

SOSAM DDR5 RDIMM

64GB 5600MHz

Datasheet Ver1.0

I.Product Basic Information

- Memory Type: PC5-44800 DDR5 288pins R-DIMM CL46
- Memory Model: REG-4G*4-64G40P-5600MT/s
- Memory Capacity: 64GB
- IC Model: DDR5-4Gb*4

II.Technical Specifications

2.1 Memory Parameters

Item	Specification
Type	DDR5-5600
Operating Timing	CL=46
Memory Capacity	64GB
IC Model	DDR5-4Gb*4
IC Structure	4Gb*4
IC Quantity	40
Operating Voltage	1.1V
RCD Model	M88DR5RCD02
SPD	Yes
Chip Dimension	10mm*11mm
PCB Model	BG5RRCA

2.2 Environmental Requirements

Item	Specification
Operating Temperature	Commercial($0^{\circ}\text{C} \leq \text{TOPER} \leq 95^{\circ}\text{C}$)
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: 25/35/50 Ω ±15%
	Differential: 49/68/95 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
TOPER	Normal Operating Temperature Range	0 to 85	°C	1,2
	Extended Temperature Range	85 to 95	°C	1,3

NOTE:

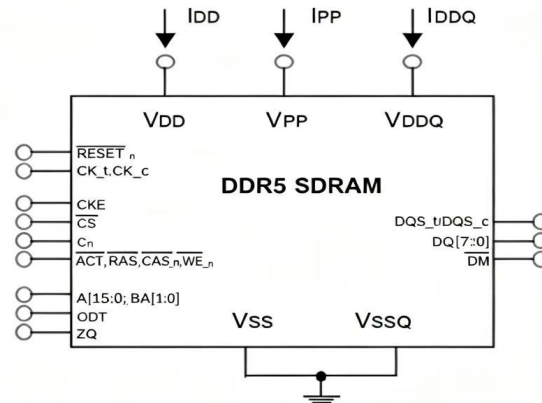
1. Operating Temperature TOPER is the case surface temperature on the center / top side of the DRAM. For measurement conditions, please refer to the JEDEC document JESD51-2.
2. The Normal Temperature Range specifies the temperatures where all DRAM specifications will be supported. During operation, the 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

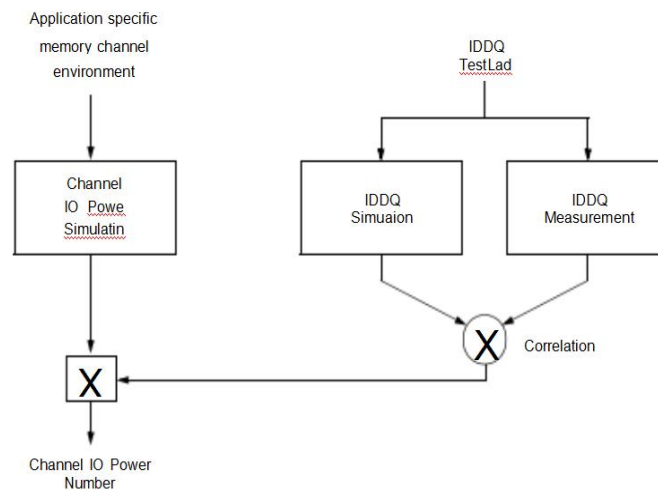


Figure 2 - Correlation from simulated Channel IO Power to actual Channel IO Power supported by IDDQ Measurement

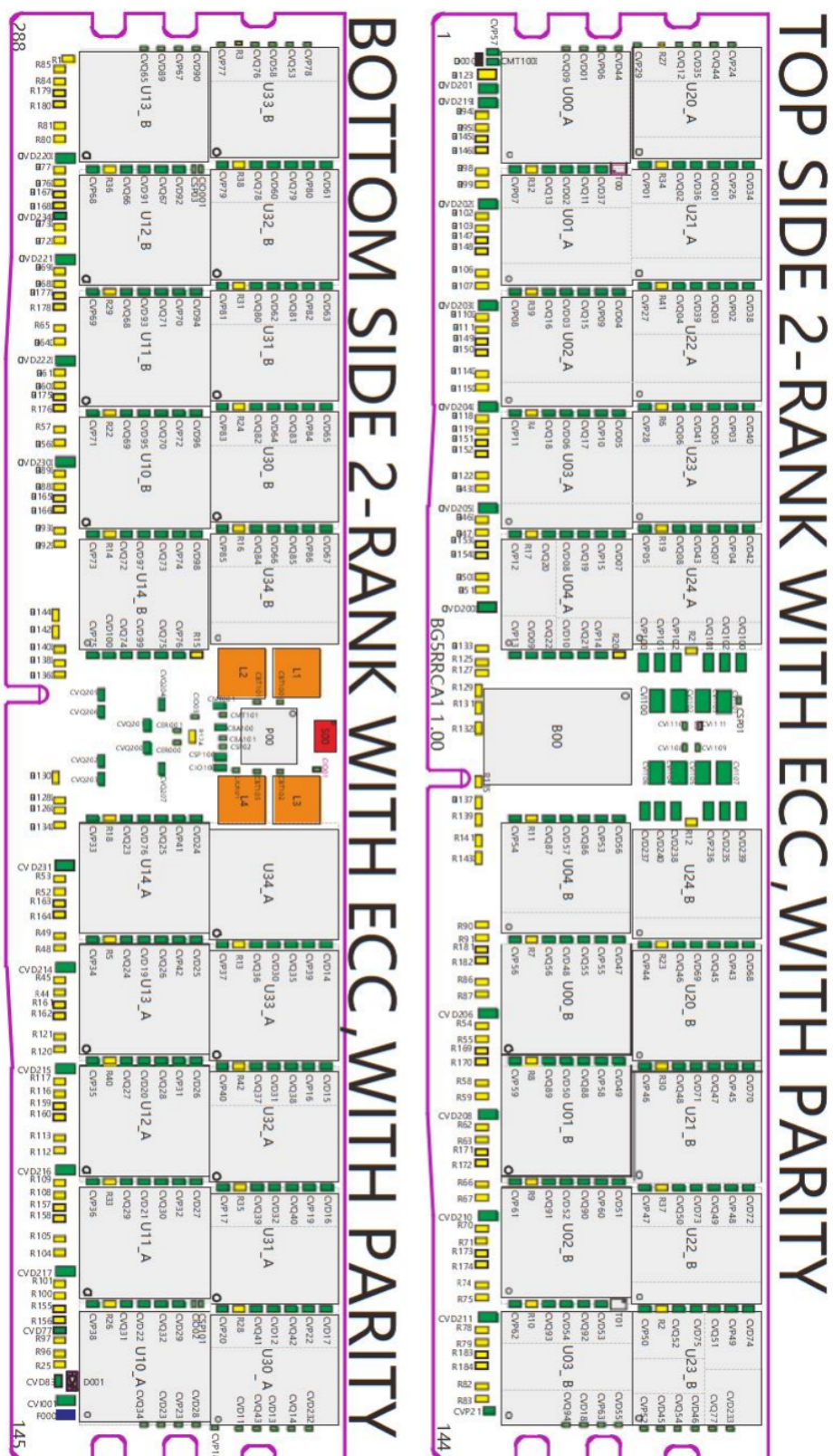
III.Ordering Information

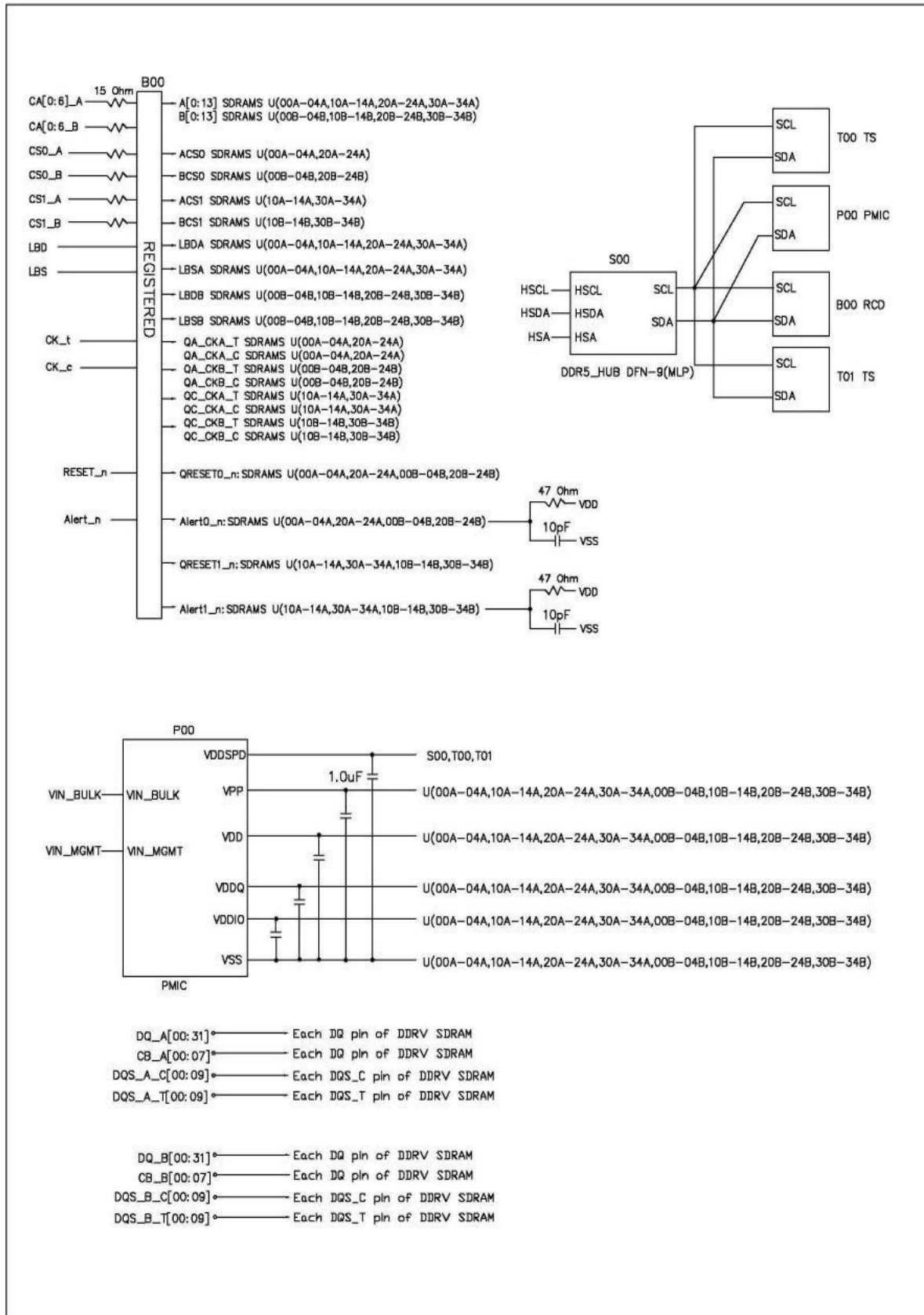
Part Number	Density	Organization	Component Composition	#of ranks
KMD5R64GDAH356DC	64GB	8Gx80	4Gx4(Hynix IC)*40	2R

Product Specification:

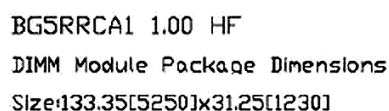
- Density -- 64GB (x80-bit)
- PC5-44800 5600MT/s
- CL= 46
- IC Marking: SESA/Hynix
- Mounting 40 pieces of 4G*4 DDR5, Double Rank- 288pin, Registered, ECC, DDR5 SDRAM DIMM
- 16 Layers Ultra Low Noises Shielded PCB
- Electroplated gold finger: 30u
- Supports ECC error correction and detection
- Temperature sensor with integrated SPD
- VDD= 1.1V ± 0.06V
- Operation Temperature : 0°C ~ 85°C
- Lead-free (RoHS compliant)

IV.Memory Component Location Diagram





Single PCB Structural Drawing



Note:
All dimensions are in millimeters[mils] and should be kept within a tolerance of $\pm 0.15[6]$, unless otherwise specified.

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

Note:
All dimensions are in millimeters[mils] and should be kept within a tolerance of $\pm 0.15[6]$, unless otherwise specified.

VII.Registered DIMM pin configurations

PIN CONFIGURATIONS (Front side/back side)

Pin#	FrontSide	Pin#	BackSide	Pin#	FrontSide	Pin#	BackSide
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#	FrontSide	Pin#	BackSide	Pin#	FrontSide	Pin#	BackSide
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, TDQS6_B_c
81	VSS	225	CA5_B	117	VSS	261	DQS6_B_t, TDQS6_B_t
82	CA6_B	226	VSS	118	DQ12_B	262	VSS
83	VSS	227	PAR_B	119	VSS	263	DQ14_B
4	CS0_B_n	228	VSS	120	DQ13_B	264	VSS
85	VSS	229	CS1_B_n	121	VSS	265	DQ15_B
86	LBD,	230	VSS	122	DQ16_B	266	VSS
87	LBS,	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, TDQS7_B_c
92	VSS	236	CB7_B	128	VSS	272	DQS7_B_t, TDQS7_B_t
93	DQS9_B_t, TDQS9_B_t	237	VSS	129	DQ20_B	273	VSS
94	DQS9_B_c, TDQS9_B_c	238	DQS4_B_c	130	VSS	274	DQ22_B
95	VSS	239	DQS4_B_t	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, TDQS8_B_c
103	VSS	247	DQ3_B	139	VSS	283	DQS8_B_t, TDQS8_B_t
104	DQS0_B_t	248	VSS	140	DQ28_B	284	VSS
105	DQS0_B_c	249	DQS5_B_c, TDQS5_B_c	141	VSS	285	DQ30_B
106	VSS	250	DQS5_B_t, TDQS5_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).