

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0213224 A1 **Brewer**

Jun. 27, 2024 (43) **Pub. Date:**

(54) **POWER AND TEMPERATURE** MANAGEMENT FOR FUNCTIONAL **BLOCKS IMPLEMENTED BY A 3D** STACKED INTEGRATED CIRCUIT

(71) Applicant: Micron Technology, Inc., Boise, ID

(72) Inventor: Tony M. Brewer, Plano, TX (US)

(21) Appl. No.: 18/596,254

(22) Filed: Mar. 5, 2024

Related U.S. Application Data

(63) Continuation of application No. 17/408,230, filed on Aug. 20, 2021, now Pat. No. 11,935,869, which is a continuation of application No. 16/942,619, filed on Jul. 29, 2020, now Pat. No. 11,114,416, which is a continuation of application No. 16/169,915, filed on Oct. 24, 2018, now Pat. No. 10,748,874.

Publication Classification

(51) Int. Cl. H01L 25/065 (2006.01)H01L 27/02 (2006.01)H01L 27/06 (2006.01)H10B 12/00 (2006.01)

(52) U.S. Cl.

CPC H01L 25/0657 (2013.01); H01L 27/0248 (2013.01); H01L 27/0688 (2013.01); H10B 12/50 (2023.02)

(57)ABSTRACT

A three-dimensional stacked integrated circuit (3D SIC) having a non-volatile memory die, a volatile memory die, a logic die, and a thermal management component. The nonvolatile memory die, the volatile memory die, the logic die, and the thermal management component are stacked. The thermal management component can be stacked in between the non-volatile memory die and the logic die, stacked in between the volatile memory die and the logic die, or both.

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	 	Functional Block 1 110				• 	Functional Block 112				, , , ,	F — — — — — — — — — — — — — — — — — — —					
		 				1 122	Non-volatile Memory Die <u>102</u>			122				 			
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		Thermal I I Management I 130															
Sensor Array 140		TS		Sensor <u>136a</u>		T — 	TSV 132		Sensor <u>136b</u>			!		Senso <u>136c</u>	ין		<u> </u>
		 			<u>126</u>	Processing Logic Die <u>106</u>			<u>126</u>								
		TSV 120		 			TSV <u>120</u>		 		TSV <u>120</u>						
				<u>128</u> 		1 <u>28</u>	Volatile Memory Die <u>108</u>				128 						
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