A Bibliography of Publications about the RISC-V Open Source Computer Architecture

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Title word cross-reference

#1 [Ano22].

$19\mu W$ [GAE+23]. ^{2} [MRGRCR+21b, PNSD20]. K [LPB+21]. $V_{\min}$ [ZCNA17].

-Boost [CPG+23, CRP+23]. **-means** [LPB+21].

0.37mm2 [WRD+17]. **0.80pJ** [MSZB19]. **0.80pJ/flop** [MSZB19]. **000-core** [DAKK19].

1 [CSZ+20, DEA+21, DtEt22]. **1-GHz** [CSZ+20]. **1.0** [PCW+22, PCA+24]. **1.24Tflop** [MSZB19]. **1.24Tflop/sW** [MSZB19]. **1.3GHz** [LWA+14]. **1.44** [SWW+22]. **1.44-GHz** [SWW+22]. **1.44GHz** [SWW+21]. **1.46TOPS** [GCL+23]. **1.7** [ZB19]. **1.7-GHz** [ZB19]. **1.89** [WBH+18, WBH+19]. **1.89-GHz** [WBH+18, WBH+19]. **10-bit** [DRC+16]. **12-nm** [LCG+23, SBP+25]. **12-Stage** [CXL+20a]. **12.4TOPS** [CRP+23]. **12.4TOPS/W** [CRP+23]. **123** [IVZV20]. **12nm** [GCL+23, PSB+24]. **136GOPS** [CRP+23]. **140-nW** [TBK+19]. **16** [SCM+21]. **16-bit** [RSA+23]. **16-mm2** [LCG+23]. **16-nm** [BRH+19, RZAH+19b, SWW+22, WBH+18, WBH+19]. **16.7** [LWA+14]. **160mV** [TLB+22]. **16mm2** [GZK+21]. **16nm** [BHR+18, RZAH+19a, SED+23, SWW+21, WRD+17]. **175** [WBH+18, WBH+19]. **175-kHz** [WBH+18, WBH+19].

DL17, HP18, SBJ21, SCM+21, TDPD+21, TCL+21, ZPRD21, ZZW+19, ZG22]. **Hardware-Assisted** [GZX+25, ZHX+22]. **Hardware-In-The-Loop** [OBB+24]. **Hardware/Software** [DLMP21, PH17, RFS20, ZWL+23, HP18]. **Harmful** [PW17b]. **Hart** [USQ+22]. **Hash** [LMP23]. **Hawkbit** [SCL+21]. **Hazard** [DPP22]. **HBM2E** [PSB+24, SBP+25]. **HD** [TBSH22]. **HDL** [BBV+23, LCCS21]. **Healing** [ZZZ+23]. **Heaps** [DG22]. **HeapSafe** [DG22]. **Heterogeneous** [APSH+22, CPG+23, FGD+19, GCL+23, GPV+22, GTP+22, GZK+21, JGZ+25, KG22a, MCD+25, RMP+19, VTS+23, WLC22, XZW+22, ZBA+20, WTY+23, EHK20]. **HEVC** [AS18]. **Hidden** [LBDPP19]. **Hierarchical** [BWZ+21]. **Hierarchies** [MCD+25]. **Hierarchy** [PKN+20]. **High** [Ano23c, Ano23d, AMG+20, BFP+22, BP21, CXL+20a, DNN23, FHL+22, GRD22, HBSE22, HK20, KZH22, LLZ+24, LPZ19, LRB18, MMGC20, MZZG22, MPU+23, PAPJ+23, QCL+23, RLL+21, SJR+23, Tri25, WLW+21, WCX+25, XYT+22, XYT+23, YXH20, ZZB+20, ZWL+20, ZCH+23, ZBZ+25, ZXXH22, ZCH22, ZHL+23, DKC+21, KHH22, MS17, WWZL17, WWL+20, ZWL+25]. **High-Assurance** [Tri25]. **High-bandwidth** [ZZB+20]. **High-Level** [GRD22, MMGC20]. **High-Performance** [Ano23c, Ano23d, BFP+22, BP21, LLZ+24, LRB18, MZZG22, SJR+23, WCX+25, XYT+23, YXH20, ZXXH22, HK20, ZCH22, DKC+21, KHH22]. **High-precision** [ZWL+20]. **High-Quality** [LPZ19]. **High-Speed** [HBSE22, KZH22, RLL+21]. **High-Throughput** [DNN23]. **Highly** [BHT+21, LYZH20, PCW+22, ZSM21]. **Hint** [EGBS22]. **Hint-Based** [EGBS22]. **HIRMA** [SJR+23]. **Hits** [Gen24]. **HL5** [MMGC20]. **HLS** [CWD+21]. **Home** [LXC23, LZH20, Szk21]. **Home-Brew** [Szk21]. **Homomorphic** [AYA+23, PS22a]. **Hoplite** [KG17]. **Horizon** [AAC+23]. **Host** [OBSB23]. **Hot** [Szk21]. **Hotspot** [CPWG23]. **HPC** [OBB+24, PFD21]. **HPCG** [GMFC23]. **HPME** [YXH20]. **HULK** [VTS+23]. **HULK-V** [VTS+23]. **Hummingbird** [SJYZ22]. **Hunting** [RMR21]. **HW** [BDdD19a, KSSMRB23, RPA22]. **HW/SW** [KSSMRB23]. **Hybrid** [HJ23, KG22b]. **Hyperdimensional** [TBSH22]. **HyperSplit** [PLSK20]. **hypervisor** [CLM+22, MP20a, MP20b]. **Hz** [TBK+19].

I/O [MRGRCR+21b]. **ICs** [PKC+20]. **Identification** [FAPHD23, HCL+21, KGBH22, MYT+23, MGZ+23]. **identifying** [KSAL21]. **IEEE** [BBdD17, IEE21, IEE22, IEE23, TBL19, KGC+24]. **IEEE-Compliant** [KGC+24]. **II** [AHV+21, COMP19, GZX+25, HVW+21, WAH21]. **ILA** [HZS+19]. **Image** [GAO21, SG23]. **Impact** [Cho18, Cho19, KCGL23, VMO+23, YLT22, WSMRM20]. **Implantable** [AMG+20, GRCRCG+20, MRAM+23]. **Implement** [LCCS21, VOK+22]. **Implementation** [ABC+20, ASE+21, CTN18, Cil21, FWZL19, FHD22, GAO21, GSDB18, HHB23, HSWM23, HSEKD21, HMTL21, HM21, ISM+23, JSB20, JNK+25, KS22, KKE+22, LHC19, LZH20, LNB+23, MR22, NRA+22, NWP+23, NHML+22, PDLC18, PSZMM21, QLC20, RRJ+21, RSA+23, SJR+23, SUM23, SAF+23, SSB+19, SFGB20, SS22, SNOT20, TS20, TT22, TGT+23, TA22, VMFL23, WSMRM20, WWGW23, WTS21, WYK21, WHB+22, WLC22, YBR+23, YNYD23, YTL+23, YTÖ21, ZGL+21, ZZQ21, DZZZ23, EAI19, GBP21, GG18, KSSMRB23, SCM+21, ZJX20, ZWL+25]. **Implementations** [KR24, SJER23, DAK+21]. **Implemented**

HBSE22, HSR+23, LXC23, MLD+23, gMCP19, NBT22, PDLC18, SRD+21, SSD+21, TSABTM20, ZGL+21].
IoT-Driven [gMCP19]. **IP** [BBVB20, Bis21, BGVB18, HHB+19, KHH22, PPS+19, PH18, TL22, WDM22, ZCH22]. **IP-XACT** [PPS+19, PH18]. **IR** [YLT22]. **Irradiation** [SML+22]. **ISA** [AKMS21, AS18, ABP22, AHB20, BPF+22, BPC+24, BBVB20, BP21, BGVB18, Chi23, Chi24, FAPHD23, GTC+20, GBP21, GMK+23, GFB+24, İBP+25, IZG22, JDH+25, KGHRM23, LCN+23, LGB17, LVR+20, MAS18, MB16, PRS+15, RCQO22, SZHB21, SFGB20, TMR+19, TZ22, TBLD23, TEYK21, TYEK21, TML+17a, TML+17b, TML+17c, WLPA14, WLPA16, CS 19, WA21, WGZ+23, YYP+22, ZTC21, ZPL+25]. **ISA-based** [RCQO22]. **ISA-Level** [FAPHD23]. **ISAs** [KRR22]. **ISE** [MPP21]. **Isolation** [CYJ+22, KLP+20]. **Issue** [EGBS22, KSRT23, SZHB21]. **ITUS** [KCHYM19].

Japan [TBL19]. **JIT** [DCL23]. **July** [BBdD17]. **June** [IEE21, TBL19].

Kernel [GPL22, GZX+25, HYML23, SMOM19, VMFL23]. **Kernels** [TLC+24]. **Key** [DNKDN+24, MLD+23]. **Keys** [DCEJ21]. **Keystone** [SNOT20, SNOT21]. **kHz** [TBK+19, WBH+18, WBH+19]. **Kid** [SEM19]. **Kitten** [GPL22]. **Klessydra** [CSM+21]. **Klessydra-T** [CSM+21]. **Kyber** [ZPL+25]. **Kyoto** [TBL19].

L1 [ZBZ+25]. **LAC** [FSS20]. **Language** [Dos19, Smi24]. **Languages** [WWN23]. **Large** [gMCP19]. **Large-Scaled** [gMCP19]. **Last** [CKTK22, CKTK23]. **Latency** [MLPH23, MST+23, RRC+20, RHD+23]. **Layer** [KYDÖ21, Suv21a, VOK+22]. **Layout** [PGTD23]. **Leakage** [Bis21, PAPJ+23, POMD22, TBK+19, AS24]. **Leakage-Suppression** [TBK+19]. **Learn** [LF22]. **Learning** [AEAS21, FHY19, GLMZ25, HSL+23, MYHT24, RRC+20, SLCK21, SSD+22, TBR+22, KMS22, RCQO22, RCMQO24]. **Learning-Assisted** [GLMZ25]. **led** [Chi23]. **Left** [AS22]. **LeNet** [FWZL19]. **LeNet-5** [FWZL19]. **Length** [MAS18]. **Level** [CKTK22, CKTK23, DDM+20, FAPHD23, GMS+23, GRD22, HYML23, HJ23, HGJD20, HZS+19, MMGC20, PKA+25, RHGD21, WTZ+20, WLPA14, WLPA16, CS 19, WGZ+23, YLT22, APHD22, CLM+22, HGPD20, KLP+20, MRGRCR+21b]. **Level-1** [DDM+20]. **Leverage** [FDMM22]. **Leveraging** [RHD+23, KG22c]. **Libraries** [FTRH20]. **Library** [GRC+19, Liu21, SEG20, SNOT20, Ano20]. **License** [LRF+21]. **LIF** [ZWL+25]. **LiFi** [RSM+23]. **LiFi-CFI** [RSM+23]. **Light** [RSM+23, SLB+22, ZSM20, MMR+17]. **Light-weight** [RSM+23]. **Lightweight** [CRRS22, DBP21, GPL22, GTD+23, GJC23, HYWP+19, KKK+17a, KKK+17b, KKK+17c, LPB+21, LCW+24, MCL+21, MCL22, MLPH23, MLD+23, MÇB22, OBSB23, PHC+23, SZHB21, SMJ21, TBSH22, TGMD20, TGMD21, MPP21, MP20a, MP20b]. **like** [RCQO22]. **Limitations** [RHS+22]. **line** [RCS+19]. **Linear** [FTRH20, GTD+23, PSB+24, ZGD22]. **LinearUCB** [ABM+23]. **Link** [ZBZ+25]. **Linux** [CIPR21, DRN+23, ILG19, OBSB23, PS22a, SGP+23, SMOM19, VTS+23, ZB19]. **Linux-Capable** [OBSB23, CIPR21]. **Linux-Ready** [PS22a, ZB19]. **LIRA** [SMJ21]. **LIRA-V** [SMJ21]. **lite** [DRC+16]. **LiteAIR5** [GMS+23]. **little** [Lu21b]. **little-core** [Lu21b]. **LLVM** [RSS+21, RSRT19, WY23]. **LLVM-Based** [RSS+21, RSRT19]. **Lo-RISK** [PAPJ+23]. **Localization** [SJER23]. **Lock** [NKTS23]. **Lock-Step** [NKTS23]. **Lockstep** [SAF+23].

QCL+23, SJR+23, SSS+22, SSB22, SMB17, SNOT20, SNOT21, TZS+21, TLB+22, UD18, VMO+22, VMO+23, WLW+21, WCX+25, XYT+22, XYT+23, YXH20, YLT22, ZB19, ZGMD22, ZGD22, ZCH+23, ZXXH22, CSM22, DKC+21, HK20, JS23, KHH22, MS17, SAB24, TLS22, WWL+20, ZCH22]. **PERI** [TGRK19, TGRK21]. **Periodical** [DWG+20]. **Periodical-Driven** [DWG+20]. **peripheral** [EHN23]. **peRISCVcope** [GVT+22]. **Perspective** [CDP+22, SMP22, AAC+23]. **Petaflop** [SB23]. **Phalanx** [Gra16]. **Photon** [SG23]. **Photovoltaic** [TLB+22]. **Physical** [APHD21b, GKB+22, HYML23, LHK23, MST+23, NWP+23, NAL22, WSUM19, ZBZ+25]. **Physical-Aware** [LHK23]. **PIC** [SG23]. **PicoRio** [TZPL21]. **PicoRV32** [JBK23]. **Pipeline** [CXL+20a, EGBS22, OCC+17, ZZZ21, GMV20, MG22, YTL+23]. **Pipelined** [DPP22, PMKZ22, PNV22, QCL+23, TGT+23]. **pipelining** [CSM22]. **PIPO** [KS22]. **pJ** [UD18]. **pJ/Cycle** [UD18]. **Plan** [Col23, Mil20]. **Plate** [LRF+21]. **Platform** [AKMS20, APHD21b, Ben23, BWP22, BHT+21, CSO+23, EMMB19, GGH+22, IFO+18, JHL+21, KG22c, LCYK20, LCF23, gMCP19, NGS20, OBSB23, QYZ21, SAB22, WTZ+20, WYK21, WWN23, WMA+21, WMR+22, ZHLR22, ZUSK23, APHD22, DGA+17, FKS22, HGPD20, HGTD21]. **Platforms** [Ano21, MSP23, MYT+23, WWX+24, CIPR21]. **PLL** [RZAH+19b, RZAH+19a]. **Plug** [OBSB23]. **Plug-In** [OBSB23]. **Pluggable** [MC22]. **Pluggy** [MKM20]. **PMP** [TLC+24]. **Point** [AVS+22, Ano20, BPM+21, CSZ+20, CPLS23, CHW+24, GFB+24, İBP+25, KPH+25, LLZ+24, MSZB19, MSZB21, MYHT24, PSS23, PSB+24, PCO+23, SEG20, ZSB21, ZZQ21, Liu21, PRS+15, YCL+23, YWZL22, ZSB20, ZG22, BDdD19b]. **Pointers** [GM21]. **Points** [JZWL23]. **Poisoning** [AVS+22]. **PolarFire** [DXYZ19]. **Polaris** [ZWL+25]. **Policy** [HWJ23, SSS+22]. **Polynomial** [KZH22, WMGD23]. **popularity** [Chi23]. **Portable** [BCZ21a, LYL23, WHB+22]. **Porting** [GPL22, Zha22]. **Portland** [IEE23]. **Posit** [CLR+21a, CLR+21b, CRRS22, KK23, MSSS23, MMD+22a, MMD+22b, MMD+22c, MDPM24, SJM+20, TGRK19, TGRK21, CRRS21, SJP+23]. **Post** [EKAK22, FSMG+19, FSS20, GJC23, HBSE22, KSFS24, KGHRM23, LKKK22, NDZ+21, PGTD23, PGZMG21, RFS20, TH22, XHY+20, YHH+25, ZKS+23, MRGRCR+21a]. **Post-Layout** [PGTD23]. **Post-Quantum** [EKAK22, FSMG+19, FSS20, GJC23, HBSE22, KSFS24, KGHRM23, LKKK22, PGZMG21, RFS20, XHY+20, YHH+25, ZKS+23]. **Post-Silicon** [TH22, MRGRCR+21a]. **Potential** [LMP23]. **Power** [ABP22, BP21, DHL+21, GRC+19, GZK+21, KM21, KCZ+17, KSRT23, KMB22, LRF+21, LHT+21, MYT+23, MRAM+23, MDR19, OBB+24, PCL+23, PHC+23, PPYB23, SED+23, SRD+21, SAW+20, SSD+21, Smi24, SLCK21, SKK+22, TBR+22, TDH+23, WSK+20, YLT22, ZBZ+23, CPL+24, DKC+21, ERGK21, GBP21, SCR+17, VTS+23, WTY+23, ZWL+20]. **Powered** [TLB+22, AAC+23]. **PPMU** [CTSG22]. **PQNTRU** [YHH+25]. **Practical** [MKVD23, VOK+22]. **Precision** [AWB+23, BPF+22, BSHB24, BPC+24, BDdD19a, CHW+24, CRP+23, FRFM+25, GFB+24, KGC+24, LCN+23, MCD+25, NRB+23, OGT+20, PCO+23, RSR21, YCL+23, BDdD19b, HSL+23, LWA+14, ZWL+20]. **Precision-Scalable** [CRP+23]. **Predictability** [GCCR21]. **Predictable** [GCR+23]. **Prediction** [BWP22, SLCK21]. **Predictor** [CSM22]. **PRESENT** [TGMD21]. **Preventing** [ARH+22]. **Prevention** [WSG+21]. **PRINCE**

[GG18]. **revolutionize** [Gre20]. **RF** [KKH+20]. **RFID** [IFO+18]. **Rich** [SNOT21]. **RIMI** [KLP+20]. **RISC** [And20, Ano23b, BDdD19b, BFC+23, CKTG21, Cho19, EHK20, KFGH+23, MTAL22, RZAH+19b, TLB+22, WY23, dOK23, ABC+20, AAA+21, ASE+21, AKMS20, AKMS21, AS22, APHD21a, APHD21b, APHD22, APSH+22, AEAS21, AvAG21, AS18, AAC+23, AFP+17, ABP22, AAB+23, AHB20, ABM+23, ARH+22, Ano20, Ano22, Ano23a, Ano23c, Ano23d, Ano23f, Ano23g, Ant22, AMRCP21, AMG+20, AS24, AP14, ABW+20, ABW+21, AWB+23, ADF+23, ASH19, AHV+21, AYA+23, BKS22, BBV+23, BSSW21, BSZ+21, BWZ+21, BSZ+24, BHR+18, BRH+19, BB21, BJGGM26, BMM+20, BCM+21, BJN23, Bar20, BFP+22, BKdLSGL23, BCCM21, Ben23, BPM+21, BPF+22, BSHB24, BPC+24, BZVCB23, BBVB20, BP21, Bor23, BPS+23, BWP22, BCZ21a, BCZ21b, BF23, BR24, BB24, BHGD21, BHD23, BHT+21, BGVB18, CCC+22, CIPR21, CTN18, CXLL22, CCC+19, CGG21, CG23]. **RISC** [CDF+20, CDP+22, CRMR+23, CMV21, CSZ+20, CPA15, CV22, CPWG23, CLC+20, CXL+20a, CXL+20b, CWD+21, CLWL21, CKTK22, CYJ+22, CKTK23, CPLS23, CHW+24, CWS+24, Chi23, CCA+18a, CCA+18b, Cho18, CPL+24, CSM22, CAL23, CKK+18, CKP19, COMP19, Cil21, CRRS21, CRRS22, CB25, Col23, CPG+23, CRP+23, CTSG22, CLW23, CSO+23, DNKDN+24, DAHK20, DHL+21, DNN23, DUM+19, DBP21, DXT+18, DBGJ19, DBGJ20, DG22, DGH19, DAPS21, DCM23, DCEJ21, DYZ+22, DPV+17, DDM+20, DPP22, DKC+21, DKT+23, DZZZ23, DEA+21, DtEt22, DCC+23, DRN+23, DXYZ19, DCSY25, DK23, DAK+21, DKA+22, Dos19, DLMP21, DCL23, DFA+23, DRC+16, DGA+17, DWG+20, DMR+20, EAI19, EAM+22, EMMB19, EAMK21, EKAK22, EEI+18, ELG20, ETR+20, ET21, EHN23, EGBS22, FSPB21, FDS+23, FHY19, FFW20, FWZL19, FHL+22, FdRES23, FKS22, FTRH20, FGD+19, FRC+18]. **RISC** [FvHC+23, FSMU21, FRFM+25, FSMG+19, FSS20, FHD22, FAPHD23, FDMM22, GM21, GZ22, GZC22, GCL+23, GMS+23, GRCRCG+20, GRC+19, GTC+20, GTC+21a, GTC+21b, GPV+22, GTP+22, GGH+22, GBP21, GST+17, GDR+22, GXLW22, GAMG+23, Gen24, GWZS23, GKB+22, dAGM23, GMK+23, GAO21, GG18, GAE+23, GMV20, GMFC23, GGÁARG+21, GZK+21, GPL22, GRD22, GLS21, GTD+23, GVT+22, Gra16, GTCS21, Gre20, GCCR21, GCR+23, GYW+23, GJC23, GSDB18, GFB+24, HYML23, HBSE22, HYWP+19, HWJ23, HJ23, HSR+23, HHB23, HH21, HVW+21, HCP+21, HH22, HK20, HYXW22, HSL+23, HSWM23, HCW23, HLHK19, HMJ22, HMJ24, HGLD18, HGLD19, HGD+19, HGTD20, HGD20a, HGJD20, HGD20b, HGPD20, HGTD21, HTGD21, HSEKD21, HMTL21, HDT+20, HHB+19, HUL+22, HCZ21, HWG22, HH23, HCL+21, HM21, IK21a, IVZV20, ISM+23, ILG19, IFO+18, IK21b, İBP+25, IZG22, JBK23, JSB20, JGZ+25]. **RISC** [JHL+21, JDH+25, JZWL23, JHLD21, JRD+23, JHQ23, JRW+23, JK20, JS23, KSAL21, KIS20, KIS22, KAR+19, KHG20, KG22a, KG22b, KK21, KFK+19, KM21, KA20, KFS22, KSFS24, KSSMRB23, KNK+21, KCZ+17, KEAS+18, KKH+20, KLP+20, KS22, KKL+25, KKOY19, KG22c, KRR22, KYDÖ21, KHH22, KAMS19, KGBH22, KHS+23, KMS22, KSRT23, KCGL23, KZH22, KMB22, KKEG22, KCHYM19, KFGH+23, KGHRM23, KK23, KKE+22, LCCS21, LRF+21, LBDPP19, LHD+21, LHD+22, LF22, LWA+14, LZW+15, LWC+16, LCYK20, LPB+21, LHC+21, LKKK22, LCN+23, LKHK23, LYZH20, LWC18, LSB22, LGB17, LHC19,

LWD20, LHT+21, LCG+23, LCF23, LMP23, LYL23, LWLA23, LCW+24, LXC23, LVR+20, LLZ+24, LNA21, LPZ19, Liu21, LPL22, LHK23, LNZ+22, LLS22, LVPSB+23, LZH20, LLL+21, Lu21b, Lu21a, Lu22, LNB+23, LRB18, MCL+21, MCL22, MLPH23, MSZB19, MKČ23, MKM20, MC22, MSSS23, MMD+22a, MMD+22b, MMD+22c, MSP23]. **RISC** [MMGC20, MTCL21, MLD+23, MG22, MR22, MPP21, MFM+19, MTT21, MS17, MAS18, MSJ19, MB16, MST+23, MZZG22, MMR+17, MSR+21, MSD+22, MSDM23, uhMSI19, Mil20, MKB+23, MPU+23, MKVD23, Mis22, MGZ+23, MRSBGR+20, MRGRCR+21a, MRGRCR+21b, MRAM+23, gMCP19, MDR19, MTJ+22, MRB+23, MRB+24, MSFK21, MÇB22, MMA+18, NRB+23, NRA+22, NNPG23, NDZ+21, NWP+23, NAL22, NHML+22, NKH+21, NBT22, NGS20, NKTS23, NPA+23, NSM+23, NRLH22, OPY+18, OCMP19, OCC+17, OGT+20, OBSB23, OBB+24, PSS23, PDLC18, PS22a, PLH+22, PKN+20, PKL21, PJL21, PKC+20, PKKK22, PCL+23, PHC+23, PAPJ+23, PGTD23, PKA+25, PRS+15, PNSD20, PW17a, Pat18, PACB21, PSB+24, PPS+19, PH18, PFD21, PCW+22, PCO+23, PGW+20, PMKZ22, PPYB23, PRP+23, PGZMG21, PVK+26, POMD22, PLSK20, PSZMM21, PNG20, PS22b, PSM23, PMBA19, PNV22]. **RISC** [QCL+23, QLH21, QYZ21, QLC20, RSR21, RRJ+21, RSR20, RCQO22, RCMQO24, RHS+22, RKH+23, RAPK23, RRC+20, RPD+15, RPSD16, RSA+23, RMF22, RKRF21, RBK18, RLL+21, RSS+21, RHGD21, RMP+19, RK23, RMR21, RSM+23, RPA22, RZAH+19a, RFS20, RCS+19, RHD+23, SGP+23, SEM19, SMP22, SVM+23, SNM22, SG23, SJR+23, Sah23, SUM23, SNH22, SGCGCR17, SSS+22, SFAAL22, SLZ+20, SLK+21, SML+22, SMMD23, SSB22, SAF+23, SC17, SLBJ23, SBJ21, SBP+25, SMB17, SAB22, SED+23, SCR+17, SSR+18, SRD+21, SAW+20, SWW+21, SWW+22, SZHB21, SJER23, SSD+21, Sew21, Sha23, SMGS22, SJM+20, SJP+23, SMJ21, SS19, SWWL23, SR22, SUAR23, SSB+19, SCA+22, SFGB20, Smi24, SB23, SJYZ22, SCM+21, SPDLP+22, SLB+22, SCL+21, SS22, SJBS21, SMOM19, Su20, Su21, SAB24, SNK22, SLCK21, Suv21a, Suv21b, SNOT20, SNOT21]. **RISC** [SLMS21, SKK+22, SSD+22, Szk21, TTB22, TS20, TMR+19, TBSH22, TLS22, TT22, TBS+21, TZPL21, TH22, TZS+21, TZ22, TZG+23, TGMD20, TGMD21, TBLD23, TDPD+21, TEYK21, TYEK21, TSS+22, TAP+25, TGRK19, TGRK21, TGT+23, TAC+22, TSABTM20, TBR+22, TCL+21, TTDD21, TDH+23, TBK+19, TL22, TCH23, TOYK22, TA22, USQ+22, UD18, UD20, VTS+23, VKG22, VROdlT22, VMO+22, VMO+23, VSD22, VMFL23, WSMRM20, WRD+17, WWZL17, WBH+18, WT19, WZW+19, WBH+19, WTZ+20, WZW+21, WLW+21, WLY+22, WDM22, WWGW23, WWW23, WLI23, WWX+24, WCX+25, WTS21, WLA+13, WLPA14, WLPA15, WLPA16, CS 19, WA21, WAH21, WA22, WYK21, WCGL23, WMGD23, WSUM19, WMA+21, WMR+22, WW19, WW21, WWB23, WSG+21, WSK+20, WXY+22, WHB+22, WLC22, WTY+23, WCL23, WGZ+23, XZW+22, XLZ23, XHY+20, XYT+22, XYT+23, YBR+23, YNYD23, Yan20, YLC21, YCL+23]. **RISC** [YLT+23, YTL+23, YYM21, YTÖ21, YXH20, YLT22, YWZL22, YYP+22, ZLC19, ZB19, ZSB20, ZSB21, Zee22, ZTC21, ZPRD21, ZPRD22, ZPRD23, ZBZ+23, ZHC+18, ZZW+19, ZWL+20, ZGL+21, ZZG21, ZZZ21, ZGMD22, ZGD22, Zha22, ZHX+22, ZHLR22, ZGG23, ZZZ+23, ZCH+23, ZBZ+25, ZXXH22, ZKS+23, ZUSK23, ZZQ21, ZCH22, ZWL+23, ZSM20, ZSM21, ZS23, ZJX20, ZHL+23, ZBA+20, ZLP+15, ZCNA16,

ZLP+16, ZCNA17, ZWL+25, ZG22, ZPL+23, ZPL+25, ZNF21, ZZL+22, ZC23, dOTB+20].
RISC-HD [TBSH22]. **RISC-V**
[And20, Ano23b, BDdD19b, BFC+23, CKTG21, Cho19, KFGH+23, MTAL22, TLB+22, WY23, dOK23, ABC+20, AAA+21, ASE+21, AKMS20, AKMS21, AS22, APHD21a, APHD21b, APHD22, APSH+22, AEAS21, AvAG21, AS18, AAC+23, AFP+17, ABP22, AAB+23, AHB20, ABM+23, ARH+22, Ano20, Ano22, Ano23a, Ano23c, Ano23d, Ano23f, Ano23g, Ant22, AMRCP21, AMG+20, AS24, AP14, ABW+20, ABW+21, AWB+23, ADF+23, ASH19, AHV+21, AYA+23, BKS22, BBV+23, BSSW21, BSZ+21, BWZ+21, BSZ+24, BHR+18, BRH+19, BB21, BJGGM26, BMM+20, BCM+21, BJN23, Bar20, BFP+22, BKdLSGL23, Ben23, BPM+21, BPF+22, BSHB24, BPC+24, BZVCB23, BBVB20, BP21, Bor23, BWP22, BCZ21a, BCZ21b, BF23, BR24, BB24, BHGD21, BHD23, BHT+21, BGVB18, CCC+22, CIPR21, CTN18, CXLL22, CCC+19, CGG21, CG23, CDF+20, CDP+22, CRMR+23, CMV21].
RISC-V
[CSZ+20, CPA15, CV22, CPWG23, CLC+20, CXL+20a, CXL+20b, CWD+21, CLWL21, CKTK22, CYJ+22, CKTK23, CPLS23, CHW+24, CWS+24, Chi23, CCA+18a, CCA+18b, Cho18, CPL+24, CSM22, CAL23, CKK+18, CKP19, COMP19, Cil21, CRRS21, CRRS22, CB25, Col23, CPG+23, CRP+23, CTSG22, CLW23, CSO+23, DNKDN+24, DAHK20, DHL+21, DNN23, DUM+19, DBP21, DXT+18, DBGJ19, DBGJ20, DG22, DGH19, DAPS21, DCM23, DCEJ21, DYZ+22, DPV+17, DDM+20, DPP22, DKC+21, DKT+23, DZZZ23, DEA+21, DtEt22, DCC+23, DRN+23, DXYZ19, DCSY25, DK23, DAK+21, DKA+22, Dos19, DLMP21, DCL23, DFA+23, DRC+16, DGA+17, DWG+20, DMR+20, EAI19, EAM+22, EMMB19, EAMK21, EKAK22, EEI+18, ELG20, ETR+20, ET21, EHN23, EGBS22, FSPB21, FDS+23, FHY19, FFW20, FWZL19, FHL+22, FdRES23, FKS22, FTRH20, FGD+19, FRC+18, FvHC+23, FSMU21, FRFM+25, FSMG+19, FSS20].
RISC-V
[FHD22, FAPHD23, FDMM22, GM21, GZ22, GZC22, GCL+23, GMS+23, GRCRCG+20, GRC+19, GTC+20, GTC+21a, GTC+21b, GPV+22, GTP+22, GST+17, GDR+22, GXLW22, GAMG+23, Gen24, GWZS23, GKB+22, dAGM23, GMK+23, GAO21, GG18, GAE+23, GMV20, GMFC23, GZK+21, GPL22, GRD22, GLS21, GTD+23, GVT+22, Gra16, GTCS21, Gre20, GCCR21, GCR+23, GYW+23, GJC23, GSDB18, GFB+24, HYML23, HBSE22, HYWP+19, HWJ23, HSR+23, HHB23, HH21, HVW+21, HCP+21, HH22, HK20, HYXW22, HSWM23, HCW23, HLHK19, HMJ22, HMJ24, HGLD18, HGLD19, HGD+19, HGTD20, HGD20a, HGJD20, HGD20b, HGPD20, HGTD21, HTGD21, HSEKD21, HMTL21, HDT+20, HHB+19, Hor20, HCZ21, HWG22, HH23, HCL+21, HM21, IK21a, IVZV20, ISM+23, ILG19, IFO+18, IK21b, İBP+25, IZG22, JBK23, JSB20, JGZ+25, JHL+21, JDH+25, JZWL23, JHLD21, JRD+23, JHQ23, JRW+23, JK20, JS23, KSAL21, KIS20].
RISC-V
[KIS22, KAR+19, KHG20, KG22a, KG22b, KK21, KFK+19, KM21, KA20, KFS22, KSFS24, KNK+21, KCZ+17, KEAS+18, KKH+20, KLP+20, KS22, KKL+25, KKOY19, KG22c, KRR22, KYDÖ21, KHH22, KAMS19, KGBH22, KHS+23, KMS22, KSRT23, KCGL23, KZH22, KMB22, KKEG22, KCHYM19, KFGH+23, KGHRM23, KK23, KKE+22, LCCS21, LRF+21, LBDPP19, LHD+21, LHD+22, LF22, LWA+14, LZW+15, LWC+16, LCYK20, LPB+21, LHC+21, LKKK22, LCN+23, LKHK23, LYZH20, LWC18, LSB22, LGB17, LHC19, LWD20, LHT+21,

LCG+23, LCF23, LMP23, LYL23, LWLA23, LCW+24, LXC23, LVR+20, LLZ+24, LNA21, LPZ19, Liu21, LPL22, LHK23, LNZ+22, LLS22, LVPSB+23, LZH20, LLL+21, Lu21b, Lu21a, Lu22, LNB+23, LRB18, MCL+21, MCL22, MLPH23, MSZB19, MKČ23, MKM20, MC22, MSSS23, MMD+22a, MMD+22b, MMD+22c, MSP23, MMGC20, MTCL21, MLD+23, MG22, MR22, MPP21, MFM+19, MTT21, MS17, MAS18, MSJ19].
RISC-V [MB16, MST+23, MZZG22, MMR+17, MSR+21, MSD+22, MSDM23, uhMSI19, Mil20, MPU+23, MKVD23, Mis22, MGZ+23, MRSBGR+20, MRGRCR+21a, MRGRCR+21b, MRAM+23, gMCP19, MDR19, MTJ+22, MRB+23, MRB+24, MSFK21, MÇB22, MMA+18, NRB+23, NRA+22, NNPG23, NDZ+21, NWP+23, NAL22, NHML+22, NKH+21, NBT22, NGS20, NKTS23, NPA+23, NSM+23, NRLH22, OPY+18, OCMP19, OCC+17, OGT+20, OBSB23, OBB+24, PSS23, PDLC18, PS22a, PLH+22, PKN+20, PKL21, PJL21, PKC+20, PKKK22, PCL+23, PHC+23, PAPJ+23, PGTD23, PKA+25, PNSD20, PW17a, Pat18, PACB21, PPS+19, PH18, PFD21, PCW+22, PGW+20, PMKZ22, PPYB23, PRP+23, PGZMG21, PVK+26, POMD22, PLSK20, PNG20, PS22b, PSM23, PMBA19, PNV22, QCL+23, QLH21, QYZ21, RSR21, RRJ+21, RSR20, RCQO22, RCMQO24, RHS+22, RKH+23, RAPK23, RRC+20, RPD+15, RPSD16, RSA+23].
RISC-V [RMF22, RKRF21, RBK18, RSS+21, RHGD21, RMP+19, RK23, RSM+23, RPA22, RZAH+19a, RFS20, RCS+19, RHD+23, SGP+23, SEM19, SMP22, SVM+23, SNM22, SG23, SJR+23, Sah23, SUM23, SNH22, SGCGCR17, SSS+22, SFAAL22, SLZ+20, SLK+21, SML+22, SMMD23, SSB22, SAF+23, SC17, SLBJ23, SBJ21, SBP+25, SMB17, SAB22, SED+23, SCR+17, SSR+18, SRD+21, SAW+20, SWW+21, SWW+22, SZHB21, SJER23, SSD+21, Sew21, Sha23, SMGS22, SJM+20, SMJ21, SS19, SWWL23, SR22, SUAR23, SSB+19, SCA+22, SFGB20, Smi24, SB23, SJYZ22, SCM+21, SPDLP+22, SLB+22, SCL+21, SS22, SJBS21, SMOM19, Su20, Su21, SAB24, SNK22, SLCK21, Suv21a, SNOT20, SNOT21, SLMS21, SKK+22, SSD+22, Szk21, TTB22, TS20, TMR+19, TBSH22, TLS22, TT22, TBS+21, TZPL21, TH22, TZS+21, TZ22, TZG+23, TGMD20, TGMD21, TBLD23, TDPD+21].
RISC-V [TEYK21, TYEK21, TSS+22, TAP+25, TGRK19, TGRK21, TGT+23, TAC+22, TSABTM20, TCL+21, TTDD21, TDH+23, TBK+19, TL22, TCH23, TOYK22, TA22, USQ+22, UD18, UD20, VTS+23, VROdlT22, VMO+22, VMO+23, VSD22, VMFL23, WSMRM20, WRD+17, WWZL17, WBH+18, WT19, WZW+19, WBH+19, WTZ+20, WZW+21, WLW+21, WLY+22, WDM22, WWGW23, WWW23, WLI23, WWX+24, WCX+25, WTS21, WLA+13, WLPA14, WLPA15, WLPA16, CS 19, WA21, WAH21, WA22, WYK21, WCGL23, WMGD23, WSUM19, WMA+21, WMR+22, WW19, WW21, WWB23, WSG+21, WSK+20, WXY+22, WHB+22, WLC22, WTY+23, WCL23, WGZ+23, XZW+22, XLZ23, XHY+20, XYT+22, XYT+23, YBR+23, YNYD23, Yan20, YLC21, YCL+23, YLT+23, YTL+23, YYM21, YTÖ21, YXH20, YLT22, YWZL22, YYP+22, ZLC19, ZB19, ZSB20, ZSB21, Zee22, ZTC21, ZPRD21, ZPRD22, ZPRD23, ZBZ+23, ZHC+18, ZZW+19, ZWL+20, ZGL+21, ZZG21, ZZZ21].
RISC-V [ZGMD22, ZGD22, Zha22, ZHX+22, ZHLR22, ZGG23, ZZZ+23, ZCH+23, ZBZ+25, ZXXH22, ZKS+23, ZUSK23, ZZQ21, ZCH22, ZWL+23, ZSM20, ZSM21, ZS23, ZJX20, ZHL+23, ZBA+20, ZLP+15, ZCNA16, ZLP+16, ZCNA17, ZWL+25, ZG22, ZPL+23, ZPL+25, ZNF21, ZZL+22, ZC23, dOTB+20].

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GAO21, GG18, GAE+23, GMV20, GMFC23, GGÁARG+21, GZK+21, GPL22, GRD22, GLS21, GTD+23, GVT+22, Gra16, GTCS21, Gre20, GCCR21, GCR+23, GYW+23, GJC23, GSDB18, GFB+24, HYML23, HBSE22, HYWP+19, HWJ23, HJ23, HSR+23, HHB23, HH21, HVW+21, HCP+21, HH22, HHTo23, HK20, HYXW22, HSL+23, HSWM23, HCW23, HLHK19, HMJ22, HMJ24, HGLD18, HGLD19, HGD+19, HGTD20, HGD20a, HGJD20, HGD20b, HGPD20, HGTD21, HTGD21, HSEKD21, HMTL21, HDT+20, HHB+19, Hor20, HUL+22, HCZ21, HWG22, HH23, HCL+21, HM21, IK21a, IVZV20, ISM+23, ILG19, IFO+18, IK21b]. **V** [İBP+25, IZG22, JBK23, JSB20, JGZ+25, JHL+21, JDH+25, JZWL23, JHLD21, JRD+23, JHQ23, JRW+23, JK20, JS23, KSAL21, KIS20, KIS22, KAR+19, KHG20, KG22a, KG22b, KK21, KFK+19, KM21, KA20, KFS22, KSFS24, KSSMRB23, KNK+21, KCZ+17, KEAS+18, KKH+20, KLP+20, KS22, KKL+25, KKOY19, KG22c, KRR22, KYDÖ21, KHH22, KAMS19, KGBH22, KHS+23, KMS22, KSRT23, KCGL23, KZH22, KMB22, KKEG22, KCHYM19, KFGH+23, KGHRM23, KK23, KKE+22, LCCS21, LRF+21, LBDPP19, LHD+21, LHD+22, LF22, LWA+14, LZW+15, LWC+16, LCYK20, LPB+21, LHC+21, LKKK22, LCN+23, LKHK23, LYZH20, LWC18, LSB22, LGB17, LHC19, LWD20, LHT+21, LCG+23, LCF23, LMP23, LYL23, LWLA23, LCW+24, LXC23, LVR+20, LLZ+24, LNA21, LPZ19, Liu21, LPL22, LHK23, LNZ+22, LLS22, LVPSB+23, LZH20, LLL+21, Lu21b, Lu21a, Lu22, LNB+23, LRB18, MCL+21, MCL22, MLPH23, MSZB19, MKČ23, MKM20, MC22]. **V** [MSSS23, MMD+22a, MMD+22b, MMD+22c, MSP23, MMGC20, MTCL21, MLD+23, MG22, MR22, MPP21, MFM+19, MTT21, MS17, MAS18, MSJ19, MB16, MST+23, MZZG22, MMR+17, MSR+21, MSD+22, MSDM23, uhMSI19, Mil20, MKB+23, MPU+23, MKVD23, Mis22, MGZ+23, MRSBGR+20, MRGRCR+21a, MRGRCR+21b, MRAM+23, gMCP19, MDR19, MTJ+22, MRB+23, MRB+24, MSFK21, MÇB22, MMA+18, NRB+23, NRA+22, NNPG23, NDZ+21, NWP+23, NAL22, NHML+22, NKH+21, NBT22, NGS20, NKTS23, NPA+23, NSM+23, NRLH22, OPY+18, OCMP19, OCC+17, OGT+20, OBSB23, OBB+24, PSS23, PDLC18, PS22a, PLH+22, PKN+20, PKL21, PJL21, PKC+20, PKKK22, PCL+23, PHC+23, PAPJ+23, PGTD23, PKA+25, PNSD20, PW17a, Pat18, PACB21, PSB+24, PPS+19, PH18, PFD21, PCW+22, PCO+23, PGW+20, PMKZ22, PPYB23, PRP+23, PGZMG21, PVK+26, POMD22, PLSK20, PSZMM21, PNG20]. **V** [PS22b, PSM23, PMBA19, PNV22, QCL+23, QLH21, QYZ21, QLC20, RSR21, RRJ+21, RSR20, RCQO22, RCMQO24, RHS+22, RKH+23, RAPK23, RRC+20, RPD+15, RPSD16, RSA+23, RMF22, RKRF21, RBK18, RLL+21, RSS+21, RHGD21, RMP+19, RK23, RMR21, RSM+23, RPA22, RZAH+19b, RZAH+19a, RFS20, RCS+19, RHD+23, SGP+23, SEM19, SMP22, SVM+23, SNM22, SG23, SJR+23, Sah23, SUM23, SNH22, SGCGCR17, SSS+22, SFAAL22, SLZ+20, SLK+21, SML+22, SMMD23, SSB22, SAF+23, SC17, SLBJ23, SBJ21, SBP+25, SMB17, SAB22, SED+23, SCR+17, SSR+18, SRD+21, SAW+20, SWW+21, SWW+22, SZHB21, SJER23, SSD+21, Sew21, Sha23, SMGS22, SJM+20, SJP+23, SMJ21, SS19, SWWL23, SR22, SUAR23, SSB+19, SCA+22, SFGB20, Smi24, SB23, SJYZ22, SCM+21, SPDLP+22, SLB+22, SCL+21, SS22, SJBS21, SMOM19, Su20, Su21, SAB24, SNK22]. **V** [SLCK21, Suv21a, Suv21b, SNOT20, SNOT21, SLMS21, SKK+22, SSD+22, Szk21, TTB22, TS20, TMR+19, TBSH22, TLS22,

TT22, TBS+21, TZPL21, TH22, TZS+21, TZ22, TZG+23, TGMD20, TGMD21, TBLD23, TDPD+21, TEYK21, TYEK21, TSS+22, TAP+25, TGRK19, TGRK21, TGT+23, TAC+22, TSABTM20, TBR+22, TCL+21, TTDD21, TDH+23, TBK+19, TL22, TCH23, TOYK22, TA22, USQ+22, UD18, UD20, VTS+23, VROdlT22, VMO+22, VMO+23, VSD22, VMFL23, WSMRM20, WRD+17, WWZL17, WBH+18, WT19, WZW+19, WBH+19, WTZ+20, WZW+21, WLW+21, WLY+22, WDM22, WWGW23, WWW23, WLI23, WWX+24, WCX+25, WTS21, WLA+13, WLPA14, WLPA15, WLPA16, CS 19, WA21, WAH21, WA22, WYK21, WCGL23, WMGD23, WSUM19, WMA+21, WMR+22, WW19, WW21, WWB23, WSG+21, WSK+20, WXY+22, WHB+22, WLC22, WTY+23, WCL23, WGZ+23, XZW+22, XLZ23, XHY+20, XYT+22, XYT+23, YBR+23]. **V** [YNYD23, Yan20, YLC21, YCL+23, YLT+23, YTL+23, YYM21, YTÖ21, YXH20, YLT22, YWZL22, YYP+22, ZLC19, ZB19, ZSB20, ZSB21, Zee22, ZTC21, ZPRD21, ZPRD22, ZPRD23, ZBZ+23, ZHC+18, ZZW+19, ZWL+20, ZGL+21, ZZG21, ZZZ21, ZGMD22, ZGD22, Zha22, ZHX+22, ZHLR22, ZGG23, ZZZ+23, ZCH+23, ZBZ+25, ZXXH22, ZKS+23, ZUSK23, ZZQ21, ZCH22, ZWL+23, ZSM20, ZSM21, ZS23, ZJX20, ZHL+23, ZBA+20, ZLP+15, ZCNA16, ZLP+16, ZCNA17, ZWL+25, ZG22, ZPL+23, ZPL+25, ZNF21, ZZL+22, ZC23, dOTB+20, dOK23]. **V/Tensor** [DEA+21, DtEt22]. **V1** [Ano23g]. **V3** [RKRF21]. **Validating** [NSM+23]. **Validation** [AAC+23, CKP19, TH22]. **Value** [TBS+21]. **variability** [TLS22]. **Variable** [BDdD19a, GFB+24, MAS18, RSR21, YTL+23]. **Variable-Length** [MAS18]. **Variable-Precision** [BDdD19a]. **variant** [Ano20]. **Vector** [AEAS21, AvAG21, ADF+23, BKdLSGL23, CCC+22, CSZ+20, CV22, CSM+21, CXL+20a, DFA+23, ISM+23, JGZ+25, JRD+23, JK20, KKOY19, KZH22, KFGH+23, LMP23, LPL22, MC22, MKB+23, MPU+23, PNSD20, PCW+22, PCO+23, PCA+24, PGZMG21, RSR21, RMF22, SAW+20, SWW+21, SWW+22, SPDLP+22, Su21, TAP+25, WSK+20, XHY+20, ZHC+18, ZKS+23, ZLP+16, BJGGM26, GAE+23, GMFC23, KMS22, LWA+14, LZW+15, SCM+21, VMFL23, WWW23, ZLP+15, ZPL+25]. **vector-dataflow** [GAE+23]. **Vector-Instruction** [ZHC+18]. **Vectorized** [BKdLSGL23]. **Vectorizing** [CRRS21]. **Vehicles** [CRMR+23, Ben23]. **Verification** [ASE+21, APHD21a, AAC+23, BHD23, CAL23, DDM+20, DKT+23, DMR+20, FAPHD23, GM21, HGJD20, HZS+19, IK21a, JRD+23, KHS+23, LLS22, MMA+18, OCMP19, QYZ21, RHGD21, RMR21, RCS+19, SSR+18, TML+17a, TML+17b, TML+17c, Tri25, WTZ+20, WMGD23, WGZ+23, ZPRD22, ZZZ21, ZNF21, CWD+21, MRSBGR+20, ZPRD23]. **verified** [TMK+16]. **Verifying** [TZG+23]. **Verilog** [IK21a, LCCS21, MKVD23, Mis22]. **Version** [WLPA14, WLPA16, AS24, WLPA15]. **Very** [QLC20]. **Veyron** [Ano23g]. **VGG** [SCM+21]. **VGG-16** [SCM+21]. **VHDL** [PMKZ22]. **via** [dAGM23, PKA+25, THZ+24, YHH+25]. **Vibration** [MGZ+23]. **Virtex** [SFGB20]. **Virtex-7** [SFGB20]. **Virtex-UltraScale** [SFGB20]. **Virtual** [BWP22, FHD22, HGLD18, HGLD19, HGTD20, HGD20b, HGTD21, LCW+24, ZWL+23, HGPD20, IEE21, IEE22, KKC+16]. **Virtualization** [DK23, MTJ+22, SMP22, SVM+23, CLM+22]. **Visible** [SLB+22, ZSM20]. **Vision** [LRF+21]. **Visual** [SED+23]. **Vitamin** [AAC+23]. **Vitamin-V** [AAC+23]. **Vitruvius** [MPU+23]. **VLSI** [LLS22, YTL+23]. **vMCU** [MST+23]. **Vmin** [ZCNA16]. **Volatile** [MTT21]. **Voltage**

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