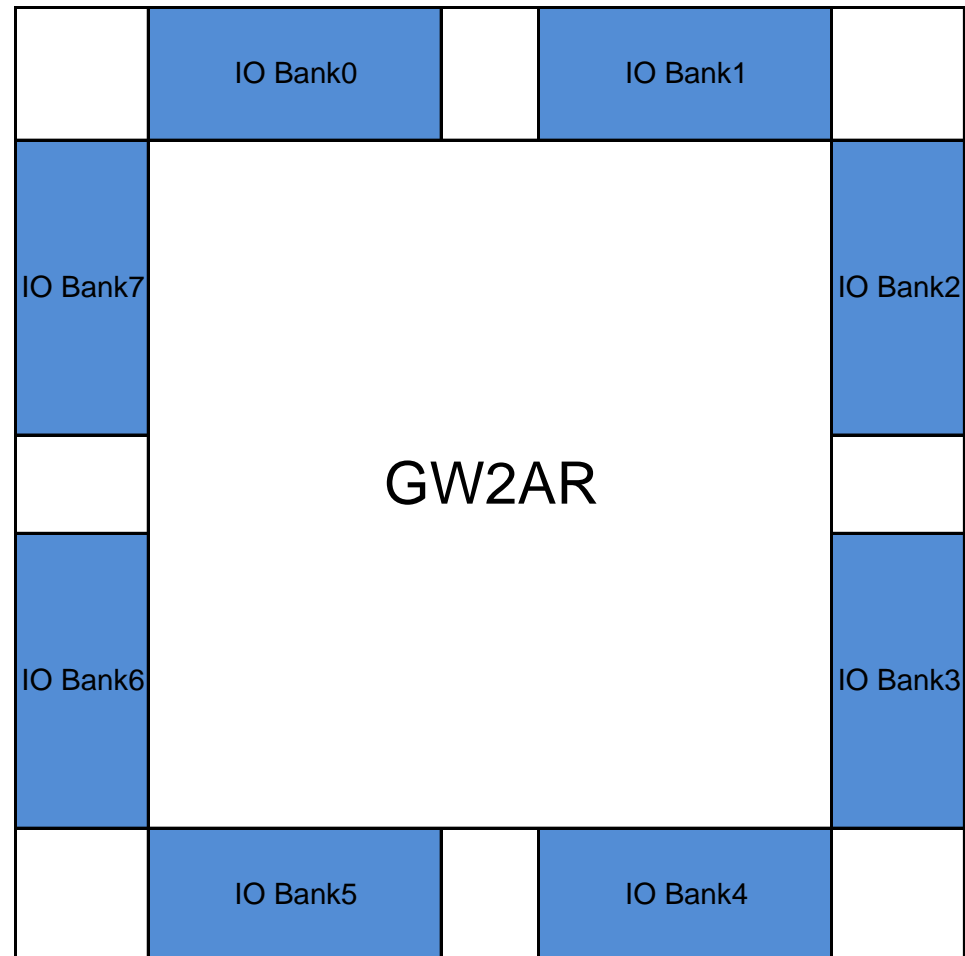


| Date       | Version | Description   |
|------------|---------|---|
| 09/02/2016 | 1.0E    | Initial version published.  |
| 03/28/2019 | 1.1E    | The info. of EQ176 package added.   |
| 03/10/2020 | 1.2E    | The descriptions of pin MODE0/MODE1/MODE2 improved.   |
| 06/30/2020 | 1.2.1E  | QN88/EQ144 package embedded with PSRAM renamed QN88P/EQ144P.  |
| 08/07/2020 | 1.3E    | The info. of QN88PF and EQ144PF packages added.<br>The power supply pin in package LQ176 and EQ176 modified.  |
| 04/22/2021 | 1.4E    | The info. of PG256S package added.  |
| 10/25/2021 | 1.5E    | Pin definitions updated.  |
| 08/12/2022 | 1.6E    | The info. of PG256S package removed.  |
| 10/20/2022 | 1.6.1E  | The note in Power sheet updated.<br>The note in Pin Definitions sheet updated.  |
| 03/10/2023 | 1.7E    | LQ176 and LQ144 packages removed.<br>The note of EQ144/QN88/EQ176/QN88P/EQ144P/EQ144PF/QN88PF package in Power sheet added.<br>The description of CLKHOLD_N pin in Pin Definitions sheet updated.                   |
| 06/30/2023 | 1.7.1E  | The descriptions of pin definitions and info. for MODE0, MODE1, MODE2 pins optimized.   |
| 11/15/2024 | 1.7.2E  | The descriptions of EPAD pin in Pin Definitions sheet added.<br>The descriptions of EXTR pin in Pin Definitions sheet optimized.<br>The I/O descriptions of Ready and Done pins in Pin Definitions sheet optimized. |

| Pin Name                            | I/O                        | Description   |
|-------------------------------------|----------------------------|---|
| User I/O                            |                            |   |
| IO[End][Row/Column Number][A/B]     | I/O                        | [End] indicates the pin location, including L(left), R(right), B(bottom), and T(top).   |
|                                     |                            | [Row/Column Number] indicates the pin row/column number. If [End] is T(top) or B(bottom), the pin indicates the column number of the corresponding CFU. If [End] is L(left) or R(right), the pin indicates the row number of the corresponding CFU. |
|                                     |                            | [A/B] indicates differential signal pair information.   |
| Multi-Function Pins                 |                            |   |
| IO[End][Row/Column Number][A/B]/MMM |                            | /MMM represents one or more of the other functions in addition to being general purpose user I/O. When these functions are not in use, these pins can be used as user I/O.  |
| D0                                  | I/O                        | Data port D0 in CPU mode  |
| D1                                  | I/O                        | Data port D1 in CPU mode  |
| D2                                  | I/O                        | Data port D2 in CPU mode  |
| D3                                  | I/O                        | Data port D3 in CPU mode  |
| D4                                  | I/O                        | Data port D4 in CPU mode  |
| D5                                  | I/O                        | Data port D5 in CPU mode  |
| D6                                  | I/O                        | Data port D6 in CPU mode  |
| D7                                  | I/O                        | Data port D7 in CPU mode  |
| WE_N                                | I                          | Select data input/output of D[7:0] in CPU mode.0: Write;1: Read.  |
| DOUT                                | O                          | Data output in SERIAL mode  |
| DIN                                 | I, internal weak pull-up   | Data input in SERIAL mode   |
| TMS                                 | I, internal weak pull-up   | Serial mode input in JTAG mode  |
| TCK                                 | I                          | Serial clock input in JTAG mode   |
| TDO                                 | O                          | Serial data output in JTAG mode   |
| TDI                                 | I, internal weak pull-up   | Serial data input in JTAG mode  |
| JTAGSEL_N                           | I, internal weak pull-up   | Reconfigure JTAG download function signal   |
| RECONFIG_N                          | I, internal weak pull-up   | Global reset GowinCONFIG logic signal, active low   |
| FASTRD_N                            | I                          | Access SPI FLASH to select signal. Low, Fast Read mode; High, Read mode.  |
| DONE <sup>[1]</sup>                 | O, internal weak pull-up   | High, the programming configuration has been completed successfully;<br>Low, the programming configuration has not been completed or failed.  |
|                                     | I, internal weak pull-up   | When the DONE signal is low, delay the chip to activate. Activate the chip until the DONE signal is high.   |
| READY <sup>[1]</sup>                | I/O, internal weak pull-up | High, the device can be programmed and configured currently;<br>Low, the device cannot be programmed and configured currently.  |
| MI                                  | I                          | MI in MSPI mode   |
| MO                                  | O                          | MO in MSPI mode   |

| Pin Name            | I/O                      | Description   |
|---------------------|--------------------------|---|
| MCS_N               | O                        | Enable signal MCS_N in MSPI mode, active-low  |
| MCLK                | O                        | Clock output MCLK in MSPI mode, with default frequency of 2.5Mhz  |
| SCLK                | I                        | Clock input in SSPI, SERIAL, and CPU modes  |
| SO                  | O                        | SO in SSPI mode   |
| SI                  | I/O                      | SI in SSPI mode   |
| SSPI_CS_N           | I/O                      | Enable signal SSPI_CS_N in SSPI mode, active-low, and internal weak pull-up   |
| CLKHOLD_N           | I, internal weak pull-up | Active-high in SSPI mode;<br>Active-low in CPU mode.  |
| GCLKC_[x]           | I                        | Differential input pin of GCLKT_[x], C(Comp), [x] is global clock number <sup>[2]</sup>   |
| GCLKT_[x]           | I                        | Global clock input pin, T(True), [x] is global clock number   |
| LPLL_C_fb/RPLL_C_fb | I                        | Left/Right PLL feedback input pin, C(Comp)  |
| LPLL_T_fb/RPLL_T_fb | I                        | Left/Right PLL feedback input pin, T(True)  |
| LPLL_C_in/RPLL_C_in | I                        | Left/Right PLL clock input pin, C(Comp)   |
| LPLL_T_in/RPLL_T_in | I                        | Left/Right PLL clock input pin, T(True)   |
| MODE2               | I, internal weak pull-up | GowinCONFIG modes selection pin; if this pin is marked as "VCCIO", it's internally powered; if this pin is marked as "GND", it's internally grounded. |
| MODE1               | I, internal weak pull-up | GowinCONFIG modes selection pin; if this pin is marked as "VCCIO", it's internally powered; if this pin is marked as "GND", it's internally grounded. |
| MODE0               | I, internal weak pull-up | GowinCONFIG modes selection pin; if this pin is marked as "VCCIO", it's internally powered; if this pin is marked as "GND", it's internally grounded. |
| <b>Other Pins</b>   |                          |   |
| EXTR                | NA                       | Dedicated pin to provide reference voltage for internal circuits, must be connected to an external 10K 1% resistor to ground.                         |
| NC                  | NA                       | Reserved  |
| VSS                 | NA                       | Ground  |
| VCC                 | NA                       | Power supply pin of core voltage  |
| VCCIO#              | NA                       | Power supply pin of I/O voltage for I/O BANK#   |
| VCCX                | NA                       | Power supply pin of auxiliary voltage   |
| VCCPLLL0/1          | NA                       | Left PLL0/1 voltage supply pin, LQFP is separately packaged.  |
| VCCPLLR0/1          | NA                       | Right PLL0/1 voltage supply pin, LQFP is separately packaged.   |
| VCCPLLL             | NA                       | Package PBGA: Left PLL0/1 voltage supply pin  |
| VCCPLLR             | NA                       | Package PBGA: Right PLL0/1 voltage supply pin   |

| Pin Name  | I/O | Description                     |
|---|-----|---------------------------------|
| EPAD  | NA  | Exposed pad. Connect to ground. |
| <b>Note!</b><br><sup>[1]</sup> The default state of READY/DONE is open-drain output, internal weak pull-up. DONE outputs 0 during configuration.<br><sup>[2]</sup> When the input is single-ended, GCLKC_[x] pin is not a global clock pin. |     |                                 |

**Note!**

[1] Each Bank has independent reference voltage (VREF).

[2] You can select to use IOB internal VREF (equals to  $0.5 \times V_{CCIO}$ ).

[3] You can also select to use external VREF input (use any IO pins as external VREF input).

**Note!**

<sup>[1]</sup> It is embedded with SDRAM.

<sup>[2]</sup> It is embedded with PSRAM.

<sup>[3]</sup> "Tie to VSS by 10K Resistor" indicates the pin is connected to the ground with 10K resistance.

<sup>[4]</sup> The pin is internally grounded.

| Pin Name       | Function | DQS  | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|----------------|----------|------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| EXTR           | Ground   |      | N/A  |                        |                   |      | 47                  | 75                   | 91                   | 47                   | 75                    | 75                     | 47                    |
| IOB12A         | I/O      | DQ5  | 5    |                        | True_of_IOB12B    | TRUE |                     | 44                   | 53                   |                      | 44                    | 44                     |                       |
| IOB12B         | I/O      | DQ5  | 5    |                        | Comp_of_IOB12A    | TRUE |                     | 45                   | 54                   |                      | 45                    | 45                     |                       |
| IOB13A         | I/O      | DQ5  | 5    |                        | True_of_IOB13B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB13B         | I/O      | DQ5  | 5    |                        | Comp_of_IOB13A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB14A         | I/O      | DQ5  | 5    |                        | True_of_IOB14B    | TRUE | 29                  | 46                   | 55                   | 29                   | 46                    | 46                     | 29                    |
| IOB14B         | I/O      | DQ5  | 5    |                        | Comp_of_IOB14A    | TRUE | 30                  | 47                   | 56                   | 30                   | 47                    | 47                     | 30                    |
| IOB15A         | I/O      | DQ5  | 5    |                        | True_of_IOB15B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB15B         | I/O      | DQ5  | 5    |                        | Comp_of_IOB15A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB16A         | I/O      | DQ5  | 5    |                        | True_of_IOB16B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB16B         | I/O      | DQ5  | 5    |                        | Comp_of_IOB16A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB17A         | I/O      | DQ5  | 5    |                        | True_of_IOB17B    | NONE |                     | 48                   | 57                   |                      | 48                    | 48                     |                       |
| IOB17B         | I/O      | DQ5  | 5    |                        | Comp_of_IOB17A    | NONE |                     | 49                   | 58                   |                      | 49                    | 49                     |                       |
| IOB18A         | I/O      | DQ5  | 5    |                        | True_of_IOB18B    | TRUE | 31                  |                      | 59                   | 31                   |                       |                        | 31                    |
| IOB18B         | I/O      | DQ5  | 5    |                        | Comp_of_IOB18A    | TRUE | 32                  |                      | 60                   | 32                   |                       |                        | 32                    |
| IOB19A         | I/O      | DQ5  | 5    |                        | True_of_IOB19B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB19B         | I/O      | DQ5  | 5    |                        | Comp_of_IOB19A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB20A         | I/O      | DQ5  | 5    |                        | True_of_IOB20B    | TRUE |                     | 50                   |                      |                      | 50                    | 50                     |                       |
| IOB20B         | I/O      | DQ5  | 5    |                        | Comp_of_IOB20A    | TRUE |                     | 51                   |                      |                      | 51                    | 51                     |                       |
| IOB21A         | I/O      | DQS5 | 5    |                        | True_of_IOB21B    | NONE |                     |                      | 61                   |                      |                       |                        |                       |
| IOB21B         | I/O      | DQS5 | 5    |                        | Comp_of_IOB21A    | NONE |                     |                      | 62                   |                      |                       |                        |                       |
| IOB22A         | I/O      | DQ5  | 5    |                        | True_of_IOB22B    | TRUE |                     | 52                   |                      |                      | 52                    | 52                     |                       |
| IOB22B         | I/O      | DQ5  | 5    |                        | Comp_of_IOB22A    | TRUE |                     | 54                   |                      |                      | 54                    | 54                     |                       |
| IOB23A         | I/O      | DQ5  | 5    |                        | True_of_IOB23B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB23B         | I/O      | DQ5  | 5    |                        | Comp_of_IOB23A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB24A         | I/O      | DQ5  | 5    |                        | True_of_IOB24B    | TRUE | 33                  |                      |                      | 33                   |                       |                        | 33                    |
| IOB24B         | I/O      | DQ5  | 5    |                        | Comp_of_IOB24A    | TRUE | 34                  |                      |                      | 34                   |                       |                        | 34                    |
| IOB25A         | I/O      | DQ5  | 5    |                        | True_of_IOB25B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB25B         | I/O      | DQ5  | 5    |                        | Comp_of_IOB25A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB26A         | I/O      | DQ5  | 5    |                        | True_of_IOB26B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB26B         | I/O      | DQ5  | 5    |                        | Comp_of_IOB26A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB27A/GCLKT_5 | I/O      | DQ5  | 5    | GCLKT_5                | True_of_IOB27B    | NONE |                     |                      | 63                   |                      |                       |                        |                       |
| IOB27B/GCLKC_5 | I/O      | DQ5  | 5    | GCLKC_5                | Comp_of_IOB27A    | NONE |                     |                      | 64                   |                      |                       |                        |                       |

**Note!**

<sup>[1]</sup> It is embedded with SDRAM.

<sup>[2]</sup> It is embedded with PSRAM.

<sup>[3]</sup> "Tie to VSS by 10K Resistor" indicates the pin is connected to the ground with 10K resistance.

<sup>[4]</sup> The pin is internally grounded.

| Pin Name       | Function | DQS  | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|----------------|----------|------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| IOB2A          | I/O      | DQ4  | 5    |                        | True_of_IOB2B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB2B          | I/O      | DQ4  | 5    |                        | Comp_of_IOB2A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB30A/GCLKT_4 | I/O      | DQ6  | 4    | GCLKT_4                | True_of_IOB30B    | TRUE | 35                  | 56                   | 68                   | 35                   | 56                    | 56                     | 35                    |
| IOB30B/GCLKC_4 | I/O      | DQ6  | 4    | GCLKC_4                | Comp_of_IOB30A    | TRUE | 36                  | 57                   | 69                   | 36                   | 57                    | 57                     | 36                    |
| IOB31A         | I/O      | DQ6  | 4    |                        | True_of_IOB31B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB31B         | I/O      | DQ6  | 4    |                        | Comp_of_IOB31A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB32A         | I/O      | DQ6  | 4    |                        | True_of_IOB32B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB32B         | I/O      | DQ6  | 4    |                        | Comp_of_IOB32A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB33A         | I/O      | DQ6  | 4    |                        | True_of_IOB33B    | NONE |                     | 58                   |                      |                      | 58                    | 58                     |                       |
| IOB33B         | I/O      | DQ6  | 4    |                        | Comp_of_IOB33A    | NONE |                     | 59                   |                      |                      | 59                    | 59                     |                       |
| IOB34A         | I/O      | DQ6  | 4    |                        | True_of_IOB34B    | TRUE | 37                  | 60                   | 70                   | 37                   | 60                    | 60                     | 37                    |
| IOB34B         | I/O      | DQ6  | 4    |                        | Comp_of_IOB34A    | TRUE | 38                  | 61                   | 71                   | 38                   | 61                    | 61                     | 38                    |
| IOB35A         | I/O      | DQ6  | 4    |                        | True_of_IOB35B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB35B         | I/O      | DQ6  | 4    |                        | Comp_of_IOB35A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB36A         | I/O      | DQ6  | 4    |                        | True_of_IOB36B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB36B         | I/O      | DQ6  | 4    |                        | Comp_of_IOB36A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB37A         | I/O      | DQS6 | 4    |                        | True_of_IOB37B    | NONE |                     |                      | 72                   |                      |                       |                        |                       |
| IOB37B         | I/O      | DQS6 | 4    |                        | Comp_of_IOB37A    | NONE |                     |                      | 73                   |                      |                       |                        |                       |
| IOB38A         | I/O      | DQ6  | 4    |                        | True_of_IOB38B    | TRUE |                     | 62                   | 74                   |                      | 62                    | 62                     |                       |
| IOB38B         | I/O      | DQ6  | 4    |                        | Comp_of_IOB38A    | TRUE |                     | 63                   | 75                   |                      | 63                    | 63                     |                       |
| IOB39A         | I/O      | DQ6  | 4    |                        | True_of_IOB39B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB39B         | I/O      | DQ6  | 4    |                        | Comp_of_IOB39A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB3A          | I/O      | DQ4  | 5    |                        | True_of_IOB3B     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB3B          | I/O      | DQ4  | 5    |                        | Comp_of_IOB3A     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB40A         | I/O      | DQ6  | 4    |                        | True_of_IOB40B    | TRUE | 39                  | 64                   | 76                   | 39                   | 64                    | 64                     | 39                    |
| IOB40B         | I/O      | DQ6  | 4    |                        | Comp_of_IOB40A    | TRUE | 40                  | 65                   | 77                   | 40                   | 65                    | 65                     | 40                    |
| IOB41A         | I/O      | DQ6  | 4    |                        | True_of_IOB41B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB41B         | I/O      | DQ6  | 4    |                        | Comp_of_IOB41A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB42A         | I/O      | DQ6  | 4    |                        | True_of_IOB42B    | TRUE |                     | 66                   | 78                   |                      | 66                    | 66                     |                       |
| IOB42B         | I/O      | DQ6  | 4    |                        | Comp_of_IOB42A    | TRUE | 42                  | 67                   | 79                   | 42                   | 67                    | 67                     | 42                    |
| IOB43A         | I/O      | DQ6  | 4    |                        | True_of_IOB43B    | NONE | 41                  |                      |                      | 41                   |                       |                        | 41                    |
| IOB43B         | I/O      | DQ6  | 4    |                        | Comp_of_IOB43A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB44A         | I/O      | DQ6  | 4    |                        | True_of_IOB44B    | TRUE |                     |                      | 80                   |                      |                       |                        |                       |

**Note!**

<sup>[1]</sup> It is embedded with SDRAM.

<sup>[2]</sup> It is embedded with PSRAM.

<sup>[3]</sup> "Tie to VSS by 10K Resistor" indicates the pin is connected to the ground with 10K resistance.

<sup>[4]</sup> The pin is internally grounded.

| Pin Name | Function | DQS  | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|----------|----------|------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| IOB44B   | I/O      | DQ6  | 4    |                        | Comp_of_IOB44A    | TRUE |                     |                      | 81                   |                      |                       |                        |                       |
| IOB45A   | I/O      | DQ6  | 4    |                        | True_of_IOB45B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB45B   | I/O      | DQ6  | 4    |                        | Comp_of_IOB45A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB48A   | I/O      | DQS7 | 4    |                        | True_of_IOB48B    | TRUE |                     | 68                   | 82                   |                      | 68                    | 68                     |                       |
| IOB48B   | I/O      | DQS7 | 4    |                        | Comp_of_IOB48A    | TRUE |                     | 69                   | 83                   |                      | 69                    | 69                     |                       |
| IOB49A   | I/O      | DQ7  | 4    |                        | True_of_IOB49B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB49B   | I/O      | DQ7  | 4    |                        | Comp_of_IOB49A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB4A    | I/O      | DQ4  | 5    |                        | True_of_IOB4B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB4B    | I/O      | DQ4  | 5    |                        | Comp_of_IOB4A     | TRUE |                     |                      | 47                   |                      |                       |                        |                       |
| IOB50A   | I/O      | DQ7  | 4    |                        | True_of_IOB50B    | TRUE |                     |                      | 84                   |                      |                       |                        |                       |
| IOB50B   | I/O      | DQ7  | 4    |                        | Comp_of_IOB50A    | TRUE |                     |                      | 85                   |                      |                       |                        |                       |
| IOB51A   | I/O      | DQ7  | 4    |                        | True_of_IOB51B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB51B   | I/O      | DQ7  | 4    |                        | Comp_of_IOB51A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB52A   | I/O      | DQ7  | 4    |                        | True_of_IOB52B    | TRUE |                     |                      | 86                   |                      |                       |                        |                       |
| IOB52B   | I/O      | DQ7  | 4    |                        | Comp_of_IOB52A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB53A   | I/O      | DQ7  | 4    |                        | True_of_IOB53B    | NONE |                     | 70                   |                      |                      | 70                    | 70                     |                       |
| IOB53B   | I/O      | DQ7  | 4    |                        | Comp_of_IOB53A    | NONE |                     | 71                   |                      |                      | 71                    | 71                     |                       |
| IOB54A   | I/O      | DQ7  | 4    |                        | True_of_IOB54B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB54B   | I/O      | DQ7  | 4    |                        | Comp_of_IOB54A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB55A   | I/O      | DQ7  | 4    |                        | True_of_IOB55B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB55B   | I/O      | DQ7  | 4    |                        | Comp_of_IOB55A    | NONE |                     | 72                   |                      |                      | 72                    | 72                     |                       |
| IOB5A    | I/O      | DQ4  | 5    |                        | True_of_IOB5B     | NONE |                     | 38                   | 48                   |                      | 38                    | 38                     |                       |
| IOB5B    | I/O      | DQ4  | 5    |                        | Comp_of_IOB5A     | NONE |                     | 39                   |                      |                      | 39                    | 39                     |                       |
| IOB6A    | I/O      | DQ4  | 5    |                        | True_of_IOB6B     | TRUE | 25                  | 40                   | 49                   | 25                   | 40                    | 40                     | 25                    |
| IOB6B    | I/O      | DQ4  | 5    |                        | Comp_of_IOB6A     | TRUE | 26                  | 41                   | 50                   | 26                   | 41                    | 41                     | 26                    |
| IOB7A    | I/O      | DQ4  | 5    |                        | True_of_IOB7B     | NONE |                     | 42                   |                      |                      | 42                    | 42                     |                       |
| IOB7B    | I/O      | DQ4  | 5    |                        | Comp_of_IOB7A     | NONE |                     | 43                   |                      |                      | 43                    | 43                     |                       |
| IOB8A    | I/O      | DQ4  | 5    |                        | True_of_IOB8B     | TRUE | 27                  |                      | 51                   | 27                   |                       |                        | 27                    |
| IOB8B    | I/O      | DQ4  | 5    |                        | Comp_of_IOB8A     | TRUE | 28                  |                      | 52                   | 28                   |                       |                        | 28                    |
| IOB9A    | I/O      | DQS4 | 5    |                        | True_of_IOB9B     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOB9B    | I/O      | DQS4 | 5    |                        | Comp_of_IOB9A     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL11A   | I/O      | DQ1  | 7    |                        | True_of_IOL11B    | TRUE |                     |                      | 6                    |                      |                       |                        |                       |
| IOL11B   | I/O      | DQ1  | 7    |                        | Comp_of_IOL11A    | TRUE |                     |                      |                      |                      |                       |                        |                       |



**Note!**

<sup>[1]</sup> It is embedded with SDRAM.

<sup>[2]</sup> It is embedded with PSRAM.

<sup>[3]</sup> "Tie to VSS by 10K Resistor" indicates the pin is connected to the ground with 10K resistance.

<sup>[4]</sup> The pin is internally grounded.

| Pin Name       | Function | DQS  | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|----------------|----------|------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| IOL12A         | I/O      | DQ1  | 7    |                        | True_of_IOL12B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL12B         | I/O      | DQ1  | 7    |                        | Comp_of_IOL12A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL13A         | I/O      | DQ1  | 7    |                        | True_of_IOL13B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL13B         | I/O      | DQ1  | 7    |                        | Comp_of_IOL13A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL14A         | I/O      | DQ1  | 7    |                        | True_of_IOL14B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL14B         | I/O      | DQ1  | 7    |                        | Comp_of_IOL14A    | NONE |                     |                      | 7                    |                      |                       |                        |                       |
| IOL15A         | I/O      | DQ1  | 7    |                        | True_of_IOL15B    | TRUE |                     |                      | 8                    |                      |                       |                        |                       |
| IOL15B         | I/O      | DQ1  | 7    |                        | Comp_of_IOL15A    | TRUE |                     |                      | 9                    |                      |                       |                        |                       |
| IOL16A         | I/O      | DQ1  | 7    |                        | True_of_IOL16B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL16B         | I/O      | DQ1  | 7    |                        | Comp_of_IOL16A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL17A         | I/O      | DQ1  | 7    |                        | True_of_IOL17B    | TRUE |                     |                      | 10                   |                      |                       |                        |                       |
| IOL17B         | I/O      | DQ1  | 7    |                        | Comp_of_IOL17A    | TRUE |                     |                      | 11                   |                      |                       |                        |                       |
| IOL18A         | I/O      | DQ1  | 7    |                        | True_of_IOL18B    | NONE |                     |                      | 12                   |                      |                       |                        |                       |
| IOL18B         | I/O      | DQ1  | 7    |                        | Comp_of_IOL18A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL20A         | I/O      | DQ1  | 7    |                        | True_of_IOL20B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL20B         | I/O      | DQ1  | 7    |                        | Comp_of_IOL20A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL21A         | I/O      | DQ1  | 7    |                        | True_of_IOL21B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL21B         | I/O      | DQ1  | 7    |                        | Comp_of_IOL21A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL22A         | I/O      | DQS1 | 7    |                        | True_of_IOL22B    | TRUE |                     | 9                    |                      |                      | 9                     | 9                      |                       |
| IOL22B         | I/O      | DQS1 | 7    |                        | Comp_of_IOL22A    | TRUE |                     | 10                   |                      |                      | 10                    | 10                     |                       |
| IOL23A         | I/O      | DQ1  | 7    |                        | True_of_IOL23B    | NONE |                     |                      | 14                   |                      |                       |                        |                       |
| IOL23B         | I/O      | DQ1  | 7    |                        | Comp_of_IOL23A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL24A         | I/O      | DQ1  | 7    |                        | True_of_IOL24B    | TRUE |                     |                      | 15                   |                      |                       |                        |                       |
| IOL24B         | I/O      | DQ1  | 7    |                        | Comp_of_IOL24A    | TRUE |                     |                      | 16                   |                      |                       |                        |                       |
| IOL25A         | I/O      | DQ1  | 7    |                        | True_of_IOL25B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL25B         | I/O      | DQ1  | 7    |                        | Comp_of_IOL25A    | NONE |                     |                      | 18                   |                      |                       |                        |                       |
| IOL26A         | I/O      | DQ1  | 7    |                        | True_of_IOL26B    | TRUE |                     |                      | 17                   |                      |                       |                        |                       |
| IOL26B         | I/O      | DQ1  | 7    |                        | Comp_of_IOL26A    | TRUE |                     |                      | 19                   |                      |                       |                        |                       |
| IOL27A/GCLKT_7 | I/O      | DQ1  | 7    | GCLKT_7                | True_of_IOL27B    | NONE |                     | 11                   | 20                   |                      | 11                    | 11                     |                       |
| IOL27B/GCLKC_7 | I/O      | DQ1  | 7    | GCLKC_7                | Comp_of_IOL27A    | NONE |                     | 12                   | 21                   |                      | 12                    | 12                     |                       |
| IOL29A/GCLKT_6 | I/O      | DQ2  | 6    | GCLKT_6                | True_of_IOL29B    | TRUE | 10                  | 25                   |                      | 10                   | 25                    | 25                     | 10                    |
| IOL29B/GCLKC_6 | I/O      | DQ2  | 6    | GCLKC_6                | Comp_of_IOL29A    | TRUE | 11                  | 26                   |                      | 11                   | 26                    | 26                     | 11                    |
| IOL2A          | I/O      | DQ0  | 7    |                        | True_of_IOL2B     | TRUE |                     | 3                    | 3                    |                      | 3                     | 3                      |                       |

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<sup>[4]</sup> The pin is internally grounded.

| Pin Name          | Function | DQS  | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|-------------------|----------|------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| IOL2B             | I/O      | DQ0  | 7    |                        | Comp_of_IOL2A     | TRUE |                     | 4                    | 4                    |                      | 4                     | 4                      |                       |
| IOL30A            | I/O      | DQ2  | 6    |                        | True_of_IOL30B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL30B            | I/O      | DQ2  | 6    |                        | Comp_of_IOL30A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL31A            | I/O      | DQ2  | 6    |                        | True_of_IOL31B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL31B            | I/O      | DQ2  | 6    |                        | Comp_of_IOL31A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL32A            | I/O      | DQ2  | 6    |                        | True_of_IOL32B    | NONE |                     | 23                   |                      |                      | 23                    | 23                     |                       |
| IOL32B            | I/O      | DQ2  | 6    |                        | Comp_of_IOL32A    | NONE |                     | 24                   |                      |                      | 24                    | 24                     |                       |
| IOL33A            | I/O      | DQ2  | 6    |                        | True_of_IOL33B    | TRUE |                     | 27                   |                      |                      | 27                    | 27                     |                       |
| IOL33B            | I/O      | DQ2  | 6    |                        | Comp_of_IOL33A    | TRUE |                     | 28                   |                      |                      | 28                    | 28                     |                       |
| IOL34A            | I/O      | DQ2  | 6    |                        | True_of_IOL34B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL34B            | I/O      | DQ2  | 6    |                        | Comp_of_IOL34A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL35A            | I/O      | DQ2  | 6    |                        | True_of_IOL35B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL35B            | I/O      | DQ2  | 6    |                        | Comp_of_IOL35A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL36A            | I/O      | DQS2 | 6    |                        | True_of_IOL36B    | NONE |                     | 29                   |                      |                      | 29                    | 29                     |                       |
| IOL36B            | I/O      | DQS2 | 6    |                        | Comp_of_IOL36A    | NONE |                     | 30                   |                      |                      | 30                    | 30                     |                       |
| IOL38A            | I/O      | DQ2  | 6    |                        | True_of_IOL38B    | TRUE |                     |                      | 24                   |                      |                       |                        |                       |
| IOL38B            | I/O      | DQ2  | 6    |                        | Comp_of_IOL38A    | TRUE |                     |                      | 25                   |                      |                       |                        |                       |
| IOL39A            | I/O      | DQ2  | 6    |                        | True_of_IOL39B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL39B            | I/O      | DQ2  | 6    |                        | Comp_of_IOL39A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL3A             | I/O      | DQ0  | 7    |                        | True_of_IOL3B     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL3B             | I/O      | DQ0  | 7    |                        | Comp_of_IOL3A     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL40A            | I/O      | DQ2  | 6    |                        | True_of_IOL40B    | TRUE |                     |                      | 26                   |                      |                       |                        |                       |
| IOL40B            | I/O      | DQ2  | 6    |                        | Comp_of_IOL40A    | TRUE |                     |                      | 27                   |                      |                       |                        |                       |
| IOL41A            | I/O      | DQ2  | 6    |                        | True_of_IOL41B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL41B            | I/O      | DQ2  | 6    |                        | Comp_of_IOL41A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL42A            | I/O      | DQ2  | 6    |                        | True_of_IOL42B    | TRUE |                     | 32                   | 28                   |                      | 32                    | 32                     |                       |
| IOL42B            | I/O      | DQ2  | 6    |                        | Comp_of_IOL42A    | TRUE |                     | 33                   | 29                   |                      | 33                    | 33                     |                       |
| IOL43A            | I/O      | DQ2  | 6    |                        | True_of_IOL43B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL43B            | I/O      | DQ2  | 6    |                        | Comp_of_IOL43A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL44A            | I/O      | DQ2  | 6    |                        | True_of_IOL44B    | TRUE |                     |                      | 30                   |                      |                       |                        |                       |
| IOL44B            | I/O      | DQ2  | 6    |                        | Comp_of_IOL44A    | TRUE |                     |                      | 31                   |                      |                       |                        |                       |
| IOL45A/LPLL2_T_in | I/O      | DQ2  | 6    | LPLL2_T_in             | True_of_IOL45B    | NONE | 13                  | 34                   | 32                   | 13                   | 34                    | 34                     | 13                    |
| IOL45B/LPLL2_C_in | I/O      | DQ2  | 6    | LPLL2_C_in             | Comp_of_IOL45A    | NONE |                     | 35                   | 33                   |                      | 35                    | 35                     |                       |

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<sup>[4]</sup> The pin is internally grounded.

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|-------------------|----------|------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| IOL47A/LPLL2_T_fb | I/O      | DQ3  | 6    | LPLL2_T_fb             | True_of_IOL47B    | TRUE | 15                  |                      | 35                   | 15                   |                       |                        | 15                    |
| IOL47B/LPLL2_C_fb | I/O      | DQ3  | 6    | LPLL2_C_fb             | Comp_of_IOL47A    | TRUE | 16                  |                      | 36                   | 16                   |                       |                        | 16                    |
| IOL48A            | I/O      | DQ3  | 6    |                        | True_of_IOL48B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL48B            | I/O      | DQ3  | 6    |                        | Comp_of_IOL48A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL49A            | I/O      | DQ3  | 6    |                        | True_of_IOL49B    | TRUE | 17                  |                      | 37                   | 17                   |                       |                        | 17                    |
| IOL49B            | I/O      | DQ3  | 6    |                        | Comp_of_IOL49A    | TRUE | 18                  |                      |                      | 18                   |                       |                        | 18                    |
| IOL4A             | I/O      | DQ0  | 7    |                        | True_of_IOL4B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL4B             | I/O      | DQ0  | 7    |                        | Comp_of_IOL4A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL50A            | I/O      | DQS3 | 6    |                        | True_of_IOL50B    | NONE |                     |                      | 38                   |                      |                       |                        |                       |
| IOL50B            | I/O      | DQS3 | 6    |                        | Comp_of_IOL50A    | NONE |                     |                      | 39                   |                      |                       |                        |                       |
| IOL51A            | I/O      | DQ3  | 6    |                        | True_of_IOL51B    | TRUE | 19                  |                      |                      | 19                   |                       |                        | 19                    |
| IOL51B            | I/O      | DQ3  | 6    |                        | Comp_of_IOL51A    | TRUE | 20                  |                      |                      | 20                   |                       |                        | 20                    |
| IOL52A            | I/O      | DQ3  | 6    |                        | True_of_IOL52B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL52B            | I/O      | DQ3  | 6    |                        | Comp_of_IOL52A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL53A            | I/O      | DQ3  | 6    |                        | True_of_IOL53B    | TRUE |                     |                      | 41                   |                      |                       |                        |                       |
| IOL53B            | I/O      | DQ3  | 6    |                        | Comp_of_IOL53A    | TRUE |                     |                      | 42                   |                      |                       |                        |                       |
| IOL54A            | I/O      | DQ3  | 6    |                        | True_of_IOL54B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL54B            | I/O      | DQ3  | 6    |                        | Comp_of_IOL54A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL5A             | I/O      | DQ0  | 7    |                        | True_of_IOL5B     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL5B             | I/O      | DQ0  | 7    |                        | Comp_of_IOL5A     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL6A             | I/O      | DQS0 | 7    |                        | True_of_IOL6B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL6B             | I/O      | DQS0 | 7    |                        | Comp_of_IOL6A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL7A/LPLL1_T_in  | I/O      | DQ0  | 7    | LPLL1_T_in             | True_of_IOL7B     | NONE | 4                   | 6                    |                      | 4                    | 6                     | 6                      | 4                     |
| IOL7B/LPLL1_C_in  | I/O      | DQ0  | 7    | LPLL1_C_in             | Comp_of_IOL7A     | NONE |                     | 7                    |                      |                      | 7                     | 7                      |                       |
| IOL8A/LPLL1_T_fb  | I/O      | DQ0  | 7    | LPLL1_T_fb             | True_of_IOL8B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL8B/LPLL1_C_fb  | I/O      | DQ0  | 7    | LPLL1_C_fb             | Comp_of_IOL8A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL9A             | I/O      | DQ0  | 7    |                        | True_of_IOL9B     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOL9B             | I/O      | DQ0  | 7    |                        | Comp_of_IOL9A     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR11A            | I/O      | DQ10 | 2    |                        | True_of_IOR11B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR11B            | I/O      | DQ10 | 2    |                        | Comp_of_IOR11A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR12A            | I/O      | DQ10 | 2    |                        | True_of_IOR12B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR12B            | I/O      | DQ10 | 2    |                        | Comp_of_IOR12A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR13A            | I/O      | DQ10 | 2    |                        | True_of_IOR13B    | TRUE |                     |                      |                      |                      |                       |                        |                       |

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| Pin Name       | Function | DQS   | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|----------------|----------|-------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| IOR13B         | I/O      | DQ10  | 2    |                        | Comp_of_IOR13A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR14A         | I/O      | DQ10  | 2    |                        | True_of_IOR14B    | NONE |                     |                      | 126                  |                      |                       |                        |                       |
| IOR14B         | I/O      | DQ10  | 2    |                        | Comp_of_IOR14A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR15A         | I/O      | DQ10  | 2    |                        | True_of_IOR15B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR15B         | I/O      | DQ10  | 2    |                        | Comp_of_IOR15A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR16A         | I/O      | DQ10  | 2    |                        | True_of_IOR16B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR16B         | I/O      | DQ10  | 2    |                        | Comp_of_IOR16A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR17A         | I/O      | DQ10  | 2    |                        | True_of_IOR17B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR17B         | I/O      | DQ10  | 2    |                        | Comp_of_IOR17A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR18A         | I/O      | DQ10  | 2    |                        | True_of_IOR18B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR18B         | I/O      | DQ10  | 2    |                        | Comp_of_IOR18A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR20A         | I/O      | DQ10  | 2    |                        | True_of_IOR20B    | TRUE |                     | 102                  | 125                  |                      | 102                   | 102                    |                       |
| IOR20B         | I/O      | DQ10  | 2    |                        | Comp_of_IOR20A    | TRUE |                     | 101                  | 124                  |                      | 101                   | 101                    |                       |
| IOR21A         | I/O      | DQ10  | 2    |                        | True_of_IOR21B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR21B         | I/O      | DQ10  | 2    |                        | Comp_of_IOR21A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR22A         | I/O      | DQS10 | 2    |                        | True_of_IOR22B    | TRUE |                     | 100                  | 123                  |                      | 100                   | 100                    |                       |
| IOR22B         | I/O      | DQS10 | 2    |                        | Comp_of_IOR22A    | TRUE |                     | 99                   | 122                  |                      | 99                    | 99                     |                       |
| IOR23A         | I/O      | DQ10  | 2    |                        | True_of_IOR23B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR23B         | I/O      | DQ10  | 2    |                        | Comp_of_IOR23A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR24A         | I/O      | DQ10  | 2    |                        | True_of_IOR24B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR24B         | I/O      | DQ10  | 2    |                        | Comp_of_IOR24A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR25A/TDO     | I/O      | DQ10  | 2    | TDO                    | True_of_IOR25B    | NONE | 8                   | 18                   | 121                  | 8                    | 18                    | 18                     | 8                     |
| IOR25B/TMS     | I/O      | DQ10  | 2    | TMS                    | Comp_of_IOR25A    | NONE | 5                   | 13                   | 119                  | 5                    | 13                    | 13                     | 5                     |
| IOR26A/TCK     | I/O      | DQ10  | 2    | TCK                    | True_of_IOR26B    | TRUE | 6                   | 14                   | 120                  | 6                    | 14                    | 14                     | 6                     |
| IOR26B/TDI     | I/O      | DQ10  | 2    | TDI                    | Comp_of_IOR26A    | TRUE | 7                   | 16                   | 117                  | 7                    | 16                    | 16                     | 7                     |
| IOR27A/GCLKT_2 | I/O      | DQ10  | 2    | GCLKT_2                | True_of_IOR27B    | NONE |                     | 98                   | 116                  |                      | 98                    | 98                     |                       |
| IOR27B/GCLKC_2 | I/O      | DQ10  | 2    | GCLKC_2                | Comp_of_IOR27A    | NONE |                     | 97                   |                      |                      | 97                    | 97                     |                       |
| IOR29A/GCLKT_3 | I/O      | DQ9   | 3    | GCLKT_3                | True_of_IOR29B    | TRUE | 63                  |                      | 114                  | 63                   |                       |                        | 63                    |
| IOR29B/GCLKC_3 | I/O      | DQ9   | 3    | GCLKC_3                | Comp_of_IOR29A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR2A          | I/O      | DQ11  | 2    |                        | True_of_IOR2B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR2B          | I/O      | DQ11  | 2    |                        | Comp_of_IOR2A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR30A/MODE0   | I/O      | DQ9   | 3    | MODE0                  | True_of_IOR30B    | NONE | 88                  | 144                  | 113                  | 88                   | 144                   | 144                    | 88                    |
| IOR30B/MODE1   | I/O      | DQ9   | 3    | MODE1                  | Comp_of_IOR30A    | NONE | 87                  | 142                  | 111                  | 87                   | 142                   | 142                    | 87                    |

**Note!**

<sup>[1]</sup> It is embedded with SDRAM.

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| Pin Name             | Function | DQS  | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|----------------------|----------|------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| IOR31A/MODE2         | I/O      | DQ9  | 3    | MODE2                  | True_of_IOR31B    | TRUE | GND <sup>[4]</sup>  | 143                  | 112                  | GND <sup>[4]</sup>   | 143                   | 143                    | GND <sup>[4]</sup>    |
| IOR31B/RECONFIG_N    | I/O      | DQ9  | 3    | RECONFIG_N             | Comp_of_IOR31A    | TRUE | 9                   | 20                   | 108                  | 9                    | 20                    | 20                     | 9                     |
| IOR32A/READY         | I/O      | DQ9  | 3    | READY                  | True_of_IOR32B    | NONE |                     | 22                   | 109                  |                      | 22                    | 22                     |                       |
| IOR32B/DONE          | I/O      | DQ9  | 3    | DONE                   | Comp_of_IOR32A    | NONE |                     | 21                   | 107                  |                      | 21                    | 21                     |                       |
| IOR33A/MI/D7         | I/O      | DQ9  | 3    | MI/D7                  | True_of_IOR33B    | TRUE | 62                  | 96                   | 106                  | 62                   | 96                    | 96                     | 62                    |
| IOR33B/MO/D6         | I/O      | DQ9  | 3    | MO/D6                  | Comp_of_IOR33A    | TRUE | 61                  | 95                   | 105                  | 61                   | 95                    | 95                     | 61                    |
| IOR34A/MCS_N/D5      | I/O      | DQ9  | 3    | MCS_N/D5               | True_of_IOR34B    | NONE | 60                  | 94                   | 104                  | 60                   | 94                    | 94                     | 60                    |
| IOR34B/MCLK/D4       | I/O      | DQ9  | 3    | MCLK/D4                | Comp_of_IOR34A    | NONE | 59                  | 93                   | 103                  | 59                   | 93                    | 93                     | 59                    |
| IOR35A/FASTRD_N/D3   | I/O      | DQ9  | 3    | FASTRD_N/D3            | True_of_IOR35B    | TRUE | 57                  | 92                   | 102                  | 57                   | 92                    | 92                     | 57                    |
| IOR35B/SI/D2         | I/O      | DQ9  | 3    | SI/D2                  | Comp_of_IOR35A    | TRUE |                     | 90                   | 101                  |                      | 90                    | 90                     |                       |
| IOR36A/SO/D1         | I/O      | DQS9 | 3    | SO/D1                  | True_of_IOR36B    | NONE | 56                  | 88                   | 100                  | 56                   | 88                    | 88                     | 56                    |
| IOR36B/SSPI_CS_N/D0  | I/O      | DQS9 | 3    | SSPI_CS_N/D0           | Comp_of_IOR36A    | NONE | 55                  | 87                   | 99                   | 55                   | 87                    | 87                     | 55                    |
| IOR38A/DIN/CLKHOLD_N | I/O      | DQ9  | 3    | DIN/CLKHOLD_N          | True_of_IOR38B    | TRUE | 54                  | 86                   | 98                   | 54                   | 86                    | 86                     | 54                    |
| IOR38B/DOUT/WE_N     | I/O      | DQ9  | 3    | DOUT/WE_N              | Comp_of_IOR38A    | TRUE | 53                  | 85                   | 97                   | 53                   | 85                    | 85                     | 53                    |
| IOR39A/SCLK          | I/O      | DQ9  | 3    | SCLK                   | True_of_IOR39B    | NONE | 52                  | 15                   | 96                   | 52                   | 15                    | 15                     | 52                    |
| IOR39B               | I/O      | DQ9  | 3    |                        | Comp_of_IOR39A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR3A                | I/O      | DQ11 | 2    |                        | True_of_IOR3B     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR3B                | I/O      | DQ11 | 2    |                        | Comp_of_IOR3A     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR40A               | I/O      | DQ9  | 3    |                        | True_of_IOR40B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR40B               | I/O      | DQ9  | 3    |                        | Comp_of_IOR40A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR41A               | I/O      | DQ9  | 3    |                        | True_of_IOR41B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR41B               | I/O      | DQ9  | 3    |                        | Comp_of_IOR41A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR42A               | I/O      | DQ9  | 3    |                        | True_of_IOR42B    | TRUE |                     | 84                   |                      |                      | 84                    | 84                     |                       |
| IOR42B               | I/O      | DQ9  | 3    |                        | Comp_of_IOR42A    | TRUE |                     | 83                   |                      |                      | 83                    | 83                     |                       |
| IOR43A               | I/O      | DQ9  | 3    |                        | True_of_IOR43B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR43B               | I/O      | DQ9  | 3    |                        | Comp_of_IOR43A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR44A               | I/O      | DQ9  | 3    |                        | True_of_IOR44B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR44B               | I/O      | DQ9  | 3    |                        | Comp_of_IOR44A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR45A/RPLL2_T_in    | I/O      | DQ9  | 3    | RPLL2_T_in             | True_of_IOR45B    | NONE | 51                  | 82                   | 93                   | 51                   | 82                    | 82                     | 51                    |
| IOR45B/RPLL2_C_in    | I/O      | DQ9  | 3    | RPLL2_C_in             | Comp_of_IOR45A    | NONE |                     |                      |                      |                      |                       |                        |                       |

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| Pin Name          | Function | DQS   | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|-------------------|----------|-------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| IOR47A/RPLL2_T_fb | I/O      | DQ8   | 3    | RPLL2_T_fb             | True_of_IOR47B    | TRUE |                     |                      | 92                   |                      |                       |                        |                       |
| IOR47B/RPLL2_C_fb | I/O      | DQ8   | 3    | RPLL2_C_fb             | Comp_of_IOR47A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR48A            | I/O      | DQ8   | 3    |                        | True_of_IOR48B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR48B            | I/O      | DQ8   | 3    |                        | Comp_of_IOR48A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR49A            | I/O      | DQ8   | 3    |                        | True_of_IOR49B    | TRUE | 49                  | 80                   |                      | 49                   | 80                    | 80                     | 49                    |
| IOR49B            | I/O      | DQ8   | 3    |                        | Comp_of_IOR49A    | TRUE | 48                  | 79                   |                      | 48                   | 79                    | 79                     | 48                    |
| IOR4A             | I/O      | DQ11  | 2    |                        | True_of_IOR4B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR4B             | I/O      | DQ11  | 2    |                        | Comp_of_IOR4A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR50A            | I/O      | DQS8  | 3    |                        | True_of_IOR50B    | NONE |                     | 78                   |                      |                      | 78                    | 78                     |                       |
| IOR50B            | I/O      | DQS8  | 3    |                        | Comp_of_IOR50A    | NONE |                     | 76                   |                      |                      | 76                    | 76                     |                       |
| IOR51A            | I/O      | DQ8   | 3    |                        | True_of_IOR51B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR51B            | I/O      | DQ8   | 3    |                        | Comp_of_IOR51A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR52A            | I/O      | DQ8   | 3    |                        | True_of_IOR52B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR52B            | I/O      | DQ8   | 3    |                        | Comp_of_IOR52A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR53A            | I/O      | DQ8   | 3    |                        | True_of_IOR53B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR53B            | I/O      | DQ8   | 3    |                        | Comp_of_IOR53A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR54A            | I/O      | DQ8   | 3    |                        | True_of_IOR54B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR54B            | I/O      | DQ8   | 3    |                        | Comp_of_IOR54A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR5A             | I/O      | DQ11  | 2    |                        | True_of_IOR5B     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR5B             | I/O      | DQ11  | 2    |                        | Comp_of_IOR5A     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR6A             | I/O      | DQS11 | 2    |                        | True_of_IOR6B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR6B             | I/O      | DQS11 | 2    |                        | Comp_of_IOR6A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR7A/RPLL1_T_in  | I/O      | DQ11  | 2    | RPLL1_T_in             | True_of_IOR7B     | NONE |                     | 106                  | 129                  |                      | 106                   | 106                    |                       |
| IOR7B/RPLL1_C_in  | I/O      | DQ11  | 2    | RPLL1_C_in             | Comp_of_IOR7A     | NONE |                     | 105                  | 128                  |                      | 105                   | 105                    |                       |
| IOR8A/RPLL1_T_fb  | I/O      | DQ11  | 2    | RPLL1_T_fb             | True_of_IOR8B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR8B/RPLL1_C_fb  | I/O      | DQ11  | 2    | RPLL1_C_fb             | Comp_of_IOR8A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR9A             | I/O      | DQ11  | 2    |                        | True_of_IOR9B     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOR9B             | I/O      | DQ11  | 2    |                        | Comp_of_IOR9A     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT12A            | I/O      | DQ14  | 0    |                        | True_of_IOT12B    | TRUE |                     | 134                  | 169                  |                      | 134                   | 134                    |                       |
| IOT12B            | I/O      | DQ14  | 0    |                        | Comp_of_IOT12A    | TRUE |                     | 133                  | 168                  |                      | 133                   | 133                    |                       |
| IOT13A            | I/O      | DQ14  | 0    |                        | True_of_IOT13B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT13B            | I/O      | DQ14  | 0    |                        | Comp_of_IOT13A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT14A            | I/O      | DQ14  | 0    |                        | True_of_IOT14B    | TRUE |                     | 132                  | 167                  |                      | 132                   | 132                    |                       |

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|----------------|----------|-------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| IOT14B         | I/O      | DQ14  | 0    |                        | Comp_of_IOT14A    | TRUE |                     | 131                  | 166                  |                      | 131                   | 131                    |                       |
| IOT15A         | I/O      | DQ14  | 0    |                        | True_of_IOT15B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT15B         | I/O      | DQ14  | 0    |                        | Comp_of_IOT15A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT16A         | I/O      | DQ14  | 0    |                        | True_of_IOT16B    | TRUE |                     |                      | 165                  |                      |                       |                        |                       |
| IOT16B         | I/O      | DQ14  | 0    |                        | Comp_of_IOT16A    | TRUE |                     |                      | 164                  |                      |                       |                        |                       |
| IOT17A         | I/O      | DQ14  | 0    |                        | True_of_IOT17B    | NONE | 82                  | 130                  |                      | 82                   | 130                   | 130                    | 82                    |
| IOT17B         | I/O      | DQ14  | 0    |                        | Comp_of_IOT17A    | NONE | 81                  | 129                  |                      | 81                   | 129                   | 129                    | 81                    |
| IOT18A         | I/O      | DQ14  | 0    |                        | True_of_IOT18B    | TRUE |                     |                      | 163                  |                      |                       |                        |                       |
| IOT18B         | I/O      | DQ14  | 0    |                        | Comp_of_IOT18A    | TRUE |                     |                      | 162                  |                      |                       |                        |                       |
| IOT19A         | I/O      | DQ14  | 0    |                        | True_of_IOT19B    | NONE |                     | 128                  |                      |                      | 128                   | 128                    |                       |
| IOT19B         | I/O      | DQ14  | 0    |                        | Comp_of_IOT19A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT20A         | I/O      | DQ14  | 0    |                        | True_of_IOT20B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT20B         | I/O      | DQ14  | 0    |                        | Comp_of_IOT20A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT21A         | I/O      | DQS14 | 0    |                        | True_of_IOT21B    | NONE |                     |                      | 161                  |                      |                       |                        |                       |
| IOT21B         | I/O      | DQS14 | 0    |                        | Comp_of_IOT21A    | NONE |                     |                      | 160                  |                      |                       |                        |                       |
| IOT22A         | I/O      | DQ14  | 0    |                        | True_of_IOT22B    | TRUE |                     | 125                  |                      |                      | 125                   | 125                    |                       |
| IOT22B         | I/O      | DQ14  | 0    |                        | Comp_of_IOT22A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT23A         | I/O      | DQ14  | 0    |                        | True_of_IOT23B    | NONE |                     | 126                  |                      |                      | 126                   | 126                    |                       |
| IOT23B         | I/O      | DQ14  | 0    |                        | Comp_of_IOT23A    | NONE |                     | 124                  |                      |                      | 124                   | 124                    |                       |
| IOT24A         | I/O      | DQ14  | 0    |                        | True_of_IOT24B    | TRUE |                     |                      | 159                  |                      |                       |                        |                       |
| IOT24B         | I/O      | DQ14  | 0    |                        | Comp_of_IOT24A    | TRUE |                     |                      | 158                  |                      |                       |                        |                       |
| IOT25A         | I/O      | DQ14  | 0    |                        | True_of_IOT25B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT25B         | I/O      | DQ14  | 0    |                        | Comp_of_IOT25A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT26A         | I/O      | DQ14  | 0    |                        | True_of_IOT26B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT26B         | I/O      | DQ14  | 0    |                        | Comp_of_IOT26A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT27A/GCLKT_0 | I/O      | DQ14  | 0    | GCLKT_0                | True_of_IOT27B    | NONE | 80                  | 123                  | 157                  | 80                   | 123                   | 123                    | 80                    |
| IOT27B/GCLKC_0 | I/O      | DQ14  | 0    | GCLKC_0                | Comp_of_IOT27A    | NONE | 79                  | 122                  | 156                  | 79                   | 122                   | 122                    | 79                    |
| IOT2A          | I/O      | DQ15  | 0    |                        | True_of_IOT2B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT2B          | I/O      | DQ15  | 0    |                        | Comp_of_IOT2A     | TRUE |                     | 141                  |                      |                      | 141                   | 141                    |                       |
| IOT30A/GCLKT_1 | I/O      | DQ13  | 1    | GCLKT_1                | True_of_IOT30B    | TRUE | 77                  | 121                  | 152                  | 77                   | 121                   | 121                    | 77                    |
| IOT30B/GCLKC_1 | I/O      | DQ13  | 1    | GCLKC_1                | Comp_of_IOT30A    | TRUE | 76                  | 120                  | 151                  | 76                   | 120                   | 120                    | 76                    |
| IOT31A         | I/O      | DQ13  | 1    |                        | True_of_IOT31B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT31B         | I/O      | DQ13  | 1    |                        | Comp_of_IOT31A    | NONE |                     |                      |                      |                      |                       |                        |                       |

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|----------|----------|-------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| IOT32A   | I/O      | DQ13  | 1    |                        | True_of_IOT32B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT32B   | I/O      | DQ13  | 1    |                        | Comp_of_IOT32A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT33A   | I/O      | DQ13  | 1    |                        | True_of_IOT33B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT33B   | I/O      | DQ13  | 1    |                        | Comp_of_IOT33A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT34A   | I/O      | DQ13  | 1    |                        | True_of_IOT34B    | TRUE | 75                  |                      |                      | 75                   |                       |                        | 75                    |
| IOT34B   | I/O      | DQ13  | 1    |                        | Comp_of_IOT34A    | TRUE | 74                  |                      |                      | 74                   |                       |                        | 74                    |
| IOT35A   | I/O      | DQ13  | 1    |                        | True_of_IOT35B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT35B   | I/O      | DQ13  | 1    |                        | Comp_of_IOT35A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT36A   | I/O      | DQ13  | 1    |                        | True_of_IOT36B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT36B   | I/O      | DQ13  | 1    |                        | Comp_of_IOT36A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT37A   | I/O      | DQS13 | 1    |                        | True_of_IOT37B    | NONE |                     |                      | 150                  |                      |                       |                        |                       |
| IOT37B   | I/O      | DQS13 | 1    |                        | Comp_of_IOT37A    | NONE |                     |                      | 149                  |                      |                       |                        |                       |
| IOT38A   | I/O      | DQ13  | 1    |                        | True_of_IOT38B    | TRUE |                     | 119                  | 148                  |                      | 119                   | 119                    |                       |
| IOT38B   | I/O      | DQ13  | 1    |                        | Comp_of_IOT38A    | TRUE |                     | 118                  | 147                  |                      | 118                   | 118                    |                       |
| IOT39A   | I/O      | DQ13  | 1    |                        | True_of_IOT39B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT39B   | I/O      | DQ13  | 1    |                        | Comp_of_IOT39A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT3A    | I/O      | DQ15  | 0    |                        | True_of_IOT3B     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT3B    | I/O      | DQ15  | 0    |                        | Comp_of_IOT3A     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT40A   | I/O      | DQ13  | 1    |                        | True_of_IOT40B    | TRUE | 73                  | 117                  | 146                  | 73                   | 117                   | 117                    | 73                    |
| IOT40B   | I/O      | DQ13  | 1    |                        | Comp_of_IOT40A    | TRUE | 72                  | 116                  | 145                  | 72                   | 116                   | 116                    | 72                    |
| IOT41A   | I/O      | DQ13  | 1    |                        | True_of_IOT41B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT41B   | I/O      | DQ13  | 1    |                        | Comp_of_IOT41A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT42A   | I/O      | DQ13  | 1    |                        | True_of_IOT42B    | TRUE |                     | 115                  | 144                  |                      | 115                   | 115                    |                       |
| IOT42B   | I/O      | DQ13  | 1    |                        | Comp_of_IOT42A    | TRUE |                     | 114                  | 143                  |                      | 114                   | 114                    |                       |
| IOT43A   | I/O      | DQ13  | 1    |                        | True_of_IOT43B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT43B   | I/O      | DQ13  | 1    |                        | Comp_of_IOT43A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT44A   | I/O      | DQ13  | 1    |                        | True_of_IOT44B    | TRUE | 71                  |                      | 142                  | 71                   |                       |                        | 71                    |
| IOT44B   | I/O      | DQ13  | 1    |                        | Comp_of_IOT44A    | TRUE | 70                  |                      | 141                  | 70                   |                       |                        | 70                    |
| IOT45A   | I/O      | DQ13  | 1    |                        | True_of_IOT45B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT45B   | I/O      | DQ13  | 1    |                        | Comp_of_IOT45A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT48A   | I/O      | DQS12 | 1    |                        | True_of_IOT48B    | TRUE |                     | 113                  | 140                  |                      | 113                   | 113                    |                       |
| IOT48B   | I/O      | DQS12 | 1    |                        | Comp_of_IOT48A    | TRUE |                     | 112                  | 139                  |                      | 112                   | 112                    |                       |
| IOT49A   | I/O      | DQ12  | 1    |                        | True_of_IOT49B    | NONE |                     |                      |                      |                      |                       |                        |                       |



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|------------------|----------|-------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| IOT49B           | I/O      | DQ12  | 1    |                        | Comp_of_IOT49A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT4A            | I/O      | DQ15  | 0    |                        | True_of_IOT4B     | TRUE | 86                  | 140                  |                      | 86                   | 140                   | 140                    | 86                    |
| IOT4B            | I/O      | DQ15  | 0    |                        | Comp_of_IOT4A     | TRUE | 85                  | 139                  | 174                  | 85                   | 139                   | 139                    | 85                    |
| IOT50A           | I/O      | DQ12  | 1    |                        | True_of_IOT50B    | TRUE | 69                  | 111                  | 138                  | 69                   | 111                   | 111                    | 69                    |
| IOT50B           | I/O      | DQ12  | 1    |                        | Comp_of_IOT50A    | TRUE |                     | 110                  | 137                  |                      | 110                   | 110                    |                       |
| IOT51A           | I/O      | DQ12  | 1    |                        | True_of_IOT51B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT51B           | I/O      | DQ12  | 1    |                        | Comp_of_IOT51A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT52A           | I/O      | DQ12  | 1    |                        | True_of_IOT52B    | TRUE |                     |                      | 136                  |                      |                       |                        |                       |
| IOT52B           | I/O      | DQ12  | 1    |                        | Comp_of_IOT52A    | TRUE |                     |                      | 135                  |                      |                       |                        |                       |
| IOT53A           | I/O      | DQ12  | 1    |                        | True_of_IOT53B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT53B           | I/O      | DQ12  | 1    |                        | Comp_of_IOT53A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT54A           | I/O      | DQ12  | 1    |                        | True_of_IOT54B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT54B           | I/O      | DQ12  | 1    |                        | Comp_of_IOT54A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT55A           | I/O      | DQ12  | 1    |                        | True_of_IOT55B    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT55B/JTAGSEL_N | I/O      | DQ12  | 1    | JTAGSEL_N              | Comp_of_IOT55A    | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT5A            | I/O      | DQ15  | 0    |                        | True_of_IOT5B     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT5B            | I/O      | DQ15  | 0    |                        | Comp_of_IOT5A     | NONE |                     |                      |                      |                      |                       |                        |                       |
| IOT6A            | I/O      | DQ15  | 0    |                        | True_of_IOT6B     | TRUE | 84                  | 138                  | 173                  | 84                   | 138                   | 138                    | 84                    |
| IOT6B            | I/O      | DQ15  | 0    |                        | Comp_of_IOT6A     | TRUE | 83                  | 137                  | 172                  | 83                   | 137                   | 137                    | 83                    |
| IOT7A            | I/O      | DQ15  | 0    |                        | True_of_IOT7B     | NONE |                     | 136                  |                      |                      | 136                   | 136                    |                       |
| IOT7B            | I/O      | DQ15  | 0    |                        | Comp_of_IOT7A     | NONE |                     | 135                  |                      |                      | 135                   | 135                    |                       |
| IOT8A            | I/O      | DQ15  | 0    |                        | True_of_IOT8B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT8B            | I/O      | DQ15  | 0    |                        | Comp_of_IOT8A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT9A            | I/O      | DQS15 | 0    |                        | True_of_IOT9B     | NONE |                     |                      | 171                  |                      |                       |                        |                       |
| IOT9B            | I/O      | DQS15 | 0    |                        | Comp_of_IOT9A     | NONE |                     |                      | 170                  |                      |                       |                        |                       |
| VCC              | Power    |       | N/A  |                        |                   |      | 1                   |                      |                      | 1                    |                       |                        | 1                     |
| VCC              | Power    |       | N/A  |                        |                   |      | 22                  |                      | 44                   | 22                   |                       |                        | 22                    |
| VCC              | Power    |       | N/A  |                        |                   |      | 45                  |                      | 89                   | 45                   |                       |                        | 45                    |
| VCC              | Power    |       | N/A  |                        |                   |      | 66                  |                      | 132                  | 66                   |                       |                        | 66                    |
| VCC              | Power    |       | N/A  |                        |                   |      |                     |                      | 1                    |                      |                       |                        |                       |
| VCC              | Power    |       | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCC/VCCPLL1      | Power    |       | N/A  |                        |                   |      |                     | 1                    |                      |                      |                       |                        |                       |
| VCC/VCCPLL1      | Power    |       | N/A  |                        |                   |      |                     | 36                   |                      |                      |                       |                        |                       |

**Note!**

<sup>[1]</sup> It is embedded with SDRAM.

<sup>[2]</sup> It is embedded with PSRAM.

<sup>[3]</sup> "Tie to VSS by 10K Resistor" indicates the pin is connected to the ground with 10K resistance.

<sup>[4]</sup> The pin is internally grounded.

| Pin Name                    | Function | DQS | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|-----------------------------|----------|-----|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| VCC/VCCPLL1                 | Power    |     | N/A  |                        |                   |      |                     | 73                   |                      |                      |                       |                        |                       |
| VCC/VCCPLL1                 | Power    |     | N/A  |                        |                   |      |                     | 108                  |                      |                      |                       |                        |                       |
| VCC/VCCPLL1                 | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      | 1                     | 1                      |                       |
| VCC/VCCPLL1                 | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      | 36                    | 36                     |                       |
| VCC/VCCPLL1                 | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      | 73                    | 73                     |                       |
| VCC/VCCPLL1                 | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      | 108                   | 108                    |                       |
| VCCIO0                      | Power    |     | N/A  |                        |                   |      | 78                  |                      | 155                  | 78                   |                       |                        | 78                    |
| VCCIO0                      | Power    |     | N/A  |                        |                   |      |                     | 127                  |                      |                      | 127                   | 127                    |                       |
| VCCIO0                      | Power    |     | N/A  |                        |                   |      |                     |                      | 176                  |                      |                       |                        |                       |
| VCCIO1                      | Power    |     | N/A  |                        |                   |      | 67                  | 109                  | 133                  |                      | 109                   | 109                    |                       |
| VCCIO1                      | Power    |     | N/A  |                        |                   |      |                     |                      | 153                  |                      |                       |                        |                       |
| VCCIO2                      | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       | 103                    | 64                    |
| VCCIO2/VCCIO3/VCCIO6/VCCIO7 | Power    |     | N/A  |                        |                   |      |                     |                      | 5                    |                      |                       |                        |                       |
| VCCIO2/VCCIO3/VCCIO6/VCCIO7 | Power    |     | N/A  |                        |                   |      |                     |                      | 13                   |                      |                       |                        |                       |
| VCCIO2/VCCIO3/VCCIO6/VCCIO7 | Power    |     | N/A  |                        |                   |      |                     |                      | 22                   |                      |                       |                        |                       |
| VCCIO2/VCCIO3/VCCIO6/VCCIO7 | Power    |     | N/A  |                        |                   |      |                     |                      | 40                   |                      |                       |                        |                       |
| VCCIO2/VCCIO3/VCCIO6/VCCIO7 | Power    |     | N/A  |                        |                   |      |                     |                      | 95                   |                      |                       |                        |                       |
| VCCIO2/VCCIO3/VCCIO6/VCCIO7 | Power    |     | N/A  |                        |                   |      |                     |                      | 110                  |                      |                       |                        |                       |
| VCCIO2/VCCIO3/VCCIO6/VCCIO7 | Power    |     | N/A  |                        |                   |      |                     |                      | 118                  |                      |                       |                        |                       |
| VCCIO2/VCCIO3/VCCIO6/VCCIO7 | Power    |     | N/A  |                        |                   |      |                     |                      | 130                  |                      |                       |                        |                       |
| VCCIO2/VCCIO7               | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      | 5                     |                        |                       |
| VCCIO2/VCCIO7               | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      | 19                    |                        |                       |
| VCCIO2/VCCIO7               | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      | 103                   |                        |                       |
| VCCIO2/VCCIO7               | Power    |     | N/A  |                        |                   |      |                     |                      |                      | 3                    |                       |                        |                       |
| VCCIO2/VCCIO7               | Power    |     | N/A  |                        |                   |      |                     |                      |                      | 64                   |                       |                        |                       |

**Note!**  
<sup>[1]</sup> It is embedded with SDRAM.  
<sup>[2]</sup> It is embedded with PSRAM.  
<sup>[3]</sup> "Tie to VSS by 10K Resistor" indicates the pin is connected to the ground with 10K resistance.  
<sup>[4]</sup> The pin is internally grounded.

| Pin Name                  | Function | DQS | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|---------------------------|----------|-----|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| VCCIO3                    | Power    |     | N/A  |                        |                   |      | 58                  | 91                   |                      | 58                   | 91                    | 91                     | 58                    |
| VCCIO3                    | Power    |     | N/A  |                        |                   |      |                     | 77                   |                      |                      | 77                    | 77                     |                       |
| VCCIO4                    | Power    |     | N/A  |                        |                   |      | 44                  |                      | 88                   | 44                   |                       |                        | 44                    |
| VCCIO4                    | Power    |     | N/A  |                        |                   |      |                     | 55                   | 67                   |                      |                       |                        |                       |
| VCCIO5                    | Power    |     | N/A  |                        |                   |      | 23                  | 37                   | 45                   | 23                   | 37                    | 37                     | 23                    |
| VCCIO5                    | Power    |     | N/A  |                        |                   |      |                     |                      | 65                   |                      |                       |                        |                       |
| VCCIO7                    | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       | 5                      | 3                     |
| VCCIO7                    | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       | 19                     |                       |
| VCCPLLL                   | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCPLLL0                  | Power    |     | N/A  |                        |                   |      |                     | 8                    |                      |                      | 8                     | 8                      |                       |
| VCCPLLL1                  | Power    |     | N/A  |                        |                   |      | 14                  |                      | 34                   | 14                   |                       |                        | 14                    |
| VCCPLLR                   | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCPLLR0                  | Power    |     | N/A  |                        |                   |      |                     | 104                  | 127                  |                      | 104                   | 104                    |                       |
| VCCPLLR1                  | Power    |     | N/A  |                        |                   |      | 50                  | 81                   | 94                   | 50                   | 81                    | 81                     | 50                    |
| VCCX                      | Power    |     | N/A  |                        |                   |      |                     |                      | 23                   |                      |                       |                        |                       |
| VCCX                      | Power    |     | N/A  |                        |                   |      |                     |                      | 66                   |                      |                       |                        |                       |
| VCCX                      | Power    |     | N/A  |                        |                   |      |                     |                      | 115                  |                      |                       |                        |                       |
| VCCX                      | Power    |     | N/A  |                        |                   |      |                     |                      | 154                  |                      |                       |                        |                       |
| VCCX/VCCIO1/VCCIO6        | Power    |     | N/A  |                        |                   |      |                     |                      |                      | 12                   |                       |                        | 12                    |
| VCCX/VCCIO1/VCCIO6        | Power    |     | N/A  |                        |                   |      |                     |                      |                      | 67                   |                       |                        | 67                    |
| VCCX/VCCIO2/VCCIO6/VCCIO7 | Power    |     | N/A  |                        |                   |      | 3                   |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/VCCIO6/VCCIO7 | Power    |     | N/A  |                        |                   |      | 12                  |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/VCCIO6/VCCIO7 | Power    |     | N/A  |                        |                   |      | 64                  |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/VCCIO6/VCCIO7 | Power    |     | N/A  |                        |                   |      |                     | 5                    |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/VCCIO6/VCCIO7 | Power    |     | N/A  |                        |                   |      |                     | 19                   |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/VCCIO6/VCCIO7 | Power    |     | N/A  |                        |                   |      |                     | 31                   |                      |                      |                       |                        |                       |

| <b>Note!</b><br><sup>[1]</sup> It is embedded with SDRAM.<br><sup>[2]</sup> It is embedded with PSRAM.<br><sup>[3]</sup> "Tie to VSS by 10K Resistor" indicates the pin is connected to the ground with 10K resistance.<br><sup>[4]</sup> The pin is internally grounded. |          |     |      |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
|---|----------|-----|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| Pin Name  | Function | DQS | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
| VCCX/VCCIO2/<br>VCCIO6/VCCIO7   | Power    |     | N/A  |                        |                   |      |                     | 103                  |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |

| <b>Note!</b><br><sup>[1]</sup> It is embedded with SDRAM.<br><sup>[2]</sup> It is embedded with PSRAM.<br><sup>[3]</sup> "Tie to VSS by 10K Resistor" indicates the pin is connected to the ground with 10K resistance.<br><sup>[4]</sup> The pin is internally grounded. |          |     |      |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
|---|----------|-----|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| Pin Name  | Function | DQS | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO2/<br>VCCIO3/VCCIO6/<br>VCCIO7  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VCCX/VCCIO4/VCCIO6  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      | 31                    | 31                     |                       |
| VCCX/VCCIO4/VCCIO6  | Power    |     | N/A  |                        |                   |      |                     |                      |                      |                      | 55                    | 55                     |                       |
| VSS   | Ground   |     | N/A  |                        |                   |      | 2                   | 2                    | 2                    | 2                    | 2                     | 2                      | 2                     |
| VSS   | Ground   |     | N/A  |                        |                   |      | 21                  |                      |                      | 21                   |                       |                        | 21                    |
| VSS   | Ground   |     | N/A  |                        |                   |      | 24                  |                      |                      | 24                   |                       |                        | 24                    |
| VSS   | Ground   |     | N/A  |                        |                   |      | 43                  |                      |                      | 43                   |                       |                        | 43                    |

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<sup>[1]</sup> It is embedded with SDRAM.  
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<sup>[3]</sup> “Tie to VSS by 10K Resistor” indicates the pin is connected to the ground with 10K resistance.  
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| Pin Name | Function | DQS | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|----------|----------|-----|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| VSS      | Ground   |     | N/A  |                        |                   |      | 46                  | 74                   | 90                   | 46                   | 74                    | 74                     | 46                    |
| VSS      | Ground   |     | N/A  |                        |                   |      | 65                  |                      | 131                  | 65                   | 107                   | 107                    | 65                    |
| VSS      | Ground   |     | N/A  |                        |                   |      | 68                  |                      |                      | 68                   |                       |                        | 68                    |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     | 17                   | 134                  |                      | 17                    | 17                     |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     | 53                   | 175                  |                      | 53                    | 53                     |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     | 89                   |                      |                      | 89                    | 89                     |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     | 107                  |                      |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      | 43                   |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      | 46                   |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      | 87                   |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| VSS      | Ground   |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| NC       | N/A      |     | N/A  |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |

**Note!**

<sup>[1]</sup> It is embedded with SDRAM.

<sup>[2]</sup> It is embedded with PSRAM.

| Pin Name                    | Function | DQS  | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|-----------------------------|----------|------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| <b>BANK7 True LVDS Pair</b> |          |      |      |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| IOL11A                      | I/O      | DQ1  | 7    |                        | True_of_IOL11B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL11B                      | I/O      | DQ1  | 7    |                        | Comp_of_IOL11A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL13A                      | I/O      | DQ1  | 7    |                        | True_of_IOL13B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL13B                      | I/O      | DQ1  | 7    |                        | Comp_of_IOL13A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL15A                      | I/O      | DQ1  | 7    |                        | True_of_IOL15B    | TRUE |                     |                      | 8                    |                      |                       |                        |                       |
| IOL15B                      | I/O      | DQ1  | 7    |                        | Comp_of_IOL15A    | TRUE |                     |                      | 9                    |                      |                       |                        |                       |
| IOL17A                      | I/O      | DQ1  | 7    |                        | True_of_IOL17B    | TRUE |                     |                      | 10                   |                      |                       |                        |                       |
| IOL17B                      | I/O      | DQ1  | 7    |                        | Comp_of_IOL17A    | TRUE |                     |                      | 11                   |                      |                       |                        |                       |
| IOL20A                      | I/O      | DQ1  | 7    |                        | True_of_IOL20B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL20B                      | I/O      | DQ1  | 7    |                        | Comp_of_IOL20A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL22A                      | I/O      | DQS1 | 7    |                        | True_of_IOL22B    | TRUE |                     | 9                    |                      |                      | 9                     | 9                      |                       |
| IOL22B                      | I/O      | DQS1 | 7    |                        | Comp_of_IOL22A    | TRUE |                     | 10                   |                      |                      | 10                    | 10                     |                       |
| IOL24A                      | I/O      | DQ1  | 7    |                        | True_of_IOL24B    | TRUE |                     |                      | 15                   |                      |                       |                        |                       |
| IOL24B                      | I/O      | DQ1  | 7    |                        | Comp_of_IOL24A    | TRUE |                     |                      | 16                   |                      |                       |                        |                       |
| IOL26A                      | I/O      | DQ1  | 7    |                        | True_of_IOL26B    | TRUE |                     |                      | 17                   |                      |                       |                        |                       |
| IOL26B                      | I/O      | DQ1  | 7    |                        | Comp_of_IOL26A    | TRUE |                     |                      | 19                   |                      |                       |                        |                       |
| IOL2A                       | I/O      | DQ0  | 7    |                        | True_of_IOL2B     | TRUE |                     | 3                    | 3                    |                      | 3                     | 3                      |                       |
| IOL2B                       | I/O      | DQ0  | 7    |                        | Comp_of_IOL2A     | TRUE |                     | 4                    | 4                    |                      | 4                     | 4                      |                       |
| IOL4A                       | I/O      | DQ0  | 7    |                        | True_of_IOL4B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL4B                       | I/O      | DQ0  | 7    |                        | Comp_of_IOL4A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL6A                       | I/O      | DQS0 | 7    |                        | True_of_IOL6B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL6B                       | I/O      | DQS0 | 7    |                        | Comp_of_IOL6A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL8A/LPLL1_T_fb            | I/O      | DQ0  | 7    | LPLL1_T_fb             | True_of_IOL8B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL8B/LPLL1_C_fb            | I/O      | DQ0  | 7    | LPLL1_C_fb             | Comp_of_IOL8A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| <b>BANK6 True LVDS Pair</b> |          |      |      |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| IOL29A/GCLKT_6              | I/O      | DQ2  | 6    | GCLKT_6                | True_of_IOL29B    | TRUE | 10                  | 25                   |                      | 10                   | 25                    | 25                     | 10                    |
| IOL29B/GCLKC_6              | I/O      | DQ2  | 6    | GCLKC_6                | Comp_of_IOL29A    | TRUE | 11                  | 26                   |                      | 11                   | 26                    | 26                     | 11                    |
| IOL31A                      | I/O      | DQ2  | 6    |                        | True_of_IOL31B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL31B                      | I/O      | DQ2  | 6    |                        | Comp_of_IOL31A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL33A                      | I/O      | DQ2  | 6    |                        | True_of_IOL33B    | TRUE |                     | 27                   |                      |                      | 27                    | 27                     |                       |
| IOL33B                      | I/O      | DQ2  | 6    |                        | Comp_of_IOL33A    | TRUE |                     | 28                   |                      |                      | 28                    | 28                     |                       |
| IOL35A                      | I/O      | DQ2  | 6    |                        | True_of_IOL35B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOL35B                      | I/O      | DQ2  | 6    |                        | Comp_of_IOL35A    | TRUE |                     |                      |                      |                      |                       |                        |                       |

**Note!**

<sup>[1]</sup> It is embedded with SDRAM.

<sup>[2]</sup> It is embedded with PSRAM.

| Pin Name                    | Function | DQS | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|-----------------------------|----------|-----|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| IOL38A                      | I/O      | DQ2 | 6    |                        | True_of_IOL38B    | TRUE |                     |                      | 24                   |                      |                       |                        |                       |
| IOL38B                      | I/O      | DQ2 | 6    |                        | Comp_of_IOL38A    | TRUE |                     |                      | 25                   |                      |                       |                        |                       |
| IOL40A                      | I/O      | DQ2 | 6    |                        | True_of_IOL40B    | TRUE |                     |                      | 26                   |                      |                       |                        |                       |
| IOL40B                      | I/O      | DQ2 | 6    |                        | Comp_of_IOL40A    | TRUE |                     |                      | 27                   |                      |                       |                        |                       |
| IOL42A                      | I/O      | DQ2 | 6    |                        | True_of_IOL42B    | TRUE |                     | 32                   | 28                   |                      | 32                    | 32                     |                       |
| IOL42B                      | I/O      | DQ2 | 6    |                        | Comp_of_IOL42A    | TRUE |                     | 33                   | 29                   |                      | 33                    | 33                     |                       |
| IOL44A                      | I/O      | DQ2 | 6    |                        | True_of_IOL44B    | TRUE |                     |                      | 30                   |                      |                       |                        |                       |
| IOL44B                      | I/O      | DQ2 | 6    |                        | Comp_of_IOL44A    | TRUE |                     |                      | 31                   |                      |                       |                        |                       |
| IOL47A/LPLL2_T_fb           | I/O      | DQ3 | 6    | LPLL2_T_fb             | True_of_IOL47B    | TRUE | 15                  |                      | 35                   | 15                   |                       |                        | 15                    |
| IOL47B/LPLL2_C_fb           | I/O      | DQ3 | 6    | LPLL2_C_fb             | Comp_of_IOL47A    | TRUE | 16                  |                      | 36                   | 16                   |                       |                        | 16                    |
| IOL49A                      | I/O      | DQ3 | 6    |                        | True_of_IOL49B    | TRUE | 17                  |                      |                      | 17                   |                       |                        | 17                    |
| IOL49B                      | I/O      | DQ3 | 6    |                        | Comp_of_IOL49A    | TRUE | 18                  |                      |                      | 18                   |                       |                        | 18                    |
| IOL51A                      | I/O      | DQ3 | 6    |                        | True_of_IOL51B    | TRUE | 19                  |                      |                      | 19                   |                       |                        | 19                    |
| IOL51B                      | I/O      | DQ3 | 6    |                        | Comp_of_IOL51A    | TRUE | 20                  |                      |                      | 20                   |                       |                        | 20                    |
| IOL53A                      | I/O      | DQ3 | 6    |                        | True_of_IOL53B    | TRUE |                     |                      | 41                   |                      |                       |                        |                       |
| IOL53B                      | I/O      | DQ3 | 6    |                        | Comp_of_IOL53A    | TRUE |                     |                      | 42                   |                      |                       |                        |                       |
| <b>BANK5 True LVDS Pair</b> |          |     |      |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| IOB12A                      | I/O      | DQ5 | 5    |                        | True_of_IOB12B    | TRUE |                     | 44                   | 53                   |                      | 44                    | 44                     |                       |
| IOB12B                      | I/O      | DQ5 | 5    |                        | Comp_of_IOB12A    | TRUE |                     | 45                   | 54                   |                      | 45                    | 45                     |                       |
| IOB14A                      | I/O      | DQ5 | 5    |                        | True_of_IOB14B    | TRUE | 29                  | 46                   | 55                   | 29                   | 46                    | 46                     | 29                    |
| IOB14B                      | I/O      | DQ5 | 5    |                        | Comp_of_IOB14A    | TRUE | 30                  | 47                   | 56                   | 30                   | 47                    | 47                     | 30                    |
| IOB16A                      | I/O      | DQ5 | 5    |                        | True_of_IOB16B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB16B                      | I/O      | DQ5 | 5    |                        | Comp_of_IOB16A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB18A                      | I/O      | DQ5 | 5    |                        | True_of_IOB18B    | TRUE | 31                  |                      | 59                   | 31                   |                       |                        | 31                    |
| IOB18B                      | I/O      | DQ5 | 5    |                        | Comp_of_IOB18A    | TRUE | 32                  |                      | 60                   | 32                   |                       |                        | 32                    |
| IOB20A                      | I/O      | DQ5 | 5    |                        | True_of_IOB20B    | TRUE |                     | 50                   |                      |                      | 50                    | 50                     |                       |
| IOB20B                      | I/O      | DQ5 | 5    |                        | Comp_of_IOB20A    | TRUE |                     | 51                   |                      |                      | 51                    | 51                     |                       |
| IOB22A                      | I/O      | DQ5 | 5    |                        | True_of_IOB22B    | TRUE |                     | 52                   |                      |                      | 52                    | 52                     |                       |
| IOB22B                      | I/O      | DQ5 | 5    |                        | Comp_of_IOB22A    | TRUE |                     | 54                   |                      |                      | 54                    | 54                     |                       |
| IOB24A                      | I/O      | DQ5 | 5    |                        | True_of_IOB24B    | TRUE | 33                  |                      |                      | 33                   |                       |                        | 33                    |
| IOB24B                      | I/O      | DQ5 | 5    |                        | Comp_of_IOB24A    | TRUE | 34                  |                      |                      | 34                   |                       |                        | 34                    |
| IOB26A                      | I/O      | DQ5 | 5    |                        | True_of_IOB26B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB26B                      | I/O      | DQ5 | 5    |                        | Comp_of_IOB26A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB2A                       | I/O      | DQ4 | 5    |                        | True_of_IOB2B     | TRUE |                     |                      |                      |                      |                       |                        |                       |



**Note!**

<sup>[1]</sup> It is embedded with SDRAM.

<sup>[2]</sup> It is embedded with PSRAM.

| Pin Name                    | Function | DQS  | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|-----------------------------|----------|------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| IOB2B                       | I/O      | DQ4  | 5    |                        | Comp_of_IOB2A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB4A                       | I/O      | DQ4  | 5    |                        | True_of_IOB4B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB4B                       | I/O      | DQ4  | 5    |                        | Comp_of_IOB4A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB6A                       | I/O      | DQ4  | 5    |                        | True_of_IOB6B     | TRUE | 25                  | 40                   | 49                   | 25                   | 40                    | 40                     | 25                    |
| IOB6B                       | I/O      | DQ4  | 5    |                        | Comp_of_IOB6A     | TRUE | 26                  | 41                   | 50                   | 26                   | 41                    | 41                     | 26                    |
| IOB8A                       | I/O      | DQ4  | 5    |                        | True_of_IOB8B     | TRUE | 27                  |                      | 51                   | 27                   |                       |                        | 27                    |
| IOB8B                       | I/O      | DQ4  | 5    |                        | Comp_of_IOB8A     | TRUE | 28                  |                      | 52                   | 28                   |                       |                        | 28                    |
| <b>BANK4 True LVDS Pair</b> |          |      |      |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| IOB30A/GCLKT_4              | I/O      | DQ6  | 4    | GCLKT_4                | True_of_IOB30B    | TRUE | 35                  | 56                   | 68                   | 35                   | 56                    | 56                     | 35                    |
| IOB30B/GCLKC_4              | I/O      | DQ6  | 4    | GCLKC_4                | Comp_of_IOB30A    | TRUE | 36                  | 57                   | 69                   | 36                   | 57                    | 57                     | 36                    |
| IOB32A                      | I/O      | DQ6  | 4    |                        | True_of_IOB32B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB32B                      | I/O      | DQ6  | 4    |                        | Comp_of_IOB32A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB34A                      | I/O      | DQ6  | 4    |                        | True_of_IOB34B    | TRUE | 37                  | 60                   | 70                   | 37                   | 60                    | 60                     | 37                    |
| IOB34B                      | I/O      | DQ6  | 4    |                        | Comp_of_IOB34A    | TRUE | 38                  | 61                   | 71                   | 38                   | 61                    | 61                     | 38                    |
| IOB36A                      | I/O      | DQ6  | 4    |                        | True_of_IOB36B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB36B                      | I/O      | DQ6  | 4    |                        | Comp_of_IOB36A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB38A                      | I/O      | DQ6  | 4    |                        | True_of_IOB38B    | TRUE |                     | 62                   | 74                   |                      | 62                    | 62                     |                       |
| IOB38B                      | I/O      | DQ6  | 4    |                        | Comp_of_IOB38A    | TRUE |                     | 63                   | 75                   |                      | 63                    | 63                     |                       |
| IOB40A                      | I/O      | DQ6  | 4    |                        | True_of_IOB40B    | TRUE | 39                  | 64                   | 76                   | 39                   | 64                    | 64                     | 39                    |
| IOB40B                      | I/O      | DQ6  | 4    |                        | Comp_of_IOB40A    | TRUE | 40                  | 65                   | 77                   | 40                   | 65                    | 65                     | 40                    |
| IOB42A                      | I/O      | DQ6  | 4    |                        | True_of_IOB42B    | TRUE |                     | 66                   | 78                   |                      | 66                    | 66                     |                       |
| IOB42B                      | I/O      | DQ6  | 4    |                        | Comp_of_IOB42A    | TRUE |                     | 67                   | 79                   |                      | 67                    | 67                     |                       |
| IOB44A                      | I/O      | DQ6  | 4    |                        | True_of_IOB44B    | TRUE |                     |                      | 80                   |                      |                       |                        |                       |
| IOB44B                      | I/O      | DQ6  | 4    |                        | Comp_of_IOB44A    | TRUE |                     |                      | 81                   |                      |                       |                        |                       |
| IOB48A                      | I/O      | DQS7 | 4    |                        | True_of_IOB48B    | TRUE |                     | 68                   | 82                   |                      | 68                    | 68                     |                       |
| IOB48B                      | I/O      | DQS7 | 4    |                        | Comp_of_IOB48A    | TRUE |                     | 69                   | 83                   |                      | 69                    | 69                     |                       |
| IOB50A                      | I/O      | DQ7  | 4    |                        | True_of_IOB50B    | TRUE |                     |                      | 84                   |                      |                       |                        |                       |
| IOB50B                      | I/O      | DQ7  | 4    |                        | Comp_of_IOB50A    | TRUE |                     |                      | 85                   |                      |                       |                        |                       |
| IOB52A                      | I/O      | DQ7  | 4    |                        | True_of_IOB52B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB52B                      | I/O      | DQ7  | 4    |                        | Comp_of_IOB52A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB54A                      | I/O      | DQ7  | 4    |                        | True_of_IOB54B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOB54B                      | I/O      | DQ7  | 4    |                        | Comp_of_IOB54A    | TRUE |                     |                      |                      |                      |                       |                        |                       |

| <b>Note!</b><br><sup>[1]</sup> It is embedded with SDRAM.<br><sup>[2]</sup> It is embedded with PSRAM. |          |      |      |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
|--|----------|------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| Pin Name   | Function | DQS  | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
| <b>BANK3 True LVDS Pair</b>  |          |      |      |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| IOR29A/GCLKT_3   | I/O      | DQ9  | 3    | GCLKT_3                | True_of_IOR29B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR29B/GCLKC_3   | I/O      | DQ9  | 3    | GCLKC_3                | Comp_of_IOR29A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR31A/MODE2   | I/O      | DQ9  | 3    | MODE2                  | True_of_IOR31B    | TRUE |                     | 143                  | 112                  |                      | 143                   | 143                    |                       |
| IOR31B/RECONFIG_N  | I/O      | DQ9  | 3    | RECONFIG_N             | Comp_of_IOR31A    | TRUE |                     | 20                   | 108                  |                      | 20                    | 20                     |                       |
| IOR33A/MI/D7   | I/O      | DQ9  | 3    | MI/D7                  | True_of_IOR33B    | TRUE | 62                  | 96                   | 106                  | 62                   | 96                    | 96                     | 62                    |
| IOR33B/MO/D6   | I/O      | DQ9  | 3    | MO/D6                  | Comp_of_IOR33A    | TRUE | 61                  | 95                   | 105                  | 61                   | 95                    | 95                     | 61                    |
| IOR35A/FASTRD_N/D3   | I/O      | DQ9  | 3    | FASTRD_N/D3            | True_of_IOR35B    | TRUE |                     | 92                   | 102                  |                      | 92                    | 92                     |                       |
| IOR35B/SI/D2   | I/O      | DQ9  | 3    | SI/D2                  | Comp_of_IOR35A    | TRUE |                     | 90                   | 101                  |                      | 90                    | 90                     |                       |
| IOR38A/DIN/CLKHOLD_N   | I/O      | DQ9  | 3    | DIN/CLKHOLD_N          | True_of_IOR38B    | TRUE | 54                  | 86                   | 98                   | 54                   | 86                    | 86                     | 54                    |
| IOR38B/DOUT/WE_N   | I/O      | DQ9  | 3    | DOUT/WE_N              | Comp_of_IOR38A    | TRUE | 53                  | 85                   | 97                   | 53                   | 85                    | 85                     | 53                    |
| IOR40A   | I/O      | DQ9  | 3    |                        | True_of_IOR40B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR40B   | I/O      | DQ9  | 3    |                        | Comp_of_IOR40A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR42A   | I/O      | DQ9  | 3    |                        | True_of_IOR42B    | TRUE |                     | 84                   |                      |                      | 84                    | 84                     |                       |
| IOR42B   | I/O      | DQ9  | 3    |                        | Comp_of_IOR42A    | TRUE |                     | 83                   |                      |                      | 83                    | 83                     |                       |
| IOR44A   | I/O      | DQ9  | 3    |                        | True_of_IOR44B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR44B   | I/O      | DQ9  | 3    |                        | Comp_of_IOR44A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR47A/RPLL2_T_fb  | I/O      | DQ8  | 3    | RPLL2_T_fb             | True_of_IOR47B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR47B/RPLL2_C_fb  | I/O      | DQ8  | 3    | RPLL2_C_fb             | Comp_of_IOR47A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR49A   | I/O      | DQ8  | 3    |                        | True_of_IOR49B    | TRUE | 49                  | 80                   |                      | 49                   | 80                    | 80                     | 49                    |
| IOR49B   | I/O      | DQ8  | 3    |                        | Comp_of_IOR49A    | TRUE | 48                  | 79                   |                      | 48                   | 79                    | 79                     | 48                    |
| IOR51A   | I/O      | DQ8  | 3    |                        | True_of_IOR51B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR51B   | I/O      | DQ8  | 3    |                        | Comp_of_IOR51A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR53A   | I/O      | DQ8  | 3    |                        | True_of_IOR53B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR53B   | I/O      | DQ8  | 3    |                        | Comp_of_IOR53A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| <b>BANK2 True LVDS Pair</b>  |          |      |      |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| IOR11A   | I/O      | DQ10 | 2    |                        | True_of_IOR11B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR11B   | I/O      | DQ10 | 2    |                        | Comp_of_IOR11A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR13A   | I/O      | DQ10 | 2    |                        | True_of_IOR13B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR13B   | I/O      | DQ10 | 2    |                        | Comp_of_IOR13A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR15A   | I/O      | DQ10 | 2    |                        | True_of_IOR15B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR15B   | I/O      | DQ10 | 2    |                        | Comp_of_IOR15A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR17A   | I/O      | DQ10 | 2    |                        | True_of_IOR17B    | TRUE |                     |                      |                      |                      |                       |                        |                       |

**Note!**

<sup>[1]</sup> It is embedded with SDRAM.

<sup>[2]</sup> It is embedded with PSRAM.

| Pin Name                    | Function | DQS   | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
|-----------------------------|----------|-------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| IOR17B                      | I/O      | DQ10  | 2    |                        | Comp_of_IOR17A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR20A                      | I/O      | DQ10  | 2    |                        | True_of_IOR20B    | TRUE |                     | 102                  | 125                  |                      | 102                   | 102                    |                       |
| IOR20B                      | I/O      | DQ10  | 2    |                        | Comp_of_IOR20A    | TRUE |                     | 101                  | 124                  |                      | 101                   | 101                    |                       |
| IOR22A                      | I/O      | DQS10 | 2    |                        | True_of_IOR22B    | TRUE |                     | 100                  | 123                  |                      | 100                   | 100                    |                       |
| IOR22B                      | I/O      | DQS10 | 2    |                        | Comp_of_IOR22A    | TRUE |                     | 99                   | 122                  |                      | 99                    | 99                     |                       |
| IOR24A                      | I/O      | DQ10  | 2    |                        | True_of_IOR24B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR24B                      | I/O      | DQ10  | 2    |                        | Comp_of_IOR24A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR26A/TCK                  | I/O      | DQ10  | 2    | TCK                    | True_of_IOR26B    | TRUE | 6                   | 14                   | 120                  | 6                    | 14                    | 14                     | 6                     |
| IOR26B/TDI                  | I/O      | DQ10  | 2    | TDI                    | Comp_of_IOR26A    | TRUE | 7                   | 16                   | 117                  | 7                    | 16                    | 16                     | 7                     |
| IOR2A                       | I/O      | DQ11  | 2    |                        | True_of_IOR2B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR2B                       | I/O      | DQ11  | 2    |                        | Comp_of_IOR2A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR4A                       | I/O      | DQ11  | 2    |                        | True_of_IOR4B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR4B                       | I/O      | DQ11  | 2    |                        | Comp_of_IOR4A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR6A                       | I/O      | DQS11 | 2    |                        | True_of_IOR6B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR6B                       | I/O      | DQS11 | 2    |                        | Comp_of_IOR6A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR8A/RPLL1_T_fb            | I/O      | DQ11  | 2    | RPLL1_T_fb             | True_of_IOR8B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOR8B/RPLL1_C_fb            | I/O      | DQ11  | 2    | RPLL1_C_fb             | Comp_of_IOR8A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| <b>BANK1 True LVDS Pair</b> |          |       |      |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| IOT30A/GCLKT_1              | I/O      | DQ13  | 1    | GCLKT_1                | True_of_IOT30B    | TRUE | 77                  | 121                  | 152                  | 77                   | 121                   | 121                    | 77                    |
| IOT30B/GCLKC_1              | I/O      | DQ13  | 1    | GCLKC_1                | Comp_of_IOT30A    | TRUE | 76                  | 120                  | 151                  | 76                   | 120                   | 120                    | 76                    |
| IOT32A                      | I/O      | DQ13  | 1    |                        | True_of_IOT32B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT32B                      | I/O      | DQ13  | 1    |                        | Comp_of_IOT32A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT34A                      | I/O      | DQ13  | 1    |                        | True_of_IOT34B    | TRUE | 75                  |                      |                      | 75                   |                       |                        | 75                    |
| IOT34B                      | I/O      | DQ13  | 1    |                        | Comp_of_IOT34A    | TRUE | 74                  |                      |                      | 74                   |                       |                        | 74                    |
| IOT36A                      | I/O      | DQ13  | 1    |                        | True_of_IOT36B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT36B                      | I/O      | DQ13  | 1    |                        | Comp_of_IOT36A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT38A                      | I/O      | DQ13  | 1    |                        | True_of_IOT38B    | TRUE |                     | 119                  | 148                  |                      | 119                   | 119                    |                       |
| IOT38B                      | I/O      | DQ13  | 1    |                        | Comp_of_IOT38A    | TRUE |                     | 118                  | 147                  |                      | 118                   | 118                    |                       |
| IOT40A                      | I/O      | DQ13  | 1    |                        | True_of_IOT40B    | TRUE | 73                  | 117                  | 146                  | 73                   | 117                   | 117                    | 73                    |
| IOT40B                      | I/O      | DQ13  | 1    |                        | Comp_of_IOT40A    | TRUE | 72                  | 116                  | 145                  | 72                   | 116                   | 116                    | 72                    |
| IOT42A                      | I/O      | DQ13  | 1    |                        | True_of_IOT42B    | TRUE |                     | 115                  | 144                  |                      | 115                   | 115                    |                       |
| IOT42B                      | I/O      | DQ13  | 1    |                        | Comp_of_IOT42A    | TRUE |                     | 114                  | 143                  |                      | 114                   | 114                    |                       |
| IOT44A                      | I/O      | DQ13  | 1    |                        | True_of_IOT44B    | TRUE | 71                  |                      | 142                  | 71                   |                       |                        | 71                    |
| IOT44B                      | I/O      | DQ13  | 1    |                        | Comp_of_IOT44A    | TRUE | 70                  |                      | 141                  | 70                   |                       |                        | 70                    |

| <b>Note!</b>                              |          |       |      |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
|---|----------|-------|------|------------------------|-------------------|------|---------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|-----------------------|
| <sup>[1]</sup> It is embedded with SDRAM. |          |       |      |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| <sup>[2]</sup> It is embedded with PSRAM. |          |       |      |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| Pin Name                                  | Function | DQS   | BANK | Configuration Function | Differential Pair | LVDS | QN88 <sup>[1]</sup> | EQ144 <sup>[1]</sup> | EQ176 <sup>[1]</sup> | QN88P <sup>[2]</sup> | EQ144P <sup>[2]</sup> | EQ144PF <sup>[2]</sup> | QN88PF <sup>[2]</sup> |
| IOT48A                                    | I/O      | DQS12 | 1    |                        | True_of_IOT48B    | TRUE |                     | 113                  | 140                  |                      | 113                   | 113                    |                       |
| IOT48B                                    | I/O      | DQS12 | 1    |                        | Comp_of_IOT48A    | TRUE |                     | 112                  | 139                  |                      | 112                   | 112                    |                       |
| IOT50A                                    | I/O      | DQ12  | 1    |                        | True_of_IOT50B    | TRUE |                     | 111                  | 138                  |                      | 111                   | 111                    |                       |
| IOT50B                                    | I/O      | DQ12  | 1    |                        | Comp_of_IOT50A    | TRUE |                     | 110                  | 137                  |                      | 110                   | 110                    |                       |
| IOT52A                                    | I/O      | DQ12  | 1    |                        | True_of_IOT52B    | TRUE |                     |                      | 136                  |                      |                       |                        |                       |
| IOT52B                                    | I/O      | DQ12  | 1    |                        | Comp_of_IOT52A    | TRUE |                     |                      | 135                  |                      |                       |                        |                       |
| IOT54A                                    | I/O      | DQ12  | 1    |                        | True_of_IOT54B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT54B                                    | I/O      | DQ12  | 1    |                        | Comp_of_IOT54A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| <b>BANK0 True LVDS Pair</b>               |          |       |      |                        |                   |      |                     |                      |                      |                      |                       |                        |                       |
| IOT12A                                    | I/O      | DQ14  | 0    |                        | True_of_IOT12B    | TRUE |                     | 134                  | 169                  |                      | 134                   | 134                    |                       |
| IOT12B                                    | I/O      | DQ14  | 0    |                        | Comp_of_IOT12A    | TRUE |                     | 133                  | 168                  |                      | 133                   | 133                    |                       |
| IOT14A                                    | I/O      | DQ14  | 0    |                        | True_of_IOT14B    | TRUE |                     | 132                  | 167                  |                      | 132                   | 132                    |                       |
| IOT14B                                    | I/O      | DQ14  | 0    |                        | Comp_of_IOT14A    | TRUE |                     | 131                  | 166                  |                      | 131                   | 131                    |                       |
| IOT16A                                    | I/O      | DQ14  | 0    |                        | True_of_IOT16B    | TRUE |                     |                      | 165                  |                      |                       |                        |                       |
| IOT16B                                    | I/O      | DQ14  | 0    |                        | Comp_of_IOT16A    | TRUE |                     |                      | 164                  |                      |                       |                        |                       |
| IOT18A                                    | I/O      | DQ14  | 0    |                        | True_of_IOT18B    | TRUE |                     |                      | 163                  |                      |                       |                        |                       |
| IOT18B                                    | I/O      | DQ14  | 0    |                        | Comp_of_IOT18A    | TRUE |                     |                      | 162                  |                      |                       |                        |                       |
| IOT20A                                    | I/O      | DQ14  | 0    |                        | True_of_IOT20B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT20B                                    | I/O      | DQ14  | 0    |                        | Comp_of_IOT20A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT22A                                    | I/O      | DQ14  | 0    |                        | True_of_IOT22B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT22B                                    | I/O      | DQ14  | 0    |                        | Comp_of_IOT22A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT24A                                    | I/O      | DQ14  | 0    |                        | True_of_IOT24B    | TRUE |                     |                      | 159                  |                      |                       |                        |                       |
| IOT24B                                    | I/O      | DQ14  | 0    |                        | Comp_of_IOT24A    | TRUE |                     |                      | 158                  |                      |                       |                        |                       |
| IOT26A                                    | I/O      | DQ14  | 0    |                        | True_of_IOT26B    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT26B                                    | I/O      | DQ14  | 0    |                        | Comp_of_IOT26A    | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT2A                                     | I/O      | DQ15  | 0    |                        | True_of_IOT2B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT2B                                     | I/O      | DQ15  | 0    |                        | Comp_of_IOT2A     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT4A                                     | I/O      | DQ15  | 0    |                        | True_of_IOT4B     | TRUE | 86                  | 140                  |                      | 86                   | 140                   | 140                    | 86                    |
| IOT4B                                     | I/O      | DQ15  | 0    |                        | Comp_of_IOT4A     | TRUE | 85                  | 139                  |                      | 85                   | 139                   | 139                    | 85                    |
| IOT6A                                     | I/O      | DQ15  | 0    |                        | True_of_IOT6B     | TRUE | 84                  | 138                  | 173                  | 84                   | 138                   | 138                    | 84                    |
| IOT6B                                     | I/O      | DQ15  | 0    |                        | Comp_of_IOT6A     | TRUE | 83                  | 137                  | 172                  | 83                   | 137                   | 137                    | 83                    |
| IOT8A                                     | I/O      | DQ15  | 0    |                        | True_of_IOT8B     | TRUE |                     |                      |                      |                      |                       |                        |                       |
| IOT8B                                     | I/O      | DQ15  | 0    |                        | Comp_of_IOT8A     | TRUE |                     |                      |                      |                      |                       |                        |                       |

| <b>Note!</b><br>VCCX should be greater than or equal to VCCIO.                                    |   |        |       |
|---|---|--------|-------|
| <b>Recommended Operating Conditions of EQ144/QN88 Package Embedded with SDR SDRMA in GW2AR-18</b> |   |        |       |
| Name  | Description   | Min.   | Max.  |
| VCC   | Core voltage  | 0.95V  | 1.05V |
| VCCPLLL0/1  | Left PLL 0/1 supply voltage, VCC/VCCPLLL1 in package LQ144 are internally connected.                    | 0.95V  | 1.05V |
| VCCPLLR0/1  | Right PLL 0/1 supply voltage  | 0.95V  | 1.05V |
| VCCIO0, VCCIO1, VCCIO4, VCCIO5  | I/O Bank power supply voltage   | 1.14V  | 3.6V  |
| VCCIO2, VCCIO3, VCCIO6, VCCIO7  | I/O Bank power supply voltage, connected to SDR SDRAM port  | 3.135V | 3.6V  |
| VCCX/VCCIO2/VCCIO6/VCCIO7   | VCCX, VCCIO2, and VCCIO7 provide SDR SDRAM voltage; VCCX/VCCIO2/VCCIO6/VCCIO7 are internally connected. | 3.135V | 3.6V  |
| <b>Note !</b><br>It is highly recommended that the EPAD connect to GND, but not a requirement.    |   |        |       |
| <b>Recommended Operating Conditions of EQ176 Package Embedded with DDR SDRMA in GW2AR-18</b>      |   |        |       |
| Name  | Description   | Min.   | Max.  |
| VCC   | Core voltage  | 0.95V  | 1.05V |
| VCCPLLL0/1  | Left PLL 0/1 supply voltage   | 0.95V  | 1.05V |
| VCCPLLR0/1  | Right PLL 0/1 supply voltage  | 0.95V  | 1.05V |
| VCCIO0, VCCIO1, VCCIO4, VCCIO5  | I/O Bank power supply voltage   | 1.14V  | 3.6V  |
| VCCIO2, VCCIO3, VCCIO6, VCCIO7  | I/O Bank power supply voltage, connected to DDR SDRAM and provides power for DDR SDRAM.                 | 2.3V   | 2.7V  |
| VCCX  | Auxiliary voltage   | 2.7V   | 3.6V  |
| <b>Note !</b><br>It is highly recommended that the EPAD connect to GND, but not a requirement.    |   |        |       |

| <b>Note!</b><br>VCCX should be greater than or equal to VCCIO.                                 |   |       |       |
|--|---|-------|-------|
| <b>Recommended Operating Conditions of QN88P Package Embedded with PSRAM in GW2AR-18</b>       |   |       |       |
| Name   | Description   | Min.  | Max.  |
| VCC  | Core voltage  | 0.95V | 1.05V |
| VCCPLLL0/1   | Left PLL 0/1 supply voltage   | 0.95V | 1.05V |
| VCCPLLR0/1   | Right PLL 0/1 supply voltage  | 0.95V | 1.05V |
| VCCIO0, VCCIO3, VCCIO4, VCCIO5   | I/O Bank power supply voltage   | 1.14V | 3.6V  |
| VCCIO2/7   | I/O Bank power supply voltage, connected to PSRAM port. VCCIO2/VCCIO7 provides power for PSRAM. | 1.71V | 1.89V |
| VCCX/VCCIO1/VCCIO6   | VCCX/VCCIO1/VCCIO6 are internally connected.  | 2.7V  | 3.6V  |
| <b>Note !</b><br>It is highly recommended that the EPAD connect to GND, but not a requirement. |   |       |       |
| <b>Recommended Operating Conditions of EQ144P Package Embedded with PSRAM in GW2AR-18</b>      |   |       |       |
| Name   | Description   | Min.  | Max.  |
| VCC  | Core voltage  | 0.95V | 1.05V |
| VCCPLLL0/1   | Left PLL 0/1 supply voltage   | 0.95V | 1.05V |
| VCCPLLR0/1   | Right PLL 0/1 supply voltage  | 0.95V | 1.05V |
| VCCIO0, VCCIO1, VCCIO3, VCCIO5   | I/O Bank power supply voltage   | 1.14V | 3.6V  |
| VCCIO2/7   | I/O Bank power supply voltage, connected to PSRAM port. VCCIO2/VCCIO7 provides power for PSRAM. | 1.71V | 1.89V |
| VCCX/VCCIO4/VCCIO6   | VCCX/VCCIO4/VCCIO6 are internally connected.  | 2.7V  | 3.6V  |
| <b>Note !</b><br>It is highly recommended that the EPAD connect to GND, but not a requirement. |   |       |       |

| <b>Note!</b><br>VCCX should be greater than or equal to VCCIO.                                 |  |       |        |
|--|--|-------|--------|
| <b>Recommended Operating Conditions of EQ144PF Package Embedded with PSRAM in GW2AR-18</b>     |  |       |        |
| Name   | Description  | Min.  | Max.   |
| VCC  | Core voltage   | 0.95V | 1.05V  |
| VCCPLLL0/1   | Left PLL 0/1 supply voltage  | 0.95V | 1.05V  |
| VCCPLLR0/1   | Right PLL 0/1 supply voltage   | 0.95V | 1.05V  |
| VCCIO0, VCCIO1, VCCIO2, VCCIO3, VCCIO5   | I/O Bank power supply voltage  | 1.14V | 3.465V |
| VCCIO7   | I/O Bank power supply voltage, connected to PSRAM port. VCCIO7 provides power for PSRAM. | 1.71V | 1.89V  |
| VCCX/VCCIO4/VCCIO6   | VCCX/VCCIO4/VCCIO6 are internally connected.   | 2.7V  | 3.465V |
| <b>Note !</b><br>It is highly recommended that the EPAD connect to GND, but not a requirement. |  |       |        |
| <b>Recommended Operating Conditions of QN88PF Package Embedded with PSRAM in GW2AR-18</b>      |  |       |        |
| Name   | Description  | Min.  | Max.   |
| VCC  | Core voltage   | 0.95V | 1.05V  |
| VCCPLLL0/1   | Left PLL 0/1 supply voltage  | 0.95V | 1.05V  |
| VCCPLLR0/1   | Right PLL 0/1 supply voltage   | 0.95V | 1.05V  |
| VCCIO0, VCCIO2, VCCIO3, VCCIO4, VCCIO5   | I/O Bank power supply voltage  | 1.14V | 3.6V   |
| VCCIO7   | I/O Bank power supply voltage, connected to PSRAM port. VCCIO7 provides power for PSRAM. | 1.71V | 1.89V  |
| VCCX/VCCIO1/VCCIO6   | VCCX/VCCIO1/VCCIO6 are internally connected.   | 2.7V  | 3.6V   |
| <b>Note !</b><br>It is highly recommended that the EPAD connect to GND, but not a requirement. |  |       |        |