

Jian F Zhang

List of Publications by Year in descending order

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150
times ranked

1178
citing authors

#	ARTICLE	IF	CITATIONS
1	Hole Traps in Silicon Dioxides—Part I: Properties. IEEE Transactions on Electron Devices, 2004, 51, 1267-1273.	3.0	126
2	Positive bias temperature instability in MOSFETs. IEEE Transactions on Electron Devices, 1998, 45, 116-124.	3.0	70
3	Hole trapping and trap generation in the gate silicon dioxide. IEEE Transactions on Electron Devices, 2001, 48, 1127-1135.	3.0	63
4	Two-Pulse $SC_{\text{eff}}^{\text{V}}$: A New Method for Characterizing Electron Traps in the Bulk of $\text{SiO}_2/\text{high-}\kappa$ Dielectric Stacks. IEEE Electron Device Letters, 2008, 29, 1043-1046.	3.9	55
5	NBTI Lifetime Prediction and Kinetics at Operation Bias Based on Ultrafast Pulse Measurement. IEEE Transactions on Electron Devices, 2010, 57, 228-237.	3.0	55
6	Energy Distribution of Positive Charges in Gate Dielectric: Probing Technique and Impacts of Different Defects. IEEE Transactions on Electron Devices, 2013, 60, 1745-1753.	3.0	50
7	A Single Pulse Charge Pumping Technique for Fast Measurements of Interface States. IEEE Transactions on Electron Devices, 2011, 58, 1490-1498.	3.0	48
8	Stress-Induced Positive Charge in Hf-Based Gate Dielectrics: Impact on Device Performance and a Framework for the Defect. IEEE Transactions on Electron Devices, 2008, 55, 1647-1656.	3.0	44
9	An Investigation on Border Traps in $\text{In}^{0.53}\text{Ga}_{0.47}\text{As}$ MOSFETs With an $\text{In}_{0.53}\text{Ga}_{0.47}\text{As}$ Channel. IEEE Transactions on Electron Devices, 2015, 62, 3633-3639.	3.0	44
10	An Analysis of the NBTI-Induced Threshold Voltage Shift Evaluated by Different Techniques. IEEE Transactions on Electron Devices, 2009, 56, 1086-1093.	3.0	42
11	Determination of capture cross sections for as-grown electron traps in $\text{HfO}_2/\text{HfSiO}$ stacks. Journal of Applied Physics, 2006, 100, 093716.	2.5	41
12	Defects and instabilities in Hf-dielectric/ SiON stacks (Invited Paper). Microelectronic Engineering, 2009, 86, 1883-1887.	2.4	39
13	Impact of RTN on Pattern Recognition Accuracy of RRAM-Based Synaptic Neural Network. IEEE Electron Device Letters, 2018, 39, 1652-1655.	3.9	38
14	Hole-Traps in Silicon Dioxides—Part II: Generation Mechanism. IEEE Transactions on Electron Devices, 2004, 51, 1274-1280.	3.0	36
15	Effects of Measurement Temperature on NBTI. IEEE Electron Device Letters, 2007, 28, 298-300.	3.9	36
16	An Assessment of the Location of As-Grown Electron Traps in $\text{HfO}_2/\text{HfSiO}$ Stacks. IEEE Electron Device Letters, 2006, 27, 817-820.	3.9	35
17	Reliable Time Exponents for Long Term Prediction of Negative Bias Temperature Instability by Extrapolation. IEEE Transactions on Electron Devices, 2017, 64, 1467-1473.	3.0	35
18	Dominant Layer for Stress-Induced Positive Charges in Hf-Based Gate Stacks. IEEE Electron Device Letters, 2008, 29, 1360-1363.	3.9	34

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19	New Analysis Method for Time-Dependent Device-To-Device Variation Accounting for Within-Device Fluctuation. IEEE Transactions on Electron Devices, 2013, 60, 2505-2511.	3.0	34
20	Two types of neutral electron traps generated in the gate silicon dioxide. IEEE Transactions on Electron Devices, 2002, 49, 1868-1875.	3.0	33
21	Properties and dynamic behavior of electron traps in HfO ₂ /SiO ₂ stacks. Microelectronic Engineering, 2005, 80, 366-369.	2.4	33
22	Energy and Spatial Distributions of Electron Traps Throughout $\text{SiO}_2/\text{Al}_2\text{O}_3$ Stacks as the IPD in Flash Memory Application. IEEE Transactions on Electron Devices, 2010, 57, 288-296.	3.0	33
23	Assessment of capture cross sections and effective density of electron traps generated in silicon dioxides. IEEE Transactions on Electron Devices, 2006, 53, 1347-1354.	3.0	30
24	Effects of hydrogen on positive charges in gate oxides. Journal of Applied Physics, 2005, 97, 073703.	2.5	29
25	Time-dependent variability in RRAM-based analog neuromorphic system for pattern recognition. , 2017, , .		29
26	On positive charge formed under negative bias temperature stress. Journal of Applied Physics, 2007, 101, 024516.	2.5	28
27	Defect Loss: A New Concept for Reliability of MOSFETs. IEEE Electron Device Letters, 2012, 33, 480-482.	3.9	28
28	Insight Into Electron Traps and Their Energy Distribution Under Positive Bias Temperature Stress and Hot Carrier Aging. IEEE Transactions on Electron Devices, 2016, 63, 3642-3648.	3.0	28
29	Degradation of oxides and oxynitrides under hot hole stress. IEEE Transactions on Electron Devices, 2000, 47, 378-386.	3.0	26
30	As-grown-generation (AG) model of NBTI: A shift from fitting test data to prediction. Microelectronics Reliability, 2018, 80, 109-123.	1.7	25
31	Development of a Technique for Characterizing Bias Temperature Instability-Induced Device-to-Device Variation at SRAM-Relevant Conditions. IEEE Transactions on Electron Devices, 2014, 61, 3081-3089.	3.0	24
32	A New Multipulse Technique for Probing Electron Trap Energy Distribution in High- κ Materials for Flash Memory Application. IEEE Transactions on Electron Devices, 2010, 57, 2484-2492.	3.0	23
33	NBTI degradation effect on advanced-process 45nm high-k PMOSFETs with geometric and process variations. Microelectronics Reliability, 2010, 50, 1283-1289.	1.7	23
34	NBTI-Generated Defects in Nanoscaled Devices: Fast Characterization Methodology and Modeling. IEEE Transactions on Electron Devices, 2017, 64, 4011-4017.	3.0	23
35	Dependence of Switching Probability on Operation Conditions in Ge _x Se _{1-x} Ovonic Threshold Switching Selectors. IEEE Electron Device Letters, 2019, 40, 1269-1272.	3.9	23
36	Key Issues and Solutions for Characterizing Hot Carrier Aging of Nanometer Scale nMOSFETs. IEEE Transactions on Electron Devices, 2017, 64, 2478-2484.	3.0	22

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37	A low-power and high-speed True Random Number Generator using generated RTN. , 2018, , .		22
38	As-grown-Generation Model for Positive Bias Temperature Instability. IEEE Transactions on Electron Devices, 2018, 65, 3662-3668.	3.0	22
39	Analysis of the kinetics for interface state generation following hole injection. Journal of Applied Physics, 2003, 93, 6107-6116.	2.5	21
40	Interface quality of SiGe oxide prepared by RF plasma anodisation. Electronics Letters, 1994, 30, 1988-1989.	1.0	21
41	Relation between hole traps and hydrogenous species in silicon dioxides. Solid-State Electronics, 2002, 46, 1839-1847.	1.4	20
42	RTN-based defect tracking technique: Experimentally probing the spatial and energy profile of the critical filament region and its correlation with HfO_2 /RRAM switching operation and failure mechanism. , 2016, , .		20
43	Electrical signature of the defect associated with gate oxide breakdown. IEEE Electron Device Letters, 2006, 27, 393-395.	3.9	19
44	Assessment of plasma-grown oxides on Si:Ge substrates. Applied Surface Science, 1989, 39, 57-64.	6.1	18
45	Effects of high field injection on the hot carrier induced degradation of submicrometer pMOSFET's. IEEE Transactions on Electron Devices, 1995, 42, 1269-1276.	3.0	18
46	The Over-Reset Phenomenon in TaO_5 RRAM Device Investigated by the RTN-Based Defect Probing Technique. IEEE Electron Device Letters, 2018, 39, 955-958.	3.9	18
47	Impact of gate materials on positive charge formation in HfO_2 - SiO_2 stacks. Applied Physics Letters, 2006, 89, 023507.	3.3	17
48	New Insights Into Defect Loss, Slowdown, and Device Lifetime Enhancement. IEEE Transactions on Electron Devices, 2013, 60, 413-419.	3.0	17
49	GeSe-Based Ovonic Threshold Switching Volatile True Random Number Generator. IEEE Electron Device Letters, 2020, 41, 228-231.	3.9	17
50	Energy Distribution of Positive Charges in $\text{Al}_2\text{O}_3/\text{GeO}_2/\text{Ge}$ pMOSFETs. IEEE Electron Device Letters, 2014, 35, 160-162.	3.9	16
51	Dynamic behavior of high-pressure arcs near the flow stagnation point. IEEE Transactions on Plasma Science, 1989, 17, 524-533.	1.3	15
52	Positive Bias-Induced V_{th} Instability in Graphene Field Effect Transistors. IEEE Electron Device Letters, 2012, 33, 339-341.	3.9	15
53	Understanding charge traps for optimizing Si-passivated Ge nMOSFETs. , 2016, , .		15
54	Exploring the Impact of Random Telegraph Noise-Induced Accuracy Loss on Resistive RAM-Based Deep Neural Network. IEEE Transactions on Electron Devices, 2020, 67, 3335-3340.	3.0	15

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55	Electron Trapping in HfAlO High- κ Stack for Flash Memory Applications: An Origin of V_{th} Window Closure During Cycling Operations. IEEE Transactions on Electron Devices, 2011, 58, 1344-1351.	3.0	14
56	Characterization of Electron Traps in Si-Capped Ge MOSFETs With $\text{HfO}_2/\text{SiO}_2$ Gate Stack. IEEE Electron Device Letters, 2012, 33, 1681-1683.	3.9	14
57	Observation of the Ambient Effect in BTI Characteristics of Back-Gated Single Layer Graphene Field Effect Transistors. IEEE Transactions on Electron Devices, 2013, 60, 2682-2686.	3.0	14
58	A test-proven As-grown-Generation (A-G) model for predicting NBTI under use-bias. , 2015, , .		14
59	Hole trap generation in gate dielectric during substrate hole injection. Semiconductor Science and Technology, 2004, 19, L1-L3.	2.0	13
60	Threshold voltage instability of p-channel metal-oxide-semiconductor field effect transistors with hafnium based dielectrics. Applied Physics Letters, 2007, 90, 143502.	3.3	13
61	Reliability nano-characterization of thin SiO ₂ and HfSixOy/SiO ₂ gate stacks. Microelectronic Engineering, 2007, 84, 2290-2293.	2.4	13
62	V_{th} Shift in Single-Layer Graphene Field-Effect Transistors and Its Correlation With Raman Inspection. IEEE Transactions on Device and Materials Reliability, 2012, 12, 478-481.	2.0	13
63	Time-dependent variation: A new defect-based prediction methodology. , 2014, , .		13
64	Investigation of Preexisting and Generated Defects in Nonfilamentary a-Si/TiO ₂ RRAM and Their Impacts on RTN Amplitude Distribution. IEEE Transactions on Electron Devices, 2018, 65, 970-977.	3.0	13
65	Impact of process conditions on interface and high- $\hat{\rho}$ trap density studied by variable Tcharge-Tdischarge charge pumping (VT2CP). Microelectronic Engineering, 2007, 84, 1951-1955.	2.4	12
66	A New Mobility Extraction Technique Based on Simultaneous Ultrafast I_{dd} and V_{g} and C_{m} Measurements in MOSFETs. IEEE Transactions on Electron Devices, 2012, 59, 1906-1914.	3.0	12
67	Trigger-When-Charged: A Technique for Directly Measuring RTN and BTI-Induced Threshold Voltage Fluctuation Under Use- V_{dd} . IEEE Transactions on Electron Devices, 2019, 66, 1482-1488.	3.0	12
68	Random-telegraph-noise-enabled true random number generator for hardware security. Scientific Reports, 2020, 10, 17210.	3.3	12
69	An Assessment of the Statistical Distribution of Random Telegraph Noise Time Constants. IEEE Access, 2020, 8, 182273-182282.	4.2	12
70	Interface state behaviour of plasma grown oxides following low temperature annealing. Applied Surface Science, 1989, 39, 374-380.	6.1	11
71	Donor-like interface trap generation in pMOSFET's at room temperature. IEEE Transactions on Electron Devices, 1994, 41, 740-744.	3.0	11
72	Statistical characterization of vertical poly-Si channel using charge pumping technique for 3D flash memory optimization. Microelectronic Engineering, 2013, 109, 39-42.	2.4	11

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73	Probing the Critical Region of Conductive Filament in Nanoscale HfO_2 Resistive-Switching Device by Random Telegraph Signals. IEEE Transactions on Electron Devices, 2017, 64, 4099-4105.	3.0	11
74	Low-temperature gate dielectrics formed by plasma anodisation of silicon nitride. Electronics Letters, 1988, 24, 1269.	1.0	11
75	Reliability degradation of thin $\text{HfO}_2/\text{SiO}_2$ gate stacks by remote RF hydrogen and deuterium plasma treatment. Thin Solid Films, 2008, 517, 207-208.	1.8	10
76	Investigation of Abnormal $V_{\text{TH}}/V_{\text{FB}}$ Shifts Under Operating Conditions in Flash Memory Cells With Al_2O_3 High- κ Gate Stacks. IEEE Transactions on Electron Devices, 2012, 59, 1870-1877.	3.0	10
77	TDDDB Mechanism in a-Si/TiO ₂ Nonfilamentary RRAM Device. IEEE Transactions on Electron Devices, 2019, 66, 777-784.	3.0	10
78	Cycling Induced Metastable Degradation in GeSe Ovonic Threshold Switching Selector. IEEE Electron Device Letters, 2021, 42, 1448-1451.	3.9	10
79	Impact of different defects on the kinetics of negative bias temperature instability of hafnium stacks. Applied Physics Letters, 2008, 92, 013501.	3.3	9
80	An assessment of the mobility degradation induced by remote charge scattering. Applied Physics Letters, 2009, 95, 263502.	3.3	9
81	Characterization of Negative-Bias Temperature Instability of Ge MOSFETs With TeX $\text{GeO}_2/\text{Al}_2\text{O}_3$ Stack. IEEE Transactions on Electron Devices, 2014, 61, 1307-1315.	3.0	9
82	A Comparative Study of Defect Energy Distribution and Its Impact on Degradation Kinetics in GeO_2/Ge and SiON/Si pMOSFETs. IEEE Transactions on Electron Devices, 2016, 63, 3830-3836.	3.0	9
83	A Dual-Point Technique for the Entire $I_D \sim V_G$ Characterization Into Subthreshold Region Under Random Telegraph Noise Condition. IEEE Electron Device Letters, 2019, 40, 674-677.	3.9	9
84	On the Accuracy in Modeling the Statistical Distribution of Random Telegraph Noise Amplitude. IEEE Access, 2021, 9, 43551-43561.	4.2	9
85	On the mechanism of electron trap generation in gate oxides. Microelectronic Engineering, 2001, 59, 89-94.	2.4	8
86	Process-induced positive charges in Hf-based gate stacks. Journal of Applied Physics, 2008, 103, 014507.	2.5	8
87	A discharge-based multi-pulse technique (DMP) for probing electron trap energy distribution in high-k materials for Flash memory application. , 2009, , .		8
88	New insights into the design for end-of-life variability of NBTI in scaled high- κ /metal-gate Technology for the nano-reliability era. , 2014, , .		8
89	Impact of Hot Carrier Aging on Random Telegraph Noise and Within a Device Fluctuation. IEEE Journal of the Electron Devices Society, 2016, 4, 15-21.	2.1	8
90	Interface States Beyond Band Gap and Their Impact on Charge Carrier Mobility in MOSFETs. IEEE Transactions on Electron Devices, 2012, 59, 783-790.	3.0	7

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91	Read and Pass Disturbance in the Programmed States of Floating Gate Flash Memory Cells With High- κ Interpoly Gate Dielectric Stacks. IEEE Transactions on Electron Devices, 2013, 60, 2261-2267.	3.0	7
92	Bias Temperature Instability of MOSFETs: Physical Processes, Models, and Prediction. Electronics (Switzerland), 2022, 11, 1420.	3.1	6
93	On the hot hole induced post-stress interface trap generation in MOSFET's. , 1996, , .		5
94	Hydrogen induced positive charge in Hf-based dielectrics. Microelectronic Engineering, 2007, 84, 2354-2357.	2.4	5
95	A Discharge-Based Pulse Technique for Probing the Energy Distribution of Positive Charges in Gate Dielectric. IEEE Transactions on Semiconductor Manufacturing, 2015, 28, 221-226.	1.7	5
96	A Fast Extraction Method of Energy Distribution of Border Traps in AlGaN/GaN MIS-HEMT. IEEE Journal of the Electron Devices Society, 2020, 8, 905-910.	2.1	5
97	Impact of Relaxation on the Performance of GeSe True Random Number Generator Based on Ovonic Threshold Switching. IEEE Electron Device Letters, 2022, 43, 1061-1064.	3.9	5
98	Relation between hydrogen and the generation of interface state precursors. Microelectronic Engineering, 1999, 48, 135-138.	2.4	4
99	On the role of hydrogen in hole-induced electron trap creation. Semiconductor Science and Technology, 2004, 19, 1333-1338.	2.0	4
100	NBTI of Ge pMOSFETs: Understanding defects and enabling lifetime prediction. , 2014, , .		4
101	Experimental Evidence Toward Understanding Charge Pumping Signals in 3-D Devices With Poly-Si Channel. IEEE Transactions on Electron Devices, 2014, 61, 1501-1507.	3.0	4
102	Energy distribution of positive charges in high-k dielectric. Microelectronics Reliability, 2014, 54, 2329-2333.	1.7	4
103	AC NBTI of Ge pMOSFETs: Impact of energy alternating defects on lifetime prediction. , 2015, , .		4
104	True Random Number Generator (TRNG) for Secure Communications in the Era of IoT. , 2020, , .		4
105	The computation of self-similar arcs. Computer Physics Communications, 1987, 47, 267-280.	7.5	3
106	Plasma oxidation of Si and SiGe. Microelectronic Engineering, 1995, 28, 221-224.	2.4	3
107	Generation of mobile hydrogenous ions in gate oxide and their potential applications. Electronics Letters, 2001, 37, 716.	1.0	3
108	Real-time observation of charging dynamics in hafnium silicate films using MOS capacitance transients. Microelectronic Engineering, 2007, 84, 2390-2393.	2.4	3

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109	On the activation and passivation of precursors for process-induced positive charges in Hf-dielectric stacks. Journal of Applied Physics, 2009, 105, 054505.	2.5	3
110	Impact of PDA temperature on electron trap energy and spatial distributions in SiO ₂ /Al ₂ O ₃ stack as the IPD in Flash memory cells. Microelectronic Engineering, 2009, 86, 1834-1837.	2.4	3
111	RTN in Ge _x Se _{1-x} OTS selector devices. Microelectronic Engineering, 2019, 215, 110990.	2.4	3
112	Stochastic Computing Based on Volatile GeSe Ovonic Threshold Switching Selectors. IEEE Electron Device Letters, 2020, 41, 1496-1499.	3.9	3
113	Oxide Defects. , 2014, , 253-285.		3
114	An Integral Methodology for Predicting Long-Term RTN. IEEE Transactions on Electron Devices, 2022, 69, 3869-3875.	3.0	3
115	Hydrogen induced and plasma charging enhanced positive charge generation in gate oxides. , 0, , .		2
116	MOSFETs reliability: electron trapping in gate dielectric. , 0, , .		2
117	Dependence of energy distributions of interface states on stress conditions. Microelectronic Engineering, 2001, 59, 95-99.	2.4	2
118	Evaluation and Solutions for P/E Window Instability Induced by Electron Trapping in High- κ Inter-gate Dielectrics of Flash Memory Cells. IEEE Transactions on Electron Devices, 2014, 61, 1299-1306.	3.0	2
119	Generation and annealing of hot hole induced interface states. Microelectronic Engineering, 1997, 36, 227-230.	2.4	1
120	Still image compression based on 2D discrete wavelet transform. Electronics Letters, 1999, 35, 1934.	1.0	1
121	Generation of hole traps in silicon dioxides. , 0, , .		1
122	A review of positive charge formation in gate oxides. , 0, , .		1
123	Abnormal V_{TH}/V_{FB} shift caused by as-grown mobile charges in Al ₂ O ₃ and its impacts on Flash memory cell operations. , 2011, , .		1
124	Development of a Fast Technique for Characterizing Interface States. ECS Transactions, 2011, 35, 81-93.	0.5	1
125	Towards understanding hole traps and NBTI of Ge/GeO ₂ /Al ₂ O ₃ structure. Microelectronic Engineering, 2013, 109, 43-45.	2.4	1
126	Optimization of inter-gate-dielectrics in hybrid float gate devices to reduce window instability during memory operations. Microelectronics Reliability, 2014, 54, 2258-2261.	1.7	1

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127	ESD characterization of planar InGaAs devices. , 2015, , .		1
128	Understanding Generated RTN as an Entropy Source for True Random Number Generators. , 2021, , .		1
129	Recovery of submicrometre pMOSFETs from hot carrier degradation by high field injection. Electronics Letters, 1993, 29, 1097.	1.0	0
130	A comparative study of positive and negative bias temperature instabilities in MOSFETs. , 0, , .		0
131	Relation between hole traps and non-reactive hydrogen-induced positive charges. Microelectronic Engineering, 2001, 59, 67-72.	2.4	0
132	Defect Losses under Different Processes, Stress, Recovery, and Anneal Conditions. ECS Transactions, 2013, 52, 929-934.	0.5	0
133	Time-dependent device-to-device variation accounting for within-device fluctuation (TVF): A new characterization technique. , 2014, , .		0
134	NBTI prediction and its induced time dependent variation. , 2015, , .		0
135	Hot carrier aging of nano-meter devices. , 2016, , .		0
136	Hot carrier aging of nano-scale devices: Characterization method, statistical variation, and their impact on use voltage. , 2017, , .		0
137	A framework for defects in PBTI and hot carrier ageing. , 2018, , .		0
138	Predictive As-grown-generation model for NBTI of advanced CMOS devices and circuits. , 2018, , .		0
139	An assessment of RTN-induced threshold voltage jitter. , 2019, , .		0
140	Understanding lifetime prediction methodology for In _{0.53} Ga _{0.47} As nFETs under Positive Bias Temperature Instability (PBTI) condition. , 2019, , .		0
141	A Comparative Study of AC Positive Bias Temperature Instability of Germanium nMOSFETs With GeO ₂ /Ge and Si-cap/Ge Gate Stack. IEEE Journal of the Electron Devices Society, 2021, 9, 539-544.	2.1	0
142	Microscopy of plasma anodised materials for VLSI. Proceedings Annual Meeting Electron Microscopy Society of America, 1990, 48, 632-633.	0.0	0
143	An integrated method for extracting the statistical distribution of RTN time constants. , 2021, , .		0
144	Investigation on the Implementation of Stateful Minority Logic for Future In-Memory Computing. IEEE Access, 2021, 9, 168648-168655.	4.2	0

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145	Defect loss and its physical processes. , 2020, , .		0
146	A Probability-Based Strong Physical Unclonable Function With Strong Machine Learning Immunity. IEEE Electron Device Letters, 2022, 43, 138-141.	3.9	0
147	A comparative study of positive and negative bias temperature instabilities in MOSFETs. , 0, , .		0
148	Realization of NOR logic using Cu/ZnO/Pt CBRAM. , 2022, , .		0
149	Realization of Logical NOT Based on Standard DRAM Cells for security-centric Compute-in-Memory applications. , 2022, , .		0