8B & 70B shapes (AMD MI300X) — 72/72 PASS

Peak vs rocBLAS: **11.88×** · Peak vs rocSPARSE: **66.50×** · Max error: 5.96e-06

Layer	Sp%	M×K	hash_A	hash_V
8B embed_tokens	0%	128256×4096	`815c2c0c`	`027724f0`
8B embed_tokens	50%	128256×4096	`e419e324`	`027724f0`
8B embed_tokens	70%	128256×4096	`85b28872`	`027724f0`
8B embed_tokens	80%	128256×4096	`2a1c37a4`	`027724f0`
8B embed_tokens	90%	128256×4096	`42d5b897`	`027724f0`
8B embed_tokens	95%	128256×4096	`dce68556`	`027724f0`

8B mlp.gate_proj	0%	14336×4096	`457d9256`	`3c44a290`
8B mlp.gate_proj	50%	14336×4096	`425bb5fa`	`3c44a290`
8B mlp.gate_proj	70%	14336×4096	`c7c8cb2a`	`3c44a290`
8B mlp.gate_proj	80%	14336×4096	`d5e6f479`	`3c44a290`
8B mlp.gate_proj	90%	14336×4096	`17473f37`	`3c44a290`
8B mlp.gate_proj	95%	14336×4096	`dfa1dcbb`	`3c44a290`
8B mlp.up_proj	0%	14336×4096	`4a72417a`	`b67d5af6`
8B mlp.up_proj	50%	14336×4096	`0d1ac0b4`	`b67d5af6`
8B mlp.up_proj	70%	14336×4096	`e16f8a35`	`b67d5af6`
8B mlp.up_proj	80%	14336×4096	`a64fa4ee`	`b67d5af6`
8B mlp.up_proj	90%	14336×4096	`6b6e81d1`	`b67d5af6`
8B mlp.up_proj	95%	14336×4096	`ea5f97a9`	`b67d5af6`
8B mlp.down_proj	0%	4096×14336	`67c39416`	`4fa17fab`
8B mlp.down_proj	50%	4096×14336	`0a443011`	`4fa17fab`
8B mlp.down_proj	70%	4096×14336	`3290e673`	`4fa17fab`
8B mlp.down_proj	80%	4096×14336	`b9a2c665`	`4fa17fab`
8B mlp.down_proj	90%	4096×14336	`02997acb`	`4fa17fab`
8B mlp.down_proj	95%	4096×14336	`643d8543`	`4fa17fab`
8B q_proj	0%	4096×4096	`98a6e664`	`e6220b85`
8B q_proj	50%	4096×4096	`140bb0ac`	`e6220b85`
8B q_proj	70%	4096×4096	`279548de`	`e6220b85`

8B q_proj	80%	4096×4096	`a9fb698a`	`e6220b85`
8B q_proj	90%	4096×4096	`31fb6e2e`	`e6220b85`
8B q_proj	95%	4096×4096	`f776cef1`	`e6220b85`
8B k_proj (GQA)	0%	1024×4096	`9d6055f3`	`e9a5f677`
8B k_proj (GQA)	50%	1024×4096	`f9fec4b9`	`e9a5f677`
8B k_proj (GQA)	70%	1024×4096	`8b74cbd8`	`e9a5f677`
8B k_proj (GQA)	80%	1024×4096	`25399eb9`	`e9a5f677`
8B k_proj (GQA)	90%	1024×4096	`db737103`	`e9a5f677`
8B k_proj (GQA)	95%	1024×4096	`b28d26c9`	`e9a5f677`
70B embed_tokens	0%	128256×8192	`52e2a9f6`	`0cb76dd9`
70B embed_tokens	50%	128256×8192	`ce29263a`	`0cb76dd9`
70B embed_tokens	70%	128256×8192	`63fbbd89`	`0cb76dd9`
70B embed_tokens	80%	128256×8192	`aeae879d`	`0cb76dd9`
70B embed_tokens	90%	128256×8192	`f6ad909d`	`0cb76dd9`
70B embed_tokens	95%	128256×8192	`499b29dc`	`0cb76dd9`
70B mlp.gate_proj	0%	28672×8192	`c2368f02`	`a173466f`
70B mlp.gate_proj	50%	28672×8192	`a449752d`	`a173466f`
70B mlp.gate_proj	70%	28672×8192	`efa24abc`	`a173466f`
70B mlp.gate_proj	80%	28672×8192	`e32972b6`	`a173466f`
70B mlp.gate_proj	90%	28672×8192	`e9fa1486`	`a173466f`
70B mlp.gate_proj	95%	28672×8192	`55d04915`	`a173466f`

70B mlp.up_proj	0%	28672×8192	`d593f3e6`	`6169d11f`
70B mlp.up_proj	50%	28672×8192	`86be0d91`	`6169d11f`
70B mlp.up_proj	70%	28672×8192	`bf2fb278`	`6169d11f`
70B mlp.up_proj	80%	28672×8192	`86263da4`	`6169d11f`
70B mlp.up_proj	90%	28672×8192	`e361bde8`	`6169d11f`
70B mlp.up_proj	95%	28672×8192	`05eb0aee`	`6169d11f`
70B mlp.down_proj	0%	8192×28672	`31a9d942`	`36aef758`
70B mlp.down_proj	50%	8192×28672	`8a093d94`	`36aef758`
70B mlp.down_proj	70%	8192×28672	`399fb536`	`36aef758`
70B mlp.down_proj	80%	8192×28672	`4524ddf3`	`36aef758`
70B mlp.down_proj	90%	8192×28672	`fe0d5c1f`	`36aef758`
70B mlp.down_proj	95%	8192×28672	`c85d19c0`	`36aef758`
70B q_proj	0%	8192×8192	`14b732dc`	`9393c47f`
70B q_proj	50%	8192×8192	`bcea25e7`	`9393c47f`
70B q_proj	70%	8192×8192	`e021c78a`	`9393c47f`
70B q_proj	80%	8192×8192	`7c91e648`	`9393c47f`
70B q_proj	90%	8192×8192	`5224f169`	`9393c47f`
70B q_proj	95%	8192×8192	`9c3b44d0`	`9393c47f`
70B k_proj (GQA)	0%	1024×8192	`083d3b76`	`274dfb0d`
70B k_proj (GQA)	50%	1024×8192	`a245c3fe`	`274dfb0d`
70B k_proj (GQA)	70%	1024×8192	`562bf320`	`274dfb0d`

70B k_proj (GQA)	80%	1024×8192	`e13fdc34`	`274dfb0d`
70B k_proj (GQA)	90%	1024×8192	`09ac9ffd`	`274dfb0d`
70B k_proj (GQA)	95%	1024×8192	`46d03bfb`	`274dfb0d`

Mistral Large 3 (AMD MI300X) — 54/54 PASS

Peak vs rocBLAS: **10.22×** · Peak vs rocSPARSE: **65.44×** · Max error: 5.96e-06

Layer	Sp%	M×K	hash_A	hash_V
embed_tokens	0%	131072×7168	`9609a208`	`69dbc495`
embed_tokens	50%	131072×7168	`48a34a8a`	`69dbc495`
embed_tokens	70%	131072×7168	`14de77b0`	`69dbc495`
embed_tokens	80%	131072×7168	`35f0abd8`	`69dbc495`
embed_tokens	90%	131072×7168	`6e7b5a2a`	`69dbc495`
embed_tokens	95%	131072×7168	`9114e078`	`69dbc495`
shared_expert.gate	0%	4096×7168	`ec89d874`	`a85b0797`
shared_expert.gate	50%	4096×7168	`e850eb4e`	`a85b0797`
shared_expert.gate	70%	4096×7168	`29fe2f24`	`a85b0797`
shared_expert.gate	80%	4096×7168	`fa709ec2`	`a85b0797`
shared_expert.gate	90%	4096×7168	`34a9a60b`	`a85b0797`
shared_expert.gate	95%	4096×7168	`6b9a250f`	`a85b0797`
shared_expert.up	0%	4096×7168	`8d5cc0ef`	`5fc82022`
shared_expert.up	50%	4096×7168	`79c529e4`	`5fc82022`
shared_expert.up	70%	4096×7168	`a3302d5f`	`5fc82022`
shared_expert.up	80%	4096×7168	`53d997ff`	`5fc82022`

shared_expert.up	90%	4096×7168	`e6ebb000`	`5fc82022`
shared_expert.up	95%	4096×7168	`82b8101e`	`5fc82022`
shared_expert.down	0%	7168×4096	`f94ce35c`	`e6220b85`
shared_expert.down	50%	7168×4096	`ec1737ff`	`e6220b85`
shared_expert.down	70%	7168×4096	`81f65c26`	`e6220b85`
shared_expert.down	80%	7168×4096	`f21035ea`	`e6220b85`
shared_expert.down	90%	7168×4096	`84014323`	`e6220b85`
shared_expert.down	95%	7168×4096	`49512f11`	`e6220b85`
routed_expert.gate	0%	4096×7168	`f688afe1`	`4f122bfa`
routed_expert.gate	50%	4096×7168	`8a9e2ad0`	`4f122bfa`
routed_expert.gate	70%	4096×7168	`3113ee90`	`4f122bfa`
routed_expert.gate	80%	4096×7168	`4e36cbe0`	`4f122bfa`
routed_expert.gate	90%	4096×7168	`edf0c18b`	`4f122bfa`
routed_expert.gate	95%	4096×7168	`dc1a320a`	`4f122bfa`
routed_expert.up	0%	4096×7168	`101dff56`	`e9a1793e`
routed_expert.up	50%	4096×7168	`f2359093`	`e9a1793e`
routed_expert.up	70%	4096×7168	`b209a204`	`e9a1793e`
routed_expert.up	80%	4096×7168	`6da39c50`	`e9a1793e`
routed_expert.up	90%	4096×7168	`bfb67328`	`e9a1793e`
routed_expert.up	95%	4096×7168	`807f0cd4`	`e9a1793e`
routed_expert.down	0%	7168×4096	`4f9dc5e3`	`a63b0380`

routed_expert.down	50%	7168×4096	`a6ebb099`	`a63b0380`
routed_expert.down	70%	7168×4096	`12d04624`	`a63b0380`
routed_expert.down	80%	7168×4096	`4e1a86f2`	`a63b0380`
routed_expert.down	90%	7168×4096	`4159f7c0`	`a63b0380`
routed_expert.down	95%	7168×4096	`ad3c7226`	`a63b0380`
q_proj	0%	7168×7168	`6415ce57`	`1fad8fc2`
q_proj	50%	7168×7168	`e49df1cc`	`1fad8fc2`
q_proj	70%	7168×7168	`66f9e19f`	`1fad8fc2`
q_proj	80%	7168×7168	`0d02516a`	`1fad8fc2`
q_proj	90%	7168×7168	`73b6a7dd`	`1fad8fc2`
q_proj	95%	7168×7168	`12627791`	`1fad8fc2`
kv_lora (MLA)	0%	512×7168	`1f3d8dca`	`e58a3471`
kv_lora (MLA)	50%	512×7168	`40fd5e2b`	`e58a3471`
kv_lora (MLA)	70%	512×7168	`2a3acafd`	`e58a3471`
kv_lora (MLA)	80%	512×7168	`5f45cc3e`	`e58a3471`
kv_lora (MLA)	90%	512×7168	`5ee31179`	`e58a3471`
kv_lora (MLA)	95%	512×7168	`91603a7a`	`e58a3471`

Microsoft Phi-4 (AMD MI300X) — 42/42 PASS

Peak vs rocBLAS: **9.59×** · Peak vs rocSPARSE: **61.22×** · Max error: 4.29e-06

Layer	Sp%	M×K	hash_A	hash_V
embed_tokens	0%	100352×5120	`fd2caf5e`	`fc45cb70`
embed_tokens	50%	100352×5120	`ba7d728d`	`fc45cb70`

embed_tokens	70%	100352×5120	`1a9a0912`	`fc45cb70`
embed_tokens	80%	100352×5120	`949724eb`	`fc45cb70`
embed_tokens	90%	100352×5120	`b1014eba`	`fc45cb70`
embed_tokens	95%	100352×5120	`8fc50b2a`	`fc45cb70`
mlp.gate_proj	0%	17920×5120	`b39ac916`	`43c67f51`
mlp.gate_proj	50%	17920×5120	`619ab4bc`	`43c67f51`
mlp.gate_proj	70%	17920×5120	`13b8931e`	`43c67f51`
mlp.gate_proj	80%	17920×5120	`8d4c5c5a`	`43c67f51`
mlp.gate_proj	90%	17920×5120	`53118f2f`	`43c67f51`
mlp.gate_proj	95%	17920×5120	`eb3db8eb`	`43c67f51`
mlp.up_proj	0%	17920×5120	`f9dc87db`	`53b95cff`
mlp.up_proj	50%	17920×5120	`3b01c83a`	`53b95cff`
mlp.up_proj	70%	17920×5120	`6356c9fa`	`53b95cff`
mlp.up_proj	80%	17920×5120	`6b3d24a8`	`53b95cff`
mlp.up_proj	90%	17920×5120	`8404282e`	`53b95cff`
mlp.up_proj	95%	17920×5120	`bdf89d53`	`53b95cff`
mlp.down_proj	0%	5120×17920	`ab8f0695`	`9435b794`
mlp.down_proj	50%	5120×17920	`04efa8a4`	`9435b794`
mlp.down_proj	70%	5120×17920	`ee8e0389`	`9435b794`
mlp.down_proj	80%	5120×17920	`a2d78f2b`	`9435b794`
mlp.down_proj	90%	5120×17920	`9963735d`	`9435b794`

mlp.down_proj	95%	5120×17920	`7a0a3889`	`9435b794`
q_proj	0%	5120×5120	`14f84bf1`	`d4a8bdb3`
q_proj	50%	5120×5120	`073b09fe`	`d4a8bdb3`
q_proj	70%	5120×5120	`59b62b9f`	`d4a8bdb3`
q_proj	80%	5120×5120	`4d271b75`	`d4a8bdb3`
q_proj	90%	5120×5120	`b9868281`	`d4a8bdb3`
q_proj	95%	5120×5120	`92fa7741`	`d4a8bdb3`
k_proj (GQA)	0%	1280×5120	`11e3aa14`	`e691d491`
k_proj (GQA)	50%	1280×5120	`fff7a6e1`	`e691d491`
k_proj (GQA)	70%	1280×5120	`9f04923e`	`e691d491`
k_proj (GQA)	80%	1280×5120	`25e45c56`	`e691d491`
k_proj (GQA)	90%	1280×5120	`f5e774b9`	`e691d491`
k_proj (GQA)	95%	1280×5120	`d4b2dfdc`	`e691d491`
v_proj (GQA)	0%	1280×5120	`6b11ad5b`	`b7eff3d3`
v_proj (GQA)	50%	1280×5120	`c78aa488`	`b7eff3d3`
v_proj (GQA)	70%	1280×5120	`c58600ce`	`b7eff3d3`
v_proj (GQA)	80%	1280×5120	`63ea97e7`	`b7eff3d3`
v_proj (GQA)	90%	1280×5120	`bd5d8b6e`	`b7eff3d3`
v_proj (GQA)	95%	1280×5120	`bf3949cf`	`b7eff3d3`

Qwen3-235B-A22B (AMD MI300X) — 42/42 PASS

Peak vs rocBLAS: **11.45×** · Peak vs rocSPARSE: **69.18×** · Max error: 1.00e-05

Layer	Sp%	M×K	hash_A	hash_V

embed_tokens	0%	151936×4096	`7f9ad33d`	`027724f0`
embed_tokens	50%	151936×4096	`67e6cead`	`027724f0`
embed_tokens	70%	151936×4096	`fac83cdc`	`027724f0`
embed_tokens	80%	151936×4096	`ddc8ac44`	`027724f0`
embed_tokens	90%	151936×4096	`8fe9b085`	`027724f0`
embed_tokens	95%	151936×4096	`50e06a2b`	`027724f0`
expert.gate_proj	0%	1536×4096	`264c4643`	`3c44a290`
expert.gate_proj	50%	1536×4096	`419bb5ec`	`3c44a290`
expert.gate_proj	70%	1536×4096	`b977770c`	`3c44a290`
expert.gate_proj	80%	1536×4096	`67dd3e7b`	`3c44a290`
expert.gate_proj	90%	1536×4096	`cbbdd5db`	`3c44a290`
expert.gate_proj	95%	1536×4096	`13e4ad64`	`3c44a290`
expert.up_proj	0%	1536×4096	`46fe3209`	`b67d5af6`
expert.up_proj	50%	1536×4096	`c75ad326`	`b67d5af6`
expert.up_proj	70%	1536×4096	`b3f2c2fe`	`b67d5af6`
expert.up_proj	80%	1536×4096	`3dadcc4d`	`b67d5af6`
expert.up_proj	90%	1536×4096	`9f4277d0`	`b67d5af6`
expert.up_proj	95%	1536×4096	`190db103`	`b67d5af6`
expert.down_proj	0%	4096×1536	`db417f56`	`42737bbf`
expert.down_proj	50%	4096×1536	`a3a83236`	`42737bbf`
expert.down_proj	70%	4096×1536	`db04f9f5`	`42737bbf`

expert.down_proj	80%	4096×1536	`6ba39be4`	`42737bbf`
expert.down_proj	90%	4096×1536	`996aefb0`	`42737bbf`
expert.down_proj	95%	4096×1536	`e93e76ff`	`42737bbf`
q_proj	0%	4096×4096	`fd64fff8`	`0ecf7912`
q_proj	50%	4096×4096	`463e31d9`	`0ecf7912`
q_proj	70%	4096×4096	`c25909d0`	`0ecf7912`
q_proj	80%	4096×4096	`80f48bb4`	`0ecf7912`
q_proj	90%	4096×4096	`cb8d4e25`	`0ecf7912`
q_proj	95%	4096×4096	`5213c5d8`	`0ecf7912`
k_proj (GQA)	0%	512×4096	`c8b9ded9`	`55fe90b8`
k_proj (GQA)	50%	512×4096	`6b03d034`	`55fe90b8`
k_proj (GQA)	70%	512×4096	`5304eb51`	`55fe90b8`
k_proj (GQA)	80%	512×4096	`d353bf0d`	`55fe90b8`
k_proj (GQA)	90%	512×4096	`73c927bc`	`55fe90b8`
k_proj (GQA)	95%	512×4096	`8e9ce393`	`55fe90b8`
v_proj (GQA)	0%	512×4096	`e730970a`	`e6220b85`
v_proj (GQA)	50%	512×4096	`a2eb36b5`	`e6220b85`
v_proj (GQA)	70%	512×4096	`768e15ef`	`e6220b85`
v_proj (GQA)	80%	512×4096	`d1f62033`	`e6220b85`
v_proj (GQA)	90%	512×4096	`a64f47d0`	`e6220b85`
v_proj (GQA)	95%	512×4096	`d751be4a`	`e6220b85`

Qwen2.5-72B (AMD MI300X) — 36/36 PASS

Peak vs rocBLAS: **10.46×** · Peak vs rocSPARSE: **69.09×** · Max error: 2.79e-05

Layer	Sp%	M×K	hash_A	hash_V
embed_tokens	0%	152064×8192	`7307a608`	`a1352977`
embed_tokens	50%	152064×8192	`092bb98d`	`a1352977`
embed_tokens	70%	152064×8192	`ff66989c`	`a1352977`
embed_tokens	80%	152064×8192	`1ff1f4c1`	`a1352977`
embed_tokens	90%	152064×8192	`eb83b0b7`	`a1352977`
embed_tokens	95%	152064×8192	`9bae8aaa`	`a1352977`
mlp.gate_proj	0%	29568×8192	`e5b2b14b`	`2ecf7668`
mlp.gate_proj	50%	29568×8192	`f2966f1e`	`2ecf7668`
mlp.gate_proj	70%	29568×8192	`662d2bbd`	`2ecf7668`
mlp.gate_proj	80%	29568×8192	`a041766f`	`2ecf7668`
mlp.gate_proj	90%	29568×8192	`e696601e`	`2ecf7668`
mlp.gate_proj	95%	29568×8192	`2c687ed9`	`2ecf7668`
mlp.up_proj	0%	29568×8192	`df4992c6`	`ab9af207`
mlp.up_proj	50%	29568×8192	`f1825617`	`ab9af207`
mlp.up_proj	70%	29568×8192	`481493d5`	`ab9af207`
mlp.up_proj	80%	29568×8192	`5e6ff53b`	`ab9af207`
mlp.up_proj	90%	29568×8192	`f50475d8`	`ab9af207`
mlp.up_proj	95%	29568×8192	`e68390e9`	`ab9af207`
mlp.down_proj	0%	8192×29568	`11833250`	`6565c90d`

mlp.down_proj	50%	8192×29568	`cd25f284`	`6565c90d`
mlp.down_proj	70%	8192×29568	`f97797cc`	`6565c90d`
mlp.down_proj	80%	8192×29568	`7bf6c5b9`	`6565c90d`
mlp.down_proj	90%	8192×29568	`e4873060`	`6565c90d`
mlp.down_proj	95%	8192×29568	`5675e570`	`6565c90d`
q_proj	0%	8192×8192	`eaecf5ec`	`35aa6a4c`
q_proj	50%	8192×8192	`41f7ec98`	`35aa6a4c`
q_proj	70%	8192×8192	`1f74b19e`	`35aa6a4c`
q_proj	80%	8192×8192	`16725c1a`	`35aa6a4c`
q_proj	90%	8192×8192	`5e3ddcb7`	`35aa6a4c`
q_proj	95%	8192×8192	`a86626e8`	`35aa6a4c`
k_proj (GQA)	0%	1024×8192	`b6e67546`	`b20132a9`
k_proj (GQA)	50%	1024×8192	`bb279476`	`b20132a9`
k_proj (GQA)	70%	1024×8192	`c695c680`	`b20132a9`
k_proj (GQA)	80%	1024×8192	`64bb8315`	`b20132a9`
k_proj (GQA)	90%	1024×8192	`cd57f425`	`b20132a9`
k_proj (GQA)	95%	1024×8192	`5fd30646`	`b20132a9`

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