HAGIWARA Solutions

DDR3 SDRAM SO-DIMM
(PC3-12800 8GB)
FN12N008GL-M414CC0

Rev. 1.00

Features

- JEDEC Standard 204-pin Dual In-Line Memory Module
- Intend for PC3-12800 applications
- Inputs and Outputs are SSTL-15 compatible
- VDD=VDDQ= 1.35Volt(-0.067/+0.1V)or 1.5Volt
- Bi-directional Differential Data Strobe
- DLL aligns DQ and DQS transition with CK transition
- Normal and Dynamic On-Die Termination support
- Golden Connector
- 8 bit pre-fetch
- Two different termination values (Rtt_Nom & Rtt_WR)
- Auto & self refresh 7.8μs (TA ≤ +85°C)
- SDRAM operating temperature range
  -20°C ≤ TA ≤ +85°C
- Programmable Device Operation:
  - Burst Type: Sequential or Interleave
  - Device CAS# Latency: 7,9,11
  - Burst Length: switch on-the-fly: BL=8 or BC 4
- RoHS Compliant

Part Number	FN12N008GL-M414CC0
Density	8GB
Module speed	PC3-12800 (DDR3-1600)
Function	Non ECC
Operating Temp	0 to +85℃
Organization	1Gx64
Component Composition	512Mx8 Micron*16
Number of Rank	2
Height	30mm
Golden Connector	Au:3u”
Chamfer	Yes

Key Parameter

Part Number	Module speed	tRCD (ns)	tRP (ns)	tRC (ns)	CL-tRCD-tRP
FN12N008GL-M414CC0	PC3-12800 (DDR3-1600)	13.125	13.125	48.125	11–11-11

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
VIN, VOUT	Voltage on any pins relative to Vss	-0.4 to +1.8	V	1
VDD	Voltage on VDD supply relative to Vss	-0.4 to +1.8	V	1,2
VDDQ	Voltage on VDDQ supply relative to Vss	-0.4 to +1.8	V	1,2

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. VDD and VDDQ must be within 300 mV of each other at all times;and VREF must be not greater than 0.6 x VDDQ, When VDD and VDDQ are less than 500 mV; VREF may be equal to or less than 300 mV

Operating Conditions

- Recommended DC Operating Conditions - DDR3L (1.35V) operation

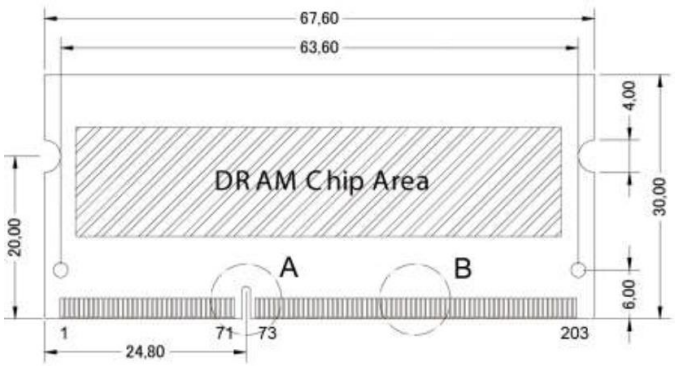
Voltage referenced to Vss = 0V, VDD&VDDQ=1.35 V +0.100/- 0.067V , Tc = 0 to 85°C

Symbol	Parameter	Min	MAX	Units	Notes
VDD	Supply Voltage	1.283	1.45	V	1,2
VDDSPD		3	3.6	V	
VDDQ	Supply Voltage for Output	1.283	1.45	V	1,2
VREFCA, (DC)	I/O Reference Voltage(CMD/ADD)	0.49 x VDDQ	0.51 x VDDQ	V	3,4
VREFDQ, (DC)	I/O Reference Voltage(DQ)	0.49 x VDDQ	0.51 x VDDQ	V	3,4

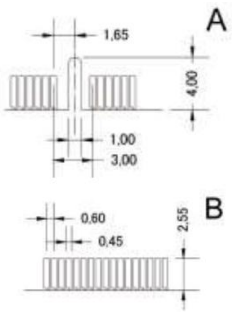
1. Under all conditions VDDQ must be less than or equal to VDD.
2. VDDQ tracks with VDD. AC parameters are measured with VDD and VDDQ tied together.
3. The AC peak noise on VREF may not allow VREF to deviate from VREF(DC) by more than anent d (for reference: approx. ±13.5mV)
4. For reference: approx. VDD/2 ±13.5mV

Dimensions

Front



Side



Note1.Unit:mm
Note2.Tolerance:±0.15mm

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