

# DDR2 Fully Buffered DIMM

DDR2 Fully Buffered DIMM is high-speed, low power memory module that use DDR2 SDRAM in FBGA package, 1 pcs AMB IC and a 2048 bits serial EEPROM on a 240-pin printed circuit board. DDR2 Fully Buffered DIMM is a Dual In-Line Memory Module and is intended for mounting into 240-pin edge connector sockets.

The Advanced Memory Buffer (AMB) allows buffering of memory traffic to support large memory capacities. All memory control for the DRAM resides in the host, including memory request initiation, timing, refresh scrubbing, sparing, configuration access and power management.



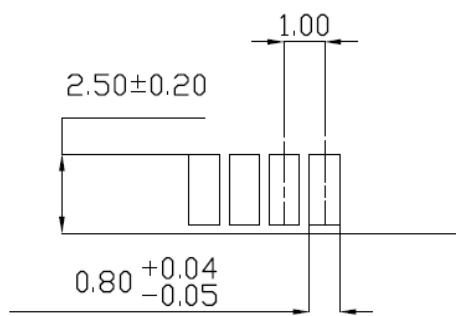
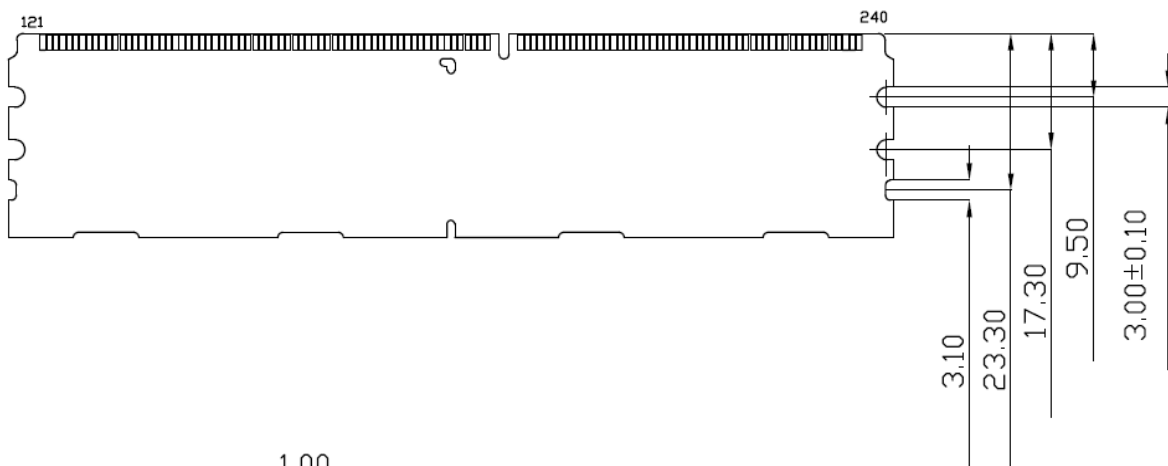
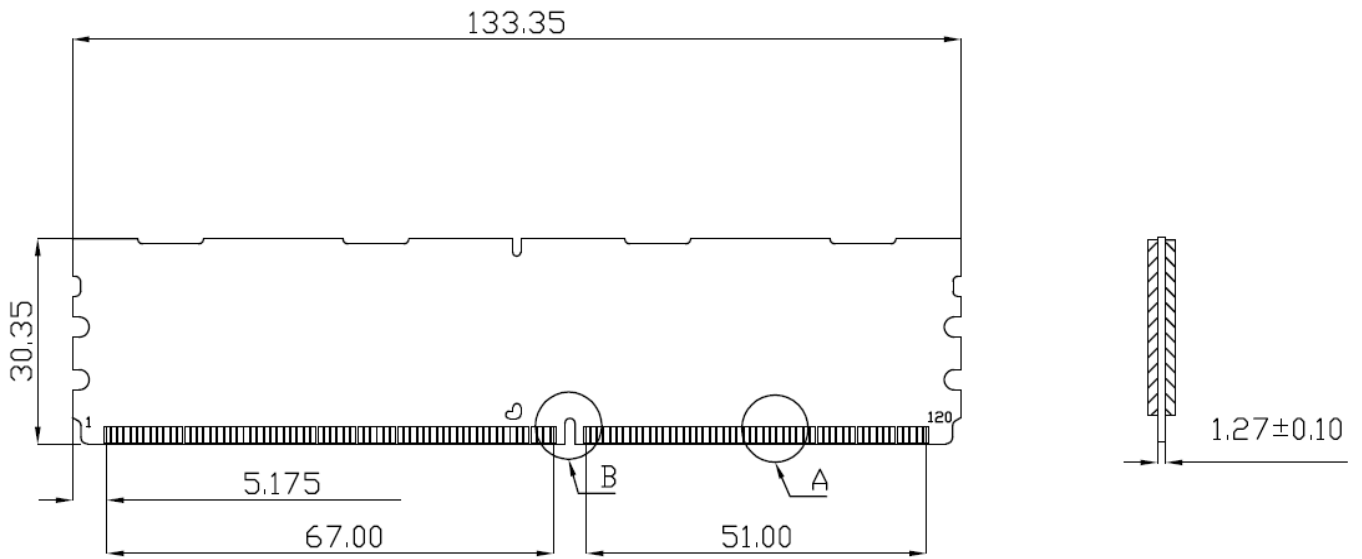
## Features

- RoHS compliant products.
- 1.8V +/- 0.1V Power Supply for DRAM VDD/VDDQ
- 1.5V +/- 0.075V Power Supply for AMB VCC
- 3.3V +/- 0.3V Power Supply for VDDSPD
- Buffer Interface with high-speed differential link at 1.5V
- Clock Freq: 333MHZ for 667Mb/s/Pin.  
400MHZ for 800Mb/s/Pin.
- Programmable CAS Latency: 3,4,5,6
- Channel error detection & reporting
- Channel fail over mode support
- Serial presence detect with EEPROM
- 8 Banks
- Posted CAS
- Automatic DDR2 DRAM bus and channel calibration
- MBIST and IBIST Test functions
- Support ECC function.

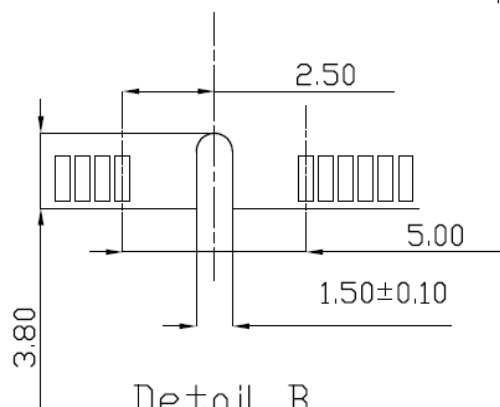
## Pin Identification

Symbol	Function
SCK, /SCK	System Clock Input
PN[13:0], /PN[13:0]	Primary Northbound Data
PS[9:0], /PS[9:0]	Primary Southbound Data
SN[13:0], /SN[13:0]	Secondary Northbound Data
SS[9:0], /SS[9:0]	Secondary Southbound Data,
SCL	Serial Presence Detect (SPD) Clock Input
SDA	SPD Data Input / Output
SA[2:0]	SPD Address Input, also used to select the DIMM number in the AMB
VID[1:0]	Voltage ID: these pins must be unconnected for DDR2-base Fully Buffered DIMMs VID[0] is VDD:OPEN=1.8V,GND=1.5V VID[1] is VCC:OPEN=1.5V,GND=1.2V
RESET	AMB reset signal
RFU	Reserved for Future Use
VCC	AMB Core Power and AMB Channel interface Power (1.5 Volt)
VDD	DRAM Power and AMB DRAM I/O Power (1.8 Volt)
VTT	DRAM Address/Command/Clock Termination Power (VDD/2)
VDDSPD	SPD Power
VSS	Ground
DNU/M_Test	The DNU/M Test pin provides an external connection R/Cs A-D for testing the margin of Vref which is produced by a voltage divider on the module. It is not intended to be used in normal system operation and must not be connected(DNU) in a system. This test pin may have other features on future card designs and if it does, will be included in this specification at that time.

**Dimensions**



Detail A



Detail B

**Note:**

1. Tolerances on all dimensions +/-0.15mm unless otherwise specified.

## Pin Assignments

Pin No	Pin Name	Pin No	Pin Name	Pin No	Pin Name	Pin No	Pin Name	Pin No	Pin Name	Pin No	Pin Name
01	VDD	41	/PN13	81	VSS	121	VDD	161	/SN13	201	VSS
02	VDD	42	VSS	82	PS4	122	VDD	162	VSS	202	SS4
03	VDD	43	VSS	83	/PS4	123	VDD	163	VSS	203	/SS4
04	VSS	44	RFU	84	VSS	124	VSS	164	RFU	204	VSS
05	VDD	45	RFU	85	VSS	125	VDD	165	RFU	205	VSS
06	VDD	46	VSS	86	RFU	126	VDD	166	VSS	206	RFU
07	VDD	47	VSS	87	RFU	127	VDD	167	VSS	207	RFU
08	VSS	48	PN12	88	VSS	128	VSS	168	SN12	208	VSS
09	VCC	49	/PN12	89	VSS	129	VCC	169	/SN12	209	VSS
10	VCC	50	VSS	90	PS9	130	VCC	170	VSS	210	SS9
11	VSS	51	PN6	91	/PS9	131	VSS	171	SN6	211	/SS9
12	VCC	52	/PN6	92	VSS	132	VCC	172	/SN6	212	VSS
13	VCC	53	VSS	93	PS5	133	VCC	173	VSS	213	SS5
14	VSS	54	PN7	94	/PS5	134	VSS	174	SN7	214	/SS5
15	VTT	55	/PN7	95	VSS	135	VTT	175	/SN7	215	VSS
16	VID1	56	VSS	96	PS6	136	VID0	176	VSS	216	SS6
17	/RESET	57	PN8	97	/PS6	137	DNU/M_Test	177	SN8	217	/SS6
18	VSS	58	/PN8	98	VSS	138	VSS	178	/SN8	218	VSS
19	RFU	59	VSS	99	PS7	139	RFU	179	VSS	219	SS7
20	RFU	60	PN9	100	/PS7	140	RFU	180	SN9	220	/SS7
21	VSS	61	/PN9	101	VSS	141	VSS	181	/SN9	221	VSS
22	PN0	62	VSS	102	PS8	142	SN0	182	VSS	222	SS8
23	/PN0	63	PN10	103	/PS8	143	/SN0	183	SN10	223	/SS8
24	VSS	64	/PN10	104	VSS	144	VSS	184	/SN10	224	VSS
25	PN1	65	VSS	105	RFU	145	SN1	185	VSS	225	RFU
26	/PN1	66	PN11	106	RFU	146	/SN1	186	SN11	226	RFU
27	VSS	67	/PN11	107	VSS	147	VSS	187	/SN11	227	VSS
28	PN2	68	VSS	108	VDD	148	SN2	188	VSS	228	SCK
29	/PN2	69	VSS	109	VDD	149	/SN2	189	VSS	229	/SCK
30	VSS	70	PS0	110	VSS	150	VSS	190	SS0	230	VSS
31	PN3	71	/PS0	111	VDD	151	SN3	191	/SS0	231	VDD
32	/PN3	72	VSS	112	VDD	152	/SN3	192	VSS	232	VDD
33	VSS	73	PS1	113	VDD	153	VSS	193	SS1	233	VDD
34	PN4	74	/PS1	114	VSS	154	SN4	194	/SS1	234	VSS
35	/PN4	75	VSS	115	VDD	155	/SN4	195	VSS	235	VDD
36	VSS	76	PS2	116	VDD	156	VSS	196	SS2	236	VDD
37	PN5	77	/PS2	117	VTT	157	SN5	197	/SS2	237	VTT
38	/PN5	78	VSS	118	SA2	158	/SN5	198	VSS	238	VDDSPD
39	VSS	79	PS3	119	SDA	159	VSS	199	SS3	239	SA0
40	PN13	80	/PS3	120	SCL	160	SN13	200	/SS3	240	SA1