

台積電2024年產學合作計畫 題目

完整提案截止日：2023-10-13



Unleash Innovation

- 1 探討二氧化矽薄膜接合強度之化學模式
- 2 The Figure of Merit of a Semiconductor Power Electronics Switch
- 3 Development of high-performance and high-reliability BCD devices for automotive and analysis of device degradation mechanisms.
- 4 CMOS Image Sensor White-Pixel Study
- 5 Silicon Photonics Optical Component Characterization and Performance Enhancement
- 6 Flicker & RTS noise improvement in analog FinFET device. High voltage FinFET device investigation for reliability improvement.
- 7 Low voltage Band Gap circuit development and design/process optimization
- 8 Cu-Cu Direct Bond Formation Mechanism and Solution
- 9 Dielectric-Dielectric Direct Bonding Fundamentals, Mechanism and Solutions
- 10 Heterogeneous Integration of Antenna in Package for Terahertz
- 11 High Thermal Conductivity Material on TIM1 Development
- 12 Composite resin system development for low Dk/Df passivation materials
- 13 Metallurgy study for bump with ultra-small CD
- 14 Positron Annihilation Spectroscopy Analysis for Atomic Scale Vacancy in Dielectric
- 15 Self-Alignment Direct Bonding Process Evaluation
- 16 Modeling Interconnect Capacitance via Machine Learning for NanoSheet and CFET Technologies
- 17 Interconnect thermal modeling and application for chip design
- 18 N55HV uDriver project BEOL SM qual performance improve
- 19 Rapid Thermal Anneal temperature monitor survey
- 20 Wafer Edge Profile tiling improved by different Top/Bottom ring design
- 21 To simulate fluid distribution during wafer processing to make vertical & lateral chemical etching rate difference
- 22 Isotropic & Controlled interfacial layer etching between sheet-sheet spacing
- 23 ALD Gd3Al5O12 (GAG) coating development with novel plasma erosion resistance
- 24 Influence of ion implantation and co-implantation on epitaxy growth of SiGe/SiP/SiAs on Si or SiP surface, TiSi formation and retardation of dopant diffusion
- 25 Process Charge In-situ Sensing Element/Circuit Development for PID and ESD Monitoring
- 26 PJ/Bit Optical Link Interconnect Technique for Next Generation HPC Application
- 27 New heteroepitaxy system for semiconductor manufacturing process on silicon substrate
- 28 A.I. modeling prediction of the effect of plasma gas on new materials' etching selectivity and profile control
- 29 Molecule layered deposited dielectrics for thermal management
- 30 BEOL-compatible (< 400oC) P-type Oxide Semiconductor FET Technology

Serial number: 202309041738-7289000



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| 31 Magnetic Core Material for mmWave High-frequency Inductor | 34 Eagle eye development for small defect and tool abnormal detection | 37 Measurement Accuracy limitation study on Optical tool |
| 32 Ferroelectric (FE) / Oxide semiconductor (OS) high performance and endurance investigation for BEOL memory application | 35 Die bonder tooling (bonding tool) coating evaluation for lifetime prolong | 38 SI/PI and FOM analysis for advanced packaging from Electric Analysis team |
| 33 Novel pretreatment to make nano-scale Sn ball on EUV mask removable by AFM tip | 36 Plasma effect on metal oxide | 39 Superparamagnetic Nanoparticle Synthesis for High Frequency Inductor |

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