

# DDR4 SDRAM UDIMM (PC4-xxxxx 4GB) GNxxN004GN-M525CC1

Rev. 1.00

## Features

- JEDEC Standard 260-pin Small-Outline Dual In-Line Memory Module
- Inputs and Outputs are SSTL-12compatible
- VDD=VDDQ= 1.2Volt (TYP)
- VPP=2.5Volt (TYP)
- VDDSPD=2.2-3.6V
- Low-Power auto self-refresh (LPASR)
- Normal and Dynamic On-Die Termination for data, strobe and mask signals.
- Data bus inversion (DBI) for data bus
- Fixed burst chop (BC) of 4 and burst length (BL) of 8 via the MRS
- Selectable BC4 or BL8 on-the fly (OTF)
- Golden Connector
- Chamfer
- Fly-By topology
- Terminated control, command and address bus
- Programmable /CAS Latency: 15, 17, 19, 21, 22
- Operation temperature – (0°C~85°C)
- On-die VREFDQ generation and Calibration
- On-Board EEPROM
- RoHs and Halogen free

Part Number	GN17N004GN-M525CC1 GN19N004GN-M525CC1 GN21N004GN-M525CC1 GN25N004GN-M525CC1
Density	4GB
Module speed	PC4-17000 (DDR4-2133) PC4-19200 (DDR4-2400) PC4-21333 (DDR4-2666) PC4-25600 (DDR4-3200)
Function	Non ECC
Operating Temp	0 to +85°C
Organization	512Mx64
Component Composition	512Mx16 Micron *4
Number of Rank	1
Height	30mm
Golden Connector	Au: 3u"
Chamfer	Yes

## Key Parameter

Part Number	Module speed	tRCD (ns)	tRP (ns)	tRC (ns)	CL-tRCD-tRP
GN17N004GN-M525CC1	PC4-17000 (DDR4-2133)	13.50	13.50	46.50	15-15-15
GN19N004GN-M525CC1	PC4-19200 (DDR4-2400)	13.75	13.75	45.75	17-17-17
GN21N004GN-M525CC1	PC4-21333 (DDR4-2666)	13.75	13.75	45.75	19-19-19
GN25N004GN-M525CC1	PC4-25600 (DDR4-3200)	13.75	13.75	45.75	22-22-22

## Environmental Req.

Symbol	Parameter	Rating	Units	Notes
TOPR	Operating Temperature (ambient)	0 to +85	°C	1,2
		+85 to +95	°C	1,2
TSTG	Storage Temperature	-50 to +100	°C	-
HOPR	Operating Humidity (relative)	10 to 90	%	-
HSTG	Storage Humidity (without condensation)	5 to 95	%	-

1. The component maximum case temperature (Tcase) shall not exceed the value specified in the DDR DRAM component specification.

2. Average Refresh Period 7.8us at lower then TCASE 85°C, 3.9us at 85°C < TCASE ≤ 95°C

# Absolute Max DC Rating

Symbol	Parameter	Rating	Units	Notes
V <sub>IN</sub> , V <sub>OUT</sub>	Voltage on any pins relative to V <sub>SS</sub>	-0.3 to +1.5	V	1
V <sub>DD</sub>	Voltage on V <sub>DD</sub> supply relative to V <sub>SS</sub>	-0.3 to +1.5	V	1,2
V <sub>DDQ</sub>	Voltage on V <sub>DDQ</sub> supply relative to V <sub>SS</sub>	-0.3 to +1.5	V	1,2
V <sub>PP</sub>	Voltage on V <sub>PP</sub> supply relative to V <sub>SS</sub>	-0.3 to +3.0	V	-

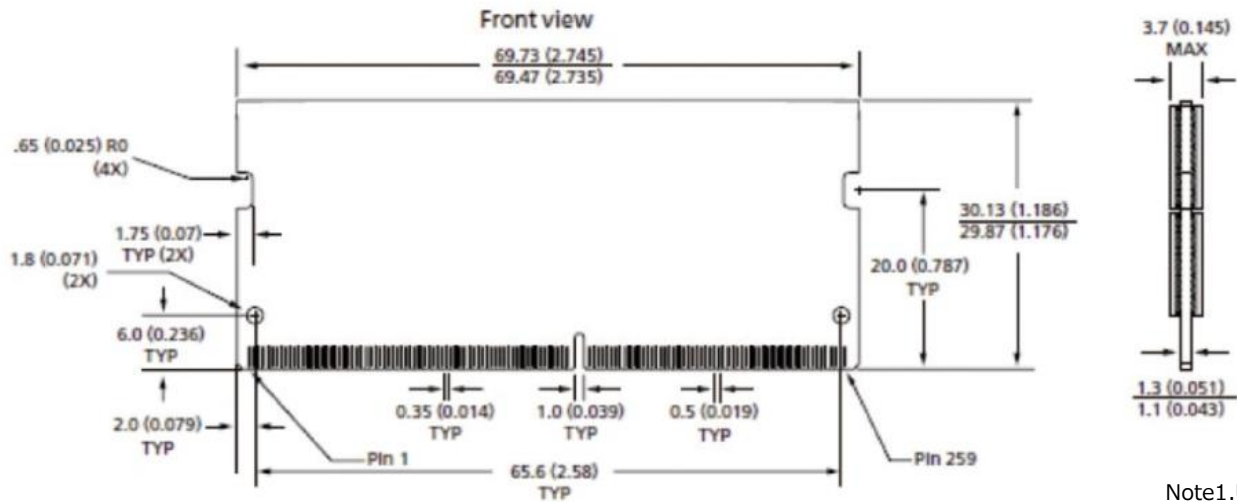
1. Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is stress rating only, and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.
2. V<sub>DD</sub> and V<sub>DDQ</sub> must be within 300 mV of each other at all times; and V<sub>REF</sub> must be not greater than 0.6 x V<sub>DDQ</sub>, When V<sub>DD</sub> and V<sub>DDQ</sub> are less than 500 mV; V<sub>REF</sub> may be equal to or less than 300 mV

# Operating Conditions

Symbol	Parameter	Min	Nom	Max	Units	Notes
V <sub>DD</sub>	V <sub>DD</sub> supply voltage	1.14	1.2	1.26	V	1
V <sub>PP</sub>	DRAM activating power supply	2.375	2.5	2.75	V	2
V <sub>REFCA(DC)</sub>	Input reference voltage command/ address bus	0.49 x V <sub>DD</sub>	0.5 x V <sub>DD</sub>	0.51 x V <sub>DD</sub>	V	3
V <sub>TT</sub>	Termination reference voltage (DC) – command/address bus	0.49 x V <sub>DD</sub> - 20mV	0.5 x V <sub>DD</sub>	0.51 x V <sub>DD</sub> + 20mV	V	4

1. V<sub>DDQ</sub> tracks with V<sub>DD</sub>; V<sub>DDQ</sub> and V<sub>DD</sub> are tied together.
2. V<sub>PP</sub> must be greater than or equal to V<sub>DD</sub> at all times.
3. V<sub>REFCA</sub> must not be greater than 0.6 x V<sub>DD</sub>. When V<sub>DD</sub> is less than 500mV, V<sub>REF</sub> may be less than or equal to 300mV.
4. V<sub>TT</sub> termination voltages in excess of the specification limit adversely affect the voltage margins of command and address signals and reduce timing margins.

# Dimensions



Note1.Unit:mm