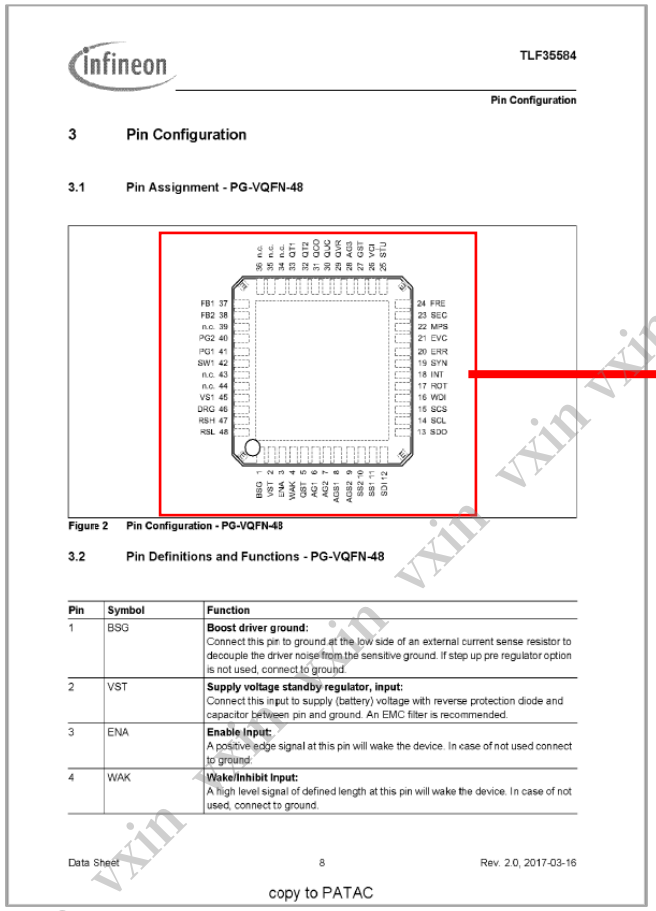
PART

# 01 智能建库工具

# 1-1. 结合OCR丰富的算法

根据芯片设计图纸，从中萃取出芯片的PIN脚信息。以便建库及检查。



Infineon TLF35584

Pin Configuration

3 Pin Configuration

3.1 Pin Assignment - PG-VQFN-48

Figure 2 Pin Configuration - PG-VQFN-48

3.2 Pin Definitions and Functions - PG-VQFN-48

| Pin | Symbol | Function |
|---|---|---|
| 1 | BSG | **Boost driver ground:** Connect this pin to ground at the low side of an external current sense resistor to decouple the driver noise from the sensitive ground. If step up pre regulator option is not used, connect to ground. |
| 2 | VST | **Supply voltage standby regulator, input:** Connect this input to supply (battery) voltage with reverse protection diode and capacitor between pin and ground. An EMC filter is recommended. |
| 3 | ENA | **Enable Input:** A positive edge signal at this pin will wake the device. In case of not used connect to ground. |
| 4 | WAK | **Wake/Inhibit Input:** A high level signal of defined length at this pin will wake the device. In case of not used, connect to ground. |

Data Sheet 8 Rev. 2.0, 2017-03-16

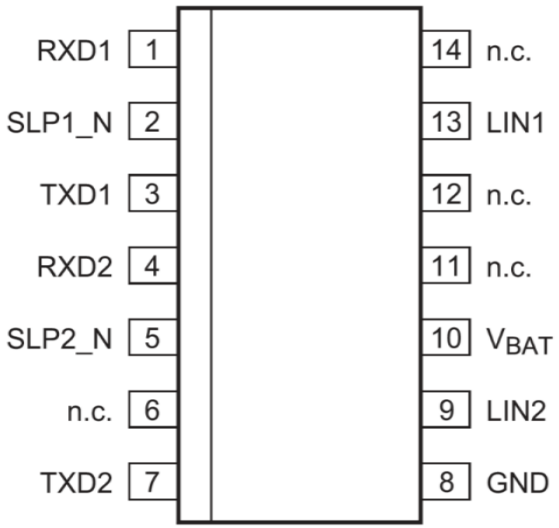
copy to PATAC

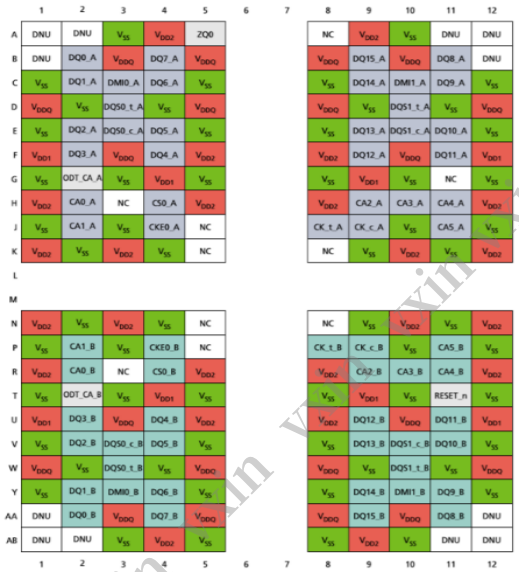
信息萃取

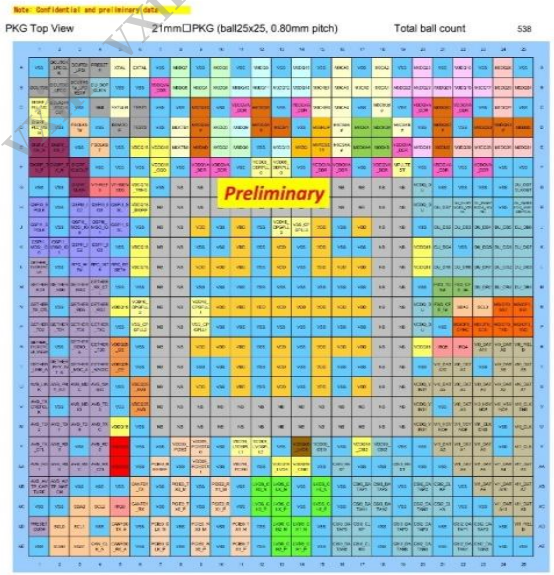
| PIN | PIN脚信息 |
|---|---|
| 1 | BSG |
| 2 | VST |
| 3 | ENA |
| 4 | WAK |
| 5 | QST |
| … | … |

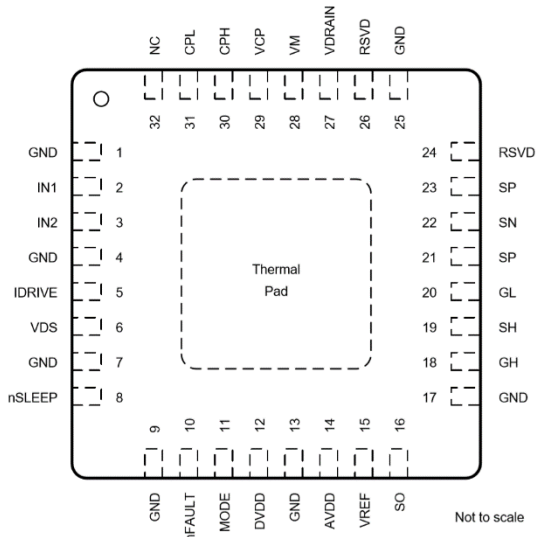
# 第一次将AI引入EDA

支持数据类型：两边出脚、四边出脚、表格格式（框线清晰）、BGA矩阵格式，萃取出Pin Name、Pin Number信息。



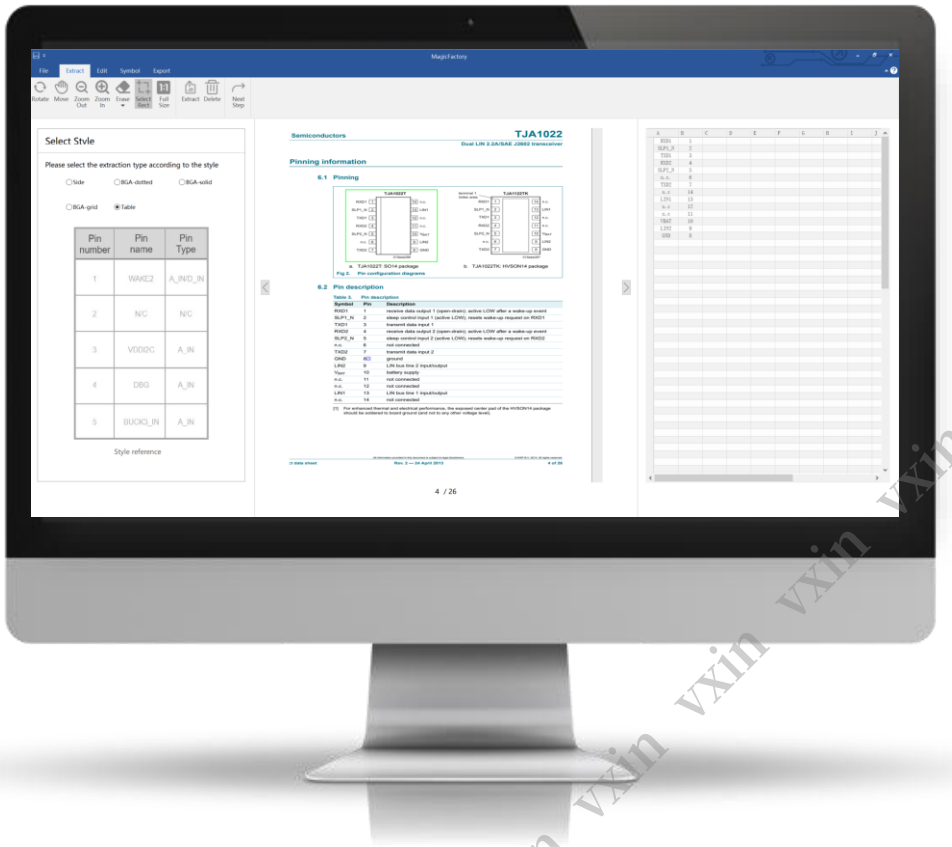





# 第一步 智能识别

无论什么规格说明书，在这里，一秒变成文字！




## 功能优势

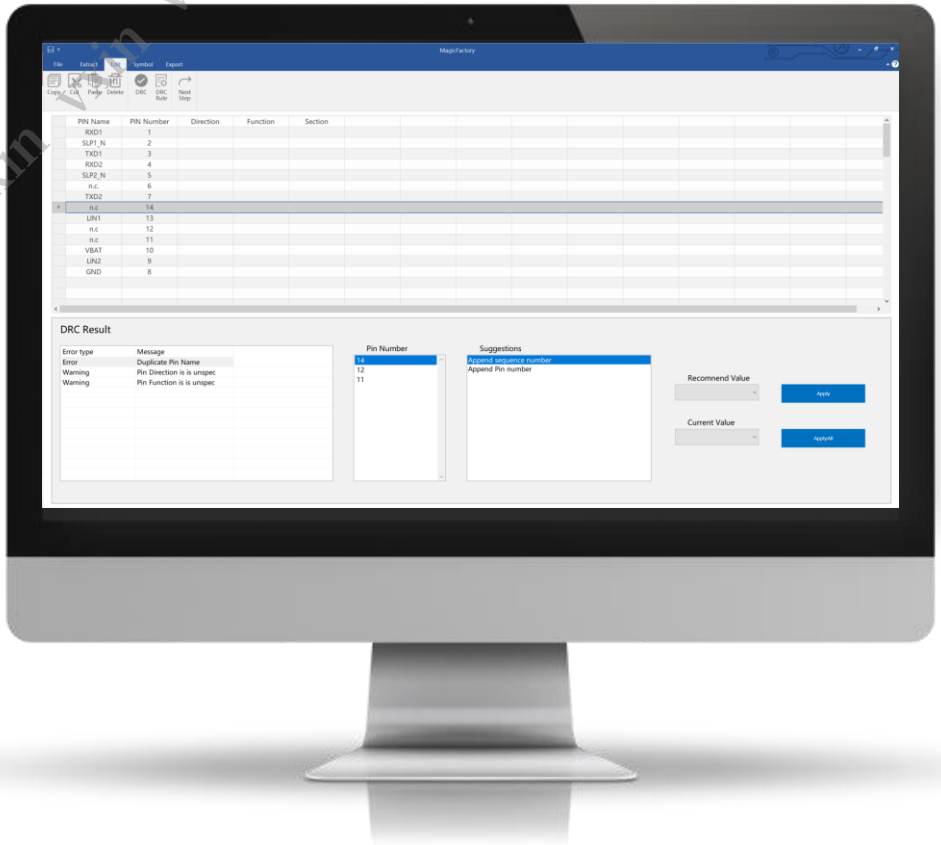
- 识别SOP、QFP、BGA等多种类型
- 支持萃取Pin Number、Name等多种信息
- 支持二级管、三极管等非标格式
- 可定位和识别不规则文字

# 第二步 信息优化

PIN脚信息不全？数量太多一个个太难改？别怕，这里直接一键补全！

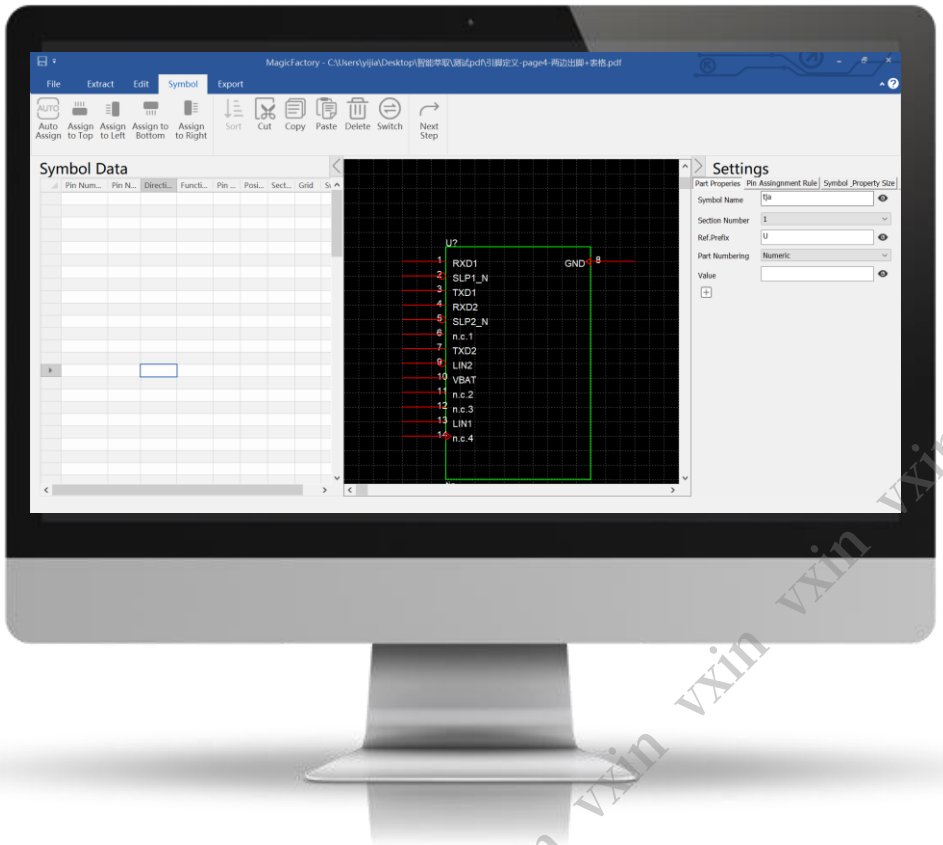
## 功能优势

- Pin Type识别及自动推荐类型
- 自动识别低电平有效等特殊电气属性
- 可编辑引脚信息，优化Pin Function
- 自动编号重复的Pin Name



# 第三步 智能建库

就算是一千个PIN脚又怎样呢，手指点一下，乖乖摆布到元件上！




## 功能优势

- 支持手动排布任意引脚
- 支持单个或一组引脚拖拽摆放
- 依据Pin Type属性自动排布引脚位置
- 支持编辑symbol图框大小
- 支持自定义symbol属性参数

# 第四步 输出建库

自动导出多种EDA工具原理图符号库


## 功能优势

· 支持输出Cadence OrCAD原理图符号库

· 支持输出Zuken Design Gateway原理图符号库

· 支持输出Mentor EPD原理图符号库

· 支持输出CSV 格式pin 引脚信息表

File | Extract | Edit | Symbol | Export

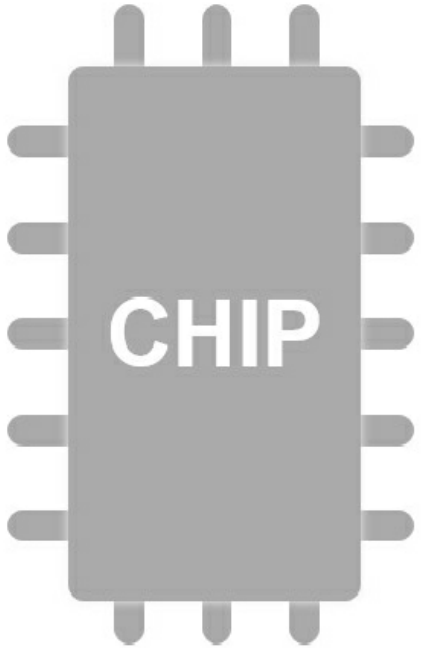
Rotate | Move | Zoom Out | Zoom In | Full Size | Erase | Select Rect | Extract | Delete | Next Step

# 四边出脚类型Pin Map萃取

## Select Style

Please select the extraction type according to the style

- ○ Side2
- ○ BGA-dotted
- ○ BGA-solid
- ○ BGA-grid
- ○ Table
- ◉ Side4

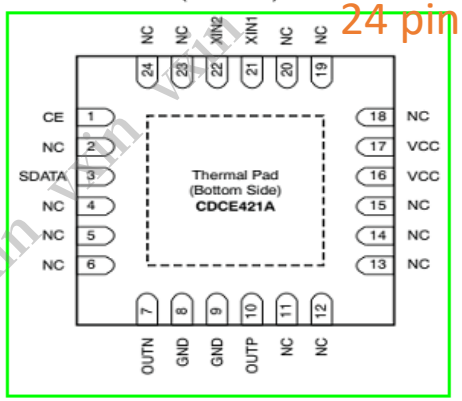



Style reference

TEXAS INSTRUMENTS
www.ti.com
CDC
SCAS873-

### DEVICE INFORMATION

RGE PACKAGE
QFN-24
(TOP VIEW)




### PIN DESCRIPTIONS

**Table 1. CDCE421A Pin Descriptions**

| TERMINAL NAME | TERMINAL NO. | TYPE | ESD PROTECTION | DESCRIPTION |
|---|---|---|---|---|
| CE | 1 | I | Y | Chip enable<br>CE = 1: enable the device and the outputs.<br>CE = 0: disable all current sources; in LVDS mode, LVDSP = LVDSN<br>in LVPECL mode, LVPECLP = LVPECLN = Hi-Z. |
| GND | 8, 9 | GND | Y | Ground |
| No connect | 2, 4–6, 11–15, 18–20, 23,24 | | | Do not connect these pins. Leave them floating. |
| OUTN | 7 | O | Y | High-speed negative differential LVPECL or LVDS outputs. (Outputs enabled by CE and selected by the EEPROM configuration registers. |
| OUTP | 10 | O | Y | High-speed positive differential LVPECL or LVDS outputs. (Outputs a enabled by CE and selected by the EEPROM configuration registers. |
| SDATA | 3 | I | Y | Programming pin using TI proprietary interface protocol |
| VCC | 16, 17 | Power | Y | 3.3-V power supply |
| XIN1<br>XIN2 | 21<br>22 | I<br>GND/NC | Y<br>N | In crystal input mode, connect XIN1 to one end of the crystal and XIN other end of the crystal. In LVCMOS input single-ended driven mode (pin 21) acts as an input reference, and XIN2 should connect to GND be left unconnected. |

# 萃取结果24 pins

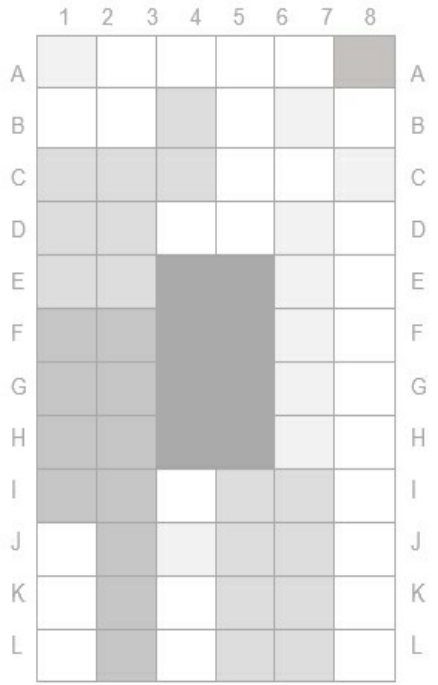
| | | B | C |
|---|---|---|---|
| 1 | 1 | CE | |
| 2 | 2 | NC | |
| 3 | 3 | SDATA | |
| 4 | 4 | NC | |
| 5 | 5 | NC | |
| 6 | 6 | NC | |
| 7 | 7 | OUTN | |
| 8 | 8 | GND | |
| 9 | 9 | GND | |
| 10 | 10 | OUTP | |
| 11 | 11 | NC | |
| 12 | 12 | NC | |
| 13 | 13 | NC | |
| 14 | 14 | NC | |
| 15 | 15 | NC | |
| 16 | 16 | Vcc | |
| 17 | 17 | Vcc | |
| 18 | 18 | NC | |
| 19 | 19 | NC | |
| 20 | 20 | NC | |
| 21 | 21 | XIN1 | |
| 22 | 22 | XIN2 | |
| 23 | 23 | NC | |
| 24 | 24 | NC | |
| 25 | | | |
| 26 | | | |
| 27 | | | |
| 28 | | | |
| 29 | | | |
| 30 | | | |
| 31 | | | |
| 32 | | | |
| 33 | | | |
| 34 | | | |

# 矩阵类型Pin Map萃取

## Select Style

Please select the extraction type according to the style

- ○ Side2
- ○ BGA-dotted
- ○ BGA-solid
- ◉ BGA-grid
- ○ Table
- ○ Side4




Style reference



### PIN CONFIGURATION AND FUNCTION DESCRIPTIONS

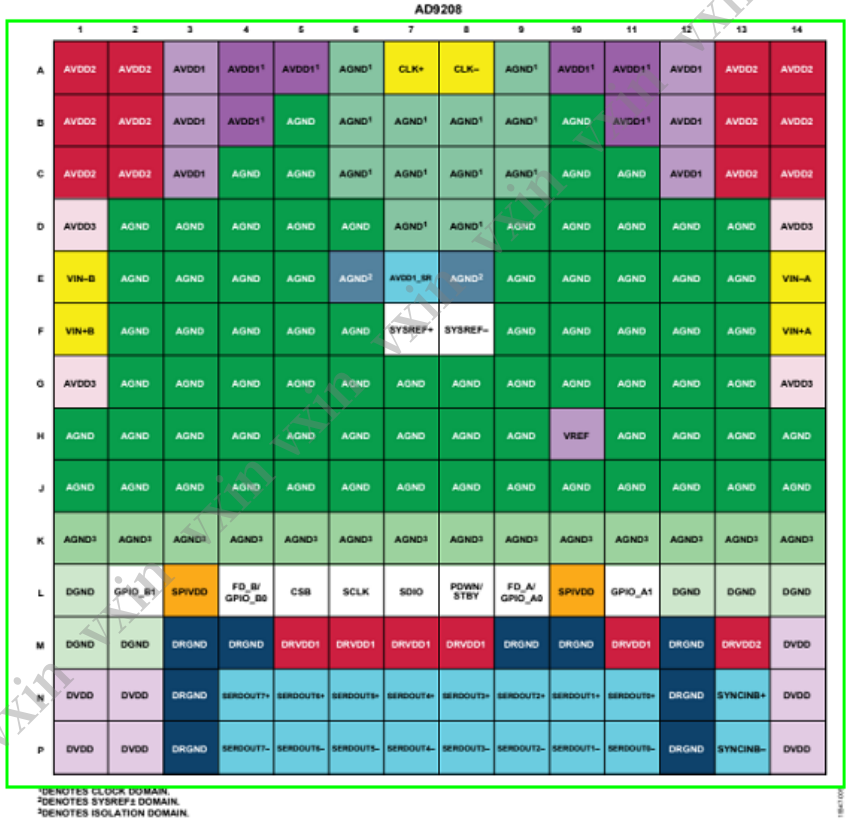



*Figure 5. Pin Configuration (Top View)*



# 萃取结果

| | A | B | C |
|---|---|---|---|
| 166 | M12 | DRGND | |
| 167 | M13 | DRVDD2 | |
| 168 | M14 | DVDD | |
| 169 | N1 | DVDD | |
| 170 | N2 | DVDD | |
| 171 | N3 | DRGND | |
| 172 | N4 | SERDOUT7+ | |
| 173 | N5 | SERDOUT6+ | |
| 174 | N6 | SERDOUT5+ | |
| 175 | N7 | SERDOUT4+ | |
| 176 | N8 | SERDOUT3+ | |
| 177 | N9 | SERDOUT2+ | |
| 178 | N10 | SERDOUT1+ | |
| 179 | N11 | SERDOUT0+ | |
| 180 | N12 | DRGND | |
| 181 | N13 | SYNCINB+ | |
| 182 | N14 | DVDD | |
| 183 | P1 | DVDD | |
| 184 | P2 | DVDD | |
| 185 | P3 | DRGND | |
| 186 | P4 | SERDOUT7 - | |
| 187 | P5 | SERDOUT6 - | |
| 188 | P6 | SERDOUT5 - | |
| 189 | P7 | SERDOUT4 - | |
| 190 | P8 | SERDOUT3 - | |
| 191 | P9 | SERDOUT2 - | |
| 192 | P10 | SERDOUT1 - | |
| 193 | P11 | SERDOUT0 - | |
| 194 | P12 | DRGND | |
| 195 | P13 | SYNCINB - | |
| 196 | P14 | DVDD | |
| 197 | | | |
| 198 | | | |
| 199 | | | |

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## PIN CONFIGURATIONS

| 204-Pin DDR3 SODIMM Front | | | | | | | |
|---|---|---|---|---|---|---|---|
| Pin | Symbol | Pin | Symbol | Pin | Symbol | Pin | Symbol |
| 1 | $V_{REFDQ}$ | 53 | DQ19 | 105 | $V_{DD}$ | 157 | DQ42 |
| 3 | $V_{SS}$ | 55 | $V_{SS}$ | 107 | A10 | 159 | DQ43 |
| 5 | DQ0 | 57 | DQ24 | 109 | BA0 | 161 | $V_{SS}$ |
| 7 | DQ1 | 59 | DQ25 | 111 | $V_{DD}$ | 163 | DQ48 |
| 9 | $V_{SS}$ | 61 | $V_{SS}$ | 113 | WE# | 165 | DQ49 |
| 11 | DM0 | 63 | DM3 | 115 | CAS# | 167 | $V_{SS}$ |
| 13 | $V_{SS}$ | 65 | $V_{SS}$ | 117 | $V_{DD}$ | 169 | DQS6# |
| 15 | DQ2 | 67 | DQ26 | 119 | A13 | 171 | DQS6 |
| 17 | DQ3 | 69 | DQ27 | 121 | S1# | 173 | $V_{SS}$ |
| 19 | $V_{SS}$ | 71 | $V_{SS}$ | 123 | $V_{DD}$ | 175 | DQ50 |
| 21 | DQ8 | 73 | CKE0 | 125 | NC | 177 | DQ51 |
| 23 | DQ9 | 75 | $V_{DD}$ | 127 | $V_{SS}$ | 179 | $V_{SS}$ |
| 25 | $V_{SS}$ | 77 | NC | 129 | DQ32 | 181 | DQ56 |
| 27 | DQS1# | 79 | BA2 | 131 | DQ33 | 183 | DQ57 |
| 29 | DQS1 | 81 | $V_{DD}$ | 133 | $V_{SS}$ | 185 | $V_{SS}$ |
| 31 | $V_{SS}$ | 83 | A12 | 135 | DQS4# | 187 | DM7 |
| 33 | DQ10 | 85 | A9 | 137 | DQS4 | 189 | $V_{SS}$ |
| 35 | DQ11 | 87 | $V_{DD}$ | 139 | $V_{SS}$ | 191 | DQ58 |
| 37 | $V_{SS}$ | 89 | A8 | 141 | DQ34 | 193 | DQ59 |
| 39 | DQ16 | 91 | A5 | 143 | DQ35 | 195 | $V_{SS}$ |
| 41 | DQ17 | 93 | $V_{DD}$ | 145 | $V_{SS}$ | 197 | SA0 |
| 43 | $V_{SS}$ | 95 | A3 | 147 | DQ40 | 199 | $V_{DDSPD}$ |
| 45 | DQS2# | 97 | A1 | 149 | DQ41 | 201 | SA1 |
| 47 | DQS2 | 99 | $V_{DD}$ | 151 | $V_{SS}$ | 203 | $V_{TT}$ |
| 49 | $V_{SS}$ | 101 | CK0 | 153 | DM5 | | |
| 51 | DQ18 | 103 | CK0# | 155 | $V_{SS}$ | | |

| 204-Pin DDR3 SODIMM Back | | | | | | | |
|---|---|---|---|---|---|---|---|
| Pin | Symbol | Pin | Symbol | Pin | Symbol | Pin | Symbol |
| 2 | $V_{SS}$ | 54 | $V_{SS}$ | 106 | $V_{DD}$ | 158 | DQ46 |
| 4 | DQ4 | 56 | DQ28 | 108 | BA1 | 160 | DQ47 |
| 6 | DQ5 | 58 | DQ29 | 110 | RAS# | 162 | $V_{SS}$ |
| 8 | $V_{SS}$ | 60 | $V_{SS}$ | 112 | $V_{DD}$ | 164 | DQ52 |
| 10 | DQS0# | 62 | DQS3# | 114 | S0# | 166 | DQ53 |
| 12 | DQS0 | 64 | DQS3 | 116 | ODT0 | 168 | $V_{SS}$ |
| 14 | $V_{SS}$ | 66 | $V_{SS}$ | 118 | $V_{DD}$ | 170 | DM6 |
| 16 | DQ6 | 68 | DQ30 | 120 | ODT1 | 172 | $V_{SS}$ |
| 18 | DQ7 | 70 | DQ31 | 122 | NC | 174 | DQ54 |
| 20 | $V_{SS}$ | 72 | $V_{SS}$ | 124 | $V_{DD}$ | 176 | DQ55 |
| 22 | DQ12 | 74 | CKE1 | 126 | $V_{REFCA}$ | 178 | $V_{SS}$ |
| 24 | DQ13 | 76 | $V_{DD}$ | 128 | $V_{SS}$ | 180 | DQ60 |
| 26 | $V_{SS}$ | 78 | NC | 130 | DQ36 | 182 | DQ61 |
| 28 | DM1 | 80 | A14 | 132 | DQ37 | 184 | $V_{SS}$ |
| 30 | RESET# | 82 | $V_{DD}$ | 134 | $V_{SS}$ | 186 | DQS7# |
| 32 | $V_{SS}$ | 84 | A11 | 136 | DM4 | 188 | DQS7 |
| 34 | DQ14 | 86 | A7 | 138 | $V_{SS}$ | 190 | $V_{SS}$ |
| 36 | DQ15 | 88 | $V_{DD}$ | 140 | DQ38 | 192 | DQ62 |
| 38 | $V_{SS}$ | 90 | A6 | 142 | DQ39 | 194 | DQ63 |
| 40 | DQ20 | 92 | A4 | 144 | $V_{SS}$ | 196 | $V_{SS}$ |
| 42 | DQ21 | 94 | $V_{DD}$ | 146 | DQ44 | 198 | EVENT# |
| 44 | $V_{SS}$ | 96 | A2 | 148 | DQ45 | 200 | SDA |
| 46 | DM2 | 98 | A0 | 150 | $V_{SS}$ | 202 | SCL |
| 48 | $V_{SS}$ | 100 | $V_{DD}$ | 152 | DQS5# | 204 | $V_{TT}$ |
| 50 | DQ22 | 102 | CK1 | 154 | DQS5 | | |
| 52 | DQ23 | 104 | CK1# | 156 | $V_{SS}$ | | |

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萃取结果

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| | | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|
| 1 | 53 | DQ19 | 105 | VDD | 157 | DQ42 | |
| 2 | 55 | VSS | 107 | A10 | 159 | DQ43 | |
| 3 | 57 | DQ24 | 109 | BA0 | 161 | VSS | |
| 4 | 59 | DQ25 | 111 | VDD | 163 | DQ48 | |
| 5 | 61 | VSS | 113 | WE# | 165 | DQ49 | |
| 6 | 63 | DM3 | 115 | CAS# | 167 | VSS | |
| 7 | 65 | VSS | 117 | VDD | 169 | DQS6# | |
| 8 | 67 | DQ26 | 119 | A13 | 171 | DQS6 | |
| 9 | 69 | DQ27 | 121 | S1# | 173 | VSS | |
| 10 | 71 | VSS | 123 | VDD | 175 | DQ50 | |
| 11 | 73 | CKE0 | 125 | NC | 177 | DQ51 | |
| 12 | 75 | VDD | 127 | VSS | 179 | VSS | |
| 13 | 77 | NC | 129 | DQ32 | 181 | DQ56 | |
| 14 | 79 | BA2 | 131 | DQ33 | 183 | DQ57 | |
| 15 | 81 | VDD | 133 | VSS | 185 | VSS | |
| 16 | 83 | A12 | 135 | DQS4# | 187 | DM7 | |
| 17 | 85 | A9 | 137 | DQS4 | 189 | VSS | |
| 18 | 87 | VDD | 139 | VSS | 191 | DQ58 | |
| 19 | 89 | A8 | 141 | DQ34 | 193 | DQ59 | |
| 20 | 91 | A5 | 143 | DQ35 | 195 | VSS | |
| 21 | 93 | VDD | 145 | VSS | 197 | SA0 | |
| 22 | 95 | A3 | 147 | DQ40 | 199 | VDDSPD | |
| 23 | 97 | A1 | 149 | DQ41 | 201 | SA1 | |
| 24 | 99 | VDD | 151 | VSS | 203 | VTT | |
| 25 | 101 | CK0 | 153 | DM5 | | | |
| 26 | 103 | CK0# | 155 | VSS | | | |
| 27 | | | | | | | |
| 28 | | | | | | | |
| 29 | | | | | | | |