

| I/O & VREF Bank | Pad Number Orientation | Pin/Pad Function | 652-Pin BGA | 672-Pin FineLine BGA |
|-----------------|------------------------|------------------|-------------|----------------------|
| 8               | 1                      | I/O              | F6          | E5                   |
| 8               | 2                      | I/O              | F5          | E3                   |
| 8               | 3                      | I/O              | F4          | F5                   |
| 8               | 4                      | I/O              | C1          | F4                   |
| —               | 5                      | VCCINT           | VCCINT      | VCCINT               |
| —               | 6                      | GNDINT           | GND         | GND                  |
| 8               | 7                      | I/O              | D1          | E4                   |
| 8               | 8                      | I/O              | E2          | F3                   |
| 8               | 9                      | I/O              | G6          | D5                   |
| 8               | 10                     | I/O              | G5          | G5                   |
| 8               | 11                     | I/O              | G4          | G3                   |
| —               | 12                     | VCCIO            | VCCIO8      | VCCIO8               |
| 8               | 13                     | I/O              | G3          | G8                   |
| 8               | 14                     | I/O              | F2          | G4                   |
| 8               | 15                     | I/O              | E1          | C4                   |
| 8               | 16                     | I/O              | G2          | G6                   |
| 8               | 17                     | I/O              | H6          | H5                   |
| —               | 18                     | VCCINT           | VCCINT      | VCCINT               |
| —               | 19                     | GNDINT           | GND         | GND                  |
| 8               | 20                     | I/O              | H4          | G7                   |
| 8               | 21                     | I/O              | H3          | H7                   |
| 8               | 22                     | I/O              | F1          | H4                   |
| 8               | 23                     | I/O              | H2          | H6                   |
| 8               | 24                     | I/O              | G1          | K7                   |
| —               | 25                     | GNDIO            | GND         | GND                  |
| 8               | 26                     | I/O              | J6          | J5                   |
| 8               | 27                     | I/O              | J5          | H9                   |
| 8               | 28                     | I/O              | J4          | J8                   |
| 8               | 29                     | I/O              | J3          | H3                   |
| 8               | 30                     | I/O              | J2          | K3                   |
| —               | 31                     | VCCINT           | VCCINT      | VCCINT               |
| —               | 32                     | GNDINT           | GND         | GND                  |
| 8               | 33                     | I/O              | J1          | J4                   |
| 8               | 34                     | I/O              | K6          | K5                   |
| 8               | 35                     | I/O              | K5          | J6                   |
| 8               | 36                     | I/O              | K4          | L6                   |
| 8               | 37                     | I/O              | K3          | J7                   |
| —               | 38                     | VCCIO            | VCCIO8      | VCCIO8               |
| 8               | 39                     | I/O              | K2          | J3                   |
| 8               | 40                     | I/O              | K1          | K8                   |
| 8               | 41                     | I/O, DATA6 (1)   | L6          | L8                   |
| 8               | 42                     | I/O              | L5          | K6                   |
| 8               | 43                     | I/O              | L4          | K4                   |
| —               | 44                     | VCCINT           | VCCINT      | VCCINT               |
| —               | 45                     | GNDINT           | GND         | GND                  |
| 8               | 46                     | I/O              | L2          | N5                   |
| 8               | 47                     | I/O              | L1          | M8                   |

| I/O & VREF Bank | Pad Number Orientation | Pin/Pad Function    | 652-Pin BGA | 672-Pin FineLine BGA |
|-----------------|------------------------|---------------------|-------------|----------------------|
| 8               | 48                     | I/O, DATA7 (1)      | M6          | M10                  |
| 8               | 49                     | I/O                 | M5          | M6                   |
| 8               | 50                     | I/O                 | M4          | L7                   |
| —               | 51                     | GNDIO               | GND         | GND                  |
| 8               | 52                     | I/O                 | M3          | L9                   |
| 8               | 53                     | I/O                 | M2          | M7                   |
| 8               | 54                     | I/O, nWS (1)        | M1          | P9                   |
| 8               | 55                     | I/O                 | N6          | L5                   |
| 8               | 56                     | I/O                 | N5          | P8                   |
| —               | 57                     | VCCINT              | VCCINT      | VCCINT               |
| —               | 58                     | GNDINT              | GND         | GND                  |
| 8               | 59                     | I/O                 | N3          | L4                   |
| 8               | 60                     | I/O                 | N2          | L3                   |
| 8               | 61                     | I/O, nRS (1)        | N1          | N10                  |
| 8               | 62                     | I/O                 | P6          | R4                   |
| 8               | 63                     | I/O                 | P5          | M5                   |
| —               | 64                     | VCCIO               | VCCIO8      | VCCIO8               |
| 8               | 65                     | I/O                 | P4          | M3                   |
| 8               | 66                     | I/O                 | P3          | P4                   |
| 8               | 67                     | I/O, nCS (1)        | P2          | M9                   |
| 8               | 68                     | I/O                 | P1          | R3                   |
| 8               | 69                     | I/O                 | R6          | P5                   |
| —               | 70                     | VCCINT              | VCCINT      | VCCINT               |
| —               | 71                     | GNDINT              | GND         | GND                  |
| —               | 72                     | VCC_CK4 (2)         | R4          | P10                  |
| —               | 73                     | GND_CK4 (2)         | R3          | R10                  |
| —               | 74                     | GND_CK4 (2)         | R3          | R10                  |
| 8               | 75                     | I/O, CS (1)         | R2          | T6                   |
| 8               | 76                     | I/O                 | R1          | M4                   |
| 8               | 77                     | I/O, DEV_CLRn (3)   | T6          | R9                   |
| —               | 78                     | VCCIO               | VCCIO8      | —                    |
| —               | 79                     | GNDIO               | GND         | GND                  |
| 8               | 80                     | I/O, CLK4n_FB2n (4) | T5          | T8                   |
| 8               | 81                     | CLK4n_FB2p          | T4          | U8                   |
| 8               | 82                     | I/O, CLK4n (4)      | T3          | R7                   |
| 8               | 83                     | CLK4p               | T2          | R6                   |
| 8               | 84                     | I/O, CLK2n (4)      | T1          | N9                   |
| —               | 85                     | VCCINT              | VCCINT      | VCCINT               |
| —               | 86                     | GNDINT              | GND         | GND                  |
| —               | 87                     | DATA0 (5), (6)      | U4          | N6                   |
| —               | 88                     | DCLK (5)            | U3          | N7                   |
| 8               | 89                     | CLK2p               | U2          | N8                   |
| —               | 90                     | nCE (5)             | U1          | P6                   |
| —               | 91                     | TDI (5)             | W1          | P7                   |
| —               | 92                     | VCCIO               | VCCIO7      | VCCIO7               |
| —               | 93                     | GND_CK2 (2)         | W2          | P11                  |
| —               | 94                     | GND_CK2 (2)         | W2          | P11                  |

| I/O & VREF Bank | Pad Number Orientation | Pin/Pad Function        | 652-Pin BGA | 672-Pin FineLine BGA |
|-----------------|------------------------|-------------------------|-------------|----------------------|
| –               | 95                     | GNDINT                  | GND         | GND                  |
| –               | 96                     | VCCINT                  | VCCINT      | VCCINT               |
| –               | 97                     | VCC_CLKLK2 (2)          | W4          | N11                  |
| 7               | 98                     | I/O, DEV_OE (3)         | Y5          | R8                   |
| –               | 99                     | VCC_CKOUT2 (7)          | Y1          | V7                   |
| –               | 100                    | GND_CKOUT2 (7)          | Y2          | V6                   |
| –               | 101                    | CLKLK_OUT2p (8)         | Y3          | T7                   |
| 7               | 102                    | I/O, CLKLK_OUT2n (4)    | Y4          | U7                   |
| –               | 103                    | VCCIO                   | VCCIO7      | VCCIO7               |
| 7               | 104                    | I/O, LVDSTXINCLK1p      | W5          | D1                   |
| 7               | 105                    | I/O, LVDSTXINCLK1n (4)  | Y6          | D2                   |
| 7               | 106                    | I/O, LOCK2 (9)          | AB6         | U6                   |
| 7               | 107                    | I/O, LVDSTXOUTCLK1n (4) | AA2         | E1                   |
| 7               | 108                    | I/O, LVDSTXOUTCLK1p     | AA3         | E2                   |
| –               | 109                    | GNDINT                  | GND         | GND                  |
| –               | 110                    | VCCINT                  | VCCINT      | VCCINT               |
| 7               | 111                    | I/O, LVDSTX01p          | AA5         | F1                   |
| 7               | 112                    | I/O, LVDSTX01n (4)      | AA6         | F2                   |
| 7               | 113                    | I/O                     | AB1         | R5                   |
| 7               | 114                    | I/O, LVDSTX02n (4)      | AB2         | G1                   |
| 7               | 115                    | I/O, LVDSTX02p          | AB3         | G2                   |
| –               | 116                    | GNDIO                   | GND         | GND                  |
| 7               | 117                    | I/O, LVDSTX03p          | AB4         | H1                   |
| 7               | 118                    | I/O, LVDSTX03n (4)      | AB5         | H2                   |
| 7               | 119                    | I/O                     | AA1         | T5                   |
| 7               | 120                    | I/O, LVDSTX04n (4)      | AC1         | J1                   |
| 7               | 121                    | I/O, LVDSTX04p          | AC2         | J2                   |
| –               | 122                    | GNDINT                  | GND         | GND                  |
| –               | 123                    | VCCINT                  | VCCINT      | VCCINT               |
| 7               | 124                    | I/O, LVDSTX05p          | AC4         | K1                   |
| 7               | 125                    | I/O, LVDSTX05n (4)      | AC5         | K2                   |
| 7               | 126                    | I/O, LOCK4 (9)          | AC6         | W7                   |
| 7               | 127                    | I/O, LVDSTX06n (4)      | AD1         | L1                   |
| 7               | 128                    | I/O, LVDSTX06p          | AD2         | L2                   |
| –               | 129                    | VCCIO                   | VCCIO7      | VCCIO7               |
| 7               | 130                    | I/O, LVDSTX07p          | AD3         | M1                   |
| 7               | 131                    | I/O, LVDSTX07n (4)      | AD4         | M2                   |
| 7               | 132                    | I/O                     | AD5         | T3                   |
| 7               | 133                    | I/O, LVDSTX08n (4)      | AD6         | R1                   |
| 7               | 134                    | I/O, LVDSTX08p          | AE1         | R2                   |
| –               | 135                    | GNDINT                  | GND         | GND                  |
| –               | 136                    | VCCINT                  | VCCINT      | VCCINT               |
| 7               | 137                    | I/O, LVDSTX09p          | AE3         | T1                   |
| 7               | 138                    | I/O, LVDSTX09n (4)      | AE4         | T2                   |
| 7               | 139                    | I/O                     | AE5         | U5                   |
| 7               | 140                    | I/O, LVDSTX10n (4)      | AE6         | U1                   |
| 7               | 141                    | I/O, LVDSTX10p          | AF1         | U2                   |

| I/O & VREF Bank | Pad Number Orientation | Pin/Pad Function   | 652-Pin BGA | 672-Pin FineLine BGA |
|-----------------|------------------------|--------------------|-------------|----------------------|
| –               | 142                    | GNDIO              | GND         | GND                  |
| 7               | 143                    | I/O, LVDSTX11p     | AF2         | V1                   |
| 7               | 144                    | I/O, LVDSTX11n (4) | AF3         | V2                   |
| 7               | 145                    | I/O                | AF4         | T4                   |
| 7               | 146                    | I/O, LVDSTX12n (4) | AF5         | W1                   |
| 7               | 147                    | I/O, LVDSTX12p     | AF6         | W2                   |
| –               | 148                    | GNDINT             | GND         | GND                  |
| –               | 149                    | VCCINT             | VCCINT      | VCCINT               |
| 7               | 150                    | I/O, LVDSTX13p     | AH1         | Y1                   |
| 7               | 151                    | I/O, LVDSTX13n (4) | AG2         | Y2                   |
| 7               | 152                    | I/O                | AG3         | U4                   |
| 7               | 153                    | I/O, LVDSTX14n (4) | AG4         | AA1                  |
| 7               | 154                    | I/O, LVDSTX14p     | AG5         | AA2                  |
| –               | 155                    | VCCIO              | VCCIO7      | VCCIO7               |
| 7               | 156                    | I/O, LVDSTX15p     | AG6         | AB1                  |
| 7               | 157                    | I/O, LVDSTX15n (4) | AJ1         | AB2                  |
| 7               | 158                    | I/O                | AH2         | W4                   |
| 7               | 159                    | I/O, LVDSTX16n (4) | AK1         | AC1                  |
| 7               | 160                    | I/O, LVDSTX16p     | AH3         | AC2                  |
| –               | 161                    | GNDINT             | GND         | GND                  |
| –               | 162                    | VCCINT             | VCCINT      | VCCINT               |
| 7               | 163                    | I/O                | AH5         | U3                   |
| 7               | 164                    | I/O                | AH6         | V3                   |
| 7               | 165                    | I/O                | AJ2         | W5                   |
| 7               | 166                    | I/O                | AL1         | W6                   |
| 7               | 167                    | I/O                | AK2         | V5                   |
| –               | 168                    | GNDIO              | GND         | GND                  |
| 7               | 169                    | I/O                | AJ3         | V4                   |
| 7               | 170                    | I/O                | AJ4         | W3                   |
| 7               | 171                    | I/O                | AJ5         | Y5                   |
| 7               | 172                    | I/O                | AJ6         | AB5                  |
| 7               | 173                    | I/O                | AM1         | AA5                  |
| –               | 174                    | GNDINT             | GND         | GND                  |
| –               | 175                    | VCCINT             | VCCINT      | VCCINT               |
| 7               | 176                    | I/O                | AK3         | Y6                   |
| 7               | 177                    | I/O                | AK4         | AA6                  |
| 7               | 178                    | I/O                | AK5         | AA7                  |
| 7               | 179                    | I/O                | AK6         | AB6                  |
| –               | 180                    | VCCIO              | VCCIO7      | VCCIO7               |
| –               | 181                    | VCCIO              | VCCIO6      | VCCIO6               |
| 6               | 182                    | I/O                | AL7         | AB4                  |
| 6               | 183                    | I/O                | AM6         | AA4                  |
| 6               | 184                    | I/O                | AP3         | AC5                  |
| 6               | 185                    | I/O                | AN5         | Y4                   |
| 6               | 186                    | I/O                | AR2         | AE4                  |
| 6               | 187                    | I/O                | AP4         | AB3                  |
| 6               | 188                    | I/O                | AL8         | AF4                  |

| I/O & VREF Bank | Pad Number Orientation | Pin/Pad Function | 652-Pin BGA | 672-Pin FineLine BGA |
|-----------------|------------------------|------------------|-------------|----------------------|
| 6               | 189                    | I/O              | AM7         | Y3                   |
| 6               | 190                    | I/O              | AN6         | AD4                  |
| 6               | 191                    | I/O              | AR3         | AA3                  |
| —               | 192                    | GNDIO            | GND         | GND                  |
| 6               | 193                    | I/O              | AP5         | AE5                  |
| 6               | 194                    | I/O              | AL9         | AD5                  |
| 6               | 195                    | I/O              | AR4         | AD6                  |
| 6               | 196                    | I/O              | AM8         | AB7                  |
| 6               | 197                    | I/O              | AN7         | Y7                   |
| 6               | 198                    | I/O              | AP6         | AC6                  |
| 6               | 199                    | I/O              | AR5         | AB8                  |
| 6               | 200                    | I/O              | AM9         | AF5                  |
| 6               | 201                    | I/O              | AL10        | V8                   |
| 6               | 202                    | I/O              | AN8         | AC7                  |
| —               | 203                    | VCCIO            | VCCIO6      | VCCIO6               |
| 6               | 204                    | I/O              | AP7         | AD7                  |
| 6               | 205                    | I/O              | AR6         | T9                   |
| 6               | 206                    | I/O              | AM10        | AE7                  |
| 6               | 207                    | I/O              | AN9         | AA9                  |
| 6               | 208                    | I/O              | AL11        | AF7                  |
| 6               | 209                    | I/O              | AP8         | AA8                  |
| 6               | 210                    | I/O              | AR7         | AC8                  |
| 6               | 211                    | I/O              | AM11        | Y8                   |
| 6               | 212                    | I/O              | AN10        | AD8                  |
| 6               | 213                    | I/O              | AP9         | Y9                   |
| —               | 214                    | GNDIO            | GND         | GND                  |
| —               | 215                    | VCCINT           | VCCINT      | VCCINT               |
| —               | 216                    | VCCINT           | VCCINT      | VCCINT               |
| —               | 217                    | GNDINT           | GND         | GND                  |
| —               | 218                    | GNDINT           | GND         | GND                  |
| 6               | 219                    | I/O              | AR8         | W9                   |
| 6               | 220                    | I/O              | AN11        | AB9                  |
| 6               | 221                    | I/O              | AP10        | W10                  |
| 6               | 222                    | I/O              | AR9         | AC9                  |
| 6               | 223                    | I/O              | AL13        | Y10                  |
| 6               | 224                    | I/O              | AM13        | AD9                  |
| 6               | 225                    | I/O              | AN12        | AA10                 |
| 6               | 226                    | I/O              | AP11        | AB11                 |
| 6               | 227                    | I/O              | AL14        | V11                  |
| 6               | 228                    | I/O              | AR10        | AB10                 |
| —               | 229                    | VCCIO            | VCCIO6      | VCCIO6               |
| 6               | 230                    | I/O              | AN13        | AC10                 |
| 6               | 231                    | I/O              | AP12        | AA11                 |
| 6               | 232                    | I/O              | AM14        | AE9                  |
| 6               | 233                    | I/O              | AR11        | Y11                  |
| 6               | 234                    | I/O              | AL15        | AF9                  |
| 6               | 235                    | I/O              | AN14        | W11                  |

| I/O & VREF Bank | Pad Number Orientation | Pin/Pad Function | 652-Pin BGA | 672-Pin FineLine BGA |
|-----------------|------------------------|------------------|-------------|----------------------|
| 6               | 236                    | I/O              | AP13        | AF11                 |
| 6               | 237                    | I/O              | AR12        | V12                  |
| 6               | 238                    | I/O              | AR13        | AE10                 |
| 6               | 239                    | I/O              | AM15        | W12                  |
| —               | 240                    | GNDIO            | GND         | GND                  |
| 6               | 241                    | I/O              | AN15        | Y12                  |
| 6               | 242                    | I/O              | AL16        | T13                  |
| —               | 243                    | VCCIO            | VCCIO6      | VCCIO6               |
| 6               | 244                    | I/O              | AP14        | W14                  |
| 6               | 245                    | I/O              | AR14        | AB12                 |
| 6               | 246                    | I/O              | AP15        | AF10                 |
| 6               | 247                    | I/O              | AR15        | U13                  |
| 6               | 248                    | I/O, LVDSDESKEW  | AM16        | U12                  |
| 6               | 249                    | I/O              | AN16        | W13                  |
| 6               | 250                    | I/O              | AP16        | AE11                 |
| 6               | 251                    | I/O              | AR16        | V13                  |
| —               | 252                    | CONF_DONE (5)    | AM17        | AA12                 |
| —               | 253                    | nSTATUS (5)      | AN17        | AA13                 |
| 5               | 254                    | FAST4            | AP17        | Y13                  |
| —               | 255                    | VCCIO            | VCCIO5      | VCCIO5               |
| —               | 256                    | VCCINT           | VCCINT      | VCCINT               |
| —               | 257                    | VCCINT           | VCCINT      | VCCINT               |
| —               | 258                    | GNDINT           | GND         | GND                  |
| —               | 259                    | GNDINT           | GND         | GND                  |
| 5               | 260                    | FAST3            | AP19        | Y14                  |
| —               | 261                    | TCK (5)          | AN19        | AA14                 |
| —               | 262                    | TMS (5)          | AM19        | AA15                 |
| 5               | 263                    | I/O              | AR20        | AC13                 |
| 5               | 264                    | I/O              | AP20        | AD17                 |
| 5               | 265                    | I/O              | AN20        | AC12                 |
| 5               | 266                    | I/O              | AM20        | AC14                 |
| 5               | 267                    | I/O              | AR21        | AD10                 |
| 5               | 268                    | I/O              | AP21        | AB13                 |
| 5               | 269                    | I/O              | AR22        | V14                  |
| 5               | 270                    | I/O              | AP22        | AB14                 |
| 5               | 271                    | I/O              | AL20        | Y15                  |
| 5               | 272                    | I/O              | AN21        | AC11                 |
| —               | 273                    | GNDIO            | GND         | GND                  |
| 5               | 274                    | I/O              | AM21        | AD18                 |
| 5               | 275                    | I/O              | AR23        | U14                  |
| 5               | 276                    | I/O              | AR24        | AC15                 |
| 5               | 277                    | I/O              | AP23        | V15                  |
| 5               | 278                    | I/O              | AN22        | AB15                 |
| 5               | 279                    | I/O              | AL21        | W15                  |
| 5               | 280                    | I/O              | AR25        | AB16                 |
| 5               | 281                    | I/O              | AM22        | T14                  |
| 5               | 282                    | I/O              | AP24        | AD19                 |

| I/O & VREF Bank | Pad Number Orientation | Pin/Pad Function | 652-Pin BGA | 672-Pin FineLine BGA |
|-----------------|------------------------|------------------|-------------|----------------------|
| 5               | 283                    | I/O              | AN23        | AA16                 |
| —               | 284                    | VCCIO            | VCCIO5      | VCCIO5               |
| 5               | 285                    | I/O              | AR26        | Y16                  |
| 5               | 286                    | I/O              | AL22        | AC16                 |
| 5               | 287                    | I/O              | AP25        | W16                  |
| 5               | 288                    | I/O              | AN24        | AC17                 |
| 5               | 289                    | I/O              | AM23        | U15                  |
| 5               | 290                    | I/O              | AL23        | AB17                 |
| 5               | 291                    | I/O              | AR27        | V16                  |
| 5               | 292                    | I/O              | AP26        | AE16                 |
| 5               | 293                    | I/O              | AN25        | AA17                 |
| 5               | 294                    | I/O              | AR28        | AD20                 |
| —               | 295                    | VCCINT           | VCCINT      | VCCINT               |
| —               | 296                    | VCCINT           | VCCINT      | VCCINT               |
| —               | 297                    | GNDINT           | GND         | GND                  |
| —               | 298                    | GNDINT           | GND         | GND                  |
| —               | 299                    | GNDIO            | GND         | GND                  |
| 5               | 300                    | I/O              | AP27        | AB18                 |
| 5               | 301                    | I/O              | AN26        | Y17                  |
| 5               | 302                    | I/O              | AM25        | AF16                 |
| 5               | 303                    | I/O              | AR29        | AA18                 |
| 5               | 304                    | I/O              | AP28        | AC18                 |
| 5               | 305                    | I/O              | AL25        | W17                  |
| 5               | 306                    | I/O              | AN27        | AE17                 |
| 5               | 307                    | I/O              | AM26        | Y18                  |
| 5               | 308                    | I/O              | AR30        | AF17                 |
| 5               | 309                    | I/O              | AP29        | W18                  |
| —               | 310                    | VCCIO            | VCCIO5      | VCCIO5               |
| 5               | 311                    | I/O              | AN28        | AA19                 |
| 5               | 312                    | I/O              | AL26        | AD21                 |
| 5               | 313                    | I/O              | AM27        | Y19                  |
| 5               | 314                    | I/O              | AR31        | AD22                 |
| 5               | 315                    | I/O              | AP30        | W20                  |
| 5               | 316                    | I/O              | AN29        | AC19                 |
| 5               | 317                    | I/O              | AM28        | Y20                  |
| 5               | 318                    | I/O              | AR32        | AB20                 |
| 5               | 319                    | I/O              | AL27        | AB19                 |
| 5               | 320                    | I/O              | AP31        | AC20                 |
| —               | 321                    | GNDIO            | GND         | GND                  |
| 5               | 322                    | I/O              | AR33        | AD23                 |
| 5               | 323                    | I/O              | AN30        | AA20                 |
| 5               | 324                    | I/O              | AM29        | AB24                 |
| 5               | 325                    | I/O              | AL28        | AC22                 |
| 5               | 326                    | I/O              | AP32        | AC21                 |
| 5               | 327                    | I/O              | AR34        | Y23                  |
| 5               | 328                    | I/O              | AN31        | Y24                  |
| 5               | 329                    | I/O              | AP33        | AA23                 |

| I/O & VREF Bank | Pad Number Orientation | Pin/Pad Function | 652-Pin BGA | 672-Pin FineLine BGA |
|-----------------|------------------------|------------------|-------------|----------------------|
| 5               | 330                    | I/O              | AM30        | AA24                 |
| 5               | 331                    | I/O              | AL29        | AB23                 |
| —               | 332                    | VCCIO            | VCCIO5      | VCCIO5               |
| —               | 333                    | VCCIO            | VCCIO4      | VCCIO4               |
| 4               | 334                    | I/O              | AL33        | AA21                 |
| 4               | 335                    | I/O              | AK30        | Y22                  |
| 4               | 336                    | I/O              | AK31        | AB21                 |
| 4               | 337                    | I/O              | AK32        | U19                  |
| —               | 338                    | VCCINT           | VCCINT      | VCCINT               |
| —               | 339                    | GNDINT           | GND         | GND                  |
| 4               | 340                    | I/O              | AL34        | AB22                 |
| 4               | 341                    | I/O              | AM35        | V19                  |
| 4               | 342                    | I/O              | AJ30        | T18                  |
| 4               | 343                    | I/O              | AJ31        | W21                  |
| 4               | 344                    | I/O              | AJ32        | V20                  |
| —               | 345                    | GNDIO            | GND         | GND                  |
| 4               | 346                    | I/O              | AJ33        | V21                  |
| 4               | 347                    | I/O              | AK34        | Y21                  |
| 4               | 348                    | I/O              | AL35        | W22                  |
| 4               | 349                    | I/O              | AJ34        | AA22                 |
| 4               | 350                    | I/O              | AH30        | U20                  |
| —               | 351                    | VCCINT           | VCCINT      | VCCINT               |
| —               | 352                    | GNDINT           | GND         | GND                  |
| 4               | 353                    | I/O              | AH32        | R17                  |
| 4               | 354                    | I/O              | AH33        | W23                  |
| 4               | 355                    | I/O              | AK35        | T19                  |
| 4               | 356                    | I/O              | AH34        | U21                  |
| 4               | 357                    | I/O              | AJ35        | P17                  |
| —               | 358                    | VCCIO            | VCCIO4      | VCCIO4               |
| 4               | 359                    | I/O              | AG30        | R18                  |
| 4               | 360                    | I/O              | AG31        | W24                  |
| 4               | 361                    | I/O              | AG32        | T20                  |
| 4               | 362                    | I/O              | AG33        | V24                  |
| 4               | 363                    | I/O              | AG34        | N16                  |
| —               | 364                    | VCCINT           | VCCINT      | VCCINT               |
| —               | 365                    | GNDINT           | GND         | GND                  |
| 4               | 366                    | I/O              | AG35        | V22                  |
| 4               | 367                    | I/O              | AF30        | R19                  |
| 4               | 368                    | I/O              | AF31        | V23                  |
| 4               | 369                    | I/O              | AF32        | P18                  |
| 4               | 370                    | I/O              | AF33        | N17                  |
| —               | 371                    | GNDIO            | GND         | GND                  |
| 4               | 372                    | I/O              | AF34        | T21                  |
| 4               | 373                    | I/O              | AF35        | R21                  |
| 4               | 374                    | I/O              | AE30        | U22                  |
| 4               | 375                    | I/O              | AE31        | R20                  |
| 4               | 376                    | I/O              | AE32        | P22                  |

| I/O & VREF Bank | Pad Number Orientation | Pin/Pad Function    | 652-Pin BGA | 672-Pin FineLine BGA |
|-----------------|------------------------|---------------------|-------------|----------------------|
| —               | 377                    | VCCINT              | VCCINT      | VCCINT               |
| —               | 378                    | GNDINT              | GND         | GND                  |
| 4               | 379                    | I/O                 | AE34        | N18                  |
| 4               | 380                    | I/O                 | AE35        | U23                  |
| 4               | 381                    | I/O                 | AD30        | N19                  |
| 4               | 382                    | I/O                 | AD31        | N22                  |
| 4               | 383                    | I/O                 | AD32        | L20                  |
| —               | 384                    | VCCIO               | VCCIO4      | VCCIO4               |
| 4               | 385                    | I/O                 | AD33        | M17                  |
| 4               | 386                    | I/O                 | AD34        | T22                  |
| 4               | 387                    | I/O                 | AD35        | M18                  |
| 4               | 388                    | I/O                 | AC30        | T23                  |
| 4               | 389                    | I/O                 | AC31        | R23                  |
| —               | 390                    | VCCINT              | VCCINT      | VCCINT               |
| —               | 391                    | GNDINT              | GND         | GND                  |
| 4               | 392                    | I/O                 | AC33        | U24                  |
| 4               | 393                    | I/O                 | AC34        | R24                  |
| 4               | 394                    | I/O                 | AC35        | T24                  |
| 4               | 395                    | I/O                 | AB30        | M21                  |
| 4               | 396                    | I/O                 | AB31        | M24                  |
| —               | 397                    | GNDIO               | GND         | GND                  |
| 4               | 398                    | I/O                 | AB32        | M22                  |
| 4               | 399                    | I/O                 | AB33        | R22                  |
| 4               | 400                    | I/O                 | AB34        | M23                  |
| 4               | 401                    | I/O                 | AB35        | L22                  |
| 4               | 402                    | I/O, LOCK1 (9)      | AA30        | L21                  |
| —               | 403                    | VCCINT              | VCCINT      | VCCINT               |
| —               | 404                    | GNDINT              | GND         | GND                  |
| 4               | 405                    | I/O                 | AA32        | L23                  |
| 4               | 406                    | I/O                 | AA33        | L24                  |
| 4               | 407                    | I/O                 | AA34        | N23                  |
| —               | 408                    | VCC_CLKL1 (2)       | AA35        | AF18                 |
| —               | 409                    | GND_CLKL1 (2)       | Y30         | AE18                 |
| —               | 410                    | GND_CLKL1 (2)       | Y30         | AE18                 |
| —               | 411                    | VCCIO               | VCCIO4      | VCCIO4               |
| 4               | 412                    | I/O, CLKLK_FB1n (4) | Y31         | AF20                 |
| 4               | 413                    | CLKLK_FB1p          | Y32         | AE20                 |
| 4               | 414                    | I/O, CLK3n (4)      | Y33         | M20                  |
| 4               | 415                    | CLK3p               | Y34         | M19                  |
| 4               | 416                    | I/O, CLK1n (4)      | Y35         | P19                  |
| —               | 417                    | VCCINT              | VCCINT      | VCCINT               |
| —               | 418                    | GNDINT              | GND         | GND                  |
| —               | 419                    | VCCIO               | VCCIO4      | VCCIO4               |
| —               | 420                    | nCONFIG (5)         | W32         | P21                  |
| —               | 421                    | CLKLK_ENA (5), (10) | W33         | P16                  |
| 4               | 422                    | CLK1p               | W34         | P20                  |
| —               | 423                    | MSEL1 (5)           | W35         | N20                  |

| I/O & VREF Bank | Pad Number Orientation | Pin/Pad Function       | 652-Pin BGA | 672-Pin FineLine BGA |
|-----------------|------------------------|------------------------|-------------|----------------------|
| —               | 424                    | MSEL0 (5)              | U35         | N21                  |
| —               | 425                    | GNDINT                 | GND         | GND                  |
| —               | 426                    | VCCINT                 | VCCINT      | VCCINT               |
| —               | 427                    | VCC_CKOUT1 (7)         | U33         | AF22                 |
| —               | 428                    | GND_CKOUT1 (7)         | U32         | AE22                 |
| —               | 429                    | CLKLK_OUT1p (8)        | U31         | AE23                 |
| 3               | 430                    | I/O, CLKLK_OUT1n (4)   | T35         | AF23                 |
| —               | 431                    | VCC_CLKL3 (2)          | T34         | AC26                 |
| —               | 432                    | GNDIO                  | GND         | GND                  |
| —               | 433                    | GND_CLKL3 (2)          | V35         | N25                  |
| —               | 434                    | GND_CLKL3 (2)          | T33         | AC25                 |
| 3               | 435                    | I/O, LVDSRXINCLK1p     | T32         | AB25                 |
| 3               | 436                    | I/O, LVDSRXINCLK1n (4) | T31         | AB26                 |
| 3               | 437                    | I/O                    | T30         | J23                  |
| 3               | 438                    | I/O                    | R35         | L19                  |
| —               | 439                    | GNDINT                 | GND         | GND                  |
| —               | 440                    | VCCINT                 | VCCINT      | VCCINT               |
| 3               | 441                    | I/O, LVDSRX01p         | R33         | AA25                 |
| 3               | 442                    | I/O, LVDSRX01n (4)     | R32         | AA26                 |
| 3               | 443                    | I/O, LOCK3 (9)         | R31         | L18                  |
| 3               | 444                    | I/O, LVDSRX02n (4)     | R30         | Y25                  |
| 3               | 445                    | I/O, LVDSRX02p         | P35         | Y26                  |
| —               | 446                    | VCCIO                  | VCCIO3      | VCCIO3               |
| 3               | 447                    | I/O, LVDSRX03p         | P34         | W25                  |
| 3               | 448                    | I/O, LVDSRX03n (4)     | P33         | W26                  |
| 3               | 449                    | I/O                    | P32         | J24                  |
| 3               | 450                    | I/O, LVDSRX04n (4)     | P31         | V25                  |
| 3               | 451                    | I/O, LVDSRX04p         | P30         | V26                  |
| —               | 452                    | GNDINT                 | GND         | GND                  |
| —               | 453                    | VCCINT                 | VCCINT      | VCCINT               |
| 3               | 454                    | I/O, LVDSRX05p         | N34         | U25                  |
| 3               | 455                    | I/O, LVDSRX05n (4)     | N33         | U26                  |
| 3               | 456                    | I/O                    | N32         | K21                  |
| 3               | 457                    | I/O, LVDSRX06n (4)     | N31         | T25                  |
| 3               | 458                    | I/O, LVDSRX06p         | N30         | T26                  |
| —               | 459                    | GNDIO                  | GND         | GND                  |
| 3               | 460                    | I/O, LVDSRX07p         | M35         | R25                  |
| 3               | 461                    | I/O, LVDSRX07n (4)     | M34         | R26                  |
| 3               | 462                    | I/O                    | M33         | K23                  |
| 3               | 463                    | I/O, LVDSRX08n (4)     | M32         | M25                  |
| 3               | 464                    | I/O, LVDSRX08p         | M31         | M26                  |
| —               | 465                    | GNDINT                 | GND         | GND                  |
| —               | 466                    | VCCINT                 | VCCINT      | VCCINT               |
| 3               | 467                    | I/O, LVDSRX09p         | L35         | L25                  |
| 3               | 468                    | I/O, LVDSRX09n (4)     | L34         | L26                  |
| 3               | 469                    | I/O                    | L33         | K20                  |
| 3               | 470                    | I/O, LVDSRX10n (4)     | L32         | K25                  |

| I/O & VREF Bank | Pad Number Orientation | Pin/Pad Function   | 652-Pin BGA | 672-Pin FineLine BGA |
|-----------------|------------------------|--------------------|-------------|----------------------|
| 3               | 471                    | I/O, LVDSRX10p     | L31         | K26                  |
| –               | 472                    | VCCIO              | VCCIO3      | VCCIO3               |
| 3               | 473                    | I/O, LVDSRX11p     | L30         | J25                  |
| 3               | 474                    | I/O, LVDSRX11n (4) | K35         | J26                  |
| 3               | 475                    | I/O                | K34         | K22                  |
| 3               | 476                    | I/O, LVDSRX12n (4) | K33         | H25                  |
| 3               | 477                    | I/O, LVDSRX12p     | K32         | H26                  |
| –               | 478                    | GNDINT             | GND         | GND                  |
| –               | 479                    | VCCINT             | VCCINT      | VCCINT               |
| 3               | 480                    | I/O, LVDSRX13p     | K30         | G25                  |
| 3               | 481                    | I/O, LVDSRX13n (4) | J35         | G26                  |
| 3               | 482                    | I/O                | H35         | K24                  |
| 3               | 483                    | I/O, LVDSRX14n (4) | J34         | F25                  |
| 3               | 484                    | I/O, LVDSRX14p     | J33         | F26                  |
| –               | 485                    | GNDIO              | GND         | GND                  |
| 3               | 486                    | I/O, LVDSRX15p     | J32         | E25                  |
| 3               | 487                    | I/O, LVDSRX15n (4) | J31         | E26                  |
| 3               | 488                    | I/O                | J30         | H24                  |
| 3               | 489                    | I/O, LVDSRX16n (4) | G35         | D25                  |
| 3               | 490                    | I/O, LVDSRX16p     | H34         | D26                  |
| –               | 491                    | GNDINT             | GND         | GND                  |
| –               | 492                    | VCCINT             | VCCINT      | VCCINT               |
| 3               | 493                    | I/O                | H33         | K19                  |
| 3               | 494                    | I/O                | H32         | J20                  |
| 3               | 495                    | I/O                | H31         | G22                  |
| 3               | 496                    | I/O                | H30         | H20                  |
| 3               | 497                    | I/O                | G34         | H22                  |
| –               | 498                    | VCCIO              | VCCIO3      | VCCIO3               |
| 3               | 499                    | I/O                | E35         | J22                  |
| 3               | 500                    | I/O                | F34         | G24                  |
| 3               | 501                    | I/O                | G33         | H21                  |
| 3               | 502                    | I/O                | G32         | G21                  |
| 3               | 503                    | I/O                | G31         | J21                  |
| –               | 504                    | GNDINT             | GND         | GND                  |
| –               | 505                    | VCCINT             | VCCINT      | VCCINT               |
| 3               | 506                    | I/O                | D35         | F22                  |
| 3               | 507                    | I/O                | E34         | G20                  |
| 3               | 508                    | I/O                | F33         | F21                  |
| 3               | 509                    | I/O                | F32         | E22                  |
| –               | 510                    | VCCIO              | VCCIO2      | –                    |
| –               | 511                    | GNDIO              | GND         | GND                  |
| 2               | 512                    | I/O                | E29         | E23                  |
| 2               | 513                    | I/O                | D30         | D22                  |
| 2               | 514                    | I/O                | B33         | F24                  |
| 2               | 515                    | I/O                | C31         | E24                  |
| 2               | 516                    | I/O                | A34         | H23                  |
| 2               | 517                    | I/O                | B32         | C23                  |

| I/O & VREF Bank | Pad Number Orientation | Pin/Pad Function | 652-Pin BGA | 672-Pin FineLine BGA |
|-----------------|------------------------|------------------|-------------|----------------------|
| 2               | 518                    | I/O              | E28         | G23                  |
| 2               | 519                    | I/O              | D29         | C22                  |
| 2               | 520                    | I/O              | C30         | F23                  |
| 2               | 521                    | I/O              | A33         | B23                  |
| –               | 522                    | VCCIO            | VCCIO2      | VCCIO2               |
| 2               | 523                    | I/O              | B31         | A23                  |
| 2               | 524                    | I/O              | E27         | E21                  |
| 2               | 525                    | I/O              | A32         | B22                  |
| 2               | 526                    | I/O              | D28         | F20                  |
| 2               | 527                    | I/O              | C29         | D21                  |
| 2               | 528                    | I/O              | B30         | C21                  |
| 2               | 529                    | I/O              | A31         | E20                  |
| 2               | 530                    | I/O              | D27         | J19                  |
| 2               | 531                    | I/O              | E26         | A22                  |
| 2               | 532                    | I/O              | C28         | G19                  |
| –               | 533                    | GNDIO            | GND         | GND                  |
| 2               | 534                    | I/O              | B29         | F19                  |
| 2               | 535                    | I/O              | A30         | E19                  |
| 2               | 536                    | I/O              | D26         | K18                  |
| 2               | 537                    | I/O              | C27         | D20                  |
| 2               | 538                    | I/O              | E25         | H18                  |
| 2               | 539                    | I/O              | B28         | C20                  |
| 2               | 540                    | I/O              | A29         | G18                  |
| 2               | 541                    | I/O              | D25         | D19                  |
| 2               | 542                    | I/O              | C26         | E18                  |
| 2               | 543                    | I/O              | B27         | B20                  |
| –               | 544                    | VCCIO            | VCCIO2      | VCCIO2               |
| –               | 545                    | GNDINT           | GND         | GND                  |
| –               | 546                    | GNDINT           | GND         | GND                  |
| –               | 547                    | VCCINT           | VCCINT      | VCCINT               |
| –               | 548                    | VCCINT           | VCCINT      | VCCINT               |
| –               | 549                    | GNDINT           | –           | –                    |
| 2               | 550                    | I/O              | A28         | A20                  |
| 2               | 551                    | I/O              | C25         | F18                  |
| 2               | 552                    | I/O              | B26         | C19                  |
| 2               | 553                    | I/O              | A27         | E17                  |
| 2               | 554                    | I/O              | E23         | D18                  |
| 2               | 555                    | I/O              | D23         | F17                  |
| 2               | 556                    | I/O              | C24         | C18                  |
| 2               | 557                    | I/O              | B25         | G17                  |
| 2               | 558                    | I/O              | E22         | B18                  |
| 2               | 559                    | I/O              | A26         | H17                  |
| –               | 560                    | GNDIO            | GND         | GND                  |
| 2               | 561                    | I/O              | C23         | F16                  |
| 2               | 562                    | I/O              | B24         | D17                  |
| 2               | 563                    | I/O              | D22         | J17                  |
| 2               | 564                    | I/O              | A25         | E16                  |

| I/O & VREF Bank | Pad Number Orientation | Pin/Pad Function  | 652-Pin BGA | 672-Pin FineLine BGA |
|-----------------|------------------------|-------------------|-------------|----------------------|
| 2               | 565                    | I/O               | E21         | G16                  |
| 2               | 566                    | I/O               | C22         | A18                  |
| 2               | 567                    | I/O               | B23         | H16                  |
| 2               | 568                    | I/O               | A24         | C17                  |
| 2               | 569                    | I/O               | A23         | E15                  |
| 2               | 570                    | I/O               | D21         | D16                  |
| –               | 571                    | VCCIO             | VCCIO2      | VCCIO2               |
| 2               | 572                    | I/O               | C21         | B17                  |
| 2               | 573                    | I/O               | E20         | F15                  |
| 2               | 574                    | I/O               | B22         | A17                  |
| 2               | 575                    | I/O               | A22         | E14                  |
| 2               | 576                    | I/O               | B21         | H15                  |
| 2               | 577                    | I/O               | A21         | E13                  |
| 2               | 578                    | I/O               | D20         | L14                  |
| 2               | 579                    | I/O               | C20         | G15                  |
| 2               | 580                    | I/O               | B20         | K15                  |
| 2               | 581                    | I/O               | A20         | J16                  |
| –               | 582                    | TRST (5)          | D19         | F14                  |
| –               | 583                    | nCEO (5)          | C19         | G14                  |
| 1               | 584                    | FAST1             | B19         | H14                  |
| –               | 585                    | GNDINT            | GND         | GND                  |
| –               | 586                    | GNDINT            | GND         | GND                  |
| –               | 587                    | VCCINT            | VCCINT      | VCCINT               |
| –               | 588                    | VCCINT            | VCCINT      | VCCINT               |
| –               | 589                    | GNDIO             | GND         | GND                  |
| 1               | 590                    | FAST2             | B17         | F13                  |
| –               | 591                    | TDO (5)           | C17         | G13                  |
| –               | 592                    | GNDINT            | GND         | GND                  |
| 1               | 593                    | I/O               | A16         | D15                  |
| 1               | 594                    | I/O               | B16         | D14                  |
| 1               | 595                    | I/O, INITDONE (3) | C16         | J15                  |
| 1               | 596                    | I/O               | D16         | A12                  |
| 1               | 597                    | I/O               | A15         | D13                  |
| 1               | 598                    | I/O               | B15         | B11                  |
| 1               | 599                    | I/O, RDYnBSY (1)  | A14         | J14                  |
| 1               | 600                    | I/O               | B14         | B12                  |
| 1               | 601                    | I/O               | E16         | H13                  |
| 1               | 602                    | I/O, CLKUSR (1)   | C15         | K14                  |
| –               | 603                    | VCCIO             | VCCIO1      | VCCIO1               |
| 1               | 604                    | I/O               | D15         | F12                  |
| 1               | 605                    | I/O               | A13         | A11                  |
| 1               | 606                    | I/O               | A12         | E12                  |
| 1               | 607                    | I/O               | B13         | A10                  |
| 1               | 608                    | I/O               | C14         | D12                  |
| 1               | 609                    | I/O               | E15         | D11                  |
| 1               | 610                    | I/O               | A11         | E11                  |
| 1               | 611                    | I/O               | D14         | B10                  |

| I/O & VREF Bank | Pad Number Orientation | Pin/Pad Function | 652-Pin BGA | 672-Pin FineLine BGA |
|-----------------|------------------------|------------------|-------------|----------------------|
| 1               | 612                    | I/O              | B12         | C10                  |
| 1               | 613                    | I/O, DATA1 (1)   | C13         | K13                  |
| –               | 614                    | GNDIO            | GND         | GND                  |
| 1               | 615                    | I/O              | A10         | J13                  |
| 1               | 616                    | I/O              | E14         | D10                  |
| –               | 617                    | VCCIO            | VCCIO1      | VCCIO1               |
| 1               | 618                    | I/O              | B11         | H12                  |
| 1               | 619                    | I/O              | C12         | E10                  |
| 1               | 620                    | I/O              | D13         | F11                  |
| 1               | 621                    | I/O              | E13         | B9                   |
| 1               | 622                    | I/O              | A9          | G12                  |
| 1               | 623                    | I/O              | B10         | C9                   |
| 1               | 624                    | I/O              | C11         | G11                  |
| 1               | 625                    | I/O, DATA2 (1)   | A8          | J12                  |
| –               | 626                    | GNDINT           | GND         | GND                  |
| –               | 627                    | GNDINT           | GND         | GND                  |
| –               | 628                    | VCCINT           | VCCINT      | VCCINT               |
| –               | 629                    | VCCINT           | VCCINT      | VCCINT               |
| –               | 630                    | VCCIO            | VCCIO1      | VCCIO1               |
| 1               | 631                    | I/O              | B9          | E9                   |
| 1               | 632                    | I/O              | C10         | F9                   |
| 1               | 633                    | I/O              | D11         | D9                   |
| 1               | 634                    | I/O              | A7          | K12                  |
| 1               | 635                    | I/O              | B8          | A9                   |
| 1               | 636                    | I/O              | E11         | H11                  |
| 1               | 637                    | I/O              | C9          | D8                   |
| 1               | 638                    | I/O              | D10         | E8                   |
| 1               | 639                    | I/O              | A6          | C8                   |
| 1               | 640                    | I/O, DATA3 (1)   | B7          | F10                  |
| –               | 641                    | GNDIO            | GND         | GND                  |
| 1               | 642                    | I/O              | C8          | F8                   |
| 1               | 643                    | I/O              | E10         | E7                   |
| 1               | 644                    | I/O              | D9          | G10                  |
| 1               | 645                    | I/O              | A5          | C7                   |
| 1               | 646                    | I/O              | B6          | H10                  |
| 1               | 647                    | I/O              | C7          | B7                   |
| 1               | 648                    | I/O              | D8          | J11                  |
| 1               | 649                    | I/O              | A4          | D7                   |
| 1               | 650                    | I/O              | E9          | D6                   |
| 1               | 651                    | I/O, DATA4 (1)   | B5          | G9                   |
| –               | 652                    | VCCIO            | VCCIO1      | VCCIO1               |
| 1               | 653                    | I/O              | A3          | A7                   |
| 1               | 654                    | I/O              | C6          | F7                   |
| 1               | 655                    | I/O              | D7          | E6                   |
| 1               | 656                    | I/O              | E8          | C5                   |
| 1               | 657                    | I/O              | B4          | C6                   |
| 1               | 658                    | I/O              | A2          | B5                   |

| <b>I/O &amp; VREF<br/>Bank</b> | <b>Pad Number<br/>Orientation</b> | <b>Pin/Pad Function</b> | <b>652-Pin BGA</b> | <b>672-Pin<br/>FineLine BGA</b> |
|--------------------------------|-----------------------------------|-------------------------|--------------------|---------------------------------|
| 1                              | 659                               | I/O                     | C5                 | A5                              |
| 1                              | 660                               | I/O                     | B3                 | B4                              |
| 1                              | 661                               | I/O                     | D6                 | A4                              |
| 1                              | 662                               | I/O, DATA5 (1)          | E7                 | F6                              |
| —                              | 663                               | GNDIO                   | GND                | GND                             |
| —                              | 664                               | —                       | —                  | —                               |

| Pin Name            | 652-Pin BGA          | 672-Pin FineLine BGA |
|---------------------|----------------------|----------------------|
| MSEL0 (5)           | U35                  | N21                  |
| MSEL1 (5)           | W35                  | N20                  |
| nSTATUS (5)         | AN17                 | AA13                 |
| nCONFIG (5)         | W32                  | P21                  |
| DCLK (5)            | U3                   | N7                   |
| CONF_DONE (5)       | AM17                 | AA12                 |
| INIT_DONE (3)       | C16                  | J15                  |
| nCE (5)             | U1                   | P6                   |
| nCEO (5)            | C19                  | G14                  |
| nWS (1)             | M1                   | P9                   |
| nRS (1)             | N1                   | N10                  |
| nCS (1)             | P2                   | M9                   |
| CS (1)              | R2                   | T6                   |
| RDYnBSY (1)         | A14                  | J14                  |
| CLKUSR (1)          | C15                  | K14                  |
| DATA7 (1)           | M6                   | M10                  |
| DATA6 (1)           | L6                   | L8                   |
| DATA5 (1)           | E7                   | F6                   |
| DATA4 (1)           | B5                   | G9                   |
| DATA3 (1)           | B7                   | F10                  |
| DATA2 (1)           | A8                   | J12                  |
| DATA1 (1)           | C13                  | K13                  |
| DATA0 (5), (6)      | U4                   | N6                   |
| TDI (5)             | W1                   | P7                   |
| TDO (5)             | C17                  | G13                  |
| TCK (5)             | AN19                 | AA14                 |
| TMS (5)             | AM19                 | AA15                 |
| TRST (5)            | D19                  | F14                  |
| Dedicated Fast I/Os | AP19, AP17, B17, B19 | Y14, Y13, F13, H14   |
| CLK1p               | W34                  | P20                  |
| CLK2p               | U2                   | N8                   |
| CLK3p               | Y34                  | M19                  |
| CLK4p               | T2                   | R6                   |
| LOCK1 (9)           | AA30                 | L21                  |
| LOCK2 (9)           | AB6                  | U6                   |
| LOCK3 (9)           | R31                  | L18                  |
| LOCK4 (9)           | AC6                  | W7                   |
| CLKLK_ENA (5), (10) | W33                  | P16                  |
| CLKLK_OUT1p (8)     | U31                  | AE23                 |
| CLKLK_OUT2p (8)     | Y3                   | T7                   |
| CLKLK_FB1p          | Y32                  | AE20                 |
| CLKLK_FB2p          | T4                   | U8                   |
| DEV_CLRn (3)        | T6                   | R9                   |
| DEV_OE (3)          | Y5                   | R8                   |

| Pin Name                 | 652-Pin BGA                                                                                                                                                                                                                                                                                                                                        | 672-Pin FineLine BGA                                                                                                                                                                                                                                                                                                         |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VCCINT                   | A17, A19, AA31, AA4, AC3, AC32, AE2, AE33, AG1, AH31, AH35, AH4, AK33, AL12, AL2, AL24, AM12, AM24, AR17, AR19, D12, D24, E12, E24, F3, F35, G30, H1, H5, K31, L3, M30, N35, N4, R34, R5, U34, U5, W3, W31                                                                                                                                         | A3, A24, B3, B8, B19, B24, C1, C2, C25, C26, D3, D24, K11, L10, L15, M13, M16, N2, N12, P15, P24, P25, R11, R14, T12, T17, U9, U16, AC3, AC24, AD1, AD2, AD25, AD26, AE3, AE8, AE19, AE24, AF3, AF24                                                                                                                         |
| VCCIO1                   | C4, D5, E17                                                                                                                                                                                                                                                                                                                                        | A6, J10, L12                                                                                                                                                                                                                                                                                                                 |
| VCCIO2                   | E19, D31, C32                                                                                                                                                                                                                                                                                                                                      | A13, K16, M14                                                                                                                                                                                                                                                                                                                |
| VCCIO3                   | F30, F31, U30                                                                                                                                                                                                                                                                                                                                      | A21, L17, N15                                                                                                                                                                                                                                                                                                                |
| VCCIO4                   | W30, AL31, AL32                                                                                                                                                                                                                                                                                                                                    | N24, R16, U18                                                                                                                                                                                                                                                                                                                |
| VCCIO5                   | AN32, AN33, AL19                                                                                                                                                                                                                                                                                                                                   | T15, V17, AF21                                                                                                                                                                                                                                                                                                               |
| VCCIO6                   | AL17, AM5, AN4                                                                                                                                                                                                                                                                                                                                     | R13, U11, V10, AF13                                                                                                                                                                                                                                                                                                          |
| VCCIO7                   | AL3, AL4, W6                                                                                                                                                                                                                                                                                                                                       | P12, T10, AF6                                                                                                                                                                                                                                                                                                                |
| VCCIO8                   | U6, E3, E4                                                                                                                                                                                                                                                                                                                                         | K9, M11, N3                                                                                                                                                                                                                                                                                                                  |
| VCC_CK1K1 (2)            | AA35                                                                                                                                                                                                                                                                                                                                               | AF18                                                                                                                                                                                                                                                                                                                         |
| VCC_CK1K2 (2)            | W4                                                                                                                                                                                                                                                                                                                                                 | N11                                                                                                                                                                                                                                                                                                                          |
| VCC_CK1K3 (2)            | T34                                                                                                                                                                                                                                                                                                                                                | AC26                                                                                                                                                                                                                                                                                                                         |
| VCC_CK1K4 (2)            | R4                                                                                                                                                                                                                                                                                                                                                 | P10                                                                                                                                                                                                                                                                                                                          |
| VCC_CKOUT1 (7)           | U33                                                                                                                                                                                                                                                                                                                                                | AF22                                                                                                                                                                                                                                                                                                                         |
| VCC_CKOUT2 (7)           | Y1                                                                                                                                                                                                                                                                                                                                                 | V7                                                                                                                                                                                                                                                                                                                           |
| GND                      | A1, A18, A35, AK18, AL18, AL30, AL5, AL6, AM18, AM2, AM3, AM31, AM32, AM33, AM34, AM4, AN1, AN18, AN2, AN3, AN34, AN35, AP1, AP18, AP2, AP34, AP35, AR1, AR18, AR35, B1, B18, B2, B34, B35, C18, C2, C3, C33, C34, C35, D17, D18, D2, D3, D32, D33, D34, D4, E18, E30, E31, E32, E33, E5, E6, F18, V1, V2, V3, V30, V31, V32, V33, V34, V4, V5, V6 | A2, A8, A14, A19, A25, B1, B2, B6, B21, B25, B26, C3, C13, C24, D4, D23, H8, H19, J9, J18, K10, K17, L11, L13, L16, M12, M15, N1, N4, N13, N14, N26, P1, P2, P3, P13, P14, P23, P26, R12, R15, T11, T16, U10, U17, V9, V18, W8, W19, AC4, AC23, AD3, AD13, AD24, AE1, AE2, AE6, AE21, AE25, AE26, AF2, AF8, AF14, AF19, AF25 |
| GND_CK1K1 (2)            | Y30                                                                                                                                                                                                                                                                                                                                                | AE18                                                                                                                                                                                                                                                                                                                         |
| GND_CK1K2 (2)            | W2                                                                                                                                                                                                                                                                                                                                                 | P11                                                                                                                                                                                                                                                                                                                          |
| GND_CK1K3 (2)            | T33, V35                                                                                                                                                                                                                                                                                                                                           | AC25, N25                                                                                                                                                                                                                                                                                                                    |
| GND_CK1K4 (2)            | R3                                                                                                                                                                                                                                                                                                                                                 | R10                                                                                                                                                                                                                                                                                                                          |
| GND_CKOUT1 (7)           | U32                                                                                                                                                                                                                                                                                                                                                | AE22                                                                                                                                                                                                                                                                                                                         |
| GND_CKOUT2 (7)           | Y2                                                                                                                                                                                                                                                                                                                                                 | V6                                                                                                                                                                                                                                                                                                                           |
| No Connect (N.C.)        |                                                                                                                                                                                                                                                                                                                                                    | A15, A16, B13, B14, B15, B16, C11, C12, C14, C15, C16, AF12, AF15, AE12, AE13, AE14, AE15, AD11, AD12, AD14, AD15, AD16                                                                                                                                                                                                      |
| Total User I/O Pins (11) | 488                                                                                                                                                                                                                                                                                                                                                | 488                                                                                                                                                                                                                                                                                                                          |

Notes:

- (1) This pin can be used as a user I/O pin after configuration.
- (2) This pin is the power or ground for the ClockLock and ClockBoost circuitry. To ensure noise resistance, the power and ground supply to the ClockLock and ClockBoost circuitry should be isolated from the power and ground to the rest of the device. VCC\_CKCLK has the same voltage specifications as the VCCINT and should be connected to a 1.8-V power supply. If the ClockLock or ClockBoost circuitry is not used, this power or ground pin should be connected to VCCINT or GNDINT, respectively.
- (3) This pin can be used as a user I/O pin if it is not used for its device-wide or configuration function.
- (4) This pin is the complementary signal for the LVDS pair on dedicated inputs and outputs that can be configured for the LVDS standard. If not used for the LVDS pair, these pins are regular I/O pins. Pins with the "n" suffix carry the negative signal for the LVDS channel. Pins with a "p" suffix carry the positive signal for the LVDS channel.
- (5) This pin is a dedicated pin; it is not available as a user I/O pin.
- (6) This pin is tri-stated in user mode.
- (7) This pin is the power or ground for the external output of a PLL. These pins should be set to the VCCIO level/standard desired for the external clock output. To ensure noise resistance, the power and ground supply to the PLL external output should be isolated from the power and ground to the rest of the VCCIO and GNDIO pins. If the PLL or external output is not used, this power or ground pin should be connected to VCCIO or GNDIO, respectively.
- (8) The CLKCLK\_OUT pin is powered by the VCC\_CKOUT and GND\_CKOUT pins.
- (9) This pin shows the status of the ClockLock and ClockBoost circuitry. When the ClockLock and ClockBoost circuitry is locked to the incoming clock and generates an internal clock, LOCK is driven high. LOCK remains high if a periodic clock stops clocking. The LOCK function is optional; if the LOCK output is not used, this pin is a user I/O pin.
- (10) This pin is the active high enable pin for all of the PLL circuits in the device. When de-asserted, all PLLs are reset to their default, unlocked state and will stop clocking. Once re-asserted, the PLLs will lock again and start clocking. If this pin function is not needed, the pin should be connected to VCCINT.
- (11) The user I/O pin count includes dedicated inputs and dedicated clock inputs. It does not include the dedicated clock feedback and output pins.

Copyright © 1995, 1996, 1997, 1998, 1999, 2000, 2001, Altera Corporation, 101 Innovation Drive, San Jose, CA 95134, USA, all rights reserved. By accessing this information, you agree to be bound by the terms of Altera's Legal Notice.