Sourabh Khandelwal

List of Publications by Year
in descending order

123 papers	2,991 citations	257450 24 h-index	197818 49 g-index
125 all docs	125 docs citations	125 times ranked	2114 citing authors

#	Article	IF	Citations
1	Noise Models. , 2022, , 125-130.		0
2	Parameter Extraction in ASM-HEMT Model. , 2022, , 131-150.		2
3	A Physics-Based Model of Vertical TFETâ€"Part II: Drain Current Model. IEEE Transactions on Electron Devices, 2022, 69, 3974-3982.	3.0	4
4	Compact and Energy Efficient Neuron With Tunable Spiking Frequency in 22-nm FDSOI. IEEE Nanotechnology Magazine, 2022, 21, 189-195.	2.0	4
5	A Physics-Based Model of Vertical TFETâ€"Part I: Modeling of Electric Potential. IEEE Transactions on Electron Devices, 2022, 69, 3966-3973.	3.0	2
6	Modeling Substrate Voltage Effects on GaN I-V Characteristics with ASM-HEMT model. , 2022, , .		3
7	Deep Learning-Based BSIM-CMG Parameter Extraction for 10-nm FinFET. IEEE Transactions on Electron Devices, 2022, 69, 4765-4768.	3.0	17
8	Analysis and modeling of OFF-state hysteretic losses in GaN power HEMTs. Solid-State Electronics, 2021, 180, 107995.	1.4	1
9	An Accurate Compact Model for GaN Power Switches with the Physics-based ASM-HEMT Model. , 2021, , .		3
10	Small signal model and analog performance analysis of negative capacitance FETs. Solid-State Electronics, 2021, 186, 108161.	1.4	11
11	Accurate Non-linear Large Signal Physics-based Modeling for Ka-band GaN Power Amplifier Design with ASM-HEMT. , 2021, , .		5
12	L-Bot: A Physically Motivated Deep Learning Based Inductor Modeling Tool. , 2021, , .		1
13	Circuit Performance Analysis of Analog RF LNA Designed with Negative Capacitance FET. , 2021, , .		0
14	Optimal Ferroelectric Parameters for Negative Capacitance Field-Effect Transistors Based on Full-Chip Implementationsâ€"Part II: Scaling of the Supply Voltage. IEEE Transactions on Electron Devices, 2020, 67, 371-376.	3.0	4
15	Cross-Domain Optimization of Ferroelectric Parameters for Negative Capacitance Transistorsâ€"Part I: Constant Supply Voltage. IEEE Transactions on Electron Devices, 2020, 67, 365-370.	3.0	6
16	Physics-Oriented Device Model for Packaged GaN Devices. IEEE Transactions on Power Electronics, 2020, 35, 6332-6339.	7.9	7
17	An Analytical Model for Hot Carrier Induced Long-Term Degradation in Power Amplifiers. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2020, 39, 2000-2005.	2.7	5
18	Energy-Efficient Ferroelectric Field-Effect Transistor-Based Oscillators for Neuromorphic System Design. IEEE Journal on Exploratory Solid-State Computational Devices and Circuits, 2020, 6, 122-129.	1.5	11

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19	Frequency Behaviour of FeFET-Based Ultra-Low-Power Coupled Oscillator Neurons. , 2020, , .		5
20	RF simulation of self-aligned T-shape S/D contact InAs MOSFET on silicon. Solid-State Electronics, 2020, 172, 107885.	1.4	0
21	Characterization of Thermal and Trapping Time Constants in a GaN HEMT. , 2020, , .		4
22	Extreme Temperature Modeling of AlGaN/GaN HEMTs. IEEE Transactions on Electron Devices, 2020, 67, 430-437.	3.0	21
23	Consistent Surface-Potential-Based Modeling of Drain and Gate Currents in AlGaN/GaN HEMTs. IEEE Transactions on Electron Devices, 2020, 67, 455-462.	3.0	12
24	Validation of the Industry-Standard ASM-GaN Model for Gate-Length Scaling. , 2020, , .		1
25	Statistical Modeling of GaN Power Devices with ASM-GaN Model. , 2020, , .		3
26	SLC-ASM-HEMT: An Accurate compact model for SLCFET RF switch. , 2020, , .		0
27	Dependence of AM/PM non-linearity on source field-plate in GaN HEMTs. , 2020, , .		0
28	Leakage Current and Thermal Effects. , 2019, , 65-87.		1
29	Physics-based Compact Models: An Emerging Trend in Simulation-based GaN HEMT Power Amplifier Design. , 2019, , .		7
30	Core Model for Independent Multigate MOSFETs. , 2019, , 15-34.		0
31	Model for Terminal Charges and Capacitances in BSIM-IMG. , 2019, , 89-106.		0
32	Channel Current Model With Real Device Effects in BSIM-IMG. , 2019, , 35-63.		0
33	Design methodology considering evolution of statistical corners under long term degradation. Microelectronics Journal, 2019, 91, 36-41.	2.0	3
34	Modeling of the Impact of the Substrate Voltage on the Capacitances of GaN-on-Si HEMTs. IEEE Transactions on Electron Devices, 2019, 66, 5103-5110.	3.0	5
35	Analog Neuromorphic System Based on Multi Input Floating Gate MOS Neuron Model. , 2019, , .		8
36	Consistent Modelling of I-V and C-V Behaviour of GaN HEMTs in Presence of Trapping. , 2019, , .		4

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37	Modeling the Impact of the High-Field Region on the $C-V$ Characteristics in GaN HEMTs. IEEE Transactions on Electron Devices, 2019, 66, 4679-4684.	3.0	3
38	DC and RF performances of InAs FinFET and GAA MOSFET on insulator. Solid-State Electronics, 2019, 158, 11-15.	1.4	4
39	InAs FinFETs Performance Enhancement by Superacid Surface Treatment. IEEE Transactions on Electron Devices, 2019, 66, 1856-1861.	3.0	10
40	A Computationally Efficient Modelling Methodology for Field-Plates in GaN HEMTs. , 2019, , .		1
41	Quiescent Drain Voltage Dependence of Pulsed I-V Characteristics of GaN HEMTs: Analysis and Modeling. , 2019, , .		4
42	Impact of Via-Inductance on Stability Behavior of Large Gate-Periphery Multi-finger RF Transistors. , 2019, , .		0
43	ASM GaN: Industry Standard Model for GaN RF and Power Devicesâ€"Part-II: Modeling of Charge Trapping. IEEE Transactions on Electron Devices, 2019, 66, 87-94.	3.0	61
44	ASM GaN: Industry Standard Model for GaN RF and Power Devicesâ€"Part 1: DC, CV, and RF Model. IEEE Transactions on Electron Devices, 2019, 66, 80-86.	3.0	97
45	Self-aligned gate-last process for quantum-well InAs transistor on insulator. Microelectronic Engineering, 2018, 191, 42-47.	2.4	2
46	New Mobility Model for Accurate Modeling of Transconductance in FDSOI MOSFETs. IEEE Transactions on Electron Devices, 2018, 65, 463-469.	3.0	5
47	Analysis of low-frequency noise characterisation set-up for electronic devices. , 2018, , .		1
48	A Study of Hard Switching Characteristics of GaN-based DC-DC Boost Power Converter using ASM-GaN Compact Model. , 2018, , .		1
49	A Tunable Input-Impedance Matching Approach for Long-term Degradation effects of Power Amplifier. , 2018, , .		0
50	Robust Circuit Model for GaN-Based Radiation-Hard Electronics. , 2018, , .		0
51	Characterization and Modeling of the Impact of the Substrate Potential in the Dynamic and Static Behavior of Power GaN-on-Si HEMTs. , 2018, , .		1
52	Non-Linear RF Modeling of GaN HEMTs with Industry Standard ASM GaN Model (Invited). , 2018, , .		9
53	Impact of p-GaN layer Doping on Switching Performance of Enhancement Mode GaN Devices. , 2018, , .		7
54	Physics-based Compact Modeling of MSM-2DEG GaN-based Varactors for THz Applications. , 2018, , .		3

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55	Anomalous Transconductance in Long Channel Halo Implanted MOSFETs: Analysis and Modeling. IEEE Transactions on Electron Devices, 2017, 64, 376-383.	3.0	15
56	Analysis and Modeling of Cross-Coupling and Substrate Capacitances in GaN HEMTs for Power-Electronic Applications. IEEE Transactions on Electron Devices, 2017, 64, 816-823.	3.0	34
57	A Predictive Tunnel FET Compact Model With Atomistic Simulation Validation. IEEE Transactions on Electron Devices, 2017, 64, 599-605.	3.0	20
58	Pole-Zero Approach to Analyze and Model the Kink in Gain-Frequency Plot of GaN HEMTs. IEEE Microwave and Wireless Components Letters, 2017, 27, 266-268.	3.2	16
59	Modeling of Back-Gate Effects on Gate-Induced Drain Leakage and Gate Currents in UTB SOI MOSFETs. IEEE Transactions on Electron Devices, 2017, 64, 3986-3990.	3.0	9
60	Ferroelectric Oscillators and Their Coupled Networks. IEEE Electron Device Letters, 2017, 38, 1614-1617.	3.9	46
61	A New Small-Signal Parameter Extraction Technique for Large Gate-Periphery GaN HEMTs. IEEE Microwave and Wireless Components Letters, 2017, 27, 918-920.	3.2	22
62	Sustained Sub-60 mV/decade Switching via the Negative Capacitance Effect in MoS₂ Transistors. Nano Letters, 2017, 17, 4801-4806.	9.1	237
63	Physics-Based Multi-Bias RF Large-Signal GaN HEMT Modeling and Parameter Extraction Flow. IEEE Journal of the Electron Devices Society, 2017, 5, 310-319.	2.1	59
64	Impact of Parasitic Capacitance and Ferroelectric Parameters on Negative Capacitance FinFET Characteristics. IEEE Electron Device Letters, 2017, 38, 142-144.	3.9	71
65	GaN HEMT modeling for power and RF applications using ASM-HEMT. , 2016, , .		14
66	Analysis and modeling of low frequency noise in presence of doping non-uniformity in MOSFETs. , 2016, , .		2
67	Modeling of GeOI and validation with Ge-CMOS inverter circuit using BSIM-IMG industry standard model. , 2016, , .		6
68	Predictive effective mobility model for FDSOI transistors using technology parameters. , 2016, , .		6
69	Modeling of source/drain access resistances and their temperature dependence in GaN HEMTs. , 2016, , .		36
70	Modeling of kink-effect in RF behaviour of GaN HEMTs using ASM-HEMT model. , 2016, , .		23
71	Compact models of negative-capacitance FinFETs: Lumped and distributed charge models. , 2016, , .		69
72	Modeling of Subsurface Leakage Current in Low Short Channel MOSFET at Accumulation Bias. IEEE Transactions on Electron Devices, 2016, 63, 1840-1845.	3.0	14

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73	Thermal resistance modeling in FDSOI transistors with industry standard model BSIM-IMG. Microelectronics Journal, 2016, 56, 171-176.	2.0	19
74	Characterization of RF Noise in UTBB FD-SOI MOSFET. IEEE Journal of the Electron Devices Society, 2016, 4, 379-386.	2.1	12
75	Compact Modeling of Surface Potential, Charge, and Current in Nanoscale Transistors Under Quasi-Ballistic Regime. IEEE Transactions on Electron Devices, 2016, 63, 4151-4159.	3.0	18
76	Modeling of Charge and Quantum Capacitance in Low Effective Mass III-V FinFETs. IEEE Journal of the Electron Devices Society, 2016, 4, 396-401.	2.1	13
77	Analysis and Compact Modeling of Negative Capacitance Transistor with High ON-Current and Negative Output Differential Resistanceâ€"Part I: Model Description. IEEE Transactions on Electron Devices, 2016, 63, 4981-4985.	3.0	85
78	Modeling of nonlinear thermal resistance in FinFETs. Japanese Journal of Applied Physics, 2016, 55, 04ED11.	1.5	14
79	Analysis and Compact Modeling of Negative Capacitance Transistor with High ON-Current and Negative Output Differential Resistanceâ€"Part II: Model Validation. IEEE Transactions on Electron Devices, 2016, 63, 4986-4992.	3.0	139
80	Modeling of threshold voltage for operating point using industry standard BSIM-IMG model. , 2016, , .		6
81	RF Modeling of FDSOI Transistors Using Industry Standard BSIM-IMG Model. IEEE Transactions on Microwave Theory and Techniques, 2016, 64, 1745-1751.	4.6	34
82	Analysis and modeling of flicker noise in lateral asymmetric channel MOSFETs. Solid-State Electronics, 2016, 115, 33-38.	1.4	7
83	Unified Compact Model Covering Drift-Diffusion to Ballistic Carrier Transport. IEEE Electron Device Letters, 2016, 37, 134-137.	3.9	17
84	Capacitance Modeling in Dual Field-Plate Power GaN HEMT for Accurate Switching Behavior. IEEE Transactions on Electron Devices, 2016, 63, 565-572.	3.0	69
85	Negative Capacitance in Short-Channel FinFETs Externally Connected to an Epitaxial Ferroelectric Capacitor. IEEE Electron Device Letters, 2016, 37, 111-114.	3.9	198
86	Modeling of trapping effects in GaN HEMTs. , 2015, , .		4
87	Analytical Modeling of Flicker Noise in Halo Implanted MOSFETs. IEEE Journal of the Electron Devices Society, 2015, 3, 355-360.	2.1	22
88	Modeling SiGe FinFETs With Thin Fin and Current-Dependent Source/Drain Resistance. IEEE Electron Device Letters, 2015, 36, 636-638.	3.9	7
89	Effect of access region and field plate on capacitance behavior of GaN HEMT. , 2015, , .		10
90	Analytical Modeling and Experimental Validation of Threshold Voltage in BSIM6 MOSFET Model. IEEE Journal of the Electron Devices Society, 2015, 3, 240-243.	2.1	22

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91	BSIM-CMG: Standard FinFET compact model for advanced circuit design. , 2015, , .		65
92	Surface-Potential-Based Compact Modeling of Gate Current in AlGaN/GaN HEMTs. IEEE Transactions on Electron Devices, 2015, 62, 443-448.	3.0	44
93	Modeling STI Edge Parasitic Current for Accurate Circuit Simulations. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2015, 34, 1291-1294.	2.7	11
94	ASM-HEMT: Compact model for GaN HEMTs. , 2015, , .		24
95	Surface Potential Based Modeling of Thermal Noise for HEMT Circuit Simulation. IEEE Microwave and Wireless Components Letters, 2015, 25, 376-378.	3.2	29
96	BSIM-IMG: Compact model for RF-SOI MOSFETs. , 2015, , .		13
97	Piezoelectricity-Induced Schottky Barrier Height Variations in AlGaN/GaN High Electron Mobility Transistors. IEEE Electron Device Letters, 2015, 36, 902-904.	3.9	27
98	New industry standard FinFET compact model for future technology nodes. , 2015, , .		12
99	Capacitance Modeling in IIIâ€“V FinFETs. IEEE Transactions on Electron Devices, 2015, 62, 3892-3897.	3.0	25
100	Modeling the impact of substrate depletion in FDSOI MOSFETs. Solid-State Electronics, 2015, 104, 6-11.	1.4	26
101	Compact Modeling of Flicker Noise in HEMTs. IEEE Journal of the Electron Devices Society, 2014, 2, 174-178.	2.1	24
102	Modeling 20-nm Germanium FinFET With the Industry Standard FinFET Model. IEEE Electron Device Letters, 2014, 35, 711-713.	3.9	20
103	BSIM6: Analog and RF Compact Model for Bulk MOSFET. IEEE Transactions on Electron Devices, 2014, 61, 234-244.	3.0	105
104	Modeling of GaN-Based Normally-Off FinFET. IEEE Electron Device Letters, 2014, 35, 612-614.	3.9	40
105	BSIM-IMG with improved surface potential calculation recipe. , 2014, , .		5
106	Analysis of Drain-Current Nonlinearity Using Surface-Potential-Based Model in GaAs pHEMTs. IEEE Transactions on Microwave Theory and Techniques, 2013, 61, 3265-3270.	4.6	9
107	Robust Surface-Potential-Based Compact Model for GaN HEMT IC Design. IEEE Transactions on Electron Devices, 2013, 60, 3216-3222.	3.0	90
108	A charge-based capacitance model for AlGaAs/GaAs HEMTs. Solid-State Electronics, 2013, 82, 38-40.	1.4	4

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109	Modeling and Simulation Methodology for SOA-Aware Circuit Design in DC and Pulsed-Mode Operation of HV MOSFETs. IEEE Transactions on Electron Devices, 2013, 60, 714-718.	3.0	2
110	A precise physics-based compact model for 2-DEG charge density in GaAs HEMTs applicable in all regions of device operation. Solid-State Electronics, 2013, 79, 22-25.	1.4	7
111	A surface potential based model for GaN HEMTs. , 2013, , .		7
112	Compact Charge-Based Physical Models for Current and Capacitances in AlGaN/GaN HEMTs. IEEE Transactions on Electron Devices, 2013, 60, 3746-3752.	3.0	70
113	Comparison of high-voltage linear transmitter topologies for ultrasound CMUT applications. , 2013, , .		0
114	Analytical Modeling of Surface-Potential and Intrinsic Charges in AlGaN/GaN HEMT Devices. IEEE Transactions on Electron Devices, 2012, 59, 2856-2860.	3.0	128
115	Assessment of NBTI in Presence of Self-Heating in High- k SOI FinFETs. IEEE Electron Device Letters, 2012, 33, 1532-1534.	3.9	14
116	A Surface-Potential-Based Compact Model for Study of Non-Linearities in AlGaAs/GaAs HEMTs. , 2012, , .		6
117	A physics based compact model for drain current in AlGaN/GaN HEMT devices. , 2012, , .		14
118	BSIM — Industry standard compact MOSFET models. , 2012, , .		16
119	A physics based compact model of Iâ€“V and Câ€“V characteristics in AlGaN/GaN HEMT devices. Solid-State Electronics, 2012, 76, 60-66.	1.4	101
120	A physics based compact model of gate capacitance in AlGaN/GaN HEMT devices. , 2012, , .		13
121	BSIM — Industry standard compact MOSFET models. , 2012, , .		41
122	BSIM-IMG: A Compact Model for Ultrathin-Body SOI MOSFETs With Back-Gate Control. IEEE Transactions on Electron Devices, 2012, 59, 2019-2026.	3.0	83
123	A Physics-Based Analytical Model for 2DEG Charge Density in AlGaN/GaN HEMT Devices. IEEE Transactions on Electron Devices, 2011, 58, 3622-3625.	3.0	152