



MMY DDR4 16GB-2133 / 2400 / 2666 / 2933 / 3200 SO-DIMM

GENERAL DESCRIPTION

This chapter gives an overview of the 260-pin SO DDR4 Dual-In-Line memory modules product family and describes its main characteristics.

FEATURES

- ◆ 260-Pin SO-DIMM (Lead-Free) DDR4 SDRAM Memory Module.
- ◆ Data transfer rates: . PC4-17000 / 19200 / 21300 / 23400 / 25600.
- ◆ Power supply: VDD: 1.20V ± 0.06V
- ◆ Module organization: 2048Meg × 64.
Chip organization: 2048M × 8.
- ◆ Nominal and dynamic on-die termination (ODT) for data, strobe, and mask signals
- ◆ Low-power auto self refresh (LPASR)
- ◆ Data bus inversion (DBI) for data bus
- ◆ On-die VREFDQ generation and calibration
- ◆ On-board I² serial presence-detect (SPD) EEPROM
- ◆ 16 internal banks; 4 groups of 4 banks each
- ◆ Fixed burst chop (BC) of 4 and burst length (BL) of 8 via the mode register set (MRS)
- ◆ Selectable BC4 or BL8 on-the-fly (OTF)
- ◆ Fly-by topology
- ◆ Terminated control command and address bus
- ◆ Operating Temperature : 0 °C ~ 85 °C
- ◆ Storage Temperature : -55 °C ~ 100 °C

Ordering Information for Compliant Products

Product Type	Compliance Code	Description	DRAM Organisation	# of SDRAMs
MM4SAGF3PG-2133C-A00	16GB, PC4 - 17000, 15-15-15	1 Rank, Non-ECC	2048Mx8	8
MM4SAGF3PG-2400C-A00	16GB, PC4 - 19200, 17-17-17	1 Rank, Non-ECC	2048Mx8	8
MM4SAGF3PG-2666C-A00	16GB, PC4 - 21300, 19-19-19	1 Rank, Non-ECC	2048Mx8	8
MM4SAGF3PG-2933C-A00	16GB, PC4 - 23400, 21-21-21	1 Rank, Non-ECC	2048Mx8	8
MM4SAGF3PG-3200C-A00	16GB, PC4 - 25600, 22-22-22	1 Rank, Non-ECC	2048Mx8	8



DDR4 2133 / 2400 / 2666 / 2933 / 3200 16GB With 2048Mx8 / 260 Pin SO-DIMM

Pinout

260-Pin DDR4 SODIMM Front								260-Pin DDR4 SODIMM Back							
Pin	Symbol	Pin	Symbol	Pin	Symbol	Pin	Symbol	Pin	Symbol	Pin	Symbol	Pin	Symbol	Pin	Symbol
1	V _{SS}	67	DQ29	133	A1	199	DM5_n/ DBI5_n	2	V _{SS}	68	V _{SS}	134	EVENT_n, NF	200	DQ55_t
3	DQ5	69	V _{SS}	135	V _{DD}	201	V _{SS}	4	DQ4	70	DQ24	136	V _{DD}	202	V _{SS}
5	V _{SS}	71	DQ25	137	CK0_t	203	DQ46	6	V _{SS}	72	V _{SS}	138	CK1_t/NF	204	DQ47
7	DQ1	73	V _{SS}	139	CK0_c	205	V _{SS}	8	DQ0	74	DQ53_c	140	CK1_c/NF	206	V _{SS}
9	V _{SS}	75	DM3_n/ DBI3_n	141	V _{DD}	207	DQ42	10	V _{SS}	76	DQ53_t	142	V _{DD}	208	DQ43
11	DQ50_c	77	V _{SS}	143	PARITY	209	V _{SS}	12	DM0_n/ DBI0_n	78	V _{SS}	144	A0	210	V _{SS}
13	DQ50_t	79	DQ30	145	BA1	211	DQ52	14	V _{SS}	80	DQ31	146	A10/AP	212	DQ53
15	V _{SS}	81	V _{SS}	147	V _{DD}	213	V _{SS}	16	DQ6	82	V _{SS}	148	V _{DD}	214	V _{SS}
17	DQ7	83	DQ26	149	CS0_n	215	DQ49	18	V _{SS}	84	DQ27	150	BA0	216	DQ48
19	V _{SS}	85	V _{SS}	151	WE_n/ A14	217	V _{SS}	20	DQ2	86	V _{SS}	152	RAS_n/ A16	218	V _{SS}
21	DQ3	87	CB5/NC	153	V _{DD}	219	DQ56_c	22	V _{SS}	88	CB4/NC	154	V _{DD}	220	DM6_n/ DBI6_n
23	V _{SS}	89	V _{SS}	155	ODT0	221	DQ56_t	24	DQ12	90	V _{SS}	156	CAS_n/ A15	222	V _{SS}
25	DQ13	91	CB1/NC	157	CS1_n	223	V _{SS}	26	V _{SS}	92	CB0/NC	158	A13	224	DQ54
27	V _{SS}	93	V _{SS}	159	V _{DD}	225	DQ55	28	DQ8	94	V _{SS}	160	V _{DD}	226	V _{SS}
29	DQ9	95	DQ58_c	161	ODT1	227	V _{SS}	30	V _{SS}	96	DM8_n/ DBI_n/NC	162	C0/ CS2_n/NC	228	DQ50
31	V _{SS}	97	DQ58_t	163	V _{DD}	229	DQ51	32	DQ51_c	98	V _{SS}	164	V _{REFCA}	230	V _{SS}
33	DM1_n/ DBI_n	99	V _{SS}	165	C1, CS3_n, NC	231	V _{SS}	34	DQ51_t	100	CB6/NC	166	SA2	232	DQ60
35	V _{SS}	101	CB2/NC	167	V _{SS}	233	DQ61	36	V _{SS}	102	V _{SS}	168	V _{SS}	234	V _{SS}
37	DQ15	103	V _{SS}	169	DQ37	235	V _{SS}	38	DQ14	104	CB7/NC	170	DQ36	236	DQ57
39	V _{SS}	105	CB3/NC	171	V _{SS}	237	DQ56	40	V _{SS}	106	V _{SS}	172	V _{SS}	238	V _{SS}
41	DQ10	107	V _{SS}	173	DQ33	239	V _{SS}	42	DQ11	108	RESET_n	174	DQ32	240	DQ57_c
43	V _{SS}	109	CKE0	175	V _{SS}	241	DM7_n/ DBI7_n	44	V _{SS}	110	CKE1	176	V _{SS}	242	DQ57_t
45	DQ21	111	V _{DD}	177	DQ54_c	243	V _{SS}	46	DQ20	112	V _{DD}	178	DM4_n/ DBI4_n	244	V _{SS}
47	V _{SS}	113	BG1	179	DQ54_t	245	DQ62	48	V _{SS}	114	ACT_n	180	V _{SS}	246	DQ63
49	DQ17	115	BG0	181	V _{SS}	247	V _{SS}	50	DQ16	116	ALERT_n	182	DQ39	248	V _{SS}
51	V _{SS}	117	V _{DD}	183	DQ38	249	DQ58	52	V _{SS}	118	V _{DD}	184	V _{SS}	250	DQ59
53	DQ52_c	119	A12	185	V _{SS}	251	V _{SS}	54	DM2_n/ DBI2_n	120	A11	186	DQ35	252	V _{SS}
55	DQ52_t	121	A9	187	DQ34	253	SCL	56	V _{SS}	122	A7	188	V _{SS}	254	SDA
57	V _{SS}	123	V _{DD}	189	V _{SS}	255	V _{DDSPD}	58	DQ22	124	V _{DD}	190	DQ45	256	SA0
59	DQ23	125	A8	191	DQ44	257	V _{PP}	60	V _{SS}	126	A5	192	V _{SS}	258	V _{TT}
61	V _{SS}	127	A6	193	V _{SS}	259	V _{PP}	62	DQ18	128	A4	194	DQ41	260	SA1
63	DQ19	129	V _{DD}	195	DQ40	-	-	64	V _{SS}	130	V _{DD}	196	V _{SS}	-	-
65	V _{SS}	131	A3	197	V _{SS}	-	-	66	DQ28	132	A2	198	DQ55_c	-	-

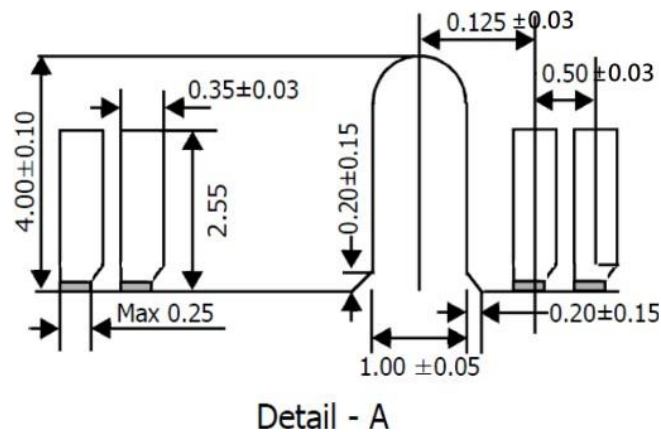
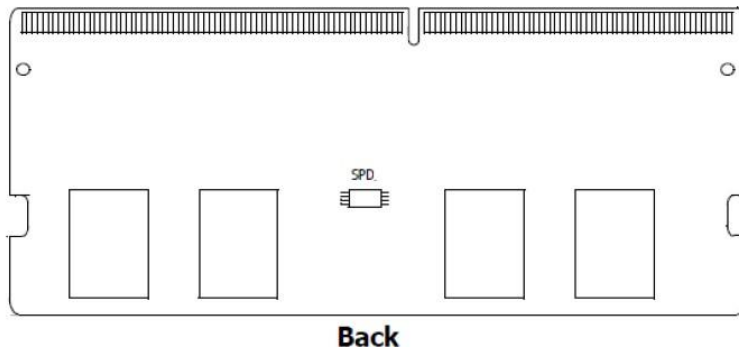
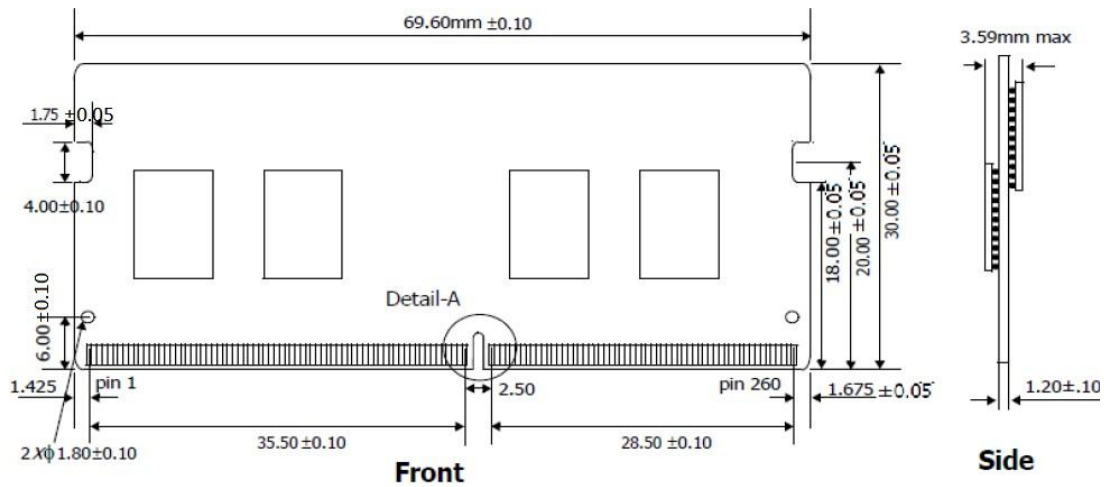


Pin Descriptions

Pin Name	Description	Pin Name	Description
A0-A17 ¹	SDRAM address bus	SCL	I ² C serial bus clock for SPD-TSE
BA0, BA1	SDRAM bank select	SDA	I ² C serial bus line for SPD-TSE
BG0, BG1	SDRAM bank group select	SA0-SA2	I ² C slave address select for SPD-TSE
RAS _n ²	SDRAM row address strobe	PARITY	SDRAM parity input
CAS _n ³	SDRAM column address strobe	VDD	SDRAM I/O and core power supply
WE _n ⁴	SDRAM write enable	C0, C1, C2	Chip ID lines
CS0 _n , CS1 _n ,	DIMM Rank Select Lines	12V	Optional power Supply on socket but not used on UDIMM
CKE0, CEK1	SDRAM clock enable lines input	VREFCA	SDRAM command/address reference supply
ODT0, ODT1	SDRAM on-die termination control lines input	VSS	Power supply return (ground)
ACT _n	SDRAM activate	VDDSPD	Serial SPD-TSE positive power supply
DQ0-DQ63	DIMM memory data bus	ALERT _n	SDRAM ALERT _n output
CB0-CB7	DIMM ECC check bits	VPP	SDRAM Supply
TDQS0 _t - TDQS8 _t TDQS0 _c - TDQS8 _c	Dummy loads for mixed populations of x4 based and x8 based RDIMMs. Not used on UDIMMs.		
DQS0 _t - DQS8 _t	SDRAM data strobes (positive line of differential pair)		
DQS0 _c - DQS8 _c	SDRAM data strobes (negative line of differential pair)	RESET _n	Set DRAMs to a Known State
DM0 _n - DM8 _n , DBI0 _n - DBI8 _n	SDRAM data masks/data bus insertion (x8-based x72 DIMMs)	EVENT _n	SPD signals a thermal event has occurred
CK0 _t , CK1 _t	SDRAM clock (positive line of differential pair)	VTT	SDRAM I/O termination supply
CK0 _c , CK1 _c	SDRAM clock (negative line of differential pair)	RFU	Reserved for future use

1. Address A17 is not valid for x8 and x16 based SDRAMs. For UDIMMs, this connection pin is NC.
2. RAS_n is a multiplexed function with A16.
3. CAS_n is a multiplexed function with A15.
4. WE_n is a multiplexed function with A14.

Physical Dimensions



Units : Millimeter