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Date: 06.08.2021 **(*Manas Ranjan Tripathy*)**

Dedicated
To
My Daughter
“Saanvi”

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LIST OF ABBREVIATIONS

Abbreviation	Details
TFET	Tunnel Field Effect Transistor
BTBT	Band-to-band Tunneling
DG TFET	Double Gate Tunnel Field Effect Transistor
VTFET	Vertical Tunnel Field Effect Transistor
2-D	Two Dimensional
3-D	Three Dimensional
SCEs	Short Channel Effects
HCEs	Hot Carrier Effects
DG	Double Gate
GAA	Gate All Around
Fin-FET	Fin Field Effect Transistor
MOS	Metal Oxide Semiconductor
FET	Field Effect Transistor
MOSFET	Metal Oxide Semiconductor Field Effect Transistor
SOI	Silicon-on-Insulator
IC	Integrated Circuit
GIDL	Gate Induced Drain Lowering
SS	Subthreshold Swing
SPE	Source Pocket Engineered
CMOS	Complementary Metal Oxide Semiconductor
DIBL	Drain Induced Barrier Lowering
TCAD	Technology Computer-Aided Design

HGD	Heterogeneous Gate Dielectric
LS	Lateral Stack
VS	Vertical Stack
HJ	Heterojunction
RF	Radio Frequency
GBP	Gain Bandwidth Product
TGF	Transconductance Generation Factor
TFP	Transconductance Frequency Product
RAM	Random Access Memory
SRAM	Static Random-Access Memory
AT	Access Transistor
AI	Artificial Intelligence
IoT	Internet of Thing
RSNM	Read Static Noise Margin
WSNM	Write Static Noise Margin
RM	Read Margin
WM	Write Margin
BL	Bit Line
BLB	Bit Line Inverse
WL	Word Line
6T	Six-Transistor
7T	Seven-Transistor
8T	Eight-Transistor

LIST OF SYMBOLS

Symbol	Details
E_g	Energy Band Gap
E_C	Conduction Band energy
E_V	Valance Band Energy
q	Electronic Charge
T	Temperature in Kelvin
KT	Thermal Energy
V_{th}	Threshold Voltage
SS	Sub-threshold Swing
g_m	Transconductance
I_{ON}	ON-current
I_{OFF}	OFF-state current
I_D	Drain Current
V_{GS}	Gate to Source Voltage
V_{DS}	Drain to Source Voltage
t_{si}	Channel Thickness
t_{ox}	Oxide Thickness
nm	Nanometer
V	Voltage
L_G	Gate Length
L_S	Source Length
L_D	Drain Length
Φ_m	Gate Work Function

ε	Gate Dielectric Permittivity
m_{ht}	Hole Tunnel Mass
m_{et}	Electron Tunnel Mass
m_0	Rest Mass
C_{gs}	Intrinsic Gate to Source Capacitance
C_{gd}	Intrinsic Gate to Drain Capacitance
C_{Load}	Load Capacitance
f_T	Unity Gain Cut-off Frequency
f_{max}	Maximum Frequency of Oscillation
f_0	Applied Frequency
f	Frequency
α	Scaling Constant
τ	Transit Time
eV	Electron Volt
μA	Micro Ampere
μm	Micro Meter
NM_L	Low Noise Margin
NM_H	High Noise Margin
V_{OL}	Output High Voltage
V_{IL}	Input Low Voltage
V_{OH}	Output High Voltage
V_{IH}	Input High Voltage
V_{DD}	Supply Voltage
PS_{ub}	Sub-threshold Power Dissipation
P_{Active}	Active Power Dissipation