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(21) International Application Number: PCT/US98/19944 (22) International Filing Date: 23 September 1998 (23.09.98) (30) Priority Data: 08/943,510 3 October 1997 (03.10.97) US (71) Applicant: ATMEL CORPORATION [US/US]; 2325 Orchard Parkway, San Jose, CA 95131 (US). (72) Inventors: BENHAMMOU, Jean-Pierre; 610 Thames Drive, Colorado Springs, CO 80906 (US). BARAN, Dennis, F.; 7980 Wildridge Road, Colorado Springs, CO 80908 (US). TONGE, Phillip, D.; 3604 Lancashire Street, Colorado Springs, CO 80907 (US). TERRY, Edward, L., Jr.; 104 Landoe Lane, Widefield, CO 80911 (US). (74) Agents: D'ALESSANDRO, Kenneth et al.; D'Alessandro & Ritchie, P.O. Box 640640, San Jose, CA 95164-0640 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: SECURE MEMORY HAVING MULTIPLE SECURITY LEVELS

(57) Abstract

According to the present invention, a secured memory (20) comprises a first level security zone (22) having an access code (SC1) controlling access to the secured memory (20) prior to an issuer fuse (28) being blown, a security code attempts counter (SLAC) preventing access to the secured memory (20) when a predetermined number of attempts at matching the access code have been made prior to resetting the security code attempts counter (SCAC), a plurality of application zones (24), each of the plurality of application zones comprising: a storage memory zone (SMZ 2-4), an application security zone (24) having an application zone access code (SC2-4) controlling access to the storage memory zone after an issuer fuse (28) has been blown, an application zone security code attempts counter (S2-4AC) preventing access to the application zone (24) when a predetermined number of attempts at matching the application zone access code (SC2-4) have been made prior to resetting the application zone security code attempts counter, an erase key (EZ2-4) partition having an erase key code controlling erase access counter (E1-4AC) preventing erase access to the application zone when a predetermined number of attempts at matching the erase key code (EZ2-4) have been made prior to resetting the erase key attempts counter (E1-4AC).

MEMORY PARTITIONS	ADDRESSES	BITS	BYTES
Fabrication Zone (FZ)	0-15	16	2
Issuer Zone (IZ)	16-79	64	8
Security Code (SC)	80-85	16	2
Security Code Attempts Counter (SCAC)	86-103	8	1
Code Protected Zone (CPZ)	104-157	64	8
Application Zone 1 Security Code (SC1)	160-165	16	2
Application Zone 1 SC1 Attempts Counter (SLAC)	166-191	8	1
Application Zone 1 Erase Key (EZ1)	192-207	16	2
Application Zone 1 EZ1 Attempts Counter (E1AC)	208-215	8	1
Application Zone 1 (SMZ1) Storage Memory Zone	216-4011	4096	512
Application Zone 2 Security Code (SC2)	4016-4027	16	2
Application Zone 2 SC2 Attempts Counter (SLAC)	4028-4035	8	1
Application Zone 2 Erase Key (EZ2)	4036-4051	16	2
Application Zone 2 EZ2 Attempts Counter (E2AC)	4052-4059	8	1
Application Zone 2 (SMZ2) Storage Memory Zone	4060-6055	4096	512
Application Zone 3 Security Code (SC3)	6060-6071	16	2
Application Zone 3 SC3 Attempts Counter (SLAC)	6072-6079	8	1
Application Zone 3 Erase Key (EZ3)	6080-6095	16	2
Application Zone 3 EZ3 Attempts Counter (E3AC)	6096-6103	8	1
Application Zone 3 (SMZ3) Storage Memory Zone	6104-12059	4096	512
Application Zone 4 Security Code (SC4)	12060-12071	16	2
Application Zone 4 SC4 Attempts Counter (SLAC)	12072-12079	8	1
Application Zone 4 Erase Key (EZ4)	12080-12095	16	2
Application Zone 4 EZ4 Attempts Counter (E4AC)	12096-12107	8	1
Application Zone 4 (SMZ4) Storage Memory Zone	12108-16319	3680	457
Memory Test Zone (MTZ)	16320-16319	16	2
TOTAL ADDRESSABLE EEPROM MEMORY	16319	2011	25
FUSE	16320-16327		
Last Address	16328		