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Vipin Joshi
Ph.D. Student

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List of Symbols

Symbol	*Description*
P_{PE}	Piezoelectric Polarization
P_{SP}	Spontaneous Polarization
σ	Charge Density
E_D	Donor Trap Energy Level
E_F	Fermi Energy Level
ϵ	Dielectric Constant
V_{TH}	Threshold Voltage
V_{DS}	Drain to Source Potential
L_{GD}	Gate to Drain distance
μ	Mobility
L_{FP}	Field Plate Length
I_D	Drain Current
N_A	Acceptor Trap Concentration
N_D	Donor Trap Concentration
V_{BD}	Breakdown Voltage
R_{ON}	ON resistance
q_{Pol}	Polarization Charge
ϕ	Electrostatic Potential
N_C	Effective density of states
$F_{1/2}$	Fermi integral of order 1/2
E_C	Conduction band edge
kT_n	Thermal energy of electrons

List of Abbreviations

Abbreviation	*Full form*
IEA	International Energy Agency
CTE	Co-efficient of thermal expansion
GaN	Gallium Nitride
SiC	Silicon Carbide
BFOM	Balliga's Figure of Merit
AlGaN	Aluminum Gallium Nitride
RF	Radio Frequency
4G	Fourth Generation
LTE	Long Term Evolution
IC	Integrated Circuit
MOSFET	Metal Oxide Semiconductor Field Effect Transistor
MESFET	Metal Semiconductor Field Effect Transistor
LiDAR	Light Distancing and Ranging
HEMT	High Electron Mobility Transistor
NDR	Negative Differential Resistance
2-DEG	2-Dimensional Electron Gas
InGaN	Indium Gallium Nitride
UID	Un-Intentional Doping
MBE	Molecular Beam Epitaxy
AlInN	Aluminum Indium Nitride
PECVD	Plasma Enhanced Chemical Vapor Deposition
LDMOS	Laterally Diffused Metal Oxide Semiconductor
MOCVD	Metal Organic Chemical Vapor Deposition
TCAD	Technology Computer Aided Design
MIS-HEMT	Metal Insulator Semiconductor High Electron Mobility Transistor
FN	Fowler Nordheim
WKB	Wentzel-Kramers-Brillouin
DFT	Density Functional Theory