

# Tsu-Jae Liu

## List of Publications by Year in descending order

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138  
papers

4,509  
citations

172457

29  
h-index

118850

62  
g-index

139  
all docs

139  
docs citations

139  
times ranked

2740  
citing authors

#	ARTICLE	IF	CITATIONS
1	Tunneling Field-Effect Transistors (TFETs) With Subthreshold Swing (SS) Less Than 60 mV/dec. IEEE Electron Device Letters, 2007, 28, 743-745.	3.9	1,537
2	Demonstration of L-Shaped Tunnel Field-Effect Transistors. IEEE Transactions on Electron Devices, 2016, 63, 1774-1778.	3.0	250
3	Fully Integrated CMOS Power Amplifier With Efficiency Enhancement at Power Back-Off. IEEE Journal of Solid-State Circuits, 2008, 43, 600-609.	5.4	155
4	Tunnel Field Effect Transistor With Raised Germanium Source. IEEE Electron Device Letters, 2010, 31, 1107-1109.	3.9	141
5	Large-Scale SRAM Variability Characterization in 45 nm CMOS. IEEE Journal of Solid-State Circuits, 2009, 44, 3174-3192.	5.4	133
6	Study of Random Dopant Fluctuation Induced Variability in the Raised-Ge-Source TFET. IEEE Electron Device Letters, 2013, 34, 184-186.	3.9	124
7	Gate Line Edge Roughness Model for Estimation of FinFET Performance Variability. IEEE Transactions on Electron Devices, 2009, 56, 3055-3063.	3.0	87
8	Study of Random-Dopant-Fluctuation (RDF) Effects for the Trigate Bulk MOSFET. IEEE Transactions on Electron Devices, 2009, 56, 1538-1542.	3.0	85
9	Feedback FET: A novel transistor exhibiting steep switching behavior at low bias voltages. , 2008, , .		72
10	Prospect of tunneling green transistor for 0.1V CMOS. , 2010, , .		61
11	Tri-Gate Bulk MOSFET Design for CMOS Scaling to the End of the Roadmap. IEEE Electron Device Letters, 2008, 29, 491-493.	3.9	59
12	A Comparative Study of Dopant-Segregated Schottky and Raised Source/Drain Double-Gate MOSFETs. IEEE Transactions on Electron Devices, 2008, 55, 2665-2677.	3.0	57
13	SRAM Read/Write Margin Enhancements Using FinFETs. IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 2010, 18, 887-900.	3.1	57
14	Characterization of Dynamic SRAM Stability in 45 nm CMOS. IEEE Journal of Solid-State Circuits, 2011, 46, 2702-2712.	5.4	54
15	Nano-Electro-Mechanical Nonvolatile Memory (NEMory) Cell Design and Scaling. IEEE Transactions on Electron Devices, 2008, 55, 3482-3488.	3.0	46
16	FinFET Evolution Toward Stacked-Nanowire FET for CMOS Technology Scaling. IEEE Transactions on Electron Devices, 2015, 62, 3945-3950.	3.0	46
17	Germanium Gate PhotoMOSFET Integrated to Silicon Photonics. IEEE Journal of Selected Topics in Quantum Electronics, 2014, 20, 1-7.	2.9	44
18	Characterization of Contact Resistance Stability in MEM Relays With Tungsten Electrodes. Journal of Microelectromechanical Systems, 2012, 21, 511-513.	2.5	43

#	ARTICLE	IF	CITATIONS
19	Mechanically modulated tunneling resistance in monolayer MoS <sub>2</sub> . Applied Physics Letters, 2013, 103, .	3.3	43
20	Performance and Area Scaling Benefits of FD-SOI Technology for 6-T SRAM Cells at the 22-nm Node. IEEE Transactions on Electron Devices, 2010, 57, 1301-1309.	3.0	40
21	Perfectly Complementary Relay Design for Digital Logic Applications. IEEE Electron Device Letters, 2010, 31, 371-373.	3.9	40
22	Compact Nano-Electro-Mechanical Non-Volatile Memory (NEMory) for 3D Integration. , 2007, , .		39
23	Effectiveness of Stressors in Aggressively Scaled FinFETs. IEEE Transactions on Electron Devices, 2012, 59, 1592-1598.	3.0	39
24	MOSFET design for forward body biasing scheme. IEEE Electron Device Letters, 2006, 27, 387-389.	3.9	38
25	ZrO <sub>2</sub> Ferroelectric FET for Non-volatile Memory Application. IEEE Electron Device Letters, 2019, 40, 1419-1422.	3.9	38
26	Dopant-Segregated Schottky Source/Drain Double-Gate MOSFET Design in the Direct Source-to-Drain Tunneling Regime. IEEE Transactions on Electron Devices, 2009, 56, 2016-2026.	3.0	37
27	Hybrid CMOS/BEOL-NEMS technology for ultra-low-power IC applications. , 2014, , .		36
28	Seesaw Relay Logic and Memory Circuits. Journal of Microelectromechanical Systems, 2010, 19, 1012-1014.	2.5	35
29	Characterization of Polycrystalline Silicon-Germanium Film Deposition for Modularly Integrated MEMS Applications. Journal of Microelectromechanical Systems, 2007, 16, 68-77.	2.5	32
30	Impact of Body Doping and Thickness on the Performance of Germanium-Source TFETs. IEEE Transactions on Electron Devices, 2010, 57, 1710-1713.	3.0	32
31	Design Optimization of Multigate Bulk MOSFETs. IEEE Transactions on Electron Devices, 2013, 60, 28-33.	3.0	31
32	Adhesive Force Characterization for MEM Logic Relays With Sub-Micron Contacting Regions. Journal of Microelectromechanical Systems, 2014, 23, 198-203.	2.5	31
33	MOSFET hot-carrier reliability improvement by forward-body bias. IEEE Electron Device Letters, 2006, 27, 605-608.	3.9	29
34	Three-Dimensional FinFET Source/Drain and Contact Design Optimization Study. IEEE Transactions on Electron Devices, 2009, 56, 1483-1492.	3.0	25
35	Simulation-Based Study of the Inserted-Oxide FinFET for Future Low-Power System-on-Chip Applications. IEEE Electron Device Letters, 2015, 36, 742-744.	3.9	25
36	Simulation-Based Study of Hybrid Fin/Planar LDMOS Design for FinFET-Based System-on-Chip Technology. IEEE Transactions on Electron Devices, 2017, 64, 4193-4199.	3.0	25

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37	Carrier-Mobility Enhancement via Strain Engineering in Future Thin-Body MOSFETs. IEEE Electron Device Letters, 2012, 33, 318-320.	3.9	24
38	Large-scale read/write margin measurement in 45nm CMOS SRAM arrays. , 2008, , .		23
39	Four-Terminal-Relay Body-Biasing Schemes for Complementary Logic Circuits. IEEE Electron Device Letters, 2010, 31, 890-892.	3.9	21
40	Design Requirements for Steeply Switching Logic Devices. IEEE Transactions on Electron Devices, 2012, 59, 326-334.	3.0	21
41	Non-Volatile Nano-Electro-Mechanical Memory for Energy-Efficient Data Searching. IEEE Electron Device Letters, 2016, 37, 31-34.	3.9	20
42	A 1.2V, 2.4GHz Fully Integrated Linear CMOS Power Amplifier with Efficiency Enhancement. , 2006, , .		19
43	Dopant-Segregated Schottky Junction Tuning With Fluorine Pre-Silicidation Ion Implant. IEEE Transactions on Electron Devices, 2010, 57, 1084-1092.	3.0	19
44	Spacer Gate Lithography for Reduced Variability Due to Line Edge Roughness. IEEE Transactions on Semiconductor Manufacturing, 2010, 23, 311-315.	1.7	19
45	Impact of back biasing on carrier transport in ultra-thin-body and BOX (UTBB) Fully Depleted SOI MOSFETs. , 2012, , .		19
46	Scaling Limitations for Flexural Beams Used in Electromechanical Devices. IEEE Transactions on Electron Devices, 2009, 56, 688-691.	3.0	18
47	Planar GeOI TFET Performance Improvement With Back Biasing. IEEE Transactions on Electron Devices, 2012, 59, 1629-1635.	3.0	18
48	High-Mobility Ge pMOSFETs With Crystalline ZrO <sub>2</sub> Dielectric. IEEE Electron Device Letters, 2019, 40, 371-374.	3.9	18
49	Pull-In and Release Voltage Design for Nanoelectromechanical Field-Effect Transistors. IEEE Transactions on Electron Devices, 2009, 56, 3072-3082.	3.0	17
50	Four-Terminal Relay Design for Improved Body Effect. IEEE Electron Device Letters, 2010, 31, 515-517.	3.9	17
51	Embedded Nano-Electro-Mechanical Memory for Energy-Efficient Reconfigurable Logic. IEEE Electron Device Letters, 2016, 37, 1563-1565.	3.9	17
52	Prospects for MEM logic switch technology. , 2010, , .		16
53	Design of Gate-All-Around Silicon MOSFETs for 6-T SRAM Area Efficiency and Yield. IEEE Transactions on Electron Devices, 2014, 61, 2371-2377.	3.0	16
54	Multiple-Input Relay Design for More Compact Implementation of Digital Logic Circuits. IEEE Electron Device Letters, 2012, 33, 281-283.	3.9	15

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55	Comparative Study of Uniform Versus Supersteep Retrograde MOSFET Channel Doping and Implications for 6-T SRAM Yield. IEEE Transactions on Electron Devices, 2013, 60, 1790-1793.	3.0	15
56	Variation-Aware Comparative Study of 10-nm GAA Versus FinFET 6-T SRAM Performance and Yield. IEEE Transactions on Electron Devices, 2014, 61, 3949-3954.	3.0	15
57	Effect of Body Biasing on the Energy-Delay Performance of Logic Relays. IEEE Electron Device Letters, 2015, 36, 862-864.	3.9	15
58	Nanomechanical Switch Designs to Overcome the Surface Adhesion Energy Limit. IEEE Electron Device Letters, 2015, 36, 963-965.	3.9	15
59	Scale-Length Assessment of the Trigate Bulk MOSFET Design. IEEE Transactions on Electron Devices, 2009, 56, 2840-2842.	3.0	14
60	A Novel Self-Aligned 4-Bit SONOS-Type Nonvolatile Memory Cell With T-Gate and I-Shaped FinFET Structure. IEEE Transactions on Electron Devices, 2010, 57, 1728-1736.	3.0	14
61	Impact of Gate Line-Edge Roughness (LER) Versus Random Dopant Fluctuations (RDF) on Germanium-Source Tunnel FET Performance. IEEE Nanotechnology Magazine, 2013, 12, 1061-1067.	2.0	14
62	Nanocrystal-Embedded-Insulator Ferroelectric Negative Capacitance FETs with Sub-kT/q Swing. IEEE Electron Device Letters, 2018, , 1-1.	3.9	14
63	Multi-input/multi-output relay design for more compact and versatile implementation of digital logic with zero leakage. , 2012, , .		13
64	Physically Based Modeling of Stress-Induced Variation in Nanoscale Transistor Performance. IEEE Transactions on Device and Materials Reliability, 2011, 11, 378-386.	2.0	12
65	Electromechanical Diode Cell for Cross-Point Nonvolatile Memory Arrays. IEEE Electron Device Letters, 2012, 33, 131-133.	3.9	12
66	MOSFET performance and scalability enhancement by insertion of oxygen layers. , 2012, , .		12
67	The Effect of Random Dopant Fluctuation on Specific Contact Resistivity. IEEE Transactions on Electron Devices, 2010, 57, 273-281.	3.0	11
68	Interfacial Adhesion between Rough Surfaces of Polycrystalline Silicon and Its Implications for M/NEMS Technology. Journal of Adhesion Science and Technology, 2010, 24, 2545-2556.	2.6	11
69	Extension of Planar Bulk n-Channel MOSFET Scaling With Oxygen Insertion Technology. IEEE Transactions on Electron Devices, 2014, 61, 3345-3349.	3.0	11
70	Microelectromechanical Relay and Logic Circuit Design for Zero Crowbar Current. IEEE Transactions on Electron Devices, 2014, 61, 3296-3302.	3.0	11
71	Energy-delay performance optimization of NEM logic relay. , 2015, , .		11
72	Demonstration of 50-mV Digital Integrated Circuits with Microelectromechanical Relays. , 2018, , .		11

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73	Compensation of systematic variations through optimal biasing of SRAM wordlines. , 2008, , .		10
74	Channel Stress and Ballistic Performance Advantages of Gate-All-Around FETs and Inserted-Oxide FinFETs. IEEE Nanotechnology Magazine, 2017, 16, 209-216.	2.0	10
75	Ultra-Low-Voltage Operation of MEM Relays for Cryogenic Logic Applications. , 2019, , .		10
76	Flicker-Noise Impact on Scaling of Mixed-Signal CMOS With HfSiON. IEEE Transactions on Electron Devices, 2008, 55, 417-422.	3.0	9
77	Enhanced endurance of dual-bit SONOS NVM cells using the GIDL read method. , 2008, , .		9
78	Impact of Gate-Induced Strain on MuGFET Reliability. IEEE Electron Device Letters, 2008, 29, 916-919.	3.9	9
79	DSS MOSFET With Tunable SDE Regions by Fluorine Pre-Silicidation Ion Implant. IEEE Electron Device Letters, 2010, 31, 785-787.	3.9	9
80	Recent progress and challenges for relay logic switch technology. , 2012, , .		8
81	Threshold Voltage and DIBL Variability Modeling Based on Forward and Reverse Measurements for SRAM and Analog MOSFETs. IEEE Transactions on Electron Devices, 2015, 62, 1119-1126.	3.0	8
82	Tilted ion implantation as a cost-efficient sublithographic patterning technique. Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics, 2016, 34, 040608.	1.2	8
83	Impact of flash annealing on performance and reliability of high- $\kappa$ /metal-gate MOSFETs for sub-45 nm CMOS. , 2007, , .		7
84	Dual-Bit Gate-Sidewall Storage FinFET NVM and New Method of Charge Detection. IEEE Electron Device Letters, 2007, 28, 502-505.	3.9	7
85	Convex Channel Design for Improved Capacitorless DRAM Retention Time. , 2009, , .		7
86	Reliability of Nanoelectromechanical Nonvolatile Memory (NEMory) Cells. IEEE Electron Device Letters, 2009, 30, 269-271.	3.9	7
87	MuGFET carrier mobility and velocity: Impacts of fin aspect ratio, orientation and stress. , 2010, , .		7
88	First Demonstration of Quasi-Planar Segmented-Channel MOSFET Design for Improved Scalability. IEEE Transactions on Electron Devices, 2012, 59, 2273-2276.	3.0	7
89	NEM relay design for compact, ultra-low-power digital logic circuits. , 2014, , .		7
90	Variability Study for Low-Voltage Microelectromechanical Relay Operation. IEEE Transactions on Electron Devices, 2018, 65, 1529-1534.	3.0	7

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91	Impact of random telegraph signals on $V_{\text{min}}$ in 45nm SRAM. , 2009, , .		6
92	FinFET Design for Tolerance to Statistical Dopant Fluctuations. IEEE Nanotechnology Magazine, 2009, 8, 375-378.	2.0	6
93	Study of High-Performance Ge pMOSFET Scaling Accounting for Direct Source-to-Drain Tunneling. IEEE Transactions on Electron Devices, 2011, 58, 2895-2902.	3.0	6
94	Fabrication of $\text{Si}_{1-x}\text{Ge}_x/\text{Si}$ pMOSFETs Using Corrugated Substrates for Improved $I_{\text{ON}}$ and Reduced Layout-Width Dependence. IEEE Transactions on Electron Devices, 2013, 60, 153-158.	3.0	6
95	Sub-lithographic Patterning via Tilted Ion Implantation for Scaling Beyond the 7-nm Technology Node. IEEE Transactions on Electron Devices, 2017, 64, 231-236.	3.0	6
96	Effects of oxygen-inserted layers on diffusion of boron, phosphorus, and arsenic in silicon for ultra-shallow junction formation. Journal of Applied Physics, 2018, 123, .	2.5	6
97	Reducing adhesion energy of nano-electro-mechanical relay contacts by self-assembled Perfluoro (2,3-Dimethylbutan-2-ol) coating. AIP Advances, 2019, 9, 055329.	1.3	6
98	6-T SRAM cell design with gate-all-around silicon nanowire MOSFETs. , 2013, , .		5
99	Electromechanical Diode Cell Scaling for High-Density Nonvolatile Memory. IEEE Transactions on Electron Devices, 2014, 61, 1382-1387.	3.0	5
100	Tri-gate bulk MOSFET design for improved robustness to random dopant fluctuations. , 2008, , .		4
101	SRAM yield enhancement with thin-BOX FD-SOI. , 2009, , .		4
102	SRAM cell design considerations for SOI technology. , 2009, , .		4
103	Inkjet-printed micro-electro-mechanical switches. , 2011, , .		4
104	Variation Study and Implications for BJT-Based Thin-Body Capacitorless DRAM. IEEE Electron Device Letters, 2012, 33, 312-314.	3.9	4
105	Rapid melt grown germanium gate photoMOSFET on a silicon waveguide. , 2013, , .		4
106	Effects of oxygen-inserted layers and oxide capping layer on dopant activation for the formation of ultrashallow p-n junctions in silicon. Journal of Vacuum Science and Technology B: Nanotechnology and Microelectronics, 2018, 36, 061211.	1.2	4
107	Simulation-Based Study of $\text{Si}/\text{Si}_{0.9}\text{Ge}_{0.1}/\text{Si}$ Hetero-Channel FinFET for Enhanced Performance in Low-Power Applications. IEEE Electron Device Letters, 2019, 40, 363-366.	3.9	4
108	SRAM yield and performance enhancements with tri-gate bulk MOSFETs. , 2008, , .		3

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109	Full 3D Simulation of 6T-SRAM Cells for the 22nm Node. , 2009, , .		3
110	SRAM design in fully-depleted SOI technology. , 2010, , .		3
111	Embedded Memory Capability of Four-Terminal Relay Technology. IEEE Transactions on Electron Devices, 2011, 58, 891-894.	3.0	3
112	Micro-relay reliability improvement by inkjet-printed microshell encapsulation. , 2013, , .		3
113	Cell Ratio Tuning for High-Density SRAM Voltage Scaling With Inserted-Oxide FinFETs. IEEE Electron Device Letters, 2016, 37, 1539-1542.	3.9	3
114	Modeling Nanoelectromechanical Switches With Random Surface Roughness. IEEE Transactions on Electron Devices, 2017, 64, 2409-2416.	3.0	3
115	Simulation-Based Study of High-Density SRAM Voltage Scaling Enabled by Inserted-Oxide FinFET Technology. IEEE Transactions on Electron Devices, 2019, 66, 1754-1759.	3.0	3
116	Breakdown and Healing of Tungsten-Oxide Films on Microelectromechanical Relay Contacts. Journal of Microelectromechanical Systems, 2022, 31, 265-274.	2.5	3
117	Low-Standby-Power Bulk MOSFET Design Using High- $\kappa$ Trench Isolation. IEEE Electron Device Letters, 2009, 30, 1380-1382.	3.9	2
118	Comparative Study of FinFET Versus Quasi-Planar HTI MOSFET for Ultimate Scalability. IEEE Transactions on Electron Devices, 2010, 57, 3250-3256.	3.0	2
119	Why hybridize NEMS with CMOS?. , 2014, , .		2
120	Comparison of 10 nm GAA vs. FinFET 6-T SRAM performance and yield. , 2014, , .		2
121	Reducing adhesion energy of micro-relay electrodes by ion beam synthesized oxide nanolayers. APL Materials, 2017, 5, 036103.	5.1	2
122	$V_{T\text{eff}}$ Adjustment by $L_{\text{eff}}$ Engineering for LSTP Single Gate Work-function CMOS FinFET Technology. , 2006, , .		1
123	WireFET Technology for 3-D Integrated Circuits. , 2006, , .		1
124	Defect Passivation by Selenium-Ion Implantation for Poly-Si Thin Film Transistors. IEEE Electron Device Letters, 2007, 28, 725-727.	3.9	1
125	Predictive Compact Modeling for Strain Effects in Nanoscale Transistors. , 2009, , .		1
126	Electrical Characterization of Etch Rate for Micro- and Nano-Scale Gap Formation. Journal of Microelectromechanical Systems, 2010, 19, 1260-1263.	2.5	1



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127	Effectiveness of strained-Si technology for thin-body MOSFETs. , 2012, , .		1
128	High-density SRAM voltage scaling enabled by inserted-oxide FinFET technology. , 2017, , .		1
129	Design optimization of sub-5â€%nm node nanosheet field effect transistors to minimize self-heating effects. Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics, 2021, 39, .	1.2	1
130	Dual-bit SONOS FinFET Non-Volatile Memory Cell and New Method of Charge Detection. , 2007, , .		0
131	WetFET A Novel Fluidic Gate-Dielectric Transistor for Sensor Applications. , 2007, , .		0
132	Multi-Gate MOSFETs with Dual Contact Etch Stop Liner Stressors on Tensile Metal Gate and Strained Silicon on Insulator (sSOI). , 2007, , .		0
133	Steep-subthreshold-slope devices on SOI. , 2011, , .		0
134	Variation-aware study of BJT-based capacitorless DRAM cell scaling limit. , 2012, , .		0
135	Oxygen-inserted SegFET: A candidate for 10-nm node system-on-chip applications. , 2014, , .		0
136	Tuning of Schottky barrier height using oxygen-inserted (OI) layers and fluorine implantation. AIP Advances, 2020, 10, 065310.	1.3	0
137	(Keynote) Silicon-Germanium: Enabler of Moore's Law. ECS Meeting Abstracts, 2018, , .	0.0	0
138	Reliability of Nanoelectromechanical Nonvolatile Memory (NEMory) Cells. IEEE Electron Device Letters, 2009, , .	3.9	0