

SOSAM DDR5 RDIMM

64GB 5600MT/s

Datasheet Ver1.0

I.Product Basic Information

- Memory Type: PC5-44800 DDR5 288pins R-DIMM CL46
- Memory Model: REG-4G*8-64G20P-5600MT/s
- Memory Capacity: 64GB
- IC Model: DDR5-4Gb*8

II.Technical Specifications

2.1 Memory Parameters

Item	Specification
Type	DDR5-5600
Operating Timing	CL=46
Memory Capacity	64GB
IC Model	DDR5-4Gb*8
IC Structure	4Gb*8
IC Quantity	20
Operating Voltage	1.1V
RCD Model	M88DR5RCD02
SPD	Yes
Chip Dimension	7.5mm*11.5mm
PCB Model	BG5RRCE

2.2 Environmental Requirements

Item	Specification
Operating Temperature	Commercial($0^{\circ}\text{C} \leq T_{\text{OPER}} \leq 95^{\circ}\text{C}$)
Operating Humidity	Relative Humidity: 10% - 90%
Storage Temperature	-50°C - 100°C
Storage Humidity	Relative Humidity: 5% - 95%
Operating & Storage Air Pressure	69 - 105 KPa

2.3 SPD Description

SPD must comply with the requirements of JEDEC DDR5 standard.

2.4 PCB Board Performance Parameters

Item	Specification
PCB Material	FR-4
Finished Board Thickness	50±4mil
Ni/Au Plating Thickness	Au:30u/Ni:120-140u±15%
Board Warpage	<0.75%
Solder Mask	Green
Module Outline Dimension	5250x1230mil
Impedance	Single-ended: 25/35 Ω ±15%
	Single-ended: 50 Ω ±10%
	Differential: 48/61/67/84/88 Ω ±15%
Number of Layers	16 Layers

2.5 Label Description

Label Type	Specification
PCB Board Label	PCB model printed on the board.
Memory Module Label	Includes memory capacity, frequency, and serial number

2.6 Absolute Maximum DC Ratings

Symbol	Parameter	Rating	Units	NOTE
VDD	Voltage on VDD pin relative to Vss	-0.3~1.32	V	1,3
VDDQ	Voltage on VDDQ pin relative to Vss	-0.3~1.32	V	1,3
VPP	Voltage on VPP pin relative to Vss	-0.3~2.2	V	4
VIN,VOUT	Voltage on any pin except VREFCA relative to Vss	-0.3~1.32	V	1,3,5
TSTG	Storage Temperature	-55 to+100	°C	1,2

NOTE:

1. Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability
2. Storage Temperature is the case surface temperature on the center/top side of the DRAM. For the measurement conditions, please refer to JESD51-2 standard.
3. VDD and VDDQ must be within 300 mV of each other at all times;and VREFCA must be not greater than 0.6 x VDDQ, When VDD and VDDQ are less than 500 mV; VREFCA may be equal to or less than 300 mV
4. VPP must be equal or greater than VDD/VDDQ at all times
5. Overshoot area above 1.32V is specified in DDR5 Device Operation.

2.7 DRAM Component Operating Temperature Range

Symbol	Parameter	Rating	Units	Notes
T _{OPER}	Normal Operating Temperature Range	0 to 85	°C	1,2
	Extended Temperature Range	85 to 95	°C	1,3

NOTE:

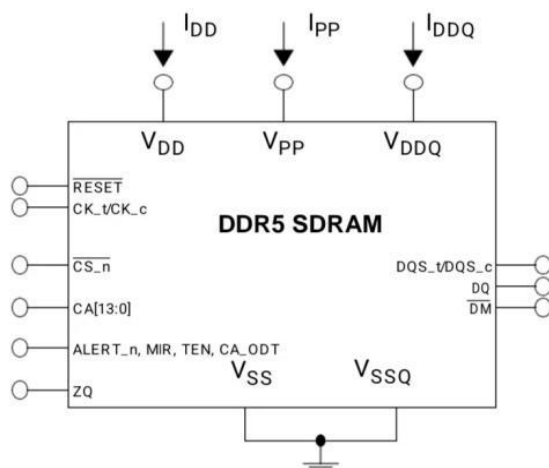
1. Operating Temperature T_{OPER} is the case surface temperature on the center / top side of the DRAM. For measurement conditions, please refer to the JEDEC document JESD51-2.
2. The Normal Temperature Range specifies the temperatures where all DRAM specifications will be supported. During operation, the DRAM case temperature must be maintained between 0 - 85°C under all operating conditions.
3. Some applications require operation of the DRAM in the Extended Temperature Range between 85°C and 95°C case temperature. Full specifications are guaranteed in this range, but the following additional conditions apply:
 - a. Refresh commands must be doubled in frequency, therefore reducing the Refresh interval tREFI to 3.9 μs. It is also possible to specify a component with 1X refresh (tREFI to 7.8μs) in the Extended Temperature Range. Please refer to the DIMM SPD for option availability
 - b. If Self-Refresh operation is required in the Extended Temperature Range, then it is mandatory to either use the Manual Self-Refresh mode with Extended Temperature Range capability (MR2 A6 = 0b and MR2 A7 = 1b) or enable the optional Auto Self-Refresh mode (MR2 A6 = 1b and MR2 A7 = 0b).

2.8 Recommended DC Operating Conditions

Symbol	Parameter	Rating			Unit	NOTE
		Min.	Typ.	Max.		
VDD	Supply Voltage	1.06	1.1	1.16	V	1,2,3
VDDQ	Supply Voltage for Output	1.06	1.1	1.16	V	1,2,3
VPP	Supply Voltage for DRAM Activating	1.75	1.8	1.85	V	3

NOTE:

1. Under all conditions VDDQ must be less than or equal to VDD.
2. VDDQ tracks with VDD. AC parameters are measured with VDD and VDDQ tied together.
3. DC bandwidth is limited to 20MHz.
4. VPP voltage must be equal to or greater than VDD/VDDQ at all times.


NOTE:

1. DIMM level Output test load condition may be different from above

Figure 1 - Measurement Setup and Test Load for IDD, IPP and IDDQ Measurements

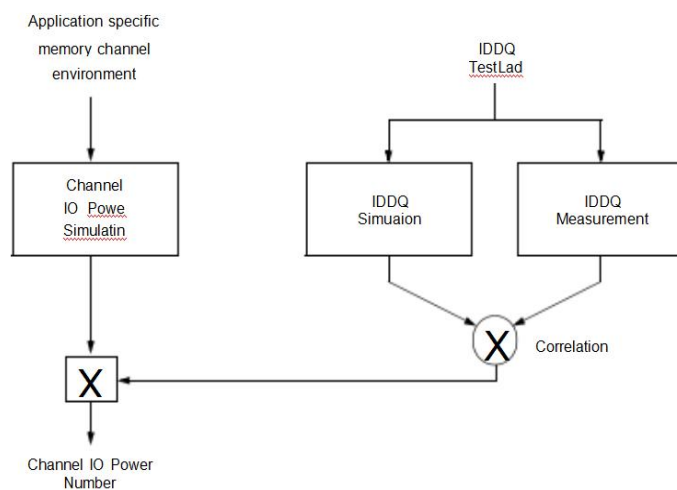


Figure 2 - Correlation from simulated Channel IO Power to actual Channel IO Power supported by IDDQ Measurement

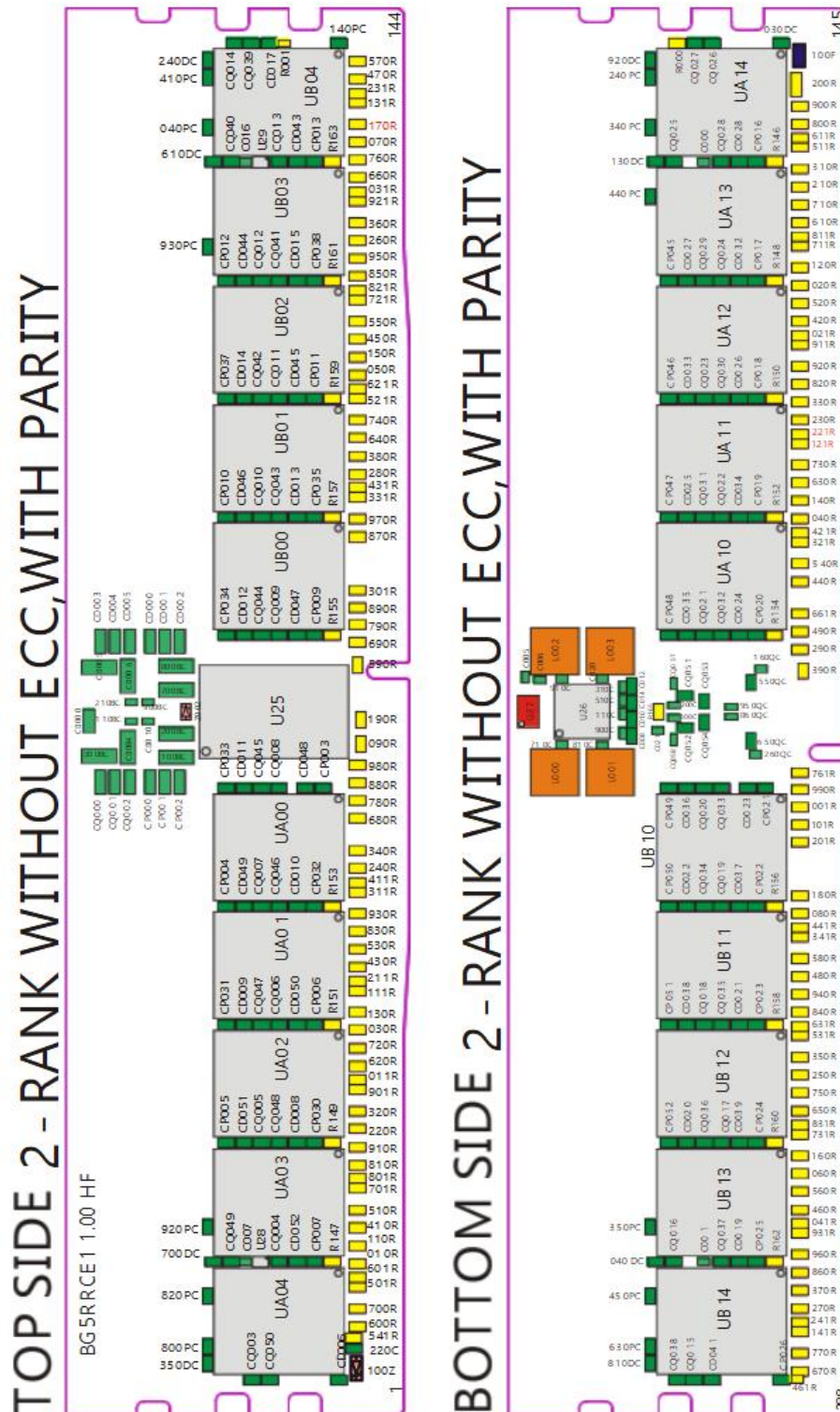
III.Ordering Information

Part Number	Density	Organization	Component Composition	#of ranks
KMD5R64GDBM756DC	64GB	8Gx80	4Gx8(Micron IC)*20	2R

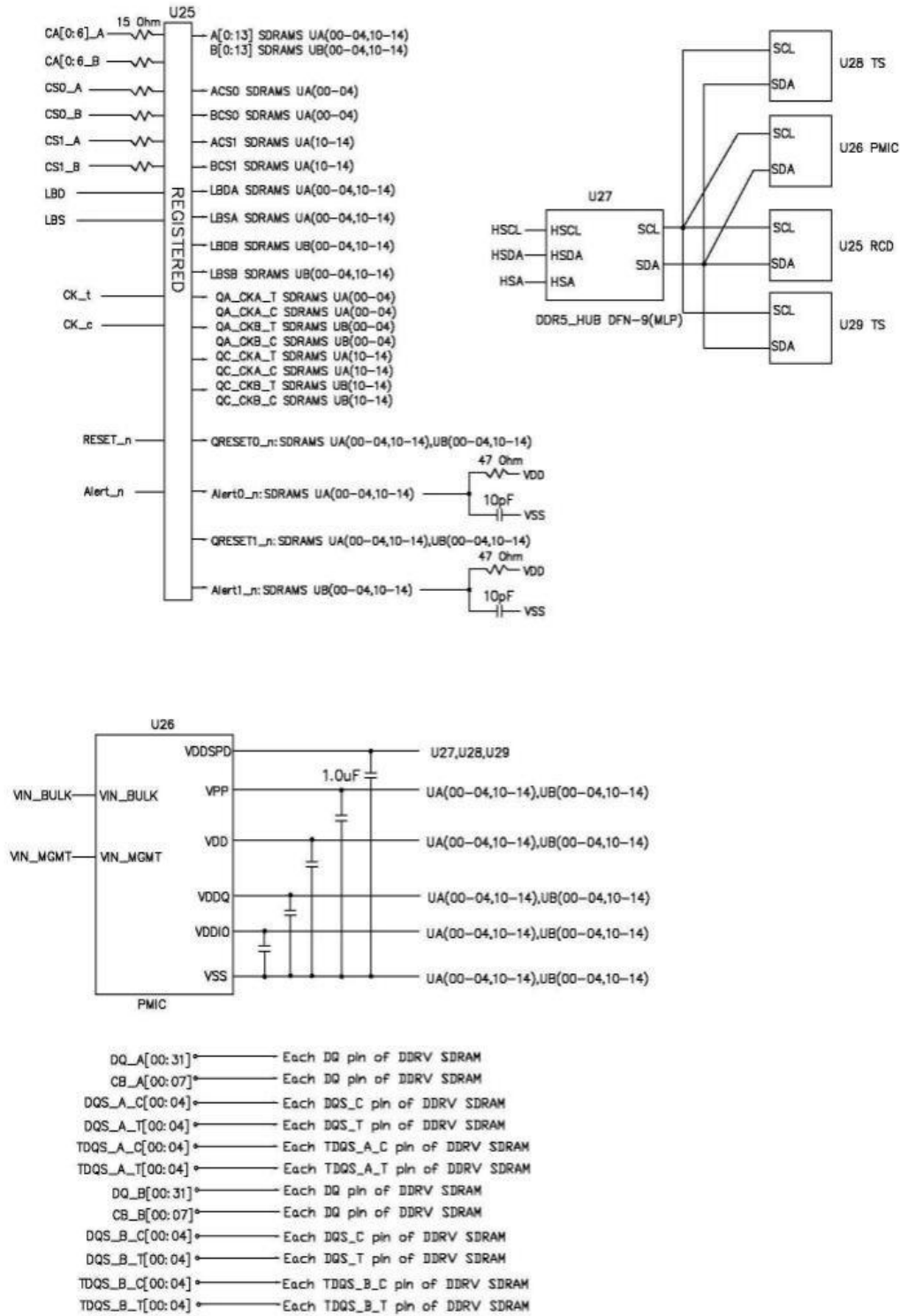
Product Specification:

- Density -- 64GB (x80-bit)
- PC5-44800 5600MT/s
- CL= 46
- IC Marking: Micron
- Mounting 20 pieces of 4G*8, Double Rank- 288pin, Registered, ECC, DDR5 SDRAM DIMM
- 16 Layers Ultra Low Noises Shield ed PCB
- Electroplated gold finger: 30u
- Supports ECC error correction and detection
- Temperature sensor with integrated SPD
- VDD= 1.1V ± 0.06V
- Operation Temperature : 0°C ~ 85°C
- Lead-free (RoHS compliant)

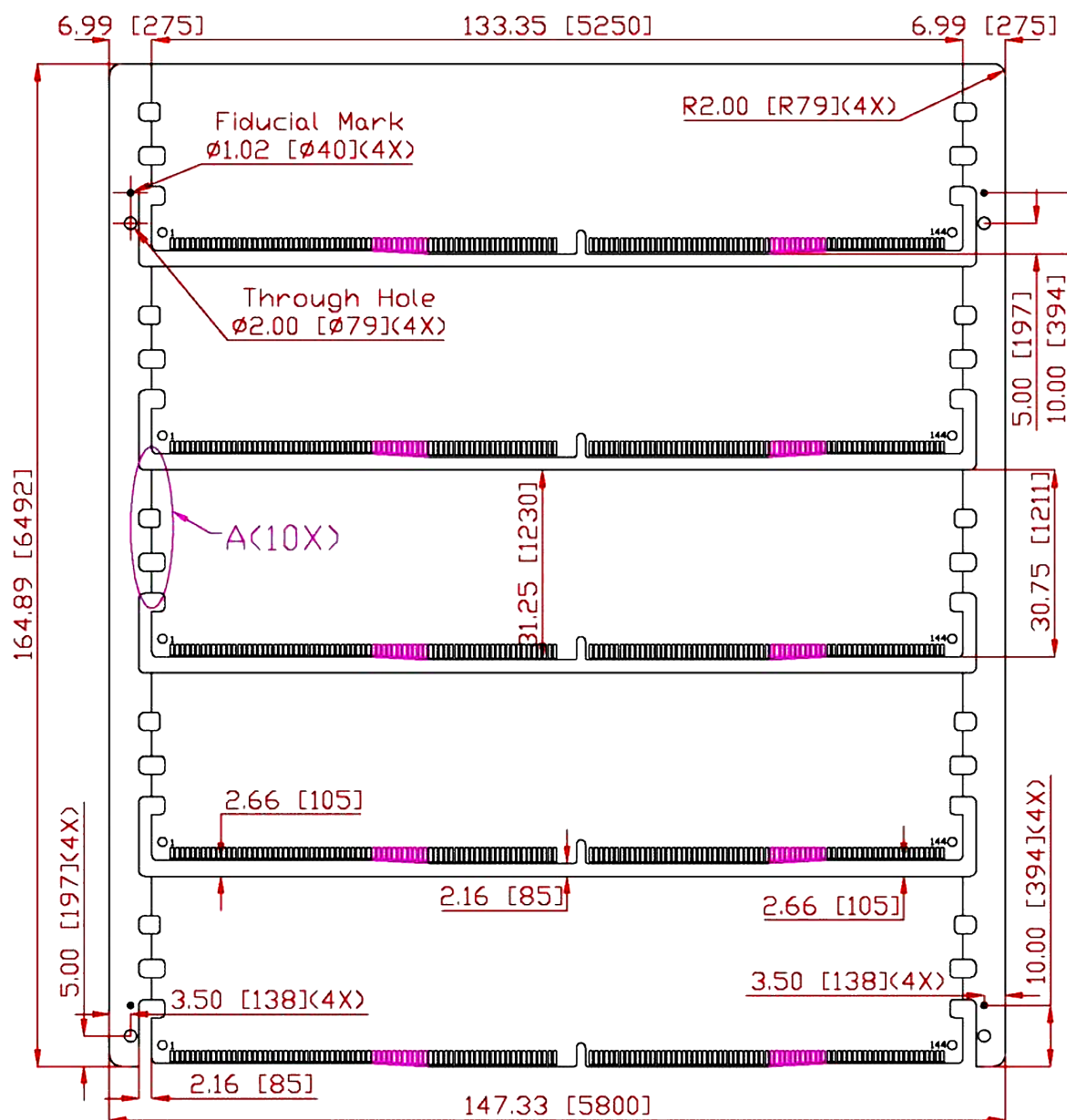
IV.Memory Component Location Diagram



[illegible]



Panel PCB Structural Drawing



NO V-CUT

There are some holes on Breakaway of panel which do not indicate size for fabrication purpose.

BG5RRCE1 1.00 HF

DIMM Module Package Dimensions

5 PCS Size: 147.33[5800]x164.89[6492]

Note:

All dimensions are in millimeters[mils] and should be kept within a tolerance of ± 0.15 [6], unless otherwise specified.

VII.Registered DIMM pin configurations

PIN CONFIGURATIONS (Front side/back side)

Pin#	Front Side	Pin#	Back Side	Pin#	Front Side	Pin#	Back Side
1	VIN_BULK	145	VIN_BULK	37	VSS	181	DQ22_A
2	RFU	146	VIN_BULK	38	DQ21_A	182	VSS
3	VIN_MGMT	147	PCMAP	39	VSS	183	DQ23_A
4	SCL	148	SPD_ID	40	DQ24_A	184	VSS
5	SDA	149	RFU	41	VSS	185	DQ26_A
6	VSS	150	RFU	42	DQ25_A	186	VSS
7	DQ0_A	151	VSS	43	VSS	187	DQ27_A
8	VSS	152	DQ2_A	44	DQS3_A_t	188	VSS
9	DQ1_A	153	VSS	45	DQS3_A_c	189	DQS8_A_c, TDQS8_A_c
10	VSS	154	DQ3_A	46	VSS	190	DQS8_A_t, TDQS8_A_t
11	DQS0_A_t	155	VSS	47	DQ28_A	191	VSS
12	DQS0_A_c	156	DQS5_A_c, TDQS5_A_c	48	VSS	192	DQ30_A
13	VSS	157	DQS5_A_t, TDQS5_A_t	49	DQ29_A	193	VSS
14	DQ4_A	158	VSS	50	VSS	194	DQ31_A
15	VSS	159	DQ6_A	51	CB0_A	195	VSS
16	DQ5_A	160	VSS	52	VSS	196	CB2_A
17	VSS	161	DQ7_A	53	CB1_A	197	VSS
18	DQ8_A	162	VSS	54	VSS	198	CB3_A
19	VSS	163	DQ10_A	55	DQS4_A_t	199	VSS
20	DQ9_A	164	VSS	56	DQS4_A_c	200	DQS9_A_c, TDQS9_A_c
21	VSS	165	DQ11_A	57	VSS	201	DQS9_A_t, TDQS9_A_t
22	DQS1_A_t	166	VSS	58	CB4_A	202	VSS
23	DQS1_A_c	167	DQS6_A_c, TDQS6_A_c	59	VSS	203	CB6_A
24	VSS	168	DQS6_A_t, TDQS6_A_t	60	CB5_A	204	VSS
25	DQ12_A	169	VSS	61	VSS	205	CB7_A
26	VSS	170	DQ14_A	62	ALERT_n	206	VSS
27	DQ13_A	171	VSS	63	VSS	207	RESET_n
28	VSS	172	DQ15_A	64	CS0_A_n	208	VSS
29	DQ16_A	173	VSS	65	VSS	209	CS1_A_n
30	VSS	174	DQ18_A	66	CA0_A	210	VSS
31	DQ17_A	175	VSS	67	VSS	211	CA1_A
32	VSS	176	DQ19_A	68	CA2_A	212	VSS
33	DQS2_A_t	177	VSS	69	VSS	213	CA3_A
34	DQS2_A_c	178	DQS7_A_c, TDQS7_A_c	70	CA4_A	214	VSS
35	VSS	179	DQS7_A_t, TDQS7_A_t	71	VSS	215	CA5_A
36	DQ20_A	180	VSS	72	CA6_A	216	VSS

Pin#	Front Side	Pin#	Back Side	Pin#	Front Side	Pin#	Back Side
73	VSS	217	CK _t	108	VSS	252	DQ6 _B
74	PAR _A	218	CK _c	109	DQ5 _B	253	VSS
75	VSS	219	VSS	110	VSS	254	DQ7 _B
KEY				111	DQ8 _B	255	VSS
76	CA0 _B	220	RFU	112	VSS	256	DQ10 _B
77	VSS	221	CA1 _B	113	DQ9 _B	257	VSS
78	CA2 _B	222	VSS	114	VSS	258	DQ11 _B
79	VSS	223	CA3 _B	115	DQS1 _{B t}	259	VSS
80	CA4 _B	224	VSS	116	DQS1 _{B c}	260	DQS6 _{B c,}
81	VSS	225	CA5 _B	117	VSS	261	DQS6 _{B t,}
82	CA6 _B	226	VSS	118	DQ12 _B	262	VSS
83	VSS	227	PAR _B	119	VSS	263	DQ14 _B
84	CS0 _{B n}	228	VSS	120	DQ13 _B	264	VSS
85	VSS	229	CS1 _{B_n}	121	VSS	265	DQ15 _B
86	LBD ₁	230	VSS	122	DQ16 _B	266	VSS
87	LBS ₁	231	RFU	123	VSS	267	DQ18 _B
88	VSS	232	RFU	124	DQ17 _B	268	VSS
89	CB4 _B	233	VSS	125	VSS	269	DQ19 _B
90	VSS	234	CB2 _B	126	DQS2 _{B t}	270	VSS
91	CB5 _B	235	VSS	127	DQS2 _{B c}	271	DQS7 _{B c,}
92	VSS	236	CB7 _B	128	VSS	272	DQS7 _{B t,}
93	DQS9 _{B c,}	237	VSS	129	DQ20 _B	273	VSS
94	DQS9 _{B t,}	238	DQS4 _{B t}	130	VSS	274	DQ22 _B
95	VSS	239	DQS4 _{B c}	131	DQ21 _B	275	VSS
96	CB0 _B	240	VSS	132	VSS	276	DQ23 _B
97	VSS	241	CB2 _B	133	DQ24 _B	277	VSS
98	CB1 _B	242	VSS	134	VSS	278	DQ26 _B
99	VSS	243	CB3 _B	135	DQ25 _B	279	VSS
100	DQ0 _B	244	VSS	136	VSS	280	DQ27 _B
101	VSS	245	DQ2 _B	137	DQS3 _{B t}	281	VSS
102	DQ1 _B	246	VSS	138	DQS3 _{B c}	282	DQS8 _{B c,}
103	VSS	247	DQ3 _B	139	VSS	283	DQS8 _{B t,}
104	DQS0 _{B t}	248	VSS	140	DQ28 _B	284	VSS
105	DQS0 _{B c}	249	DQS5 _{B c,}	141	VSS	285	DQ30 _B
106	VSS	250	DQS5 _{B t,}	142	DQ29 _B	286	VSS
107	DQ4 _B	251	VSS	143	VSS	287	DQ31 _B
				144	RFU	288	VSS

For More Information

For Technical Support:

If additional support is needed, please visit the SOSAM website at <https://kumi-sosam.com/>

for the following topics:

- **Warranty Services:** Includes the warranty service policy and the RMA requestforms.
- **Technical Information:** Includes product data sheets and various storage product white papers.
- **Tools Section:** Includes frequently asked questions (FAQs).